



Cisco MDS 9000 Series Command Reference, Release 8.x

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CONTENTS

PREFACE

Preface	xliv
Preface	xliv
Audience	xliv
Document Conventions	xliv
Related Documentation	xlvi
Obtaining Documentation and Submitting a Service Request	xlvii

CHAPTER 1

A Commands	1
1G-speed-mode	3
10G-speed-mode (FC ports)	4
10G-speed-mode (IP Storage Ports)	5
16G-speed-mode	6
aaa accounting default	7
aaa accounting logsize	8
aaa authentication dhchap default	9
aaa authentication iscsi default	10
aaa authentication login	11
aaa authentication login ascii-authentication	13
aaa authentication login chap enable	15
aaa authentication login mschapy2 enable	16
aaa authorization	17
aaa authorization ssh-certificate	19
aaa authorization ssh-publickey	20
aaa group server	21
aaa user default-role	23
abort	24

absolute-timeout	25
action cli	26
action counter	27
action event-default	29
action exception log	30
action forceshut	32
action overbudgetshut	33
action policy-default	34
action reload	35
action snmp-trap	36
action syslog	37
active equals saved	39
add-session vsan	40
add-step dynamic	41
add-step static	42
add-tgt vsan	43
add-vi vsan	44
alert-group	46
analytics port-sampling	49
analytics query	51
analytics type	56
arp	58
attach	59
attachpriv	60
attribute-admin	61
attribute failover auto	63
attribute qos	64
attributes (DMM job configuration submode)	65
authentication (IKE policy configuration submode)	66
authentication	68
auth-mechanism plain	69
autonomous-fabric-id (IVR service group configuration)	70
autonomous-fabric-id (IVR topology database configuration)	72
autonomous-fabric-id database	74

auto-volgrp 76

autozone 77

CHAPTER 2**B Commands 83**

beacon 84

banner motd 86

boot 88

bport 90

bport-keepalive 91

broadcast 92

CHAPTER 3**C Commands 93**

callhome 97

callhome mft-put 99

callhome test 100

callhome test-keepalive 101

cd 102

cdp 104

certificate 107

cfs distribute 108

cfs ipv4 distribute 109

cfs ipv4 mcast-address 111

cfs ipv6 distribute 113

cfs ipv6 mcast-address 115

cfs region 117

cfs static-peers 119

channel mode active 120

channel-group 121

cimserver 122

cimserver clearcertificate 124

cimserver loglevel 125

class 126

clear accounting log 128

clear analytics 129

clear arp-cache	131
clear asic-cnt	132
clear callhome session	134
clear cdp	135
clear cores	136
clear counters (EXEC mode)	137
clear counters (SAN extension N port configuration mode)	138
clear counters interface	139
clear counters interface all	140
clear crypto ike domain ipsec sa	141
clear crypto sa domain ipsec	142
clear debug-logfile	143
clear device-alias	144
clear dpvm	145
clear dpvm merge statistics	146
clear fabric-binding statistics	147
clear fcanalyzer	148
clear fcflow stats	149
clear fcns statistics	150
clear fc-redirect config	151
clear fc-redirect decommission-switch	152
clear fcs statistics	153
clear fctimer session	154
clear ficon	155
clear fspf counters	156
clear install failure-reason	157
clear ip access-list counters	158
clear ips arp	159
clear ips stats	160
clear ips stats fabric interface	161
clear ipv6 access-list	162
clear ipv6 neighbors	163
clear islb session	164
clear ivr fcdomain database	165

clear ivr service-group database	166
clear ivr zone database	167
clear license	168
clear line	169
clear logging	170
clear ntp	172
clear port-security	173
clear processes log	174
clear qos statistics	175
clear radius-server statistics	176
clear radius session	177
clear rlir	178
clear rmon alarms	180
clear rmon all-alarms	181
clear rmon hcalarms	182
clear rmon log	183
clear role session	184
clear rscn session vsan	185
clear rscn statistics	186
clear santap module	187
clear scheduler logfile	188
clear screen	189
clear scsi-flow statistics	190
clear sdv	191
clear snmp hostconfig	192
clear ssh hosts	193
clear ssm-nvram santap module	194
clear system reset-reason	195
clear tacacs+ session	196
clear tacacs-server statistics	197
clear tlport alpa-cache	198
clear user	199
clear vrrp	200
clear zone	202

clear zone smart-zoning	204
cli	205
cli alias name	207
cli var name (configuration)	209
cli var name (EXEC)	210
clis	211
clock	212
clock format	214
clock set	215
cloud discover	216
cloud discovery	217
cloud-discovery enable	219
cluster	220
code-page	221
commit	223
commit (DMM job configuration submode)	224
configure terminal	225
congestion-isolation	226
congestion-isolation remove interface	228
contract-id	230
copy	231
copy licenses	235
copy startup-config running-config	236
copy ssm-nvram standby-sup	237
counter (port-group-monitor configuration mode)	238
counter (port-monitor configuration mode)	240
crlookup	244
crypto ca authenticate	245
crypto ca crt request	247
crypto ca enroll	249
crypto ca export	251
crypto ca import	252
crypto ca lookup	254
crypto ca remote ldap	255

crypto ca test verify	256
crypto ca trustpoint	257
crypto cert ssh-authorize	259
crypto certificatemap mapname	260
crypto global domain ipsec security-association lifetime	261
crypto ike domain ipsec	262
crypto ike domain ipsec rekey sa	263
crypto ike enable	264
crypto ipsec enable	265
crypto key generate rsa	266
crypto key zeroize rsa	268
crypto map domain ipsec (configuration mode)	269
crypto map domain ipsec (interface configuration submode)	271
crypto transform-set domain ipsec	272
customer-id	274

CHAPTER 4
Caching Services Module Commands 275

cluster name	277
cluster config	279
cluster add	280
feature enable	282
flash-copy	284
host	286
install module node	288
interface svc	290
iogroup	292
ip	293
mdisk-grp	294
migrate vdisk	296
node	297
node svc delete	298
node svc recover	299
node svc servicemode	300
node svc upgrade	301

quorum	302
remote-copy	303
show cluster flash-copy	305
show cluster host	306
show cluster iogroup	307
show cluster ip	308
show cluster mdisk	309
show cluster mdsik-grp	311
show cluster nodes	312
show cluster remote-copy	313
show cluster remote-copy-cluster	314
show cluster status	315
show cluster vdisk	316
show environment battery	317
show interface svc	319
show nodes	322
show svc	324
svc-config	327
svc-ibmcli	328
svc-purge-wwn module	329
vdisk	330

CHAPTER 5

D Commands	333
data-pattern-file	335
deadtime (radius group configuration)	336
deadtime (tacacs+ group configuration)	337
deadtime (server group configuration mode)	338
delete	339
delete ca-certificate	341
delete certificate	342
delete crl	343
deny (IPv6-ACL configuration)	344
description	347
destination interface	348

destination-group	350
destination-profile	352
destination-profile (telemetry)	355
device-alias (IVR fcdomain database configuration submode)	356
device-alias (SDV virtual device configuration submode)	357
device-alias abort	358
device-alias commit	359
device-alias confirm-commit enable	360
device-alias database	361
device-alias distribute	362
device-alias import fcalias	363
device-alias mode enhanced	364
debug ldap	366
device-alias name	367
diagnostic bootup level	368
diagnostic isl latency-test	369
diagnostic isl multi_hop generator	370
diagnostic isl multi_hop reflector	372
diagnostic monitor interval module	374
diagnostic monitor module	376
diagnostic ondemand iteration	377
diagnostic ondemand action-on-failure	378
diagnostic start interface fc test link-diag	379
diagnostic start module	382
diagnostic stop interface fc test link-diag	383
diagnostic stop module	384
dir	385
disable	387
discover	388
discover custom-list	389
discover scsi-target	390
distribute	392
dmm module	393
dmm module job	394

do 397
 dpvm abort 399
 dpvm activate 400
 dpvm auto-learn 401
 dpvm commit 403
 dpvm database 404
 dpvm database copy active 406
 dpvm database diff 407
 dpvm distribute 408
 dpvm enable 409
 dpvm overwrite-duplicate-pwwn 410
 dscp 411
 dst-grp 413
 duplicate-message throttle 415

CHAPTER 6

E Commands 417
 egress-sa 419
 email-contact 420
 empty 421
 enable 422
 enable (Call Home configuration submode) 423
 enable user-server-group 424
 enable secret 425
 enable cert-DN-match 426
 encryption 427
 end 428
 enrollment terminal 429
 errdisable detect cause link-down 430
 errdisable detect cause bit-errors 432
 errdisable detect cause credit-loss 433
 errdisable detect cause link-reset 435
 errdisable detect cause signal-loss 436
 errdisable detect cause sync-loss 437
 errdisable detect cause trustsec-violation 438

event cli 439
event counter 441
event fanabsent 443
event fanbad 444
event fens 445
event flogi 446
event gold 448
event memory 450
event module 451
event module-failure 453
event oir 456
event policy-default 458
event poweroverbudget 459
event snmp 460
event storm-control 463
event syslog 464
event sysmgr 466
event temperature 468
event zone 470
event manager applet 473
event manager environment 474
event manager policy 475
event zone 476
exit 479

CHAPTER 7

F Commands 481
fabric 484
fabric-binding activate 485
fabric-binding database copy 487
fabric-binding database diff 488
fabric-binding database vsan 489
fabric-binding enable 491
fabric-membership 492
fcalias clone 493

fcalias name	494
fcalias rename	495
fcalyzer local	496
fcalyzer remote	501
filter	502
fcc enable	504
fc-management database	505
fc-management enable	506
fcc priority	507
fedomain	508
fedomain abort	509
fedomain allowed	510
fedomain auto-reconfigure	512
fedomain commit	514
fedomain contiguous-allocation	515
fedomain distribute	516
fedomain domain	517
fedomain fabric-name	519
fedomain fcid database	520
fedomain fcid persistent	521
fedomain optimize	522
fedomain priority	524
fedomain restart	526
fedroplacency	527
fcflow stats	529
fcid-allocation	531
fcid-last-byte	532
fcinterop fcid-allocation	533
fcinterop loop-monitor	534
fcip-enhanced	535
fcip enable	537
fcip profile	538
fens bulk-notify	539
fens no-bulk-notify	540

fens proxy-port	541
fens reject-duplicate-pwwn vsan	542
fcping	543
fc-redirect version2 enable	545
fc-redirect ivr-support enable	547
feroute	548
feroute-map vsan	550
ferxbcredit extended enable	552
fcs plat-check-global vsan	553
fcs register	554
fcs virtual-device-add	555
fesp	556
fesp dhchap devicename	558
fesp dhchap dhgroup	560
fesp dhchap hash	562
fesp dhchap password	564
fesp enable	566
fesp esp sa	567
fesp timeout	568
fctimer	569
fctimer abort	570
fctimer commit	571
fctimer distribute	572
fctrace	573
fc-tunnel	574
feature	577
feature analytics	579
feature congestion-isolation	580
feature ficon	582
feature fpm	584
feature telemetry	585
feature vmis	586
ficon distribute	587
ficon logical-port assign port-numbers	588

ficon port default-state prohibit-all	589
ficon slot assign port-numbers	590
ficon swap	592
ficon-tape-read-accelerator	594
ficon-tape-accelerator vsan	595
ficon vsan (EXEC mode)	597
ficon vsan (configuration mode)	599
ficon vsan diagnostics	600
file	601
find	602
flex-attach virtual-pwwn	603
flex-attach virtual-pwwn auto	604
flex-attach virtual-pwwn interface	605
flogi scale enable	606
flogi quiesce timeout	607
flowgroup	608
format	609
fpm congested device	611
fpm congested device recover	613
fpm congestion-signal	614
fpm dirl	615
fpm fpin	617
fspf config vsan	618
fspf cost	620
fspf dead-interval	621
fspf enable vsan	622
fspf hello-interval	623
fspf passive	624
fspf retransmit-interval	625

CHAPTER 8

G Commands	627
group	628
gzip	629
gunzip	630

CHAPTER 9**H Commands 631**

- hardware ejector enable 632
- hardware fabric crc 633
- hash 635
- host 636
- host 637
- hw-module logging onboard 639

CHAPTER 10**I Commands 641**

- identity 644
- ingress-sa 646
- initiator 647
- in-order-guarantee 648
- install all 649
- install clock-module 655
- install license 657
- install module bios 658
- install module epfd 659
- install module loader 661
- install ssi 662
- interface 664
- interface fc 666
- interface fcip 668
- interface fc-tunnel 671
- interface gigabitethernet 673
- interface ioa 675
- interface iscsi 676
- interface mgmt 678
- interface port-channel 679
- interface sme 681
- interface sme (Cisco SME cluster node configuration submode) 682
- interface vsan 684
- ioa cluster 685

ioa site-local	686
ioa-ping	687
ip access-group	689
ip access-list	691
ip address (FCIP profile configuration submode)	698
ip address (interface configuration)	699
ip default-gateway	700
ip default-network	701
ip (destination-group)	702
ip domain-list	704
ip domain-lookup	705
ip domain-name	706
ip name-server	707
ip route	708
ip routing	709
ip-compression	710
ips netsim delay-ms	712
ips netsim delay-us	713
ips netsim drop nth	714
ips netsim drop random	716
ips netsim enable	718
ips netsim max-bandwidth-kbps	719
ips netsim max-bandwidth-mbps	720
ips netsim qsize	721
ips netsim reorder	722
ipv6 access-list	724
ipv6 address	725
ipv6 enable	726
ipv6 nd	727
ipv6 route	729
ipv6 routing	731
ipv6 traffic-filter	732
iscsi authentication	733
iscsi duplicate-wwn-check	735

iscsi dynamic initiator	737
iscsi enable	739
iscsi enable module	740
iscsi import target fc	741
iscsi initiator idle-timeout	742
iscsi initiator ip-address	743
iscsi initiator name	745
iscsi interface vsan-membership	746
iscsi save-initiator	747
iscsi virtual-target name	749
islb abort	752
islb commit	753
islb distribute	754
islb initiator	756
islb save-initiator	758
islb virtual-target name	760
islb vrrp	762
islb zoneset activate	764
isns	765
isns distribute	766
isns esi retries	767
isns profile name	768
isns reregister	769
isns-server enable	770
ivr aam pre-deregister-check	771
ivr aam register	772
ivr abort	773
ivr commit	774
ivr copy active-service-group user-configured-service-group	775
ivr copy active-topology user-configured-topology	776
ivr copy active-zoneset full-zoneset	777
ivr copy auto-topology user-configured-topology	778
ivr distribute	779
ivr enable	780

ivr fcdomain database autonomous-fabric-num	781
ivr nat	782
ivr refresh	783
ivr service-group activate	784
ivr service-group name	785
ivr virtual-fcdomain-add	787
ivr virtual-fcdomain-add2	788
ivr vsan-topology	789
ivr vsan-topology auto	791
ivr vsan-topology database	792
ivr withdraw domain	794
ivr zone name	795
ivr zone rename	796
ivr zoneset	797
ivr zoneset rename	798

CHAPTER 11

J Commands	799
job name	800

CHAPTER 12

K Commands	801
keepalive	802
key	803
key (sa configuration submode)	805
key-ontape	806

CHAPTER 13

L Commands	807
ldap search-map	808
ldap-search-map	809
ldap-server deadtime	810
ldap-server host	811
ldap-server port	813
ldap-server timeout	814
lifetime seconds	815
line com1	816

line console **819**
 line vty **822**
 link-state-trap (SME) **823**
 load-balancing **824**
 load-balancing (Cisco IOA cluster Configuration submode) **825**
 locator-led **826**
 logging abort **827**
 logging commit **828**
 logging console **829**
 logging distribute **830**
 logging level **831**
 logging level pmon **832**
 logging level port **834**
 logging logfile **836**
 logging module **837**
 logging monitor **838**
 logging origin-id **839**
 logging server **841**
 logging timestamp **844**
 logical-type **845**

CHAPTER 14

M Commands 847
 match **848**
 match (fcroute-map configuration submode) **850**
 match address **852**
 mcast root **853**
 member (fcalias configuration submode) **854**
 member (ivr zone configuration) **856**
 member (zone configuration and zoneset-zone configuration submode) **858**
 member (zoneset configuration submode) **861**
 member (zoneset-zone configuration submode) **862**
 member pwwn **864**
 metric (iSLB initiator configuration) **866**
 mkdir **867**

mode **868**
 modem connect line **869**
 monitor counter (port-group-monitor configuration mode) **870**
 monitor counter (port-monitor configuration mode) **872**
 monitor counter tx-slowport-count **874**
 monitor counter tx-slowport-oper-delay **875**
 monitor counter txwait **876**
 monitor session **877**
 move **878**
 mutual-chap username (iSCSI initiator configuration and iSLB initiator configuration) **879**

CHAPTER 15
N Commands 881

native-autonomous-fabric-num **882**
 node **883**
 node (Cisco IOA cluster node configuration submode) **884**
 npiv enable **885**
 nport **886**
 nport pwwn **887**
 npv auto-load-balance disruptive **888**
 npv enable **889**
 npv traffic-map analysis clear **890**
 npv traffic-map server-interface **891**
 ntp abort **892**
 ntp allow **893**
 ntp authenticate **895**
 ntp authentication-key **897**
 ntp commit **899**
 ntp distribute **900**
 ntp logging **902**
 ntp peer **903**
 ntp server **905**
 ntp source-interface **907**
 ntp sync-retry **909**
 ntp trusted-key **910**

[nxapi http port port-number](#) 911
[nxapi https port port-number](#) 912
[nxapi ssl ciphers weak](#) 913
[nxapi ssl protocols](#) 914
[nxapi sandbox](#) 915
[nwwn \(DPVM database configuration submode\)](#) 916
[nwwn \(SAN extension configuration mode\)](#) 917

CHAPTER 16
O Commands 919

[ocsp url](#) 920
[odrt.bin](#) 921
[open](#) 923
[out-of-service](#) 924
[out-of-service module](#) 926
[out-of-service xbar](#) 927

CHAPTER 17
P Commands 929

[passive-mode](#) 931
[password strength-check](#) 932
[path](#) 933
[pathtrace](#) 935
[peer \(DMM job configuration submode\)](#) 942
[peer-info ipaddr](#) 943
[periodic-inventory notification](#) 945
[permit \(IPv6-ACL configuration\)](#) 946
[phone-contact](#) 949
[ping](#) 950
[policy](#) 952
[port](#) 953
[portaddress](#) 954
[port-channel persistent](#) 956
[port-group-monitor activate](#) 957
[port-group-monitor enable](#) 958
[port-group-monitor name](#) 959

port-license	960
port-monitor activate	961
port-monitor check-interval	962
port-monitor cong-isolation-recover	963
port-monitor dirl	964
port-monitor enable	965
port-monitor fpin	966
port-monitor name	967
port-security	969
port-security abort	972
port-security commit	973
port-security database	974
port-security distribute	976
port-security enable	977
port-track enable	978
port-track force-shut	979
port-track interface	980
power redundancy-mode (MDS 9500 switches)	981
power redundancy-mode (MDS 9700 switch)	983
poweroff module	986
priority	987
priority-flow-control long-distance	988
priority-flow-control mode	989
purge analytics	990
purge fcdomain fcid	992
purge module	993
pwc	994
pwd	995
pwwn (DPVM database configuration submode)	996
pwwn (fcdomain database configuration submode)	997
pwwn (fc-management database configuration submode)	998
pwwn (SDV virtual device configuration submode)	1000

[qos class-map](#) 1002
[qos control](#) 1003
[qos control priority](#) 1004
[qos dwrr-q](#) 1005
[qos enable](#) 1006
[qos policy-map](#) 1007
[qos priority](#) 1008
[qos service](#) 1009
[quiesce](#) 1010

CHAPTER 19
R Commands 1011

[radius abort](#) 1013
[radius commit](#) 1014
[radius distribute](#) 1015
[radius-server deadtime](#) 1016
[radius-server directed-request](#) 1017
[radius-server host](#) 1018
[radius-server key](#) 1020
[radius-server retransmit](#) 1021
[radius-server test](#) 1022
[radius-server timeout](#) 1024
[rate-mode bandwidth-fairness](#) 1025
[rate-mode oversubscription-limit](#) 1026
[read command-id](#) 1028
[read-only](#) 1029
[reload](#) 1030
[revocation-check](#) 1032
[rlir preferred-cond fcid](#) 1034
[rmdir](#) 1036
[rmon alarm](#) 1037
[rmon event](#) 1039
[rmon hcalarm](#) 1041
[role abort](#) 1043
[role commit](#) 1044

[role distribute](#) 1045
[role name](#) 1046
[rsa-keypair](#) 1048
[rscn](#) 1050
[rscn abort vsan](#) 1051
[rscn coalesce swrscn vsan](#) 1052
[rscn commit vsan](#) 1053
[rscn distribute](#) 1054
[rscn event-tov](#) 1055
[rscn permit type nport event switch-config](#) 1057
[rspan-tunnel](#) 1058
[rule](#) 1059
[run-script](#) 1060

CHAPTER 20
S Commands 1063

[salt \(sa configuration submode\)](#) 1067
[san-ext-tuner enable](#) 1068
[santap module](#) 1070
[scaling batch enable](#) 1072
[scheduler](#) 1073
[scsi-flow distribute](#) 1076
[scsi-flow flow-id](#) 1077
[scsi-target](#) 1079
[sdv abort vsan](#) 1081
[sdv commit vsan](#) 1082
[sdv enable](#) 1083
[sdv virtual-device name](#) 1084
[secure-erase abort job](#) 1085
[secure-erase create algorithm](#) 1086
[secure-erase create job](#) 1087
[secure-erase create-vi vsan](#) 1088
[secure-erase destroy algorithm](#) 1089
[secure-erase destroy job](#) 1090
[secure-erase destroy-vi vsan](#) 1091

secure-erase start job	1092
secure-erase stop job	1093
secure-erase validate job	1094
security-mode	1095
send	1096
sensor-group	1097
server	1098
server (configure session submode)	1099
server (DMM job configuration submode)	1100
server (iSNS profile configuration mode)	1101
server (radius configuration)	1102
server (tacacs+ configuration)	1103
set (IPsec crypto map configuration submode)	1104
set interface preference-strict (fcroute-map configuration submode)	1106
setup	1107
setup ficon	1108
setup sme	1109
shared-keymode	1110
shutdown	1111
shutdown (Cisco SME and IOA cluster configuration submode)	1112
site-id	1113
sleep	1114
sme	1115
snmp port	1116
snmp-server	1117
snmp-server aaa-user cache-timeout	1119
snmp-server aaa exclusive-behavior enable	1120
snmp-server community	1121
snmp-server contact	1122
snmp-server enable traps	1123
snmp-server enable traps fcdomain	1126
snmp-server enable traps link cisco	1127
snmp-server enable traps zone	1128
snmp-server globalEnforcePriv	1129

snmp-server host	1130
snmp-server location	1132
snmp-server tcp-session	1133
snmp-server traps entity fru	1134
snmp-server user	1135
snsr-grp	1137
source	1139
span max-queued-packets	1141
span session	1142
span session source interface	1144
special-frame	1145
ssh	1146
ssh connect	1148
ssh key	1149
ssh name	1151
ssh server enable	1153
ssl	1154
ssm enable feature	1155
ssm upgrade delay	1158
static (iSCSI initiator configuration and iSLB initiator configuration)	1159
stop	1161
storage (DMM job configuration submode)	1162
streetaddress	1163
subscription	1164
suspend	1165
switchname	1167
switchport auto-negotiate	1168
switchport beacon	1169
switchport description	1170
switchport duplex	1171
switchport encap	1172
switchport fcbbscn	1173
switchport fcrxbcredit	1175
switchport fcrxbuFSIZE	1177

switchport fec	1178
switchport fec tts	1180
switchport fill-pattern	1182
switchport ignore	1183
switchport ingress-rate	1185
switchport initiator id	1186
switchport link-diag	1187
switchport logical-type	1189
switchport max-npiv-limit	1190
switchport mode	1191
switchport mtu	1193
switchport owner	1194
switchport promiscuous-mode	1195
switchport proxy-initiator	1196
switch-priority	1198
switchport rate-mode	1199
switchport speed	1203
switchport trunk allowed vsan	1205
switchport trunk-max-npiv-limit	1206
switchport trunk mode	1207
switch-wwn	1209
system cores	1211
system default interface congestion mode	1212
system default interface congestion timeout	1213
system default interface pause mode	1215
system default interface pause timeout	1216
system default rib ipfc-mcast-deny	1217
system default switchport	1218
system default zone default-zone permit	1220
system default zone distribute full	1221
system default zone gs	1222
system default zone mode enhanced	1223
system default zone smart-zone	1224
system delayed-traps enable mode	1225

system delayed-traps timer	1226
system fc flow-control	1227
system hap-reset	1228
system health (configuration mode)	1229
system health cf-crc-check	1232
system health cf-re-flash	1233
system health clear-errors	1234
system health external-loopback	1236
system health internal-loopback	1238
system health module	1240
system health serdes-loopback	1243
system heartbeat	1245
system kernel core	1246
system memlog	1247
system port pacer mode F interface-login-threshold	1248
system startup-config	1249
system statistics reset	1250
system switchover (configuration mode)	1251
system switchover (EXEC mode)	1252
system timeout congestion-drop	1253
system timeout no-credit-drop	1255
system timeout slowport-monitor	1257
system timestamp format	1258
system trace	1261
system watchdog	1262

CHAPTER 21
Show Commands 1263

show aaa accounting	1271
show aaa authentication	1272
show aaa authentication login ascii-authentication	1273
show aaa authentication login chap enable	1274
show aaa authentication login mschapv2	1275
show aaa authorization all	1276
show aaa groups	1277

show aaa user default-role	1278
show accounting log	1279
show analytics port-sampling	1280
show analytics query	1282
show analytics schema	1299
show analytics system-load	1304
show analytics flow congestion-drops	1306
show arp	1308
show autonomous-fabric-id database	1309
show banner motd	1310
show boot	1311
show boot auto-copy	1312
show callhome	1314
show callhome transport	1317
show cdp	1318
show cfs	1322
show cfs regions	1325
show cfs static peers	1327
show cfs status	1328
show cimserver	1329
show cimserver indications	1330
show cimserver logs	1332
show cimserver status	1333
show cli alias	1334
show cli variables	1335
show clock	1336
show cloud discovery	1337
show cloud membership	1338
show congestion-isolation	1340
show consistency-checker	1342
show consistency-checker analytics	1345
show copyright	1346
show cores	1347
show crypto ca certificates	1348

show crypto ca crt	1350
show crypto ca remote-certstore	1352
show crypto ca trustpoints	1353
show crypto certificatemap	1354
show crypto global domain ipsec	1355
show crypto ike domain ipsec	1356
show crypto key mypubkey rsa	1357
show crypto map domain ipsec	1358
show crypto sad domain ipsec	1360
show crypto spd domain ipsec	1361
show crypto ssh-auth-map	1362
show crypto transform-set domain ipsec	1363
show debug	1364
show debug logfile	1365
show debug npv	1366
show debug sme	1368
show device-alias	1369
show device-alias status	1372
show diagnostic bootup level	1373
show diagnostic content module	1374
show diagnostic description module	1375
show diagnostic events	1376
show diagnostic isl result interface	1377
show diagnostic isl status	1378
show diagnostic ondemand setting	1379
show diagnostic result interface fc test link-diag	1380
show diagnostic result module	1382
show diagnostic simulation module	1384
show diagnostic status module	1385
show diagnostic status module	1386
show diagnostic test link-diag status	1387
show dmm discovery-log	1388
show dmm fp-port	1389
show dmm ip-peer	1391

show dmm job	1392
show dmm module	1394
show dmm srvr-vt-login	1395
show dmm vt	1397
show dpvm	1398
show dpvm merge statistics	1399
show dpvm merge status	1400
show environment	1401
show event manager environment	1408
show event manager policy	1409
show fabric switch information vsan	1410
show fabric-binding	1411
show fc2	1415
show fcalias	1418
show fcanalyzer	1419
show fcc	1420
show fcdomain	1421
show fcdroplateny	1425
show fcflow stats	1426
show fcfd	1427
show fcid-allocation	1428
show fcip	1429
show fcip counters	1433
show fc-management	1435
show fcns database	1436
show fcns statistics	1440
show fc-redirect active-configs	1441
show fc-redirect configs	1443
show fc-redirect peer-switches	1444
show fcroute	1446
show fcroute-map	1449
show fcs	1451
show fcsp	1455
show fcsp interface	1457

show fctimer	1458
show fc-tunnel	1460
show fdmi	1461
show ficon	1464
show ficon vsan diagnostics	1471
show file	1472
show flex-attach	1473
show flex-attach info	1474
show flex-attach merge status	1476
show flex-attach virtual-pwwn	1477
show flogi	1479
show flogi database details	1482
show flogi database interface	1483
show flow-control	1484
show fpm	1485
show fspf	1490
show hardware	1493
show hardware capacity	1496
show hardware fabric crc status	1498
show hardware fabric-mode	1499
show hardware internal rxwait-history	1500
show hardware internal txwait-history	1502
show hosts	1504
show incompatibility system	1505
show in-order-guarantee	1506
show install all failure-reason	1507
show install all impact	1508
show install all status	1510
show interface	1512
show interface ioa	1546
show interface priority-flow-control	1548
show interface sme	1550
show interface transceiver	1552
show interface vfc	1554

show inventory	1556
show ioa cluster	1557
show ioa cluster summary	1560
show ioa internal interface ioa	1561
show ip access-list	1565
show ip arp	1566
show ip interface	1567
show ip route	1569
show ip routing	1570
show ip traffic	1571
show ips arp	1572
show ips ip route	1573
show ips ipv6	1574
show ips netsim	1576
show ips stats	1577
show ips stats fabric interface	1580
show ips stats netsim	1582
show ips status	1583
show ipv6 access-list	1584
show ipv6 interface	1585
show ipv6 neighbours	1587
show ipv6 route	1588
show ipv6 routing	1589
show ipv6 traffic	1590
show isapi dpp	1592
show isapi tech-support santap file	1593
show iscsi global	1595
show iscsi initiator	1596
show iscsi session	1598
show iscsi stats	1600
show iscsi virtual-target	1604
show islb cfs-session status	1605
show islb initiator	1606
show islb merge status	1608

show islb pending	1609
show islb pending-diff	1610
show islb session	1611
show islb status	1613
show islb virtual-target	1614
show islb vrrp	1616
show isns	1623
show ivr	1626
show ivr aam	1631
show ivr aam pre-deregister-check	1632
show ivr diagnostics	1633
show ivr fcdomain database	1634
show ivr service-group	1636
show ivr virtual-fcdomain-add-status2	1637
show ivr virtual-switch-wwn	1638
show kernel core	1639
show ldap-search-map	1640
show ldap-server	1641
show ldap-server groups	1642
show license	1643
show line	1645
show loadbalancing hash-type	1647
show loadbalancing module	1649
show locator-led status	1650
show logging	1652
show logging onboard flow-control request-timeout	1675
show mcast	1676
show module	1678
show monitor session	1681
show npv flogi-table	1688
show npv internal info	1689
show npv internal info traffic-map	1691
show npv status	1692
show npv traffic-map	1693

show npv traffic-map proposed	1694
show ntp authentication-keys	1696
show ntp authentication-status	1697
show ntp logging-status	1698
show ntp peers	1699
show ntp peer-status	1700
show ntp pending-diff	1701
show ntp pending peers	1702
show ntp rts-update	1703
show ntp session status	1704
show ntp source-interface	1706
show ntp statistics	1707
show ntp status	1710
show ntp trusted-keys	1711
show nxapi	1712
show port index-allocation	1713
show port-channel	1715
show port-channel compatibility-parameters	1718
show port-channel consistency	1720
show port-channel database	1721
show port-channel internal	1724
show port-channel summary	1728
show port-channel usage	1729
show port-group-monitor	1730
show port-group-monitor active	1732
show port-group-monitor status	1733
show port-license	1734
show port-monitor	1735
show port-monitor active	1737
show port-monitor status	1739
show port-resources module	1740
show port-security	1743
show process creditmon credit-loss-event-history	1746
show process creditmon credit-loss-events	1747

show process creditmon event-history 1748
show process creditmon slowport-monitor-events 1749
show process creditmon txwait-history 1751
show processes 1753
show qos 1756
show radius 1758
show radius-server 1759
show rdp 1761
show rlir 1764
show rmon 1768
show rmon status 1770
show role 1771
show role 1773
show rscn 1775
show running radius 1777
show running-config 1779
show running-config callhome 1782
show running-config fcsp 1783
show running-config telemetry 1784
show san-ext-tuner 1785
show santap module 1786
show santap module dvt 1792
show santap module dvt brief 1793
show santap module dvtlun 1795
show santap vttbl dvt 1796
show santap vttbl dvt host 1797
show scheduler 1798
show scsi-flow 1801
show_scsi-target 1805
show sdv 1808
show secure-erase algorithm 1810
show secure-erase job 1811
show secure-erase job detail 1812
show secure-erase vsan 1813

show sme cluster	1814
show sme transport	1817
show snmp	1818
show span drop-counters	1822
show span max-queued-packets	1823
show sprom	1824
show ssh	1827
show ssl info	1829
show ssm provisioning	1830
show startup-config	1831
show switchname	1834
show system	1835
show system default zone	1838
show system fc flow-control	1839
show system health	1840
show system health isl result interface	1846
show system internal snmp lc	1847
show system timestamp format	1849
show tacacs+	1850
show tacacs-server	1851
show tech-support	1853
show tech-support fc-management	1862
show tech-support sme	1863
show telemetry	1864
show telnet server	1871
show terminal	1872
show time-stamp running-config last-changed	1873
show tlport	1875
show topology	1877
show topology isl	1879
show trunk protocol	1885
show user-account	1886
show username	1887
show users	1888

show version	1889
show vmis database	1893
show vmis range	1897
show vmis statistics	1898
show vrrp	1899
show vsan	1902
show wwn	1905
show zone	1906
show zone analysis	1913
show zone internal global-info	1920
show zone internal vsan	1922
show zone policy	1923
show zone smart-zoning auto-conv	1924
show zone-attribute-group	1925
show zoneset	1926
ShowAnalytics	1928
ShowAnalyticsConsistency	1938

CHAPTER 22
T Commands 1941

tacacs+ abort	1943
tacacs+ commit	1944
tacacs+ distribute	1945
tacacs+ enable	1946
tacacs-server deadline	1947
tacacs-server directed-request	1948
tacacs-server host	1949
tacacs-server key	1951
tacacs-server test	1952
tacacs-server timeout	1954
tag	1955
tail	1957
tape compression	1958
tape-bkgrp	1959
tape-device	1960

tape-keyrecycle 1961
tape-read command-id 1962
tape-volgrp 1964
tape-write command-id 1965
target (iSLB initiator configuration) 1967
telquit 1970
tcp cwm 1971
tcp keepalive-timeout 1973
tcp maximum-bandwidth-kbps 1974
tcp maximum-bandwidth-mbps 1977
tcp max-jitter 1980
tcp max-retransmissions 1982
tcp min-retransmit-time 1983
tcp pmtu-enable 1984
tcp sack-enable 1986
tcp send-buffer-size 1987
tcp-connections 1988
telemetry 1990
telnet 1991
telnet server enable 1992
terminal alias 1993
terminal ask-on-term 1995
terminal color 1996
terminal deep-help 1997
terminal dont-ask 1998
terminal edit-mode vi 1999
terminal event-manager bypass 2001
terminal exec prompt timestamp 2002
terminal history no-exec-in-config 2003
terminal home 2004
terminal length 2005
terminal monitor 2006
terminal output xml 2007
terminal password 2008

terminal redirection-mode	2009
terminal session-timeout	2010
terminal sticky-mode	2011
terminal terminal-type	2012
terminal time	2014
terminal verify-only	2015
terminal width	2016
test aaa authorization	2017
test pfm snmp test-trap fan	2018
test pfm snmp test-trap powersupply	2020
test pfm snmp test-trap temp_sensor	2022
time	2023
time-stamp	2025
tlport alpa-cache	2026
traceroute	2027
transceiver-frequency	2028
transfer-ready-size	2029
transport email	2030
transport email mail-server	2032
transport http proxy enable	2033
transport http proxy server	2034
trunk protocol enable	2035
trustedcert	2036
tune	2037
tune-timer	2040

CHAPTER 23	U Commands	2043
	undebg all	2044
	update license	2045
	use-profile	2046
	use-retry	2047
	user-certdn-match	2048
	username	2049
	username (iSCSI initiator configuration and iSLB initiator configuration)	2054

[userprofile](#) 2056
[user-pubkey-match](#) 2057
[user-switch-bind](#) 2058

CHAPTER 24
V Commands 2059

[virtual-domain \(SDV virtual device configuration submode\)](#) 2060
[virtual-fcid \(SDV virtual device configuration submode\)](#) 2061
[vims range](#) 2062
[vrrp](#) 2063
[vsan \(iSCSI initiator configuration and iSLB initiator configuration\)](#) 2065
[vsan database](#) 2067
[vsan interface](#) 2068
[vsan interop](#) 2069
[vsan loadbalancing](#) 2070
[vsan name](#) 2071
[vsan policy deny](#) 2072
[vsan suspend](#) 2074
[vsan wwn fcid](#) 2076

CHAPTER 25
W Commands 2079

[write command-id](#) 2080
[write erase](#) 2081
[write-accelerator](#) 2082
[wwn oui](#) 2084
[wwn secondary-mac](#) 2085
[wwn vsan](#) 2086

CHAPTER 26
Z Commands 2087

[zone broadcast enable vsan](#) 2088
[zone clone](#) 2089
[zone commit vsan](#) 2090
[zone compact vsan](#) 2091
[zone confirm-commit enable](#) 2092
[zone convert smart-zoning](#) 2094

zone convert zone	2096
zone copy	2098
zone default-zone	2100
zone gs	2101
zone merge-control restrict vsan	2103
zone mode enhanced vsan	2104
zone name (configuration mode)	2107
zone name (zone set configuration submode)	2111
zone rename	2112
zone rscn address-format port	2113
zone smart-zoning enable	2114
zone-attribute-group clone	2115
zone-attribute-group name	2116
zone-attribute-group rename	2117
zonename (iSLB initiator configuration)	2118
zoneset (configuration mode)	2120
zoneset (EXEC mode)	2122
zoneset overwrite-control vsan	2124



Preface

- [Preface, on page xlv](#)

Preface

This preface describes the audience, organization of, and conventions used in the Cisco MDS 9000 Series Configuration Guides. It also provides information on how to obtain related documentation, and contains the following chapters:

Audience

This publication is for experienced network administrators who configure and maintain Cisco Multilayer Director Switches (MDS) Devices.

Document Conventions

Command descriptions use the following conventions:

Convention	Description
bold	Bold text indicates the commands and keywords that you enter literally, as shown.
<i>Italic</i>	Italic text indicates arguments for which a user supplies the values.
[x]	Square brackets enclose an optional element (keyword or argument).
[x | y]	Square brackets enclosing keywords or arguments separated by a vertical bar indicate an optional choice.
{x | y}	Braces enclosing keywords or arguments separated by a vertical bar indicate a required choice.
[x {y | z}]	Nested set of square brackets or braces indicate optional or required choices within optional or required elements. Braces and a vertical bar within square brackets indicate a required choice within an optional element.

Convention	Description
<code>variable</code>	Indicates a variable for which you supply values, in contexts where italics cannot be used.
<code>string</code>	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.

Examples use the following conventions:

Convention	Description
<code>screen font</code>	Terminal sessions and information the switch displays are in screen font.
boldface screen font	Information you must enter is in boldface screen font.
<i>italic screen font</i>	Arguments for which you supply values are in italic screen font.
<code><></code>	Nonprinting characters, such as passwords, are in angle brackets.
<code>[]</code>	Default responses to system prompts are in square brackets.
<code>!, #</code>	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

This document uses the following conventions:



Note

Means reader take note. Notes contain helpful suggestions or references to material not covered in the manual.



Caution

Means reader be careful. In this situation, you might do something that could result in equipment damage or loss of data.

Related Documentation

The documentation set for the Cisco MDS 9000 Series Switches includes the following documents.

Release Notes

<http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-release-notes-list.html>

Regulatory Compliance and Safety Information

<http://www.cisco.com/c/en/us/td/docs/switches/datacenter/mds9000/hw/regulatory/compliance/RCSI.html>

Compatibility Information

<http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-device-support-tables-list.html>

Installation and Upgrade

<http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-installation-guides-list.html>

Configuration

<http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-installation-and-configuration-guides-list.html>

CLI

<http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-command-reference-list.html>

Troubleshooting and Reference

<http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/tsd-products-support-troubleshoot-and-alerts.html>

To find a document online, use the Cisco MDS NX-OS Documentation Locator at:

http://www.cisco.com/c/en/us/td/docs/storage/san_switches/mds9000/roadmaps/doclocator.html

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see What's New in Cisco Product Documentation, at:

<http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html>.

Subscribe to What's New in Cisco Product Documentation, which lists all new and revised Cisco technical documentation as an RSS feed and delivers content directly to your desktop using a reader application. The RSS feeds are a free service.



A Commands

- [1G-speed-mode](#), on page 3
- [10G-speed-mode \(FC ports\)](#), on page 4
- [10G-speed-mode \(IP Storage Ports\)](#), on page 5
- [16G-speed-mode](#), on page 6
- [aaa accounting default](#), on page 7
- [aaa accounting logsize](#), on page 8
- [aaa authentication dhchap default](#), on page 9
- [aaa authentication iscsi default](#), on page 10
- [aaa authentication login](#), on page 11
- [aaa authentication login ascii-authentication](#), on page 13
- [aaa authentication login chap enable](#), on page 15
- [aaa authentication login mschapv2 enable](#), on page 16
- [aaa authorization](#), on page 17
- [aaa authorization ssh-certificate](#), on page 19
- [aaa authorization ssh-publickey](#), on page 20
- [aaa group server](#), on page 21
- [aaa user default-role](#), on page 23
- [abort](#), on page 24
- [absolute-timeout](#), on page 25
- [action cli](#), on page 26
- [action counter](#), on page 27
- [action event-default](#), on page 29
- [action exception log](#), on page 30
- [action forceshut](#), on page 32
- [action overbudgetshut](#), on page 33
- [action policy-default](#), on page 34
- [action reload](#), on page 35
- [action snmp-trap](#), on page 36
- [action syslog](#), on page 37
- [active equals saved](#), on page 39
- [add-session vsan](#), on page 40
- [add-step dynamic](#), on page 41
- [add-step static](#), on page 42

- [add-tgt vsan](#), on page 43
- [add-vi vsan](#), on page 44
- [alert-group](#), on page 46
- [analytics port-sampling](#), on page 49
- [analytics query](#), on page 51
- [analytics type](#), on page 56
- [arp](#), on page 58
- [attach](#), on page 59
- [attachpriv](#), on page 60
- [attribute-admin](#), on page 61
- [attribute failover auto](#), on page 63
- [attribute qos](#), on page 64
- [attributes \(DMM job configuration submode\)](#), on page 65
- [authentication \(IKE policy configuration submode\)](#), on page 66
- [authentication](#), on page 68
- [auth-mechanism plain](#), on page 69
- [autonomous-fabric-id \(IVR service group configuration\)](#), on page 70
- [autonomous-fabric-id \(IVR topology database configuration\)](#), on page 72
- [autonomous-fabric-id database](#), on page 74
- [auto-volgrp](#), on page 76
- [autozone](#), on page 77

1G-speed-mode

To configure 1 Gbps link speed on an IP storage interface on the Cisco MDS 24/10 port SAN Extension Module, use the 1G-speed-mode command.

1G-speed-mode

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Interface configuration (config-if)

Command History	Release	Modification
	7.3(0)DY(1)	This command was introduced.

Usage Guidelines This command will only be accepted for an interface range of whole IPStorage port groups because all interfaces in an IPStorage port group must have the same link speed. IPStorage interface port groups are as follows:

- Cisco MDS 9250i Switch: 1-2
- Cisco MDS 24/10 port SAN Extension Module: 1-4, 5-8

Examples

The following example shows how to configure 1 Gbps link speed on an IP storage interface on Cisco MDS 24/10 port SAN Extension Module:

```
switch# config terminal
switch(config)# interface IPStorage 5/1-4
switch(config-if)# 1G-speed-mode
This speed change will disrupt FCIP/iSCSI traffic for 60 seconds on selected IPStorage
ports.If FCIP tunnels are configured please make sure max-bw <= 1000 Mbps and tcp-connections
set to 2.
Do you wish to continue(y/n)? [n]
switch(config-if)# end
```

Related Commands	Command	Description
	10G-speed-mode	Configures 10 Gbps link speed on an IP storage interface.
	show ips status	Displays the operational speed of the IP storage interface.

10G-speed-mode (FC ports)

To enable 10 gig speed mode, use the 10G-speed-mode command. To disable this feature, use the no form of the command.

```
10G-speed-mode
no 10G-speed-mode
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Interface Configuration mode.

Command History	Release	Modification
	5.x	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable the 10 Gig speed mode:

```
switch# config terminal
switch(config-if)# 10G-speed-mode
switch(config-if)#
```

Related Commands	Command	Description
	show interface fc x/y brief	Displays the interface brief information.
	show running-config interface fc x/y	Displays the running configuration of the interface.

10G-speed-mode (IP Storage Ports)

To configure 10 Gbps link speed on an IP storage interface on the Cisco MDS 24/10 port SAN Extension Module, use the 10G-speed-mode command.

10G-speed-mode

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes Interface configuration (config-if)

Command History	Release	Modification
	7.3(0)DY(1)	This command was introduced.

Usage Guidelines This command will only be accepted for an interface range of whole IPStorage port groups because all interfaces in an IPStorage port group must have the same link speed. IPStorage interface port groups are as follows:

- Cisco MDS 9250i Switch: 1-2
- Cisco MDS 24/10 port SAN Extension Module: 1-4, 5-8

Examples

The following example shows how to configure 10 Gbps link speed on an IP storage interface on Cisco MDS 24/10 port SAN Extension Module:

```
switch# config terminal
switch(config)# interface IPStorage 5/5-8
switch(config-if)# 10G-speed-mode
This speed change will disrupt FCIP/iSCSI traffic for 60 seconds on select IPStorage ports.
Do you wish to continue(y/n)? [n]
switch(config-if)# end
```

Related Commands	Command	Description
	1G-speed-mode	Configures 1 Gbps link speed on an IP storage interface.
	show ips status	Displays the operational speed of the IP storage interface.

16G-speed-mode

To enable 2, 4, 8 and 16G speed mode, use the 16G-speed-mode command. To disable this feature, use the no form of the command.

```
16G-speed-mode
no 16G-speed-mode
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes Interface Configuration mode.

Command History	Release	Modification
	6.x	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable the 16 Gig speed mode:

```
switch# config terminal
switch(config-if)# 16G-speed-mode
switch(config-if)#
```

Related Commands	Command	Description
	show interface fc x/y brief	Displays the interface brief information.
	show running-config interface fc x/y	Displays the running configuration of the interface.

aaa accounting default

To configure the default accounting method, use the `aaa accounting default` command. To revert to the default local accounting, use the `no` form of the command.

```
aaa accounting default group group-name [none] | none | local [none] | none
no aaa accounting default group group-name [none] | none | local [none] | none
```

Syntax Description	group group-name	Specifies the group authentication method. The group name is a maximum of 127 characters.
	none	(Optional) No authentication, everyone permitted.
	local	Specifies the local authentication method.

Command Default Local accounting.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines Specify the currently configured command preceded by a `no` in order to revert to the factory default.

Examples

The following example enables accounting to be performed using remote TACACS+ servers which are members of the group called `TacServer`, followed by the local accounting method:

```
switch# config t
switch(config)# aaa accounting default group TacServer
```

The following example turns off accounting:

```
switch(config)# aaa accounting default none
```

The following example reverts to the local accounting (default):

```
switch(config)# no aaa accounting default group TacServer
```

Related Commands	Command	Description
	<code>show aaa accounting</code>	Displays the configured accounting methods.

aaa accounting logsize

To set the size of the local accounting log file, use the `aaa accounting logsize` command to set the size of the local accounting log file. To revert to the default log file size of 250000 bytes, use the `no` form of the command.

```
aaa accounting logsize integer
no aaa accounting logsize
```

Syntax Description	
logsize	Configures local accounting log file size (in bytes).
integer	The size limit of the local accounting log file in bytes from 0 to 250000.

Command Default 25,0000.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.
	2.0	This command was deprecated.

Usage Guidelines None.

Examples The following example shows the log file size configured at 29000 bytes:

```
switch# config terminal
switch(config)# aaa accounting logsize 29000
```

Related Commands	Command	Description
	show accounting logsize	Displays the configured log size.
	show accounting log	Displays the entire log file.

aaa authentication dhchap default

To configure DHCHAP authentication method, use the `aaa authentication dhchap default` command in configuration mode. To revert to factory defaults, use the `no` form of the command.

```
aaa authentication dhchap default group group-name [none] | none | local [none] | none
no aaa authentication dhchap default group group-name [none] | none | local [none] | none
```

Syntax Description	group group-name	Specifies the group name authentication method. The group name is a maximum of 127 characters.
	none	(Optional) Specifies no authentication.
	local	Specifies local user name authentication (default).

Command Default Local user name authentication.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines The local option disables other authentication methods and configures local authentication to be used exclusively.

Specify the currently configured command preceded by a `no` in order to revert to the factory default.

Examples

The following example enables all DHCHAP authentication to be performed using remote TACACS+ servers which are members of the group called TacServers, followed by the local authentication:

```
switch# config terminal
switch(config)# aaa authentication dhchap default group TacServer
```

The following example reverts to the local authentication method (default):

```
switch(config)# no aaa authentication dhcahp default group TacServer
```

Related Commands	Command	Description
	show aaa authentication	Displays the configured authentication methods.

aaa authentication iscsi default

To configure the iSCSI authentication method, use the `aaa authentication iscsi default` command in configuration mode. To negate the command or revert to factory defaults, use the `no` form of this command.

```
aaa authentication iscsi default group group-name [none] | none | local [none] | none
no aaa authentication iscsi default group group-name [none] | none | local [none] | none
```

Syntax Description

group group-name	Specifies the group name. The group name is a maximum of 127 characters.
none	(Optional) Specifies no authentication.
local	Specifies local user name authentication (default).

Command Default

Local user name authentication.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

The local option disables other authentication methods and configures local authentication to be used exclusively.

Specify the currently configured command preceded by a `no` in order to revert to the factory default.

Examples

The following example enables all iSCSI authentication to be performed using remote TACACS+ servers which are members of the group called TacServers, followed by the local authentication:

```
switch# config terminal
switch(config)# aaa authentication iscsi default group TacServer
```

The following example reverts to the local authentication method (default):

```
switch(config)# no aaa authentication iscsi default group TacServer
```

Related Commands

Command	Description
show aaa authentication	Displays the configured authentication methods.

aaa authentication login

To configure the authentication method for a login, use the `aaa authentication login` command in configuration mode. To revert to local authentication, use the `no` form of the command.

```
aaa authentication login default | fallback | error | local | group group-name [none] | none | local [none]
| none | console fallback | error | local | group-name [none] | none | local [none] | none | error-enable | mschap
enable
```

```
no aaa authentication login default | fallback | error | local | group group-name [none] | none | local [none]
| none | console fallback | error | local | group-name [none] | none | local [none] | none | error-enable | mschap
enable
```

Syntax Description

default	Specifies the default method.
fallback	Specifies the fallback mechanism configuration error.
error	Specifies the authentication error. The maximum size is 32 characters.
local	Specifies the fallback to local authentication.
group group-name	Specifies the group name. The group name is a maximum of 127 characters.
none	(Optional) Sets no authentication; everyone is permitted.
local	Specifies the local authentication method.
console	Configures the console authentication login method.
error-enable	Enables login error message display.
mschap enable	Enables MS-CHAP authentication for login.

Command Default

Local user name authentication.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 5.0(1a)	Added fallback, error, and local keywords to the syntax description.
1.3(1)	This command was introduced.
3.0(1)	Added the mschap option.

Usage Guidelines

Use the `console` option to override the console login method.

Specify the currently configured command preceded by a `no` to revert to the factory default.

Examples

The following example shows how to configure a default method:

```
switch# config t
switch(config)# aaa authentication login default fallback error local
switch(config)#
```

The following example shows how to configure a console method:

```
switch# config t
switch(config)# aaa authentication login console fallback error local
switch(config)#
```

The following example enables all login authentication to be performed using remote TACACS+ servers, which are members of the group called TacServer, followed by the local login method:

```
switch# config t
switch(config)# aaa authentication login default group TacServer
```

The following example enables console authentication to use the group called TacServer, followed by the local login method:

```
switch(config)# aaa authentication login console group TacServer
```

The following example turns off password validation:

```
switch(config)# aaa authentication login default none
```

The following example reverts to the local authentication method (default):

```
switch(config)# no aaa authentication login default group TacServer
```

The following example enables MS-CHAP authentication for login:

```
switch(config)# aaa authentication login mschap enable
```

The following example reverts to the default authentication method for login, which is the Password Authentication Protocol (PAP):

```
switch(config)# no aaa authentication login mschap enable
```

Related Commands

Command	Description
show aaa authentication	Displays the configured authentication methods.

aaa authentication login ascii-authentication

To enable ASCII authentication, use the `aaa authentication login ascii-authentication` command. To disable this feature, use the `no` form of the command.

```
aaa authentication login ascii-authentication
no aaa authentication login ascii-authentication
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	NX-OS 4.1(3a)	aaa authentication login password-aging enable command changed to aaa authentication login ascii-authentication.

Usage Guidelines Password aging notification is initiated when the user authenticates to a Cisco MDS 9000 switch with a TACACS+ account. The user is notified when a password is about to expire or has expired. If the password has expired, the user is prompted to change the password.



Note As of Cisco MDS SAN-OS Release 3.2(1), only TACACS+ supports password aging notification. If you try to use RADIUS servers by enabling this feature, RADIUSs will generate a SYSLOG message and authentication will fall back to the local database. Cisco ACS TACACS+ server must have `chpass` enabled as well.

- Password change—You can change your password by entering a blank password.
- Password aging notification—Notifies password aging. Notification happens only if the AAA server is configured and MSCHAP and MSCHAPv2 is disabled.
- Password change after expiration—Initiates password change after the old password expires. Initiation happens from the AAA server.



Note Password aging notification fails if you do not disable MSCHAP and MSCHAPv2 authentication.

Examples

The following example shows how to enable ASCII authentication:

```
switch(config)# aaa authentication login ascii-authentication
switch#(config)#
```

Related Commands

Command	Description
show aaa authentication login ascii-authentication	Displays the configured ASCII authentication method.

aaa authentication login chap enable

To enable CHAP authentication for login, use the `aaa authentication login chap enable` command. To disable CHAP authentication, use the `no` form of the command.

```
aaa authentication login chap enable
no aaa authentication login chap enable
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable CHAP authentication for login:

```
switch(config)# aaa authentication login chap enable
switch(config)#
```

Related Commands	Command	Description
	<code>show aaa authentication login CHAP</code>	Displays CHAP authentication for login.

aaa authentication login mschapv2 enable

To enable MS-CHAPv2 authentication for login, use the `aaa authentication login mschapv2 enable` command. To disable MS-CHAPv2 authentication, use the no form of the command.

```
aaa authentication login mschapv2 enable
no aaa authentication login mschapv2 enable
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines MS-CHAPv2 cannot be configured when MS-CHAP or ASCII authentication is configured and also when a TACACS group is configured for authentication.

Examples The following example shows how to enable MS-CHAPv2 authentication for login:

```
switch(config)# aaa authentication login mschapv2 enable
switch(config)#
```

Related Commands	Command	Description
	<code>show aaa authentication login mschapv2</code>	Displays MS-CHAPv2 authentication for login.

aaa authorization

To configure authorization for a function, use the aaa authorization command. To disable authorization for a function, use the no form of the command.

```
aaa authorization commands | config-commands default [group group-name] | [local] | [group group-name]
| [none]
no aaa authorization commands | config-commands default [group group-name] | [local] | [group
group-name] | [none]
```

Syntax Description

commands	Specifies authorization for all exec-mode commands.
config-commands	Specifies authorization for all commands under config mode L2 and L3.
default	Specifies the default methods.
group group-name	(Optional) Specifies the server group and group name..
local	(Optional) Specifies the local username authentication.
none	(Optional) Specifies no authorization.

Command Default

Authorization is disabled for all actions (equivalent to the method keyword none). If the aaa authorization command for a particular authorization type is entered without a specifies named method list. The default method list is automatically applied to all interfaces or lines (where this authorization type applies for except those that have a named method list explicitly defined. A defined method list overrides the default method list if no default method list is defined, then no authorization takes place.

Command Modes

Configuration mode

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to configure authorization for a configuration command function:

```
switch(config)# aaa authorization config-commands default group tac1 local
switch(config)#
```

The following example shows how to configure authorization for a command function:

```
switch(config)# aaa authorization commands default group tac1 local none
switch(config)#
```

Related Commands

Command	Description
show aaa authorization all	Displays all authorization information.

aaa authorization ssh-certificate

To configure SSH certificate authorization, use the `aaa authorization ssh-certificate` command. To disable this feature, use the `no` form of the command.

```
aaa authorization ssh-certificate default [group | local]
```

Syntax Description	default	Specifies default SSH methods.
	group	Specifies server groups.
	local	Specifies local user name authentication.

Command Default None

Command Modes Configuration mode

Command History	Release	Modification
	NX-OS 5.0(1)	This command was introduced.

Usage Guidelines None

Examples

The following example shows how to use local user name authentication:

```
switch(config)# aaa authorization ssh-certificate default local
switch(config)#
```

The following example shows how to specify server groups:

```
switch(config)# aaa authorization ssh-certificate default group ldap1
switch#
```

Related Commands	Command	Description
	show aaa authorization all	Displays all authorization information.

aaa authorization ssh-publickey

To configure SSH public key authorization, use the `aaa authorization ssh-publickey` command. To disable this feature, use the `no` form of the command.

```
aaa authorization ssh-publickey default [group | local]
no aaa authorization ssh-publickey default [group | local]
```

Syntax Description

default	Specifies default SSH methods.
group	(Optional) Specifies server groups.
local	(Optional) Specifies local user name authentication.

Command Default

None

Command Modes

Configuration mode

Command History

Release	Modification
NX-OS 5.0(1)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to use local user name authentication:

```
switch(config)# aaa authorization ssh-publickey default local
switch(config)#
```

The following example shows how to specify server groups:

```
switch(config)# aaa authorization ssh-publickey default group ldap1
switch#
```

Command	Description
show aaa authorization all	Displays all authorization information.

aaa group server

To configure one or more independent server groups, use the `aaa group server` command in configuration mode. To remove the server group, use the `no` form of this command to remove the server group.

```
aaa group server radius | tacacs+ | ldap group-name server server-name no server server-name
no aaa group server radius | tacacs+ | ldap group-name server server-name no server server-name
```

Syntax Description		
radius		Specifies the RADIUS server group.
tacacs+		Specifies the TACACS+ server group.
ldap		Specifies LDAP server group name.
group-name		Identifies the specified group of servers with a user-defined name. The name is limited to 64 alphanumeric characters.
no server server-name		Specifies the server name to add or remove from the server group.

Command Default None

Command Modes Sub configuration mode

Command History	Release	Modification
	NX-OS 5.0(1)	Added ldap keyword to the syntax description.
	1.3(1)	This command was introduced.

Usage Guidelines You can configure these server groups at any time but they only take effect when you apply them to a AAA service using the `aaa authentication login` or the `aaa accounting` commands.

LDAP groups cannot be used for AAA accounting commands.

Examples

The following example shows how to configure LDAP server group name:

```
switch(config)# aaa group server ldap a
switch(config-ldap)#
switch# config terminal
switch(config)# aaa group server tacacs+ TacacsServer1
switch(config-tacacs+)# server ServerA
switch(config-tacacs+)# exit
switch(config)# aaa group server radius RadiusServer19
switch(config-radius)# server ServerB
switch(config-radius)# no server ServerZ
```

Related Commands

Command	Description
show aaa groups	Displays all configured server groups.
show radius-server groups	Displays configured RADIUS server groups.
show tacacs-server groups	Displays configured TACACS server groups.

aaa user default-role

To allow remote users who do not have a user role to log in to the Cisco NX-OS device through a remote authentication server using a default user role, use the `aaa user default-role` command. To disable default user roles for remote users, use the `no` form of this command.

```
aaa user default-role
no aaa user default-role
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled

Command Modes Global configuration

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines When you disable the AAA default user role feature, remote users who do not have a user role cannot log in to the device.

This command does not require a license.

Examples

This example shows how to enable default user roles for AAA authentication of remote users:

```
switch# configure terminal
switch(config)# aaa user default-role
```

This example shows how to disable default user roles for AAA authentication of remote users:

```
switch# configure terminal
switch(config)# no aaa user default-role
```

Related Commands	Command	Description
	show aaa user default-role	Displays the status of the AAA default user role feature.

abort

To discard a Call Home configuration session in progress, use the abort command in Call Home configuration submode.

abort

Syntax Description This command has no other arguments or keywords.

Command Default None

Command Modes Call Home configuration submode

Command History	Release	Modification
	2.0(1b)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to discard a Call Home configuration session in progress:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# abort
```

Related Commands	Command	Description
	callhome	Configures the Call Home function.
	callhome test	Sends a dummy test message to the configured destination.
	show callhome	Displays configured Call Home information.

absolute-timeout

To set the interval for closing the connection, use the `absolute-timeout` command in line configuration mode. To restore the default, use the `no` form of this command.

```
absolute-timeout minutes
no absolute-timeout
```

Syntax Description

minutes	Number of minutes after which the user session will be terminated. The range is from 0 to 10000 minutes.
---------	--

Command Default

No timeout interval is automatically set.

Command Modes

Line configuration

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

Use the `absolute-timeout` command to configure the EXEC to terminate when the configured number of minutes occurs on the virtual terminal (vty) line. The `absolute-timeout` command terminates the connection after the specified time period has elapsed, regardless of whether the connection is being used at the time of termination. You can specify an `absolute-timeout` value for each port. The user is given 20 seconds notice before the session is terminated. You can use this command along with the `logout-warning` command to notify users of an impending logout.

Examples

The following example sets an interval of 60 minutes on line 5:

```
switch# configure terminal
switch(config)# line vty 5
switch(config-line)# absolute-timeout 60
```

Related Commands

Command	Description
<code>logout-warning</code>	Sets and displays a warning for users about an impending forced timeout.

action cli

To configure a VSH command string to be executed when an Embedded Event Manager (EEM) applet is triggered, use the action cli command. To disable the VSH command string, use the no form of the command.

```
action number [.number2] cli command1 [command2 . . .] [local]
no action number [.number2] cli command1 [command2 . . .] [local]
```

Syntax Description

number	Number can be any number up to 16 digits. The range for number2 is from 0 to 9.
local	(Optional) Specifies the action that is to be executed in the same module on which the event occurs.

Command Default

None.

Command Modes

Embedded Event Manager mode

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to configure a CLI command:

```
switch# configure terminal
switch(config)# event manager applet cli-applet
switch(config-applet)# action 1.0 cli "show interface e 3/1"
switch(config-applet)#
```

Related Commands

Command	Description
event manager applet	Displays an applet with the Embedded Event Manager.

action counter

To specify a setting or modify a named counter when an Embedded Event Manager (EEM) applet is triggered, use the action counter command. To restore the default value to the counter, use the no form of the command.

```
action number [.number2] counter name counter value val op dec | inc | nop | set
no action number [.number2] counter name counter value val op dec | inc | nop | set
```

Syntax Description	
number .number2	Number can be any number up to 16 digits. The range for number2 is from 0 to 9.
name name	The counter name can be any case-sensitive, alphanumeric string up to 32 characters.
value val	Specifies the value of the counter. The value can be an integer from 0 to 2147483647 or a substituted parameter.
op {dec | inc | nop | set}	The following operations can be performed: <ul style="list-style-type: none"> • dec—Decrement the counter by the specified value. • inc—Increment the counter by the specified value. • nop—Only print the specified value. • set—Set the counter to the specified value.

Command Default None

Command Modes Embedded Event Manager mode

Command History	Release	Modification
	NX-OS 4.1(3)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to set or modify the counter when the EEM counter applet is triggered:

```
switch# configure terminal
switch(config)# event manager applet counter-applet
switch(config-applet)# action 2.0 counter name mycounter value 20 op
switch(config-applet)#
```

Related Commands	Command	Description
	event manager applet	Displays an applet with the Embedded Event Manager.

action event-default

To execute the default action for the associated event, use the action event-default command. To disable the default action, use the no form of the command.

```
action number [.number2] event-default
no action number [.number2] event-default
```

Syntax Description

number . number2	Number can be any number up to 16 digits. The range for number2 is from 0 to 9.
------------------	---

Command Default

None

Command Modes

Embedded Event Manager mode

Command History

Release	Modification
NX-OS 4.2(1)	Added a note.
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

If you want to allow the triggered event to process any default actions, you must configure the EEM policy to allow the event default action statement. For example, if you match a CLI command in a match statement, you must add the event-default action statement to the EEM policy or EEM will not allow the CLI command to execute.

Examples

The following example shows how to specify that the default action of the event be performed when an EEM applet is triggered:

```
switch# configure terminal
switch(config)# event manager applet default-applet
switch(config-applet)# action 1.0 event-default
switch(config-applet)#
```

Related Commands

Command	Description
event manager applet	Displays an applet with the Embedded Event Manager.

action exception log

To log an exception if the specific conditions are encountered when an Embedded Event Manager (EEM) applet is triggered, use the action exception log command.

action number [.number2] exception log module module syserr error devid id errtype type errcode code phylayer layer ports list harderror error [desc string]

Syntax Description

number .number2	Number can be any number up to 16 digits. The range for number2 is from 0 to 9.
module module	Records an exception for the specified module. Enter a module word.
syserr error	Records an exception for the specified system error. Enter an error word.
devid id	Records an exception for the specified device ID. Enter an ID word.
errtype type	Records an exception for the specified error type. Enter a type word.
errcode code	Records an exception for the specified error code. Enter a code word.
phylayer layer	Records an exception for the specified physical layer. Enter a layer word.
ports list	Records an exception for the specified ports. Enter a list word.
harderror error	The reset reason is a quoted alphanumeric string up to 80 characters.
desc string	(Optional) Describes the exception logging condition.

Command Default

None

Command Modes

Embedded Event Manager mode

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to log an EEM applet exception:

```
switch# configure terminal
switch(config)# event manager applet exception-applet
switch(config-applet)# action 1.42 exceptionlog module 1 syserr 13 devid 1 errtype fatal
errcode 13 phylayer 2 ports 1-42 harderror 13 desc "fatal exception logging"
switch(config-applet)#
```

Related Commands

Command	Description
event manager applet	Displays an applet with the Embedded Event Manager.

action forceshut

To configure a forced shutdown of a module, a crossbar, ASCII, or the entire switch when an Embedded Event Manager (EEM) applet is triggered, use the action forceshut command.

action number [.number2] forceshut [module slot | xbar xbar-number] reset-reason string

Syntax Description

number .number2	Number can be any number up to 16 digits. The range for number2 is from 0 to 9.
module slot	(Optional) Specifies slot range. The range is from 1 to 10, or a substituted parameter.
xbar xbar-number	(Optional) Specifies an xbar number. The range is from 1 to 4 or a substituted parameter.
reset-reason string	Specifies reset reason. The reason is an alphanumeric string up to 80 characters.

Command Default

None

Command Modes

Embedded Event Manager mode

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to log an EEM applet exception:

```
switch# configure terminal
switch(config)# event manager applet exception-applet
switch(config-applet)# action 1.0 forceshut module 2 reset-reason "flapping links"
switch(config-applet)#
```

Related Commands

Command	Description
event manager applet	Displays an applet with the Embedded Event Manager.

action overbudgetshut

To configure the shutdown of a module or the entire switch due to an overbudget power condition when an Embedded Event Manager (EEM) applet is triggered, use the action overbudgetshut command.

```
action number [.number2] overbudgetshut [module slot [- slot]]
```

Syntax Description	
number .number2	Number can be any number up to 16 digits. The range for number2 is from 0 to 9.
module slot -slot	(Optional) Specifies the slot range: <ul style="list-style-type: none"> • For 6slot the range is from 1 to 6. • For 9slot the range is from 1 to 9. • For 13slot the range is from 1 to 13.

Command Default None

Command Modes Embedded Event Manager

Command History	Release	Modification
	NX-OS 4.1(3)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to configure a power overbudget shutdown of module 3-5 when an EEM applet is triggered:

```
switch# configure terminal
switch(config)# event manager applet overbudget-applet
switch(config-applet)# action 1.0 overbudgetshut module 3-5
switch(config-applet)#
```

Related Commands	Command	Description
	event manager applet	Displays an applet with the Embedded Event Manager.

action policy-default

To enable the default actions of the policy being overridden, use the action policy-default command.

```
action number [.number2] policy-default
```

Syntax Description

number .number2	Number can be any number up to 16 digits. The range for number2 is from 0 to 9.
--------------------	---

Command Default

None

Command Modes

Embedded Event Manager mode

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to enable the default action of a policy being overridden when an EEM applet is triggered:

```
switch# configure terminal
switch(config)# event manager applet default-applet
switch(config-applet)# action 1.0 policy-default
switch(config-applet)#
```

Related Commands

Command	Description
event manager applet	Displays an applet with the Embedded Event Manager.

action reload

To configure the reloading or to reload the switch software when an Embedded Event Manager (EEM) applet is triggered, use the action reload command. To remove the software reload configuration, use the no form of this command.

Syntax Description	number .number2	Number can be any number up to 16 digits. The range for number2 is from 0 to 9.
	module slot -slot	(Optional) Specifies the slot range. The range is from 1 to 10, or a substituted parameter.

Command Default None

Command Modes Embedded Event Manager mode

Command History	Release	Modification
	NX-OS 4.1(3)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to enable the default action of a policy being overridden when an EEM applet is triggered:

```
switch# configure terminal
switch(config)# event manager applet default-applet
switch(config-applet)# action 1.0 policy-default
switch(config-applet)#
```

Related Commands	Command	Description
	event manager applet	Displays an applet with the Embedded Event Manager.

action snmp-trap

To specify the generation of a Simple Network Management Protocol (SNMP) trap when an Embedded Event Manager (EEM) applet is triggered, use the `action snmp-trap` command. To disable the SNMP trap, use the `no` form of this command.

```
action number [.number2] snmp-trap [intdata1 integer [intdata2 integer] [strdata string]]
no action number [.number2] snmp-trap [intdata1 integer [intdata2 integer] [strdata string]]
```

Syntax Description

number .number2	Number can be any number up to 16 digits. The range for number2 is from 0 to 9.
intdata1 integer	(Optional) Specifies an integer to be sent in the SNMP trap message to the SNMP agent.
intdata2 integer	(Optional) Specifies a second integer to be sent in the SNMP trap message to the SNMP agent.
strdata string	(Optional) Specifies a string to be sent in the SNMP trap message to the SNMP agent. If the string contains embedded blanks, enclose it in double quotation marks.

Command Default

None

Command Modes

Embedded Event Manager mode.

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to specify an SNMP trap to generate when an EEM applet is triggered:

```
switch# configure terminal
switch(config)# event manager applet snmp-applet
switch(config-applet)# action 1.0 snmp-trap strdata "temperature problem"
switch(config-applet)#
```

Related Commands

Command	Description
event manager applet	Displays an applet with the Embedded Event Manager.

action syslog

To configure a syslog message to generate when an Embedded Event Manager (EEM) applet is triggered, use the action syslog command. To disable the syslog message, use the no form of this command.

```
action number [.number2] syslog [priority prio-val] msg error-message
no action number [.number2] syslog [priority prio-val] msg error-message
```

Syntax Description	
number	Number can be any number up to 16 digits. The range for number2 is from 0 to 9.
priority prio-val	<p>(Optional) Specifies the priority level of the syslog messages. If this keyword is not selected, all syslog messages are set at the informational priority level. If this keyword is selected, the priority level argument must be defined. There are three ways of defining the priority level:</p> <ul style="list-style-type: none"> • Define the priority level using one of these methods: <ul style="list-style-type: none"> – 0—System is unusable. – 1—Immediate action is needed. – 2—Critical conditions. – 3—Error conditions. – 4—Warning conditions. – 5—Normal but significant conditions. – 6—Informational messages. This is the default. – 7—Debugging messages. • Enter the priority by selecting one of the priority keywords: <ul style="list-style-type: none"> – emergencies—System is unusable. – alerts—Immediate action is needed. – critical—Critical conditions. – errors—Error conditions. – warnings—Warning conditions. – notifications—Normal but significant conditions. – informational—Informational messages. This is the default. – debugging—Debugging messages.
msg error message	Specifies the error message. The message can be any quoted alphanumeric string up to 80 characters.

Command Default None

Command Modes Embedded Event Manager mode

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to configure a syslog message to save when an EEM applet is triggered:

```
switch# configure terminal
switch(config)# event manager applet syslog-applet
switch(config-applet)# action 1.0 syslog priority notifications msg "cpu high"
switch(config-applet)#
```

Related Commands

Command	Description
event manager applet	Displays an applet with the Embedded Event Manager.

active equals saved

To automatically write any changes to the block, prohibit or port an address name to the IPL file, use the active equals saved command. To disable the configuration or to revert to factory defaults, use the no form of the command.

```
active equals saved
no active equals saved
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.
Enabled (when a FICON VSAN is configured).

Command Modes FICON configuration submode

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines Enabling active equals saved ensures that you do not have to perform the copy running-config startup-config command to save the FICON configuration as well as the running configuration. If your switch or fabric consists of multiple FICON-enabled VSANs, and one of these VSANs has active equals saved enabled, changes made to the non-FICON configuration causes all FICON-enabled configurations to be saved to the IPL file.

The following example enables the automatic save feature for a VSAN:

```
switch(config)# ficon vsan 2
switch(config-ficon)# active equals saved
```

The following example disables the automatic save feature for this VSAN:

```
switch(config-ficon)# no active equals saved
```

Command	Description
copy running-config startup-config	Saves the running configuration to the startup configuration.
ficon vsan	Enables FICON on the specified VSAN.
show ficon	Displays configured FICON details.

add-session vsan

To add sessions to a job, use the add-session vsan command in configuration mode.

```
add-session vsan vsan-id pwwn tgt-pwwn all-luns | lun lun-id algorithm name-id
```

Syntax Description

vsan-id	Specifies the VSAN ID of the target.
pwwn tgt-pwwn	Specifies the pWWN of the target.
all-luns	Specifies all of the LUNs in the Secure Erase session.
lun lun-id	Specifies the LUN ID of the Secure Erase session.
algorithm name/id	Specifies the algorithm that should be used for the session.

Command Default

None

Command Modes

Configuration Secure Erase job submode

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to add a VI to a specific Secure Erase job:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 job 1
switch(config-se-job)# add-session vsan 1 pwwn 20:04:00:a0:b8:16:92:18 all-luns algorithm
RCMP
```

Related Commands

Command	Description
add-session job	Adds sessions to the job.

add-step dynamic

To add a dynamic pattern step to a specific algorithm, use the add-step dynamic command in configuration mode.

```
add-step dynamic [0 | 1]
```

Syntax Description

0	(Optional) Specifies that the pattern is generated using a random number generator.
1	(Optional) Specifies that the pattern is complimentary to the previous pattern.

Command Default

None

Command Modes

Configuration Secure Erase algorithm submode

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to add a dynamic pattern step to a specific algorithm:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 algorithm 0
switch(config-se-algo)#
switch(config-se-algo)# add-step dynamic 0
```

Related Commands

Command	Description
add-step static	Adds static pattern step to a specific algorithm.

add-step static

To add a static pattern step to a specific algorithm, use the add-step static command in configuration mode.

```
add-step static pattern
```

Syntax Description

pattern	Specifies the static pattern step. The pattern is to write ranges from 1 to 512 bytes and can consist of only characters 0 to 9 and A to F.
---------	---

Command Default

None

Command Modes

Configuration Secure Erase algorithm submenu

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to add a static step to a specific algorithm:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 algorithm 0
switch(config-se-algo)#
switch(config-se-algo)# add-step static 1
```

Related Commands

Command	Description
add-step dynamic	Adds a dynamic pattern step to a specific algorithm.

add-tgt vsan

To define target enclosure and add multiple target ports for a specific Secure Erase job, use the `add-tgt vsan` command in configuration mode.

```
add-tgt vsan vsan-id pwwn target port pwwn
```

Syntax Description

vsan-id	Specifies the VSAN ID of the target port added to a Secure Erase job.
pwwn target port pwwn	Specifies the port world-wide name (pWWN) of the target port.

Command Default

None

Command Modes

Configuration Secure Erase job submode

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

The target ports added to a specific job can be part of a different VSAN. The Secure Erase application creates VIs in a specific VSAN.



Note

VIs and targets from different VSANs can be added to a job. A storage array may have multiple storage ports belonging to a different VSAN. You can create one job for one storage array.

Examples

The following example shows how to define a target enclosure and add multiple target ports for a specific Secure Erase job:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 job 1
switch(config-se-job)# add-tgt vsan 1 pwwn 20:04:00:a0:b8:16:92:18
```

Related Commands

Command	Description
add-session vsans	Adds sessions to a job.
add-VI job	Adds a VI to a specific Secure Erase job.
secure-erase create job	Creates a Secure Erase job.

add-vi vsan

To add a VI to a specific Secure Erase job, use the `add-vi vsan` command in configuration mode.

```
add-vi vsan vsan-id all | pwwn VI pwwn
```

Syntax Description

vsan-id	Specifies the VSAN ID of the target where a VI exists.
all	Adds all the VSAN IDs of the target.
pwwn VI pwwn	Adds a specific VI in a given VSAN to the job.

Command Default

None

Command Modes

Configuration Secure Erase job submode

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

You must add at least one VI in each VSAN where a Secure Erase target is present.

All VIs that are part of the same job and the VSAN must have same target view. The same set of targets and LUNs must be exposed for all VIs in the same VSAN.



Note

VI-CPP can not be added to a job. To know the WWN of the VI-CPP, please run the `show isapi virtual-nport database` command on SSM module.

Examples

The following example shows how to add all VIs to a given Secure Erase job:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 job 1
switch(config-se-job)# add-vi vsan 1 all
The following example shows how to add a VI to a given Secure Erase job:
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 job 1
switch(config-se-job)# add-vi vsan 1 pwwn 2c:0d:00:05:30:00:43:64
```

Related Commands

Command	Description
add-session job	Adds sessions to the job.

Command	Description
add-VI job	Adds a VI to a specific Secure Erase job.
secure-erase create job	Creates a Secure Erase job.

alert-group

To override the default data attached to a Call Home message, use the alert-group command in Call Home configuration submode. To remove the customization, use the no form of the command.

```
alert-group All | Cisco-TAC | Crash | Environmental | Inventory | License | Linecard-Hardware | RMON
permit event-id id | Supervisor-Hardware | Syslog-group-port | System | Test script-name script.tar
| user-def-cmd commands
```

```
no alert-group All | Cisco-TAC | Crash | Environmental | Inventory | License | Linecard-Hardware |
RMON permit event-id id | Supervisor-Hardware | Syslog-group-port | System | Test script-name
script.tar | user-def-cmd commands
```

Syntax Description

All	Specifies an alert group consisting of events from all the Call Home messages.
Cisco-TAC	Specifies an alert group consisting of events that are meant only for Cisco TAC.
Crash	Specifies an alert group consisting of events that are meant only for software crashes.
Environmental	Specifies an alert group consisting of power, fan, and temperature-related events.
Inventory	Specifies an alert group consisting of inventory status events.
License	Specifies an alert group consisting of license status events.
Linecard-Hardware	Specifies an alert group consisting of module-related events.
RMON	Specifies an alert group consisting of RMON status events.
permit	Specifies to permit only specific RMON alert event IDs and ranges.
event-id id	Specifies the RMON event IDs to be permitted. This can be single event id or multiple event ids and ranges. If the RMON alert is permitted then the RMON alert will generate a Call Home event. If the RMON alert is not permitted then the RMON alert will not generate a Call Home event. By default, when the RMON alert group is specified all event IDs are permitted.
Supervisor-Hardware	Specifies an alert group consisting of supervisor-related events.
Syslog-group-port	Specifies an alert group consisting of syslog port group status events.
System	Specifies an alert group consisting of software-related events.
Test	Specifies an alert group consisting of user-generated test events.
script-name script.tar	Maps a script to the alert group that should trigger it.
user-def-cmd command	Configures a CLI command for an alert-group. The maximum size is 512.

Command Default

Events from all the Call Home alert groups are permitted.

Command Modes

Call Home configuration submode (config-callhome)

Command History

Release	Modification
8.5(1)	Added the permit event-id id option for RMON alert group.
8.1(1)	Added the Crash keyword.
7.3(1)DY(1)	Added the script-name keyword.
3.0(1)	This command was introduced.

Usage Guidelines

The user-def-cmd argument allows you to define a command whose outputs should be attached to the Call Home message being sent. Only show commands can be specified and they must be associated with an alert group. Five commands can be specified per alert group. Invalid commands are rejected.

**Caution**

The script-name option is only for use by certain customers. Do not configure it if you are not approved by Cisco to use it.

**Note**

Make sure the destination profiles for the non-Cisco-TAC alert group, with a predefined show command, and the Cisco-TAC alert group are not the same.

Examples

The following example shows how to define a set of commands to be used for the supervisor-hardware alert group:

```
switch# configure terminal
switch(config)# callhome
switch(config-callhome)# alert-group supervisor-hardware user-def-cmd show version
switch(config-callhome)# alert-group supervisor-hardware user-def-cmd show environment power
switch(config-callhome)# alert-group supervisor-hardware user-def-cmd show cores
```

The following example shows how to configure RMON Call Home event alerts for event IDs 9, 15, and 33 to 89:

```
switch# configure terminal
switch(config)# callhome
switch(config-callhome)# alert-group RMON permit event-id 9,15,33-89
```

The following example shows how to configure a script for all Call Home alerts:

```
switch# configure terminal
switch(config)# callhome
switch(config-callhome)# alert-group all script-name m9700.tar
```

Related Commands

Command	Description
callhome	Configures the Call Home function.
callhome test	Sends a dummy test message to the configured destination(s).
show callhome	Displays configured Call Home information.

analytics port-sampling

To enable port sampling on a module, use the `analytics port-sampling` command. To disable port sampling on the module and go back to the default mode of monitoring all analytics enabled ports with a configured streaming interval, use the `no` form of this command.

```
analytics port-sampling module number size numberinterval seconds
```

```
no analytics port-sampling module number
```

Syntax Description

module number	Specifies a module number.
size number	Specifies the number of ports to be sampled.
interval seconds	Specifies the port sampling interval.

Command Default

No ports are sampled.

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.3(1)	This command was introduced.

Usage Guidelines

The Port Sampling feature is useful when the network processing unit (NPU) load is high and you cannot reduce the number of ports being monitored on a module. In such a situation, the load on the NPU can be reduced by sampling a subset of the monitored ports at a specified port sampling interval. Use the `show analytics port-sampling module number` command to check the NPU load.

Examples

This example shows how to enable port sampling on a module with port sampling interval of 35 seconds:

```
switch# configure terminal
switch(config)# analytics port-sampling module 2 size 12 interval 35
```

This example shows how to disable port sampling on a module and go back to the default mode of monitoring all analytics enabled ports with the configured streaming interval:

```
switch# configure terminal
switch(config)# no analytics port-sampling module 2
```

Related Commands

Command	Description
<code>analytics query</code>	Installs a push analytics query.
<code>analytics type</code>	Enables the SAN Analytics feature on an interface or a range of interfaces.

Command	Description
clear analytics	Resets all flow metrics for a view instance.
feature analytics	Enables the SAN Analytics feature on a switch.
purge analytics	Deletes a view instance and its associated flow metrics.
show analytics flow	Displays the SAN analytics type.
show analytics port-sampling	Displays the SAN analytics port sampling information.
show analytics query	Displays the SAN analytics query information.
ShowAnalytics	Displays the SAN analytics information in a tabular format.

analytics query

To install a push analytics query, use the analytics query command. To remove the push analytics query, use the no form of this command.

```
analytics query "query_string" name query_name type periodic [interval seconds] [clear] [differential]
no analytics query "query_string" name query_name type periodic [interval seconds] [clear]
[differential]
no analytics name query_name
```

Syntax Description

“query_string”	Query syntax.
name query_name	Query name.
type	Analytics query type.
periodic	Periodic fetch.
interval seconds	Specifies the time interval when the specified metrics in the “query_string” should be refreshed, in seconds.
clear	Clears all the minimum, maximum, and peak flow metrics after the streaming interval.
differential	Streams only the ITL flow metrics that have changed between streaming intervals.

Command Default

None.

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.3(1)	This command was modified. This command has changed from analytics query “query_string” type timer timer_val to analytics query "query_string" name query_name type periodic [interval seconds] [clear] [differential].
8.2(1)	This command was introduced.

Usage Guidelines

You can remove a query name using one of the following commands:

- no analytics name query_name
- no analytics query "query_string" name query_name

The analytics query command is a configuration of push query that periodically extracts the flow metrics. The show analytics query query_name result command is used to extract the recently refreshed flow metrics for a specified push query name.

The “query_string” is a query syntax where you can specify query semantics such as select, table, limit, and so on. For example, "select all from fc-scsi.port". For more information, see the [“Cisco MDS 9000 Series NX-OS SAN Analytics and Telemetry Configuration Guide.”](#)

Only one push query using a specific “query_string” is allowed at a time. Maximum of eight push queries can be installed. If you try to configure a duplicate push query (query with the same "query string"), the query name of the already configured push query is returned with a message indicating that the current configuration is a duplicate.

Examples

This example shows how to configure a push query when the duration to refresh the flow metrics is set to the default duration of 30 seconds:

```
switch# configure
switch(config)# analytics query 'select all from fc-scsi.scsi_initiator_itl_flow' name
inititl type periodic
```

This example shows how to display the list of configured push queries that were installed on a switch:

```
switch(config)# show analytics query all
Total queries:7
=====
Query Name :init
Query String :select all from fc-scsi.scsi_initiator
Query Type :periodic, interval 30
Query Name :targettl
Query String :select all from fc-scsi.scsi_target_tl_flow
Query Type :periodic, interval 30
Query Options :differential clear
Query Name :port
Query String :select all from fc-scsi.logical_port
Query Type :periodic, interval 30
Query Name :targetit
Query String :select all from fc-scsi.scsi_target_it_flow
Query Type :periodic, interval 30
Query Name :targetitl
Query String :select all from fc-scsi.scsi_target_itl_flow
Query Type :periodic, interval 30
Query Options :differential clear
Query Name :inititl
Query String :select all from fc-scsi.scsi_initiator_itl_flow
Query Type :periodic, interval 30
Query Name :initit
Query String :select all from fc-scsi.scsi_initiator_it_flow
Query Type :periodic, interval 30
```

This example shows an output of the push analytics query that was configured in the previous example (query name inititl):

```
switch(config)# show analytics query name inititl result
{ "values": {
  "1": {
    "port": "fc1/6",
    "vsan": "10",
    "app_id": "255",
    "initiator_id": "0xe800a0",
    "target_id": "0xd601e0",
    "lun": "0000-0000-0000-0000",
```

```

"active_io_read_count": "0",
"active_io_write_count": "7",
"total_read_io_count": "0",
"total_write_io_count": "1008608573",
"total_seq_read_io_count": "0",
"total_seq_write_io_count": "1",
"total_read_io_time": "0",
"total_write_io_time": "370765952314",
"total_read_io_initiation_time": "0",
"total_write_io_initiation_time": "52084968152",
"total_read_io_bytes": "0",
"total_write_io_bytes": "2065630357504",
"total_read_io_inter_gap_time": "0",
"total_write_io_inter_gap_time": "16171468343166",
"total_time_metric_based_read_io_count": "0",
"total_time_metric_based_write_io_count": "1008608566",
"total_time_metric_based_read_io_bytes": "0",
"total_time_metric_based_write_io_bytes": "2065630343168",
"read_io_rate": "0",
"peak_read_io_rate": "0",
"write_io_rate": "16070",
"peak_write_io_rate": "32468",
"read_io_bandwidth": "0",
"peak_read_io_bandwidth": "0",
"write_io_bandwidth": "32912384",
"peak_write_io_bandwidth": "66494976",
"read_io_size_min": "0",
"read_io_size_max": "0",
"write_io_size_min": "2048",
"write_io_size_max": "2048",
"read_io_completion_time_min": "0",
"read_io_completion_time_max": "0",
"write_io_completion_time_min": "111",
"write_io_completion_time_max": "9166",
"read_io_initiation_time_min": "0",
"read_io_initiation_time_max": "0",
"write_io_initiation_time_min": "36",
"write_io_initiation_time_max": "3265",
"read_io_inter_gap_time_min": "0",
"read_io_inter_gap_time_max": "0",
"write_io_inter_gap_time_min": "100",
"write_io_inter_gap_time_max": "1094718",
"peak_active_io_read_count": "0",
"peak_active_io_write_count": "23",
"read_io_aborts": "0",
"write_io_aborts": "0",
"read_io_failures": "0",
"write_io_failures": "0",
"read_io_timeouts": "0",
"write_io_timeouts": "0",
"read_io_scsi_check_condition_count": "0",
"write_io_scsi_check_condition_count": "0",
"read_io_scsi_busy_count": "0",
"write_io_scsi_busy_count": "0",
"read_io_scsi_reservation_conflict_count": "0",
"write_io_scsi_reservation_conflict_count": "0",
"read_io_scsi_queue_full_count": "0",
"write_io_scsi_queue_full_count": "0",
"sampling_start_time": "1529993232",
"sampling_end_time": "1529993260"
},
"2": {
  "port": "fcl/6",
  "vsan": "10",

```

```

"app_id": "255",
"initiator_id": "0xe800a1",
"target_id": "0xd601e1",
"lun": "0000-0000-0000-0000",
"active_io_read_count": "0",
"active_io_write_count": "8",
"total_read_io_count": "0",
"total_write_io_count": "1004271260",
"total_seq_read_io_count": "0",
"total_seq_write_io_count": "1",
"total_read_io_time": "0",
"total_write_io_time": "370004164726",
"total_read_io_initiation_time": "0",
"total_write_io_initiation_time": "51858511487",
"total_read_io_bytes": "0",
"total_write_io_bytes": "2056747540480",
"total_read_io_inter_gap_time": "0",
"total_write_io_inter_gap_time": "16136686881766",
"total_time_metric_based_read_io_count": "0",
"total_time_metric_based_write_io_count": "1004271252",
"total_time_metric_based_read_io_bytes": "0",
"total_time_metric_based_write_io_bytes": "2056747524096",
"read_io_rate": "0",
"peak_read_io_rate": "0",
"write_io_rate": "16065",
"peak_write_io_rate": "16194",
"read_io_bandwidth": "0",
"peak_read_io_bandwidth": "0",
"write_io_bandwidth": "32901632",
"peak_write_io_bandwidth": "33165824",
"read_io_size_min": "0",
"read_io_size_max": "0",
"write_io_size_min": "2048",
"write_io_size_max": "2048",
"read_io_completion_time_min": "0",
"read_io_completion_time_max": "0",
"write_io_completion_time_min": "114",
"write_io_completion_time_max": "9019",
"read_io_initiation_time_min": "0",
"read_io_initiation_time_max": "0",
"write_io_initiation_time_min": "37",
"write_io_initiation_time_max": "3158",
"read_io_inter_gap_time_min": "0",
"read_io_inter_gap_time_max": "0",
"write_io_inter_gap_time_min": "101",
"write_io_inter_gap_time_max": "869035",
"peak_active_io_read_count": "0",
"peak_active_io_write_count": "19",
"read_io_aborts": "0",
"write_io_aborts": "0",
"read_io_failures": "0",
"write_io_failures": "0",
"read_io_timeouts": "0",
"write_io_timeouts": "0",
"read_io_scsi_check_condition_count": "0",
"write_io_scsi_check_condition_count": "0",
"read_io_scsi_busy_count": "0",
"write_io_scsi_busy_count": "0",
"read_io_scsi_reservation_conflict_count": "0",
"write_io_scsi_reservation_conflict_count": "0",
"read_io_scsi_queue_full_count": "0",
"write_io_scsi_queue_full_count": "0",
"sampling_start_time": "1529993232",
"sampling_end_time": "1529993260"

```

```

    }
  }}

```

This example shows how to remove an installed query name:

```
switch(config)# no analytics name inititl
```

Related Commands

Command	Description
analytics port-sampling	Enables port sampling on a module.
analytics type	Enables the SAN Analytics feature on an interface or a range of interfaces.
clear analytics	Resets all flow metrics for a view instance.
feature analytics	Enables the SAN Analytics feature on a switch.
purge analytics	Deletes a view instance and its associated flow metrics.
show analytics port-sampling	Displays the SAN analytics port sampling information.
show analytics query	Displays the SAN analytics query information.
show analytics type	Displays the SAN analytics type.
ShowAnalytics	Displays the SAN analytics information in a tabular format.

analytics type

To enable the SAN Analytics feature on an interface or a range of interfaces, use the analytics type command. To disable this feature, use the no form of this command.

```
analytics type fc-all | fc-nvme | fc-scsi
no analytics type fc-all | fc-nvme | fc-scsi
```

Syntax Description

fc-all	All analytics types.
fc-nvme	Non-Volatile Memory Express (NVMe) analytics type.
fc-scsi	Fibre Channel Small Computer Systems Interface (SCSI) analytics type.

Command Default

This feature is disabled by default.

Command Modes

Interface configuration submode (config-if)

Command History

Release	Modification
8.4(1)	Added the fc-all and fc-nvme keywords.
8.2(1)	This command was introduced.

Usage Guidelines

To use the SAN Analytics feature on an interface, you must first enable the SAN Analytics feature on the respective switch.

Examples

This example shows how to enable the SAN Analytics feature on an interface for the SCSI analytics type:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# analytics type fc-scsi
```

This example shows how to disable the SAN Analytics feature on an interface for the SCSI analytics type:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# no analytics type fc-scsi
```

This example shows how to enable the SAN Analytics feature on an interface for the SCSI analytics type when the NVMe analytics type is already enabled:

- This example displays that the NVMe analytics type is already enabled:

```
switch# show running-config analytics
```



```

!Command: show running-config analytics
!Running configuration last done at: Wed Mar 13 09:01:56 2019
!Time: Wed Mar 13 09:02:52 2019

version 8.4(1)
feature analytics

interface fc1/1
  analytics type fc-nvme

```

- This example displays how to enable the SCSI analytics type on a single port:

```

switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# analytics type fc-scsi

```

- This example displays that the SCSI analytics type is enabled:

```

switch# show running-config analytics

!Command: show running-config analytics
!Running configuration last done at: Wed Mar 13 09:01:56 2019
!Time: Wed Mar 13 09:02:52 2019

version 8.4(1)
feature analytics

interface fc1/1
  analytics type fc-scsi
  analytics type fc-nvme

```

Related Commands

Command	Description
analytics port-sampling	Enables port sampling on a module.
analytics query	Installs a push analytics query.
clear analytics	Resets all flow metrics for a view instance.
feature analytics	Enables the SAN Analytics feature on a switch.
purge analytics	Deletes a view instance and its associated flow metrics.
show analytics flow	Displays the SAN analytics type.
show analytics port-sampling	Displays the SAN analytics port sampling information.
show analytics query	Displays the SAN analytics query information.
ShowAnalytics	Displays the SAN analytics information in a tabular format.

arp

To enable the Address Resolution Protocol (ARP) for the switch, use the arp command. To disable ARP for the switch, use the no form of the command.

```
arp hostname
no arp hostname
```

Syntax Description

hostname	Specifies the name of the host. Maximum length is 20 characters.
----------	--

Command Default

Enabled

Command Modes

Configuration mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example disables the Address Resolution Protocol configured for the host with the IP address 10.1.1.1:

```
switch(config)# no arp 10.1.1.1
switch(config)#
```

Related Commands

Command	Description
clear arp	Deletes a specific entry or all entries from the ARP table.
show arp	Displays the ARP table.

attach

To connect to a specific module, use the attach command in EXEC mode.

```
attach module slot-number
```

Syntax Description

module slot-number	Specifies the slot number of the module.
-----------------------	--

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

You can use the attach module command to view the standby supervisor module information, but you cannot configure the standby supervisor module using this command.

You can also use the attach module command on the switching module portion of the Cisco MDS 9216 supervisor module, which resides in slot 1 of this two-slot switch.

To disconnect, use the exit command at the module-number# prompt, or type \$. to forcibly terminate the attach session.

Examples

The following example connects to the module in slot 2. Note that after you connect to the image on the module using the attach module command, the prompt changes to module-number#:

```
switch# attach module 1
Attaching to module 1 ...
To exit type 'exit', to abort type '$.'
module-1# exit
switch#
```

Related Commands

Command	Description
exit	Disconnects from the module.
show module	Displays the status of a module.

attachpriv

To connect to a specific ILC line card as a privilege, use the attachpriv command in EXEC mode.

```
attachpriv module slot-number
```

Syntax Description

module slot-number	Specifies the slot number of the module.
-----------------------	--

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
3.1(3)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to connect to a specific ILC line card as a privilege:

```
switch# attachpriv module 1
Attaching to module 1 ...
To exit type 'exit', to abort type '$.'
module-1# exit
```

Related Commands

Command	Description
exit	Disconnects from the module.
show module	Displays the status of a module.

attribute-admin

To create a user with a custom role that is equivalent to the network-admin role, using which the user can modify other users' accounts (role or password), use the attribute-admin command. To revert to the default, use the no rule rule-number attribute-admin command.

This command has no arguments and keywords.

Command Default Disabled

Command Modes Configuration Role

Release	Modification
8.3(1)	This command was introduced.

Usage Guidelines



Note

- The attribute-admin rule is mutually exclusive with an existing rule. Remove the existing rule to configure the new attribute-admin rule.
- The Role-distribute feature will not fail while configuring the attribute-admin command, if an unsupported software image is present in the fabric. Instead it gets accepted, and shows as an Invalid rule for the rule which is not supported.
- The Role-distribute feature will not fail for mutually exclusive configs if an unsupported software image is present in the fabric.
- Loading Dplug does not work when the attribute-admin privilege.
- The show system internal kernel memory global detail command output under the show tech-support details command fails for users with the attribute-admin privilege.

Example: Configuring Custom Roles

The following example shows how to configure a custom role:

```
switch# configure terminal
switch(config)# role name techdocs
switch(config-role)# rule 1 attribute-admin
switch(config-role)# end
```

Create a user and associate it with the custom role.

```
switch# configure terminal
switch(config)# username user1 role techdocs password xxxxxxxx
switch(config-role)# end
```

The following example shows sample output for the show user-account command:

```
switch# show user-account user1

user:user1
```

```
    this user account has no expiry date
    roles:techdocs
    rule 1 attribute-admin
no password set. Local login not allowed
Remote login through RADIUS is possible
```

The following example shows sample output to verify the attribute-admin command configuration:

```
switch# show run | sec techdocs
```

```
role name techdocs
  rule 1 attribute-admin
```

Command	Description
show tech-support details	Displays information useful to technical support when reporting a problem.
show user-account	Displays configured information about user accounts.

attribute failover auto

To configure an automatic fallback failover for a virtual device, use the attribute failover auto command. To revert to the default, use the no form of the command.

```
attribute failover auto [fallback]
no attribute failover auto [fallback]
```

Syntax Description

fallback	(Optional) Enables a switchback with an automatic failover.
----------	---

Command Default

Disabled

Command Modes

Virtual device submode

Command History

Release	Modification
NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to configure an automatic failover for a specific virtual device:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# sdv virtual-device name vdev1 vsan 1
switch(config-sdv-virt-dev)# attribute failover auto
switch(config-sdv-virt-dev)#
```

The following example shows how to configure an attribute of a virtual device:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# sdv virtual-device name vdev1 vsan 1
switch(config-sdv-virt-dev)# attribute failover auto fallback
switch(config-sdv-virt-dev)#
```

attribute qos

To configure a QoS attribute, use the `attribute qos` command in Inter-VSAN Routing (IVR) zone configuration submode. To disable this feature, use the `no` form of this command.

```
attribute qos high | low | medium
no attribute qos high | low | medium
```

Syntax Description

high	Configures frames matching zone to get high priority.
low	Configures frames matching zone to get low priority (default).
medium	Configures frames matching zone to get medium priority.

Command Default

Disabled

Command Modes

IVR zone configuration submode

Command History

Release	Modification
2.1(1a)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to configure an IVR zone QoS attribute to low priority:

```
switch# config terminal

Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ivr zone name IvzZone

switch(config-ivr-zone)# attribute qos priority low
```

Related Commands

Command	Description
show ivr zone	Displays IVR zone configuration.

attributes (DMM job configuration submode)

To set the attributes of a data migration job, use the attributes command in DMM job configuration submode. To remove the attributes of a data migration job, use the no form of the command.

```
attributes job_type 1|2 job_mode 1|2 job_rate 1|2|3|4 job_method 1|2
no attributes job_type 1|2 job_mode 1|2 job_rate 1|2|3|4 job_method 1|2
```

Syntax Description	job_type 1|2	Specifies the job type. Specify 1 for a server type job and 2 for a storage type job.
	job_mode 1|2	Specifies the job mode. Specify 1 for an online job and 2 for an offline job.
	job_rate 1|2|3|4	Specifies the job rate. Specify 1 for the default rate, 2 for a slow rate, 3 for a medium rate, and 4 for a fast rate.
	job_method 1|2	Specifies the job method. Specify 1 for Method 1 and 2 for Method 2.

Command Default None

Command Modes DMM job configuration submode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines None

Examples The following example sets the job type to storage, the job mode to online, and the job rate to fast:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# dmm module 3 job 1 create
Started New DMM Job Configuration.
Do not exit sub-mode until configuration is complete and committed
switch(config-dmm-job)# attributes job_type 2 job_mode 1 job_rate 4 job_method 1
switch(config-dmm-job)#
```

Related Commands	Command	Description
	show dmm job	Displays job information.
	show dmm srvr-vt-login	Displays server VT login information.

authentication (IKE policy configuration submode)

To configure the authentication method for an IKE protocol policy, use the authentication command in IKE policy configuration submode. To revert to the default authentication method, use the no form of the command.

```
authentication pre-share | rsa-sig
no authentication pre-share | rsa-sig
```

Syntax Description

pre-share	Configures the preshared key as the authentication method.
rsa-sig	Configures RSA signatures as the authentication method.

Command Default

Preshared key.

Command Modes

IKE policy configuration submode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

To use this command, enable the IKE protocol using the crypto ike enable command. In addition, you must configure the identity authentication mode using the fully qualified domain name (FQDN) before you can use RSA signatures for authentication. Use the identity hostname command for this purpose.

Examples

The following example shows how to configure the authentication method using the preshared key:

```
switch# config terminal
switch(config)# crypto ike domain ipsec
switch(config-ike-ipsec)# policy 1
switch(config-ike-ipsec-policy)# authentication pre-share
```

The following example shows how to configure the authentication method using the RSA signatures:

```
switch(config-ike-ipsec-policy)# authentication rsa-sig
```

The following example shows how to revert to the default authentication method (preshared key):

```
switch(config-ike-ipsec-policy)# no
authentication rsa-sig
```

Related Commands

Command	Description
crypto ike domain ipsec	Enters IKE configuration mode.
crypto ike enable	Enables the IKE protocol.
identity hostname	Configures the identity for the IKE protocol.

Command	Description
show crypto ike domain ipsec	Displays IKE information for the IPsec domain.

authentication

To change the authentication behavior, use the authentication command. To disable this feature, use the no form of the command.

```
authentication compare [password-attribute password-attribute] | bind-first [append-with-baseDN string]
no authentication compare [password-attribute password-attribute] | bind-first [append-with-baseDN string]
```

Syntax Description

compare	Specifies the compare option to be used for authentication.
password-attribute password-attribute	(Optional) Overrides the default password attribute. The maximum length is 128 characters.
bind-first	Specifies that the client use bind and search instead of search and bind.
append-with-baseDN string	(Optional) Overrides the default string appended with baseDN.

Command Default

userPassword.

append-with-baseDN default value is (cn=\$userid).

Command Modes

Configuration submode

Command History

Release	Modification
NX-OS 5.0(1)	This command was introduced.

Usage Guidelines

The password-attribute keyword provides a method for changing the attribute type of password.

Examples

```
The following example shows how to change the default attribute:
switch(config-ldap)# authentication compare password-attribute 1
switch(config-ldap)#
```

Related Commands

Command	Description
show aaa authentication	Displays the configured authentication methods.

auth-mechanism plain

To set the authentication mechanism as plain, use the `auth-mechanism plain` command in configuration mode. To disable this feature, use the `no` form of the command.

```
auth-mechanism plain
no auth-mechanism plain
```

Syntax Description This command has no arguments or keywords.

Command Default Plain.

Command Modes Configuration mode

Command History	Release	Modification
	NX-OS 5.0(1)	This command was introduced.

Usage Guidelines None.

Examples

The following example shows how to set the authentication mechanism as plain:

```
switch(config-ldap)# auth-mechanism plain
switch(config-ldap)#
```

Related Commands	Command	Description
	<code>show ldap-server groups</code>	Displays the configured LDAP server groups.

autonomous-fabric-id (IVR service group configuration)

To configure an autonomous fabric ID (AFID) into an IVR service group, use the `autonomous-fabric-id` command in IVR service group configuration submode. To remove the autonomous fabric ID, use the `no` form of the command.

```
autonomous-fabric-id afid vsan-ranges vsan-id
no autonomous-fabric-id afid vsan-ranges vsan-id
```

Syntax Description

afid	Specifies the AFID to the local VSAN.
vsan-ranges vsan-id	Configures up to five ranges of VSANs to be added to the service group. The range is 1 to 4093.

Command Default

None

Command Modes

IVR service group configuration submode

Command History

Release	Modification
2.1	This command was introduced.

Usage Guidelines

Before configuring an IVR service group, you must enable the following:

- IVR using the `ivr enable` command
- IVR distribution using the `ivr distribute` command
- Automatic IVR topology discovery using the `ivr vsan-topology auto` command

To change to IVR service group configuration submode, use the `ivr service-group activate` command.

Examples

The following command enters the IVR service group configuration submode and configures AFID 10 to be in IVR service group `serviceGroup1`:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ivr enable
switch(config)# ivr distribute
switch(config)# ivr vsan-topology auto
switch(config)# ivr ?
  abort                Flushes cached data without committing and releases the lock
  commit               Commits cached data (of all msg types) and releases the lock
  distribute           Enables/disables fabric distribution using cfs.
  enable               Enable/Disable IVR
  nat                  Enable FCID address translation (NAT) for IVR traffic
  service-group        Configure IVR service group
  virtual-fcdomain-add Add IVR virtual domain(s) to fcdomain list
  vsan-topology        Configure or activate VSAN topology for inter-VSAN routing
  zone                 Configure a inter vsan zone
  zoneset              Configure inter vsan routing zoneset
switch(config)# ivr service-group name serviceGroup1
switch(config-ivr-sg)# ?
```

```

service grp. membership cmds:
  afid  Enter Autonomous Fabric ID
  do    EXEC command
  exit  Exit from this submode
  no    Negate a command or set its defaults
switch(config-ivr-sg)# <TBD - Information Needed>
switch(config-ivr-sg)# afid ?
  <1-64> Enter an autonomous fabric ID
switch(config-ivr-sg)# afid 10 ?
  vsan-ranges Enter VSANs within this afid
switch(config-ivr-sg)# afid 10 vsan 1-4 ?
  ,          Comma
  <cr>      Carriage Return
switch(config-ivr-sg)# autonomous-fabric-id 10 vsan 1-4
IVR service group is used only when VSAN Topology is in AUTO mode

```

Related Commands

Command	Description
ivr enable	Enables the Inter-VSAN Routing (IVR) feature.
ivr service-group name	Configures an IVR service group and changes to IVR service group configuration submode.
show autonomous-fabric-id database	Displays the contents of the AFID database.
show ivr	Displays IVR feature information.

autonomous-fabric-id (IVR topology database configuration)

To configure an autonomous fabric ID (AFID) into the Inter-VSAN Routing (IVR) topology database, use the `autonomous-fabric-id` command. To remove the fabric ID, use the `no` form of the command.

```
autonomous-fabric-id fabric-id switch-wwn swwn vsan-ranges vsan-id
no autonomous-fabric-id fabric-id switch-wwn swwn vsan-ranges vsan-id
```

Syntax Description

fabric-id	Specifies the fabric ID for the IVR topology. Note For Cisco MDS SAN-OS images prior to Release 2.1(1a), the fabric-id value is limited to 1. For Releases 2.1(1a) and later images, the fabric-id range is 1 to 64.
switch-wwn swwn	Configures the switch WWN in dotted hex format.
vsan-ranges vsan-id	Configures up to five ranges of VSANs to be added to the database. The range is 1 to 4093.

Command Default

None

Command Modes

IVR topology database configuration submode

Command History

Release	Modification
1.3(1)	This command was introduced.
2.1(1a)	Modified range for fabric-id.

Usage Guidelines

The following rules apply to configuring AFIDs to VSANs:

- The default AFID of a VSAN is 1.
- Each VSAN belongs to one and only one AFID.
- A switch can be a member of multiple AFIDs.
- AFIDs at a switch must not share any VSAN identifier (for example, a VSAN at a switch can belong to only one AFID).
- A VSAN identifier can be reused in different AFIDs, without merging the VSANs, as long as those AFIDs do not share a switch.

You can have up to 64 VSANs (or 128 VSANs for Cisco MDS SAN-OS Release 2.1(1a) or later) in an IVR topology. Specify the IVR topology using the following information:

- The switch WWNs of the IVR-enabled switches.
- A minimum of two VSANs to which the IVR-enabled switch belongs.
- The autonomous fabric ID (AFID), which distinguishes two VSANs that are logically and physically separate, but have the same VSAN number. Cisco MDS SAN-OS Release 1.3(1) and NX-OS Release 4.1(1b) supports only one default AFID (AFID 1) and does not support non-unique VSAN IDs in the network. As of Cisco MDS SAN-OS Release 2.1(1a), you can specify up to 64 AFIDs.



Note Two VSANs with the same VSAN number but different fabric IDs are counted as two VSANs out of the 128 total VSANs allowed in the fabric.

Examples

The following command enters the configuration mode, enables the IVR feature, enters the VSAN topology database, and configures the pWWN-VSAN association for VSANs 2 and 2000:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ivr enable
switch(config)# ivr vsan-topology database
switch(config-ivr-topology-db)# autonomous-fabric-id 1 switch 20:00:00:00:30:00:3c:5e
vsan-ranges 2,2000
```

Related Commands

Command	Description
ivr enable	Enables the Inter-VSAN Routing (IVR) feature.
ivr vsan-topology database	Configures a VSAN topology database.
show autonomous-fabric-id database	Displays the contents of the AFID database.
show ivr	Displays IVR feature information.

autonomous-fabric-id database

To configure an autonomous fabric ID (AFID) database, use the autonomous-fabric-id database command. To remove the fabric AFID database, use the no form of the command.

```
autonomous-fabric-id database
no autonomous-fabric-id database
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes Configuration mode

Release	Modification
2.1(1a)	This command was introduced.

Usage Guidelines You must configure the IVR VSAN topology to auto mode, using the ivr vsan-topology auto command, before you can use the autonomous-fabric-id database command to modify the database. The autonomous-fabric-id database command also enters AFID database configuration submode.



Note In user-configured VSAN topology mode, the AFIDs are specified in the IVR VSAN topology configuration itself and a separate AFID configuration is not needed.

Examples

The following example shows how to create an AFID database and enters AFID database configuration submode:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# autonomous-fabric-id ?
  database Configure autonomous fabric identifier (AFID) database
switch(config)# autonomous-fabric-id database ?
  <cr> Carriage Return
switch(config)# autonomous-fabric-id database
AFID database is used only when VSAN Topology is in AUTO mode
switch(config-afid-db)#
```

Related Commands

Command	Description
ivr vsan-topology auto	Configures a VSAN topology for Inter-VSAN Routing (IVR) to auto configuration mode.
switch-wwn	Configures a switch WWN in the autonomous fabric ID (AFID) database

Command	Description
show autonomous-fabric-id database	Displays the contents of the AFID database.
show ivr	Displays IVR feature information.

auto-volgrp

To configure the automatic volume grouping, use the auto-volgrp command. To disable this feature, use the no form of the command.

```
auto-volgrp
no auto-volgrp
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled

Command Modes Cisco SME cluster configuration submode

Release	Modification
3.2(2)	This command was introduced.

Usage Guidelines If Cisco SME recognizes that the tape's barcode does not belong to an existing volume group, then a new volume group is created when automatic volume grouping is enabled.

Examples The following example enables automatic volume grouping:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# auto-volgrp
switch(config-sme-cl)#
```

The following example disables automatic volume grouping:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# auto-volgrp
switch(config-sme-cl)#
```

Command	Description
show sme cluster	Displays Cisco SME cluster information.

autozone

To create zones and a zoneset for all edge devices currently logged on VSAN 1 and schedule a timer to automatically add new device logins, use the `autozone --enable` command. To disable this feature, use the `autozone --disable` command.

autozone

Syntax	Description
<code>--enable</code>	Enables Autozone. New devices logged in be zoned automatically. This option was added to enable Autozone explicitly. Prior to Cisco MDS NX-OS Release 8.4(1), Autozone was enabled via the <code>autozone</code> command with no options. From Cisco MDS NX-OS Release 8.4(1), the <code>--enable</code> option is required to enable Autozone.
<code>--enableautosave</code>	Enables automatically saving of the running-configuration to the startup-configuration after making a zoning change.
<code>--delete</code>	Deletes zone and zoneset configurations created by Autozone for VSAN 1. Note This option can be used even when Autozone is disabled.
<code>--disable</code>	Disables Autozone. New devices logged in will not be zoned automatically. No changes will be made in the existing configuration.
<code>--disableautosave</code>	Disables automatically saving of the running-configuration to the startup-configuration after making a zoning change.
<code>-help, --help</code>	Provides information about the list of available keywords and arguments. Note This option can be used even when Autozone is disabled.
<code>--show</code>	Displays all possible zone configurations with the currently logged-in devices. Note This option can be used even when Autozone is disabled.
<code>--showpending</code>	Displays only pending zone configurations that are yet to be applied to the switch. Note This option can be used even when Autozone is disabled.
<code>--update</code>	Computes and applies any pending zone configurations to switch for VSAN 1. Note This option can be used even when Autozone is disabled.

Command Default The Autozone feature is disabled.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	8.4(1)	Added the <code>--enable</code> , <code>--enableautosave</code> and <code>--disableautosave</code> options.

Release	Modification
8.3(1)	This command was introduced.

Usage Guidelines

See the “Guidelines and Limitations for Autozone” section in the [Cisco MDS 9000 Series NX-OS Fabric Configuration Guide](#).



Note

If you run only the autozone command, you will receive a message requesting you to provide a valid argument.

Examples

The following example shows how to create zones and a zoneset on VSAN 1 automatically:

```
switch# autozone --enable
This command will create and activate single-initiator and single-target zones for all
end-devices are already logged-in automatically; that may lead to more tcam entries and
also RSCN load on network. Please use AutoZone judiciously.

AutoZone feature is enabled

Device with pwnn 10:00:00:de:fb:74:e8:31 is not registered with FC4-type Init or Target.
Hence, it will be ignored for AutoZone configuration.
Configuring zones for vsan 1
      AUTOZONE_JPG21190082_1

Configuring zoneset for vsan 1
Activating the zoneset. Please wait...
Configured zoneset AUTOZONESET for vsan 1 successfully.
```

The following example shows how to run the Autozone feature one time to zone all unzoned devices logged in on VSAN 1 and add them to the active zoneset of VSAN 1 without creating the Autozone scheduler job. A device without a suitable FC4 type is detected and not included in the zone configuration.

```
switch# autozone --update
Device with pwnn 10:00:00:de:fb:74:e8:31 is not registered with FC4-type Init or Target.
Hence, it will be ignored for AutoZone configuration.
Configuring zones for vsan 1
      AUTOZONE_JPG21190082_1
      AUTOZONE_JPG21190082_2
      AUTOZONE_JPG21190082_3
      AUTOZONE_JPG21190082_4

Configuring zoneset for vsan 1
Activating the zoneset. Please wait...
Configured zoneset AUTOZONESET for vsan 1 successfully.
```

The following example shows how to disable Autozone so that newly logged in devices are not zoned while still retaining the existing zone configuration:

```
switch# autozone --disable
This will disable the AutoZone feature. Do you wish to continue? [y/n]|y: y

AutoZone feature disabled successfully.
```

The following example shows how to automatically save the running-configuration to the startup-configuration after autozone makes a zoning change:

```
switch# autozone --enableautosave
```



Note Autozone must be enabled before enabling the automatic save of the Autozone configurations option.

The following example shows how to disable automatically saving of the running-configuration to the startup-configuration after autozone makes a zoning change:

```
switch# autozone --disableautosave
```

The following example shows how to delete the Autozone and zoneset created for VSAN 1:

```
switch# autozone --delete
Checking if zoneset name AUTOZONESET present on switch...[Found]
Checking if AutoZone is enabled on switch...[Disabled]

This option will only delete the zone/zoneset configurations done by AutoZone feature.
Do you wish to continue? [n]|y: y
Deleting zoneset name AUTOZONESET and all zones for vsan 1 configured by AutoZone
Deleting following zones -
    AUTOZONE_JPG21190082_1
    AUTOZONE_JPG21190082_2
    AUTOZONE_JPG21190082_3
    AUTOZONE_JPG21190082_4
Deactivating zoneset for vsan 1.
Deactivated zoneset for vsan 1.
```

The following example displays the Autozone status, the zones already created, as well as uncreated (pending) zones, by Autozone:

```
switch# autozone --show
Feature AutoZone : Enabled
AutoSave Configuration : Enabled
The possible zone/zoneset configuration with AutoZone feature for currently logged-in devices
is :
zoneset name AUTOZONESET vsan 1
    zone name AUTOZONE_JPG21190082_1 vsan 1
        member pwnn 20:00:00:11:0d:97:00:01
        member pwnn 20:01:00:11:0d:97:01:01
    zone name AUTOZONE_JPG21190082_2 vsan 1
        member pwnn 20:00:00:11:0d:97:00:01
        member pwnn 20:01:00:11:0d:97:01:00
    zone name AUTOZONE_JPG21190082_3 vsan 1
        member pwnn 20:00:00:11:0d:97:00:00
        member pwnn 20:01:00:11:0d:97:01:01
    zone name AUTOZONE_JPG21190082_4 vsan 1
        member pwnn 20:00:00:11:0d:97:00:00
        member pwnn 20:01:00:11:0d:97:01:00
```

The following example shows how to first check what zoning Autozone would create for any unzoned devices and then apply those changes. In this example, Autozone is disabled so that zoning is updated only one time and there is no periodic zoning by Autozone.

```
switch# autozone --showpending
Feature AutoZone : Disabled
zoneset name AUTOZONESET vsan 1
    zone name AUTOZONE_JPG21190082_1 vsan 1
        member pwnn 20:00:00:11:0d:97:00:00
        member pwnn 20:01:00:11:0d:97:01:00
switch# autozone --update
Configuring zones for vsan 1
    AUTOZONE_JPG21190082_1
Configuring zoneset for vsan 1
Activating the zoneset. Please wait...
Configured zoneset AUTOZONESET for vsan 1 successfully.
```

The following example displays how to get help about the autozone command:

```
switch# autozone --help
usage: autozone.py [-h] [--enable] [--disable] [--update] [--delete] [--show]
                [--showpending] [--enableautosave] [--disableautosave]
```

Enables AutoZone feature for vsan 1

optional arguments:

```
-h, --help          show this help message and exit
--enable            Enables AutoZone feature for vsan 1. New devices logging
                    in will be zoned automatically. No changes will be done
                    for existing configuration.
--disable           Disables AutoZone feature for vsan 1. New devices logging
                    in will not be zoned automatically. No changes will be
                    done for existing configuration.
--update            Computes and applies any pending AutoZone configuration
                    to switch for vsan 1
--delete            Deletes zoneset and zones configured by AutoZone for vsan
                    1
--show              Displays zoning configuration that will be applied if
                    autozone is enabled or if the --update option is
                    executed.
--showpending       Displays only zoning configuration that is pending and
                    not yet applied on the switch.
--enableautosave   Enables Auto Saving of configurations to startup.
--disableautosave  Disables Auto Saving of configurations to startup. To
                    save these changes to startup you need to manually do
                    "copy r s ".
```

Related Commands

Command	Description
show scheduler configuration	Displays scheduler configuration information.
show scheduler schedule	Displays scheduler schedule.
show vsan	Displays information about configured VSANs.
show zone	Displays zone information.

Command	Description
show zoneset	Displays the configured zone sets.



B Commands

- [beacon](#), on page 84
- [banner motd](#), on page 86
- [boot](#), on page 88
- [bport](#), on page 90
- [bport-keepalive](#), on page 91
- [broadcast](#), on page 92

beacon

To configure the port beacon LEDs on one or both ends of a link, use the beacon command. To disable the LED, use the no form of this command.

```
beacon interface fc slot/port both | local | peer [status normal | warning | critical] [duration seconds]
[frequency number]
```

```
no beacon interface fc slot/port both | local | peer
```

Syntax Description

interface fc slot/port	Specifies a Fibre Channel port.
both	Specifies local and peer port LEDs.
local	Specifies local port LED.
peer	Specifies peer port LED.
status	(Optional) Specifies a status for the port LEDs.
normal	Sets the status for port LEDs to normal from the previous state.
warning	Sets the status for port LEDs to warning ^{Footnote.} from the previous state.
critical	Sets the status for port LEDs to critical from the previous state.
duration seconds	(Optional) Configures the duration to blink the port beacon LED, in seconds. The range is 0 to 32767. Note When you configure the duration to 0 second, the port LEDs will continue to be in the same state until stopped by using the no beacon interface fc slot/port command for the port.
frequency number	(Optional) Configures a frequency (number of blinks per 10 seconds) for port LEDs. The range is 0 to 255. Note When you configure the frequency to 0, the port LEDs will not blink and continue to be in the same state.

² On Cisco switches only, the normal status indicates green color and warning status indicates orange color on the port LED. There is no color specified for critical status because the critical status is rejected on Cisco switches.

Command Default

The port beacon LED is disabled.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.4(1)	Added support for Cisco MDS switches that are operating in Cisco NPV mode.

Release	Modification
8.3(1)	This command was introduced.

Usage Guidelines

See the “Guidelines and Limitations for Port Beaconing” section in the [Cisco MDS 9000 Series NX-OS Interfaces Configuration Guide](#).

Examples

The following example shows how to set the LED status of a peer port to normal (green color) with a duration of 120 seconds and frequency of one blink per second:

```
switch# beacon interface fc 6/1 peer status normal duration 120 frequency 10
```

Related Commands

Command	Description
show interface	Displays local and peer LED status of interfaces.
switchport beacon	Enables the beacon LED on a local interface.

banner motd

To configure a message of the day (MOTD) banner, use the banner motd command in configuration mode.

```
banner motd [delimiting-character message delimiting-character]
no banner motd [delimiting-character message delimiting-character]
```

Syntax Description	delimiting-character	(Optional) Identifies the delimiting character.
	message	(Optional) Specifies the banner message that is restricted to 40 lines with a maximum of 254 characters in each line.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(4)	This command was introduced.

Usage Guidelines The configured MOTD banner is displayed before the login prompt on the terminal whenever a user logs in to a Cisco MDS 9000 Family switch.

Follow these guidelines when choosing your delimiting character:

- Do not use the delimiting-character in the message string.
- Do not use " and % as delimiters.

You can include tokens in the form \$(token) in the message text. Tokens will be replaced with the corresponding configuration variable. For example:

- \$(hostname) displays the host name for the switch
- \$(line) displays the vty or tty line no or name
- The \$(line-desc) and \$(domain) tokens are not supported.

Examples

The following example spans multiple lines and uses tokens to configure the banner message:

```
switch# config terminal
switch(config)# banner motd #
>Welcome to switch $(hostname).
>Your tty line is $(line).
>#
```

The following example shows a structured multiple line banner message:

```
switch# show banner motd
+++++
You have accessed a Cisco MDS switch.
```

```
Only authorized personnel have the right to access this switch.  
If you are not on the list of the authorized personnel,  
disconnect immediately or you will be prosecuted according to law.
```

```
Planned maintenance activity:  
Saturday 27th Feb 2021 from 20.00 till 23.00
```

```
For more information, contact your administrator.
```

```
+++++
```

Related Commands

Command	Description
show banner motd	Displays the configured banner message.

boot

To perform operations on the system, use the boot command in configuration mode. To negate this feature or return to factory defaults, use the no form of the command.

```
boot asm-sfn bootflash: | slot0: | tftp: [image] [module [slot-number]] | auto-copy | kickstart bootflash:
| slot0: | tftp: [image] [sup-1 [sup-2] | sup-2] | lasilc bootflash: | slot0: | tftp: [image] [module
[slot-number]] | ssi bootflash: | slot0: | system bootflash: | slot0: | tftp: [image] [sup-1 [sup-2] | sup-2]
no boot asm-sfn bootflash: | slot0: | tftp: [image] [module [slot-number]] | auto-copy | kickstart
bootflash: | slot0: | tftp: [image] [sup-1 [sup-2] | sup-2] | lasilc bootflash: | slot0: | tftp: [image]
[module [slot-number]] | ssi bootflash: | slot0: | system bootflash: | slot0: | tftp: [image] [sup-1 [sup-2]
| sup-2]
```

Syntax Description

asm-sfn	Configures the virtualization image.
bootflash:	Specifies system image URI for bootflash.
slot0:	Specifies system image URI for slot 0.
tftp:	Specifies system image URI for TFTP.
image	(Optional) Specifies the image file name.
module slot-number	(Optional) Specifies the slot number of the SSM.
auto-copy	Configures auto-copying of boot variable images.
kickstart	Configures the kickstart image.
lasilc	Configures the boot image.
ssi	Configures the SSI image.
system	Configures the system image.
sup-1	(Optional) The upper supervisor.
sup-2	(Optional) The lower supervisor.

Disabled. The default state for auto-copy is enabled.

Command Modes

Configuration mode.

Command History

Release	Modification
1.2(2)	This command was introduced.
3.0(1)	Changed the default state for auto-copy to enabled.

Usage Guidelines

The boot kickstart slot0:image command is currently not allowed. For kickstart, only bootflash: is allowed.

When the boot auto-copy command is issued, the system copies the boot variable images which are local (present) in the active supervisor module (but not in the standby supervisor module) to the standby supervisor module. For kickstart and system boot variables, only those images that are set for the standby supervisor module are copied. For modules (line card) images, all modules present in standby's corresponding locations (bootflash: or slot0:) will be copied.

Examples

The following example adds the new system image file to the SYSTEM environment variable:

```
switch(config)# boot system bootflash:system.img
```

The following example boots from the CompactFlash device (slot0:). The switch updates the SYSTEM environment variable to reflect the new image file in the specified flash device:

```
switch(config)# boot system slot0:system.img
```

The following example overwrites the old Kickstart environment variable in the configuration file:

```
switch(config)# boot kickstart bootflash:kickstart.img
```

The following example specifies the SSM image to be used:

```
switch(config)# boot asm-sfn bootflash:m9000-ek9-asm-sfn-mz.1.2.2.bin
```

The following example enables automatic copying of boot variables from the active supervisor module to the standby supervisor module:

```
switch(config)# boot auto-copy
```

The following example disables the automatic copy feature (default).

```
switch(config)# no boot auto-copy
```

Related Commands

Command	Description
show boot	Displays the configured boot variable information.

bport

To configure a B port mode on a FCIP interface, use the `bport` option. To disable a B port mode on a FCIP interface, use the `no` form of the command.

```
bport
no bport
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Interface configuration submode.

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines Access this command from the `switch(config-if)#` submode.

Examples The following example shows how to configure a B port mode on an FCIP interface:

```
switch# config terminal
switch(config)# interface fcip 1
switch(config-if)# bport
```

Command	Description
<code>bport-keepalive</code>	Configures B port keepalive responses.
<code>show interface fcip</code>	Displays an interface configuration for a specified FCIP interface.

bport-keepalive

To configure keepalive responses for B port FCIP interfaces, use the bport-keepalive option. To disable keepalive responses for B port FCIP interfaces, use the no form of the command.

```
bport-keepalive
no bport-keepalive
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Interface configuration submode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines Access this command from the switch(config-if)# submode.

Examples The following example shows how to configure keepalive responses for B port FCIP interfaces:

```
switch# config terminal
switch(config)# interface fcip 1
switch(config-if)# bport-keepalives
```

Related Commands	Command	Description
	bport	Configures a B port FCIP interface.
	show interface fcip	Displays an interface configuration for a specified FCIP interface.

broadcast

To enable the broadcast frames attribute in a zone attribute group, use the broadcast command. To revert to the default, use the no form of the command.

```
broadcast
no broadcast
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Zone attribute configuration submode.

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines Broadcast frames are sent to all Nx ports.

If any NL port attached to an FL port shares a broadcast zone with the source of the broadcast frame, then the frames are broadcast to all devices in the loop.

This command only configures the broadcast attribute for enhanced zoning. To enable broadcast zoning for basic mode, use the attribute broadcast subcommand after entering zone configuration mode using the zone name command.

Examples

The following example shows how to set the broadcast attribute for a zone attribute group:

```
switch# config terminal
switch(config)# zone-attribute-group name admin-attributes vsan 10
switch(config-attribute-group)# broadcast
```

Related Commands

Command	Description
show zone-attribute-group	Displays zone attribute group information.
zone mode enhanced vsan	Enables enhanced zoning for a VSAN.
zone name	Configures zone attributes.
zone-attribute-group name	Configures zone attribute groups.



C Commands

- [callhome](#), on page 97
- [callhome mft-put](#), on page 99
- [callhome test](#), on page 100
- [callhome test-keepalive](#), on page 101
- [cd](#), on page 102
- [cdp](#), on page 104
- [certificate](#), on page 107
- [cfs distribute](#), on page 108
- [cfs ipv4 distribute](#), on page 109
- [cfs ipv4 mcast-address](#), on page 111
- [cfs ipv6 distribute](#), on page 113
- [cfs ipv6 mcast-address](#), on page 115
- [cfs region](#), on page 117
- [cfs static-peers](#), on page 119
- [channel mode active](#), on page 120
- [channel-group](#), on page 121
- [cimserver](#), on page 122
- [cimserver clearcertificate](#), on page 124
- [cimserver loglevel](#), on page 125
- [class](#), on page 126
- [clear accounting log](#), on page 128
- [clear analytics](#), on page 129
- [clear arp-cache](#), on page 131
- [clear asic-cnt](#), on page 132
- [clear callhome session](#), on page 134
- [clear cdp](#), on page 135
- [clear cores](#), on page 136
- [clear counters \(EXEC mode\)](#), on page 137
- [clear counters \(SAN extension N port configuration mode\)](#), on page 138
- [clear counters interface](#), on page 139
- [clear counters interface all](#), on page 140
- [clear crypto ike domain ipsec sa](#), on page 141
- [clear crypto sa domain ipsec](#), on page 142

- clear debug-logfile, on page 143
- clear device-alias, on page 144
- clear dpvm, on page 145
- clear dpvm merge statistics, on page 146
- clear fabric-binding statistics, on page 147
- clear fcanalyzer, on page 148
- clear fcflow stats, on page 149
- clear fcns statistics, on page 150
- clear fc-redirect config, on page 151
- clear fc-redirect decommission-switch, on page 152
- clear fcs statistics, on page 153
- clear fctimer session, on page 154
- clear ficon, on page 155
- clear fspf counters, on page 156
- clear install failure-reason, on page 157
- clear ip access-list counters, on page 158
- clear ips arp, on page 159
- clear ips stats, on page 160
- clear ips stats fabric interface, on page 161
- clear ipv6 access-list, on page 162
- clear ipv6 neighbors, on page 163
- clear islb session, on page 164
- clear ivr fcdomain database, on page 165
- clear ivr service-group database, on page 166
- clear ivr zone database, on page 167
- clear license, on page 168
- clear line, on page 169
- clear logging, on page 170
- clear ntp, on page 172
- clear port-security, on page 173
- clear processes log, on page 174
- clear qos statistics, on page 175
- clear radius-server statistics, on page 176
- clear radius session, on page 177
- clear rlir, on page 178
- clear rmon alarms, on page 180
- clear rmon all-alarms, on page 181
- clear rmon hcalarms, on page 182
- clear rmon log, on page 183
- clear role session, on page 184
- clear rscn session vsan, on page 185
- clear rscn statistics, on page 186
- clear santap module, on page 187
- clear scheduler logfile, on page 188
- clear screen, on page 189
- clear scsi-flow statistics, on page 190

- clear sdv, on page 191
- clear snmp hostconfig, on page 192
- clear ssh hosts, on page 193
- clear ssm-nvram santap module, on page 194
- clear system reset-reason, on page 195
- clear tacacs+ session, on page 196
- clear tacacs-server statistics, on page 197
- clear tlport alpa-cache, on page 198
- clear user, on page 199
- clear vrrp, on page 200
- clear zone, on page 202
- clear zone smart-zoning, on page 204
- cli, on page 205
- cli alias name, on page 207
- cli var name (configuration), on page 209
- cli var name (EXEC), on page 210
- clis, on page 211
- clock, on page 212
- clock format, on page 214
- clock set, on page 215
- cloud discover, on page 216
- cloud discovery, on page 217
- cloud-discovery enable, on page 219
- cluster, on page 220
- code-page, on page 221
- commit, on page 223
- commit (DMM job configuration submode), on page 224
- configure terminal, on page 225
- congestion-isolation, on page 226
- congestion-isolation remove interface, on page 228
- contract-id, on page 230
- copy, on page 231
- copy licenses, on page 235
- copy startup-config running-config, on page 236
- copy ssm-nvram standby-sup, on page 237
- counter (port-group-monitor configuration mode), on page 238
- counter (port-monitor configuration mode), on page 240
- crllookup, on page 244
- crypto ca authenticate, on page 245
- crypto ca crl request, on page 247
- crypto ca enroll, on page 249
- crypto ca export, on page 251
- crypto ca import, on page 252
- crypto ca lookup, on page 254
- crypto ca remote ldap, on page 255
- crypto ca test verify, on page 256

- [crypto ca trustpoint](#), on page 257
- [crypto cert ssh-authorize](#), on page 259
- [crypto certificatemap mapname](#), on page 260
- [crypto global domain ipsec security-association lifetime](#), on page 261
- [crypto ike domain ipsec](#), on page 262
- [crypto ike domain ipsec rekey sa](#), on page 263
- [crypto ike enable](#), on page 264
- [crypto ipsec enable](#), on page 265
- [crypto key generate rsa](#), on page 266
- [crypto key zeroize rsa](#), on page 268
- [crypto map domain ipsec \(configuration mode\)](#), on page 269
- [crypto map domain ipsec \(interface configuration submode\)](#), on page 271
- [crypto transform-set domain ipsec](#), on page 272
- [customer-id](#), on page 274

callhome

To configure the Call Home function, use the callhome command.

```
callhome
```

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled.

Command Modes

Configuration mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

The Call Home configuration commands are available in the (config-callhome) submode.

A Call Home message is used to contact a support person or organization in case an urgent alarm is raised.

Once you have configured the contact information, you must enable the Call Home function. The enable command is required for the Call Home function to start operating. When you disable the Call Home function, all input events are ignored.



Note Even if Call Home is disabled, basic information for each Call Home event is sent to syslog.

The user-def-cmd command allows you to define a command whose outputs should be attached to the Call Home message being sent. Only show commands can be specified and they must be associated with an alert group. Five commands can be specified per alert group. Invalid commands are rejected.



Note Customized show commands are only supported for full text and XML alert groups. Short text alert groups (short-txt-destination) do not support customized show commands because they only allow 128 bytes of text.

To assign show commands to be executed when an alert is sent, you must associate the commands with the alert group. When an alert is sent, Call Home associates the alert group with an alert type and attaches the output of the show commands to the alert message.



Note Make sure the destination profiles for the non-Cisco-TAC alert group, with a predefined show command, and the Cisco-TAC alert group are not the same.

The following example assigns contact information:

```
switch# config terminal
config terminal
```

```

switch# snmp-server contact personname@companyname.com
switch(config)# callhome
switch(config-callhome)# email-contact username@company.com
switch(config-callhome)# phone-contact +1-800-123-4567
switch(config-callhome)# streetaddress 1234 Picaboo Street, Any city, Any state, 12345
switch(config-callhome)# switch-priority 0
switch(config-callhome)# customer-id Customer1234
switch(config-callhome)# site-id Site1ManhattanNY
switch(config-callhome)# contract-id Company1234

```

The following example configures a user-defined show command for an alert-group license:

```
switch(config-callhome)# alert-group license user-def-cmd "show license usage"
```

**Note**

The show command must be enclosed in double quotes.

The following example removes a user-defined show command for an alert-group license:

```
switch(config-callhome)# no alert-group license user-def-cmd "show license usage"
```

Related Commands

Command	Description
alert-group	Customizes a Call Home alert group with user-defined show commands.
callhome test	Sends a dummy test message to the configured destination(s).
show callhome	Displays configured Call Home information.

callhome mft-put

To copy the file from the bootflash directory to a secure remote support service, use the callhome mft-put command.

callhome mft-put filename

Syntax Description

filename	The name of the file to be transferred to a secure remote support service.
----------	--

Command Default

None

Command Modes

User EXEC (#)
Privileged EXEC (#)

Command History

Release	Modification
NX-OS 7.3(1)DY(1)	This command was introduced.

Usage Guidelines

The callhome mft-put command is used to transfer files such as syslogs, output of the show tech-support command, and so on, to a secure remote support service.

Examples

The following example shows how to copy a file bootflash to a secure remote support service:

```
switch# callhome mft-put zone_sdb.log
Trying to copy file using mft-put to remote location
Successfully sent file using mft-put
```

Related Commands

Command	Description
callhome	Configures Call Home functions.
show callhome	Displays configured Call Home information.

callhome test

To simulate a Call Home message generation, use the callhome test command.

```
callhome test [inventory]
```

Syntax Description

inventory	(Optional) Sends a dummy Call Home inventory.
-----------	---

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

You can simulate a message generation by entering a callhome test command.

Examples

The following example sends a test message to the configured destinations:

```
switch# callhome test
trying to send test callhome message
successfully sent test callhome message
```

The following example sends a test inventory message to the configured destinations:

```
switch# callhome test inventory
trying to send test callhome message
successfully sent test callhome message
```

Related Commands

Command	Description
callhome	Configures Call Home functions.
show callhome	Displays configured Call Home information.

callhome test-keepalive

To check for the connectivity between Call Home and a secure remote support service, use the callhome test-keepalive command.

```
callhome test-keepalive
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes
User EXEC (#)
Privileged EXEC (#)

Command History	Release	Modification
	NX-OS 7.3(1)DY(1)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to initiate a keepalive message communication with a secure remote support service:

```
switch# callhome test-keepalive
Initiating callhome test-keepalive
```

Related Commands	Command	Description
	callhome	Configures Call Home functions.
	show callhome	Displays configured Call Home information.

cd

To change the default directory or file system, use the cd command.

```
cd directory | bootflash : [directory] | slot0 : [directory] | volatile : [directory]
```

Syntax Description

directory	(Optional) Name of the directory on the file system.
bootflash:	URI or alias of the bootflash or file system.
slot0:	URI or alias of the slot0 file system.
volatile:	URI or alias of the volatile file system.

Command Default

The initial default file system is flash:. For platforms that do not have a physical device named flash:, the keyword flash: is aliased to the default flash device.

If you do not specify a directory on a file system, the default is the root directory on that file system.

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

For all EXEC commands that have an optional file system argument, the system uses the file system specified by the cd command when you omit the optional file system argument. For example, the dir command, which displays a list of files on a file system, contains an optional file system argument. When you omit this argument, the system lists the files on the file system specified by the cd command.

Examples

The following example sets the default file system to the flash memory card inserted in slot 0:

```
switch# pwd
bootflash:/
switch# cd slot0:
switch# pwd
slot0:/
```

Related Commands

Command	Description
copy	Copies any file from a source to a destination.
delete	Deletes a file on a flash memory device.
dir	Displays a list of files on a file system.
pwd	Displays the current setting of the cd command.

Command	Description
show file systems	Lists available file systems and their alias prefix names.
undelete	Recovers a file marked deleted on a Class A or Class B flash file system.

cdp

To globally configure the Cisco Discovery Protocol parameters, use the `cdp` command. Use the `no` form of this command to revert to factory defaults.

```
cdp enable | advertise v1 | v2 | holdtime holdtime-seconds | timer timer-seconds
no cdp enable | advertise | holdtime holdtime-seconds | timer timer-seconds
```

Syntax Description

enable	Enables CDP globally on all interfaces on the switch.
advertise	Specifies the EXEC command to be executed.
v1	Specifies CDP version 1.
v2	Specifies CDP version 2.
holdtime	Sets the hold time advertised in CDP packets.
holdtime-seconds	The holdtime in seconds. The default is 180 seconds and the valid range is from 10 to 255 seconds.
timer	Sets the refresh time interval.
timer-seconds	The time interval in seconds. The default is 60 seconds and the valid range is from 5 to 255 seconds.

Command Default

CDP is enabled.

The hold time default interval is 180 seconds.

The refresh time interval is 60 seconds.

Command Modes

Configuration mode

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

Use the `cdp enable` command to enable the Cisco Discovery Protocol (CDP) feature at the switch level or at the interface level. Use the `no` form of this command to disable this feature. When the interface link is established, CDP is enabled by default.

CDP version 1 (v1) and version 2 (v2) are supported in Cisco MDS 9000 Family switches. CDP packets with any other version number are silently discarded when received.

Examples

The following example disables the CDP protocol on the switch. When CDP is disabled on an interface, one packet is sent to clear out the switch state with each of the receiving devices:

```
switch(config)#
no cdp enable
```



```
Operation in progress. Please check global parameters
switch(config-console)#
```

The following example enables (default) the CDP protocol on the switch. When CDP is enabled on an interface, one packet is sent immediately. Subsequent packets are sent at the configured refresh time.

```
switch(config)# cdp enable
Operation in progress. Please check global parameters
switch(config)#
```

The following example configures the Gigabit Ethernet interface 8/8 and disables the CDP protocol on this interface. When CDP is disabled on an interface, one packet is sent to clear out the switch state with each of the receiving devices.

```
switch(config)#
interface gigabitethernet 8/8
switch(config-if)#
no cdp enable
Operation in progress. Please check interface parameters
switch(config-console)#
```

The following example enables (default) the CDP protocol on the selected interface. When CDP is enabled on this interface, one packet is sent immediately. Subsequent packets are sent at the configured refresh time.

```
switch(config-if)#
cdp enable
Operation in progress. Please check interface parameters
switch(config)#
```

The following example globally configures the refresh time interval for the CDP protocol in seconds. The default is 60 seconds and the valid range is from 5 to 255 seconds.

```
switch#
config terminal
switch(config)#
cdp timer 100
switch(config)#
```

The following example globally configures the hold time advertised in CDP packet in seconds. The default is 180 seconds and the valid range is from 10 to 255 seconds.

```
switch#
config terminal
switch(config)#
cdp holdtime 200
switch(config)#
```

The following example globally configures the CDP version. The default is version 2 (v2). The valid options are v1 and v2.

```
switch# config terminal
switch(config)# cdp advertise v1
switch(config)#
```

Related Commands

Command	Description
clear cdp	Clears global or interface-specific CDP configurations.
show cdp	Displays configured CDP settings and parameters.

certificate

To use an SSL or TLS certificate, use the certificate command.

```
certificate certificate_path host_name
```

Syntax Description

certificate_path	Specifies the path to the Privacy Enhanced Mail (PEM) certificate file.
host_name	Host name associated with the PEM file.

Command Default

No certificate is used.

Command Modes

Telemetry configuration mode (config-telemetry)

Command History

Release	Modification
8.3(1)	This command was introduced.

Examples

This example shows how to install an SSL or TLS certificate:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# certificate /bootflash/test.pem foo.test.google.fr
```

Related Commands

Command	Description
feature telemetry	Enables the SAN Telemetry Streaming feature.
telemetry	Enters SAN Telemetry Streaming configuration mode.

cfs distribute

To enable or disable Cisco Fabric Services (CFS) distribution on the switch, use the `cfs distribute` command in configuration mode. To disable this feature, use the `no` form of the command.

```
cfs distribute
no cfs distribute
```

Syntax Description This command has no other arguments or keywords.

Command Default CFS distribution is enabled.

Command Modes Configuration mode

Release	Modification
2.1(1a)	This command was introduced.

Usage Guidelines By default CFS is in the distribute mode. In the distribute mode, fabric wide distribution is enabled. Applications can distribute data/configuration to all CFS-capable switches in the fabric where the application exists. This is the normal mode of operation.

If CFS distribution is disabled, using the `no cfs distribute` command causes the following to occur:

- CFS and the applications using CFS on the switch are isolated from the rest of the fabric even though there is physical connectivity.
- All CFS operations are restricted to the isolated switch.
- All the CFS commands continue to work similar to the case of a physically isolated switch.
- Other CFS operations (for example, lock, commit, and abort) initiated at other switches do not have any effect at the isolated switch.
- CFS distribution is disabled over both Fibre Channel and IP.

Examples

The following example shows how to disable CFS distribution:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no cfs distribute
```

The following example shows how to reenable CFS distribution:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# cfs distribute
```

Related Commands

Command	Description
show cfs status	Displays whether CFS distribution is enabled or disabled.

cfs ipv4 distribute

To enable Cisco Fabric Services (CFS) distribution over IPv4 for applications that want to use this feature, use the `cfs ipv4 distribute` command in configuration mode. To disable this feature, use the `no` form of the command.

```
cfs ipv4 distribute
no cfs ipv4 distribute
```

Syntax Description This command has no arguments or keywords.

Command Default CFS distribution is enabled.
CFS over IP is disabled.

Command Modes Configuration mode

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines All CFS over IP enabled switches with similar multicast addresses form one CFS over IP fabric. CFS protocol specific distributions, such as the keep-alive mechanism for detecting network topology changes, use the IP multicast address to send and receive information.

Observe the following guidelines when using this command:

- If a switch is reachable over both IP and Fibre Channel, application data will be distributed over Fibre Channel.
- You can select either an IPv4 or IPv6 distribution when CFS is enabled over IP.
- Both IPv4 and IPv6 distribution cannot be enabled on the same switch.
- A switch that operate IPv4 distribution enabled cannot detect a switch that IPv6 distribution enabled. The switches behave as if they are in two different fabrics even though they are connected to each other.

Examples

The following example shows how to disable CFS IPv4 distribution:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no cfs ipv4 distribute
This will prevent CFS from distributing over IPv4 network.
Are you sure? (y/n) [n]
```

The following example shows how to reenab CFS IPv4 distribution:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# cfs ipv4 distribute
```

Related Commands

Command	Description
cfs ipv4 mcast-address	Configures an IPv4 multicast address for Cisco Fabric Services (CFS) distribution over IPv4.
show cfs status	Displays whether CFS distribution is enabled or disabled.

cfs ipv4 mcast-address

To configure an IPv4 multicast address for Cisco Fabric Services (CFS) distribution over IPv4, use the `cfs ipv4 mcast-address` command in configuration mode. To disable this feature, use the no form of the command.

```
cfs ipv4 mcast-address ipv4-address
no cfs ipv4 mcast-address ipv4-address
```

Syntax Description

ipv4-address	Specifies an IPv4 multicast address for CFS distribution over IPv4. The range of valid IPv4 addresses is 239.255.0.0 through 239.255.255.255, and 239.192.0.0 through 239.251.251.251.
--------------	--

Command Default

Multicast address: 239.255.70.83.

Command Modes

Configuration mode

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

Before using this command, enable CFS distribution over IPv4 using the `cfs ipv4 distribute` command.

All CFS over IP enabled switches with similar multicast addresses form one CFS over IP fabric. CFS protocol specific distributions, such as the keepalive mechanism for detecting network topology changes, use the IP multicast address to send and receive information.



Note

CFS distributions for application data use directed unicast.

You can configure a value for a CFS over IP multicast address. The default IPv4 multicast address is 239.255.70.83.

Examples

The following example shows how to configure an IP multicast address for CFS over IPv4:

```
switch# config t
switch(config)# cfs ipv4 mcast-address 239.255.1.1
Distribution over this IP type will be affected
Change multicast address for CFS-IP ?
Are you sure? (y/n) [n] y
```

The following example shows how to revert to the default IPv4 multicast address for CFS distribution over IPv4. The default IPv4 multicast address for CFS is 239.255.70.83:

```
switch(config)# no cfs ipv4 mcast-address 10.1.10.100
Distribution over this IP type will be affected
Change multicast address for CFS-IP ?
Are you sure? (y/n) [n] y
```

Related Commands

Command	Description
cfs ipv4 distribute	Enables or disables Cisco Fabric Services (CFS) distribution over IPv4.
show cfs status	Displays whether CFS distribution is enabled or disabled.

cfs ipv6 distribute

To enable Cisco Fabric Services (CFS) distribution over IPv6 for applications that want to use this feature, use the `cfs ipv6 distribute` command in configuration mode. To disable this feature, use the `no` form of the command.

```
cfs ipv6 distribute
no cfs ipv6 distribute
```

Syntax Description

This command has no arguments or keywords.

Command Default

CFS distribution is enabled.
CFS over IP is disabled.

Command Modes

Configuration mode

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

All CFS over IP enabled switches with similar multicast addresses form one CFS over IP fabric. CFS protocol specific distributions, such as the keepalive mechanism for detecting network topology changes, use the IP multicast address to send and receive information.

Observe the following guidelines when using this command:

- If a switch is reachable over both IP and Fibre Channel, application data will be distributed over Fibre Channel.
- You can select either an IPv4 or IPv6 distribution when CFS is enabled over IP.
- Both IPv4 and IPv6 distribution cannot be enabled on the same switch.
- A switch that operate IPv4 distribution enabled cannot detect a switch that IPv6 distribution enabled. The switches behave as if they are in two different fabrics even though they are connected to each other.

Examples

The following example shows how to disable CFS IPv6 distribution:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no cfs ipv6 distribute
This will prevent CFS from distributing over IPv6 network.
Are you sure? (y/n) [n]
```

The following example shows how to reenable CFS IPv6 distribution:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# cfs ipv6 distribute
```

Related Commands

Command	Description
cfs ipv6 mcast-address	Configures an IPv6 multicast address for Cisco Fabric Services (CFS) distribution over IPv6.
show cfs status	Displays whether CFS distribution is enabled or disabled.

cfs ipv6 mcast-address

To configure an IPv6 multicast address for Cisco Fabric Services (CFS) distribution over IPv6, use the `cfs ipv6 mcast-address` command in configuration mode. To disable this feature, use the no form of the command.

```
cfs ipv6 mcast-address ipv6-address
no cfs ipv6 mcast-address ipv6-address
```

Syntax Description

ipv6-address	An IPv6 multicast address or CFS distribution over IPv6. The IPv6 Admin scope range is [ff15::/16, ff18::/16].
--------------	--

Command Default

Multicast address: ff15::eff:4653.

Command Modes

Configuration mode

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

Before using this command, enable CFS distribution over IPv6 using the `cfs ipv6 distribute` command.

All CFS over IP enabled switches with similar multicast addresses form one CFS over IP fabric. CFS protocol specific distributions, such as the keepalive mechanism for detecting network topology changes, use the IP multicast address to send and receive information.



Note

CFS distributions for application data use directed unicast.

You can configure a CFS over IP multicast address value for IPv6. The default IPv6 multicast address is ff15::eff:4653. Examples of the IPv6 Admin scope range are ff15::0000:0000 to ff15::fff:fff and ff18::0000:0000 to ff18::fff:fff.

Examples

The following example shows how to configure an IP multicast address for CFS over IPv6:

```
switch# config t
switch(config)# cfs ipv6 mcast-address
ff13::e244:4754
Distribution over this IP type will be affected
Change multicast address for CFS-IP ?
Are you sure? (y/n) [n] y
```

The following example shows how to revert to the default IPv6 multicast address for CFS distribution over IPv6. The default IPv6 multicast address for CFS is ff13:7743:4653.

```
switch(config)# no cfs ipv6
ff13::e244:4754
Distribution over this IP type will be affected
```

```
Change multicast address for CFS-IP ?  
Are you sure? (y/n) [n] y
```

Related Commands

Command	Description
cfs ipv6 distribute	Enables or disables Cisco Fabric Services (CFS) distribution over IPv6.
show cfs status	Displays whether CFS distribution is enabled or disabled.

cfs region

To create a region that restricts the scope of application distribution to the selected switches, use the `cfs region` command in the configuration mode. To disable this feature, use the `no` form of this command.

```
cfs region region-id
no cfs region region-id
```

Syntax Description

region-id	Assigns an application to a region. A total of 200 regions are supported.
-----------	---

Command Default

None.
Configuration mode

Command History

Release	Modification
3.2(1)	This command was introduced.

Usage Guidelines

An application can only be a part of one region on a given switch. By creating the region ID and assigning it to an application, the application distribution is restricted to switches with a similar region ID.

Cisco Fabric Services (CFS) regions provide the ability to create distribution islands within the application scope. Currently, the regions are supported only for physical scope applications. In the absence of any region configuration, the application will be a part of the default region. The default region is region ID 0. This command provides backward compatibility with the earlier release where regions were not supported. If applications are assigned to a region, the configuration check will prevent the downgrade. Fabric Manager supports CFS regions.

Examples

The following example shows how to create a region ID:

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# cfs region 1
```

The following example shows how to assign an application to a region:

```
switch# cfs region 1
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# cfs region 1
switch(config-cfs-region)# ntp
```



Note The applications assigned to a region have to be registered with CFS.

The following example shows how to remove an application assigned to a region:

```
switch# cfs region 1
```

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# cfs region 1
switch(config-cfs-region)# no ntp
```

The following example shows how to remove all the applications from a region:

```
switch(config)# no cfs region 1
WARNING: All applications in the region will be moved to default region.
Are you sure? (y/n) [n] y
```

Related Commands

Command	Description
show cfs regions	Displays all configured applications with peers.

cfs static-peers

To enable static peers interface, use the `cfs static-peers` command. To disable this feature, use the `no` form of the command.

```
cfs static-peers
no cfs static-peers
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes Configuration mode

Command History	Release	Modification
	4.1(1b)	This command was introduced.

Usage Guidelines This command enables the static peers with status and all the peers in the physical fabric.



Note The `no cfs static-peers` displays a warning string, and changes the entire fabric from static to dynamic.

Examples

The following example shows how to enable static peers interface:

```
Switch(config)# cfs static-peers
Warning: This mode will stop dynamic discovery and relay only on these peers.
Do you want to continue?(y/n) [n] y
Switch(config-cfs-static)#ip address 209.165.200.226
Switch(config-cfs-static)#ip address 209.165.200.227
Switch(config-cfs-static)#exit
Switch(config)#
```

Related Commands	Command	Description
	<code>show cfs static peers</code>	Displays configured static peers with status.

channel mode active

To enable channel mode on a PortChannel interface, use the channel mode active command. To disable this feature, use the no form of the command.

```
channel mode active
no channel mode
```

Syntax Description This command has no other arguments or keywords.

Command Default Enabled.

Command Modes Interface configuration submode.

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines This command determines the protocol operate for all the member ports in the channel group associated with the port channel interface.

Examples The following example shows how to disable channel mode on a PortChannel interface:

```
switch# config terminal
switch(config)# interface port-channel 10
switch(config-if)# no channel mode active
```

Command	Description
show interface port-channel	Displays PortChannel interface information.

channel-group

To add a port to a PortChannel group, use the channel-group command. To remove a port, use the no form of the command.

```
channel-group port-channel number force
no channel-group port-channel number force
```

Syntax Description

port-channel number	The PortChannel number. The range is 1 to 256.
force	Specifies the PortChannel to add a port, without compatibility check of port parameters, port mode and port speed.

Command Default

None

Command Modes

Interface configuration mode

Command History

Release	Modification
NX-OS 4.1(3)	Deleted auto keyword from the syntax description.
3.0(1)	This command was introduced.

Usage Guidelines

When ports are added to a PortChannel, manager checks for incompatibility in the port mode and port speed. If the ports are being added to the PortChannel, do not have compatible parameters, the ports will not be added to the PortChannel. The force option bypasses, the port parameter compatibility check, and adds the port to a PortChannel. It also forces the individual member interfaces to inherit the port parameters configured on the PortChannel itself. If you configure switchport speed 4000 on the PortChannel then the member interface is forced to that setting.

force option is used to override the port's parameters. The auto mode support is not available after Release 4.x. To convert auto PortChannel to active mode PortChannel, use the port-channel persistent command. This command needs to be run on both sides of the auto Port Channel.

Examples

The following example shows how to add a port to the PortChannel:

```
switch# config terminal
switch(config)# interface fc 1/1
switch(config-if)# channel-group 2 force
fc1/1 added to port-channel 2 and disabled
please do the same operation on the switch at the other end of the port-channel,
then do "no shutdown" at both end to bring them up
switch(config-if)#
```

Related Commands

Command	Description
show interface port-channel	Displays the PortChannel interface information.

cimservers

To configure the Common Information Models (CIM) parameters, use the `cimservers` command. Use the `no` form of this command to revert to factory defaults.

```
cimservers certificate bootflash:filename | slot0 : filename | volatile:filename | clearcertificate filename
| enable | enablehttp | enablehttps
no cimservers certificate bootflash : filename | slot0 : filename | volatile : filename | clearcertificate
filename | enable | enablehttp | enablehttps
```

Syntax Description

certificate	Installs the Secure Socket Layer (SSL) certificate
bootflash:	Specifies the location for internal bootflash memory.
filename	The name of the license file with a .pem extension.
slot0: filename	Specifies the location for the CompactFlash memory or PCMCIA card.
volatile: filename	Specifies the location for the volatile file system.
clearcertificate filename	Clears a previously installed SSL certificate.
enable	Enables and starts the CIM server.
enablehttp	Enables the HTTP (non-secure) protocol for the CIM server (default).
enablehttps	Enables the HTTPS (secure) protocol for the CIM server.

Command Default

None

Command Modes

Configuration mode

Command History

Release	Modification
1.3(1)	This command was introduced.
5.2(1)	This command was deprecated.

Usage Guidelines

A CIM client is required to access the CIM server. The client can be any client that supports CIM.

Examples

The following example installs a Secure Socket Layer (SSL) certificate specified in the file named with a .pem extension:

```
switch#
conf terminal
switch(config)# cimservers certificateName bootflash:simservers.pem
```

The following example clears the specified SSL certificate:

```
switch(config)#
```

```
cimserver clearCertificateName bootflash:simserver.pem
```

Related Commands

Command	Description
show csimserver	Displays configured CIM settings and parameters.

cimservers clearcertificate

To clear the cimservers certificate, use the cimservers clearcertificate command in configuration mode.

```
cimservers clearcertificate
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes Configuration mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.
	5.2(1)	This command was deprecated.

Usage Guidelines You need not specify the certificate name.

Examples The following example shows how to clear the cimservers certificate:

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# cimservers clearcertificate
```

Related Commands	Command	Description
	show cimservers certificate name	Displays the cimservers certificate filename.

cimserver loglevel

To configure the cimserver log level filter, use the cimserver loglevel command in configuration mode.

cimserver loglevel filter value

Syntax Description

filter value	1	Specifies the cimserver log filter levels. The range is 1 to 5.
	2	Sets the current value for the log level property to trace.
	3	Sets the current value for the log level property to information.
	4	Sets the current value for the log level property to warning.
	5	Sets the current value for the log level property to severe.
	6	Sets the current value for the log level property to fatal.

Command Default

None

Command Modes

Configuration mode

Command History

Release	Modification
3.3(1a)	This command was introduced.
5.2(1)	This command was deprecated.

Usage Guidelines

None

Examples

The following example displays the cimserver log level:

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# cimserver loglevel 2
Current value for the property logLevel is set to "INFORMATION" in CIMServer.
```

Related Commands

Command	Description
show cimserver logs	Displays the cimserver logs.

class

To select a QoS policy map class for configuration, use the class command in QoS policy map configuration submode. To disable this feature, use the no form of the command.

```
class class-map-name
no class class-map-name
```

Syntax Description

class-map-name	The QoS policy class map to configure.
----------------	--

Command Default

Disabled

Command Modes

QoS policy map configuration submode

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

Before you can configure a QoS policy map class you must complete the following:

- Enable the QoS data traffic feature using the qos enable command.
- Configure a QoS class map using the qos class-map command.
- Configure a QoS policy map using the qos policy-map command.

After you configure the QoS policy map class, you can configure the Differentiated Services Code Point (DSCP) and priority for frames matching this class map.

Examples

The following example shows how to select a QoS policy map class to configure:

```
switch# config terminal
switch(config)# qos enable
switch(config)# qos class-map class-map1
switch(config)# qos policy-map policyMap1
switch(config-pmap)# class class-map1
```

Related Commands

Command	Description
dscp	Configures the DSCP in the QoS policy map class.
qos class-map	Configures a QoS class map.
qos enable	Enables the QoS data traffic feature on the switch.
qos policy-map	Configures a QoS policy map.
priority	Configures the priority in the QoS policy map class.

Command	Description
show qos	Displays the current QoS settings.

clear accounting log

To clear the accounting log, use the clear accounting log command.

```
clear accounting log
```

Syntax Description This command has no other arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None

Examples The following example clears the accounting log:

```
switch# clear accounting session
```

Related Commands	Command	Description
	show accounting log	Displays the accounting log contents.

clear analytics

To reset flow metrics for a view instance, use the clear analytics command.

```
clear analytics query "query_string"
```

Syntax Description

query "query_string"	Query syntax.
----------------------	---------------

Command Default

None.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.3(1)	This command was modified. Added the query keyword. This command has changed from clear analytics "query_string" to clear analytics query "query_string".
8.2(1)	This command was introduced.

Usage Guidelines



Note

- The "query_string" must have the format "select all from <view-name>".
- You can clear the flow metrics without installing a push query.

Clear resets metrics of a view instance, whereas purge deletes specific view instance and its associated flow metrics momentarily. After clearing the database, the database will continue to collect flow metrics for the specified "query_string". When you clear metrics of a view instance, the values of the metrics are reset to default. The "query_string" is a query syntax where you can specify query semantics such as select, table, limit, and so on. For example, "select all from fc-scsi.port." For more information, see the "[Cisco MDS 9000 Series NX-OS SAN Analytics and Telemetry Configuration Guide](#)."

Using a combination of sort and limit in the "query_string" allows you to display the first record or the last record of the flow metrics that is used for sorting. This data is useful in determining the port that has the most IO transactions, port that is using the least read and write IO bandwidth, and so on.

Examples

These examples show how to clear flow metrics:

1. This example shows an output before clearing the flow metrics:

```
switch# show analytics query 'select port,initiator_id, target_id,lun,
total_read_io_count,total write_io_count,read_io_rate,
write_io_rate from fc-scsi.scsi_initiator_itl_flow where initiator_id=0xe80001'
{ "values": {
    "1": {
        "port": "fc1/8",
```

```

        "initiator_id": "0xe80001",
        "target_id": "0xe800a1",
        "lun": "0000-0000-0000-0000",
        "total_read_io_count": "0",
        "total_write_io_count": "1139010960",
        "read_io_rate": "0",
        "write_io_rate": "7071",
        "sampling_start_time": "1528535447",
        "sampling_end_time": "1528697495"
    }
}

```

2. This example shows how to clear the flow metrics of an initiator ITL flow view type:

```

switch# clear analytics query 'select port,initiator_id,
total_read_io_count,total_write_io_count,read_io_rate,
write_io_rate from fc-scsi.scsi_initiator_itl_flow where initiator_id=0xe80001'

```

3. This example shows an output after clearing the flow metrics:

```

switch# show analytics query 'select port,initiator_id, target_id,lun,
total_read_io_count,total_write_io_count,read_io_rate, write_io_rate from
fc-scsi.scsi_initiator_itl_flow where initiator_id=0xe80001'
{ "values": {
    "1": {
        "port": "fc1/8",
        "initiator_id": "0xe80001",
        "target_id": "0xe800a1",
        "lun": "0000-0000-0000-0000",
        "total_read_io_count": "0",
        "total_write_io_count": "0",
        "read_io_rate": "0",
        "write_io_rate": "0",
        "sampling_start_time": "0",
        "sampling_end_time": "0"
    }
}
}

```

Related Commands

Command	Description
analytics query	Installs a push analytics query.
feature analytics	Enables the SAN Analytics feature on a switch.
purge analytics	Deletes a view instance and its associated flow metrics.
show analytics port-sampling	Displays the SAN analytics port sampling information.
show analytics query	Displays the SAN analytics query information.
show analytics type	Displays the SAN analytics type.
ShowAnalytics	Displays the SAN analytics information in a tabular format.

clear arp-cache

To clear the ARP cache table entries, use the clear arp-cache command in EXEC mode.

```
clear arp-cache
```

Syntax Description This command has no arguments or keywords.

Command Default The ARP table is empty by default.

Command Modes EXEC mode

Command History	Release	Modification
	1.0(2)	This command was introduced.

Examples The following example shows how to clear the arp-cache table entries:

```
switch# clear arp-cache
```

Related Commands	Command	Description
	show arp	Displays Address Resolution Protocol (ARP) entries.

clear asic-cnt

To clear ASCII counters, use the clear asic-cnt command in EXEC mode.

```
clear asic-cnt all | device-id | list-all-devices
```

Syntax Description

all	Clears the counter for all device types.
device-id	Clears the counter for device type device ID.
list-all-devices	Lists all device types.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Examples

The following example shows how to clear all counters on the module:

```
switch(config)# attach module 4
Attaching to module 4 ...
To exit type 'exit', to abort type '$.'
Last login: Mon Jan  5 13:04:02 2009 from 127.1.1.8 on pts/0
Linux lc04 2.6.10_mvl401-pc_target #1 Tue Dec 16 22:58:32 PST 2008 ppc GNU/Linux
module-4# clear asic-cnt all
Cleared counters for asic type id = 63, name = 'Stratosphere'
Cleared counters for asic type id = 46, name = 'transceiver'
Cleared counters for asic type id = 57, name = 'Skyline-asic'
Cleared counters for asic type id = 60, name = 'Skyline-ni'
Cleared counters for asic type id = 59, name = 'Skyline-xbar'
Cleared counters for asic type id = 58, name = 'Skyline-fwd'
Cleared counters for asic type id = 52, name = 'Tuscany-asic'
Cleared counters for asic type id = 54, name = 'Tuscany-xbar'
Cleared counters for asic type id = 55, name = 'Tuscany-que'
Cleared counters for asic type id = 53, name = 'Tuscany-fwd'
Cleared counters for asic type id = 73, name = 'Fwd-spi-group'
Cleared counters for asic type id = 74, name = 'Fwd-parser'
Cleared counters for asic type id = 10, name = 'eobc'
Cleared counters for asic type id = 1, name = 'X-Bus IO'
Cleared counters for asic type id = 25, name = 'Power Mngmnt Epld'
module-4#
```

The following example shows how to clear the specific counter:

```
module-4# clear asic-cnt device-id 1
Clearing counters for devId = 1, name = 'X-Bus IO'
module-4#
```

The following example shows how to list all device IDs:

```
module-4# clear asic-cnt list-all-devices
  Asic Name |          Device ID
  Stratosphere |          63
  transceiver |          46
  Skyline-asic |          57
  Skyline-ni |          60
  Skyline-xbar |          59
  Skyline-fwd |          58
  Tuscany-asic |          52
  Tuscany-xbar |          54
  Tuscany-que |          55
  Tuscany-fwd |          53
  Fwd-spi-group |          73
  Fwd-parser |          74
  eobc |          10
  X-Bus IO |          1
  Power Mngmnt Epld |          25
module-4#
```

Related Commands

Command	Description
show arp	Displays Address Resolution Protocol (ARP) entries.

clear callhome session

To clear Call Home Cisco Fabric Services (CFS) session configuration and locks, use the clear callhome session command.

```
clear callhome session
```

Syntax Description This command has no other arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to clear the Call Home session configuration and locks:

```
switch# clear callhome session
```

Related Commands	Command	Description
	show callhome	Displays Call Home information.

clear cdp

To delete global or interface-specific CDP configurations, use the clear cdp command.

```
clear cdp counters | table [interface gigabitethernet slot/port | mgmt 0]
```

Syntax Description		
counters		Enables CDP on globally or on a per-interface basis.
table		Specifies the EXEC command to be executed.
interface		(Optional) Displays CDP parameters for an interface.
gigabitethernet		Specifies the Gigabit Ethernet interface.
slot/port		Specifies the slot number and port number separated by a slash (/).
mgmt 0		Specifies the Ethernet management interface.

Command Default None

Command Modes Configuration mode

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines You can use this command for a specified interface or for all interfaces (management and Gigabit Ethernet interfaces).

Examples The following example clears CDP traffic counters for all interfaces:

```
switch# clear cdp counters
switch#
```

The following example clears CDP entries for the specified Gigabit Ethernet interface:

```
switch# clear cdp table interface gigabitethernet 4/1
switch#
```

Related Commands	Command	Description
	cdp	Configures global or interface-specific CDP settings and parameters.
	show cdp	Displays configured CDP settings and parameters.

clear cores

To clear all core dumps for the switch, use the clear cores command in EXEC mode.

```
clear cores
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines The system software keeps the last few cores per service and per slot and clears all other cores present on the active supervisor module.

Examples The following example shows how to clear all core dumps for the switch:

```
switch# clear cores
```

Related Commands	Command	Description
	show cores	Displays core dumps that have been made.

clear counters (EXEC mode)

To clear the interface counters, use the clear counters command in EXEC mode.

```
clear counters all | interface fc | mgmt | port-channel | sup-fc | vsan number
```

Syntax Description

all	Clears all interface counters.
interface	Clears interface counters for the specified interface.
number	The number of the slot or interface being cleared.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

The following table lists the number ranges interface types:

Keyword	Interface Type	Number
fc	Fibre Channel	1– 2 or 1– 9 (slot)
gigabitethernet	Gigabit Ethernet	1– 2 or 1– 9 (slot)
mgmt	Management	0–0 (management interface)
port-channel	PortChannel	1–128 (PortChannel)
sup-fc	Inband	0–0 (Inband interface)
vsan	VSAN	1– 4093 (VSAN ID)

This command clears counters displayed in the show interface command output.

Examples

The following example shows how to clear counters for a VSAN interface:

```
switch# clear counters interface vsan 13
```

Related Commands

Command	Description
show interface	Displays interface information.

clear counters (SAN extension N port configuration mode)

To clear SAN extension tuner N port counters, use the clear counters command.

```
clear counters
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes SAN extension N port configuration submode

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to clear SAN extension tuner N port counters:

```
switch# san-ext-tuner
switch(san-ext)# nwwn 10:00:00:00:00:00:00
switch(san-ext)# nport pwwn 12:00:00:00:00:00:00:56 vsan 13 interface gigabitethernet 1/2
switch(san-ext-nport)# clear counters
```

Related Commands	Command	Description
	show san-ext-tuner	Displays SAN extension tuner information.

clear counters interface

To clear the aggregate counters for the interface, use the clear counters interface command.

```
clear counters interface interface snmp
```

Syntax Description	Parameter	Description
	interface	Specifies the interface.
	snmp	Clears SNMP interface counters.

Command Default None

Command Modes Configuration mode

Command History	Release	Modification
	6.2(1)	Added the snmp option to the syntax description.

Usage Guidelines This command clears counter displayed in the show interface command output.

Examples The following example shows how to clear the aggregate counters for the interface:

```
switch(config)# clear counters interface e2/1 snmp
switch(config)#
```

Related Commands	Command	Description
	show interface	Displays interface information.

clear counters interface all

To clear all interface counters, use the clear counters interface all command.

```
clear counters interface all snmp
```

Syntax Description

snmp	Clears SNMP interface counters.
------	---------------------------------

Command Default

None

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	Added the snmp option to the syntax description.

Usage Guidelines

This command clears counter displayed in the show interface command output.

Examples

The following example shows how to clear all SNMP interface counters:

```
switch(config)# clear counters interface all snmp
switch(config)#
```

Related Commands

Command	Description
show interface	Displays interface information.

clear crypto ike domain ipsec sa

To clear the IKE tunnels for IPsec, use the clear crypto ike domain ipsec sa command.

```
clear crypto ike domain ipsec sa [tunnel-id]
```

Syntax Description

tunnel-id	(Optional) The tunnel ID. The range is 1 to 2147483647.
-----------	---

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, the IKE protocol must be enabled using the crypto ike enable command.

If the tunnel ID is not specified, all IKE tunnels are cleared.



Note

The crypto ikes feature is not supported on the Cisco MDS 9148 and Cisco MDS 9148S, and Cisco MDS 9396S Switches.

Examples

The following example shows how to clear all IKE tunnels:

```
switch# clear crypto ike domain ipsec sa
```

Related Commands

Command	Description
crypto ike domain ipsec	Configures IKE information.
crypto ike enable	Enables the IKE protocol.
show crypto ike domain ipsec	Displays IKE information for the IPsec domain.

clear crypto sa domain ipsec

To clear the security associations for IPsec, use the clear crypto sa domain ipsec command.

```
clear crypto sa domain ipsec interface gigabitethernet slot / port inbound|outbound sa sa-index
```

Syntax Description		
interface gigabitethernet slot/port		Specifies the Gigabit Ethernet interface.
inbound		Specifies clearing inbound associations.
outbound		Specifies clearing output associations.
sa sa-index		Specifies the security association index. The range is 1 to 2147483647.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To clear security associations, IPsec must be enabled using the crypto ipsec enable command. After clearing the security associations for IPsec, ensure that you wait for at least 10 seconds before you run the system switchover command.

Examples The following example shows how to clear a security association for an interface:

```
switch# clear crypto sa domain ipsec interface gigabitethernet 1/2 inbound sa 1
```

Related Commands	Command	Description
	show crypto sad domain ipsec	Displays IPsec security association database information.

clear debug-logfile

To delete the debug log file, use the clear debug-logfile command in EXEC mode.

```
clear debug-logfile filename
```

Syntax Description

filename	The name (restricted to 80 characters) of the log file to be cleared. The maximum size of the log file is 1024 bytes.
----------	---

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Examples

The following example shows how to clear the debug logfile:

```
switch# clear debug-logfile debuglog
```

Related Commands

Command	Description
show debug logfile	Displays the log file contents.

clear device-alias

To clear device alias information, use the clear device-alias command.

```
clear device-alias database | session | statistics
```

Syntax Description

database	Clears the device alias database.
session	Clears session information.
statistics	Clears device alias statistics.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to clear the device alias session:

```
switch# clear device-alias session
```

Related Commands

Command	Description
show device-alias	Displays device alias database information.

clear dpvm

To clear Dynamic Port VSAN Membership (DPVM) information, use the clear dpvm command.

```
clear dpvm auto-learn [pwwn pwwn-id] | session
```

Syntax Description		
auto-learn		Clears automatically learned (autolearn) DPVM entries.
pwwn pwwn-id		(Optional) Specifies the pWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
session		Clears the DPVM session and locks.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, DPVM must be enabled using the dpvm enable command.

Examples

The following example shows how to clear a single autolearned entry:

```
switch# clear dpvm auto-learn pwwn 21:00:00:20:37:9c:48:e5
```

The following example shows how to clear all autolearn entries:

```
switch# clear dpvm auto-learn
```

The following example shows how to clear a session:

```
switch# clear dpvm session
```

Related Commands	Command	Description
	dpvm enable	Enables DPVM.
	show dpvm	Displays DPVM database information.

clear dpvm merge statistics

To clear the DPVM merge statistics, use the clear dpvm merge statistics command.

```
clear dpvm merge statistics
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes Configuration mode

Command History	Release	Modification
	NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to clear the DPVM merge statistics:

```
switch#(config)# clear dpvm merge statistics
switch#(config)#
```

Related Commands	Command	Description
	show dpvm merge statistics	Displays the DPVM merge statistics.

clear fabric-binding statistics

To clear fabric binding statistics in a FICON enabled VSAN, use the clear fabric-binding statistics command in EXEC mode.

```
clear fabric-binding statistics vsan vsan-id
```

Syntax Description	vsan vsan-id	Specifies the FICON-enabled VSAN. The ID of the VSAN is from 1 to 4093.
---------------------------	--------------	---

Command Default	None
------------------------	------

Command Modes	EXEC mode
----------------------	-----------

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines	None
-------------------------	------

Examples The following example clears existing fabric binding statistics in VSAN 1:

```
switch# clear
fabric-binding statistics vsan 1
```

Related Commands	Command	Description
	show fabric-binding efmd statistics	Displays existing fabric binding statistics information.

clear fcanalyzer

To clear the entire list of configured hosts for remote capture, use the clear fcanalyzer command in EXEC mode.

```
clear fcanalyzer
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines This command clears only the list of configured hosts. Existing connections are not terminated.

Examples The following example shows how to clear the entire list of configured hosts for remote capture:

```
switch# clear fcanalyzer
```

Related Commands	Command	Description
	show fcanalyzer	Displays the list of hosts configured for a remote capture.

clear fcflow stats

To clear Fibre Channel flow statistics, use the clear fcflow stats command in EXEC mode.

```
clear fcflow stats [aggregated] module module-number index flow-number
```

Syntax Description

aggregated	(Optional) Clears the Fibre Channel flow aggregated statistics.
module	Clears the statistics for a specified module.
module-number	Specifies the module number.
index	Clears the Fibre Channel flow counters for a specified flow index.
flow-number	Specifies the flow index number.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
1.0(2)	This command was introduced.

Examples

The following example shows how to clear aggregated Fibre Channel flow statistics for flow index 1 of module 2:

```
switch(config)# clear fcflow stats aggregated module 2 index 1
```

Related Commands

Command	Description
show fcflow	Displays the fcflow statistics.

clear fcns statistics

To clear the name server statistics, use the clear fcns statistics command in EXEC mode.

```
clear fcns statistics vsan vsan-id
```

Syntax Description

vsan vsan-id	Clears FCS statistics for a specified VSAN ranging from 1 to 4093.
-----------------	--

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
1.0(3)	This command was introduced.

Examples

The following example shows how to clear the name server statistics:

```
switch# show fcns statistics
Name server statistics for vsan 1
=====
registration requests received = 0
deregistration requests received = 0
queries received = 23
queries sent = 27
reject responses sent = 23
RSCNs received = 0
RSCNs sent = 0
switch# clear fcns statistics vsan 1
switch# show fcns statistics
Name server statistics for vsan 1
=====
registration requests received = 0
deregistration requests received = 0
queries received = 0
queries sent = 0
reject responses sent = 0
RSCNs received = 0
RSCNs sent = 0
switch#
```

Related Commands

Command	Description
show fcns statistics	Displays the name server statistics.

clear fc-redirect config

To delete a FC-Redirect configuration on a switch, use the clear fc-redirect config command.

```
clear fc-redirect config vt vt-pwwn [local-switch-only]
```

Syntax Description

vt vt-pwwn	Specify the VT pWWN for the configuration to be deleted.
local-switch-only	(Optional) The configuration is deleted locally only.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
3.2(1)	This command was introduced.

Usage Guidelines

This command is used as a last option if deleting the configuration through the application is not possible.

This command will delete any configuration (including active configurations) on FC-Redirect created by applications such as SME/DMM that may lead to data loss. When you enter this command, the host server communicates to the storage array directly by passing the individual Intelligent Service Applications causing data corruption. Use this command as a last option to clear any leftover configuration that cannot be deleted from the application (DMM/SME). Use this command while decommissioning the switch.

Examples

The following example clears the FC-Redirect configuration on the switch:

```
switch# clear fc-redirect config vt 2f:ea:00:05:30:00:71:64
Deleting a configuration MAY result in DATA CORRUPTION.
Do you want to continue? (y/n) [n] y
```

Related Commands

Command	Description
show fc-redirect active-configs	Displays all active configurations on the switch.

clear fc-redirect decommission-switch

To remove all existing FC-Redirect configurations and disable any further FC-Redirect configurations on a switch, use the clear fc-redirect decommission-switch command.

```
clear fc-redirect decommission-switch
```

Syntax Description This command has no other arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines This command is used after write erase. The command is also used to move a switch from a fabric with FC-Redirect configurations to another fabric. After using this command, disconnect the switch from the fabric and reboot the switch before using it in another fabric.

Examples The following example shows how to decommission FC-Redirect on a switch:

```
switch# clear fc-redirect decommission-switch
This Command removes any FC-Redirect configuration and disables
FC-Redirect on this switch. Its usage is generally recommended in
the following cases:
  1) After 'write erase'
  2) When removing the switch from the fabric.
If NOT for the above, Decommissioning a switch MAY result in
DATA CORRUPTION.

Do you want to continue? (Yes/No) [No] Yes

Please check the following before proceeding further:
  1) Hosts / targets connected locally are NOT involved in any
    FC-Redirect configuration.
  2) No application running on this switch created an FC-Redirect
    Configuration
Please use the command 'show fc-redirect active-configs' to check
these.

Do you want to continue? (Yes/No) [No] Yes
switch#
```

Related Commands	Command	Description
	show fc-redirect active-configs	Displays all active configurations on a switch.

clear fcs statistics

To clear the fabric configuration server statistics, use the clear fcs statistics command in EXEC mode.

```
clear fcs statistics vsan vsan-id
```

Syntax Description

vsan vsan-id	FCS statistics are to be cleared for a specified VSAN ranging from 1 to 4093.
-----------------	---

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Examples

The following example shows how to clear the fabric configuration server statistics for VSAN 10:

```
switch# clear fcs statistics vsan 10
```

Related Commands

Command	Description
show fcs statistics	Displays the fabric configuration server statistics information.

clear fctimer session

To clear fctimer Cisco Fabric Services (CFS) session configuration and locks, use the clear fctimer session command.

```
clear fctimer session
```

Syntax Description This command has no other arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to clear fctimer session:

```
switch# clear fctimer session
```

Related Commands	Command	Description
	show fctimer	Displays fctimer information.

clear ficon

Use the clear ficon command in EXEC mode to clear the FICON information for the specified VSAN.

```
clear ficon vsan vsan-id [allegiance | timestamp]
```

Syntax Description	
vsan vsan-id	Specifies the FICON-enabled VSAN. The ID of the VSAN is from 1 to 4093.
allegiance	(Optional) Clears the FICON device allegiance.
timestamp	(Optional) Clears the FICON VSAN specific timestamp.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines The clear ficon vsan vsan-id allegiance command terminates the currently executing session.

Examples The following example clears the current device allegiance for VSAN 1:

```
switch# clear ficon vsan 1 allegiance
```

The following example clears the VSAN clock for VSAN 20:

```
switch# clear ficon vsan 20 timestamp
```

Related Commands	Command	Description
	show ficon	Displays configured FICON details.

clear fspf counters

To clear the Fabric Shortest Path First statistics, use the `clear fspf counters` command in EXEC mode.

```
clear fspf counters vsan vsan-id [interface type]
```

Syntax Description

vsan	Indicates that the counters are to be cleared for a VSAN.
vsan-id	The ID of the VSAN is from 1 to 4093.
interface type	(Optional). The counters are to be cleared for an interface. The interface types are fc for Fibre Channel, and port-channel for PortChannel.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

If the interface is not specified, then all of the counters of a VSAN are cleared. If the interface is specified, then the counters of the specific interface are cleared.

Examples

The following example clears the FSPF t statistics on VSAN 1:

```
switch# clear fspf counters vsan 1
```

The following example clears FSPF statistics specific to the Fibre Channel interface in VSAN 1, Slot 9 Port 32:

```
switch# clear fspf counters vsan 1 interface fc 9/32
```

Related Commands

Command	Description
show fspf	Displays global FSPF information for a specific VSAN.

clear install failure-reason

To remove the upgrade failure reason log created during in-service software upgrades (ISSUs) on the Cisco MDS 9124 Fabric Switch, use the clear install failure-reason command.



Caution If you remove the upgrade failure reason log, then you will not have any information to help you debug in the event of an ISSU failure.

```
clear install failure-reason
```

Syntax Description This command has no other arguments or keywords.

Command Default None

Command Modes
EXEC mode

Command History	Release	Modification
	3.1(1)	This command was introduced.

Usage Guidelines This command is supported only on the Cisco MDS 9124 Fabric Switch.

Examples The following example removes all upgrade failure reason logs on a Cisco MDS 9124 Fabric Switch:

```
switch# clear install failure-reason
```

Related Commands	Command	Description
	show install all failure-reason	Displays the reasons why an upgrade cannot proceed in the event of an ISSU failure.
	show install all status	Displays the status of an ISSU on a Cisco MDS 9124 Fabric Switch.

clear ip access-list counters

To clear IP access list counters, use the clear ip access-list counters command in EXEC mode.

```
clear ip access-list counters list-name
```

Syntax Description

list-name	Specifies the IP access list name (maximum 64 characters).
-----------	--

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
1.1(1)	This command was introduced.

Examples

The following example clears the counters for an IP access list:

```
switch# clear ip access-list counters adminlist
```

Related Commands

Command	Description
show ip access-list	Displays IP access list information.

clear ips arp

To clear ARP caches, use the clear ips arp command in EXEC mode.

```
clear ips arp address ip-address | interface gigabitethernet module-number
```

Syntax Description		
address		Clears fcfow aggregated statistics.
ip-address		Enters the peer IP address.
interface gigabitethernet		Specifies the Gigabit Ethernet interface.
module-number		Specifies the slot and port of the Gigabit Ethernet interface.

Command Default None

Command Modes EXEC

Command History	Release	Modification
	1.1(1)	This command was introduced.

Examples

The ARP cache can be cleared in two ways: clearing just one entry or clearing all entries in the ARP cache.

The following example clears one ARP cache entry:

```
switch# clear ips arp address 10.2.2.2 interface gigabitethernet 8/7
arp clear successful
```

The following example clears all ARP cache entries:

```
switch# clear ips arp interface gigabitethernet 8/7
arp clear successful
```

clear ips stats

To clear IP storage statistics, use the clear ips stats command in EXEC mode.

```
clear ips stats all [interface gigabitethernet slot/port] | buffer interface gigabitethernet slot/port |
dma-bridge interface gigabitethernet slot/port | icmp interface gigabitethernet slot/port | ip interface
gigabitethernet slot/port | ipv6 traffic interface gigabitethernet slot/port | mac interface gigabitethernet
slot/port | tcp interface gigabitethernet slot/port
```

Syntax Description

all	Clears all IPS statistics.
interface gigabitethernet	(Optional) Clears the Gigabit Ethernet interface.
slot/port	Specifies the slot and port numbers.
buffer	Clears IP storage buffer information.
dma-bridge	Clears direct memory access (DMA) statistics.
icmp	Clears ICMP statistics.
ip	Clears IP statistics.
ipv6	Clears IPv6 statistics.
mac	Clears Ethernet MAC statistics.
tcp	Clears TCP statistics.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
3.0(1)	This command was introduced.

Examples

The following example clears all IPS statistics on the specified interface:

```
switch# clear ips all interface gigabitethernet 8/7
switch#
```


clear ips stats fabric interface

To clear the statistics for a given iSCSI or FCIP interface on a Cisco MDS 9000 18/4-Port Multi Service Module IPS linecard, use the clear ips stats fabric interface command.

```
clear ips stats fabric interface [iscsi slot/port | fcip N]
```

Syntax Description

iscsi slot/port	(Optional) Clears Data Path Processor (DPP) fabric statistics for the iSCSI interface.
fcip N	(Optional) Clears DPP fabric statistics for the FCIP interface.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
3.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example clears the statistics for a given iSCSI or FCIP interface:

```
switch# clear ips stats fabric interface fcip ?
<1-255>  Fcip interface number
switch# clear ips stats fabric interface fcip 1
switch#
switch# clear ips stats fabric interface iscsi 1/1
switch#
```

Related Commands

Command	Description
show ips stats fabric interface	Displays the fabric-related statistics for the given iSCSI or FCIP interface on a Cisco MDS 9000 18/4-Port Multi Service Module IPS linecard.

clear ipv6 access-list

To clear IPv6 access control list statistics, use the clear ipv6 access-list command.

```
clear ipv6 access-list [list-name]
```

Syntax Description	
access-list	Displays a summary of access control lists (ACLs).
list-name	(Optional) Specifies the name of the ACL. The maximum size is 64.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	3.1(0)	This command was introduced.

Usage Guidelines You can use the clear ipv6 access-list command to clear IPv6-ACL statistics.

Examples The following example displays information about an IPv6-ACL:

```
switch# clear ipv6 access-list testlist
switch#
```

Related Commands	Command	Description
	ipv6 access-list	Configures an IPv6-ACL.
	show ipv6	Displays IPv6 configuration information.

clear ipv6 neighbors

To clear the IPv6 neighbor cache table, use the clear ipv6 neighbors command.

```
clear ipv6 neighbors
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	3.1(0)	This command was introduced.

Usage Guidelines None.

Examples The following example flushes the IPv6 neighbor cache table:

```
switch# clear ipv6 neighbors
switch#
```

Related Commands	Command	Description
	ipv6 nd	Configures IPv6 neighbor discovery commands.
	show ipv6 neighbors	Displays IPv6 neighbors configuration information.

clear islb session

To clear a pending iSLB configuration, use the clear islb session command.

```
clear islb session
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines You can use the clear islb session command to clear a pending iSLB configuration. This command can be executed from any switch by a user with admin privileges.

Examples The following example clears a pending iSLB configuration:

```
switch# clear
      islb session
```

Related Commands	Command	Description
	islb abort	Discards a pending iSLB configuration.
	show islb cfs-session status	Displays iSLB session details.
	show islb pending	Displays an iSLB pending configuration.
	show islb pending-diff	Displays iSLB pending configuration differences.
	show islb session	Displays iSLB session information.
	show islb status	Displays iSLB CFS status.
	show islb vrrp	Displays iSBL VRRP load balancing information.

clear ivr fcdomain database

To clear the IVR fcdomain database, use the clear ivr fcdomain database command in EXEC mode.

```
clear ivr fcdomain database
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	2.1(2)	This command was introduced.

Usage Guidelines None

Examples The following example clears all IVR fcdomain database information:

```
switch# clear ivr fcdomain database
```

Related Commands	Command	Description
	show ivr fcdomain database	Displays IVR fcdomain database entry information.

clear ivr service-group database

To clear an inter-VSAN routing (IVR) service group database, use the `clear ivr service-group database` command.

```
clear ivr service-group database
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None

Examples The following example clears the ivr service-group database:

```
switch# clear ivr service-group database
```

Related Commands	Command	Description
	show ivr service-group database	Displays an IVR service group database.

clear ivr zone database

To clear the Inter-VSAN Routing (IVR) zone database, use the `clear ivr zone database` command in EXEC mode.

```
clear ivr zone database
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC

Command History	Release	Modification
	1.3(1)	This command was introduced.

Examples

The following example clears all configured IVR information:

```
switch# clear ivr zone database
```

clear license

To uninstall a license, use the clear license command in EXEC mode.

```
clear license filename
```

Syntax Description	filename	Specifies the license file to be uninstalled.
---------------------------	----------	---

Command Default	None
------------------------	------

Command Modes	EXEC
----------------------	------

Command History	Release	Modification
	1.3(2)	This command was introduced.

Examples

The following example clears a specific license:

```
switch# clear license Ficon.lic
Clearing license Ficon.lic:
SERVER this_host ANY
VENDOR cisco
# An example fports license
INCREMENT SAN_EXTN_OVER_IP cisco 1.000 permanent 1 HOSTID=VDH=ABCD \
    NOTICE=<LicFileID>san_extn2.lic</LicFileID><LicLineID>1</LicLineID> \
    SIGN=67CB2A8CCAC2

Do you want to continue? (y/n) y
Clearing license ..done
switch#
```

Related Commands	Command	Description
	show license	Displays license information.

clear line

To clear VTY sessions, use the clear line command in EXEC mode.

```
clear line vty-name
```

Syntax Description

vty-name	Specifies the VTY name (maximum 64 characters).
----------	---

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
1.2(1)	This command was introduced.

Examples

The following example clears one ARP cache entry:

```
switch# clear line Aux  
arp clear successful
```

Related Commands

Command	Description
show line	Displays line information.

clear logging

To delete the syslog information, use the clear logging command in EXEC mode.

```
clear logging dropcount | logfile | nvramp | onboard information [ module slot ] | session
```

Syntax Description

logfile	Clears log file messages.
nvramp	Clears NVRAM logs.
onboard information	Clears onboard failure logging (OBFL) information. The types of information include boot-uptime, cpu-hog, device-version, endtime, environmental-history, error-stats, exception-log, interrupt-stats, mem-leak, miscellaneous-error, module, obfl-history, obfl-log, rxwait, register-log, stack-trace, starttime, status, system-health, txwait, and so on.
module slot	(Optional) Clears OBFL information for a specified module.
session	Clears a logging session.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
9.2(1)	The TxWait OBFL file size was increased from 512 KB to 8 MB.
3.0(1)	Added the onboard, module and session options.
1.0(2)	This command was introduced.

Usage Guidelines

From Cisco MDS NX-OS Release 9.2(1), the TxWait OBFL file size was increased from 512 KB to 8 MB.

If you are upgrading to Cisco MDS NX-OS Release 9.2(1) or later releases, ensure that you use the clear logging onboard txwait command after upgrading. Otherwise, the file will be automatically deleted and recreated at the new file size when the file size exceeds 512 KB.

If you are downgrading from Cisco MDS NX-OS Release 9.2(1) or later releases and the file size is more than 512 KB, you will be prompted with a message to use the clear logging onboard txwait command to delete the file after downgrading.

If you are downgrading from Cisco MDS NX-OS Release 9.2(1) or later releases and the file size is less than 512 KB, the file is automatically deleted and recreated at the 512 KB file size after downgrading.

Therefore, we recommend that you use the clear logging onboard txwait command immediately in the following two instances:

- After upgrading from any release prior to Cisco MDS NX-OS Release 9.2(1) to Release 9.2(1) or later

- After downgrading from Cisco MDS NX-OS Release 9.2(1) or later to any release prior to Cisco MDS NX-OS Release 9.2(1)

Examples

The following example shows how to clear the debug log file:

```
switch# clear logging logfile
```

The following example shows how to clear the onboard system health log file:

```
switch# clear logging onboard system-health
!!!WARNING! This will clear the selected logging buffer!!
Do you want to continue? (y/n) [n]
```

Related Commands

Command	Description
show logging	Displays logging information.

clear ntp

To clear Network Time Protocol (NTP) information, use the `clear ntp` command in EXEC mode.

```
clear ntp session | statistics all-peers | io | local | memory
```

Syntax Description

session	Clears NTP CFS session configuration and locks.
statistics	Clears NTP statistics.
all-peers	Clears I/O statistics for all peers.
io	Clears I/O statistics for I/O devices.
local	Clears I/O statistics for local devices.
memory	Clears I/O statistics for memory.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to clear NTP statistics for all peers:

```
switch# clear ntp statistics all-peers
```

The following example shows how to clear NTP statistics for I/O devices:

```
switch# clear ntp statistics io
```

The following example shows how to clear NTP statistics for local devices:

```
switch# clear ntp statistics local
```

The following example shows how to clear NTP statistics for memory:

```
switch# clear ntp statistics memory
```

Related Commands

Command	Description
show ntp	Displays the configured server and peer associations.

clear port-security

To clear the port security information on the switch, use the clear port-security command in EXEC mode.

Syntax Description	Option	Description
	database	Clears the port security active configuration database.
	auto-learn	Clears the auto-learn entries for a specified interface or VSAN.
	interface fc slot/port	Clears entries for a specified interface.
	port-channel port	Clears entries for a specified PortChannel. The range is 1 to 128.
	session	Clears the port security CFS configuration session and locks.
	statistics	Clears the port security counters.
	vsan vsan-id	Clears entries for a specified VSAN ID. The range is 1 to 4093.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	1.2(1)	This command was introduced.
	2.0(x)	Added the session option.

Usage Guidelines The active database is read-only and clear port-security database command can be used when resolving conflicts.

Examples The following example clears all existing statistics from the port security database for a specified VSAN:

```
switch# clear port-security statistics vsan 1
```

The following example clears learnt entries in the active database for a specified interface within a VSAN:

```
switch# clear port-security database auto-learn interface fc1/1 vsan 1
```

The following example clears learnt entries in the active database up to for the entire VSAN:

```
switch# clear port-security database auto-learn vsan 1
```

Related Commands	Command	Description
	show port-security	Displays the configured port security information.

clear processes log

To clear the log files on the switch, use the clear processes log command in EXEC mode.

```
clear processes log all | pid pid-number
```

Syntax Description		
	all	Deletes all of the log files.
	pid	Deletes the log files of a specific process.
	pid-number	Specifies the process ID, which must be from 0 to 2147483647.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to clear all of the log files on the switch :

```
switch# clear processes log all
```

Related Commands	Command	Description
	show processes	Displays the detailed running or log information of processes or high availability applications.

clear qos statistics

To clear the quality of services statistics counters, use the clear qos statistics command in EXEC mode.

```
clear qos statistics
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to clear the quality of service counters:

```
switch# clear qos statistics
```

Related Commands	Command	Description
	show qos statistics	Displays the current QoS settings, along with a number of frames marked high priority.

clear radius-server statistics

To clear radius server statistics, use the clear radius-server statistics command.

```
clear radius-server statistics name
```

Syntax Description	name	Specifies the RADIUS name or IP address.
---------------------------	------	--

Command Default	None
------------------------	------

Command Modes	Configuration mode
----------------------	--------------------

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines	None
-------------------------	------

Examples The following example shows how to clear the statistics sent or received from the specified server:

```
switch(config)# clear radius-server statistics 10.64.65.57
switch(config)#
```

Related Commands	Command	Description
	tacacs+ enable	Enables TACACS+.

clear radius session

To clear RADIUS Cisco Fabric Services (CFS) session configuration and locks, use the clear radius session command.

```
clear radius session
```

Syntax Description This command has no other arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to clear RADIUS session:

```
switch# clear radius session
```

Related Commands	Command	Description
	show radius	Displays RADIUS CFS distribution status and other details.

clear rlir

To clear the Registered Link Incident Report (RLIR), use the clear rlir command in EXEC mode.

```
clear rlir history | recent interface fc slot-port | portnumber port-number | statistics vsan vsan-id
```



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs as follows: interface bay port | ext port .

Syntax Description

history	Clears RLIR link incident history.
recent	Clears recent link incidents.
interface fc slot/port	Clears entries for a specified interface.
bay port | ext port	Clears entries for a specified interface on a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter.
portnumber port-number	Displays the port number for the link incidents.
statistics	Clears RLIR statistics.
vsan vsan-id	Specifies the VSAN ID for which the RLIR statistics are to be cleared.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
1.3(1)	This command was introduced.
3.1(2)	Added the interface bay | ext option.

Usage Guidelines

None.

Examples

The following example clears all existing statistics for a specified VSAN:

```
switch# clear rlir statistics vsan 1
```

The following example clears the link incident history:

```
switch# clear rlir history
```

The following example clears recent RLIR information for a specified interface:

```
switch# clear rlr recent interface fc 1/2
```

The following example clears recent RLIR information for a specified port number:

```
switch# clear rlr recent portnumber 16
```

Related Commands

Command	Description
show rscn	Displays RSCN information.

clear rmon alarms

To clear all the 32-bit remote monitoring (RMON) alarms from the running configuration, use the `clear rmon alarms` command.

```
clear rmon alarms
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines You must save the changes to startup configuration to make them permanent.

Examples The following example clears all 32-bit RMON alarms from the running configuration:

```
switch# clear rmon alarms
switch#
```

Related Commands	Command	Description
	clear rmon all-alarms	Clears all the 32-bit and 64-bit RMON alarms.
	clear rmon hcalarms	Clears all the 64-bit RMON alarms.
	clear rmon log	Clears RMON log information.

clear rmon all-alarms

To clear all the 32-bit and 64-bit RMON alarms from the running configuration, use the clear rmon all-alarms command.

```
clear rmon all-alarms
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines You must save the changes to startup configuration to make them permanent.

Examples The following example clears all the 32-bit and 64-bit RMON alarms from the running configuration:

```
switch# clear rmon all-alarms
switch#
```

Related Commands	Command	Description
	clear rmon alarms	Clears all the 32-bit RMON alarms.
	clear rmon hcalarms	Clears all the 64-bit RMON alarms.
	clear rmon log	Clears RMON log information.

clear rmon hcalarms

To clear all the 64-bit RMON alarms from the running configuration, use the `clear rmon hcalarms` command.

```
clear rmon hcalarms
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines You must save the changes to startup configuration to make them permanent.

Examples The following example clears all the 64-bit RMON alarms from the running configuration:

```
switch# clear rmon hcalarms
switch#
```

Related Commands	Command	Description
	clear rmon all-alarms	Clears all the 32-bit and 64-bit RMON alarms.
	clear rmon alarms	Clears all the 32-bit RMON alarms.
	clear rmon log	Clears RMON log information.

clear rmon log

To clear all entries from RMON log on the switch, use the clear rmon log command.

```
clear rmon log
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines None

Examples The following example clears all entries from RMON log on the switch:

```
switch# clear rmon log
switch#
```

Related Commands	Command	Description
	clear rmon alarm	Clears all the 32-bit RMON alarms.
	clear rmon hcalarms	Clears all the 64-bit RMON alarms.
	clear rmon all-alarms	Clears all the 32-bit and 64-bit RMON alarms.

clear role session

To clear authentication role Cisco Fabric Services (CFS) session configuration and locks, use the clear role session command.

```
clear role session
```

Syntax Description This command has no other arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to clear authentication role CFS session:

```
switch# clear role session
```

Related Commands	Command	Description
	show role	Displays role configuration information.

clear rscn session vsan

To clear a Registered State Change Notification (RSCN) session for a specified VSAN, use the clear rscn session vsan command.

```
clear rscn session vsan vsan-id
```

Syntax Description

vsan-id	Specifies a VSAN where the RSCN session should be cleared. The ID of the VSAN is from 1 to 4093.
---------	--

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

None

Examples

The following example clears an RSCN session on VSAN 1:

```
switch# clear rscn session vsan 1
```

Related Commands

Command	Description
rscn	Configures an RSCN.
show rscn	Displays RSCN information.

clear rscn statistics

To clear the registered state change notification RSCN statistics for a specified VSAN, use the clear rscn statistics command in EXEC mode.

```
clear rscn statistics vsan vsan-id
```

Syntax Description

vsan	The RSCN statistics are to be cleared for a VSAN.
vsan-id	The ID for the VSAN for which you want to clear RSCN statistics.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to clear RSCN statistics for VSAN 1:

```
switch# clear rscn statistics 1
```

Related Commands

Command	Description
show rscn	Displays RSCN information.

clear santap module

To clear SANTap information, use the clear santap module command.

```
clear santap module slot-number avt avt-pwwn [lun avt-lun] | itl target-pwwn host-pwwn | session
session-id
```

Syntax Description	Parameter	Description
	slot-number	Specifies the Storage Services Module (SSM) module number. The range is 1 through 13.
	avt avt-pwwn	Removes the appliance virtual target (AVT) pWWN. The format is hh:hh:hh:hh:hh:hh:hh:hh .
	lun avt-lun	(Optional) Removes the appliance virtual target (AVT) LUN. The format is 0xhhhh [:hhhh [:hhhh [:hhhh]]].
	itl target-pwwn host-pwwn	Removes the SANTap Initiator Target LUN (ITL) triplet. The format of the target-pwwn and the host-pwwn is hh:hh:hh:hh:hh:hh:hh:hh .
	session session-id	Removes a session. The range for session ID is 0 through 2147483647.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to remove a SANTap session:

```
switch# clear santap module 13 session 2020
```

Related Commands	Command	Description
	santap module	Configures the mapping between the Storage Services Module (SSM) and the VSAN where the appliance is configured.
	show santap module	Displays the configuration and statistics of the SANTap feature.

clear scheduler logfile

To clear the command scheduler logfile, use the clear scheduler logfile command.

```
clear scheduler logfile
```

Syntax Description This command has no other arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to clear the command scheduler logfile:

```
switch# clear scheduler logfile
```

Related Commands	Command	Description
	show scheduler	Displays command scheduler information.

clear screen

To clear the terminal screen, use the clear screen command in EXEC mode.

```
clear screen
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to clear the terminal screen:

```
switch# clear screen
```

clear scsi-flow statistics

To clear the SCSI flow statistics counters, use the clear scsi-flow statistics command.

```
clear scsi-flow statistics flow-id flow-id
```

Syntax Description	flow-id	Configures the SCSI flow identification number.
	flow-id	

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	2.0(2)	This command was introduced.

Usage Guidelines None

Examples

The following example shows how to clear the SCSI flow statistics counters for SCSI flow ID 3:

```
switch# clear sc
screen      scsi-flow
switch# clear scsi-flow ?
  statistics  Clear statistics counters
switch# clear scsi-flow statistics ?
  flow-id    Clear statistics for particular flow
switch# clear scsi-flow statistics flow-id ?
  <1-65535>  Enter the index of the SCSI flow
switch# clear scsi-flow statistics flow-id 3 ?
  <cr>      Carriage Return
switch# clear scsi-flow statistics flow-id 3
```

Related Commands	Command	Description
	scsi-flow flow-id	Configures the SCSI flow services.
	show scsi-flow	Displays SCSI flow configuration and status.

clear sdv

To clear specified SAN device virtualization parameters, use the clear sdv command in EXEC mode.

```
clear sdv database vsan vsan-id | session vsan vsan-id | statistics vsan vsan-id
```

Syntax Description

database	Clears the SDV database.
vsan vsan-id	Specifies the number of the VSAN. The range is 1 to 4093.
session	Clears the SDV session.
statistics	Clears the SDV statistics.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
3.1(2)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to clear SDV statistics:

```
switch# clear sdv statistics vsan 2
```

Related Commands

Command	Description
sdv enable	Enables or disables SAN device virtualization.
show sdv statistics	Displays SAN device virtualization statistics.

clear snmp hostconfig

To clear all SNMP hosts from the running configuration, use the `clear snmp hostconfig` command.

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines You must save the changes to startup configuration to make them permanent:

Examples The following example clears the SNMP host list.

```
switch# clear snmp hostconfig
switch#
```

Related Commands	Command	Description
	show snmp host	Displays the SNMP status and setting information.

clear ssh hosts

To clear trusted SSH hosts, use the clear ssh hosts command in EXEC mode.

```
clear ssh hosts
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	1.2(1)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to clear reset-reason information from NVRAM and volatile storage:

```
switch# clear ssh hosts
```

Related Commands	Command	Description
	show ssh hosts	Displays SSH host information.

clear ssm-nvram santap module

To clear the SANTap configuration for a specific slot stored on the supervisor flash, use the `clear ssm-nvram santap module` command in the configuration mode.

```
clear ssm-nvram santap module slot
```

Syntax Description

slot	Displays SANTap configuration for a module in the specified slot.
------	---

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
3.2(1)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to clear the SANTap configuration for a slot 2:

```
switch# clear ssm-nvram santap module 2
```

Related Commands

Command	Description
ssm enable feature	Enables the SANTap feature on the SSM.

clear system reset-reason

To clear the reset-reason information stored in NVRAM and volatile persistent storage, use the clear system reset-reason command in EXEC mode.

```
clear system reset-reason
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	1.3(2a)	This command was introduced.

Usage Guidelines Use this command as follows for these switches:

- In a Cisco MDS 9500 Series switch, this command clears the reset-reason information stored in NVRAM and volatile persistent storage in the active and standby supervisor modules.
- In a Cisco MDS 9200 Series switch, this command clears the reset-reason information stored in NVRAM and volatile persistent storage in the active supervisor module.

Examples

The following example shows how to clear trusted SSH hosts:

```
switch# clear system reset-reason
```

Related Commands	Command	Description
	show system reset-reason	Displays system reset-reason information.

clear tacacs+ session

To clear TACACS+ Cisco Fabric Services (CFS) session configuration and locks, use the `clear tacacs+ session` command.

```
clear tacacs+ session
```

Syntax Description This command has no other arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, TACACS+ must be enabled using the `tacacs+ enable` command.

Examples The following example shows how to clear the TACACS+ session:

```
switch# clear tacacs+ session
```

Related Commands	Command	Description
	show tacacs+	Displays TACACS+ CFS distribution status and other details.
	tacacs+ enable	Enables TACACS+.

clear tacacs-server statistics

To clear TACACS server statistics, use the clear tacacs-server statistics command.

```
clear tacacs-server statistics name
```

Syntax Description	name	Specifies the TACACS name or IP address.
---------------------------	------	--

Command Default	None
------------------------	------

Command Modes	EXEC mode
----------------------	-----------

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines	None
-------------------------	------

Examples The following example shows how to clear the tacacs server statistics:

```
switch(config)# clear tacacs-server statistics 10.64.65.57
switch(config)#
```

Related Commands	Command	Description
	tacacs+ enable	Enables TACACS+.

clear tlport alpa-cache

To clear the entire contents of the alpa-cache, use the clear tlport alpa-cache command in EXEC mode.

```
clear tlport alpa-cache
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	NX-OS 5.0 and later releases	This command was deprecated.
	1.3(5)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to clear a TL port ALPA cache:

```
switch# clear tlport alpa-cache
```

Related Commands	Command	Description
	show tlport alpa-cache	Displays TL port alpa-cache information.

clear user

To clear trusted SSH hosts, use the clear user command in EXEC mode.

```
clear user username
```

Syntax Description	username	Specifies the user name to clear.
---------------------------	----------	-----------------------------------

Command Default	None
------------------------	------

Command Modes	EXEC mode
----------------------	-----------

Command History	Release	Modification
	1.2(1)	This command was introduced.

Usage Guidelines	None
-------------------------	------

Examples The following example shows how to log out a specified user:

```
switch# clear user vsam
```

Related Commands	Command	Description
	show users	Displays user information.

clear vrrp

To clear all the software counters for the specified virtual router, use the clear vrrp command in EXEC mode.

```
clear vrrp statistics [ipv4 | ipv6] vr number interface gigabitethernet slot/port | mgmt 0 | port-channel
portchannel-id | vsan vsan-id
```

Syntax Description

statistics	Clears global VRRP statistics.
ipv4	(Optional) Clears IPv4 virtual router statistics.
ipv6	(Optional) Clears IPv6 virtual router statistics.
vr number	Clears specific virtual router statistics and specifies a VR number from 1 to 255.
interface	Clears an interface.
gigabitethernet slot/port	Clears a specified Gigabit Ethernet interface.
mgmt 0	Specifies the management interface.
port-channel port-channel-id	Clears a specified PortChannel interface. The ID of the PortChannel interface is from 1 to 128.
vsan vsan-id	Clears a specified VSAN. The ID of the VSAN is from 1 to 4093.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.
3.0(1)	Added the ipv4 and ipv6 arguments.

Usage Guidelines

None

Examples

The following example shows how to clear all the software counters for virtual router 7 on VSAN 2:

```
switch# clear vrrp vr 7 interface vsan2
```

Related Commands

Command	Description
show vrrp	Displays VRRP configuration information.

Command	Description
vrrp	Enables VRRP.

clear zone

To clear all configured information in the zone server for a specified VSAN, use the clear zone command in EXEC mode.

```
clear zone database | lock | statistics lun-zoning | read-only-zoning vsan vsan-id
```

Syntax Description

database	Clears zone server database information.
lock	Clears a zone server database lock.
statistics	Clears zone server statistics.
lun-zoning	Clears LUN-zoning related statistics.
read-only-zoning	Clears read-only zoning related statistics.
vsan	Clears zone information for a VSAN.
vsan-id	The ID of the VSAN is from 1 to 4093.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.
3.0(1)	Added the lock option.

Usage Guidelines

After issuing a clear zone database command, you need to explicitly issue the copy running-config startup-config to ensure that the running configuration is used when you next start the switch.

When you issue the clear zone lock command from a remote switch, only the lock on that remote switch is cleared. When you issue the clear zone lock command from the switch where the lock originated, all locks in the VSAN are cleared.



Note

The recommended method to clear a session lock on a switch where the lock originated is by issuing the no zone commit vsan command.

Examples

The following example shows how to clear all configured information in the zone server for VSAN 1:

```
switch# clear zone database vsan 1
```

Related Commands

Command	Description
show zone	Displays zone information for any configured interface.

clear zone smart-zoning

To clear the smart zoning configuration, use the clear zone smart-zoning command.

Syntax Description

fcalias name	Specifies auto-convert commands for an fcalias.
fcalias-name	Specifies the fcalias name. The maximum size is 64 characters.
vsan	Specifies the auto convert commands for a VSAN.
vsan-id	Specifies the VSAN ID. The range is from 1 to 4093.
zone name	Specifies the auto convert commands for a given zone.
zone-name	Specifies the zone name. The maximum size is 64 characters.
zoneset name	Specifies the auto convert commands for a zoneset.
zoneset-name	Specifies the zoneset name. The maximum size is 64 characters.
vsan	Specifies the VSAN.
vsan-id	Specifies the VSAN ID. The range is from 1 to 4093.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.2(6)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to clear the smart zoning command for a VSAN:

```
switch(config)# clear zone smart-zoning vsan 1
WARNING: This command will clear smart zoning configs from the specified zone/zoneset/fcalias/vsan. Do you want to continue? (y/n) [n] y
switch(config)#
```

Related Commands

Command	Description
show zone	Displays zone information for any configured interface.

cli

To execute Cisco NX-OS commands verbosely in Tcl, use the cli command.

cli arguments

Syntax Description

arguments	arguments takes the form of a single NX-OS command line to execute in a subprocess. This may include pipes and semicolon separated commands. Normal abbreviations of NX-OS keywords are allowed. Enclosing arguments in quotes (") is optional, but good style that adds clarity to code. The specified NX-OS command line must not cause any prompts for input from the user.
-----------	--

Command Default

None.

Command Modes

Interactive Tcl shell and Tcl script.

Command History

Release	Modification
NX-OS 5.1(1)	This command was introduced.

Usage Guidelines

The cli command prints the output of the specified command to the terminal and returns the output as a single string to Tcl. This would be the preferred behavior when using the interactive Tcl shell as it allows the user to verify the output of the executed NX-OS commands.

In a Tcl script, the cli or clis command is required to execute NX-OS commands.

In the Tcl shell interactive mode, the cli and clis commands are optional to execute NX-OS commands; commands that are not recognized by the Tcl shell are passed to the NX-OS shell for execution.

Examples

The following example enables the locator LED for module 1 in an interactive Tcl shell:

```
switch# tclsh
switch-tcl# cli "locator-led module 1"
switch-tcl#
```

The following example shows how to quote a variable and use the pipe in an interactive Tcl shell. It creates a list of Supervisor-3 modules in the system and assigns it to the variable sups. string trimright removes the trailing blank line from the variable added by Tcl, but not from the terminal output:

```
switch-tcl# set type "Supervisor Module-3"
Supervisor Module-3
switch-tcl# set sups [split [string trimright [cli "show module | include \"$type\""]] '\n']

5 0 Supervisor Module-3 DS-X97-SF1-K9 active *
6 0 Supervisor Module-3 DS-X97-SF1-K9 ha-standby

switch-tcl#
```

Related Commands

Command	Description
clis	Execute an NX-OS CLI command silently from Tel.
open	Open a file or command pipeline and return a channel identifier.

cli alias name

To define a command alias name, use the `cli alias name` command in configuration submode. To remove the user-defined command alias, use the `no` form of the command.

```
cli alias name command definition
no cli alias name command definition
```

Syntax Description	command	definition
	Specifies an alias command name. The maximum size is 30 characters.	
		Specifies the alias command definition. The maximum size is 80 characters.

Command Default alias command.

Command Modes Configuration submode

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines When defining a command alias follow these guidelines:

- Command aliases are global for all user sessions.
- Command aliases persist across reboots.
- Commands being aliased must be typed in full without abbreviation.
- Command alias translation always takes precedence over any keyword in any configuration mode or submode.
- Command alias support is only available on the supervisor module, not the switching modules.
- Command alias configuration takes effect for other user sessions immediately.
- You cannot override the default command alias `alias`, which is an alias for `show cli alias`.
- Nesting of command aliases is permitted to a maximum depth of 1. One command alias can refer to another command alias that refers to a valid command, not to another command alias.
- A command alias always replaces the first command keyword on the command line.
- You can define command aliases in either EXEC mode or configuration submode.

Examples

The following example shows how to define command aliases in configuration submode:

```
switch# config
t
switch(config)# cli alias name gigint interface gigabitethernet
switch(config)# cli alias name shintbr show interface brief
switch(config)# cli alias name shfcintup shintbr| include up | include fc
```

You can display the command aliases defined on the switch using the `alias default` command alias.

The following example shows how to display the command aliases defined on the switch:

```
switch(config)# alias
```

```
CLI alias commands
```

```
=====
```

```
alias          :show cli alias
shfcintup     :shintbr | include up | include fc
switch(config)# shfcintup
fc3/1         18      F      on      up          swl   F      4      --
fc3/3         1       SD     --      up          swl   SD     2      --
fc6/1         22      E      auto    up          swl   E      2      --
```

Related Commands

Command	Description
alias	Displays the default alias command for show cli alias.
show cli alias	Displays all configured aliases.

cli var name (configuration)

To define a CLI variable that persists across CLI sessions and switch reloads, use the `cli var name` command in configuration submenu. To remove the user-defined persistent CLI variable, use the `no` form of the command.

```
cli var name name value
no cli var name name value
```

Syntax Description

name	Specifies a variable name. The maximum size is 31 characters.
value	Specifies a variable value. The maximum size is 80.

Command Default

None

Command Modes

Configuration submenu

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

CLI variables can be used as follows:

- Entered directly on the command line.
- Passed to the child script and initiated using the `run-script` command. The variables defined in the parent shell are available for use in the child `run-script` command process.
- Passed as command-line arguments to the `run-script` command.
- Referenced using the syntax `$(variable)`.

CLI variables have the following limitations:

- You cannot reference a variable through another variable using nested references.

Examples

The following example creates a persistent user-defined CLI variable:

```
switch# config t
switch(config)# cli var name mgmtport mgmt 0
```

Related Commands

Command	Description
show cli variables	Displays all CLI variables (persistent, session and system).

cli var name (EXEC)

To define a CLI session variable that persists only for the duration of a CLI session, use the `cli var name` command in either EXEC mode or configuration submenu. To remove a user-defined session CLI variable, use the `no` form of the command.

```
cli var name name value
no cli var name name value
```

Syntax Description

name	Specifies a variable name. The maximum size is 31 characters.
value	Specifies a variable value. The maximum size is 80.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

CLI session variables can be used as follows:

- Entered directly on the command line.
- Passed to the child script and initiated using the `run-script` command. The variables defined in the parent shell are available for use in the child `run-script` command process.
- Passed as command-line arguments to the `run-script` command.
- Referenced using the syntax `$(variable)`.

CLI variables have the following limitation:

- You cannot reference a variable through another variable using nested references.

Examples

The following example creates a user-defined CLI variable for a session:

```
switch# cli var name testinterface 3/4
```

The following example removes a user-defined CLI variable for a session:

```
switch# cli no var name testinterface 3/4
```

Related Commands

Command	Description
cli no var name	Removes a user-defined session CLI variable.
show cli variables	Displays all CLI variables (persistent, session and system).

clis

To execute Cisco NX-OS commands silently in Tcl, use the clis command.

clis arguments

Syntax Description

arguments	arguments takes the form of a single NX-OS command line to execute in a subprocess. This may include pipes and semicolon separated commands. Normal abbreviations of NX-OS keywords are allowed. Enclosing arguments in quotes (") is optional, but good style that adds clarity to code. The specified NX-OS command line must not cause any prompts for input from the user.
-----------	--

Command Default

None.

Command Modes

Interactive Tcl shell and Tcl script.

Command History

Release	Modification
NX-OS 5.1(1)	This command was introduced.

Usage Guidelines

The clis returns the output as a single string. It does not print any output to the terminal. This is usually the desired behavior when running Tcl scripts. This prevents the terminal from getting flooded with the outputs of the executed NX-OS commands.

In a Tcl script, the cli or clis command is required to execute NX-OS commands.

In the Tcl shell interactive mode, the cli and clis commands are optional to execute NX-OS commands; commands that are not recognized by the Tcl shell are passed to the NX-OS shell for execution.

Examples

The following example shows enables the locator LED for module 1 in a Tcl script:

```
clis "locator-led module 1"
```

The following example shows how to quote a variable and use the pipe in an interactive Tcl shell. It creates a list of Supervisor-3 modules in the system and assigns it to the variable sups. string trimright removes the trailing blank line from the variable added by Tcl, but not from the terminal output:

```
switch-tcl# set type "Supervisor Module-3"
Supervisor Module-3
switch-tcl# set sups [split [string trimright [cli "show module | include \"${type}\"]] '\n']

switch-tcl#
```

Related Commands

Command	Description
cli	Execute an NX-OS CLI command in Tcl verbosely.
open	Open a file or command pipeline and return a channel identifier.

clock

To configure the time zone or daylight savings time, use the clock command in configuration mode. To disable the daylight saving time adjustment, use the no form of the command.

```
clock summer-time summer-time-name start-week start-day start-month start-time end-week end-day
end-month end-time offset-minutes | timezone timezone-name hours-offset minute-offset
no clock summer-time summer-time-name start-week start-day start-month start-time end-week
end-day end-month end-time offset-minutes | timezone timezone-name hours-offset minute-offset
```

Syntax Description

summer-time	Specifies the name of the time zone in summer.
summer-time-name	Specifies the name of the daylight savings time zone, ranging from 1 to 8 characters.
start-week end-week	Specifies the starting week and ending week, ranging from 1 (week 1) to 5 (week 5).
start-dayend-day	Specifies the starting day and ending day, ranging from 1 to 8 characters (Sunday to Saturday).
start-monthend-month	Specifies the starting month and ending month, ranging from 1 to 8 characters (January to December).
start-timeend-time	Specifies the starting time and ending time, ranging from 00:00 to 23:59.
offset-minutes	Specifies the daylight savings time offset, ranging from 1 to 1440 minutes.
timezone	Specifies the name of the time zone.
timezone-name	Specifies the name of the time zone, ranging from 1 to 8 characters.
hours-offset	Specifies the offset time in hours, ranging from 0 to 23. Include a dash before the number; for example, -23.
minutes-offset	Specifies the offset time in minutes, ranging from 0 to 59. Include a dash before the number; for example, -59.

Command Default

Coordinated Universal Time (UTC) is the same as Greenwich Mean Time (GMT).

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
3.1(1)	Added a new set of arguments for timezone.

Usage Guidelines

The appropriate daylight savings time zone name should be specified. If it is not, the default name is used.

Specify the hours-offset argument with a dash before the number; for example, -23 . Specify the minutes-offset argument with a dash before the number; for example, -59.

In the clock timezone command, ensure that the STD timezone is not set to a non-DST timezone. Similarly, ensure that the DST timezone is set in the clock summer-time command. Otherwise, the SAN telemetry receivers will be unable to correlate the analytics metric timestamps.

Examples

The following example shows how to set Pacific Daylight Time starting on Sunday in the second week of March at 2:00 A.M. and ending on Sunday in the first week of November at 2:00 A.M:

```
switch# configure terminal
switch# clock summer-time PDT 2 sunday march 02:00 1 sunday november 02:00 60
```

The following example shows how to set the time zone to Pacific Standard Time:

```
switch# configure terminal
switch(config)# clock timezone PST 0 0
```

Related Commands

Command	Description
clock set	Changes the time on the switch.
show clock	Displays the current date and time.
show run	Displays changes made to the time zone configuration along with other configuration information.

clock format

To set the clock format that is to be used in NX-OS, use the clock format command. To reset the clock format, use the no form of this command.

clock format 12-hours | 24-hours | show-timezone debug | syslog

Syntax Description

12-hours	Specifies to set the clock format to 12 hours.
24-hours	Specifies to set the clock format to 24 hours.
show-timezone debug	Specifies to display the configured timezone in debug messages.
show-timezone syslog	Specifies to display the configured timezone in syslog messages.

Command Default

Clock format is set to 24 hours.
 Timezone is included in debug messages.
 Timezone is included in syslog messages.

Command Modes

Configuration mode (config)

Command History

Release	Modification
1.1(1)	This command was introduced.

Examples

The following example displays how to set the clock format to 12 hours:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# clock format 12-hours
```

The following example displays how to reset the clock format to 24 hours:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no clock format 12-hours
```

Related Commands

Command	Description
show running-config	Displays the active configuration of the switch.

clock set

To change the system time on a Cisco MDS 9000 Family switch, use the clock set command in EXEC mode.

```
clock set H H : MM:SS DD Month YYYY
```

Syntax Description

HH:	The two-digit time in hours in military format (15 for 3 p.m.).
MM:	The two-digit time in minutes (58).
SS	The two-digit time in seconds (15).
DD	The two-digit date (12).
Month	The month in words (August).
YYYY	The four-digit year (2002).

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

Generally, if the system is synchronized by a valid outside timing mechanism, such as an NTP clock source, or if you have a switch with calendar capability, you do not need to set the system clock. Use this command if no other time sources are available. The time specified in this command is relative to the configured time zone.

The clock set command changes are saved across system resets.

Examples

The following example shows how to set the system time:

```
switch# clock set 15:58:15 12 August 2002
Mon Aug 12 15:58:00 PDT 2002
```

cloud discover

To initiate manual, on-demand cloud discovery, use the cloud discover command.

```
cloud discovery auto | fabric distribute | message icmp no cloud discovery auto | fabric distribute | message icmp
```

Syntax Description

interface	(Optional) Specifies an interface for cloud discovery.
gigabitethernet slot/port	(Optional) Specifies a Gigabit Ethernet interface.
port-channel port-channel-number	(Optional) Specifies a PortChannel interface. The range for the PortChannel number is 1 to 256.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
3.0(1)	This command was introduced.
3.2(2c)	This command was deprecated.

Usage Guidelines

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example initiates manual, on-demand cloud discovery:

```
switch# cloud discover
```

The following example initiates manual, on-demand cloud discovery on Gigabit Ethernet interface 2/2:

```
switch# cloud discover interface gigabitethernet 2/2
```

Related Commands

Command	Description
cloud discovery	Configures cloud discovery.
cloud-discovery enable	Enables discovery of cloud memberships.
show cloud discovery	Displays discovery information about the cloud.
show cloud membership	Displays information about members of the cloud.

cloud discovery

To configure cloud discovery, use the cloud discovery command in configuration mode. To remove the configuration, use the no form of the command.

```
cloud discovery auto | fabric distribute | message icmp
no cloud discovery auto | fabric distribute | message icmp
```

Syntax Description

auto	Enables auto fabric discovery.
fabric distribute	Enables cloud discovery fabric distribution.
message icmp	Configures Internet Control Message Protocol (ICMP) as the method for sending a discovery message.

Command Default

Auto.

Command Modes

Configuration mode

Command History

Release	Modification
3.0(1)	This command was introduced.
3.2(2c)	This command was deprecated.

Usage Guidelines

The iSNS server distributes cloud and membership information across all of the switches using CFS. The cloud view is the same on all of the switches in the fabric.



Note If auto discovery is disabled, interface changes result in new members becoming part of an undiscovered cloud. No new clouds are formed.



Note This command is not supported on the Cisco MDS 9124 switch.

Examples

The following example enables auto cloud discovery:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# cloud discovery auto
```

The following example enables auto cloud discovery fabric distribution:

```
switch(config)# cloud discovery fabric distribute
```

The following example disables auto cloud discovery fabric distribution:

```
switch(config)# no
cloud discovery fabric distribute
```

Related Commands

Command	Description
cloud discover	Initiates manual, on-demand cloud discovery.
cloud-discovery enable	Enables discovery of cloud memberships.
show cloud discovery	Displays cloud discovery information.
show cloud membership	Displays information about members of the cloud.

cloud-discovery enable

To enable discovery of cloud memberships, use the `cloud-discovery enable` command in configuration mode. To disable discovery of cloud memberships, use the `no` form of the command.

```
cloud-discovery enable
no cloud-discovery enable
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode

Command History	Release	Modification
	3.0(1)	This command was introduced.
	3.2(2c)	This command was deprecated.

Usage Guidelines This command is not supported on the Cisco MDS 9124 switch.

Examples The following example enables discovery of cloud memberships:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# cloud-discovery enable
```

The following example disables discovery of cloud memberships:

```
switch(config)# no
cloud-discovery enable
```

Related Commands	Command	Description
	<code>cloud discover</code>	Initiates manual, on-demand cloud discovery.
	<code>cloud discovery</code>	Configures cloud discovery.
	<code>show cloud</code>	Displays cloud discovery and membership information.

cluster

To configure a cluster feature, use the cluster command.

```
cluster enable
```

Syntax Description

enable	Enables or disables a cluster.
--------	--------------------------------

Command Default

None

Command Modes

Configuration mode

Command History

Release	Modification
3.2(2)	This command was introduced.
NX-OS 4.1(1c)	The cluster command is replaced by the feature command.

Usage Guidelines

Starting from Cisco NX-OS 4.x Release, the cluster command is replaced by the feature command.

Examples

The following example enables the Cisco SME clustering:

```
switch# config terminal
switch(config)# cluster enable
switch(config)#
```

code-page

Use the code-page command to configure the EBCDIC format. To disable the configuration or to revert to factory defaults, use the no form of the command.

```
code-page brazil | france | international-5 | italy | japan | spain-latinamerica | uk | us-canada
no code-page brazil | france | international-5 | italy | japan | spain-latinamerica | uk | us-canada
```

Syntax Description

code-page	Configures code page on a FICON-enabled VSAN
brazil	Configures the brazil EBCDIC format.
france	Configures the france EBCDIC format.
international-5	Configures the international-5 EBCDIC format.
italy	Configures the italy EBCDIC format.
japan	Configures the japan EBCDIC format.
spain-latinamerica	Configures the spain-latinamerica EBCDIC format.
uk	Configures the uk EBCDIC format.
us-canada	Configures the us-canada EBCDIC format.

Command Default

None

Command Modes

Configuration mode

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

This is an optional configuration. If you are not sure of the EBCDIC format to be used, we recommend retaining the us-canada (default) option.

Examples

The following example configures the italy EBCDIC format:

```
switch(config)# ficon vsan 2
switch(config-ficon)# code-page italy
```

The following example reverts to the factory default of using the us-canada EBCDIC format:

```
switch(config-ficon)# no code-page
```

Related Commands

Command	Description
ficon vsan vsan-id	Enables FICON on the specified VSAN.
show ficon	Displays configured FICON details.

commit

To apply the pending configuration pertaining to the Call Home configuration session in progress, use the commit command in Call Home configuration submenu.

```
commit
```

Syntax Description This command has no other arguments or keywords.

Command Default None

Command Modes Call Home configuration submenu

Command History	Release	Modification
	1.3(1)	This command was introduced.
	2.0(1b)	This command was introduced.

Usage Guidelines CFS distribution must be enabled before you can commit the Call Home configuration.

Examples The following example shows how to commit the Call Home configuration commands:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# commit
```

Related Commands	Command	Description
	callhome	Configures the Call Home function.
	callhome test	Sends a dummy test message to the configured destination(s).
	show callhome	Displays configured Call Home information.

commit (DMM job configuration submode)

To commit a DMM job, use the commit command in DMM job configuration submode. To remove the DMM job, use the no form of the command.

```
commit
no commit
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes DMM job configuration submode

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines You need to configure server HBA ports, storage ports, and job attributes before you commit the job.

Examples The following example shows how to commit a data migration job:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# dmm module 3 job 1 destroy
switch(config-dmm-job)#
```

Related Commands	Command	Description
	show dmm job	Displays job information.
	show dmm srvr-vt-login	Enables DMM.

configure terminal

To enter the configuration mode, use the configure terminal command in EXEC mode.

```
configure terminal
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None

Examples

The following example enters the configuration mode:

```
switch# configure terminal  
switch(config)#
```

The following example enters the configuration mode using an abbreviated format of the command:

```
switch# config terminal  
switch(config)#
```

congestion-isolation

To manually configure a device such that it is identified as a slow device by the port monitor, or exclude a device that is identified as a slow device by the port monitor, use the congestion-isolation command.

congestion-isolation exclude | include pwwn pwwn vsan vsan-id

Syntax Description

exclude	Excludes (manually) a device that is identified as a slow device by the port monitor.
include	Configures (manually) a device such that it is identified as a slow device by the port monitor.
pwwn	Specifies a port world wide name (pWWN).
pwwn	pWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
vsan	Specifies a virtual storage area network (VSAN).
vsan-id	VSAN ID. Range is 1 to 4093.

Command Default

The congestion isolation feature is disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
8.5(1)	This command was deprecated.
8.1(1)	This command was introduced.

Usage Guidelines



Note From Cisco MDS NX-OS Release 8.5(1), use the fpm congested-device {exclude | static} list command instead of this command.

- When you manually configure a device to be detected as a slow device by the port monitor, the device is permanently treated as a slow device until the device is removed from automatic isolation by the port monitor. All the traffic to the device, traversing the ISLs that are in Enhanced Receiver Ready (ER_RDY) flow-control mode, are routed to the low-priority VL (VL2).
- When you manually exclude a device from being detected as a slow device by the port monitor, the device is not isolated as a slow device even when the port monitor counter rising threshold is reached. The traffic to this device, traversing the ISLs that are in ER_RDY flow-control mode, are not routed to the low-priority VL (VL2).
- When you manually exclude a device from being detected as a slow device, and if the device is detected as a slow device by the port monitor, the device is again marked as a slow device by the port monitor. Also, if the exclude configuration is already used for a device marked as slow device by the port monitor, the device will no longer be detected as a slow device.

Examples

The following example shows how to manually configure a device to be marked as slow device:

```
switch# configure terminal  
switch(config)# congestion-isolation include pwnn 10:00:00:00:c9:f9:16:8d vsan 4
```

The following example shows how to manually exclude a device from automatic congestion-isolation by the port monitor:

```
switch# configure terminal  
switch(config)# congestion-isolation exclude pwnn 10:00:00:00:c9:f9:16:8d vsan 4
```

Related Commands

Command	Description
congestion-isolation remove	Prevents an interface or port channel from being detected as slow by the port monitor.
feature congestion-isolation	Enables or disables the Congestion Isolation feature.
fpm congested-device	Configures congested devices.
show congestion-isolation	Displays information about the devices that are configured for congestion-isolation.


```
from being marked as slow by PMON
switch# show congestion-isolation pmon-list
PMON detected list for vsan 1 : PWWN(FCID)
=====
PMON detected list for vsan 2 : PWWN(FCID)
=====
PMON detected list for vsan 3 : PWWN(FCID)
=====
<<<<<<<<<<<<<<<< host behind interface fc2/9 removed from isolation
PMON detected list for vsan 4 : PWWN(FCID)
=====
PMON detected list for vsan 5 : PWWN(FCID)
=====

switch# show congestion-isolation ifindex-list
=====
<<<<<<<<<<<<<< interface cleaned from the interface list
```

Related Commands

Command	Description
congestion-isolation	Configures (manually) a device as a slow device, or excludes a device that was detected as a slow device by the port monitor.
fpm congested-device	Configures congested devices.
show congestion-isolation	Displays information about the devices that are configured for congestion-isolation.

contract-id

To configure the service contract ID of the customer with the Call Home function, use the `contract-id` command in Call Home configuration submode. To disable this feature, use the `no` form of the command.

```
contract-id customer-id
no contract-id customer-id
```

Syntax Description

customer-id	Configures the service contract ID of the customer. Allows up to 64 characters for the contract number.
-------------	---

Command Default

None

Command Modes

Call Home configuration submode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the contract ID in the Call Home configuration:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# contract-id Customer1234
```

Related Commands

Command	Description
callhome	Configures the Call Home function.
callhome test	Sends a dummy test message to the configured destination(s).
show callhome	Displays configured Call Home information.

copy

To save a backup of the system software, use the copy command in EXEC mode.

```
copy source-URL destination-URL
```

Syntax Description

source-URL	The location URL or alias of the source file or directory to be copied.
destination-URL	The destination URL or alias of the copied file or directory.

The following table lists the aliases for source and destination URLs.

running-config	Specifies the configuration currently running on the switch. The system:running-config keyword represents the current running configuration file.
startup-config	Specifies the configuration used during initialization (startup). You can copy the startup configuration from NVRAM. The nvram:startup-config keyword represents the configuration file used during initialization.
bootflash:	Specifies the location for internal bootflash memory.
log:	Specifies the location for the log file system.
slot0:	Specifies the location for the CompactFlash memory or PCMCIA card.
volatile:	Specifies the location for the volatile file system.
system:	Specifies the location for system memory, which includes the running configuration.
fabric	Specifies a fabric wide startup configuration update using Cisco Fabric Services (CFS) where all the remote switches in the fabric copy their running configuration (source) file into their startup configuration (destination) file. The syntax for this command is copy running-config startup-config fabric.
tftp:	Specifies the location for a Trivial File Transfer Protocol (TFTP) network server. The syntax for this alias is tftp: [[/location]/directory]/filename .
ftp:	Specifies the location for a File Transfer Protocol (FTP) network server. The syntax for this alias is ftp: [[/location]/directory]/filename .
scp:	Specifies the location for a secure copy (scp) network server. The syntax for this alias is scp: [[/location]/directory]/filename .
sftp:	Specifies the location for a Secure Trivial File Transfer Protocol (SFTP) network server. The syntax for this alias is sftp: [[/location]/directory]/filename .
log:	Specifies the location for log files stored in the same directory.
debug:	Specifies the location for the debug files stored in the debug partition.
nvrnram:	Specifies the switch NVRAM.

core:	Specifies the location of the cores from any switching or supervisor module to an external flash (slot 0) or a TFTP server.
filename	The name of the flash file.
sup-1sup-2	The number of the supervisor module, where sup-1 is the slot 5 supervisor (active) and sup-2 is the slot 6 supervisor (standby).

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 4.2(1)	Added a note.
1.3(4)	Command modified.
2.1(1a)	Added the fabric keyword and functionality.

Usage Guidelines

This command makes the running and the backup copy of the software identical.

A file can only be copied from an active supervisor to a standby supervisor, not from standby to active.

This command does not allow 127.x.x.x IP addresses.

The copy function will not be completed if the required space is not available in the directory. First change to the required directory (for example, cd bootflash:) and verify the available space (for example, dir bootflash:).

The entire copying process may take several minutes.

Do not copy a file from an external source directly to the standby supervisor. You must copy from the external source to the active supervisor, and then copy the saved file to the standby supervisor.

You can save cores (from the active supervisor module, the standby supervisor module, or any switching module) to an external flash (slot 0) or to a TFTP server in one of two ways:

- On demand—to copy a single file based on the provided process ID.
- Periodically—to copy core files periodically as configured by the user.

You copy the logfile to a different location using the copy log:messages command.

The debug partition contains debugging files created by the software for troubleshooting purposes.

The running-config startup-config fabric parameters allow you to use CFS to force every switch in the Fibre Channel fabric to copy their running configuration (source) to their startup configuration (destination).

**Note**

If any remote switch fails to complete the copy running-config startup-config fabric process, the initiator switch also does not complete saving its startup-configuration. This means that both the remote switch and the initiator switch have failed to save their startup-configuration (the old startup-configuration reverts back). All the other switches in the network would have succeeded.

Examples

The following example saves your configuration to the startup configuration:

```
switch# copy system:running-config nvram:startup-config
```

The following example copies the file called samplefile from the slot0 directory to the mystorage directory:

```
switch# copy slot0:samplefile slot0:mystorage/samplefile
```

The following example copies a file from the current directory level:

```
switch# copy samplefile mystorage/samplefile
```

If the current directory is slot0:mydir, this command copies slot0:mydir/samplefile to slot0:mydir/mystorage/samplefile.

The following example downloads a configuration file from an external CompactFlash to the running configuration:

```
switch copy slot0:dns-config.cfg system:running-config
```

The following example saves a running configuration file to an external CompactFlash:

```
switch# copy system:running-config slot0:dns-config.cfg
```

The following example saves a startup configuration file to an external CompactFlash:

```
switch# copy system:startup-config slot0:dns-config.cfg
```

The following example uses CFS to cause all switches in the fabric to copy their running configuration (source) file to their startup configuration (destination) file:

```
switch# copy running-config startup-config fabric
[#####] 100%
switch#
```



Note If any remote switch fails to complete the copy running-config startup-config fabric process, the initiator switch also does not complete saving its startup-configuration. This means both the remote switch and the initiator switch have failed to save their startup-configuration (the old startup-configuration reverts back). All the other switches in the network would have succeeded.



Note When you copy a file to an ftp server from a Cisco Fabric Switch for IBM BladeCenter, you must enter the full path. For example: switch# copy running-config ftp://172.25.161.201/mnt/hd2/bch6-inagua-bay3_cfg1.txt, If you do not enter the full path, the command will not succeed.

The following example creates a backup copy of the binary configuration:

```
switch# copy nvram:startup-config nvram:snapshot-config
```

The following example copies an image in bootflash on the active supervisor to the bootflash on the standby supervisor:

```
switch# copy bootflash:myimage bootflash://sup-2/myimage
```

The following example creates a running configuration copy in bootflash:

```
switch# copy system:running-config bootflash:my-config
```

The following examples creates a startup configuration copy in bootflash:

```
switch# copy nvram:startup-config bootflash:my-config
```

Related Commands

Command	Description
cd	Changes the default directory or file system.
dir	Displays a list of files on a file system.
reload	Reloads the operating system.
show version	Displays the version of the running configuration file.

copy licenses

To save a backup of the installed license files, use the copy licenses command in EXEC mode.

```
copy licenses source-URL destination-URL
```

Syntax Description

source-URL	The location URL or alias of the source file or directory to be copied.
destination-URL	The destination URL or alias of the copied file or directory.

The following table lists the aliases for source and destination URLs.

bootflash:	Specifies the location for internal bootflash memory.
slot0:	Specifies the location for the CompactFlash memory or PCMCIA card.
volatile:	Specifies the location for the volatile file system.
filename	Specifies the name of the license file with a.tar extension.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
1.3(4)	This command was introduced.

Usage Guidelines

The copy function will not be completed if the required space is not available in the directory. First change to the required directory (for example, cd bootflash:) and verify the available space (for example, dir bootflash:).

We recommend backing up your license files immediately after installing them and just before issuing a write erase command.

Examples

The following example saves a file called Enterprise.tar to the bootflash: directory:

```
switch# copy licenses bootflash:/Enterprise.tar
Backing up license done
```

Related Commands

Command	Description
cd	Changes the default directory or file system.
dir	Displays a list of files on a file system.
install license	Installs a license file.

copy startup-config running-config

To copy the startup configuration to the running configuration, use the copy startup-config running-config command.

```
copy startup-config running-config
```

Command Default

None.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.5(1)	Added a warning to alert users about overwriting the running configuration with startup configuration.
1.3(4)	This command was introduced.

Examples

The following example displays how to copy the startup configuration to the running configuration:

```
switch# copy startup-config running-config
Warning: This command will overwrite the running-config with startup-config.
Do you wish to proceed anyway? (y/n) [n] y
Copy complete.
```

Related Commands

Command	Description
copy running-config startup-config	Copies the running configuration to the startup configuration.

copy ssm-nvram standby-sup

To copy the contents of the Storage Services Module (SSM) NVRAM to the standby Supervisor 2 module when migrating from a Supervisor 1 to Supervisor 2 module, use the copy ssm-nvram standby-sup command in EXEC mode.

```
copy ssm-nvram standby-sup
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines This command should only be used for migrating from a Supervisor 1 to a Supervisor 2 module. When both modules in the switch are the same, you should not use this command; use the copy command instead.

Examples The following example copies the contents of the SSM NVRAM to the standby Supervisor 2 module:

```
switch# copy ssm-nvram standby-sup
```

Related Commands	Command	Description
	copy	Saves a backup of the system software.

counter (port-group-monitor configuration mode)

To configure individual counter in a port group monitor policy to use non-default values, use the counter command. To reset the counter to its default values in a Port Group Monitor policy, use the no form of the command.

```
counter rx-performance | tx-performance poll-interval interval delta rising-threshold rising threshold
falling-threshold low threshold
no counter rx-performance | tx-performance poll-interval interval delta rising-threshold rising threshold
falling-threshold falling-threshold
```

Syntax Description

rx-performance	Configures RX performance counter.
tx-performance	Configures TX performance counter.
poll-interval	Configures poll interval for counter.
interval	Displays poll interval in seconds. The range is from 0 to 2147483647.
delta	Displays the threshold type.
rising-threshold	Configures the upper threshold value which is the percentage of the polling interval.
rising-threshold	Sets numerical upper threshold limit. The range is from 0 to 100.
falling-threshold	Configures the lower threshold value which is the percentage of the polling interval.
falling-threshold	Sets numerical falling threshold limit. The range is from 0 to 100.

Command Default

None

Command Modes

Configuration Port Group Monitor mode

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

This command is available in port-group-monitor configuration mode.

Examples

The following example shows how to configure monitoring of a specific counter within a Port Group Monitor policy:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)#port-group name pgmon
switch(config-port-group-monitor)# counter rx-performance
switch(config-port-group-monitor)# counter tx-performance
switch(config-port-group-monitor)#
```

The following example shows how to turn off the monitoring of a specific counter in the given policy:

```

switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no port-group-monitor name pgmon
switch(config-port-group-monitor)# no counter rx-performance
switch(config-port-group-monitor)# no counter tx-performance
switch(config-port-group-monitor)#show port-group-monitor
-----
Port Group Monitor : enabled
-----
Policy Name : pgmonAdmin status : Not Active
Oper status  : Not Active
Port type    : All Port Groups
-----Counter
Threshold Interval %ge Rising Threshold %ge Falling Threshold In Use-----
-----RX Performance Delta 60 80 20
YesTX Performance Delta 60 80 20
No-----

```

Related Commands

Command	Description
show port-group-monitor	Displays Port Group Monitor information.

counter (port-monitor configuration mode)

To configure individual counter in a port-monitor policy to use non-default values, use the counter command. To reset the counter to its default values in a port-monitor policy, use the no form of the command.

```
counter  credit-loss-reco | err-pkt-from-port | err-pkt-from-xbar | err-pkt-to-xbar | input-errors | invalid-crc
| invalid-words | link-loss | lr-rx | lr-tx | rx-datarate | rx-datarate-burst | sfp-rx-power-low-warn |
sfp-tx-power-low-warn | signal-loss | state-change | sync-loss | timeout-discards | tx-credit-not-available
| tx-datarate | tx-datarate-burst | tx-discards | tx-slowport-oper-delay | txwait [ warning-signal-threshold
count1 alarm-signal-threshold count2 portguard congestion-signals ] poll-interval seconds absolute |
delta rising-threshold count3 event RMON-ID [ warning-threshold count4 ] [ alerts [ obfl rmon
syslog | none ] ] [ datarate count5 ] [ falling-threshold count6 ] [ portguard DIRL | FPIN | cong-isolate
| cong-isolate-recover | errordisable | flap ]
no counter  credit-loss-reco | err-pkt-from-port | err-pkt-from-xbar | err-pkt-to-xbar | input-errors |
invalid-crc | invalid-words | link-loss | lr-rx | lr-tx | rx-datarate | rx-datarate-burst | sfp-rx-power-low-warn
| sfp-tx-power-low-warn | signal-loss | state-change | sync-loss | timeout-discards | tx-credit-not-available
| tx-datarate | tx-datarate-burst | tx-discards | tx-slowport-oper-delay | txwait [ warning-signal-threshold
count1 alarm-signal-threshold count2 portguard congestion-signals ] poll-interval seconds absolute |
delta rising-threshold count3 event RMON-ID [ warning-threshold count4 ] [ alerts [ obfl rmon
syslog | none ] ] [ datarate count5 ] [ falling-threshold count6 ] [ portguard DIRL | FPIN | cong-isolate
| cong-isolate-recover | errordisable | flap ]
```

Syntax Description

credit-loss-reco	Configures the credit loss recovery counter 1.3.6.1.4.1.9.9.289.1.2.1.1.37.
err-pkt-from-port	Configures the err-pkt-from-port counter 1.3.6.1.4.1.9.9.779.1.1.1.1.4.0.1.
err-pkt-from-xbar	Configures the err-pkt-from-xbar counter 1.3.6.1.4.1.9.9.779.1.1.1.1.4.0.2.
err-pkt-to-xbar	Configures the err-pkt-to-xbar counter 1.3.6.1.4.1.9.9.779.1.1.1.1.4.0.3.
input-errors	Configures the input errors counter.
invalid-crc	Configures the invalid-crc counter 1.3.6.1.4.1.9.9.289.1.2.1.1.6.
invalid-words	Configures the invalid-words counter 1.3.6.1.4.1.9.9.289.1.2.1.1.5.
link-loss	Configures the link failure counter 1.3.6.1.4.1.9.9.289.1.2.1.1.1.
lr-rx	Configures the number of link reset responses received by the Fibre Channel port 1.3.6.1.4.1.9.9.289.1.2.1.1.9.
lr-tx	Configures link reset responses transmitted by the Fibre Channel port 1.3.6.1.4.1.9.9.289.1.2.1.1.10.
rx-datarate	Configures the receive performance counter 1.3.6.1.2.1.31.1.1.1.6.
rx-datarate-burst	Configures the receive datarate burst counter.
sfp-rx-power-low-warn	Configures the SFP receive power low warning counter.
sfp-tx-power-low-warn	Configures the SFP transmit power low warning counter.

signal-loss	Configures the signal-loss counter 1.3.6.1.4.1.9.9.289.1.2.1.1.3.
state-change	Configures the state-change counter. 1.3.6.1.4.1.9.9.289.1.2.1.1.46.
sync-loss	Configures the sync-loss counter 1.3.6.1.4.1.9.9.289.1.2.1.1.2.
timeout-discards	Configures the timeout-discards counter 1.3.6.1.4.1.9.9.289.1.2.1.1.35.
tx-credit-not-available	Configures the transmit credit not available counter 1.3.6.1.4.1.9.9.289.1.2.1.1.38.
tx-datarate	Configures the transmit performance counter 1.3.6.1.2.1.31.1.1.1.10.
tx-datarate-burst	Configures the transmit datarate burst counter.
tx-discards	Configures the transmit discards counter 1.3.6.1.4.1.9.9.289.1.2.1.1.36.
tx-slowport-oper-delay	Configure the tx-slowport-oper-delay counter. 1.3.6.1.4.1.9.9.289.1.2.1.1.45.
txwait	Configures the txwait counter. 1.3.6.1.4.1.9.9.289.1.2.1.1.47.
warning-signal-threshold count1	Configures the warning signal threshold.
alarm-signal-threshold count2	Configures the alarm signal threshold.
portguard congestion-signals	Configures the congestion signal.
poll-interval seconds	Configures poll interval in seconds. The range is from 1 to 700000 seconds.
absolute	Absolute threshold type.
delta	Delta threshold type.
rising-threshold count3	Sets numerical upper threshold limit. The range is from 0 to 184467440737095516151.
event-id RMON-ID	Event ID. The range is from 0 to 2147483647. Note You can also configure the following RMON events: <ul style="list-style-type: none"> • Event 1: Fatal • Event 3: Error • Event 4: Warning • Event 5: Information
warning-threshold count4	Sets numerical warning threshold limit. The range is from 0 to 18446744073709551615.
alerts	Specify to configure alerts.
obfl	Sets OBFL alerts.
rmon	Sets RMON alerts.

syslog	Sets syslog alerts.
none	Clears all alerts.
datarate count5	Configures the datarate counter.
falling-threshold count6	Sets numerical lower threshold limit. The range is from 0 to 18446744073709551615.
portguard DIRL	Sets the port guard action for Dynamic Ingress Rate Limiting (DIRL).
portguard FPIN	Sets the port guard action for Fabric Performance Impact Notifications (FPIN).
portguard cong-isolate	Sets the port guard action to isolate traffic when traffic congestion is detected on a port.
portguard cong-isolate-recover	Sets the port guard action to recover traffic when traffic congestion is detected on a port.
portguard errordisable	Sets the port guard action to disable errors on a port when a given threshold criteria is met.
portguard flap	Sets the port guard action to flap a port when a give threshold criteria is met.

Command Default

None

Command Modes

Port monitor configuration mode.

Command History

Release	Modification
8.5(1)	Added the input-errors, rx-datarate-burst, sfp-rx-power-low-warn, sfp-tx-power-low-warn, tx-datarate-burst, warning-signal-threshold, alarm-signal-threshold, portguard congestion-signals, alerts, datarate, DIRL, FPIN, and cong-isolate-recover keywords.
8.1(1)	Added the cong-isolate keyword to the syntax description.
6.2(17)	Added the state-change keyword to the syntax description.
6.2(15)	Added the warning-threshold keyword to the syntax description.
6.2(13)	Added tx-slowport-count, tx-slowport-oper-delay, and txwait keywords to the syntax description.
5.2(2a)	Added err-pkt-from-port, err-pkt-from-xbar, err-pkt-to-xbar new counters to the syntax description.
4.2(1)	This command was introduced.

Usage Guidelines

The rx-datarate and tx-datarate are calculated using the inoctets and outoctets on an interface. We recommend that you use the delta threshold type for all the counters except the tx-slowport-oper-delay counter which uses absolute threshold type.

Examples

The following example shows how to configure the credit loss recovery counter within a Port Monitor policy:

```
switch# configure  
Enter configuration commands, one per line. End with CNTL/Z.  
switch(config)# port-monitor name pgmon  
switch(config-port-monitor)# counter credit-loss-reco poll-interval 60 delta rising-threshold  
5 event 4 falling-threshold 1 event 4
```

The following example shows how to configure the err-pkt-from-port counter:

```
switch# configure  
Enter configuration commands, one per line. End with CNTL/Z.  
switch(config)# port-monitor name pgmon  
switch(config-port-monitor)# counter err-pkt-from-port poll-interval 30 delta rising-threshold  
50 event 50 falling-threshold 40 event 40
```

Related Commands

Command	Description
show port-monitor	Displays port monitor information.

crlookup

To set the CRLLookup, use the crlookup command. To disable this feature, use the no form of the command.

```
crlookup attribute-name attribute-name search-filter string base-DN string
no crlookup attribute-name attribute-name search-filter string base-DN string
```

Syntax Description

attribute-name attribute-name	Specifies LDAP attribute name. The maximum size is 128 characters.
search-filter	Specifies LDAP search filter. The maximum length is 128 characters.
string	Specifies search map search filter . The maximum length is 128 characters.
base-DN	Configure base DN to be used for search operation. The Maximum length is 63 characters.
string	Specifies search map base DN name. The Maximum length is 63 characters.

Command Default

None

Command Modes

Configuration mode

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None

Examples

```
The following example shows how to set the CRLLookup:
switch(config)#ldap search-map s1
switch(config-ldap-search-map)# CRLLookup attribute-name certificate RevocationList"
search-filter"(&(objectClass=CRLDistributionPoint))" base-DN "CN=CDP,CN=Public Key
Services,CN=Services,CN=Configuration,DC=DCBU-ACS"
GROUP_NAME: map1
CRL
ATTR_NAME: map1
SEARCH_FLTR: map1
BASE_DN: DN1
Sending the SET_REQ
switch(config-ldap-search-map)#end
```

Related Commands

Command	Description
show ldap-server groups	Displays the configured LDAP server groups.

crypto ca authenticate

To associate and authenticate a certificate of the certificate authority (CA) and configure its CA certificate (or certificate chain), use the `crypto ca authenticate` command in configuration mode. The CA certificate or certificate chain is assumed to already be available in Privacy Enhanced Mail (PEM) (base-64) encoded format.

```
crypto ca authenticate trustpoint-label
```

Syntax Description	trustpoint-label	Specifies the name of the trust point. The maximum size is 64 characters.
---------------------------	------------------	---

Command Default None

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines This command authenticates the CA to the switch by obtaining the self-signed certificate of the CA that contains the public key of the CA. Because the CA signs its own certificate, you should manually authenticate the public key of the CA by contacting the CA administrator when you execute this command.

This command is required when you initially configure certificate authority support for the switch. Before you attempt CA authentication, first create the trust point using the `crypto ca trustpoint` command. The CA certificate fingerprint (the MD5 or SHA hash of the certificate) is generally published by the CA. When authenticating the CA, the certificate fingerprint is displayed. The administrator needs to compare it with the one published by the CA and accept the CA certificate only if it matches.

If the CA being authenticated is a subordinate CA (meaning that it is not self-signed), then it is certified by another CA which in turn may be certified by yet another CA and so on until there is a self-signed CA. In this case, the subordinate CA in question is said to have a CA certificate chain certifying it. The entire chain must be input during CA authentication. The maximum length that the CA certificate chain supports is ten.

The trust point CA is the certificate authority configured on the switch as the trusted CA. Any peer certificate obtained will be accepted if it is signed by a locally trusted CA or its subordinates.



Note The trust point configuration (created by the `crypto ca trustpoint` command) is persistent only if saved explicitly using the `copy running-config startup-config` command. The certificates and CRL associated to a trust point are automatically made persistent if the trust point in question was already saved in the startup configuration. Conversely, if the trust point was not saved in the startup configuration, the certificates and CRL associated to it are not made persistent automatically because they do not exist without the corresponding trust point after the switch reboots. To ensure that the configured certificates, CRLs and key pairs are made persistent, always save the running configuration to the startup configuration.

Examples

The following example authenticates a CA certificate called `admin-ca`:

```

switch# config terminal
switch(config)# crypto ca authenticate myCA
input (cut & paste) CA certificate (chain) in PEM format;
end the input with a line containing only END OF INPUT :
-----BEGIN CERTIFICATE-----
MIIC4jCCAoygAwIBAgIQBWDSiay0GZRPSRILjK0ZejanBgkqhkiG9w0BAQUFADCB
kDEGMb4GCSqGSIB3DQEJARYRYW1hbmRrZUBjaXNjby5jb20xCzAJBgNVBAYTAklO
MRIwEAYDVQQIEWwLYXJuYXRha2ExEjAQBGNVBAcTCUJhbmdbG9yZTEOMAwGA1UE
ChMFQ2l2Y28xEzARBGNVBAsTCm5ldHN0b3JhZ2UxEjAQBGNVBAMTCUFWYXJuYSBD
QTAeFw0wNTA1MDMyMjQ2MzdaFw0wNzA1MDMyMjU1MTdaMIGQMSAwHgYJKoZIhvcN
AQkBFhFhbWFuZGt1QGNpc2NvLmNvbTElMAkGA1UEBhMCSU4xEjAQBGNVBAGTCUth
cm5hdGFrYTESMBAGA1UEBxMJQmFuZ2Fsb3JlMQ4wDAYDVQQKEwVDaXNjZETMBEG
A1UECxMKbWV0c3RvcnFnZTESMBAGA1UEAxMJQXBhcm5hIENBMFwwDQYJKoZIhvcN
AQEBBQADSwAwSAJBAMW/7b3+DXJPANBsIHHzluNccNM87ypyzwuoSNZXOMpeRXXI
OzyBAGiXT2ASFuUowQ1iDM8rO/41jf8RxxvYKvysCAwEAAaOBvzCBvDALBgNVHQ8E
BAMCAcYwDwYDVR0TAQH/BAUwAwEB/zAdBgNVHQ4EFgQUJyJyRoMbrCNMRU2OyRhQ
GgsWbHEwawYDVR0fBGQwYjAuoCygKoYoaHR0cDovL3NzZS0wOC9DZXJ0RW5yb2xs
L0FwYXJuYSUyMENBLmNybdAwoC6gLIYqZmlsZTovL1xccc3NlLTA4XENlcnRfbnJv
bGxcQXBhcm5hJTlWQ0EuY3JsmBAGCSsGAQQBgjcvVAQQDAgEAMA0GCSqGSIB3DQEB
BQUAA0EAHv6UQ+8nE399Tww+KaGr0g0NIJaNgLh0AFcT0rEyuyt/WYGFzksF9Ea
NBG7E0oN66zex0EOEfG1Vs6mXp1//w==
-----END CERTIFICATE-----
END OF INPUT
Fingerprint(s): MD5 Fingerprint=65:84:9A:27:D5:71:03:33:9C:12:23:92:38:6F:78:12
Do you accept this certificate? [yes/no]:y

```

Related Commands

Command	Description
crypto ca trustpoint	Configures the trust point.
show crypto ca certificates	Displays configured trust point certificates.
show crypto ca trustpoints	Displays trust point configurations.

crypto ca crl request

To configure a new certificate revocation list (CRL) downloaded from the certificate authority (CA), use the `crypto ca crl request` command in configuration mode.

```
crypto ca crl request trustpoint-label source-file
```

Syntax Description	trustpoint-label	Specifies the name of the trust point. The maximum size is 64 characters.
	source-file	Specifies the location of the CRL in the form <code>bootflash:filename</code> . The maximum size is 512.

Command Default None

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines Cisco MDS NX-OS allows you to pre-download CRLs for the trust points and cache the CRLs in the cert store using the `crypto ca crl request` command. During the verification of a peer certificate by IPsec/IKE or SSH, the issuer CA's CRL will be consulted only if it had already been configured locally, and revocation checking is configured to use CRL. Otherwise, CRL checking is not done and a certificate is considered to be not revoked if no other revocation checking methods are configured. This mode of CRL checking is called CRL optional.

The other modes of revocation checking are called CRL best-effort and CRL mandatory. In these modes, if the CRL is not found locally, there is an attempt to fetch it automatically from the CA. These modes are not supported in MDS SAN-OS release 3.0(1).

The CRL file specified should contain the latest CRL in either Privacy Enhanced Mail (PEM) format or Distinguished Encoding Rules (DER) format.



Note The trust point configuration (created by the `crypto ca trustpoint` command) is persistent only if saved explicitly using the `copy running-config startup-config` command. The certificates and CRL associated to a trust point are automatically made persistent if the trust point in question was already saved in the startup configuration. Conversely, if the trust point was not saved in the startup configuration, the certificates and CRL associated to it are not made persistent automatically because they do not exist without the corresponding trust point after the switch reboots. To ensure that the configured certificates, CRLs and key pairs are made persistent, always save the running configuration to the startup configuration.

Examples

The following example configures a CRL for the trust point or replaces the current CRL:

```
switch# config t
switch(config)# crypto ca crl request admin-ca bootflash:admin-ca.crl
```

Related Commands

Command	Description
revocation-check	Configures trust point revocation check methods.
show crypto ca crl	Displays configured certificate revocation lists (CRL).

crypto ca enroll

To request a certificate for the switch's RSA key pair created for this trust point CA, use the `crypto ca enroll` command in configuration mode.

```
crypto ca enroll trustpoint-label
```

Syntax Description	trustpoint-label	Specifies the name of the trust point. The maximum size is 64 characters.
---------------------------	------------------	---

Command Default None

Command Modes Configuration mode

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines An MDS switch can enroll with the trust point CA to get an identity in the form of a certificate. You can enroll your switch with multiple trust points, thereby getting a separate identity certificate from each.

When enrolling with a trust point, you must specify an RSA key pair to be certified. This key pair must be generated and associated to the trust point before generating the enrollment request. The association between the trust point, key pair, and identity certificate is valid until it is explicitly removed by deleting the identity certificate first, followed by disassociating the key pair, and deleting the CA certificates (in any order), and finally deleting the trust point itself, in that order only.

Use the `crypto ca enroll` command to generate a request to obtain an identity certificate from each of your trust points corresponding to authenticated CAs. The certificate signing request (CSR) generated is per Public-Key Cryptography Standards (PKCS) #10 standard, and is displayed in PEM format. Cut and paste it and submit it to the corresponding CA through e-mail or the CA website. The CA administrator issues the certificate and makes it available to you either through the website or by sending it in e-mail. You need to import the obtained identity certificate to the corresponding trust point using the `crypto ca import trustpoint-label certificate` command.

The challenge password is not saved with the configuration. This password is required in the event that your certificate needs to be revoked, so you must remember this password.

Examples

The following example generates a certificate request for an authenticated CA:

```
switch# config t
switch(config)# crypto ca enroll myCA
Create the certificate request ..
Create a challenge password. You will need to verbally provide this
password to the CA Administrator in order to revoke your certificate.
For security reasons your password will not be saved in the configuration.
Please make a note of it.
Password:nbv123
The subject name in the certificate will be: Vegas-1.cisco.com
Include the switch serial number in the subject name? [yes/no]:no
Include an IP address in the subject name [yes/no]:yes
```

```

ip address:209.165.200.226
The certificate request will be displayed...
-----BEGIN CERTIFICATE REQUEST-----
MIIBqzCCARQCAQAwHDEaMBGGA1UEAxMRVmVnYXMtMS5jaXNjby5jb20wgZ8wDQYJ
KoZlIhvcNAQEEBQADgY0AMIGJAoGBAL8Y1UAJ2NC7jUJ1DVaSMqNigJ2kt8r14lKY
0JC6ManNy4qxk8VeMXZSiLJ4JgTzKWdxbLDkTTysnjuCXGvjb+wj0hEhv/y51T9y
P2NJJ8ornqShrvFZgC7ysN/PyMwKcgzhhVpj+rargZvHtGJ91XTq4WoVksCzXv8S
VqyH0vEvAgMBAAGGTzAVBgkqhkiG9w0BCQcxCBMGbmJ2MTIzMDYGCsqGSib3DQEJ
DjEpMCcwJQYDVR0RAQH/BBswGYIRVmVnYXMtMS5jaXNjby5jb22HBKwWH6IwDQYJ
KoZlIhvcNAQEEBQADgYEAKT60KER6Qo8nj0sDXZVHSfJZh6K6JtDz3Gkd99G1FWgt
PftrNcWUE/pw6HayfQl2T3ecgNwel2d15133YBF2bktExiI6U188nTOjg1XMjja8
8a23bNDpNsM8rklwA6hWkrVL8NUZEFJxqbjfngPNTZacJCUS6ZqKCMetbKytUx0=
-----END CERTIFICATE REQUEST-----

```

Related Commands

Command	Description
crypto ca import trustpoint-label certificate	Imports the identity certificate obtained from the CA to the trust point.
crypto key generate rsa	Generates an RSA key pair.
rsa keypair	Configures and associates the RSA key pair details to a trust point.
show crypto key mypubkey rsa	Displays all RSA public key configurations.

crypto ca export

To export the RSA key pair and the associated certificates (identity and CA) of a trust point within a Public-Key Cryptography Standards (PKCS) #12 format file to a specified location, use the `crypto ca export` command in configuration mode.

```
crypto ca export trustpoint-label pkcs12 destination-file-url pkcs12-password
```

Syntax Description	trustpoint-label	Specifies the name of the trust point. The maximum size is 64 characters.
	pkcs12 destination-file-url	Specifies a destination file in bootflash:filename format. The maximum size is 512 characters.
	pkcs12-password	Specifies the password to be used to protect the RSA private key in the exported file. The maximum size is 64 characters.

Command Default None

Command Modes Configuration mode

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines You can export the identity certificate along with the associated RSA key pair and CA certificate (or certificate chain) to a PKCS #12 format file for backup purposes. You can later import the certificate and RSA key pair to recover from a system crash on your switch.

Examples The following example shows how to export a certificate and key pair in PKCS #12 format:

```
switch# config terminal
switch(config)# crypto ca export admin-ca pkcs12 bootflash:adminid.p12 nbv123
```

Related Commands	Command	Description
	<code>crypto ca import trustpoint-label certificate</code>	Imports the identity certificate obtained from the CA to the trust point.
	<code>crypto ca import trustpoint-label pkcs12</code>	Imports the identity certificate and associated RSA key pair and CA certificate (chain) to a trust point.
	<code>crypto key generate rsa</code>	Generates an RSA key pair.
	<code>rsa keypair</code>	Configures and associates the RSA key pair details to a trust point.
	<code>show crypto key mypubkey rsa</code>	Displays any RSA public key configurations.

crypto ca import

To import the identity certificate alone in PEM format or the identity certificate and associated RSA key pair and CA certificate (or certificate chain) in Public-Key Cryptography Standards (PKCS) #12 form, use the `crypto ca import` command in configuration mode.

```
crypto ca import trustpoint-label certificate |pkcs12 source-file-url pkcs12-password
```

Syntax Description

trustpoint-label	Specifies the name of the trust point. The maximum size is 64 characters.
pkcs12 source-file-url	Specifies a source file in bootflash:filename format. The maximum size is 512 characters.
pkcs12-password	Specifies the password that was used to protect the RSA private key in the imported PKCS#12 file. The maximum size is 64 characters.

Command Default

None

Command Modes

Configuration mode

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

The first form of the command, `crypto ca import trustpoint-label certificate`, is used to import (by cut and paste means) the identity certificate obtained from the CA, corresponding to the enrollment request generated earlier in the trust point and submitted to the CA. The administrator is prompted to cut and paste the certificate.

The second form of the command, `crypto ca import trustpoint-label pkcs12 source-file-url pkcs12-password`, is used to import the complete identity information (that is, the identity certificate and associated RSA key pair and CA certificate or certificate chain) into an empty trust point. This command is useful for restoring the configuration after a system goes down.



Note

The trust point configuration (created by the `crypto ca trustpoint` command) is persistent only if saved explicitly using the `copy running-config startup-config` command. The certificates and CRL associated to a trust point are automatically made persistent if the trust point in question was already saved in the startup configuration. Conversely, if the trust point was not saved in the startup configuration, the certificates and CRL associated to it are not made persistent automatically because they do not exist without the corresponding trust point after the switch reboots. To ensure that the configured certificates, CRLs and key pairs are made persistent, always save the running configuration to the startup configuration.

Examples

The following example installs an identity certificate obtained from a CA corresponding to an enrollment request made and submitted earlier:

```
switch# config t
```

```

switch(config)# crypto ca import myCA certificate
input (cut & paste) certificate in PEM format:
-----BEGIN CERTIFICATE-----
MIIEADCCA6qgAwIBAgIKCj0OoQAAAAAAdDANBgkqhkiG9w0BAQUFADCbDEgMB4G
CSqGSIB3DQEJARYRYWlhbmrRrZUBjaXNjby5jb20xCzAJBgNVBAYTAklOMRIWEAYD
VQIQIEWlLYXJuYXRha2ExEjAQBGNVBAcTCUJhbmhG9yZTEOMAwGA1UEChMFQ21z
Y28xEzARBGNVBAsTCm5ldHN0b3JhZ2UxEjAQBGNVBAMTCUFWYXJuYSBDQTAEFw0w
NTEeXMTIwMzAyNDBaFw0wNjExMTIwMzEyNDBaMBwxGjAYBgNVBAMTEVZlZ2FzLzE2
Y21zY28uY29tMIGfMA0GCSqGSIb3DQEBAQUAA4GNADCBiQKBgQC/GNVACdjQu41C
dQ1WkKjSICdpLfK5eJSmNCQujGpzcKsZPFxjF2UoieCYE8ylncWyw5E08rJ47
glxr42/sI9IRIb/8udU/cj9jSSfKK56koa7xWYAu8rDfz8jMcNIM4W1aY/q2q4Gb
x7RifdV06uFqFZEgs17/Elash9LxLwIDAQABO4ICEzCCAg8wJQYDVR0RAQH/BBsw
GYIRVmnVYXmtMS5jaXNjby5jb22HBKwWH6IwHQYDVR0OBBYEFKCLi+2sspWEfgrR
bhWmlVyo9jngMIHMBGNVHSMegcQwgcGAFCCo8kaDG6wjTEVNjskYUBoLFmxxoYGW
pIGTMIGQMSAwHgYJKoZlIhvcNAQkBFhFhWFuZGt1QGNpc2NvLmNvbTELMakGA1UE
BhMCSU4xEjAQBGNVBAcTCUthcm5hdGFyYTESMBAGA1UEBxMJQmFuZ2Fsb3JlMQ4w
DAYDVQQKEWVdaXNjbzETMBEGA1UECXMkbnV0c3RvcmlFZTESMBAGA1UEAxMJQXBh
cm5hIENBghAFYnKJrLQZ1E9JEiWMr16MGsGA1UdHwRkMGIwLqAsocqGKgh0dHA6
Ly9zc2UtMDgVQ2VydEVucm9sbC9BcGFybmElMjBDQS5jcmwwMKAuoCyGKmZpbGU6
Ly9cXHNzZS0wOFxkZlJ0RW5yb2xsXEFwYXJuYSUyMENBLmNybDcBiGyIKwYBBQUH
AQEEfjB8MDsGCCsGAQUFBzAChi9odHRwoi8vc3NlLTA4L0NlcnRfbnJvbGwvc3Nl
LTA4X0FwYXJuYSUyMENBLmNydDA9BgrBgEFBQcwAoYxZmlsZTovL1xccc3NlLTA4
XENlcnRfbnJvbGwvc3NlLTA4X0FwYXJuYSUyMENBLmNydDANBgkqhkiG9w0BAQUF
AANBAdGBGsbE7GNLh9xeOTWBNbm24U69ZSuDdcOcUZUUTgrpnTqVpPyejtsyflw
E36cIZu4WsExREqxbTk8ycx7V5o=
-----END CERTIFICATE-----

```

The following example shows how to import a certificate and key pair in a Public-Key Cryptography Standards (PKCS) #12 format file:

```

switch# config t
witch(config)# crypto ca import admin-ca pkcs12 bootflash:adminid.p12 nbv123

```

Related Commands

Command	Description
crypto ca enroll	Generates a certificate signing request for a trust point.
crypto ca export trustpoint-label pkcs12	Exports the RSA key pair and associated certificates of a trust point.
crypto key generate rsa	Generates the RSA key pair.
rsakeypair	Configures trust point RSA key pair details.
show crypto ca certificates	Displays the identity and CA certificate details.
show crypto key mypubkey rsa	Displays any RSA public key configurations.

crypto ca lookup

To configure the type of certstore that PKI will use for authentication, use the `crypto ca lookup` command in configuration mode. To disable this feature, use the `no` form of the command.

```
crypto ca lookup both | local | remote
```

Syntax Description

both	Specifies both local and remote certstore.
local	Specifies local certstore.
remote	Specifies remote certstore.

Command Default

None

Command Modes

Configuration mode

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to configure both local and remote certstore:

```
switch(config)# crypto ca lookup both
switch(config)#
```

The following example shows how to configure local certstore:

```
switch(config)# crypto ca lookup local
switch(config)#
```

The following example shows how to configure remote certstore:

```
switch(config)# crypto ca lookup remote
switch(config)#
```

Related Commands

Command	Description
<code>show crypto ssh-auth-map</code>	displays mapping filters applied for SSH authentication.

crypto ca remote ldap

To configure Ldap certstore, use the `crypto ca remote ldap` command in configuration mode. To disable this feature, use the `no` form of the command.

```
crypto ca remote ldap crl-refresh-time hours | server-group group-name
```

Syntax Description	Parameter	Description
	<code>crl-refresh-time</code>	Specifies timer to fetch crl from remote certstore.
	<code>hours</code>	Specifies timer value in hours. The range will be from 0 - 744. i.e. The refresh time can be configured at max for one month. So $31 * 24 = 744$. And if refresh-time is 0 then the refresh routine will be executed once at the time of configuration.
	<code>server-group</code>	Specifies LDAP server group.
	<code>group-name</code>	Specifies LDAP server group name. The maximum size is 64 characters.

Command Default None

Command Modes Configuration mode

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to configure timer to fetch crl from remote certstore:

```
switch(config)# crypto ca remote ldap crl-refresh-time 124
switch(config)#
```

The following example shows how to configure LDAP server group:

```
switch(config)# crypto ca remote ldap server-group admin
switch(config)#
```

Related Commands	Command	Description
	<code>show crypto ssh-auth-map</code>	displays mapping filters applied for SSH authentication.

crypto ca test verify

To verify a certificate file, use the `crypto ca test verify` command in configuration mode.

```
crypto ca test verify certificate-file
```

Syntax Description

certificate-file	Specifies the certificate filename in the form <code>bootflash:filename</code> . The maximum size is 512 characters.
------------------	--

Command Default

None

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

The `crypto ca test verify` command is only a test command. It verifies the specified certificate in PEM format by using the trusted CAs configured and by consulting the CRL or OCSP if needed, as per the revocation checking configuration.

Examples

The following example shows how to verify a certificate file. Verify status code 0 means the verification is successful.

```
switch(config)# crypto ca test verify bootflash:idl.pem
verify status oode:0
verify error msg:
```

Related Commands

Command	Description
<code>show crypto ca certificates</code>	Displays configured trust point certificates.

crypto ca trustpoint

To create a trust point certificate authority (CA) that the switch should trust, and enter trust point configuration submode (config-trustpoint), use the `crypto ca trustpoint` command in configuration mode. To remove the trust point, use the `no` form of the command.

```
crypto ca trustpoint trustpoint-label
no crypto ca trustpoint trustpoint-label
```

Syntax Description	trustpoint-label	Specifies the name of the trust point. The maximum size is 64 characters.
---------------------------	------------------	---

Command Default None

Command Modes Configuration mode

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines

Trust points have the following characteristics:

- A trust point corresponds to a single CA, which an MDS switch trusts for peer certificate verification for any application.
- A CA must be explicitly associated to a trust point using the CA authentication process using the `crypto ca authenticate` command.
- An MDS switch can have many trust points and all applications on the switch can trust a peer certificate issued by any of the trust point CAs.
- A trust point is not restricted to a specific application.
- The MDS switch can optionally enroll with a trust point CA to get an indemnity certificate for itself.

You do not need to designate one or more trust points to an application. Any application should be able to use any certificate issued by any trust point as long as the certificate purpose satisfies application requirement.

You do not need more than one identity certificate from a trust point or more than one key pair to be associated to a trust point. A CA certifies a given identity (name) only once and does not issue multiple certificates with the same subject name. If you need more than one identity certificate for a CA, define another trust point for the same CA, associate another key pair to it, and have it certified, provided CA allows multiple certificates with same subject name.



Note Before using the `no crypto ca trustpoint` command to remove the trust point, first delete the identity certificate and CA certificate (or certificate chain) and then disassociate the RSA key pair from the trust point. The switch enforces this behavior to prevent the accidental removal of the trust point along with the certificates.

Examples

The following example declares a trust point CA that the switch should trust and enters trust point configuration submode:

```
switch#
config terminal
```

```
switch(config)# crypto ca trustpoint admin-ca
switch(config-trustpoint)#
```

The following example removes the trust point CA:

```
switch#
config terminal
```

```
switch(config)# no crypto ca trustpoint admin-ca
```

Related Commands

Command	Description
crypto ca authenticate	Authenticates the certificate of the certificate authority.
crypto ca enroll	Generates a certificate signing request for a trust point.
show crypto ca certificates	Displays the identity and CA certificate details.
show crypto ca trustpoints	Displays trust point configurations.

crypto cert ssh-authorize

To configure mapping filter for SSH, use the `crypto cert ssh-authorize` command in configuration mode. To disable this feature, use the `no` form of the command.

```
crypto cert ssh-authorize name map map name1 mapname2
```

Syntax Description

name	Specifies issuer name of the certificate. The maximum size is 64 characters.
map	Specifies mapping filter.
map name	Specifies the name of the mapping filter that is already configured. The maximum size is 64 characters.

Command Default

None

Command Modes

Configuration mode

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to configure mapping filter for SSH:

```
switch(config)# crypto cert ssh-authorize DCBU map map1 map2
switch(config)#
```

The following example shows how to configure default mapping filter for SSH:

```
switch(config)# crypto cert ssh-authorize default map map1 map2
switch(config)#
```

Related Commands

Command	Description
show crypto ssh-auth-map	displays mapping filters applied for SSH authentication.

crypto certificatemap mapname

To configure the certificate map that will be used for filtering the certificate request, use the `crypto certificatemap mapname` command in configuration mode. To disable this feature, use the `no` form of the command.

```
crypto certificatemap mapname mapname
```

Syntax Description

mapname	Specifies the name of the filter map. The maximum size is 64 characters.
---------	--

Command Default

None

Command Modes

Configuration mode

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to display mapping filters applied for SSH authentication:

```
switch(config)# crypto certificatemap mapname map1
switch(config-certmap-filter)#
```

Related Commands

Command	Description
<code>show crypto ssh-auth-map</code>	displays mapping filters applied for SSH authentication.

crypto global domain ipsec security-association lifetime

To configure global parameters for IPsec, use the `crypto global domain ipsec security-association lifetime` command. To revert to the default, use the `no` form of the command.

```
crypto global domain ipsec security-association lifetime gigabytes number | kilobytes number | megabytes
number | seconds number
no crypto global domain ipsec security-association lifetime gigabytes | kilobytes | megabytes | seconds
```

Syntax Description	Parameter	Description
	<code>gigabytes number</code>	Specifies a volume-based key duration in gigabytes. The range is 1 to 4095.
	<code>kilobytes number</code>	Specifies a volume-based key duration in kilobytes. The range is 2560 to 2147483647.
	<code>megabytes number</code>	Specifies a volume-based key duration in megabytes. The range is 3 to 4193280.
	<code>seconds number</code>	Specifies a time-based key duration in seconds. The range is 600 to 86400.

Command Default 450 gigabytes and 3600 seconds

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, IPsec must be enabled using the `crypto ipsec enable` command. The global security association lifetime value can be overridden for individual IPsec crypto maps using the `set` command in IPsec crypto map configuration submode.

Examples The following example shows how to configure the system default before the IPsec:

```
switch# config terminal
switch(config)# crypto global domain ipsec security-association lifetime gigabytes 500
```

Related Commands	Command	Description
	<code>crypto ipsec enable</code>	Enables IPsec.
	<code>set (IPsec crypto map configuration submode)</code>	Configures IPsec crypto map entry parameters.
	<code>show crypto global domain ipsec</code>	Displays the global attributes for IPsec.

crypto ike domain ipsec

To enter IKE configuration submode, use the `crypto ike domain ipsec` command.

```
crypto ike domain ipsec
```

Syntax Description This command has no other arguments or keywords.

Command Default None

Command Modes Configuration mode

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To configure IKE protocol attributes, IKE must be enabled using the `crypto ike enable` command.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

- The `crypto ike` feature is not supported on the Cisco MDS 9148 and Cisco MDS 9148S, and Cisco MDS 9396S Switches.

Examples

The following example shows how enter IKE configuration mode:

```
switch# config terminal
switch(config)# crypto ike domain ipsec
switch(config-ike-ipsec)#
```

Related Commands

Command	Description
<code>crypto ike enable</code>	Enables the IKE protocol.
<code>show crypto ike domain ipsec</code>	Displays IKE information for the IPsec domain.

crypto ike domain ipsec rekey sa

To rekey an IKE crypto security association (SA) in the IPsec domain, use the `crypto ike domain ipsec rekey sa` command.

```
crypto ike domain ipsec rekey sa sa-index
```

Syntax Description

sa-index	Specifies the SA index. The range is 1 to 2147483647.
----------	---

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, IKE must be enabled using the `crypto ike enable` command.



Note

This command is not supported on the Cisco MDS 9124 switch.

- The `crypto ike` feature is not supported on the Cisco MDS 9148 and Cisco MDS 9148S, and Cisco MDS 9396S Switches.

Examples

The following example rekeys an IKE crypto SA:

```
switch# crypto ike domain ipsec rekey sa 100
```

Related Commands

Command	Description
<code>crypto ike enable</code>	Enables the IKE protocol.
<code>show crypto ike domain ipsec</code>	Displays IKE information for the IPsec domain.

crypto ike enable

To enable IKE, use the `crypto ike enable` command. To disable IKE, use the `no` form of the command.

```
crypto ike enable
no crypto ike enable
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Release	Modification
2.0(x)	This command was introduced.
NX-OS 4.1(1b)	This command was deprecated.

Usage Guidelines The IKE protocol cannot be disabled unless IPsec is disabled. The configuration and verification commands for the IKE protocol are only available when the IKE protocol is enabled on the switch. When you disable this feature, all related configurations are automatically discarded.



Note This command is not supported on the Cisco MDS 9124 switch.

- The `crypto ike` feature is not supported on the Cisco MDS 9148 and Cisco MDS 9148S, and Cisco MDS 9396S Switches.

Examples The following example shows how to enable the IKE protocol:

```
switch# config terminal
switch(config)# crypto ike enable
```

Command	Description
<code>clear crypto ike domain ipsec sa</code>	Clears IKE protocol information clear IKE SAs.
<code>crypto ipsec enable</code>	Enables IPsec.
<code>show crypto ike domain ipsec</code>	Displays IKE information for the IPsec domain.

crypto ipsec enable

To enable IPsec, use the `crypto ipsec enable` command. To disable IPsec, use the no form of the command.

```
crypto ipsec enable
no crypto ipsec enable
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To enable the IPsec, the IKE protocol must be enabled using the `crypto ike enable` command. The configuration and verification commands for IPsec are only available when IPsec is enabled on the switch. When you disable this feature, all related configurations are automatically discarded.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples The following example shows how to enable IPsec:

```
switch# config terminal
switch(config)# crypto ipsec enable
```

Related Commands	Command	Description
	<code>show crypto global domain ipsec</code>	Displays IPsec crypto global information.
	<code>show crypto map domain ipsec</code>	Displays IPsec crypto map information.
	<code>show crypto transform-set domain ipsec</code>	Displays IPsec crypto transform set information.

crypto key generate rsa

To generate an RSA key pair, use the `crypto key generate rsa` command in configuration mode.

```
crypto key generate rsa [label key-pair-label] [exportable] [modulus key-pair-size]
```

Syntax Description

label key-pair-label	(Optional) Specifies the name of the key pair. The maximum size is 64 characters.
exportable	(Optional) Configures the key pair to be exportable.
modulus key-pair-size	(Optional) Specifies the size of the key pair. The size ranges from 512 to 2048.

Command Default

By default, the key is not exportable. The default label is switch FQDN. The default modulus is 512.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

You can generate one or more RSA key pairs and associate each RSA key pair with a distinct trust point CA, where the MDS switch enrolls to obtain identity certificates. The MDS switch needs only one identity per CA, which consists of one key pair and one identity certificate.

Cisco MDS NX-OS allows you to generate RSA key pairs with a configurable key size (or modulus). The default key size is 512. Valid modulus values are 512, 768, 1024, 1536, and 2048.

You can also configure an RSA key pair label. The default key pair label is FQDN.

Examples

The following example shows how to configure an RSA key pair called `newkeypair`:

```
switch# config terminal
switch(config)# crypto key generate rsa label newkeypair
```

The following example shows how to configure an RSA key pair called `testkey`, of size 768, that is exportable:

```
switch# config terminal
switch(config)# crypto key generate rsa label testkey exportable modulus 768
```

The following example shows how to generate an exportable RSA key with the switch name as the default label and 512 as the default modulus:

```
switch# config terminal
switch(config)# crypto key generate rsa exportable
```

Related Commands

Command	Description
<code>crypto key zeroize rsa</code>	Deletes RSA key pair configurations.

Command	Description
rsa keypair	Configures trust point RSA key pair details.
show crypto key mypubkey rsa	Displays information about configured RSA key pairs.

crypto key zeroize rsa

To delete an RSA key pair from the switch, use the `crypto key zeroize rsa` command in configuration mode.

```
crypto key zeroize rsa key-pair-label
```

Syntax Description

key-pair-label	Specifies the RSA key pair to delete. The maximum size is 64 characters.
----------------	--

Command Default

None

Command Modes

Configuration mode

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

If you believe the RSA key pair on your switch was compromised in some way and should no longer be used, you should delete it.

After you delete the RSA key pair on the switch, ask the CA administrator to revoke your switch's certificates at the CA. You must supply the challenge password you created when you originally requested the switch's certificates.

Before deleting a key pair, you should delete the identity certificates corresponding to it in various trust points if the identity certificates exist, and then disassociate the key pair from those trust points. The purpose of this is to prevent accidental deletion of a key pair for which there exists an identity certificate in a trust point.



Note

The trust point configuration, certificates, and key pair configurations are made persistent only after saving to the startup configuration. To be consistent with this configuration behavior, the delete behavior is also the same. That is, the deletions are made persistent only after saving to the startup configuration. Use the `copy running-config startup-config` command to make the certificate and key pair deletions persistent.

Examples

The following example shows how to delete an RSA key pair called testkey:

```
switch# config terminal
switch(config)# crypto key zeroize rsa testkey
```

Related Commands

Command	Description
<code>crypto key generate rsa</code>	Configures an RSA key pair.
<code>rsakeypair</code>	Configures trust point RSA key pair details.
<code>show crypto key mypubkey rsa</code>	Displays information about configured RSA key pairs.

crypto map domain ipsec (configuration mode)

To specify an IPsec crypto map and enter IPsec crypto map configuration mode, use the `crypto map domain ipsec` command. To delete an IPsec crypto map or a specific entry in an IPsec crypto map, use the `no` form of the command.

```
crypto map domain ipsec map-name [seq-number]
no crypto map domain ipsec map-name [seq-number]
```

Syntax Description	
map-name	Specifies the map name. Maximum length is 63 characters.
seq-number	(Optional) Specifies the sequence number for the map entry. The range is 1 to 65535.

Command Default None

Command Modes Configuration mode

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, IPsec must be enabled using the `crypto ipsec enable` command. The sequence number determines the order in which IPsec crypto map entries are applied.

Examples The following example specifies entry 1 for IPsec crypto map IPsecMap and enters IPsec crypto map configuration mode:

```
switch# config terminal
switch(config)# crypto map domain ipsec IPsecMap 1
switch(config-crypto-map-ip) #
```

The following example deletes an IPsec crypto map entry:

```
switch# config terminal
switch(config)# no crypto map domain ipsec IPsecMap 1
```

The following example deletes the entire IPsec crypto map:

```
switch# config terminal
switch(config)# no crypto map domain ipsec IPsecMap
```

Related Commands	Command	Description
	<code>crypto ipsec enable</code>	Enables IPsec.
	<code>crypto transform-set domain ipsec</code>	Configures the transform set for an IPsec crypto map.

Command	Description
set (IPsec crypto map configuration submode)	Configures IPsec crypto map entry parameters.
show crypto map domain ipsec	Displays IPsec crypto map information.

crypto map domain ipsec (interface configuration submode)

To configure an IPsec crypto map on a Gigabit Ethernet interface, use the `crypto map domain ipsec` command in interface configuration submode. To remove the IPsec crypto map, use the `no` form of the command.

```
crypto map domain ipsec map-name
no crypto map domain ipsec
```

Syntax Description

map-name	Specifies the map name. Maximum length is 63 characters.
----------	--

Command Default

None

Command Modes

Interface configuration submode

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, IPsec must be enabled using the `crypto ipsec enable` command.

The sequence number determines the order in which crypto maps are applied.

Examples

The following example shows how to specify an IPsec crypto map for a Gigabit Ethernet interface:

```
switch# config terminal
switch(config)# interface gigabitethernet 1/2
switch(config-if)# crypto map domain ipsec IPsecMap
```

Related Commands

Command	Description
<code>crypto ipsec enable</code>	Enables IPsec.
<code>show crypto map domain ipsec</code>	Displays IPsec crypto map information.
<code>show interface</code>	Displays interface information.

crypto transform-set domain ipsec

To create and configure IPsec transform sets, use the `crypto transform-set domain ipsec` command. To delete an IPsec transform set, use the `no` form of the command.

```
crypto transform-set domain ipsec set-name esp-3des | esp-des [esp-aes-xcbc-mac | esp-md5-hmac |
esp-sha1-hmac]
crypto transform-set domain ipsec set-name esp-aes 128 | 256 [ctr esp-aes-xcbc-mac | esp-md5-hmac
| esp-sha1-hmac | esp-aes-xcbc-mac | esp-md5-hmac | esp-sha1-hmac]
no crypto transform-set domain ipsec set-name esp-3des | esp-des [esp-aes-xcbc-mac | esp-md5-hmac
| esp-sha1-hmac]
no crypto transform-set domain ipsec set-name esp-aes 128 | 256 [ctr esp-aes-xcbc-mac | esp-md5-hmac
| esp-sha1-hmac | esp-aes-xcbc-mac | esp-md5-hmac | esp-sha1-hmac]
```

Syntax Description

set-name	Specifies the transform set name. Maximum length is 63 characters.
esp-3des	Specifies ESP transform using the 3DES cipher (128 bits).
esp-des	Specifies ESP transform using the DES cipher (56 bits).
esp-aes-xcbc-mac	Specifies ESP transform using AES-XCBC-MAC authentication.
esp-md5-hmac	Specifies ESP transform using MD5-HMAC authentication.
esp-sha1-hmac	Specifies ESP transform using SHA1-HMAC authentication.
esp-aes	Specifies ESP transform using the AES cipher (128 or 256 bits).
128	Specifies ESP transform using AES 128-bit cipher.
256	Specifies ESP transform using AES 256-bit cipher.
ctr	Specifies AES in counter mode.

Command Default

None

The default mode of AES is CBC (Cyber Block Chaining).

Command Modes

Configuration mode.

Command History

Release	Modification
2.0(x)	This command was introduced.
5.2(2)	The <code>esp-aes-xcbc-mac</code> keyword was not supported.

Usage Guidelines

To use this command, IPsec must be enabled using the `crypto ipsec enable` command.

You can use this command to modify existing IPsec transform sets. If you change a transform set definition, the change is only applied to crypto map entries that reference the transform set. The change is not applied

to existing security associations, but used in subsequent negotiations to establish new security associations. If you want the new settings to take effect sooner, you can clear all or part of the security association database using the `clear crypto sa domain ipsec` command.

Examples

The following example shows how to configure an IPsec transform set:

```
switch# config terminal
switch(config)# crypto transform-set domain ipsec Set1 esp-aes 128
```

Related Commands

Command	Description
<code>clear crypto sa domain ipsec</code>	Clears security associations.
<code>crypto ipsec enable</code>	Enables IPsec.
<code>show crypto transform-set domain ipsec</code>	Displays IPsec crypto transform set information.

customer-id

To configure the customer ID with the Call Home function, use the `customer-id` command in Call Home configuration submode. To disable this feature, use the `no` form of the command.

```
customer-id customer-id
no customer customer-id
```

Syntax Description

<code>customer-id</code>	Specifies the customer ID. The maximum length is 64 alphanumeric characters in free format.
--------------------------	---

Command Default

None

Command Modes

Call Home configuration submode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the customer ID in the Call Home configuration submode:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# customer-id Customer1234
```

Related Commands

Command	Description
<code>callhome</code>	Configures the Call Home function.
<code>callhome test</code>	Sends a dummy test message to the configured destination(s).
<code>show callhome</code>	Displays configured Call Home information.



Caching Services Module Commands

- [cluster name](#), on page 277
- [cluster config](#), on page 279
- [cluster add](#), on page 280
- [feature enable](#), on page 282
- [flash-copy](#), on page 284
- [host](#), on page 286
- [install module node](#), on page 288
- [interface svc](#), on page 290
- [iogroup](#), on page 292
- [ip](#), on page 293
- [mdisk-grp](#), on page 294
- [migrate vdisk](#), on page 296
- [node](#), on page 297
- [node svc delete](#), on page 298
- [node svc recover](#), on page 299
- [node svc servicemode](#), on page 300
- [node svc upgrade](#), on page 301
- [quorum](#), on page 302
- [remote-copy](#), on page 303
- [show cluster flash-copy](#), on page 305
- [show cluster host](#), on page 306
- [show cluster iogroup](#), on page 307
- [show cluster ip](#), on page 308
- [show cluster mdisk](#), on page 309
- [show cluster mdsik-grp](#), on page 311
- [show cluster nodes](#), on page 312
- [show cluster remote-copy](#), on page 313
- [show cluster remote-copy-cluster](#), on page 314
- [show cluster status](#), on page 315
- [show cluster vdisk](#), on page 316
- [show environment battery](#), on page 317
- [show interface svc](#), on page 319
- [show nodes](#), on page 322

- [show svc](#), on page 324
- [svc-config](#), on page 327
- [svc-ibmcli](#), on page 328
- [svc-purge-wwn module](#), on page 329
- [vdisk](#), on page 330

cluster name

To perform operations on a previously-configured cluster, use the cluster name command in SVC configuration mode.

```
cluster name cluster-name flash-copy fc-grp-name [prepare | start | stop]
cluster name cluster-name remote-copy rc-grp-name failover | start [aux | clean | force] | stop aux-enable
cluster name cluster-name shutdown [node node-name]
cluster name cluster-name start discovery
cluster name cluster-name upgrade svc-system force
```

Syntax Description

cluster	Provides access to cluster commands
name cluster-name	Identifies a previously created cluster to perform an operation.
flash-copy fc-grp-name	Specifies a previously-configured FlashCopy relationship.
prepare	Prepares the FlashCopy consistency group.
start	Starts the FlashCopy for the specified cluster. Starts the background copy for the specified remote copy group
stop	Stops the FlashCopy for the specified cluster. Stops the remote copy relationships for the specified remote copy group.
remote-copy rc-grp-name	Specifies the remote copy consistency group name.
failover	Reverses to using the auxiliary VDIs for the specified relationship.
shutdown	Shuts down the entire cluster (gracefully).
node node-name	Specifies a particular node for a graceful shutdown.
start discovery	Starts the background copy for the specified remote copy group.
aux	Makes the auxiliary VDIs as primary.
clean	Marks the intended secondary VDIs as clean.
upgrade svc-system	Upgrades the specified cluster. The new version of the software image is specified to the FTP:, SCP:, SFTP:, TFTP:, bootflash:, or slot0: directories
force	Permits the remote copy operation to start—even if it leads to the loss of data consistency between the primary and secondary.
aux-enable	Enables write access to the secondary (or auxiliary) VDIs.

Command Default

None.

Command Modes

SVC configuration mode.

cluster name

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines None.

Examples The following example enters the SVC configuration mode and displays all options under the cluster name command.

```
switch# svc-config
switch(svc)# cluster name SampleCluster ?
  flash-copy    Flash-copy
  remote-copy   Remote copy
  shutdown      Shutdown
  start         Start discovery
  upgrade       Upgrade uri
switch(svc)# cluster name SampleCluster flash-copy f1 prepare
switch(svc)# cluster name SampleCluster flash-copy f1 start
switch(svc)# cluster name SampleCluster flash-copy f1 stop

switch(svc)# cluster name SampleCluster remote-copy f1 failover
switch(svc)# cluster name SampleCluster remote-copy f1 start
switch(svc)# cluster name SampleCluster remote-copy f1 stop

switch(svc)# cluster name SampleCluster shutdownn
switch(svc)# cluster name SampleCluster shutdown node svc2/1
switch(svc)# cluster name SampleCluster start discovery
switch(svc)# cluster name SampleCluster upgrade svc-system
bootflash:m9000-ek9-csm-svc_mz.1.3.1.bin
```

cluster config

To manage cluster configurations on a specified cluster, use the cluster config configuration submode.

```
cluster config cluster-name
```

Syntax Description	cluster	Provides access to cluster commands
	config cluster-name	Places a previously created cluster in the cluster configuration submode (switch(svc-cluster)#).

Command Default None.

Command Modes SVC configuration mode—cluster configuration submode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines None.

Examples The following example enters the SVC configuration mode and adds a cluster called SampleCluster.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)#
```

Related Commands	Command	Description
	show cluster	Displays configured cluster information.

cluster add

To create a cluster with a specified SVC node, use the cluster add command in SVC configuration mode.

```
cluster add cluster-name ip ip-address node svc slot-number/node-number
```

Syntax Description

cluster	Provides access to cluster commands
add cluster-name	Specifies a new cluster addition. The cluster name must start with an alphabet and is restricted to 15 alphanumeric characters, including dash (-) and underscore (_). The cluster name cannot be ClusterX, where X is a number.
ip ip-address	Specifies the IP address of the specified cluster. The IP address must be in the same subnet as the switch management IP address.
node svc	Specifies the node's SVC interface
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Enter this command while connected to the switch management IP address of a node at which the cluster is being created.

Examples

The following example enters the SVC configuration mode, verifies the status of previously-configured clusters, and adds a cluster called SampleCluster.

```
switch# svc-config
switch(svc)# show nodes local
-----
Node          cluster          config  cluster  node  sw
              node            node    status   status status version
-----
svc2/1                No      unconfigured free    1.3(1)
svc2/2                No      unconfigured free    1.3(1)
switch(svc)# cluster add SampleCluster ip 10.10.0.1 node svc 2/1
cluster creation going on. Please wait....
```

The status of the newly-added cluster can be verified using the show nodes local command.

```
switch(svc)# show nodes local
-----
Node  cluster  config  cluster  node  sw
      node  status  status  version
-----
```



```
-----  
svc2/1   SampleCluster   Yes  active   active   1.3(1)  
svc2/2           No  unconfigured  free    1.3(1)
```

Related Commands

Command	Description
show nodes local	Displays the cluster name and status for all nodes in the switch.

feature enable

To enable a specified feature in a cluster, use the feature enable command in the cluster configuration submode.

```
cluster config cluster-name
feature enable capacity number | flash-copy | remote-copy
```

Syntax Description

cluster	Provides access to cluster commands
config cluster-name	Places a previously created cluster in the cluster configuration submode.
feature enable	Enables a specified feature on this cluster. Three features can be enabled: capacity, flash-copy, or remote-copy
capacity	Configures the virtualization capacity of this cluster.
number	Provides a range from 1- 1677215 Gigabytes.
flash-copy	Enables the flash-copy feature for this cluster.
remote-copy	Enables the remote-copy feature for this cluster.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).

By default, flash-copy and remote-copy are disabled and 0 (zero) GB of virtualization capacity is enabled.

Examples

The following example enters the cluster configuration submode for the SampleCluster cluster and assigns a size of 4000 Gigabytes. The next two commands enables the flash-copy and remote-copy features for this cluster.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# feature enable ?
  capacity      Cluster enable feature capacity
  flash-copy    Cluster enable feature flash-copy
  remote-copy   Cluster enable feature remote-copy
switch(svc-cluster)# feature enable capacity ?
  <0-2147483647> Enter the capacity
switch(svc-cluster)# feature enable capacity 4000
switch(svc-cluster)# feature enable flash-copy
switch(svc-cluster)# feature enable remote-copy
```

Related Commands

Command	Description
show cluster name flash-copy	Displays configured flash-copy information for a specified cluster.

Command	Description
show cluster name remote-copy	Displays configured remote copy information for a specified cluster.

flash-copy

To create a snapshot (or point-in-time copy) of a specified VDisk or group of VDIs, use the flash-copy command in the cluster configuration submode.

```
cluster config cluster-name
flash-copy add fcopy-name
flash-copy name fcopy-name map src-vdisk vdisk-name dst-vdisk vdisk-name [mode copy-on-write
| full rate rate]
flash-copy rename old-name newname new-name
```

Syntax Description

cluster	Provides access to cluster commands
config cluster-name	Places a previously created cluster in the cluster configuration submode.
flash-copy add fcopy-name	Creates a FlashCopy instance.
flash-copy fcopy-name	Enters the FlashCopy submode for an existing copy name.
map	Creating a mapping between the source and destination VDIs.
src-vdisk vdisk-name	Specifies the source VDisk for the flash copy.
dst-vdisk vdisk-name	Specifies the destination VDisk for the flash copy.
mode	Controls the FlashCopy mode.
copy-on-write	Copies to the source VDisk only if new information is written to it after FlashCopy is initiated (default).
full rate rate	Specifies the background copy rate (ranges from 1 to 100) at which the source VDisk is copied to the destination VDisk even if no new information is written to the source.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).

The flash-copy submode prompt is switch(svc-cluster-flash-copy)#.

Examples

The following example enters the enters the cluster configuration mode for the SampleCluster 1 cluster.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# flash-copy f2
switch(svc-cluster-flash-copy)# ?
```

```

Submode Commands:
  exit  Exit from this mode
  map   Flash-copy map
  mode  Flash-copy mode
  no    Negate a command or set its defaults
switch(svc-cluster-flash-copy)# map src-vdisk VDISK1 dst-vdisk DDISK1
switch(svc-cluster-flash-copy)# mode copy-on-write
switch(svc-cluster-flash-copy)# exit
switch(svc-cluster)# flash-copy add FlashC2
switch(svc-cluster)# exit
switch(svc)# show SampleCluster flash-copy
-----
name                status
-----
fccstgrp0           idle_or_copied
f2                  idle_or_copied
switch(svc)# show SampleCluster flash-copy f2
Flash-copy mapping 1:
  src vdisk is v2
  dest vdisk is v3
  state is idle_or_copied
  copy rate is 50
  progress 0% done

```

Related Commands

Command	Description
show SampleCluster name flash-copy	Displays configured flash-copy information for a specified SampleCluster.

host

To create or configure hosts, use the host command in the cluster configuration submode.

```
cluster config cluster-name
host add host-name hostport port-wwn
host name host-name hostport port-wwn | map vdisk vdisk-name [SCSI-lun lun-number]
```

Syntax Description

cluster	Provides access to cluster commands
config cluster-name	Places a previously created cluster in the cluster configuration submode.
host add host-name	Creates a host with one port and assigns the host name.
hostport port-wwn	Specifies a port using the port WWN
host name host-name	Enters the host submode for an existing host name.
map	Maps a previously configured disk to this host.
vdisk vdisk-name	Specifies the VDisk to be mapped to the host.
SCSI-lun lun-number	Specifies a LUN to map the host port. If the LUN number is not specified, the next available number is assigned automatically.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).

The host submode prompt is switch (svc-cluster-host)#

Examples

The following example enters the cluster configuration mode for SampleCluster and creates a host called Host 1 with one port, adds a second port, and maps the VDisk for Host1, and verifies the configured information for Host1.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# host add Host1 hostport 11:22:33:44:aa:bb:cc:dd
switch(svc-cluster)# host Host1
switch(svc-cluster-host)# ?
Submode Commands:
  exit      Exit from this mode
  hostport  Add pWWN to host
  map       Map vdisk to host
  no        Negate a command or set its defaults
switch(svc-cluster-host)# hostport 22:11:33:55:11:aa:bb:cc
switch(svc-cluster)# host add Host1 hostport 35:66:11:22:aa:bb:22:cc
switch(svc-cluster)# host Host1
```

```
switch(svc-cluster-host) # hostport 35:66:11:22:aa:bb:22:11
switch(svc-cluster-host) # map vdisk Vdisk1
switch(svc-cluster-host) # map vdisk Vdisk1 ssci-lun 10
```

Related Commands

Command	Description
show cluster name host	Displays configured host information for a specified cluster.

install module node

To install the SVC node image, use the install module node command.

```
install module module-number node node-number image svc-system [bootflash: | slot0: | ftp: |
sftp: | scp: | svc-image]
```

Syntax Description

install module	Installs the specified image for the CSM.
module-number	Switching modules: From slot 1 to 4 and 7 to 9 in a Cisco MDS 9500 Series switch. For slot 2 in a Cisco MDS 9200 Series switch. Supervisor modules: Slot 5 or 6—only on the active supervisor module in a Cisco MDS 9500 Series switch. Slot 1—upgrades both the supervisor and switching parts of the module in a Cisco MDS 9200 Series switch.
node	Selects the SVC node to install the image.
node-number	Specifies the node number.
image svc-system	Specifies the file name of an SVC image.
bootflash:	Source location for internal bootflash memory
ftp	URI containing SVC Image.
scp	URI containing SVC Image.
sftp	URI containing SVC Image.
tftp	URI containing SVC Image.
slot0:	Source location for the CompactFlash memory or PCMCIA card.
svc-image	The name of the SAN Volume Controller (SVC) image.

Command Default

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(3).

Usage Guidelines

The install module module-number node command installs the new image in the specified node on the CSM module. All previous data in that node is lost.

Examples

The following example shows how to install a new image on an SVC node.

```
switch# install module 2 node 1 image svc-system
scp: //root@172.22.93.174/auto/isan-src/MAIN_1_3_0_17t/VegasSW/build/gdb.sb-svc/isan/target.fs/sb-svc.bin
```



```
SVC reimage going on. Please wait
root@172.22.93.174's password:
sb-svc.bin          100% |*****| 45408 KB    00:53
svc 2/1 software reimage succeeded
```

Related Commands

Command	Description
show version compatibility	Shows the system software that is currently running on the switch

interface svc

To configure a SAN Volume Controller (SVC) interface on the Cisco MDS 9000 Family of switches, use the `interface svc` command.

```
interface svc slot_number/node-number
interface svc slot_number/node-number initiator | mgmt | nwwn nwwn-id target vsan vsan-id
interface svc slot_number/node-number [switchport description | shutdown]
```

Syntax Description

interface	Configures a new interface.
svc	Specifies the new interface to be a SVC interface.
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
initiator	Configures the initiator or port in the specified VSAN.
mgmt	Configures the management or port in the specified VSAN.
target	Configures the target or port in the specified VSAN.
vsan vsan-id	Specifies the VSAN ID ranging from 1 to 4093.
shutdown	Enables or disables an interface.
nwwn nwwn-id	Configured a non-system allocated nWWN for SVC Node.
switchport description	Assigns a description to the switchport. Restricted to 80 alphanumeric characters.

Command Default

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

By default, all three N-port types (initiator, mgmt, and target) are in VSAN 1. Explicitly remove it from VSAN 1 if this is not required by your network.

The VSAN number can be any number from 1 to 4096. Only 64 VSANs for all initiator/mgmt/target are allowed (meaning, you can have initiator in VSANs 1-30, target in VSANs 31-60, and mgmt in VSANs 61-64). If the target, initiator, and mgmt overlap in VSANs, each overlap is also included in the total VSAN count.

A mgmt N-port can only exist in 4 of these 64 VSANs.

You can specify a range of interfaces by issuing a command with the following example format:

```
interface svc 1/1 space , space svc 2/1-2
```

This command configures Slot 1 Node 1 as an SVC interface and simultaneously configures Slot 2, Nodes 1 and 2 as SVC interfaces.

Place the disk, host, and other SVC nodes in the appropriate VSAN for any configuration to be completely established

Examples

The following example configures the initiator N-port on VSAN 1, the target N-port on VSAN 2, and the management N-port on VSAN 3.

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface svc 2/1
switch(config-if)# ?
Interface configuration commands:
do          EXEC command
exit       Exit from this submode
initiator  Configure Initiator traffic for SVC Node
mgmt       Configure traffic for communication with other SVC Nodes
no         Negate a command or set its defaults
nwwn      Configured a non-system allocated nWWN for SVC Node
shutdown  Enable/disable an interface
switchport Configure switchport parameters
target     Configure Target traffic for SVC Node
switch(config-if)# initiator vsan 1
switch(config-if)# target vsan 2
switch(config-if)# mgmt vsan 3
```

Related Commands

Command	Description
show interface	Displays an interface configuration for a specified interface.

iogroup

To assign a name to I/O groups, use the `iogroup` command in the cluster configuration submode. Use the `no` form of this command to delete the configured I/O group alias.

```
cluster config cluster-name
iogroup group-id alias alias-name
```

Syntax Description

<code>cluster</code>	Provides access to cluster commands
<code>config cluster-name</code>	Places a previously created cluster in the cluster configuration submode.
<code>iogroup group-id</code>	Identifies one of four I/O groups in the specified cluster. The ID ranges from 1 to 4.
<code>alias alias-name</code>	Assigns a name to the selected I/O group. The name is restricted to 15 alphanumeric characters.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The `no iogroup` command deletes the alias name, not the I/O group itself.
The cluster configuration submode prompt is `(switch(svc-cluster)#)`.

Examples

The following example enters the cluster configuration mode for `SampleCluster` and configures a new I/O group. The created group is verified using the `show cluster name iogroup` command

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# iogroup 1 alias SampleIOgroup
switch(svc-cluster)# exit
```

Related Commands

Command	Description
<code>show cluster name iogroup</code>	Displays configured I/O group information for a specified cluster.

ip

To modify the IP address for a cluster, use the ip command in the cluster configuration submode.

```
cluster config cluster-name
ip ip-address
```

Syntax Description	cluster	Provides access to cluster commands
	config cluster-name	Places a previously created cluster in the cluster configuration submodes.
	ip ip-address	Specifies the IP address of the cluster.

Command Default None.

Command Modes SVC configuration mode—cluster configuration submode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines The IP address of the cluster can be changed, but not deleted. If you connect using the current cluster IP address, that session is lost when the command completes. You must then reconnect using the new IP address.

The no form of this command is not allowed.

The cluster configuration submode prompt is (switch(svc-cluster)#).

Examples

The following example enters the cluster configuration mode for SampleCluster, configures the IP address, and verifies by displaying this information

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# ip 209.165.200.226
switch(svc)# show cluster SampleCluster ip
cluster ip address is 209.165.200.226
```

Related Commands	Command	Description
	show cluster name ip	Displays configured -- information for a specified cluster.

mdisk-grp

To create and configure a mdisk group, use the `mdisk-grp` command in the cluster configuration submode.

```
cluster config cluster-name
mdisk-grp add grp-name extent size
mdisk-grp name grp-name --> mdisk id mdisk-id
```

Syntax Description

<code>cluster</code>	Provides access to cluster commands
<code>config cluster-name</code>	Places a previously created cluster in the cluster configuration submode.
<code>mdisk-grp addgrp-name</code>	Adds a mdisk group.
<code>extent size</code>	Assigns the extent size of the storage allocation for MDisks in this cluster. The extent size can be 16, 32, 64, 128, 256, or 512 MB.
<code>mdisk-grp name grp-name</code>	Enters the mdisk submode of an existing MDisk group.
<code>mdisk id mdisk-id</code>	Assigns the disk ID ranging from 1 to 4096 to the mdisk in the MDisk group submode.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is `(switch(svc-cluster)#)`.

The submode prompt for the MDisk group is `switch (svc-cluster-mdisk-grp)#`

Examples

The following example enters the cluster configuration mode for `SampleCluster`, creates an MDisk group, and adds an MDisk to the group.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# mdisk-grp add Mdisk1 extent 512
switch(svc-cluster)# mdisk-grp name Mdisk1
switch(svc-cluster-mdisk-grp)# mdisk id 3
switch(svc)# show cluster SampleCluster mdisk-grp
-----
name           Capacity    free      extent  number  number  status
              size (MB)  of disks  of vdisks
-----
finance       7.56 GB    7.56 GB  16      5
              0         online
marketing     6.48 GB    6.48 GB  16      5
              0         online
```

Related Commands

Command	Description
show cluster name mdisk	Displays configured MDisk group information for a specified cluster.

migrate vdisk

To configure data migration from a VDisk, use the migrate vdisk command in the cluster configuration submode.

```
cluster config cluster-name
migrate vdisk vdisk-name new-mdisk-grp grp-name
migrate vdisk vdisk-name src-mdisk id mdisk-id num-extents number tgt-mdisk id mdisk-id
```

Syntax Description

cluster	Provides access to cluster commands
config cluster-name	Places a previously created cluster in the cluster configuration submode.
migrate vdisk vdisk-name	Migrates data from the specified VDisk to a MDisk or MDisk group.
new-mdisk-grp grp-name	Migrates data to a newly specified MDisk group.
src-mdisk id mdisk-id	Specifies the source MDisk for data migration.
num-extents number	Specifies the extents of a VDisk for data migration.
tgt-mdisk id mdisk-id	Specifies the target MDisk for data migration.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).

Examples

The following example enters the cluster configuration mode for SampleCluster, migrates a VDisk to a new MDisk group.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# migrate vdisk Vdisk2 new-mdisk-grp Group5
switch(svc-cluster)# migrate vdisk Vdisk2 src-mdisk id 3 num-extents 2 tgt-mdisk id 4
```

Related Commands

Command	Description
show cluster name status migrate	Displays configured MDisk migration status information for a specified cluster.

node

To add a node to a cluster or to assign a name to a preconfigured node, use the node command in the cluster configuration submode.

```
cluster config cluster-name
node name node-name
node nwwn node-wwn
node iogroup group-id [alias alias-name]
```

Syntax Description

cluster config	Provides access to cluster commands
node	Adds a specified node to the cluster being configured.
name node-name	Specifies the node using a 15 alphanumeric characters.
nwwn node-wwn	Specifies the node using the nWWN with the format hh:hh:hh:hh:hh:hh:hh:hh.
iogroup group-id	Identifies one of four I/O groups in the specified cluster. The ID ranges from 1 to 4.
alias alias-name	Assigns a name to the selected node. The name is restricted to 156 alphanumeric characters.

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).

The node must first be added before assigning an alias name.

The no form of the command deletes the node from the cluster.

Examples

The following example enters the cluster configuration mode for SampleCluster, adds a node by assigning the nWWN, and associates the node with an alias.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# node nwwn 20:00:00:04:cf:e6:e4:df iogroup 1
switch(svc-cluster)# node nwwn 20:00:00:04:cf:e6:e4:df alias NodeAlias
```

Related Commands

Command	Description
show cluster name nodes	Displays configured node information for a specified cluster.

node svc delete

To delete all cluster configurations from a specific node, use the `node svc delete` command in SVC configuration mode.

```
node svc slot-number/node-number delete
```

Syntax Description

node svc	Specifies the node's SVC interface
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
delete	Deletes a cluster information from the specified node.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Use this command if the node has lost communication with a configured cluster.

Examples

The following example enters the SVC configuration mode and adds a cluster called SampleCluster.

```
switch# svc-config
switch(svc)# node svc 2/1 delete
```

Related Commands

Command	Description
show nodes local	Displays configured node information.

node svc recover

To initiate cluster recovery on a specified SVC node, use the recover cluster command in SVC configuration mode.

```
node svc slot-number/node-number recover
```

Syntax Description	node svc	Specifies the node's SVC interface
	slot-number	Specifies the slot number of the Caching Service Module (CSM).
	node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
	recover	Initiates recovery for a specified node.

Command Default None.

Command Modes SVC configuration mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines Use this command to initiate cluster recovery after a failure. If the output of the show nodes local command displays recovery pause in the node status column.

Examples The following example initiates recovery for the SVC node 1 in slot 2.

```
switch# svc-config
switch(svc) # node svc 2/1 recover
```

Related Commands	Command	Description
	show nodes local	Displays configured node information.

node svc servicemode

To place a node in service mode, use the `servicemode node svc` command in SVC configuration mode. Use the `no` form of the command to remove a node from service mode.

```
node svc slot-number/node-number servicemode
```

Syntax Description

node svc	Specifies the node's SVC interface
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
servicemode	Places a node in service mode.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example enters the SVC configuration mode and places the specified node in service mode.

```
switch# svc-config
switch(svc)# node svc 2/2 servicemode
```

Related Commands

Command	Description
show nodes local	Displays configured node information.

node svc upgrade

To upgrade the software on a specified SVC node, use the upgrade node svc command in SVC configuration mode.

```
node svc slot-number/node-number url upgrade svc-system url
```

Syntax Description	
node svc	Specifies the node's SVC interface
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
upgrade	Upgrades the image on the specified node.
svc-system url	Specifies the SVC image to be used. The new version of the software image is specified to the FTP:, SCP:, SFTP:, TFTP:, bootflash:, or slot0: directories

Command Default None.

Command Modes SVC configuration mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines This command is valid only if the node is in service mode or the node has been shutdown.

Examples The following example enters the SVC configuration mode and displays all options in this mode.

```
switch# svc-config
switch(svc)# node svc 2/1 upgrade svc-system ?
  bootflash:  URI containing the system image for SVC
  ftp:        URI containing the system image for SVC
  scp:        URI containing the system image for SVC
  sftp:       URI containing the system image for SVC
  slot0:      URI containing the system image for SVC
  tftp:       URI containing the system image for SVC
```

quorum

To set the quorum disk for a cluster, use the quorum command in the cluster configuration submode.

```
cluster config cluster-name
quorum disk [1 | 2 | 3] mdisk disk-id
```

Syntax Description

cluster	Provides access to cluster commands
config cluster-name	Places a previously created cluster in the cluster configuration submode.
quorum disk id	Configures one of three quorum disks for the specified cluster. The quorum ID ranges from 1 to 3.
mdisk mdisk-id	Specifies the MDisk ID (ranges from 1 to 4096).

Command Default

None.

Command Modes

SVC configuration mode—cluster configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The cluster configuration submode prompt is (switch(svc-cluster)#).
You can assign one of 3 possible quorum IDs in any desired order.

Examples

The following example enters the cluster configuration mode for SampleCluster and sets the quorum disk ID.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# quorum disk 2 mdisk 1
```

remote-copy

To create a synchronous copy of a specified VDisk or group of VDIs, use the remote-copy command in the cluster configuration submode.

```
cluster config cluster-name
remote-copy add rcopy-name [cluster rcluster-name]
remote-copy rcopy-name map src-vdisk vdisk-name aux-vdisk vdisk-name
```

Syntax Description		
cluster		Provides access to cluster commands
config cluster-name		Places a previously created cluster in the cluster configuration submode.
remote-copy add rcopy-name		Creates a remote copy instance and assigns a name.
remote-copy cluster rcluster-name		Specifies the remote cluster name for the consistency group.
remote-copy rcopy-name		Enters the remote-copy submode for an existing copy object.
map		Establishes a relationship between the source and destination VDIs.
src-vdisk vdisk-name		Specifies the source VDisk for the copy creation.
aux-vdisk vdisk-name		Specifies a VDisk in the remote copy cluster.

Command Default None.

Command Modes SVC configuration mode—cluster configuration submode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines The cluster configuration submode prompt is (switch(svc-cluster)#).
The remote-copy submode prompt is switch(svc-cluster-remote-copy)#

Examples The following example enters the cluster configuration mode for SampleCluster and creates a synchronous copy of a specified disk.

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# remote-copy add Rcopy1
switch(svc-cluster)# remote-copy r1
switch(svc-cluster-remote-copy)# ?
Submode Commands:
  exit  Exit from this mode
  map   Remote-copy map
  no    Negate a command or set its defaults
switch(svc-cluster-remote-copy)# map src-vdisk SrcVdisk1 aux-vdisk AuxVdisk1
switch(svc-cluster)# remote-copy add Rcopy1 cluster remote-cluster
switch(svc-cluster)# remote-copy name Rcopy1
```

Related Commands

Command	Description
show cluster name remote-copy	Displays configured remote-copy information for a specified cluster.

show cluster flash-copy

To display configured FlashCopy information for a specified cluster, use the show cluster cluster-name flash-copy command.

```
show cluster cluster-name flash-copy [fcopy-name]
```

Syntax Description	show cluster cluster-name	Specifies a previously created cluster name.
	flash-copy fcopy-name	Displays FlashCopy relationships configured for the specified FlashCopy object.

Command Default None.

Command Modes SVC configuration mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines None.

Examples The following examples display configured cluster information.

```
switch(svc)# show cluster SampleCluster flash-copy
-----
name          status
-----
fccstgrp0     idle_or_copied
f2            idle_or_copied
switch(svc)# show cluster SampleCluster flash-copy f2
Flash-copy mapping 1:
  src vdisk is v2
  dest vdisk is v3
  state is idle_or_copied
  copy rate is 50
  progress 0% done
```

show cluster host

To display configured host information for a specific cluster, use the show cluster cluster-name host command.

```
show cluster cluster-name host [host-name | candidate]
```

Syntax Description

show cluster cluster-name	Specifies a previously created cluster name.
host	Displays information about hosts and host ports.
candidate	Lists all candidates that are not part of this entity but are visible to the cluster.
host-name	Displays information about the specified host.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following examples display configured cluster host information.

```
switch(svc)# show SampleCluster host
-----
name          number of ports
-----
oasis15      1
Host1        2
switch(svc)# show SampleCluster host Host1
host Host1:
  Number of port is 2
  Port WWN is 11:22:33:44:aa:bb:cc:dd
  Port WWN is 22:11:33:55:11:aa:bb:cc
LUN 0:  vdisk V1
LUN 10: vdisk V2
switch(svc)# show cluster SampleCluster host candidate
-----
id          pwwn
-----
1           21:00:00:e0:8b:09:e7:04
```

show cluster iogroup

To display configured I/O group information for a specified cluster, use the `show cluster cluster-name iogroup` command.

```
show cluster cluster-name iogroup [group-id]
```

Syntax Description	show cluster cluster-name	Specifies a previously created cluster name.
	iogroup	Identifies one of four I/O groups in the specified cluster.
	group-id	Specifies the iogroup ID (ranges from 1 to 4).

Command Default None.

Command Modes SVC configuration mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines None.

Examples The following examples display configured cluster iogroup information.

```
switch(svc)# show SampleCluster iogroup
-----
ID      NAME                NODE-COUNT    VLUN_COUNT
-----
1      Sampleio1           2              3
2      io_grp1             0              0
3      io_grp2             0              0
4      io_grp3             0              0
5      recovery_io_grp     0              0
```



Note Only four IDs can be used, the fifth I/O group is internally created and is only used for cluster recovery.

```
switch(svc)# show SampleCluster iogroup id 2
Io group id 2:
  Node count is 0
  Host LUN count is 0
  Contains no nodes
```

show cluster ip

To displays configured ip information for a specified cluster, use the show cluster-name ip command.

```
show cluster cluster-name ip
```

Syntax Description

show cluster cluster-name	Specifies a previously created cluster name.
ip	Displays the IP address of the specified cluster.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example displays configured cluster ip information.

```
switch(svc)# show SampleCluster ip  
cluster ip address is 209.165.200.226
```

show cluster mdisk

To display configured MDisk information for a specified cluster, use the `show cluster cluster-name mdisk` command.

```
show cluster cluster-name mdisk candidate | id mdisk-id [extent]
```

Syntax Description	
show cluster cluster-name	Specifies a previously created cluster name.
mdisk	Displays MDisk specific information.
candidate	Displays all MDisks that are not assigned to a group.
id mdisk-id	Displays details of the specified MDisk ID.
extent	Displays information about the specified MDisk's extent.

Command Default None.

Command Modes SVC configuration mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines None.

Examples The following examples display configured cluster MDisk information.

```
switch(svc)# show SampleCluster mdisk
-----
id          nwwn                mdisk-grp      capacity      status
-----
1           20:00:00:04:cf:e6:1b:5b mg1             68.37 GB      online
2           20:00:00:04:cf:e6:e5:32 mg1             68.37 GB      online
3           20:00:00:04:cf:e6:21:a2 mg1             68.37 GB      online
4           20:00:00:04:cf:e6:e1:81 mg1             68.37 GB      online
5           20:00:00:04:cf:e6:e4:df                68.37 GB      online
6           20:00:00:04:cf:e6:1c:fb                68.37 GB      online
7           20:00:00:04:cf:e6:1a:4c                68.37 GB      online
8           20:00:00:04:cf:e6:e4:6b                68.37 GB      online
switch(svc)# show SampleCluster mdisk candidate
-----
id          nwwn                capacity
-----
5           20:00:00:04:cf:e6:e4:df 68.37 GB
6           20:00:00:04:cf:e6:1c:fb 68.37 GB
7           20:00:00:04:cf:e6:1a:4c 68.37 GB
8           20:00:00:04:cf:e6:e4:6b 68.37 GB
switch(svc)# show cluster SampleCluster mdisk id 1
mdisk id 1 is online
  Is member of mdisk-grp mg1
  Controller node WWN is 20:00:00:04:cf:e6:e4:6b
  Controller port WWN is 22:00:00:04:cf:e6:e4:6b, LUN 00:00:00:00:00:00:00
  Controller serial number is 3HZ0KZ8W
```

show cluster mdisk

```
Capacity is 68.37 GB
Number of free extents is 2231
switch(svc)# show cluster SampleCluster mdisk id 1 extent
-----
vdisk          number of extents
-----
v1             2144
```

show cluster mdsik-grp

To display configured MDisk group information for a specified cluster, use the `show cluster cluster-name mdsik-grp` command.

```
show cluster cluster-name mdsik-grp [grp-name]
```

Syntax Description	
<code>show cluster cluster-name</code>	Specifies a previously created cluster name.
<code>mdisk-grp grp-name</code>	Displays information about a specified MDisk group.

Command Default None.

Command Modes SVC configuration mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines None.

Examples The following examples display configured cluster information for a MDisk group.

```
switch(svc)# show cluster SampleCluster mdsik-grp
-----
name      Capacity    free   extent    number    number    status
          size (MB)  of mdisks  of vdisks
-----
mg1       410.16 GB   309.16 GB  16   6   1   online
switch(svc)# show cluster SampleCluster mdsik-grp mg1
mdisk-grp mg1 is online
  Total capacity is 410.16 GB
  Free capacity is 309.16 GB
  Extent size is 16 MB
  Number of mdisks is 6
  Number of vdisks using this group is 1
```

show cluster nodes

To display configured node information for a specified cluster, use the `show cluster cluster-name nodes` command.

```
show cluster cluster-name nodes [candidate]
```

Syntax Description	
<code>show cluster cluster-name</code>	Specifies a previously created cluster name.
<code>nodes</code>	Displays information about nodes in this cluster.
<code>candidate</code>	Lists all candidates that are not part of this entity but are visible to the cluster.

Command Default None.

Command Modes SVC configuration mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines None.

Examples The following example displays configured cluster information for a specified node.

```
switch(svc)# show cluster SampleCluster nodes
Node node1 is online(3)
  Node WWN is 20:06:00:0b:be:57:73:42
  Serial number is JAB072705JH
  Unique id is 01:00:07:27:30:35:4a:48
  Node is in config mode
  Node is part of iogroup id 1 name io_grp0
Node node2 is online(3)
  Node WWN is 20:08:00:0b:be:57:73:42
  Serial number is JAB076605JH
  Unique id is 01:00:07:66:30:35:4a:48
  Node is in non config mode
  Node is part of iogroup id 1 name io_grp0
switch1(svc)# show cluster SampleCluster nodes candidate
-----
NODE                               NWWN
-----
switch1.2.1                        20:06:00:05:30:00:8d:e0
```


show cluster remote-copy

To display configured remote-copy information for a specified cluster, use the show cluster cluster-name remote-copy command.

```
show cluster cluster-name remote-copy [rcopy-name]
```

Syntax Description	
show cluster cluster-name	Specifies a previously created cluster name.
remote-copy	Displays remote copy relationships configured for a specified cluster.
rcopy-name	Displays the specified remote copy object.

Command Default None.

Command Modes SVC configuration mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines None.

Examples The following example displays configured cluster information for the specified copy instance.

```
switch(svc)# show cluster SampleCluster remote-copy r1
Remote-copy mapping 1:
  master cluster is SampleCluster
  master vdisk is v6
  aux cluster is c1
  aux vdisk is v7
  status is inconsistent_stopped
  progress 0% done
Remote-copy mapping 2:
  master cluster is SampleCluster
  master vdisk is v8
  aux cluster is c1
  aux vdisk is v9
  status is inconsistent_stopped
  progress 0% done
```

show cluster remote-copy-cluster

To display configured remote-copy partnership information for a specified cluster, use the show cluster cluster-name remote-copy-cluster command.

```
show cluster cluster-name remote-copy-cluster [rcopy-name]
```

Syntax Description	
show cluster cluster-name	Specifies a previously created cluster name.
remote-copy-cluster	Displays remote copy relationships configured for a specified cluster.
rcopy-name	Displays the specified remote copy object.

Command Default None.

Command Modes SVC configuration mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines None.

Examples The following example displays configured cluster information for the specified copy instance.

```
switch(svc)# show cluster SampleCluster remote-copy-cluster
-----
Cluster          Local/remote      Bandwidth
-----
local-cluster    local             10
remote-cluster   remote            50
```

show cluster status

To displays progress information for a specified cluster, use the show cluster cluster-name status command.

```
show cluster cluster-name status [flash-copy fcopy-name | remote-copy rcopy-name]
```

Syntax Description	
show cluster cluster-name	Specifies a previously created cluster name.
status	Displays the status of a upgrade or copy process.
flash-copy	Displays FlashCopy relationships configured for the specified cluster.
fcopy-name	Displays the specified FlashCopy object.
remote-copy	Displays remote copy relationships configured for a specified cluster.
rcopy-name	Displays the specified remote copy object.

Command Default None.

Command Modes SVC configuration mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines None.

Examples The following examples display configured cluster information.

```
switch(svc)# show cluster SampleCluster status flash-copy fc1
```

```
-----
src vdisk      dest vdisk      progress
-----
v1             v2              100% done
v3             v4              100% done
```

```
switch(svc)# show cluster SampleCluster status remote-copy rc1
```

```
-----
src vdisk      aux vdisk       progress
-----
v5             v6              100% done
v7             v8              100% done
```

show cluster vdisk

To display configured VDisk information for a specified cluster, use the `show cluster cluster-name vdisk` command.

```
show cluster cluster-name vdisk vdisk-id [extent | mapped_hosts]
```

Syntax Description

<code>show cluster cluster-name</code>	Specifies a previously created cluster name.
<code>vdisk</code>	Displays configured VDIs in the cluster
<code>vdisk-id</code>	Displays details of the specified VDisk ID.
<code>extent</code>	Displays information about the specified MDisk's extent.
<code>mapped_hosts</code>	Displays information about which hosts are mapped to the specified VDisk.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following examples display configured cluster information for VDIs.

```
switch(svc)# show cluster SampleCluster vdisk v1 extent
```

```
-----
mdisk id  number of extents
-----
```

```
1          2144
2          2144
3          2144
5           11
6           11
7           10
```

```
switch(svc)# show cluster SampleCluster vdisk v1 mapped_hosts
```

```
-----
host          LUN
-----
```

```
oasis15      0
```

show environment battery

To display status of a battery module for the Caching Services Module (CSM), use the show environment battery command.

```
show environment battery module slot-number [detail]
```

Syntax Description	show environment	Displays the hardware environment in any Cisco MDS 9000 Family switch.
	battery	Displays the status of the battery in a CSM.
	module slot-number	Specifies the slot number of the CSM.
	detail	Provides detailed information about the CSM battery status.

Command Default None.

Command Modes EXEC mode.

Command History This command was modified in Release 1.3(1).

Usage Guidelines None.

Examples The following example displays the current contents of the boot variable.

```
switch# show environment battery module 2
Battery 1:
-----
Voltage           : 10.343 V
Current           : 0.000 A
Temperature       : 23.7 C
Current Capacity  : 1571 mAHr
Full Capacity     : 2057 mAHr
CySampleClustere Count   : 3
Last conditioned in : Week 22 2003
Serial Num       : AMB0722009C
Battery 2:
-----
Voltage           : 10.596 V
Current           : 0.000 A
Temperature       : 26.6 C
Current Capacity  : 1701 mAHr
Full Capacity     : 2032 mAHr
CySampleClustere Count   : 6
Last conditioned in : Week 22 2003
Serial Num       : AMB0722009R
switch## show environment battery module 2 detail
Battery 1:
-----
Voltage           : 10.338 V
Current           : 0.000 A
Temperature       : 23.7 C
Current Capacity  : 1571 mAHr
```

show environment battery

```

Full Capacity      : 2057 mAHr
Caching Capacity  : 6463 MB
CySampleClustere Count : 3
Last conditioned in : Week 22 2003
Serial Num        : AMB0722009C
EEPROM version    : 1
Manufacturer Access      : 0x0
Remaining Capacity Alarm : 0xc8
Remaining Time Alarm     : 0xa
Battery Mode            : 0x6000
AtRate                 : 0x0
AtRate Time To Full    : 0xffff
AtRate Time To Empty   : 0xffff
AtRate OK              : 0x1
Temperature            : 0xb97
Voltage                : 0x2862
Current                : 0xd
Average Current        : 0x6
Max Error              : 0x2
Relative State of Charge : 0x4c
Absolute State of Charge : 0x4f
Remaining Capacity     : 0x623
Full Charge Capacity   : 0x809
Run Time To Empty      : 0xffff
Average Time To Empty  : 0xffff
Average Time To Full   : 0x13f2
Charging Current       : 0x44c
Charging Voltage       : 0x3840
Battery Status         : 0xc0
CySampleClustere Count : 0x3
Design Capacity        : 0x7d0
Design Voltage         : 0x2580
Specification Info     : 0x21
Manufacture Date       : 0x3037
Serial Number          : 0x0
Manufacturer Name      : 0x430a
Device Name            : 0x4207
Device Chemistry       : 0x4e04
Manufacturer Data       : 0x7507
Pack Status & Configuration : 0x2020
VCELL4                 : 0x0
VCELL3                 : 0x0
VCELL2                 : 0x0
VCELL1                 : 0x0
...

```

show interface svc

You can check the status of a SVC interface at any time by using the show interface svc command.

```
show interface svc slot-number/node-number [brief | counters | description]
```

Syntax Description	Parameter	Description
	interface range	Displays the interfaces in the specified range.
	brief	Displays brief info of interface.
	counters	Displays the interface counter information.
	description	Displays a description of interface.
	svc	Displays the SAN Volume Controller (SVC) interface.
	slot-number	Specifies the slot number of the Caching Service Module (CSM).
	node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.

Command Default None

Command Modes EXEC

Command History This command was modified in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines None.

Examples The following examples display configured SVC interface information.

```
switch# show interface svc 2/1
svc2/1 is up
  Node WWN is 10:00:00:00:00:00:00
  Fabric WWN is 20:41:00:05:30:00:33:1e
  Target N-port WWN is 27:39:00:05:30:00:33:2a, vsan is 1, FCID is 0x010006
  Initiator N-port WWN is 27:3a:00:05:30:00:33:2a, vsan is 1, FCID is 0x010007
  Mgmt N-port WWN is 27:3b:00:05:30:00:33:2a, vsan is 1, FCID is 0x010008
  5 minutes input rate 16 bits/sec, 2 bytes/sec, 0 frames/sec
  5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
    7 frames input, 736 bytes
      0 discards, 0 errors
    3 frames output, 276 bytes
      0 discards, 0 errors
switch# show interface svc 8/1-2
svc8/1 is down (Administratively down)
  Node WWN is 23:34:00:05:30:00:00:02
  Fabric WWN is 21:c1:00:05:30:00:00:00
  Target N-port WWN is 23:2e:00:05:30:00:00:02, vsan is 1, FCID is 0x000000
  Initiator N-port WWN is 23:2f:00:05:30:00:00:02, vsan is 1, FCID is 0x000000
  Mgmt N-port WWN is 23:30:00:05:30:00:00:02, vsan is 1, FCID is 0x000000
```

show interface svc

```

5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  0 frames input, 0 bytes
    0 discards, 0 errors
  0 frames output, 0 bytes
    0 discards, 0 errors
svc8/2 is up
Node WWN is 23:35:00:05:30:00:00:02
Fabric WWN is 21:c2:00:05:30:00:00:00
Target N-port WWN is 23:31:00:05:30:00:00:02, vsan is 1, FCID is 0x650003
Initiator N-port WWN is 23:32:00:05:30:00:00:02, vsan is 1, FCID is 0x650004
Mgmt N-port WWN is 23:33:00:05:30:00:00:02, vsan is 1, FCID is 0x650005
5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  3268061 frames input, 6602103068 bytes
    0 discards, 2 errors
  3208131 frames output, 6598470800 bytes
    0 discards, 0 errors
switch# show interface brief

```

Interface	Vsan	Admin Mode	Admin Trunk Mode	Status	FCOT	Oper Mode	Oper Speed (Gbps)	Port Channel
fc8/1	1	FX	--	fcotAbsent	--	--	--	--
...								
fc8/32	1	FX	--	fcotAbsent	--	--	--	--

Interface	Status	Speed (Gbps)
sup-fc0	up	1

Interface	Status	IP Address	Speed	MTU
mgmt0	up	172.22.90.21/24	100 Mbps	1500

Interface	Status
svc2/1	down
svc2/2	up
svc4/1	up
svc4/2	up

switch# show interface svc 2/1 counters

```

svc2/1
5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec 0 ios/sec
5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec 0 ios/sec
272 frames input, 89764 bytes
  39 input session management frames
    19 plogi, 1 plogi_acc, 13 prli, 1 prli_acc
    2 logo, 0 logo_acc, 0 prlo, 0 prlo_acc
    3 abts, 0 ba_acc, 0 ls_rjt
28 input I/Os, 28 cmd complete, 0 cmd fail
24 reads, 4 writes
0 input errors
0 input discards
  FCP cmd errors
    0 sess not up, 0 no resources, 0 bad frames
    0 up layer rjt, 0 out of order, 0 proc unexp exch st
    0 drop unexp exch st, 0 no exch match
  FCP Xrdy errors
    0 sess not up, 0 no resources, 0 bad frames
    0 up layer rjt, 0 out of order, 0 proc unexp exch st
    0 drop unexp exch st, 0 no exch match

```



```

FCP status errors
  0 sess not up, 0 no resources, 0 bad frames
  0 up layer rjt, 0 out of order, 0 proc unexp exch st
  0 drop unexp exch st, 0 no exch match
FCP Data errors
  0 sess not up, 0 no resources, 0 bad frames
  0 up layer rjt, 0 out of order, 0 proc unexp exch st
  0 drop unexp exch st, 0 no exch match
  0 Incoming Aborts
232 frames output, 84176 bytes
  35 output session management frames
    6 plogi, 13 plogi_acc, 1 prli, 12 prli_acc
    0 logo, 0 logo_acc, 0 prlo, 0 prlo_acc
    1 abts, 2 ba_acc, 0 ls_rjt
103 out I/Os, 103 cmd complete, 0 cmd fail
  63 reads, 4 writes
  0 output errors
  0 output discards
  0 out ls aborts
    LS requests while sess not up
      0 cmds 0 data xfers 0 status xfers 0 ds xfers
switch# show interface svc 4/2 description

```

```

-----
Interface          Description
-----
svc4/2             SampleInt1

```

show nodes

To displays configured information for the CSM, use the show svc command.

```
show nodes {local [detail] | svc slot_number/node-number | version}
```

Syntax Description

nodes show nodes	Displays information about the specified nodes.
local	Displays SVC nodes in the switch.
detail	Displays detailed node information.
svc	Displays node information specific to the SVC interface.
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
version	Displays software version information for each node.

Command Default

None.

Command Modes

SVC configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example display configured SVC information and statistics.

```
switch(svc)# show nodes local detail
svc2/1:
  Is a config node for cluster SampleCluster
  cluster Status is active
  Node Status is active
svc2/2:
  Is member of cluster SampleCluster
  cluster Status is active
  Node Status is active
switch(svc)# show nodes ?
  local      Show nodes in the switch
  svc        SVC Interface
  version    Show node sw versions in the switch
  <cr>      Carriage Return
switch(svc)# show nodes svc 2/2
svc2/2:
  Is not a member of any cluster
  Cluster Status is unconfigured
  Node Status is free
switch(svc)# show nodes version
```

```
-----  
Node          sw version    state  
-----  
svc2/1        1.3(1)        Runtime code  (5)  
svc2/2        1.3(1)        Runtime code  (5)
```

Related Commands

Command	Description
svc config	Configures SVC nodes.

show svc

To displays configured information for the CSM, use the show svc command.

```
show svc port svc slot_number/node-number [detail | initiator | mgmt | target [detail | vsan
vsan-id]] | session [detail | initiator | mgmt | peer-wwn pwwn-id | target [detail | vsan vsan-id]]
| stats xipc[ interface svc slot_number/node-number ]| [module slot-number]
```

Syntax Description

show svc	Displays configured SVC information.
port	Displays N-port specific SVC information.
svc	Specifies the new interface to be a SVC interface.
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
detail	Displays detailed information for all N ports
initiator	Displays a SVC node as an initiator in the specified VSAN.
mgmt	Displays a SVC node as a management node in the specified VSAN.
target	Displays a SVC node as a target in the specified VSAN.
vsanvsan-id	Specifies the VSAN ID ranging from 1 to 4093.
session	Displays information specific to the SVC session.
peer-pwwn pwwn-id	Specifies the port WWN of the target or host, with the format hh:hh:hh:hh:hh:hh:hh:hh.
stats	Displays SVC statistical information generally used for debugging.
module slot-number	Specifies the slot number containing the CSM.

Command Default

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following examples display configured SVC information and statistics.

```
switch# show svc session svc 2/1
svc2/1:
  Target N-port WWN is 21:00:00:05:30:00:8d:e0, vsan is 2, FCID is 0x610100
```

```

    pWWN 21:00:00:e0:8b:09:f0:04, nWWN 20:00:00:e0:8b:09:f0:04, FCID 0x610000
Initiator N-port WWN is 20:01:00:05:30:00:8d:e0, vsan is 1, FCID is 0xec0100
    pWWN 22:00:00:04:cf:e6:e4:6b, nWWN 20:00:00:04:cf:e6:e4:6b, FCID 0xec00d4
    pWWN 22:00:00:04:cf:e6:1a:4c, nWWN 20:00:00:04:cf:e6:1a:4c, FCID 0xec00d5
    pWWN 22:00:00:04:cf:e6:1c:fb, nWWN 20:00:00:04:cf:e6:1c:fb, FCID 0xec00d6
    pWWN 22:00:00:04:cf:e6:e1:81, nWWN 20:00:00:04:cf:e6:e1:81, FCID 0xec00d9
    pWWN 22:00:00:04:cf:e6:e4:df, nWWN 20:00:00:04:cf:e6:e4:df, FCID 0xec00da
    pWWN 22:00:00:04:cf:e6:21:a2, nWWN 20:00:00:04:cf:e6:21:a2, FCID 0xec00dc
    pWWN 22:00:00:04:cf:e6:e5:32, nWWN 20:00:00:04:cf:e6:e5:32, FCID 0xec00e0
    pWWN 22:00:00:04:cf:e6:1b:5b, nWWN 20:00:00:04:cf:e6:1b:5b, FCID 0xec00e1
Mgmt N-port WWN is 21:02:00:05:30:00:8d:e0, vsan is 3, FCID is 0x7a0000
    pWWN 21:03:00:05:30:00:8d:e0, nWWN 20:07:00:05:30:00:8d:e0, FCID 0x7a0001
switch# show svc session svc 2/1 peer-pwn 22:00:00:04:cf:e6:e4:6b detail
svc2/1:
    Initiator N-port WWN is 20:01:00:05:30:00:8d:e0, vsan is 1, FCID is 0xec0102
    pWWN 22:00:00:04:cf:e6:e4:6b, nWWN 20:00:00:04:cf:e6:e4:6b, FCID 0xec00d4
    47 frames input, 920 data bytes
    2 ELS pkts, 0 BLS pkts
    0 FCP commands, 0 FCP xfer ready
    20 FCP data frames, 25 FCP status
    0 FCP overrun, 15 FCP underrun
    0 aborts, 0 bad FC2 drops
    0 data excess
    27 frames output, 0 data bytes
    2 ELS pkts, 0 BLS pkts
    25 FCP commands, 0 FCP xfer ready
    0 FCP data frames, 0 FCP status
    0 aborts
    0 open exchanges
switch# show svc port svc 2/1
svc2/1:
    Target N-port in vsan 2 is up
    Port WWN is 21:00:00:05:30:00:8d:e0, FCID is 0x610101
    Initiator N-port in vsan 1 is up
    Port WWN is 20:01:00:05:30:00:8d:e0, FCID is 0xec0102
    Mgmt N-port in vsan 1 is up
    Port WWN is 20:02:00:05:30:00:8d:e0, FCID is 0xec0103
switch# show svc port svc 2/1 target detail
svc2/1:
    Target N-port in vsan 1 is up
    Port WWN is 27:39:00:05:30:00:33:2a, FCID is 0x010006
    0 sessions, 0 closed, 0 in transition
    5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec 0 ios/sec
    5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec 0 ios/sec
    9 frames input, 1064 bytes
    0 input session management frames
    0 plogi, 0 prli
    0 logo, 0 logo_acc
    0 prlo, 0 prlo_acc
    0 abts, 0 ls_rjt
    0 input I/Os, 0 cmd complete, 0 cmd fail
    0 reads, 0 writes
    0 input errors
    0 input discards
    5 frames output, 388 bytes
    0 output session management frames
    0 plogi_acc, 0 prli_acc
    0 logo, 0 logo_acc
    0 prlo, 0 prlo_acc
    0 ba_acc, 0 ls_rjt
    0 output I/Os, 0 cmd complete, 0 cmd fail
    0 output errors
    0 output discards
switch# show svc session svc 2/1 peer-pwn 27:46:00:05:30:00:33:2a detail

```

```
svc2/1:
  Mgmt N-port WWN is 27:3b:00:05:30:00:33:2a, vsan is 1, FCID is 0x010008
  pWWN 27:46:00:05:30:00:33:2a, nWWN 27:48:00:05:30:00:33:2a, FCID 0x010011
  19 frames input, 16517 data bytes
    2 ELS pkts, 0 BLS pkts
    3 FCP commands, 1 FCP xfer ready
    10 FCP data frames, 3 FCP status
    0 FCP overrun, 2 FCP underrun
    0 aborts, 0 bad FC2 drops
    0 data excess
  19 frames output, 16520 data bytes
    2 ELS pkts, 0 BLS pkts
    3 FCP commands, 1 FCP xfer ready
    10 FCP data frames, 3 FCP status
    0 aborts
  0 open exchanges
  FCP Error Stats
    FCP cmd errors
      0 sess not up, 0 no resources, 0 bad frames
      0 up layer rjt, 0 out of order, 0 proc unexp exch st
      0 drop unexp exch st, 0 no exch match
    FCP Xfer Rdy errors
      0 sess not up, 0 no resources, 0 bad frames
      0 up layer rjt, 0 out of order, 0 proc unexp exch st
      0 drop unexp exch st, 0 no exch match
    FCP Status errors
      0 sess not up, 0 no resources, 0 bad frames
      0 up layer rjt, 0 out of order, 0 proc unexp exch st
      0 drop unexp exch st, 0 no exch match
    FCP Data errors
      0 sess not up, 0 no resources, 0 bad frames
      0 up layer rjt, 0 out of order, 0 proc unexp exch st
      0 drop unexp exch st, 0 no exch match
```

svc-config

To perform SAN Volume Controller (SVC) configurations, use the `svc-config` command.

`svc-config`

Syntax Description	
<code>svc-config</code>	Enters the SVC configuration mode.
<code>cluster</code>	Provides access to cluster commands.
<code>node</code>	Provides access to node commands.
<code>show</code>	Displays configured SVC information for the specified node.

Command Default None.

Command Modes EXEC mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines None.

Examples The following example enters the SVC configuration mode and displays all options in this mode.

```
switch# svc-config
switch-sw6(svc)# ?
Submode Commands:
  cluster  Cluster commands
  exit     Exit from this mode
  no       Negate a command or set its defaults
  node     Node commands
  show     Show
```

svc-ibmcli

To perform SAN Volume Controller (SVC) configurations by using IBM's CLI, use the `svc-ibmcli` command.

```
svc-ibmcli {cluster-name cluster-name [IBM-CLI-command ] | node svc slot-number/node-number
[IBM-CLI-command ] }
```

Syntax Description

svc-ibmcli	Enters the IBM CLI configuration mode.
cluster-name	Specifies a new cluster.
cluster-name	Specifies a cluster name.
node svc	Specifies a node in the SVC interface.
slot-number	Specifies the slot number of the Caching Service Module (CSM).
node-number	Specifies the node number of the SVC instance running on the CSM. This number ranges from 1 to 2 nodes per module.
IBM-CLI-command	Specifies the IBM TotalStorage command to be executed

Command Default

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

When you enter the IBM TotalStorage shell, all future commands are interpreted directly by this shell. Type `exit` to return to the Cisco MDS switch prompt.

Examples

The following example enters the SVC configuration mode and displays all options in this mode.

```
switch# svc-ibmcli cluster-name SampleCluster
Attaching to config node for cluster SampleCluster
To exit type 'exit', to abort type '$.'
IBM_svc:admin>
switch# svc-ibmcli node svc 2/1
Attaching to node 2/1
To exit type 'exit', to abort type '$.'
IBM_svc:admin>
```


svc-purge-wwn module

To remove all configured WWNs for the CSM from the running configuration, use the `svc-purge-wwn module` command.

```
svc-purge-wwn module module-number
```

Syntax Description	<code>svc-purge-wwn</code>	Purges the WWN for the CSM.
	<code>module module-number</code>	Specifies the slot number for the CSM.

Command Default None.

Command Modes EXEC mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines This command also purges all system allocated pWWNs and nWWNs from the system and will never be used again (by the system or by SVC interfaces). New system values will be allocated for all pWWN/nWWNs for the module.

Examples The following example enters the SVC configuration mode and displays all options in this mode.

```
switch# svc purge-wwn module 2
!!!WARNING! This command will purge all SVC system allocated
           WWNs for the specified module. These WWNs will be lost.
           All user configured WWNs will be removed from the
           running-config, but not from the startup-config.
           This operation can take a long time. Other CLI commands
           on the system may be stopped while this operation is
           in progress.
Are you sure you want to do this? [Y/N] [N] y
switch#
```

vdisk

To create a new VDisk or access a new VDisk, use the vdisk command in the cluster configuration submode.

```
cluster config cluster-name
vdisk add vdisk-name iogroup group-id mdisk-grp grp-name capacity number | import [clean | mdisk-list
| preferred-node | sequential]
vdisk name vdisk-name -> expand [capacity | extent mdisk disk-id offset number ] | io-throttle
number [MB] | iogroup | shrink
```

Syntax Description

cluster	Provides access to cluster commands
config cluster-name	Places a previously created cluster in the cluster configuration submode.
vdisk add vdisk-name	Creates a VDisk of the specified name.
iogroup group-id	Identifies one of four I/O groups in the specified cluster. The ID ranges from 1 to 4. The I/O for the VDisk is serviced by node belonging to that I/O group.
mdisk-grpgrp-name	Specifies an existing MDisk group from which the VDisk storage originates.
capacity	Configures the size of this VDisk.
number	Provides a range from 0- 1677215 Gigabytes.
import	Imports a previously unmanaged disk that contains SVC virtualization data.
clean	Clears all data in the VDisk.
mdisk-list	Specifies a list of MDisks. All disks in this list must be part of the MDisk group
preferred-node	specifies the preferred node within the two nodes in this group to send I/Os for this VDisk
sequential	Specifies a sequential virtualization policy. If this option is not specified, the striped (default) virtualization policy is used.
vdisk vdisk-name	Enters the VDisk submode of an existing VDisk.
expand capacity	Expands the MDisk capacity.
extent	Expands the MDisk by a single extent.
offsetnumber	Offsets the extent.
io-throttle	Limits the amount of I/Os allowed for this VDisk. If MB is not specified, the unit is calculated in I/Os per second.
MB	Specifies the I/O throttling in Megabytes.
shrink	Shrinks the capacity of the VDisk as specified.

Command Default None.

Command Modes SVC configuration mode—cluster configuration submode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines The cluster configuration submode prompt is (switch(svc-cluster)#).
The VDisk submode prompt is switch (svc-cluster-vdisk)#
Extents are allowed from all MDisks in the list

Examples The following example enters the cluster configuration mode for SampleCluster and ---

```
switch(svc)# cluster config SampleCluster
switch(svc-cluster)# vdisk add Vdisk1 iogroup 1 mdisk-grp Mdisk1 ?
  capacity Vdisk add name iogroup mdisk-grp
  import Vdisk add import
switch(svc-cluster)# vdisk add Vdisk1 iogroup 1 mdisk-grp Mdisk1 capacity ?
<0-2147483647> Enter the capacity
switch(svc-cluster)# vdisk add Vdisk1 iogroup 1 mdisk-grp Mdisk1 capacity 5000 ?
  gb Vdisk add name iogroup mdisk-grp capacity
  mb Vdisk add name iogroup mdisk-grp capacity
  pb Vdisk add name iogroup mdisk-grp capacity
  tb Vdisk add name iogroup mdisk-grp capacity
switch(svc-cluster)# vdisk add Vdisk1 iogroup 1 mdisk-grp Mdisk1 capacity 5000 gb ?
  clean Vdisk add clean
  mdisk-list Vdisk add mdisk-list
  preferred-node Vdisk add sequential mdisk
  sequential Vdisk add sequential
  <cr> Carriage Return
switch(svc-cluster)# vdisk add VDISK1 iogroup 1 mdisk-grp Mdisk1 capacity 0 gb
switch(svc-cluster)# vdisk VDISK1
switch(svc-cluster-vdisk)# ?
Submode Commands:
  exit Exit from this mode
  expand Expand
  io-throttle Io throttle
  iogroup Move vdisk to iogroup
  no Negate a command or set its defaults
  shrink Shrink capacity
switch(svc-cluster-vdisk)# expand ?
  capacity Expand capacity
  extent Expand extent
switch(svc-cluster-vdisk)# io-throttle 0
switch(svc-cluster-vdisk)# shrink capacity 1 ?
  gb Expand capacity
  mb Expand capacity
  pb Expand capacity
  tb Expand capacity
switch(svc-cluster-vdisk)# exit
switch(svc)# show cluster SampleCluster vdisk
-----
name          capacity    iogroup mdisk-grp name    policy    status
-----
Vdisk1        100.00 GB    1      Group1    striped   online
Vdisk2        50.00 GB    1      Group2    striped   online
switch(svc)# show cluster SampleCluster vdisk Vdisk1
vdisk Vdisk1 is online
```

```

Capacity is 100.00 GB
Using storage from mdisk-grp Group1
Processed by io group 1
Virtualization policy is striped
Preferred node is 2
switch(svc)# show cluster SampleCluster vdisk Vdisk1 extent
-----
mdisk id  number of extents
-----
1          2134
2          2133
3          2133
switch(svc)# show cluster SampleCluster vdisk Vdisk1 mapped_hosts
-----
host          LUN
-----
Host1         0

```

Related Commands

Command	Description
show cluster name vdisk	Displays configured vdisk information for a specified cluster.



D Commands

- [data-pattern-file](#), on page 335
- [deadtime \(radius group configuration\)](#), on page 336
- [deadtime \(tacacs+ group configuration\)](#), on page 337
- [deadtime \(server group configuration mode\)](#), on page 338
- [delete](#), on page 339
- [delete ca-certificate](#), on page 341
- [delete certificate](#), on page 342
- [delete crt](#), on page 343
- [deny \(IPv6-ACL configuration\)](#), on page 344
- [description](#), on page 347
- [destination interface](#), on page 348
- [destination-group](#), on page 350
- [destination-profile](#), on page 352
- [destination-profile \(telemetry\)](#), on page 355
- [device-alias \(IVR fcdomain database configuration submode\)](#), on page 356
- [device-alias \(SDV virtual device configuration submode\)](#), on page 357
- [device-alias abort](#), on page 358
- [device-alias commit](#), on page 359
- [device-alias confirm-commit enable](#), on page 360
- [device-alias database](#), on page 361
- [device-alias distribute](#), on page 362
- [device-alias import fcalias](#), on page 363
- [device-alias mode enhanced](#), on page 364
- [debug ldap](#), on page 366
- [device-alias name](#), on page 367
- [diagnostic bootup level](#), on page 368
- [diagnostic isl latency-test](#), on page 369
- [diagnostic isl multi_hop generator](#), on page 370
- [diagnostic isl multi_hop reflector](#), on page 372
- [diagnostic monitor interval module](#), on page 374
- [diagnostic monitor module](#), on page 376
- [diagnostic ondemand iteration](#), on page 377
- [diagnostic ondemand action-on-failure](#), on page 378

- diagnostic start interface fc test link-diag, on page 379
- diagnostic start module, on page 382
- diagnostic stop interface fc test link-diag, on page 383
- diagnostic stop module, on page 384
- dir, on page 385
- disable, on page 387
- discover, on page 388
- discover custom-list, on page 389
- discover scsi-target, on page 390
- distribute, on page 392
- dmm module, on page 393
- dmm module job, on page 394
- do, on page 397
- dpvm abort, on page 399
- dpvm activate, on page 400
- dpvm auto-learn, on page 401
- dpvm commit, on page 403
- dpvm database, on page 404
- dpvm database copy active, on page 406
- dpvm database diff, on page 407
- dpvm distribute, on page 408
- dpvm enable, on page 409
- dpvm overwrite-duplicate-pwwn, on page 410
- dscp, on page 411
- dst-grp, on page 413
- duplicate-message throttle, on page 415

data-pattern-file

To configure data pattern file for a SAN tuner extension N port, use the data-pattern-file command in interface configuration submenu. To remove data pattern file, use the no form of the command.

```
data-pattern-file filename
no data-pattern-file
```

Syntax Description

filename	Specifies the data pattern file name.
----------	---------------------------------------

Command Default

All zero pattern.

Command Modes

SAN extension N port configuration submenu.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

By default, an all-zero pattern is used as the pattern for data generated by the virtual N ports. You can optionally specify a file as the data pattern to be generated by selecting a data pattern file from one of three locations: the bootflash: directory, the volatile: directory, or the slot0: directory. This option is especially useful when testing compression over FCIP links. You can also use Canterbury corpus or artificial corpus files for benchmarking purposes.

Examples

The following example configures the data pattern file for an N port:

```
switch# san-ext-tuner
switch(san-ext)# nwwn 10:00:00:00:00:00:00
switch(san-ext)# nport pwn 12:00:00:00:00:00:00:56 vsan 13 interface gigabitethernet 1/2
switch(san-ext-nport)# data-pattern-file bootflash://DataPatternFile
```

Related Commands

Command	Description
nport pwn	Configures SAN extension tuner N port pWWNs.
san-ext-tuner	Enters SAN extension tuner configuration mode.
show san-ext-tuner	Displays SAN extension tuner information.

deadtime (radius group configuration)

To configure a periodic time interval where a nonreachable (non-responsive) RADIUS server is monitored for responsiveness, use the `deadtime` command in RADIUS group configuration submode. To disable the monitoring of the non-responsive server, use the `no` form of the command.

```
deadtime time
no deadtime time
```

Syntax Description

<code>time</code>	Specifies the time interval (in minutes) for monitoring the server. The time range is 1 to 1440 minutes.
-------------------	--

Command Default

Zero.

Command Modes

RADIUS group configuration submode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

If the dead time interval for an individual RADIUS server is greater than zero (0), that value takes precedence over the value set for the server group.

When the dead time interval is 0 minutes, RADIUS server monitoring is not performed unless the RADIUS server is part of a server group and the dead time interval for the group is greater than 0 minutes.

Examples

The following example shows the `deadtime` command in RADIUS group configuration submode:

```
switch# config terminal
switch(config)# aaa group server radius testgroup
switch(config-radius)# deadtime 10
```

Related Commands

Command	Description
<code>radius-server deadtime</code>	Sets a time interval for monitoring a nonresponsive RADIUS server.
<code>show radius-server</code>	Displays RADIUS server information.

deadtime (tacacs+ group configuration)

To configure a periodic time interval where a non-reachable (non responsive) TACACS+ server is monitored for responsiveness, use the deadtime command in TACACS+ group configuration submode. To disable the monitoring of the non responsive server, use the no form of the command.

```
deadtime time
no deadtime time
```

Syntax Description	time Specifies the time interval (in minutes) for monitoring the server. The time range is 1 to 1440 minutes.
---------------------------	---

Command Default Zero.

Command Modes TACACS+ group configuration submode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines If the dead time interval for an individual TACACS+ server is greater than zero (0), that value takes precedence over the value set for the server group.

When the dead time interval is 0 minutes, TACACS+ server monitoring is not performed unless the TACACS+ server is part of a server group and the dead time interval for the group is greater than 0 minutes.

Examples

The following example shows the deadtime command in TACACS+ group configuration submode:

```
switch# config terminal
switch(config)# aaa group server tacacs mygroup
switch(config-tacacs)# deadtime 5
```

Related Commands	Command	Description
	show tacacs-server	Displays TACACS+ server information.
	tacacs-server deadtime	Sets a time interval for monitoring a nonresponsive TACACS+ server.

deadtime (server group configuration mode)

To configure deadtime within the context of LDAP server groups, use the deadtime command in server group configuration mode. To disable this feature, use the no form of the command.

```
deadtime minutes
no deadtime minutes
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Server group configuration mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to configure deadtime within the context of LDAP server groups:

```
switch(config-ldap) # deadtime minutes
switch(config-ldap) #
```

Related Commands	Command	Description
	show ldap-server groups	Displays the configured LDAP server groups.

delete

To delete a specified file or directory on a flash memory device, use the delete command in EXEC mode.

```
delete bootflash : filename | debug : filename | log : filename | modflash : filename | slot0 : filename |
volatile : filename
```

Syntax Description

bootflash:	Flash image that resides on the supervisor module.
filename	The name of the file to be deleted.
debug:	Contains the debug files.
log:	Contains the two default logfiles. The file dmesg contains the kernel log-messages and the file messages contains the system application log-messages.
modflash:	Flash image that resides on a module.
slot0:	Flash image that resides on another module.
volatile:	Flash image that resides on the volatile file system.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
2.1(1a)	Added debug, log, and modflash keywords.

Usage Guidelines

When you delete a file, the software erases the file.

If you attempt to delete the configuration file or image specified by the CONFIG_FILE or BOOTLDR environment variable, the system prompts you to confirm the deletion. Also, if you attempt to delete the last valid system image specified in the BOOT environment variable, the system prompts you to confirm the deletion.



Caution

If you specify a directory, the delete command deletes the entire directory and all its contents.

Examples

The following example deletes the file named test from the flash card inserted in slot 0:

```
switch# delete slot0:test
Delete slot0:test? [confirm]
```

The following example deletes a file from a directory:

```
switch# delete dns_config.cfg
```

The following example deletes a file from an external CompactFlash (slot0):

```
switch# delete slot0:dns_config.cfg
```

The following example deletes the entire my-dir directory and all its contents:

```
switch# delete bootflash:my-dir
```

The following example deletes the entire user created dk log file on the active supervisor:

```
switch# delete log://sup-active/
log://sup-active/dk          log://sup-active/dmesg      log://sup-active/messages
switch# delete log://sup-active/dk
switch# dir log:
      31      Feb 04 18:22:03 2005  dmesg
    14223     Feb 04 18:25:30 2005  messages
Usage for log://sup-local
    35393536 bytes used
    174321664 bytes free
    209715200 bytes total
switch#
```

Related Commands

Command	Description
cd	Changes the default directory or file system.
dir	Displays a list of files on a file system.
show boot	Displays the contents of the BOOT environment variable, the name of the configuration file pointed to by the CONFIG_FILE environment variable, the contents of the BOOTLDR environment variable, and the configuration register setting.

delete ca-certificate

To delete certificate authority certificates, use the delete ca-certificate command in trust point configuration submode.

```
delete ca-certificate
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Trust point configuration submode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines This command deletes the CA certificate or certificate chain corresponding to the trust point CA. As a result, the trust point CA is no longer trusted. If there is an identity certificate from the CA, you should delete it before attempting to delete the CA certificate. Doing so prevents the accidental deletion of a CA certificate when you have not yet deleted the identity certificate from that CA. This action may be necessary when you do not want to trust the CA any more for a reason such as the CA is compromised or the CA certificate is already expired, with the latter being a very rare event.



Note The trust point configuration, certificates, and key pair configurations are made persistent only after saving to the startup configuration. To be consistent with this configuration behavior, the delete behavior is also the same. That is, the deletions are made persistent only after saving to the startup configuration. Use the copy running-config startup-config command to make the certificate and key pair deletions persistent.

Examples

The following example shows how to delete a certificate authority certificate:

```
switch# config terminal
switch(config)# crypto ca trustpoint admin-ca
switch(config-trustpoint)# delete ca-certificate
```

Related Commands	Command	Description
	delete certificate	Deletes the identity certificate.
	delete crl	Deletes the crl from the trustpoint.

delete certificate

To delete the identity certificate, use the delete certificate command in trust point configuration submode.

```
delete certificate [force]
```

Syntax Description

force	(Optional) Forces the deletion of the identity certificate.
-------	---

Command Default

None.

Command Modes

Trust point configuration submode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

Use this command to delete the identity certificate from the trust point CA. This action may be necessary when the identity certificate expires or the corresponding key pair is compromised. Applications will be left without any identity certificate to use after the deletion of the last or the only identity certificate present. Accordingly, an error message is generated if the certificate being deleted is the last or only identity certificate present. If needed, the deletion can still be accomplished by forcing it using the force option.



Note

The trust point configuration, certificates, and key pair configurations are made persistent only after saving to the startup configuration. To be consistent with this configuration behavior, the delete behavior is also the same. That is, the deletions are made persistent only after saving to the startup configuration. Use the `copy running-config startup-config` command to make the certificate and key pair deletions persistent.

Examples

The following example shows how to delete the identity certificate:

```
switch# config terminal
switch(config)# crypto ca trustpoint admin-ca
switch(config-trustpoint)# delete certificate
```

The following example shows how to force the deletion of the identity certificate:

```
switch(config-trustpoint)# delete certificate force
```

Related Commands

Command	Description
delete ca-certificate	Deletes the certificate authority certificate.
delete crl	Deletes the crl from the trustpoint.

delete crl

To delete the crl from the trustpoint, use the delete crl command in trust point configuration submode.

```
delete crl
```

Syntax Description This command has no argument or keywords.

Command Default None.

Command Modes Trust point configuration submode.

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to delete the crl from the trustpoint:

```
switch# config terminal  
switch(config)# crypto ca trustpoint admin-ca  
switch(config-trustpoint)# delete crl
```

Command	Description
delete ca-certificate	Deletes the certificate authority certificate.
delete certificate	Deletes the identity certificate.

deny (IPv6-ACL configuration)

To configure deny conditions for an IPv6 access control list (ACL), use the deny command in IPv6-ACL configuration submode. To remove the conditions, use the no form of the command.

```
deny ipv6-protocol-number | ipv6 source-ipv6-prefix/prefix-length | any | host source-ipv6-address
dest-ipv6-prefix/prefix-length | any | host dest-ipv6-address [log-deny]
deny icmp source-ipv6-prefix/prefix-length | any | host source-ipv6-address dest-ipv6-prefix/prefix-length
| any | host dest-ipv6-address [icmp-type [icmp-code]] [log-deny]
deny tcp source-ipv6-prefix/prefix-length | any | host source-ipv6-address [source-port-operator
source-port-number | range source-port-number source-port-number] dest-ipv6-prefix/prefix-length | any
| host dest-ipv6-address [dest-port-operator dest-port-number | range dest-port-number dest-port-number]
[established] [log-deny]
deny udp source-ipv6-prefixprefix-length | any | host source-ipv6-address [source-port-operator
source-port-number | range source-port-number source-port-number] dest-ipv6-prefixprefix-length | any |
host dest-ipv6-address [dest-port-operator dest-port-number | range dest-port-number dest-port-number]
[log-deny]
no deny ipv6-protocol-number | ipv6 | icmp | tcp | udp
```

Syntax Description

ipv6-protocol-number	Specifies an IPv6 protocol number. The range is 0 to 255.
ipv6	Applies the ACL to any IPv6 packet.
source-ipv6-prefix/prefix-length	Specifies a source IPv6 network or class of networks. The format is X:X:X::X/n .
any	Applies the ACL to any source or destination prefix.
host source-ipv6-address	Applies the ACL to the specified source IPv6 host address. The format is X:X:X::X .
dest-ipv6-prefix/prefix-length	Specifies a destination IPv6 network or class of networks. The format is X:X:X::X/n .
host dest-ipv6-address	Applies the ACL to the specified destination IPv6 host address. The format is X:X:X::X .
log-deny	(Optional) For packets that are dropped, creates an informational log message about the packet that matches the entry. The message includes the input interface.
icmp	Applies the ACL to any Internet Control Message Protocol (ICMP) packet.
icmp-type	Specifies an ICMP message type. The range is 0 to 255.
icmp-code	Specifies an ICMP message code. The range is 0 255.
tcp	Applies the ACL to any TCP packet.
source-port-operator	Specifies an operand that compares the source ports of the specified protocol. The operands are lt (less than), gt (greater than), and eq (equals).

source-port-number	Specifies the port number of a TCP or UDP port. The number can be from 0 to 65535. A range requires two port numbers.
udp	Applies the ACL to any UDP packet.
dest-port-operator	Specifies an operand that compares the destination ports of the specified protocol. The operands are lt (less than), gt (greater than), and eq (equals).
dest-port-operator	Specifies the port number of a TCP or UDP port. The number can be from 0 to 65535. A range requires two port numbers.
range	Specifies a range of ports to compare for the specified protocol.
established	(Optional) Indicates an established connection, which is defined as a packet whose SYN flag is not set.

Command Default None.

Command Modes IPv6-ACL configuration submode.

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines The following guidelines can assist you in configuring an IPv6-ACL.

You can apply IPv6-ACLs to VSAN interfaces, the management interface, Gigabit Ethernet interfaces on IPS modules and MPS-14/2 modules, and Ethernet PortChannel interfaces. However, if IPv6-ACLs are already configured in a Gigabit Ethernet interface, you cannot add this interface to a Ethernet PortChannel group.



Caution Do not apply IPv6-ACLs to just one member of a PortChannel group. Apply IPv6-ACLs to the entire channel group.

- Use only the TCP or ICMP options when configuring IPv6-ACLs on Gigabit Ethernet interfaces.
- Configure the order of conditions accurately. Because the IPv6-ACL filters are applied sequentially to the IP flows, the first match determines the action taken. Subsequent matches are not considered. Be sure to configure the most important condition first. If no conditions match, the software drops the packet.

Examples

The following example configures an IPv6-ACL called List1, enters IPv6-ACL submode, and adds an entry to deny TCP traffic from any source address to any destination address:

```
switch# config terminal
switch(config)# ipv6 access-list List1
switch(config-ipv6-acl)# deny tcp any any
```

The following example removes a deny condition set for any destination prefix on a specified UDP host:

```
switch# config terminal
```

```
switch(config)# ipv6 access-list List1
switch(config-ipv6-acl)# no deny udp host 2001:db8:200d::4000 any
```

The following example removes the IPv6-ACL called List1 and all its entries:

```
switch# config terminal
switch(config)# no ipv6 access-list List1
```

Related Commands

Command	Description
ipv6 access-list	Configures an IPv6 ACL and enters IPv6-ACL configuration submode.
permit	Configures permit conditions for an IPv6 ACL.

description

To configure a description for the Event Manager policy, use the description command.

```
description policy-description
```

Syntax Description

policy-description	Configures a descriptive string for the policy. The string can be any alphanumeric string up to 80 characters. Enclose the string in quotation marks.
--------------------	---

Command Default

None.

Command Modes

Embedded Event Manager.

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure a descriptive string for the policy:

```
switch# configure terminal
switch(config)# event manager applet eem-applet
switch(config-applet)# description "Monitors interface shutdown."
switch(config-applet)#
```

Related Commands

Command	Description
show interface	Displays an interface configuration for a specified interface.
shutdown	Disables and enables an interface.

destination interface

To configure a switched port analyzer (SPAN) destination interface, use the destination interface command in SPAN session configuration submenu. To disable this feature, use the no form of the command.

```
destination interface fc slot/port | fc-tunnel tunnel-id
no destination interface fc slot/port | fc-tunnel tunnel-id
```

Syntax Description		
	fc slot/port	Specifies the Fibre Channel interface ID at a slot and port.
	fc-tunnel tunnel-id	Specifies the Fibre Channel tunnel interface ID.

Command Default Disabled.

Command Modes SPAN session configuration submenu.

Command History	Release	Modification
	6.2(5)	SPAN is supported and RSPAN is not supported in Cisco MDS 9250i Multiservice Fabric Switch.
	1.0(2)	This command was introduced.
	1.2(1)	Added the fc-tunnel parameter.

Usage Guidelines The SPAN destination interface must be configured as SPAN destination port (SD port) mode using the switchport command before the interface can be associated with SPAN session as a destination interface.

Examples

The following example shows how to configure an interface as a SPAN destination port (SD port), create a SPAN session, and then configure the interface fc3/13 as the SPAN destination interface:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fc3/13
switch(config-if)# switchport mode

switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fc3/13
switch(config-if)# switchport mode sd
switch(config-if)# exit
switch(config)# span session 1
switch(config-span)# destination interface fc3/13
switch(config-span)# do show span session 1
switch(config-span)# show span session 1
Session 1 (inactive as destination is down)
  Destination is fc3/13
  No session filters configured
  No ingress (rx) sources
  No egress (tx) sources
switch(config-span)#
```

Related Commands

Command	Description
show span session	Displays specific information about a SPAN session.
source	Configures a SPAN source.
span session	Selects or configures the SPAN session and changes to SPAN configuration submode.
suspend	Suspends a SPAN session.
switchport	Configures the switch port mode on the Fibre Channel interface.

destination-group

To create a destination group and enter destination group configuration mode, use the destination-group command. To remove the destination group, use the no form of this command.

```
destination-group id
```

```
no destination-group id
```

Syntax Description

id	Destination group ID. Range is from 1 to 4095.
----	--

Command Default

No destination group exists.

Command Modes

Telemetry configuration mode (config-telemetry)

Command History

Release	Modification
8.3(1)	This command was introduced.

Usage Guidelines

Currently, destination group ID supports only numeric ID values.

Examples

This example shows how to create a destination group and enter destination group configuration mode:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# destination-group 100
switch(conf-tm-dest)#
```

This example shows how to remove a destination group:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# no destination-group 100
```

Related Commands

Command	Description
destination-profile	Specifies the default destination profile and enters destination profile configuration mode.
feature telemetry	Enables the SAN Telemetry Streaming feature.
ip (destination-group)	Configures an IPv4 or IPv6 destination address for a destination group.
show running-config telemetry	Displays the existing telemetry configuration.

Command	Description
show telemetry	Displays telemetry configuration.
telemetry	Enters SAN Telemetry Streaming configuration mode.

destination-profile

To configure the attributes of the destination such as the e-mail address or the message level with the Call Home function, use the destination-profile command in Call Home configuration submode. To disable this feature, use the no form of the command.

```
destination-profile profile-name | XML-destination | full-txt-destination | short-txt-destination alert-group
all | cisco-Tac | Crash | environmental | inventory | license | linecard-hardware | rmon | supervisor-hardware |
syslog-group-port | system | test | email-addr email-address | http https-or-http url | message-level
message-level | message-size message-size | transport-method email | http
no destination-profile profile-name | XML-destination | full-txt-destination | short-txt-destination alert-group
all | cisco-Tac | Crash | environmental | inventory | license | linecard-hardware | rmon | supervisor-hardware |
syslog-group-port | system | test | email-addr email-address | http https-or-http url | message-level
message-level | message-size message-size | transport-method email | http
```

Syntax Description

profile-name	Specifies a user-defined user profile with a maximum of 32 alphanumeric characters.
XML-destination	Configures the destination profile for XML messages.
full-txt-destination	Configures the destination profile for plain text messages.
short-txt-destination	Configures the destination for short text messages.
alert-group	Specifies one or more of the alert groups.
all	Specifies an alert group consisting of all Call Home messages.
cisco-Tac	Specifies an alert group consisting of events that are meant only for Cisco TAC.
Crash	Specifies an alert group consisting of software crash events for Call Home.
environmental	Specifies an alert group consisting of power, fan, and temperature-related events.
inventory	Specifies an alert group consisting of inventory status events.
license	Specifies an alert group consisting of license status events.
linecard-hardware	Specifies an alert group consisting of module related events.
rmon	Specifies an alert group consisting of RMON status events.
supervisor-hardware	Specifies an alert group consisting of supervisor-related events.
syslog-port-group	Specifies an alert group consisting of syslog port group status events.
system	Specifies an alert group consisting of software-related events.
test	Specifies an alert group consisting of user-generated test events.
email-addr	E-mail transport method.

email-address	Specifies the E-mail address.
http	HTTP transport method.
https-or-http url	Specifies the HTTP or HTTPs URL.
message-level message-level	Specifies Call Home message level (0 is the lowest urgency, 9 is the highest urgency).
message-size message-size	Configures the maximum message size (default 2500000).
transport-method	Specifies Call Home message-sending transport method.
email	Specifies the e-mail transport method.
http	Specifies the HTTP transport method.

Command Default

None.

Command Modes

Call Home configuration submode.

Command History

Release	Modification
NX-OS 4.2(1)	Deleted Avanti keyword from the syntax description. Added the Usage guideline.
NX-OS 4.1(3)	Added the HTTPs URL and transport method for syntax description.
1.0(2)	This command was introduced.

Usage Guidelines

The transport method as well as the HTTP URL is distributed only to the switches in the fabric running images for 4.2(1) and later. The switches running in the lower version images will simply ignore the HTTP configuration.

The HTTP configuration also will not be distributed to switches that support the HTTP configuration but do not distribute it.

Examples

The following example shows how to configure XML destination profiles for the HTTP URL:

```
switch(config-callhome) # destination-profile XML-destination http http://site.service.com
switch(config-callhome) # no destination-profile XML-destination http http://site.service.com
```

The following example enables the transport method for destination profile:

```
switch(config-callhome) # destination-profile XML-destination transport-method http
switch(config-callhome) # no destination-profile XML-destination transport-method http
switch(config-callhome) #
switch(config-callhome) # destination-profile XML-destination transport-method email
switch(config-callhome) # no destination-profile XML-destination transport-method email
switch(config-callhome) #
```

The following example shows how to configure full-text destination profiles:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# destination-profile full-txt-destination email-addr person@place.com
switch(config-callhome)# destination-profile full-txt-destination message-size 100000
```

The following example shows how to configure short-text destination profiles:

```
switch(config-callhome)# destination-profile short-txt-destination email-addr person@place.com
switch(config-callhome)# destination-profile short-txt-destination message-size 100000
```

Related Commands

Command	Description
call home	Configures the Call Home function.
callhome test	Sends a dummy test message to the configured destinations.
show callhome	Displays configured Call Home information.

destination-profile (telemetry)

To specify the default destination profile and enter destination profile configuration mode, use the destination-profile command. To remove the default destination profile, use the no form of this command.

destination-profile

no destination-profile

Syntax Description This command has no arguments or keywords.

Command Default No destination profile exists.

Command Modes Telemetry configuration mode (config-telemetry)

Release	Modification
8.3(1)	This command was introduced.

Examples

This example shows how to specify the default destination profile and enter destination profile configuration mode:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# destination-profile
switch(conf-tm-dest-profile)#
```

This example shows how to remove the default destination profile:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# no destination-profile
```

Related Commands	Command	Description
	destination-group	Creates a destination group and enters destination group configuration mode.
	feature telemetry	Enables the SAN Telemetry Streaming feature.
	ip (destination-group)	Configures an IPv4 or IPv6 destination address for a destination group.
	show running-config telemetry	Displays the existing telemetry configuration.
	show telemetry	Displays telemetry configuration.
	telemetry	Enters SAN Telemetry Streaming configuration mode.

device-alias (IVR fcdomain database configuration submode)

To map a device alias to a persistent FC ID for IVR, use the device-alias command in IVR fcdomain database configuration submode. To remove the mapping for the device alias, use the no form of the command.

```
device-alias device-name fc-id
no device-alias device-name
```

Syntax Description

device-name	Specifies the device name. Maximum length is 64 characters.
fc-id	Specifies the FC ID for the device.

Command Default

None.

Command Modes

IVR fcdomain database configuration submode.

Command History

Release	Modification
2.1(2)	This command was introduced.

Usage Guidelines

Only one FC ID can be mapped to a device alias.

Examples

The following example shows how to map the device alias to the persistent FC ID:

```
switch# config t
switch(config)# ivr fcdomain database autonomous-fabric-num 10 vsan 20
switch(config-fcdomain)# native-autonomous-fabric-num 20 native-vsan 30 domain 15
switch(config-fcdomain-fcid)# device-alias SampleName 0x123456
```

The following example shows how to remove the mapping between the device alias and the FC ID:

```
switch# config t
switch(config)# ivr fcdomain database autonomous-fabric-num 10 vsan 20
switch(config-fcdomain)# native-autonomous-fabric-num 20 native-vsan 30 domain 15
switch(config-fcdomain-fcid)# no device-alias SampleName
```

Related Commands

Command	Description
ivr fcdomain database autonomous-fabric-num	Creates IVR persistent FC IDs.
native-autonomous-fabric-num	Creates an IVR persistent FC ID database entry.
show ivr fcdomain database	Displays IVR fcdomain database entry information.

device-alias (SDV virtual device configuration submode)

To add a device alias to a virtual device, use the device-alias command in SDV virtual device configuration submode. To remove a device alias, use the no form of the command.

```
device-alias device-name [primary]
no device-alias device-name [primary]
```

Syntax Description	
device-name	Specifies the device name. Maximum length is 64 characters.
primary	(Optional) Specifies the device as a primary device.

Command Default None.

Command Modes SDV virtual device configuration submode.

Command History	Release	Modification
	3.1(2)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to configure a virtual target alias name:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# sdv virtual-device name sql vsan 1
switch(config-sdv-virt-dev)# device-alias group1 primary
```

Related Commands	Command	Description
	sdv enable	Enables or disables SAN device virtualization.
	show sdv statistics	Displays SAN device virtualization statistics.

device-alias abort

To discard a Distributed Device Alias Services (device alias) Cisco Fabric Services (CFS) distribution session in progress, use the device-alias abort command in configuration mode.

```
device-alias abort
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to discard a device alias CFS distribution session in progress:

```
switch# config terminal
switch(config)# device-alias abort
```

Related Commands	Command	Description
	device-alias database	Configures and activates the device alias database.
	device-alias distribute	Enables CFS distribution for device aliases.
	show device-alias	Displays device alias information.

device-alias commit

To apply the pending configuration pertaining to the Distributed Device Alias Services (device alias) Cisco Fabric Services (CFS) distribution session in progress in the fabric, use the device-alias commit command in configuration mode.

```
device-alias commit
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None



Note Once the device-alias commit is done the running configuration has been modified on all switches participating in device-alias distribution. You can then use the copy running-config startup-config fabric command to save the running-config to the startup-config on all the switches in the fabric.



Note When the device-alias commit is in progress, you must not issue the clear device-alias command, until the device-alias commit is successful.

Examples

The following example shows how to commit pending changes to the active DPVM database:

```
switch# config terminal
switch(config)# device-alias commit
```

Related Commands	Command	Description
	device-alias database	Configures and activates the device alias database.
	device-alias distribute	Enables CFS distribution for device aliases.
	show device-alias	Displays device alias information.

device-alias confirm-commit enable

To enable the display of the device-alias pending-diff and subsequent confirmation of pending-diff on issuing a device-alias commit, use the device-alias confirm-commit enable command in configuration mode. To disable this feature command, use the no form of this command.

```
device-alias confirm-commit enable
no device-alias confirm-commit enable
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Release	Modification
6.2(9)	This command was introduced.

Usage Guidelines If the device-alias confirm-commit command is enabled, on committing the pending database, the pending-diff is displayed on the console and the user is prompted for Yes or No. If the device-alias confirm-commit command is disabled, the pending-diff is not displayed and the user is not prompted for Yes or No.



Note If this feature is enabled, downgrade is blocked by a configuration check. To resume downgrade correctly, confirm-commit has to be disabled.

Examples

The following example shows how to enable the confirm-commit mode for device-alias:

```
switch# config terminal
switch(config)# device-alias confirm-commit enable
switch(config)#
```

The following example shows how to disable the confirm-commit mode for device-alias:

```
switch# config terminal
switch(config)# no device-alias confirm-commit enable
switch(config)#
```


device-alias database

To initiate a Distributed Device Alias Services (device alias) session and configure device alias database, use the device-alias database command.

```
device-alias database
```

Syntax Description This command has no other arguments or keywords.

Command Default Deactivated.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines The device-alias database command starts a device alias session that locks all the databases on all the switches in this fabrics. When you exit device alias database configuration submenu, the device alias session ends and the locks are released.

You can only perform all modifications in the temporary device alias database. To make the changes permanent, use the device-alias commit command.

Examples

The following example shows how to activate a device alias session and enter device alias database configuration submenu:

```
switch# config terminal
switch(config)# device-alias database
switch(config-device-alias-db)#
```

Related Commands	Command	Description
	device-alias commit	Commits changes to the temporary device alias database to the active device alias database.
	show device-alias	Displays device alias database information.

device-alias distribute

To enable Cisco Fabric Services (CFS) distribution for Distributed Device Alias Services (device alias), use the `device-alias distribute` command. To disable this feature, use the no form of the command.

```
device-alias distribute
no device-alias distribute
```

Syntax Description This command has no other arguments or keywords.

Command Default Enabled.

Command Modes Configuration mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines Use the `device-alias commit` command to apply pending changes to the CFS distribution session.

Examples

The following example shows how to enable distribution for device alias information:

```
switch# config terminal
switch(config)# device-alias distribute
```

Related Commands

Command	Description
<code>device-alias commit</code>	Commits changes to the active device alias database.
<code>device-alias database</code>	Configures and activates the device alias database.
<code>show device-alias</code>	Displays device alias information.

device-alias import fcalias

To import device alias database information from another VSAN, use the `device-alias import fcalias` command. To revert to the default configuration or factory defaults, use the `no` form of the command.

```
device-alias import fcalias vsan vsan-id
no device-alias import fcalias vsan vsan-id
```

Syntax Description	vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
---------------------------	-----------------	--

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines You can import legacy device name configurations using this feature without losing data, if they satisfy the following restrictions:

- Each fcalias has only one member.
- The member type is supported by the device name implementation.

If any name conflict exists, the fcalias are not imported. The device name database is completely independent from the VSAN dependent fcalias database.

When the import operation is complete, the modified global fcalias table can be distributed to all other switches in the physical fabric using the `device-alias distribute` command so that new definitions are available everywhere.

Examples

The following example shows how to import device alias information:

```
switch# config terminal
switch(config)# device-alias import fcalias vsan 10
```

Related Commands	Command	Description
	device-alias database	Configures and activates the device alias database.
	device-alias distribute	Distributes fcalias database changes to the fabric.
	show device-alias	Displays device alias database information.

device-alias mode enhanced

To configure device aliases to operate in enhanced mode, use the `device-alias mode enhanced` command. To disable this feature and return to the default mode, use the `no` form of the command.

```
device-alias mode enhanced
no device-alias mode enhanced
```

Syntax Description This command has no arguments or keywords.

Command Default Prior to Cisco MDS NX-OS Release 8.5(1), the default device alias mode was basic mode. From Cisco MDS NX-OS Release 8.5(1), the default device alias mode is enhanced mode.

Command Modes Configuration mode.

Release	Modification
8.5(1)	The default device alias mode was changed to enhanced mode.
3.1(1)	This command was introduced.

Usage Guidelines When a device alias is configured in basic mode, all the applications operate like 3.0 switches. For example, when you attempt to configure the device aliases, immediately the device alias are expanded to a PWWN. This operation continues until the mode is changed to enhanced.

When a device alias is configured in enhanced mode, all the applications accept a device alias name in its native format, instead of expanding the device alias to a PWWN, the device alias name is stored in the configuration and distributed in its native device alias format.

To use enhanced mode, all switches in the fabric must be running in the Cisco SAN-OS Release 3.1(1) or later, or NX-OS 4.1(1b) later.



Note Enhanced mode, or native device alias based configurations are not accepted in interop mode. VSANs. IVR zoneset activation will fail in interop mode VSANs if the corresponding zones have native device alias-based members

Examples The following example shows how to configure the device alias in enhanced mode:

```
switch# config terminal
switch(config)# device-alias mode enhanced
switch(config)#
```

Command	Description
<code>device-alias commit</code>	Commits changes to the active device alias database.
<code>device-alias database</code>	Configures and activates the device alias database.

Command	Description
show device-alias	Displays device alias information.

debug ldap

To configure debugging for LDAP, use the debug ldap command. To disable this feature, use the no form of the command.

```
debug ldap aaa-request | aaa-request-lowlevel | all | config | config-lowlevel
no debug ldap aaa-request | aaa-request-lowlevel | all | config | config-lowlevel
```

Syntax Description

aaa-request	Enables LDAP AAA request debug.
aaa-request-lowlevel	Enables LDAP AAA request low level debugging.
config	Enables LDAP configuration debugging.
config-lowlevel	Enables LDAP configuring low level debugging.
all	Enables all the debug flags.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure LDAP AAA request debug:

```
switch# debug ldap aaa-request
switch#
```

The following example shows how to configure LDAP AAA request low level debugging:

```
switch# debug ldap aaa-request-lowlevel
switch#
```

Related Commands

Command	Description
show debug	Displays all Cisco SME related debug commands configured on the switch.

device-alias name

To configure device names in the device alias database, use the device-alias name command. To remove device names from the device alias database, use the no form of the command.

```
device-alias name device-name pwwn pwwn-id
no device-alias name device-name
```

Syntax Description

device-name	Specifies the device name. Maximum length is 64 characters in Cisco MDS NX-OS Release 9.2(1) or later and 63 characters in Cisco MDS NX-OS Release 9.2(2) or later.
pwwn pwwn-id	Specifies the pWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.

Command Default

None.

Command Modes

Device alias database configuration submenu.

Command History

Release	Modification
9.2(2)	The maximum device-name length supported was changed to 63 characters.
2.0(x)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure a device name alias entry in the device name database:

```
switch# config terminal
switch(config)# device-alias database
switch(config-device-alias-db)# device-alias name Device1 pwwn 21:00:00:20:37:6f:db:bb
```

Related Commands

Command	Description
device-alias database	Enters device alias database configuration submenu.
show device-alias	Displays device alias database information.

diagnostic bootup level

To configure the bootup diagnostic level to trigger diagnostics when the device boots, use the diagnostic bootup level command. To remove this diagnostic bootup level, use the no form of the command.

```
diagnostic bootup level bypass | complete
no diagnostic bootup level bypass | complete
```

Syntax Description	
bypass	Specifies the skip all bootup test. Do not perform any bootup diagnostics.
complete	Specifies all bootup diagnostics. The default is complete.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	6.2(1)	This command was introduced.

Usage Guidelines None.

Examples

The following example shows how to configure all bootup diagnostics level:

```
switch# config terminal
switch(config)# diagnostic bootup level complete
switch(config)#
```

Related Commands	Command	Description
	show diagnostic bootup level	Displays the bootup diagnostic level (bypass or complete) that is currently in place on the device.
	show diagnostic events	Displays diagnostic events by error and information event type.

diagnostic isl latency-test

To configure a generator switch to start and display the results for a latency test, use the diagnostic isl latency-test interface fc slot/port command.

```
diagnostic isl latency-test interface fc slot/port
```

Syntax Description

interface fc slot/port	Fibre Channel port.
---------------------------	------------------------

Command Default

None

Command Modes

User EXEC (#)
Privileged EXEC (#)

Command History

Release	Modification
7.3(0)D1(1)	This command was introduced.

Examples

This example displays how to start and display results for the latency test on the interface fc4/9:

```
switch# diagnostic isl latency-test interface fc4/9
waiting for link to be in sync ...
-----
Latency test Result for port: fc4/9
Latency in the switch(In nano-seconds):396
Latency in the cable(In nano-seconds):36
Length of the cable approximately (+/-2m):2 metres
```

Related Commands

Command	Description
diagnostic isl multi_hop generator	Configures an interface on a generator switch to run the Multihop Traffic Test for a given VSAN, destination domain (domain ID of the reflector switch), frame count, link speed, and frame size parameters.
diagnostic isl multi_hop reflector	Enables or disables a test interface on a reflector switch by setting it to loopback mode for a given VSAN and domain ID of a generator switch for Multihop Traffic Test.
show diagnostic isl status	Displays the status of configured Inter-Switch Link (ISL) diagnostic tests per port.

diagnostic isl multi_hop generator

To configure an interface on a generator switch to run the Multihop Traffic Test for a given VSAN, destination domain (domain ID of the reflector switch), frame count, link speed, and frame size parameters, use the `diagnostic isl multi_hop generator` command.

```
diagnostic isl multi_hop generator interface fc slot/port start vsan vsan-id dest_domain
destination-id duration seconds | frame-count number [ rate divider-line-rate ] [ frame_size
min size max size step size ] | stop
```

Syntax Description

interface fc slot/port	Fibre Channel port.
start	Specifies to start traffic generation.
vsan id	Specifies entries based on a VSAN ID. Range is from 1–4096.
dest_domain destination-id	Domain ID of a reflector switch. Range is from 0–255.
duration seconds	Duration of the traffic test.
frame_count number	Frame count to transmit. Range is 1–2000000000.
rate divider-line-rate	Specifies a speed value to generate traffic.
frame_size	Specifies packet size range for traffic generation.
min size	Minimum packet size for packet generation. Range is 16–517.
max size	Maximum packet size for packet generation. Range is 16–517.
step size	Step size, in the range between minimum and maximum frame size, for traffic generation. Range is 1–100.
stop	Specifies to stop traffic generation.

Command Default

None

Command Modes

User EXEC (#)
Privileged EXEC (#)

Command History

Release	Modification
7.3(0)D1(1)	This command was introduced.
8.4(1)	The command syntax was changed.

Examples

This example displays how to start traffic generation on the interface fc4/11 of a generator switch for a duration of 5 seconds:

```
switch# diagnostic isl multi_hop generator interface fc4/11 start vsan 1 dest_domain 36
duration 5
```

This example displays how to stop traffic generation on the interface fc4/11 of a generator switch:

```
switch# diagnostic isl multi_hop generator interface fc4/11 vsan 1 dest_domain 36 stop
```

```
Generator is stopped. Clean-up in progress.
Please wait....
```

```
-----
Traffic test Result for port: fc4/11
Packets Transmitted:111734
Packets Recieved in ISL :111734
ISL traffic Efficiency(in percentage):100.000000
-----
```

Related Commands

Command	Description
diagnostic isl multi_hop reflector	Enables or disables a test interface on a reflector switch by setting it to loopback mode for a given VSAN and domain ID of a generator switch for Multihop Traffic Test.
show diagnostic isl status	Displays the status of configured Inter-Switch Link (ISL) diagnostic tests per port.

diagnostic isl multi_hop reflector

To enable or disable a test interface on a reflector switch by setting it to loopback mode for a given VSAN and domain ID of a generator switch for Multihop Traffic Test, use the diagnostic isl multi_hop reflector command.

```
diagnostic isl multi_hop reflector loop-back interface fc slot/port enable vsan vsan-id
source_domain source-domain-id | disable
```

Syntax Description

loop-back	Specifies loopback.
interface fc slot/port	Fibre Channel port.
enable	Enable loopback.
vsan vsan-id	Specifies entries based on a VSAN ID. Range is from 1 to 4096.
source_domain source-domain-id	Source ID of a generator switch. Range is from 0 to 255.
disable	Disable loopback.

Command Default

Loopback for an interface is disabled by default.

Command Modes

User EXEC (#)
Privileged EXEC (#)

Command History

Release	Modification
7.3(0)D1(1)	This command was introduced.
8.4(1)	The command syntax was changed.

Examples

This example displays how to enable Multihop Traffic Test on the interface fc1/39 of a reflector switch:

```
switch# diagnostic isl multi_hop reflector loop-back interface fc1/39 enable vsan 1
source_domain 2
```

This example displays how to disable Multihop Traffic Test on the interface fc1/39 of a reflector switch:

```
switch# diagnostic isl multi_hop reflector loop-back interface fc1/39 vsan 1 source_domain
2 disable
```

Related Commands

Command	Description
diagnostic isl multi_hop generator	Configures an interface on a generator switch to run the Multihop Traffic Test for a given VSAN, destination domain (domain ID of the reflector switch), frame count, link speed, and frame size parameters.
show diagnostic isl status	Displays the status of configured Inter-Switch Link (ISL) diagnostic tests per port.

diagnostic monitor interval module

To configure diagnostic monitoring tests interval for a module, use the diagnostic monitor interval module command. To remove this diagnostic monitor interval module, use the no form of the command.

```
diagnostic monitor interval module module-number test [test-id | name | all] hour hour min minutes
second sec
no diagnostic monitor interval module module-number test [test-id | name | all] hour hour min minutes
second sec
```

Syntax Description

module-number	Specifies the module number. The range is from 1 to 10.
test	Specifies the diagnostic test selection.
test-id	Specifies test IDs. The range is from 1 to 10.
name	Specifies the test name. Can be any case-sensitive alphanumeric string up to 32 characters.
all	Specifies all test ID.
hour	Specifies hour of the day.
hour	Specifies interval in hours. The range is from 0 to 23.
min	Specifies minute of an hour.
minutes	Specifies interval in minutes. The range is from 0 to 59.
second	Specifies second of a minute.
sec	Specifies interval in seconds. The range is from 0 to 59.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure diagnostic monitoring tests interval for a module:

```
switch# config terminal
switch(config)# diagnostic monitor interval module 6 test 3 hour 1 min 0 sec 0
switch(config)#
```

Related Commands

Command	Description
diagnostic monitor module	Activates the specified test.
show diagnostic content module	Displays information about the diagnostics and their attributes.

diagnostic monitor module

To configure diagnostic monitoring tests for a module, use the diagnostic monitor module command. To remove this diagnostic monitor module, use the no form of the command.

```
diagnostic monitor module module-number test [test-id | name | all]
no diagnostic monitor module module-number test [test-id | name | all]
```

Syntax Description

module-number	Specifies the module number. The range is from 1 to 10.
test	Specifies the diagnostic test selection.
test-id	Specifies test IDs. The range is from 1 to 10.
name	Specifies the test name. Can be any case-sensitive alphanumeric string up to 32 characters.
all	Specifies all test ID.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure diagnostic monitoring tests for a module:

```
switch# config terminal
switch(config)# diagnostic monitor module 6 test 3
switch(config)#
```

Related Commands

Command	Description
diagnostic monitor interval module	Configures the interval at which the specified test is run.
show diagnostic content module	Displays information about the diagnostics and their attributes.

diagnostic ondemand iteration

To configure the number of times that the on demand test runs, use the diagnostic ondemand iteration command. To remove this diagnostic ondemand iteration, use the no form of the command.

diagnostic ondemand iteration number
no diagnostic ondemand iteration number

Syntax Description

number	Specifies number of times to repeat ondemand test list. The range is from 1 to 999.
--------	---

Command Default

1.

Command Modes

Configuration mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the number of times that the on demand test runs:

```
switch# diagnostic ondemand iteration 4
switch(config)#
```

Related Commands

Command	Description
diagnostic ondemand action-on-failure	Configures the action to take if the on-demand test fails.
show diagnostic ondemand setting	Displays information about on-demand diagnostics.

diagnostic ondemand action-on-failure

To configure the action to take if the on demand test fails, use the diagnostic ondemand action-on-failure command. To remove this feature command, use the no form of the command.

```
diagnostic ondemand action-on-failure continue failure-count num-fails | stop
no diagnostic ondemand action-on-failure continue failure-count num-fails | stop
```

Syntax Description

continue	Specifies the continue ondemand test until test failure limit is reached.
failure-count	Specifies the continue failing tests these many times.
num-fails	The num-fails range is from 1 to 999.
stop	Stop ondemand tests immediately if a test fails.

Command Default

1.

Command Modes

Configuration mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the action to take if the on demand test fails:

```
switch# diagnostic ondemand action-on-failure stop
switch#
```

Related Commands

Command	Description
diagnostic ondemand iteration	Configures the number of times that the on-demand test runs.
show diagnostic ondemand setting	Displays information about on-demand diagnostics.

diagnostic start interface fc test link-dia

To run link diagnostics tests on the diagnostic port to check the connectivity between servers and storage area networks (SANs), use the diagnostic start interface fc test link-dia command.

```
diagnostic start interface fc slot/port test link-dia [duration seconds | frame-count count] [frame-size min min_bytes max max_bytes step step_size] [gen-interface fc slot/port] [level remote levels | remote-all] [payload random | fixed fixed_payload] [rate line_rate]
```

Syntax Description

slot/port	Slot and the port numbers of the Fibre Channel interface.
duration seconds	Specifies the duration of the link diagnostics tests per level. The range is from 1-86400.
frame-count count	Generates frames required to conduct the traffic tests. The range is from 1-2147483646. The default is 1000000.
frame-size min min_bytes	Configures the minimum frame size for the traffic generated. The value of frame-size min must be a multiple of four. The range is from 64-2048. The default is 2048.
frame-size max max_bytes	Configures the maximum frame size for the traffic generated. The value of frame-size max must be a multiple of four. The range is from 64-2048. The default is 2048.
step step_size	Configures the step size for the traffic generated. The range is from 4-100. The default is 4. The value of step_size must be a multiple of four. The step_size value is ignored if the values of min_bytes and max_bytes are the same.
gen-interface fc	Configures the Fibre Channel generator port. The generator port cannot be the same as the diagnostic port.
level	Specifies the level of the diagnostics tests to be conducted.
remote levels	Runs the selected level of the diagnostics test on the diagnostic port. You can select any one of the following levels at a time: <ul style="list-style-type: none"> • elec—Electrical <p>Note When elec level is selected, the frame-count count value is fixed at 20000.</p> <ul style="list-style-type: none"> • mac—MAC • xcvr-optical—Optical
remote-all	Runs all the supported levels of the link diagnostics tests on the diagnostic port. <p>Note Even though the peer supports remote switched loopback, if remote-all is selected while running link diagnostics tests, remote switched loopback will be ignored.</p>

payload	Configures the payload for the traffic generated.
random	Configures a random payload pattern.
fixed fixed_payload	Configures a fixed payload pattern. The range is from 0x0-0xf.
rate line_rate	Configures the rate of the traffic generation of the generator port. You can select any one of the following line rates at one time: <ul style="list-style-type: none"> • 100%—100% of the line rate • 12.5%—12.5% of the line rate • 25%—25% of the line rate • 50%—50% of the line rate • 6.25%—6.25% of the line rate <p>The default is 50%.</p>

Command Default

None

Command Modes

Privileged EXEC mode

Command History**Release Modification**

8.2(1) This command was introduced.

Usage Guidelines**Running Link Diagnostics Tests on a Port**

The following example shows how to run link diagnostic tests on a port for a duration of 7200 seconds:

```
switch# diagnostic start interface fc 1/1 test link-dia duration 7200
```

The following example shows how to run link diagnostic tests on a port for 1000030 frames generated:

```
switch# diagnostic start interface fc 1/1 test link-dia frame-count 1000030
```

The following example shows how to run link diagnostic tests on a port with a minimum frame size of 64, maximum frame size of 2044, and a step size of 8:

```
switch# diagnostic start interface fc 1/23 test link-dia frame-size min 64 max 2044 step 8
```

The following example shows how to run link diagnostic tests on a port with a user-specified generator port:

```
switch# diagnostic start interface fc 1/23 test link-dia gen-interface fc 1/3
```

The following example shows how to run all traffic tests available on a port:

```
switch# diagnostic start interface fc 1/23 test link-diag level remote-all
```

The following example shows how to run the Optical level tests on a port:

```
switch# diagnostic start interface fc 1/23 test link-diag level remote xcvr-optical
```

The following example shows how to run link diagnostics tests on a port with a fixed payload pattern:

```
switch# diagnostic start interface fc 1/23 test link-diag level payload fixed 0xe
```

The following example shows how to run link diagnostics tests on a port along with a configured speed of traffic generation:

```
switch# diagnostic start interface fc 1/23 test link-diag rate 12.5%
```

Related Commands

Command	Description
diagnostic result interface fc test link-diag	Displays the results of the link diagnostics tests that are performed on a diagnostic port.
diagnostic stop interface fc test link-diag	Stops the link diagnostics tests that are running on a diagnostic port.
switchport link-diag	Enables the link diagnostic mode on a diagnostic port.
show diagnostic test link-diag status	Checks the status of the link diagnostics tests that are running on the switch.

diagnostic start module

To start one or more diagnostic tests on a module, use the diagnostic start module command. To remove this feature command, use the no form of the command.

```
diagnostic start module module-number test [test-id | name | all | non-disruptive] [port port-number | all]
```

```
no diagnostic start module module-number test [test-id | name | all | non-disruptive] [port port-number | all]
```

Syntax Description

module-number	Specifies the module number. The range is from 1 to 10.
test	Specifies the diagnostic test selection.
test-id	Specifies test IDs. The range is from 1 to 10.
name	Specifies the test name. Can be any case-sensitive alphanumeric string up to 32 characters.
all	Specifies all test ID.
non-disruptive	Specifies non disruptive diagnostics.
port	Specifies the port.
port-number	Specifies the port number. The port range is from 1 to 48.

Command Default

1.

Command Modes

Configuration mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to start one or more diagnostic tests on a module:

```
switch# diagnostic start module 6 test all
switch#
switch#
```

Related Commands

Command	Description
diagnostic run module	Starts the selected test on a module and displays the result on the completion of the test.
diagnostic stop module	Stops one or more diagnostic tests on a module.

diagnostic stop interface fc test link-diag

To stop the link diagnostics tests that are running on the diagnostic port, use the diagnostic stop interface fc test link-diag command.

```
diagnostic stop interface fc slot/port test link-diag
```

Syntax Description	slot/port Slot and the port numbers of the Fibre Channel interface.
---------------------------	---

Command Default	None
------------------------	------

Command Modes	Privileged EXEC mode
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Command History	Release Modification
	8.2(1) This command was introduced.

Usage Guidelines

Running Link Diagnostics Tests on a Port

The following example shows how to stop link diagnostic tests on a specified port:

```
switch# diagnostic stop interface fc 1/1 test link-diag
```

Related Commands	Command	Description
	switchport link-diag	Enables the link diagnostic mode on a diagnostic port.
	diagnostic result interface fc test link-diag	Displays the results of the link diagnostics tests that are performed on a diagnostic port.
	diagnostic start interface fc test link-diag	Runs link diagnostics tests on a diagnostic port .
	show diagnostic test link-diag status	Checks the status of the link diagnostics tests that are running on the switch.

diagnostic stop module

To stop one or more diagnostic tests on a module, use the diagnostic stop module command. To remove this feature command, use the no form of the command.

```
diagnostic stop module slot test [test-id | name | all]
no diagnostic stop module slot test [test-id | name | all]
```

Syntax Description

module-number	Specifies the module number. The range is from 1 to 10.
test	Specifies the diagnostic test selection.
test-id	Specifies test IDs. The range is from 1 to 10.
name	Specifies the test name. Can be any case-sensitive alphanumeric string up to 32 characters.
all	Specifies all test ID.

Command Default

1.

Command Modes

Configuration mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to stop one or more diagnostic tests on a module:

```
switch# diagnostic stop module 6 test all
switch#
switch#
```

Related Commands

Command	Description
diagnostic run module	Starts the selected test on a module and displays the result on the completion of the test.
diagnostic start module	Starts one or more diagnostic tests on a module.

dir

To display the contents of the current directory or the specified directory, use the `dir` command in EXEC mode.

`dir` [`bootflash` : module directory-or-filename | `debug` : directory-or-filename | `log` : module directory-or-filename | `modflash` : module directory-or-filename | `slot0` : directory-or-filename | `volatile` : module directory-or-filename]

Syntax Description

<code>bootflash:</code>	(Optional) Flash image that resides on the supervisor module.
<code>debug:</code>	(Optional) Provides information about the debug capture directory.
<code>log:</code>	(Optional) Provides information about the two default log files. The file <code>dmesg</code> contains the kernel log messages and the file <code>messages</code> contains the system application log messages.
<code>modflash:</code>	(Optional) Provides information about the flash image that resides in a module flash file directory.
<code>slot0:</code>	(Optional) Flash image that resides on another module.
<code>module</code>	(Optional) Module name and number.
<code>directory-or-filename</code>	(Optional) Name of the file or directory to display on a specified device. The files can be of any type. You can use wildcards in the filename. A wildcard character (*) matches all patterns. Strings after a wildcard are ignored.
<code>volatile:</code>	(Optional) Flash image on the volatile file system.

Command Default

The default file system is specified by the `cd` command.

Command Modes

EXEC mode.

Command History

Release	Modification
1.2(1)	This command was introduced.
2.1(1a)	Added <code>debug</code> , <code>log</code> , and <code>modflash</code> keywords.

Usage Guidelines

None.

Examples

The following example shows how to list the files on the `bootflash` directory:

```
switch# dir bootflash:
40295206   Aug 05 15:23:51 1980  ilc1.bin
12456448   Jul 30 23:05:28 1980  kickstart-image1
12288     Jun 23 14:58:44 1980  lost+found/
27602159   Jul 30 23:05:16 1980  system-image1
```

```

12447232    Aug 05 15:08:30 1980  kickstart-image2
28364853    Aug 05 15:11:57 1980  system-image2
Usage for bootflash://sup-local
  135404544 bytes used
   49155072 bytes free
  184559616 bytes total

```

The following example shows how to list the files in the debug directory:

```

switch# dir debug:
Usage for debug://sup-local
  0 bytes used
 2097152 bytes free
 2097152 bytes total
switch#
switch# dir ?
bootflash: Directory or filename
debug:     Directory or filename
log:       Directory or filename
modflash: Directory or filename
slot0:     Directory or filename
volatile:  Directory or filename
<cr>      Carriage Return

```

The following example shows how to list the files in the log file directory:

```

switch# dir log:
  31    Feb 05 05:00:57 2005  dmesg
8445    Feb 06 10:34:35 2005  messages
Usage for log://sup-local
  35196928 bytes used
 174518272 bytes free
 209715200 bytes total
switch#

```

Related Commands

Command	Description
cd	Changes the default directory or file system.
delete	Deletes a file on a flash memory device.

disable

To disable the Call Home function, use the disable command in Call Home configuration submode.

```
disable
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Call Home configuration submode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines To enable the Call Home function, use the enable command.

Examples The following example shows how to disable the Call Home function:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# disable
```

Related Commands	Command	Description
	callhome	Configures the Call Home function.
	callhome test	Sends a dummy test message to the configured destination(s).
	show callhome	Displays configured Call Home information.

discover

To initiate the discovery of hosts, use the discovery command. To disable this feature, use the no form of the command.

```
discover host host port target target port vsan vsan id fabric fabric name
no discover
```

Syntax Description

host host port	Identifies the host port WWN. The format is hh:hh:hh:hh:hh:hh:hh:hh.
target target port	Identifies the target port WWN. The format is hh:hh:hh:hh:hh:hh:hh:hh.
vsan vsan id	Selects the VSAN identifier. The range is 1 to 4093.
fabric fabric name	Specifies the fabric for discovery. The maximum length is 32 characters.

Command Default

None.

Command Modes

Cisco SME cluster configuration submode.

Command History

Release	Modification
3.2(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example discovers a host and specifies a target, a VSAN, and a fabric for discovery:

```
switch# config t
switch(config)# sme cluster clusternam1
switch(config-sme-cl)# discover host 20:00:00:00:c9:49:28:47 target 21:01:00:e0:8b:29:7e:0c
vsan 2345 fabric sw-xyz
```

The following example disables the discovery feature:

```
switch# config t
switch(config)# sme cluster clusternam1
switch(config-sme-cl)# no discover
```

Related Commands

Command	Description
show sme cluster	Displays information about the Cisco SME cluster.

discover custom-list

To selectively initiate discovery for specified domain IDs in a VSAN, use the discover custom-list command in EXEC mode.

```
discover custom-list add|delete vsan vsan-id fcid fc-id
```

Syntax Description		
add		Add a targets to the customized list.
delete		Deletes a target from the customized list.
vsan vsan-id		Discovers SCSI targets for the specified VSAN ID. The range is 1 to 4093.
fcip fc-id		Discovers SCSI targets for the specified FCID. The format is 0xhhhhhhh, where h is a hexadecimal digit.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines None.

Examples The following example selectively initiates discovery for the specified VSAN and FCID:

```
switch# discover custom-list add vsan 1 fcid 0X123456
```

The following example deletes the specified VSAN and FCID from the customized list:

```
switch# discover custom-list delete vsan 1 fcid 0X123456
```

discover scsi-target

To discover SCSI targets on local storage to the switch or remote storage across the fabric, use the discover scsi-target command in EXEC mode.

```
discover scsi-target custom-list | local | remote | vsan vsan-id fcid fc-id os aix | all | hpux | linux | solaris
| windows [lun | target]
```

Syntax Description

custom-list	Discovers SCSI targets from the customized list.
local	Discovers local SCSI targets.
remote	Discovers remote SCSI targets.
vsan vsan-id	Discovers SCSI targets for the specified VSAN ID. The range is 1 to 4093.
fcip fc-id	Discovers SCSI targets for the specified FCID. The format is 0xhhhhhhh, where h is a hexadecimal digit.
os	Discovers the specified operating system.
aix	Discovers the AIX operating system.
all	Discovers all operating systems.
hpux	Discovers the HPUX operating system.
linux	Discovers the Linux operating system.
solaris	Discovers the Solaris operating system.
windows	Discovers the Windows operating system.
lun	(Optional) Discovers SCSI targets and LUNs.
target	(Optional) Discovers SCSI targets.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(2a)	This command was introduced.

Usage Guidelines

On-demand discovery only discovers Nx ports present in the name server database that have registered a FC4 Type = SCSI_FCP.

Examples

The following example shows how to discover local targets assigned to all OSs:

```
switch# discover scsi-target local os all  
discovery started
```

The following example shows how to discover remote targets assigned to the Windows OS:

```
switch# discover scsi-target remote os windows  
discovery started
```

The following example shows how to discover SCSI targets for the specified VSAN (1) and FCID (0x9c03d6):

```
switch# discover scsi-target vsan 1 fcid 0x9c03d6  
discover scsi-target vsan 1 fcid 0x9c03d6  
VSAN:    1 FCID: 0x9c03d6 PWWN: 00:00:00:00:00:00:00  
PRLI RSP: 0x01 SPARM: 0x0012...
```

The following example begins discovering targets from a customized list assigned to the Linux operating system:

```
switch# discover scsi-target custom-list os linux  
discovery started
```

distribute

To enable distribution of the Call Home function using CFS, use the distribute command in Call Home configuration submenu. To disable this feature, use the no form of the command.

```
distribute
no distribute
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Call Home configuration submenu.

Command History	Release	Modification
	2.0(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable distribution of the Call Home function using CFS:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# distribute
```

Related Commands	Command	Description
	callhome	Configures the Call Home function.
	callhome test	Sends a dummy test message to the configured destination(s).
	show callhome	Displays configured Call Home information.

dmm module

To specify default DMM values for migration block size, number of migration blocks and fast migration speed, use the `dmm module` command in configuration mode.

`dmm module mod-id rate-of-migration fast migration-rate medium migration-rate slow migration-rate`

Syntax Description		
	<code>mod-id</code>	Specifies the module ID.
	<code>rate-of-migration</code>	Migration rate can be configured as slow, medium or fast.
	<code>fast migration-rate</code>	Specifies the rate for fast migration. Units are megabytes per second (MB/s).
	<code>medium migration-rate</code>	Specifies the rate for medium migration. Units are MB/s.
	<code>slow migration-rate</code>	Specifies the rate for slow migration. Units are MB/s.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.
	8.1(1)	This command was not supported.

Usage Guidelines None.

Examples The following example shows how to set the fast migration rate to 100 MB/s, the medium migration rate to 50 MB/s, and slow migration rate to 10 MB/s:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config) dmm module 3 rate_of_migration fast 100 medium 50 slow 10
```

Related Commands	Command	Description
	<code>show dmm ip-peer</code>	Displays a DMM port's IP peer.
	<code>show dmm job</code>	Displays job information.

dmm module job

To configure a data migration job, use the `dmm module mod-id job` command in configuration mode.

```
dmm module mod-id job job-id create | destroy | finish | get-vi vsan vsan-id | modify rate | schedule
hour hour min minute day day month month year year | now | reset | session | set-vi portwwn nodewwn
vsan vsan-id | start | stop | validate | verify
```

Syntax Description

module mod-id	Specifies the module ID.
job job-id	Specifies the job ID. The range is 0 to 18446744073709551615.
create	Creates the job and enters DMM job configuration submode.
destroy	Deletes the DMM job.
finish	Moves the Method 2 data migration job to completed state.
get-vi	Retrieves the virtual initiator (VI) for the DMM job.
vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
modify	Modifies the DMM job attributes.
rate	Specifies the rate of the job attribute. The range is from 1 to 4. Specify 1 for a default value, 2 for slow, 3 for medium and 4 for fast rates.
schedule	Schedules the DMM job.
hour hour	Specifies the hour the DMM job starts. The range is 0 to 23.
min minute	Specifies the minute the DMM job starts. The range is 0 to 59.
day day	Specifies the day the DMM job starts. The range is 1 to 31.
month month	Specifies the month the DMM job starts. The range is 1 to 12.
year year	Specifies the year the DMM job starts. The range is 2000 to 2030.
now	Resets the schedule to start the DMM job immediately.
reset	Resets the DMM job to unscheduled.
session	Enables the Session Configuration submode.
set-vi	Sets the VI for the storage based job.
portwwn	Specifies the port WWN. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
nodewwn	Specifies the node WWN. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.

vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
start	Starts the DMM job session.
stop	Stops the DMM job.
validate	Validates the DMM job data.
verify	Verifies the data migration for the specified job.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
3.3(1a)	The finish keyword is introduced.
4.1(1b)	The set-vi and modify rate keywords were introduced.
8.1(1)	This command was not supported.

Usage Guidelines

DMM must be enabled before you can create DMM jobs. Use the `ssm enable feature dmm` command to enable DMM.

The data migration job stops executing if it encounters any errors. To restart the migration, enter the `validate` command to validate the job configuration, then enter the `restart` command to restart the job.

Before creating a storage based data migration job, use the `show dmm module vi-list` command to choose the VI for migrating the data and then use the `set-vi` command to specify the VI.

When the job is in the failed state, you can restart the job using the `start` command. This command will start the job from point of last failure.

Examples

The following example shows how to restart the job in failed stated.

```
switch(config)# dmm module 3 job 4 start
switch#
```

The following example shows how to create a job with a schedule. The job is scheduled to start on Sunday, January 6, 2008 at 11:00 P.M.

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# dmm module 3 job 1 schedule hour 23 min 0 day 6 month 1 year 2008
```

Command	Description
show dmm ip-peer	Displays the IP peers that the DMM port is connected to.
show dmm job	Displays DMM job information.

Command	Description
show dmm module vi-list	Displays the list of VIs.

do

Use the do command to execute an EXEC-level command from any configuration mode or submode.

do command

Syntax Description

command	Specifies the EXEC command to be executed.
---------	--

Command Default

None.

Command Modes

All configuration modes.

Command History

Release	Modification
1.1(1)	This command was introduced.
NX-OS 4.1(1b)	Added the command output for extended bbcredit interface.
NX-OS 4.1(1b)	Added a note.

Usage Guidelines

Use this command to execute EXEC commands while configuring your switch. After the EXEC command is executed, the system returns to the mode from which you issued the do command.



Note

The receive bbcredit value reflects the extended bbcredit configuration. Extended bbcredit range for Vegas and ISOLA cards is 256-3500.

Examples

The following example shows how to execute the EXEC commands:

```
switch(config)# port-monitor name cisco
switch(config-port-monitor)# do
switch(config-port-monitor)#
```

The following example disables the terminal session-timeout command using the do command in configuration mode:

```
switch(config)# do terminal session-timeout 0
switch(config)#
```

The following example creates and enables the interface from configuration mode:

```
switch(config)# int fc 3/1
switch(config-if)# no shut
```

The following example shows how to receive the extended bbcredit interface:

```
switch(config-if)# do show interface fc3/2
fc3/2 is trunking
Hardware is Fiber Channel, SFP is short wave laser w/o OFC (SN)
Port WWN is 20:82:00:05:30:00:2a:1e
Peer port WWN is 20:42:00:0b:46:79:f1:80
Admin port mode is auto, trunk mode is on
Port mode is TE
Port vsan is 1
Speed is 2 Gbps
Transmit B2B Credit is 255
Receive B2B Credit is 1500
Receive data field Size is 2112
Beacon is turned off
  Trunk vsans (admin allowed and active) (1-10)
  Trunk vsans (up) (1-10)
  Trunk vsans (isolated) ()
  Trunk vsans (initializing) ()
  5 minutes input rate 504 bits/sec, 63 bytes/sec, 0 frames/sec
  5 minutes output rate 344 bits/sec, 43 bytes/sec, 0 frames/sec
  69390 frames input, 4458680 bytes
    0 discards, 0 errors
    0 CRC, 0 unknown class
    0 too long, 0 too short
  69458 frames output, 3086812 bytes
    0 discards, 0 errors
  2 input OLS, 1 LRR, 0 NOS, 2 loop inits
  1 output OLS, 1 LRR, 1 NOS, 1 loop inits
```

dpvm abort

To discard a dynamic port VSAN membership (DPVM) Cisco Fabric Services (CFS) distribution session in progress, use the `dpvm abort` command in configuration mode.

```
dpvm abort
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, DPVM must be enabled using the `dpvm enable` command.

Examples The following example shows how to discard a DPVM CFS distribution session in progress:

```
switch# config terminal
switch(config)# dpvm abort
```

Related Commands	Command	Description
	<code>dpvm database</code>	Configures the DPVM database.
	<code>dpvm distribute</code>	Enables CFS distribution for DPVM.
	<code>dpvm enable</code>	Enables DPVM.
	<code>show dpvm</code>	Displays DPVM information.

dpvm activate

To activate the dynamic port VSAN membership (DPVM) configuration database, use the `dpvm activate` command. To deactivate the DPVM configuration database, use the `no` form of the command.

```
dpvm activate [force]
no dpvm activate [force]
```

Syntax Description

<code>force</code>	(Optional) Forces the activation or deactivation if conflicts exist between the configured DPVM database and the active DPVM database.
--------------------	--

Command Default

Deactivated.

Command Modes

Configuration mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, DPVM must be enabled using the `dpvm enable` command.

Activation might fail if conflicting entries are found between the configured DPVM database and the currently activated DPVM database. You can ignore the conflicts using the `force` option.

Examples

The following example shows how to activate the DPVM database:

```
switch# config terminal
switch(config)# dpvm activate
```

The following example shows how to deactivate the DPVM database:

```
switch# config terminal
switch(config)# no dpvm activate
```

Related Commands

Command	Description
<code>dpvm database</code>	Configures the DPVM database.
<code>dpvm enable</code>	Enables DPVM.
<code>show dpvm</code>	Displays DPVM database information.

dpvm auto-learn

To enable the automatic learning feature (autolearn) for the active dynamic port VSAN membership (DPVM) database, use the `dpvm auto-learn` command. To disable this feature, use the `no` form of the command.

```
dpvm auto-learn
no dpvm auto-learn
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, DPVM must be enabled using the `dpvm enable` command.

When `autolearn` is enabled, the system automatically creates the DPVM database by learning about devices currently logged or newly logged devices with a VSAN. This is a quick way to create the DPVM which can later be edited. `Autolearn` features include the following:

- An autolearned entry is created by adding the device PWWN and VSAN to the active DPVM database.
- The active DPVM database must be present when `autolearning` is enabled.
- Autolearned entries can be deleted from the active DPVM database by the user until `autolearning` is disabled. Autolearned entries are not permanent in the active DPVM database until `autolearning` is disabled.
- If a device logs out when `autolearning` is enabled, the device entry is deleted from the active DPVM database.
- If a particular device logs into the switch multiple times through different ports, then only the VSAN corresponding to last login is associated with the device.
- `Autolearn` entries do not override previously configured activate entries.

Examples

The following example shows how to enable `autolearning` for the DPVM database:

```
switch# config terminal
switch(config)# dpvm auto-learn
```

The following example shows how to disable `autolearning` for the DPVM database:

```
switch# config terminal
switch(config)# no dpvm auto-learn
```

Related Commands

Command	Description
dpvm enable	Enables DPVM.
show dpvm	Displays DPVM database information.

dpvm commit

To apply the pending configuration pertaining to the dynamic port VSAN membership (DPVM) Cisco Fabric Services (CFS) distribution session in progress in the fabric, use the `dpvm commit` command.

```
dpvm commit
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, DPVM must be enabled using the `dpvm enable` command.

Examples The following example shows how to commit changes to the DPVM database:

```
switch# config terminal
switch(config)# dpvm commit
```

Related Commands	Command	Description
	<code>dpvm distribute</code>	Enables CFS distribution for DPVM.
	<code>dpvm enable</code>	Enables DPVM.
	<code>show dpvm</code>	Displays DPVM information.

dpvm database

To activate and configure the dynamic port VSAN membership (DPVM) database, use the `dpvm database` command. To deactivate the database, use the `no` form of the command.

```
dpvm database
no dpvm database
```

Syntax Description This command has no other arguments or keywords.

Command Default Deactivated.

Command Modes Configuration mode.

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines To use this command, DPVM must be enabled using the `dpvm enable` command.

The DPVM database consists of a series of device mapping entries. Each entry consists of device pWWN or nWWN along with the dynamic VSAN to be assigned. Use the `nwwn` command or `pwwn` command to add the entries to the DPVM database. This database is global to the whole switch (and fabric) and is not maintained for each VSAN.

Examples

The following example shows how to activate the DPVM database and enter DPVM database configuration submode:

```
switch# config terminal
switch(config)# dpvm database
switch#(config-dpvm-db)#
```

The following example shows how to activate the DPVM database and enter nWWN device:

```
switch#(config-dpvm-db)# nwwn 14:21:30:12:63:39:72:81 vsan 101
Successful. Commit should follow for command to take effect.
excal-178(config-dpvm-db)#
```

The following example shows how to activate the DPVM database and enter pWWN device:

```
switch#(config-dpvm-db)# pwwn 14:21:30:12:63:39:72:81 vsan 101
Successful. Commit should follow for command to take effect.
switch#(config-dpvm-db)#
```

Related Commands

Command	Description
<code>dpvm enable</code>	Enables DPVM.
<code>nwwn</code> (DPVM database configuration submode)	Adds entries to the DPVM database using the nWWN.
<code>pwwn</code> (DPVM database configuration submode)	Adds entries to the DPVM database using the pWWN.

Command	Description
show dpvm	Displays DPVM database information.

dpvm database copy active

To copy the active dynamic port VSAN membership (DPVM) database to the config DPVM database, use the `dpvm database copy active` command.

```
dpvm database copy active
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes EXEC mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, DPVM must be enabled using the `dpvm enable` command. The following circumstances may require the active database to be copied to the config database:

- When the autolearned entries are only added to the active database.
- When the config database or entries in the config database are accidentally deleted.



Note If you want to copy the DPVM database and fabric distribution is enabled, you must first commit the changes.

Examples The following example shows how to copy the active DPVM database to the config DPVM database:

```
switch# dpvm database copy active
```

Related Commands	Command	Description
	<code>dpvm enable</code>	Enables DPVM.
	<code>show dpvm</code>	Displays DPVM database information.

dpvm database diff

To display the active dynamic port VSAN membership (DPVM) database, use the `dpvm database diff` command.

```
dpvm database diff active | config
```

Syntax Description

active	Displays differences in the DPVM active database compared to the DPVM config database.
config	Displays differences in the DPVM config database compared to the DPVM active database.

Command Default

Deactivated.

Command Modes

Configuration mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, DPVM must be enabled using the `dpvm enable` command.

Examples

The following example displays the differences in the DPVM active database when compared with the DPVM config database:

```
switch# dpvm database diff active
Legend: "+" New Entry, "-" Missing Entry, "*" Possible Conflict Entry
-----
- pwnn 44:22:33:44:55:66:77:88 vsan 44
* pwnn 11:22:33:44:55:66:77:88 vsan 11
```

The following example displays the differences in the DPVM config database when compared with the DPVM active database:

```
switch# dpvm database diff config
Legend: "+" New Entry, "-" Missing Entry, "*" Possible Conflict Entry
-----
- pwnn 44:22:33:44:55:66:77:88 vsan 44
* pwnn 11:22:33:44:55:66:77:88 vsan 11
```

Related Commands

Command	Description
dpvm enable	Enables DPVM.
show dpvm	Displays DPVM database information.

dpvm distribute

To enable Cisco Fabric Services (CFS) distribution for dynamic port VSAN membership (DPVM), use the `dpvm distribute` command. To disable this feature, use the `no` form of the command.

```
dpvm distribute
no dpvm distribute
```

Syntax Description This command has no other arguments or keywords.

Command Default Enabled.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, DPVM must be enabled using the `dpvm enable` command. Temporary changes to the DPVM database must be committed to the active DPVM database using the `dpvm commit` command before being distributed to the fabric.

Examples The following example shows how to disable distribution for the DPVM database:

```
switch# config terminal
switch(config)# no dpvm distribute
```

The following example shows how to enable distribution for the DPVM database:

```
switch# config terminal
switch(config)# dpvm distribute
```

Related Commands	Command	Description
	<code>dpvm enable</code>	Enables DPVM.
	<code>show dpvm</code>	Displays DPVM information.

dpvm enable

To enable dynamic port VSAN membership (DPVM), use the `dpvm enable` command. To disable DPVM, use the `no dpvm enable` command.

```
dpvm enable
no dpvm enable
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.
	NX-OS 4.1(1b)	This command was deprecated.

Usage Guidelines The configuration and verification commands for DPVM are only available when DPVM is enabled on the switch. When you disable this feature, all related configurations are automatically discarded.

Examples The following example shows how to enable DPVM:

```
switch# config terminal
switch(config)# dpvm enable
```

Related Commands	Command	Description
	<code>dpvm activate</code>	Activates the DPVM database.
	<code>dpvm database</code>	Configures the DPVM database.
	<code>show dpvm</code>	Displays DPVM database information.

dpvm overwrite-duplicate-pwwn

To overwrite the first login information with the duplicate PWWN login, use the `dpvm overwrite-duplicate-pwwn` command.

```
dpvm overwrite-duplicate-pwwn
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to overwrite the DPVM duplicate PWWN login:

```
switch#(config)# dpvm overwrite-duplicate-pwwn
switch#(config)#
```

dscp

To configure a differentiated services code point (DSCP) in a QoS policy map class, use the `dscp` command in EXEC mode. To disable this feature, use the `no` form of the command.

```
dscp value
no dscp value
```

Syntax Description

value	Configures the DSCP value. The range is 0 to 63. DSCP value 46 is reserved.
-------	---

Command Default

The default DSCP value is 0.

Command Modes

QoS policy map class configuration submenu.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

Before you can configure a QoS policy map class you must complete the following:

- Enable the QoS data traffic feature using the `qos Enable` command.
- Configure a QoS class map using the `qos Class-map` command.
- Configure a QoS policy map using the `qos Policy-map` command.
- Configure a QoS policy map class using the `class` command.

Examples

The following example configures a DSCP value of 56 in QoS policy classMap1:

```
switch(config-pmap)# class classMap1
switch(config-pmap-c)# ?
Configure class-map set params:
do EXEC command
dscp DSCP for frames matching class-map.
exit Exit from this submenu
no Negate a command or set its defaults
priority Priority to be used for frames matching class-map
switch(config-pmap-c)#
switch(config-pmap-c)# ?
Configure class-map set params:
do EXEC command
dscp DSCP for frames matching class-map.
exit Exit from this submenu
no Negate a command or set its defaults
priority Priority to be used for frames matching class-map
switch(config-pmap-c)# dscp ?
<0-63> DSCP value. DSCP of 46 is disallowed.
switch(config-pmap-c)# dscp 56 ?
<cr> Carriage Return
switch(config-pmap-c)# dscp 56
Operation in progress. Please check class-map parameters
switch(config-pmap-c)# priority ?
high Frames matching class-map get high priority
```

```

    low      Frames matching class-map get low priority
    medium   Frames matching class-map get medium priority
switch(config-pmap-c)# priority low ?
    <cr> Carriage Return
switch(config-pmap-c)# priority low
Operation in progress. Please check class-map parameters
switch(config-pmap-c)#

```

Related Commands

Command	Description
class	Configure a QoS policy map class.
qos class-map	Configures a QoS class map.
qos enable	Enables the QoS data traffic feature on the switch.
qos policy-map	Configure a QoS policy map.
show qos	Displays the current QoS settings.

dst-grp

To link a destination group to a subscription node, use the `dst-grp` command. To remove the destination group linked to the subscription node, use the `no` form of this command.

```
dst-grp id
```

```
no dst-grp id
```

Syntax Description

id	Destination group ID. Range is from 1 to 4095.
----	--

Command Default

No destination group is linked to subscription node.

Command Modes

Telemetry subscription node configuration mode (`conf-tm-sub`)

Command History

Release	Modification
8.3(1)	This command was introduced.

Usage Guidelines

Currently, destination group ID supports only numeric ID values.

Examples

This example shows how to link a destination group to a subscription node:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# subscription 100
switch(conf-tm-sub)# dst-grp 100
```

This example shows how to remove a destination group linked to a subscription node:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# subscription 100
switch(conf-tm-sub)# no dst-grp 100
```

Related Commands

Command	Description
destination-group	Creates a destination group and enters destination group configuration mode.
feature telemetry	Enables the SAN Telemetry Streaming feature.
show running-config telemetry	Displays the existing telemetry configuration.
show telemetry	Displays telemetry configuration.
subscription	Creates a subscription node and enters subscription node configuration mode.

Command	Description
telemetry	Enters SAN Telemetry Streaming configuration mode.

duplicate-message throttle

To enable throttling of duplicate Call Home alert messages, use the duplicate-message throttle command in Call Home configuration submode. To disable this feature, use the no form of the command.

```
duplicate-message throttle
no duplicate-message throttle
```

Syntax Description This command has no other arguments or keywords.

Command Default Enabled.

Command Modes Call Home configuration submode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines The rate of throttling is a maximum of thirty messages in 2 hours.

Examples The following example shows how to enable throttling of duplicate Call Home alert messages:

```
switch# config terminal
switch(config)# callhome
switch(config-callhome)# duplicate-message throttle
```

Related Commands	Command	Description
	callhome	Configures the Call Home function.
	callhome test	Sends a dummy test message to the configured destination(s).
	show callhome	Displays configured Call Home information.



E Commands

- [egress-sa](#), on page 419
- [email-contact](#), on page 420
- [empty](#), on page 421
- [enable](#), on page 422
- [enable \(Call Home configuration submode\)](#), on page 423
- [enable user-server-group](#), on page 424
- [enable secret](#), on page 425
- [enable cert-DN-match](#), on page 426
- [encryption](#), on page 427
- [end](#), on page 428
- [enrollment terminal](#), on page 429
- [errdisable detect cause link-down](#), on page 430
- [errdisable detect cause bit-errors](#), on page 432
- [errdisable detect cause credit-loss](#), on page 433
- [errdisable detect cause link-reset](#), on page 435
- [errdisable detect cause signal-loss](#), on page 436
- [errdisable detect cause sync-loss](#), on page 437
- [errdisable detect cause trustsec-violation](#), on page 438
- [event cli](#), on page 439
- [event counter](#), on page 441
- [event fanabsent](#), on page 443
- [event fanbad](#), on page 444
- [event fcns](#), on page 445
- [event flogi](#), on page 446
- [event gold](#), on page 448
- [event memory](#), on page 450
- [event module](#), on page 451
- [event module-failure](#), on page 453
- [event oir](#), on page 456
- [event policy-default](#), on page 458
- [event poweroverbudget](#), on page 459
- [event snmp](#), on page 460
- [event storm-control](#), on page 463

- [event syslog](#), on page 464
- [event sysmgr](#), on page 466
- [event temperature](#), on page 468
- [event zone](#), on page 470
- [event manager applet](#), on page 473
- [event manager environment](#), on page 474
- [event manager policy](#), on page 475
- [event zone](#), on page 476
- [exit](#), on page 479

egress-sa

To configure the Security Association (SA) to the egress hardware, use the egress-sa command. To delete the SA from the egress hardware, use the no form of the command.

```
egress-sa spi-number
no egress-sa spi-number
```

Syntax Description

spi-number	The range is from 256 to 4294967295.
------------	--------------------------------------

Command Default

None.

Command Modes

Configuration submenu.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the SA to the egress hardware:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fc 2/1 - 3
switch(config-if)# fcsp esp manual
switch(config-if-esp)# egress-sa 258
switch(config-if-esp)#
```

Related Commands

Command	Description
show fcsp interface	Displays FC-SP-related information for a specific interface.

email-contact

To configure an e-mail contact with the Call Home function, use the `email-addr` command in Call Home configuration submode. To disable this feature, use the `no` form of the command.

```
email-addr email-address
no email-addr email-address
```

Syntax Description

email-address	Configures an e-mail address. Uses a standard e-mail address that does not have any text size restrictions.
---------------	---

Command Default

None.

Command Modes

Call Home configuration submode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure e-mail contact in the Call Home configuration:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# email-contact username@company.com
```

Related Commands

Command	Description
callhome	Configures the Call Home function.
callhome test	Sends a dummy test message to the configured destination(s).
show callhome	Displays configured Call Home information.

empty

To remove all steps of the user-configured algorithm, use the empty command in configuration mode.

empty

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration Secure Erase algorithm submenu

Command History	Release	Modification
	6.2(1)	This command was deprecated.
	3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples

The following example shows how to remove all steps of the user-configured algorithm:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 algorithm 0
switch (config-se-algo)# empty
```

Related Commands	Command	Description
	add-step dynamic	Adds a dynamic pattern step to a specific algorithm.
	add-step static	Adds static pattern step to a specific algorithm.

enable

To turn on the privileged commands, use the enable command. To disable this feature, use the disable command.

```
enable privilege-level
```

Syntax Description

privilege-level	Specifies privilege level. Default value is 15.
-----------------	---

Command Default

Enabled.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to turn on the privileged commands:

```
switch# enable 15
switch#
```

Related Commands

Command	Description
enable secret	Displays the secret for privilege escalation.

enable (Call Home configuration submode)

To enable the Call Home function, use the enable command in Call Home configuration submode. To disable this feature, use the disable command.

enable

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Call Home configuration submode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines To disable the Call Home function, use the disable command:

Examples

The following example shows how to enable the Call Home function.

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# enable
```

Related Commands	Command	Description
	callhome	Configures the Call Home function.
	callhome test	Sends a dummy test message to the configured destination(s).
	show callhome	Displays configured Call Home information.

enable user-server-group

To enable or disable group validation, use the enable user-server-group command. To disable this feature, use the no form of the command.

```
enable user-server-group
no enable user-server-group
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration submenu.

Command History	Release	Modification
	NX-OS 5.0	This command was introduced.

Usage Guidelines None.

Examples

The following example shows how to enable group validation:

```
switch(config-ldap) # enable user-server-group
switch(config-ldap) #
```

Related Commands	Command	Description
	show ldap-server groups	Displays the configured LDAP server groups.

enable secret

To create secret for privilege escalation, use the enable secret command. To disable this feature, use the no form of the command.

```
enable secret 0|5 password [priv-lvl privilege-level]
no enable secret 0|5 password [priv-lvl privilege-level]
```

Syntax Description		
	0	Specifies that the secret that follows should be in clear text.
	5	Specifies that the secret that follows should be encrypted.
	password	Specifies that the secret for user privilege escalation.
	priv-lvl	(Optional) Specifies the privilege level to which the secret belongs.
	privilege-level	(Optional) Specifies the privilege level. Default value is 15.

Command Default Enabled.

Command Modes Global Configuration mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to specify the secret that follows should be in clear text:

```
switch(config)# enable secret 0 admin priv-lvl 4
switch(config)#
```

The following example shows how to specify the secret that follows should be encrypted:

```
switch(config)# enable secret 5 admin priv-lvl 4
switch(config)#
```

enable cert-DN-match

To enable or disable cert DN matching, use the enable cert-DN-match command. To disable this feature, use the no form of the command.

```
enable cert-DN-match
no enable cert-DN-match
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration submode.

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines If Cert-DN match is configured, user will be allowed to login only if the user profile lists the subject-DN of the user certificate as authorized for logging in.

Examples

```
The following example shows how to enable cert DN match:
switch(config-ldap) # enable cert-dn-match
switch(config-ldap) #
```

Command	Description
show ldap-server groups	Displays the configured LDAP server groups.

encryption

To configure an encryption algorithm for an IKE protocol policy, use the encryption command. To revert to the default, use the no form of the command.

```
encryption 3des | aes | des
no encryption
```

Syntax Description

3des	Specifies 168-bit DES (3DES).
aes	Specifies 128-bit AES-CBC.
des	Specifies 56-bit DES-CBS.

Command Default

3des

Command Modes

IKE policy configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, the IKE protocol must be enabled using the crypto ike enable command.

Examples

The following example shows how to configure the encryption algorithm for the IKE protocol:

```
switch# config terminal
switch(config)# crypto ike domain ipsec
switch(config-ike-ipsec)# policy 1
switch(config-ike-ipsec-policy)# encryption 3des
```

Related Commands

Command	Description
crypto ike domain ipsec	Enters IKE configuration mode.
crypto ike enable	Enables the IKE protocol.
policy	Configures IKE policy parameters.
show crypto ike domain ipsec	Displays IKE information for the IPsec domain.

end

To exit any of the configuration modes and return to EXEC mode, use the `end` command in configuration mode.

```
end
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History

Release	Modification
4.1(1b)	Modified the command output.
1.0(2)	This command was introduced.

Usage Guidelines You can also press `Ctrl-Z` to exit configuration mode.

Examples

The following example shows how to exit from configure mode:

```
switch(config-port-monitor)# end
switch#
```

Related Commands

Command	Description
<code>exit</code>	Exits configuration mode, or any of the configuration modes.

enrollment terminal

To enable manual cut-and-paste certificate enrollment through the switch console, use the enrollment terminal command in trust point configuration submenu. To revert to the default certificate enrollment process, use the no form of the command.

```
enrollment terminal
no enrollment terminal
```

Syntax Description This command has no arguments or keywords.

Command Default The default enrollment method is manual cut-and-paste, which is the only enrollment method that the MDS switch currently supports.

Command Modes Trust point configuration submenu.

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines None.

Examples

The following example shows how to configure trust point enrollment through the switch console:

```
switch# config terminal
switch(config)# crypto ca trustpoint admin-ca
switch(config-trustpoint)# enrollment terminal
```

The following example shows how to discard a trust point enrollment through the switch console:

```
switch(config)# crypto ca trustpoint admin-ca
switch(config-trustpoint)# no enrollment terminal
```

Command	Description
crypto ca authenticate	Authenticates the certificate of the certificate authority.

errdisable detect cause link-down

To error-disable and bring down a port on a link failure, use the `errdisable detect cause link-down` command in the interface configuration submenu. To disable this feature, use the `no` form of the command.

```
errdisable detect cause link-down num-times count duration sec
no errdisable detect cause link-down num-times count duration sec
```

Syntax Description	
num-times	Specifies the flap number.
count	Specifies the count. The range is from 1 to 1023.
duration	Specifies the time in seconds.
sec	The range is from 45 to 2000000. The duration must be equal to or greater than num-times multiplied by 45. For example, to configure a port to move to the error disabled state when five bit-errors were detected, the duration must be set to 225 or more seconds.

Command Default None.

Command Modes Interface Configuration submenu.

Command History	Release	Modification
	NX-OS 4.1(3)	This command was introduced.

Usage Guidelines The port guard feature is used in environments where the system and application does not adapt quickly and efficiently to a port going down and back up or to a port rapidly cycling up and down which can happen in some failure modes. For example, if the port is going up and down once a second, and the system takes five seconds to stabilize after the port goes down, this situation might cause a more severe failure in the fabric.

The port guard feature gives the SAN administrator the ability to prevent this issue from occurring in environments that are vulnerable to these problems. The port can be configured to stay down after the first failure, or after a specified number of failures in a specified time period. This allows the SAN administration to intervene and control the recovery and avoiding any problems caused by the cycling.

Examples

The following example shows how to configure the port as down when the link flaps once:

```
Switch# configure terminal
Switch (config)# interface fc1/1
Switch (config-if)# errdisable detect cause link-down
```

The following example shows how to configure the port as down when the link flaps 5 times in 225 seconds:

```
Switch# configure terminal
Switch (config)# interface fc1/1
Switch (config-if)# errdisable detect cause link-down num-times 5 duration 225
```

The following example shows how to remove the port guard feature on the interface:

```
Switch# config t
Switch (config)# interface fc1/1
Switch (config-if)# no errdisable detect cause link-down
switch(config)#
```

Related Commands

Command	Description
show interface	Displays the interface status information.
show running-config interface	Displays the running configuration on the interface.
show interface status err-disabled	Displays the Ethernet interface error status information.

errdisable detect cause bit-errors

To enable error-disable detection on bit errors, use the `errdisable detect cause bit-errors` command in the interface configuration submenu. To disable this feature, use the `no` form of the command.

```
errdisable detect cause bit-errors num-times count duration seconds
no errdisable detect cause bit-errors num-times count duration seconds
```

Syntax Description

num-times	Specifies the number of flaps.
count	Specifies the count. The range is from 1 to 1023.
duration	Specifies the time in seconds.
seconds	The range is from 45 to 2000000. The duration must be equal to or greater than num-times multiplied by 45. For example, to configure a port to move to the error disabled state when five bit-errors were detected, the duration must be set to 225 or more seconds.

Command Default

None.

Command Modes

Interface Configuration submenu.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

The port guard feature is used in environments where the system and application does not adapt quickly and efficiently to a port going down and backup or to a port rapidly cycling up and down which can happen in some failure modes. For example, if the port is going up and down once a second, and the system takes five seconds to stabilize after the port goes down, this situation might cause a more severe failure in the fabric.

The port guard feature gives the SAN administrator the ability to prevent this issue from occurring in environments that are vulnerable to these problems. The port can be configured to stay down after the first failure, or after a specified number of failures in a specified time period. This allows the SAN administration to intervene and control the recovery and avoiding any problems caused by the cycling.

Examples

The following example shows how to enable error-disable detection on bit errors:

```
switch# configure terminal
switch(config)# interface fc1/1
switch(config-if)# errdisable detect cause bit-errors num-times 5 duration 225
```

Related Commands

Command	Description
<code>show interface</code>	Displays the interface status information.
<code>show running-config interface</code>	Displays the running configuration on the interface.
<code>show interface status err-disabled</code>	Displays the Ethernet interface error status information.

errdisable detect cause credit-loss

To enable error-disable detection on a credit loss, use the `errdisable detect cause credit-loss` command in the interface configuration submenu. To disable this feature, use the `no` form of the command.

```
errdisable detect cause credit-loss num-times count duration sec
no errdisable detect cause credit-loss num-times count duration sec
```

Syntax Description	Parameter	Description
	num-times	Specifies the flap number.
	count	Specifies the count. The range is from 1 to 1023.
	duration	Specifies the time in seconds.
	sec	The range is from 45 to 2000000. The duration must be equal to or greater than num-times multiplied by 45. For example, to configure a port to move to the error disabled state when five bit-errors were detected, the duration must be set to 225 or more seconds.

Command Default None.

Command Modes Interface Configuration submenu.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines The port guard feature is used in the environments where the system and application does not adapt quickly and efficiently to a port going down and back up or to a port rapidly cycling up and down which can happen in some failure modes. For example, if the port is going up and down once a second, and the system takes five seconds to stabilize after the port goes down, this situation might cause a more severe failure in the fabric.

The port guard feature gives the SAN administrator the ability to prevent this issue from occurring in environments that are vulnerable to these problems. The port can be configured to stay down after the first failure, or after a specified number of failures in a specified time period. This allows the SAN administration to intervene and control the recovery and avoiding any problems caused by the cycling.

Examples The following example shows how to enable error-disable detection on a credit loss:

```
Switch# configure terminal
Switch (config)# interface fc1/1
Switch (config-if)# errdisable detect cause credit-loss num-times 5 duration 225
Switch (config-if)#
```

Related Commands	Command	Description
	show interface	Displays the interface status information.
	show running-config interface	Displays the running configuration on the interface.

Command	Description
show interface status err-disabled	Displays the Ethernet interface error status information.

errdisable detect cause link-reset

To enable error-disable detection on a link reset, use the `errdisable detect cause link-reset` command in the interface configuration submenu. To disable this feature, use the `no` form of the command.

```
errdisable detect cause link-reset num-times count duration sec
no errdisable detect cause link-reset num-times count duration sec
```

Syntax Description	Parameter	Description
	num-times	Specifies the flap number.
	count	Specifies the count. The range is from 1 to 1023.
	duration	Specifies the time in seconds.
	sec	The range is from 1 to 2000000.

Command Default None.

Command Modes Interface Configuration submenu.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines The port guard feature is used in environments where the system and application does not adapt quickly and efficiently to a port going down and back up or to a port rapidly cycling up and down which can happen in some failure modes. For example, if the port is going up and down once a second, and the system takes five seconds to stabilize after the port goes down, this situation might cause a more severe failure in the fabric.

The port guard feature gives the SAN administrator the ability to prevent this issue from occurring in environments that are vulnerable to these problems. The port can be configured to stay down after the first failure, or after a specified number of failures in a specified time period. This allows the SAN administration to intervene and control the recovery and avoiding any problems caused by the cycling.

Examples The following example shows how to enable error-disable detection on a link reset:

```
Switch# configure terminal
Switch (config)# interface fc1/1
Switch (config-if)# errdisable detect cause link-reset num-times 5 duration 30
Switch (config-if)#
```

Related Commands	Command	Description
	show interface	Displays the interface status information.
	show running-config interface	Displays the running configuration on the interface.
	show interface status err-disabled	Displays the Ethernet interface error status information.

errdisable detect cause signal-loss

To enable error-disable detection on a signal loss, use the errdisable detect cause signal-loss command in the interface configuration submenu. To disable this feature, use the no form of the command.

```
errdisable detect cause signal-loss num-times count duration sec
no errdisable detect cause signal-loss num-times count duration sec
```

Syntax Description

num-times	Specifies the flap number.
count	Specifies the count. The range is from 1 to 1023.
duration	Specifies the time in seconds.
sec	The range is from 1 to 2000000.

Command Default

None.

Command Modes

Interface Configuration submenu.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

The port guard feature is used in the environments where the system and application does not adapt quickly and efficiently to a port going down and back up or to a port rapidly cycling up and down which can happen in some failure modes. For example, if the port is going up and down once a second, and the system takes five seconds to stabilize after the port goes down, this situation might cause a more severe failure in the fabric.

The port guard feature gives the SAN administrator the ability to prevent this issue from occurring in environments that are vulnerable to these problems. The port can be configured to stay down after the first failure, or after a specified number of failures in a specified time period. This allows the SAN administration to intervene and control the recovery and avoiding any problems caused by the cycling.

Examples

The following example shows how to enable error-disable on a signal loss:

```
Switch# configure terminal
Switch (config)# interface fc1/1
Switch (config-if)# errdisable detect cause signal-loss num-times 5 duration 30
Switch (config-if)#
```

Related Commands

Command	Description
show interface	Displays the interface status information.
show running-config interface	Displays the running configuration on the interface.
show interface status err-disabled	Displays the Ethernet interface error status information.

errdisable detect cause sync-loss

To enable error-disable detection on a sync loss, use the `errdisable detect cause sync-loss` command in the interface configuration submenu. To disable this feature, use the `no` form of the command.

```
errdisable detect cause sync-loss num-times count duration sec
no errdisable detect cause sync-loss num-times count duration sec
```

Syntax Description	Parameter	Description
	num-times	Specifies the flap number.
	count	Specifies the count. The range is from 1 to 1023.
	duration	Specifies the time in seconds.
	sec	The range is from 1 to 2000000.

Command Default None.

Command Modes Interface Configuration submenu.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

The port guard feature is used in environments where the system and application does not adapt quickly and efficiently to a port going down and back up or to a port rapidly cycling up and down which can happen in some failure modes. For example, if the port is going up and down once a second, and the system takes five seconds to stabilize after the port goes down, this situation might cause a more severe failure in the fabric.

The port guard feature gives the SAN administrator the ability to prevent this issue from occurring in environments that are vulnerable to these problems. The port can be configured to stay down after the first failure, or after a specified number of failures in a specified time period. This allows the SAN administration to intervene and control the recovery and avoiding any problems caused by the cycling.

Examples

The following example shows how to enable error-disable detection on a synchronized loss:

```
Switch# configure terminal
Switch (config)# interface fc1/1
Switch (config-if)# errdisable detect cause sync-loss num-times 5 duration 30
Switch (config-if)#
```

Related Commands	Command	Description
	show interface	Displays the interface status information.
	show running-config interface	Displays the running configuration on the interface.
	show interface status err-disabled	Displays the Ethernet interface error status information.

errdisable detect cause trustsec-violation

To enable error-disable detection on a trustsec violation, use the `errdisable detect cause trustsec-violation` command in the interface configuration submenu. To disable this feature, use the `no` form of the command.

```
errdisable detect cause trustsec-violation num-times count duration sec
no errdisable detect cause trustsec-violation num-times count duration sec
```

Syntax Description

num-times	Specifies the flap number.
count	Specifies the count. The range is from 1 to 1023.
duration	Specifies the time in seconds.
sec	The range is from 1 to 2000000.

Command Default

None.

Command Modes

Interface Configuration submenu.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

The port guard feature is used in environments where the system and application does not adapt quickly and efficiently to a port going down and back up or to a port rapidly cycling up and down which can happen in some failure modes. For example, if the port is going up and down once a second, and the system takes five seconds to stabilize after the port goes down, this situation might cause a more severe failure in the fabric.

The port guard feature gives the SAN administrator the ability to prevent this issue from occurring in environments that are vulnerable to these problems. The port can be configured to stay down after the first failure, or after a specified number of failures in a specified time period. This allows the SAN administration to intervene and control the recovery and avoiding any problems caused by the cycling.

Examples

The following example shows how to enable error-disable detection on a trustsec violation:

```
switch#(config-if)# errdisable detect cause trustsec-violation num-times 1 duration 1
switch#(config-if)#
```

Related Commands

Command	Description
show interface	Displays the interface status information.
show running-config interface	Displays the running configuration on the interface.
show interface status err-disabled	Displays the Ethernet interface error status information.

event cli

To configure a CLI command as an EEM applet trigger, use the event cli command. To delete the applet trigger, use the no form of the command.

```
event cli [tag tagname] match expression [count countnum [time seconds]]
no event cli [tag tagname] match expression [count countnum [time seconds]]
```

Syntax Description		
tag tagname	(Optional) Configures an event tag identifier. tagname specifies a handle for combining multiple events and this handle can be any string value of 1 to 29 characters.	
match expression	Specifies the regular expression (regexp) used to match the CLI command. The command must have been successfully parsed before a match is attempted. The expression is compared to the fully expanded command and must match exactly, not just part of the command. When the expression contains embedded spaces enclose it in double quotes.	
count countnum	(Optional) Specifies the number of matching occurrences before an Embedded Event Manager event is triggered. When a number is not specified, an Embedded Event Manager event is triggered after the first match. This number must be an integer greater than 0.	
time seconds	(Optional) Specifies the time interval during which one or more occurrences must take place. When the keyword is not specified, no time period check is applied.	

Command Default None.

Command Modes EEM applet configuration (config-applet).

Command History	Release	Modification
	NX-OS 4.1(2)	This command was introduced.

Usage Guidelines A cli event trigger allows control over CLI commands. By default, the triggering command is not executed. This allows an applet to take action before or after a command runs, or even prevent it from running. To run the triggering command, configure an event-default action at the stage in the applet where the command should run.

Examples

The following example shows how to match the shutdown command as an applet trigger:

```
switch# configure terminal
switch(config)# event manager applet blockShutdownCmd
switch(config-applet)# event cli match "shutdown"
switch(config-applet)# end
```

The following example shows how to use spaces and regular expressions. Action 10 logs a syslog message and action 20 allows the matching command to complete normally.

```
switch# configure terminal
switch(config)# event manager applet fcanalyserCheck
switch(config-applet)# event cli match "fcanalyzer * mgmt*"
switch(config-applet)# action 10 syslog priority emergencies msg fcanalyser command used
for mgmt interface
switch(config-applet)# action 20 event-default
switch(config-applet)# end
```

Related Commands

Command	Description
action	Configure EEM applet actions.
show event manager event-types	Displays information about EEM event triggers.
show event manager history events	Displays the history of EEM events.
show running-config eem	Displays all EEM applets.
tag	Correlate multiple events in an EEM applet. Correlate multiple events in an EEM applet.

event counter

To configure a counter as an EEM applet trigger, use the event counter command. To delete the applet trigger, use the no form of the command.

```
event counter [tag tagname] name name entry-val value entry-op operator [exit-val value exit-op operator]
```

```
no event counter [tag tagname] name name entry-val value entry-op operator [exit-val value exit-op operator]
```

Syntax Description

tag tagname	(Optional) Configures an event tag identifier. tagname specifies a handle for combining multiple events and this handle can be any string value of 1 to 29 characters.
name name	Configures the name of the counter to monitor. name can be any string value of 1 to 28 characters.
entry-val value	Configures a value to compare the named counter against. The event resets immediately unless an exit-val is specified. value is an integer in the range from 0 to 2147483647.
entry-op operator	Specifies how to compare the current value of the named counter with the specified value. The operator can be one of the following: <ul style="list-style-type: none"> • eq—Equal to • ge—Greater than or equal to • gt—Greater than • le—Less than or equal to • lt—Less than • ne—Not equal to
exit-val value	(Optional) Configures a value that the named counter must reach before resetting the event. value is an integer in the range from 0 to 2147483647.
exit-op operator	(Optional) Specifies how to compare the current value of the named counter with the specified value. The operator can be one of the following: <ul style="list-style-type: none"> • eq —Equal to • ge—Greater than or equal to • gt—Greater than • le—Less than or equal to • lt—Less than • ne—Not equal to

Command Default None.

Command Modes EEM applet configuration (config-applet).

Release	Modification
NX-OS 4.1(2)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to trigger an EEM applet when a counter named 'test' has a value of 0:

```
switch# configure terminal
switch(config)# event manager applet testCtrIsZero
switch(config-applet)# event counter name test entry-val 0 entry-op eq
switch(config-applet)# end
```

Related Commands	Command	Description
	show event manager event-types	Displays information about EEM event triggers.
	show event manager history events	Displays the history of EEM events.
	show running-config eem	Displays all EEM applets.
	tag	Correlate multiple events in an EEM applet. Correlate multiple events in an EEM applet.

event fanabsent

To configure a fan absence as an EEM applet trigger, use the event fanabsent command. To delete the applet trigger, use the no form of the command.

```
fanabsent [fan fannumber] time seconds
no fanabsent [fan fannumber] time seconds
```

Syntax Description	fan number	(Optional) Configures a chassis fan. fannumber range is platform specific.
	time seconds	Configures a time period. seconds range is 10 to 64000.

Command Default None.

Command Modes EEM applet configuration (config-applet).

Command History	Release	Modification
	NX-OS 4.1(2)	This command was introduced.

Usage Guidelines This event specification monitors if a fan is removed from the chassis for a particular period of time. Embedded Event Manager takes an action based on the actions configured on the applet.

Examples This example shows how to configure a an EEM applet to trigger after a fan absence of 300 seconds (5 minutes):

```
switch# configure terminal
switch(config)# event manager applet fanGoneForFiveMins
switch(config-applet)# event fanabsent fan 300
switch(config-applet)# end
```

Related Commands	Command	Description
	show event manager event-types	Displays information about EEM event triggers.
	show event manager history events	Displays the history of EEM events.
	show running-config eem	Displays all EEM applets.

event fanbad

To configure fanbad event specification, use the event fanbad command. To remove the fanbad event, use the no form of the command.

```
event fanbad [fan fannumber] time seconds
no event fanbad [fan fannumber] time seconds
```

Syntax Description

fan fannumber	(Optional) Configures a chassis fan. fannumber range is platform specific.
time seconds	Configures a time period. seconds range is 10 to 64000.

Command Default

None.

Command Modes

EEM applet configuration (config-applet).

Command History

Release	Modification
NX-OS 4.1(2)	This command was introduced.

Usage Guidelines

This event specification monitors for the failure of any chassis cooling fan and Embedded Event Manager takes an action based on the actions configured on the applet.

Examples

This example shows how to configure an EEM applet to trigger after a fan failure of 10 seconds:

```
switch# configure terminal
switch(config)# event manager applet applet1
switch(config-applet)# event fanbad time 10
switch(config-applet)# end
```

Related Commands

Command	Description
show event manager event-types	Displays information about EEM event triggers.
show event manager history events	Displays the history of EEM events.
show running-config eem	Displays all EEM applets.

event fcns

To change the maximum number of FC Name Server (FCNS) entries allowed on a switch, use the event fcns command. You must override the default system policy `__fcns_entries_max_per_switch` with a new policy to do this. To remove the FCNS event, use the no form of the command.

```
event fcns entries max-per-switch count
no event fcns entries max-per-switch count
```

Syntax Description	entries	Specifies FCNS Database entries.
	max-per-switch count	Specifies an event to configure maximum FCNS database count per switch. count specifies the maximum number of FCNS entries the switch will register. count range is platform specific.

Command Default None.

Command Modes EEM applet configuration (config-applet).

Command History	Release	Modification
	NX-OS 6.2(11)	This command was introduced.

Usage Guidelines The maximum number of name server entries that a switch can support is dependent on the platform. Refer to the Cisco MDS NX-OS Release 6.2(13) Configuration Limits document for platform specific limits.

Examples

This example shows how to configure an Embedded Event Manager event when the FCNS database count per switch reaches a maximum:

```
switch# configure terminal
switch(config)# event manager applet fcns_policy override __fcns_entries_max_per_switch
switch(config-applet)# event fcns entries max-per-switch 9000
switch(config-applet)# end
```

Related Commands	Command	Description
	show event manager event-types	Displays information about EEM event triggers.
	show event manager history events	Displays the history of EEM events.
	show running-config eem	Displays all EEM applets.

event flogi

To trigger an Embedded Event Manager (EEM) policy when certain fabric login (FLOGI) thresholds are exceeded, use the event flogi command. To remove the FLOGI event detection from the EEM policy, use the no form of this command.

```
event flogi intf-max | module-max | switch-max count
no event flogi intf-max | module-max | switch-max count
```

Syntax Description

intf-max	Triggers an event when the number of successful and pending FLOGIs for any Fibre Channel interface exceeds the specified threshold.
module-max	Triggers an event when the number of successful and pending FLOGIs for any module exceeds the specified threshold.
switch-max	Triggers an event when the number of successful and pending FLOGIs for the switch exceeds the specified threshold.
count	Specifies the threshold value. The threshold value must be a positive integer. The FLOGI limit range per interface, module, and switch is platform specific. For more information on FLOGI limits for different platforms, see the Cisco MDS NX-OS Configuration Limits document.

Command Default

None.

Command Modes

EEM applet configuration (config-applet)

Command History

Release	Modification
Cisco NX-OS 6.2(11)	This command was introduced.

Usage Guidelines

To use these FLOGI event triggers you must override the corresponding default system policies with a new policy. The default system policies are:

event flogi	corresponding system policy
intf-max	__flogi_fcid_max_per_intf
module-max	__flogi_fcid_max_per_module
switch-max	__flogi_fcid_max_per_switch

Examples

This example shows an event trigger that occurs when the number of FLOGIs per interface exceeds the threshold value of 156:

```
switch# configure terminal
switch(config)# event manager applet flogiint override __flogi_fcids_max_per_intf
switch(config-applet)# event flogi intf-max 156
switch(config-applet)# end
```

This example shows an event trigger that occurs when the number of FLOGIs per module exceeds the threshold value of 1024:

```
switch# configure terminal
switch(config)# event manager applet flogimod override __flogi_fcids_max_per_module
switch(config-applet)# event flogi module-max 1024
switch(config-applet)# end
```

This example shows an event trigger that occurs when the number of FLOGIs per switch exceeds the threshold value of 2000:

```
switch# configure terminal
switch(config)# event manager applet flogiswitch override __flogi_fcids_max_per_switch
switch(config-applet)# event flogi switch-max 2000
switch(config-applet)# end
```

Related Commands

Command	Description
show event manager event-types	Displays information about EEM event triggers.
show event manager history events	Displays the history of EEM events.
show event manager system-policy	Displays default system policies.
show running-config eem	Displays all EEM applets.

event gold

To create an online diagnostic test failure related event, use the event gold command. To remove the online diagnostic test failure related event, use the no form of the command.

```
event gold module number |all test name [severity minor | moderate | major] testing-type scheduled
| monitoring consecutive-failure count
no event gold module number |all test name [severity minor | moderate | major] testing-type scheduled
| monitoring consecutive-failure count
```

Syntax Description

number	Specifies the module number.
all	Selects all the module IDs.
test name	Selects the diagnostic test. name specifies the test name.
severity	Specifies the severity of the failure. It has the following values: <ul style="list-style-type: none"> • minor—Minor failure • moderate—Moderate failure • major—Major failure
testing-type	Specifies the type of testing. It has the following values: <ul style="list-style-type: none"> • scheduled—(Deprecated) Scheduled test • monitoring—Monitoring test
consecutive-failure count	Specifies the consecutive number of times the failure has occurred. count specifies the failure count and the value is between 1 to 1000.

Command Default None.

Command Modes EEM applet configuration (config-applet).

Command History

Release	Modification
NX-OS 6.2	This command was introduced.

Usage Guidelines None.

Examples

This example shows how to configure an EEM event when the GOLD ASICRegisterCheck test fails on all modules 10 consecutive times.

```
switch# configure terminal
switch(config)# event manager applet gold
```



```
switch(config-applet)# event gold module all test ASICRegisterCheck testing-type monitoring  
consecutive-failure 10
```

This example shows how to configure an EEM event when the GOLD PwrMgmtBus test fails on module 5 only 20 consecutive times.

```
switch# configure terminal  
switch(config)# event manager applet gold  
switch(config-applet)# event gold module 5 test PwrMgmtBus testing-type monitoring  
consecutive-failure 20
```

Related Commands

Command	Description
show event manager history events	Displays the history of EEM events.
show running-config eem	Displays all EEM applets.

event memory

To configure memory thresholds event specification, use the event memory command. To remove the memory threshold event, use the no form of the command.

```
event memory minor | severe | critical
no event memory minor | severe | critical
```

Syntax Description

minor	Specifies minor alert.
severe	Specifies severe alert.
critical	Specifies critical alert.

Command Default

None.

Command Modes

EEM applet configuration (config-applet).

Command History

Release	Modification
NX-OS 4.1(2)	This command was introduced.

Usage Guidelines

The event specification monitors the memory threshold specified in the applet and Embedded Event Manager takes an action based on the actions configured on the applet.

Examples

This example shows how to configure memory threshold event specification:

```
switch# configure terminal
switch(config)# event manager applet bad-applet
switch(config-applet)# event memory critical
switch(config-applet)# end
```

Related Commands

Command	Description
show event manager event-types	Displays information about EEM event triggers.
show event manager history events	Displays the history of EEM events.
show running-config eem	Displays all EEM applets.
show system internal memory-alerts-log	Displays the log of memory alerts.

event module

To configure the module event specification, use the event module command. To remove the module event specification, use the no form of the command.

```
event module [tag tagname] status online | offline | any module all slot
no event module [tag tagname] status online | offline | any module all slot
```

Syntax Description	Parameter	Description
	tag tagname	(Optional) Configures an event tag identifier. tagname specifies a handle for combining multiple events and this handle can be any string value of 1 to 29 characters.
	status	Configures the status condition.
	online	Specifies module status changed to online.
	offline	Specifies module status changed to offline.
	any	Specifies module status changed to online or offline.
	module	Configures which modules to monitor.
	all	Specifies all modules.
	slot	Specifies a module number. The range is platform specific.

Command Default None.

Command Modes EEM applet configuration (config-applet).

Command History	Release	Modification
	NX-OS 4.1(2)	This command was introduced.

Usage Guidelines This event specification monitors the module status change. Embedded Event Manager takes an action based on the actions configured on the applet.

Examples This example shows how to configure the module event specification in the device:

```
switch# configure terminal
switch(config)# event manager applet bad-applet
switch(config-applet)# event module status any module all
switch(config-applet)# action 1.0 syslog priority informational msg "module status changed"
switch(config-applet)# end
```

Related Commands	Command	Description
	show event manager event-types	Displays information about EEM event triggers.

Command	Description
show event manager history events	Displays the history of EEM events.
show running-config eem	Displays all EEM applets.

event module-failure

To create a module failure event specification, use the event module-failure command. To remove the module failure event, use the no form of the command.

```
event module-failure [tag tagname] type failure-type module all slot count count [time seconds]
no event module-failure [tag tagname] type failure-type module all slot count count [time seconds]
```

Syntax Description

tag tagname	(Optional) Configures an event tag identifier. tagname specifies a handle for combining multiple events and this handle can be any string value of 1 to 29 characters.
-------------	---

type failure-type	<p>Configures the failure type to monitor.</p> <p>failure-type specifies whether one or all modules must be monitored. failure-type specifies the type of failure conditions listed below:</p> <ul style="list-style-type: none"> • addon-sequence-failure—Addon sequence failure • any • hitless-upgrade-diag-failure—Runtime diag failure after hitless upgrade • hitless-upgrade-failure—Hitless upgrade failure • hitless-upgrade-procmgr-notif—LC software failure after hitless upgrade • hitless-upgrade-reg-failure—Registration failure after hitless upgrade • hitless-upgrade-seq-timeout—Hitless upgrade sequence timeout • image-download-failed—Image download failure • image-upgrade-failed—Image upgrade failed • insertion-seq-failure—Insertion sequence failure • lc-failed—LC failed • lc-not-responding—LC not responding • lc-ready-timeout—LC ready timeout • lc-sw-failure—LC software failure • registration-failure—Registration failure • registration-timeout—Registration timeout • runtime-diag-failure—Runtime diag failure • runtime-diag-timeout—Runtime diag timeout • sequence-timeout—Sequence timeout • srg-info-resp-timeout—SRG info response timeout • unexpected-registration—Unexpected registration received • upgrade-srg-not-compatible—Upgrade SRG not compatible
module	Configures which modules to monitor.
all	Specifies all modules.
slot	Specifies a module number. The range is platform specific.
count count	<p>Configures the number of matching occurrences before an Embedded Event Manager event is triggered.</p> <p>count specifies the number of repeated occurrences and this number must be an integer in the range 0 to 4294967295.</p>

time seconds	(Optional) Configures a time period. seconds is the period of module in failure state in seconds and this number must be an integer in the range 0 to 10000000.
--------------	--

Command Default None.

Command Modes EEM applet configuration (config-applet).

Release	Modification
NX-OS 4.1(2)	This command was introduced.

Usage Guidelines None.

Examples This example shows how to configure a module failure event specification:

```
switch# configure terminal
switch(config)# event manager applet modfailed
switch(config-applet)# event module-failure type lc-failed module all count 1
switch(config-applet)# action 1.0 syslog priority critical msg module failure detected
switch(config-applet)# end
```

Related Commands	Command	Description
	show event manager event-types	Displays information about EEM event triggers.
	show event manager history events	Displays the history of EEM events.
	show running-config eem	Displays all EEM applets.
	tag	Correlate multiple events in an EEM applet. Correlate multiple events in an EEM applet.

event oir

To configure an Online Insertion Removal event specification, use the event oir command. To remove the Online Insertion Removal event, use the no form of the command.

```
event oir [tag tagname] fan | module | powersupply insert | remove | anyoir [number]
no event oir [tag tagname] fan | module | powersupply insert | remove | anyoir [number]
```

Syntax Description

tag tagname	(Optional) Configures an event tag identifier. tagname specifies a handle for combining multiple events and this handle can be any string value of 1 to 29 characters.
fan	Specifies the system fans. Optionally, specifies an individual fan.
module	Specifies the system modules. Optionally, specifies an individual module.
powersupply	Specifies the system power supplies. Optionally, specifies an individual power supply.
insert | remove | anyoir	Specify the OIR event that triggers the Embedded Event Manager applet. <ul style="list-style-type: none"> • insert—OIR insert • remove—OIR remove • anyoir—Either OIR insert or OIR remove
number	(Optional) If you select fan, enter a fan number to monitor for an OIR event. The range is platform specific. If you select module, enter a module number to monitor an OIR event. The range is platform specific. If you select power supply, enter a power supply number to monitor an OIR event. The range is platform specific.

Command Default

None.

Command Modes

EEM applet configuration (config-applet).

Command History

Release	Modification
NX-OS 4.1(2)	This command was introduced.

Usage Guidelines

This event specification monitors whenever there is insertion or removal of the following components: fan, module, and power supply. Embedded Event Manager takes an action based on the actions configured on the applet.

Examples

This example shows how to configure the Online Insertion Removal event specification:

```
switch# configure terminal
switch(config)# event manager applet moduleOir
switch(config-applet)# event oir module anyoir
```



```
switch(config-applet)# action 1.0 syslog priority informational msg a module was oir-ed
switch(config-applet)# end
```

Related Commands

Command	Description
show event manager event-types	Displays information about EEM event triggers.
show event manager history events	Displays the history of EEM events.
show running-config eem	Displays all EEM applets.
tag	Correlate multiple events in an EEM applet. Correlate multiple events in an EEM applet.

event policy-default

To configure the event specification when the system policy is overridden, use the event policy-default command. To remove the configuration, use the no form of the command.

```
event policy-default count count [time seconds]
no event policy-default count count [time seconds]
```

Syntax Description

count count	Configures the number of matching occurrences before an event is triggered. count specifies the number of repeated occurrences and this number must be an integer in the range 0 to 65000.
time seconds	(Optional) Configures the time interval during which one or more occurrences must take place. When this option is not specified no time limit is applied. seconds specifies the number of seconds and this number must be an integer in the range 0 to 4294967295.

Command Default

None.

Command Modes

EEM applet configuration (config-applet).

Command History

Release	Modification
NX-OS 4.1(2)	This command was introduced.

Usage Guidelines

None.

Examples

This example shows how to configure an event configuration when the system policy is overridden:

```
switch# configure terminal
switch(config)# event manager applet applet1
switch(config-applet)# event policy-default count 1
switch(config-applet)# end
```

Related Commands

Command	Description
show event manager history events	Displays the history of EEM events.
show running-config eem	Displays all EEM applets.

event poweroverbudget

The power over-budget policy gets triggered when the available power capacity drops below zero and the device is no longer able to keep the previously powered-up modules in the powered-up state. The default action is to print a syslog to notify the user of the occurrence of power over budget. To change the power over budget behavior, use the event poweroverbudget command. You must override the default system policy `__pfm_power_over_budget` with a new policy to do this. To remove the power over-budget event specification, use the no form of the command.

```
event poweroverbudget
no event poweroverbudget
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EEM applet configuration (config-applet).

Command History	Release	Modification
	NX-OS 4.1(2)	This command was introduced.

Usage Guidelines None.

Examples This example shows how to shut down modules starting from module 1 when the available power drops below zero:

```
switch# configure terminal
switch(config)# event manager applet pobOverride override __pfm_power_over_budget
switch(config-applet)# event poweroverbudget
switch(config-applet)# event 4 overbudgetshut
switch(config-applet)# end
```

Related Commands	Command	Description
	show event manager event-types	Displays information about EEM event triggers.
	show event manager history events	Displays the history of EEM events.
	show running-config eem	Displays all EEM applets.

event snmp

To configure an SNMP event, use the event snmp command. To remove the SNMP event, use the no form of the command.

```
event snmp [tag tagname] oid oid get-type exact | next entry-op gt | ge | eq | ne | lt | le entry-val
value [exit-comb or | and exit-op gt | ge | eq | ne | lt | le exit-val value exit-time time | exit-op gt
| ge | eq | ne | lt | le exit-val value] poll-interval time
```

```
no event snmp [tag tagname] oid oid get-type exact | next entry-op gt | ge | eq | ne | lt | le entry-val
value [exit-comb or | and exit-op gt | ge | eq | ne | lt | le exit-val value exit-time time | exit-op gt
| ge | eq | ne | lt | le exit-val value] poll-interval time
```

Syntax Description

tag tagname	(Optional) Configures an event tag identifier. tagname specifies a handle for combining multiple events and this handle can be any string value of 1 to 29 characters.
oid oid	Configures the OID to monitor. oid in dot notation.
get-type	Retrieve the OID exactly as specified.
exact	Retrieves the object ID specified by the OID value argument.
next	Retrieve the OID that is the alphanumeric successor to the named OID.
entry-op	Configures how to compare the value of the current OID with the specified value.
Operator	A logical operator with the following meanings: <ul style="list-style-type: none"> • eq—Equal to • ge—Greater than or equal to • gt—Greater than • le—Less than or equal to • lt—Less than • ne—Not equal to
entry-val value	Configures a value to compare against the current OID. value specifies a value and this number is an integer in the range from 0 to 2147483647.
exit-comb	(Optional) Configures a combination of exit conditions that must be met before event monitor is re-enabled.
and	(Optional) Specifies that an exit OID value and an exit time value must be reached.
or	(Optional) Specifies that an exit OID value or an exit time value must be reached.
exit-op	Configures how to compare the value of the current OID with the exit value. If there is a match an event is triggered and event monitoring is reenabled.

exit-val value	Configures the value with which the contents of the current OID are compared to decide whether the exit criteria are met. value specifies a value and this number is an integer in the range from 0 to 2147483647.
exit-time time	(Optional) Configures the time period after which the event monitoring is reenabled. The timing starts after the event is triggered. time is an integer in the range from 1 to 2147483647.
poll-interval	Configures the time interval between consecutive polls.

Command Default

None.

Command Modes

EEM applet configuration (config-applet).

Command History

Release	Modification
NX-OS 4.1(2)	This command was introduced.

Usage Guidelines

An Embedded Event Manager event is triggered when one of the fields specified by an SNMP object ID crosses a defined threshold. If multiple conditions exist, the SNMP event is triggered when all the conditions are met.

Exit criteria are optional. If exit criteria are not specified, event monitoring will be re-enabled immediately. If exit criteria are specified on the basis of values or time periods, the event monitoring is not re-enabled until the criteria are met.

When the entry-op keyword is used and there is a match, an event is triggered and event monitoring is disabled until the exit criteria are met.

When the exit-op keyword is used and there is a match, an event is triggered and event monitoring is re-enabled.

The entry-type keyword triggers one of the following actions:

- If the value keyword is specified, the entry-value is an actual value and an SNMP event is raised whenever the absolute value occurs.
- If the increment keyword is specified, the entry-value is an increment and an SNMP event is raised whenever the incremental value is reached.
- If the rate keyword is specified, the entry-value is a rate of change and an SNMP event is raised whenever the rate of change value is reached.

When the optional exit-type keyword is used, the following conditions occur:

- If the value keyword is specified, the exit value is an actual value and the event monitoring is re-enabled whenever the absolute value occurs. This is the default.
- If the increment keyword is specified, the exit value is an increment and the event monitoring is re-enabled whenever the incremental value is reached.
- If the rate keyword is specified, the exit value is a rate of change and the event monitoring is re-enabled whenever the rate of change value is reached.

Examples

The following example shows how to monitor the CPU free memory OID and log a corresponding syslog:

```
switch# configure terminal
switch(config)# event manager applet snmp-applet
switch(config-applet)# event snmp oid 1.3.6.1.4.1.9.9.109.1.1.1.1.13.1 get-type exact
entry-op lt entry-val 100000 poll-interval 60
switch(config-applet)# action 1.0 syslog priority warnings msg free memory fell below 100
Mb
switch(config-applet)# end
```

Related Commands

Command	Description
show event manager event-types	Displays information about EEM event triggers.
show event manager history events	Displays the history of EEM events.
show running-config eem	Displays all EEM applets.
tag	Correlate multiple events in an EEM applet. Correlate multiple events in an EEM applet.

event storm-control

By default, the packet storm feature takes limited action. The packet storm feature can be augmented with further actions, such as disabling the affected interface or sending SNMP traps, by using an EEM applet. To configure a packet storm event as an EEM applet trigger, use the event storm-control command. To delete the applet trigger, use the no form of the command.

```
event storm-control
no event storm-control
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EEM applet configuration (config-applet).

Command History	Release	Modification
	NX-OS 4.1(2)	This command was introduced.

Usage Guidelines This command is only available on platforms that support the packet storm feature.

Examples The following example show how to shutdown an interface that exceeds the packet storm feature thresholds:

```
switch# configure terminal
switch(config)# event manager applet stormControlOverride
switch(config-applet)# event storm-control
switch(config-applet)# action 10 cli command "configure terminal"
switch(config-applet)# action 20 cli command "interface $interface"
switch(config-applet)# action 30 cli command "shutdown"
switch(config-applet)# action 40 cli command "end"
switch(config-applet)# action 50 syslog priority notifications msg Storm control: $interface
shutdown due to $cause
switch(config-applet)# end
```

Related Commands	Command	Description
	show event manager event-types	Displays information about EEM event triggers.
	show event manager history events	Displays the history of EEM events.
	show running-config eem	Displays all EEM applets.
	storm-control	Configure packet storm thresholds on an interface.

event syslog

To specify event criteria for an Embedded Event Manager applet that is run by matching syslog messages, use the event syslog command in the applet configuration mode. To remove the syslog message event criteria, use the no form of the command.

```
event syslog [tag tagname] [occurs count | period interval | priority 0-7 | alerts | critical | debugging
| emergencies | errors | informational | notifications | warnings] pattern expression
no event syslog [tag tagname] [occurs count | period interval | priority 0-7 | alerts | critical | debugging
| emergencies | errors | informational | notifications | warnings] pattern expression
```

Syntax Description

tag tagname	(Optional) Configures an event tag identifier. tagname specifies a handle for combining multiple events and this handle can be any string value of 1 to 29 characters.
occurs count	(Optional) Specifies the number of occurrences of the matched syslog messages to count before triggering the policy event. count range is platform specific.
period interval	(Optional) Specifies the maximum time within which the timestamps of the triggering messages must fall. interval range is platform specific.
priority	(Optional) Specifies the number or name of the desired priority level at which syslog messages are matched. Messages at or numerically lower than the specified level are matched. The parameter for priority must be one of the following: <ul style="list-style-type: none"> • 0 | emergencies— Specifies syslog messages of emergency level (the system is unusable). • 1 | alerts— Specifies syslog messages of alert level (immediate action is needed). • 2 | critical— Specifies syslog messages of critical level (critical conditions). • 3 | errors— Specifies syslog messages of error level (error conditions). • 4 | warnings— Specifies syslog messages of warning level (warning conditions). • 5 | notifications— Specifies syslog messages of notification level (normal but significant conditions). • 6 | informational— Specifies syslog messages of informational level (informational messages). • 7 | debugging— Specifies syslog messages of debugging level (debugging messages).
pattern expression	Specifies a regular expression to match against syslog messages. The pattern must be quoted with " " quotes. expression maximum size is 256 characters.

Command Default

If the occurs parameter is not specified, the default value of 1 is used.

If the period parameter is not specified, the default value of 0 is used.

If the priority parameter is not specified, the default value of informational is used.

Command Modes

EEM applet configuration (config-applet).

Command History

Release	Modification
5.2(1)	This command was introduced.

Usage Guidelines

The syslog and Embedded Event Manager client processes run on each supervisor module in a system. Therefore, in dual supervisor systems, an event syslog command will be matched on both the active and standby supervisors. Both Embedded Event Manager clients will notify the Embedded Event Manager primary process on the active supervisor causing the applet to be triggered twice. Be sure to take this potential double triggering in to account in the applet.

This command does not require a license.

Examples

This example shows how to configure an applet to trigger after 10 "authentication failed" syslog events:

```
switch# configure terminal
switch(config)# event manager applet auth-fails-applet
switch(config-applet)# event syslog occurs 10 pattern "authentication failed"
Configuration accepted successfully
```

This example shows how to configure an applet to tag module power up and standby online syslog events:

```
switch# configure terminal
switch(config)# event manager applet mod-event-applet
switch(config-applet)# event syslog tag moduleEvent pattern "(powered up|is standby)"
Configuration accepted successfully
```

Related Commands

Command	Description
action syslog	Configures a syslog message to generate when an EEM applet is triggered.
show event manager history events	Displays the history of EEM events.
tag	Correlate multiple events in an EEM applet. Correlate multiple events in an EEM applet.

event sysmgr

To override default system EEM policies, use the event sysmgr command. To remove the system manager-related event specification, use the no form of the command.

```
event sysmgr memory [module mod-number] major value minor value clear value | switchover
count count time seconds
no event sysmgr memory [module mod-number] major value minor value clear value | switchover
count count time seconds
```

Syntax Description

memory	Configures memory alert thresholds.
module mod-number	(Optional) Configures for a module. Default is all modules. mod-number specifies a module number and the range is platform specific.
major value	Configures the major memory alert threshold. value specifies the amount of used memory as a percentage.
minor value	Configures the minor memory alert threshold. value specifies the amount of used memory as a percentage.
clear value	Configures the threshold memory usage must fall below to exit memory alert condition. value specifies the amount of used memory as a percentage.
switchover count count	Configures switchover rate alert threshold. Configures the number of switchovers. count range is from 1 to 65000.
time seconds	Configures the time interval during which the switchovers must take place to trigger the event. seconds specifies the time period and the range is from 1 to 4294967295 seconds.

Command Default

None.

Command Modes

EEM applet configuration (config-applet).

Command History

Release	Modification
NX-OS 4.1(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following examples show the default system switchover EEM policy and override the default triggering values with user defined values. The default action is retained.

```
switch# show event manager system-policy __sysmgr_swover_count_alert
```

Name : __sysmgr_swover_count_alert
 Description : Switchover count exceeded event. Default value: 20 switchovers within 1200 seconds. Default action: All linecards will be powered down.
 Overridable : Yes

switch# **configure terminal**

```
switch(config)# event manager applet sup-so-override override __sysmgr_swover_count_alert
switch(config-applet)# event sysmgr switchover count 3 time 300
switch(config-applet)# action 1.0 policy-default
```

switch# **show event manager system-policy __sysmgr_policy_mem_alert**

Name : __sysmgr_policy_mem_alert
 Description : service memory usage event
 Overridable : Yes

switch# **configure terminal**

```
switch(config)# event manager applet sup-mem-override override __sysmgr_policy_mem_alert
switch(config-applet)# event sysmgr memory major 90 minor 80 clear 70
switch(config-applet)# action 1.0 policy-default
```

Related Commands

Command	Description
show event manager event-types	Displays information about EEM event triggers.
show event manager system-policy	Displays the default system EEM policies.
show event manager history events	Displays the history of EEM events.
show running-config eem	Displays all EEM applets.

event temperature

To specify an event criteria for an Embedded Event Manager (EEM) applet that is run on the basis of a temperature event, use the event temperature command in the applet configuration mode. To remove the temperature event criteria, use the no form of this command.

```
event temperature [module slot] [sensor number] threshold major | minor | any
no event temperature [module slot] [sensor number] threshold major | minor | any
```

Syntax Description

module slot	(Optional) Configures for particular modules. slot specifies a '-' and ',' delimited range of modules. The values are platform specific.
sensor number	(Optional) Configures for particular sensors. number specifies a '-' and ',' delimited range of sensors and the values are module specific.
threshold	Specifies the threshold event that triggers the Embedded Event Manager applet.
major	Specifies a major event.
minor	Specifies a minor event.
any	Specifies any event.

Command Default

None.

Command Modes

EEM applet configuration (config-applet).

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None.

Examples

This example shows the default system major temperature EEM policy and only performs the default action for a major temperature alert for sensor #8 only.

```
switch# show event manager system __pfm_tempev_major
Name : __pfm_tempev_major
Description : TempSensor Major Threshold. Action: Shutdown
Overridable : Yes
```

```
switch# configure terminal
switch(config)# event manager applet majortemp_override override __pfm_tempev_major
switch(config-applet)# event temperature module 1-3 sensor 8 threshold major
switch(config-applet)# action 1.0 policy-default
switch(config-applet)# end
```

Related Commands

Command	Description
show event manager event-types	Displays information about EEM event triggers.
show event manager history events	Displays the history of EEM events.
show event manager policy	Displays the register EEM applets.
show event manager system-policy	Displays the default system EEM applets.

event zone

The zone server database is constantly monitored by NX-OS. When the threshold of any of the monitored zone database parameters is exceeded an Embedded Event Manager (EEM) event is triggered. This is used to generate an EEM action for the event. To override the system default thresholds at which each parameter triggers an EEM event, use the event zone command.

```
event zone zones max-per-switch | zonesets max-per-switch | zonemembers max-per-switch | dbsize
max-per-vsan | zone-member-ratio count
no event zone zones max-per-switch | zonesets max-per-switch | zonemembers max-per-switch | dbsize
max-per-vsan | zone-member-ratio count
```

Syntax Description

zones	Specifies the total number of configured zones at which to trigger an Embedded Event Manager event.
zonesets	Specifies the threshold zoneset count at which to trigger an Embedded Event Manager event.
zonemembers	Specifies the total number of zone members at which to trigger an Embedded Event Manager event.
dbsize	Specifies the threshold zone database size in bytes at which to trigger an Embedded Event Manager event.
max-per-switch	Configures the number of allowed zones on the switch.
max-per-vsan	Configures the value for each VSAN.
zone-member-ratio	Specifies the threshold zone member ratio of a device at which to trigger an Embedded Event Manager event. The range is 2 to 2000.
count	Specifies the threshold value.

Command Default

This feature is not configured by default.

Command Modes

EEM applet configuration (config-applet).

Command History

Release	Modification
8.5(1)	Added the zone-member-ratio keyword.
6.2(11)	This command was introduced.

Usage Guidelines

By default, zoning resource alert thresholds are controlled by system EEM policies. These are:

Policy Name	Default Value	Default Action
__zone_zones_max_per_sw	16000 for the switch	syslog
__zone_zonesets_max_per_sw	1000 for the switch	syslog

Policy Name	Default Value	Default Action
__zone_members_max_per_sw	32000 for the switch	syslog
__zone_dbsize_max_per_vsan	4000000 bytes per VSAN	syslog
__zone_member_ratio	8 peers per device	syslog

Fan-out ratio is the number of target ports zoned to a single initiator. Fan-in ratio is the number of initiators zoned to a single target port. Zone member ratio is a superset of fan-out and fan-in ratios.

These policies log syslog messages when preconfigured thresholds are reached to alert the user of high resource usage by the zone service. The thresholds and actions may be over ridden by the user or the actions augmented by further actions (such as sending an SNMP trap).

Examples

This example shows the default system per VSAN maximum zone database size EEM policy and, overrides the database size alert threshold and shows the new policy information.. The default action is retained.

```
switch# show event manager system-policy __zone_dbsize_max_per_vsan

      Name : __zone_dbsize_max_per_vsan
      Description : Syslog warning when Zone database size exceeds the max limit of 4000000
                  bytes for a vsan.
      Overridable : Yes

switch# configure terminal
switch(config)# event manager applet newzonedb override __zone_dbsize_max_per_vsan
switch(config-applet)# event zone dbsize max-per-vsan 1000000
switch(config-applet)# action 1.0 policy-default
switch(config-applet)# end
switch# show ev man policy internal newzonedb
      Name : newzonedb      (overrides __zone_dbsize_max_per_vsan)
      Policy Type : applet
      Event Specification : event zone dbsize max-per-vsan 1000000
      action 1.0 policy-default
Event Specification active on : Active
```

This example shows how to configure and activate an EEM applet to override the maximum zone count on a system. The default action is overridden by an action to generate a syslog message.

```
switch# configure terminal
switch(config)# event manager applet zonemaxsw override __zone_zones_max_per_sw
switch(config-applet)# action 1.0 syslog priority informational msg "zone zonemaxswitch
override"
switch(config-applet)# end
```

This example shows how to configure and activate an EEM applet to override the maximum zoneset count on a system. The default action is overridden by an action to generate a syslog message.

```
switch# configure terminal
switch(config)# event manager applet zonesetmaxsw override __zone_zonesets_max_per_sw
switch(config-applet)# action 1.0 syslog priority informational msg "zone zonesetmaxswitch
```

```

override"
switch(config-applet)# end

```

This example shows how to configure and activate an EEM applet called zoneratio to override the default system policy and configure the zone member ratio limit to 20. The default action, syslog, is retained.

```

switch# configure terminal
switch(config)# event manager applet zoneratio override __zone_member_ratio
switch(config-applet)# event zone zone-member-ratio 20
switch(config-applet)# action 1.0 policy-default
switch(config-applet)# end

```

Related Commands

Command	Description
action	Configures an action in an EEM applet.
show event manager event-types	Displays information about EEM event triggers.
show event manager history events	Displays the history of EEM events.
show event manager policy internal	Displays user policies that override system policies.
show event manager system-policy	Displays the default system EEM applets.
show zone analysis	Display detailed analysis and statistical information about the zoning database including information about the zone member ratio if configured.

event manager applet

To register an applet with the Embedded Event Manager (EEM) and to enter applet configuration mode, use the event manager applet command. To unregister the applet, use the no form of the command.

```
event manager applet applet-name [override system-policy]
no event manager applet applet-name
```

Syntax Description

applet-name	The applet name can be any case-sensitive alphanumeric string up to 29 characters.
override system-policy	(Optional) Configures the applet to override an existing system policy. system-policy specifies the name of the system policy to override.

Command Default

None.

Command Modes

Global configuration.

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None.

Examples

This example shows how to register an applet with EEM and to enter applet configuration mode:

```
switch# configure terminal
switch(config)# event manager applet eem-applet
switch(config-applet)# end
```

Related Commands

Command	Description
show event manager history events	Displays the history of EEM events.

event manager environment

To configure an Embedded Event Manager (EEM) environment variable, use the event manager environment command. To disable an Embedded Event Manager environment variable, use the no form of the command.

```
event manager environment environment-name environment-value
no event manager environment environment-name
```

Syntax Description

environment-name	Specifies the name of the EEM environment variable. The variable name can be any case-sensitive alphanumeric string up to 29 characters.
environment-value	Specifies the value of the EEM environment. The variable name can be any case-sensitive alphanumeric string up to 39 characters.

Command Default

None.

Command Modes

Global configuration.

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to set an EEM environment variable:

```
switch# configure terminal
switch(config)# event manager environment emailto "admin@anyplace.com"
switch(config)# end
```

Related Commands

Command	Description
show event manager environment	Displays the name and value of the EEM.
show event manager history events	Displays the history of EEM events.
show event manager policy	Displays the register EEM applets.

event manager policy

To register and activate an Embedded Event Manager (EEM) script policy, use the event manager policy command in the global configuration mode. To deactivate the script policy, use the no form of the command.

```
event manager policy policy-script
no event manager policy policy-script
```

Syntax Description

policy-script	Specifies the Embedded Event Manager policy script. This name becomes the name of the Embedded Event Manager policy. The maximum size of the name is 29 characters.
---------------	---

Command Default

None.

Command Modes

Global Configuration.

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

User policy scripts must be installed in the bootflash://eem/user_script_policies directory before they can be used. If this directory does not exist, create this directory before the first use of this command and install the policy scripts in it.

The Embedded Event Manager schedules and runs policies on the basis of an event specification that is contained within the policy itself. When the event manager policy command is invoked, the Embedded Event Manager examines the policy and registers it to be run when the specified event occurs.

Examples

The following example shows how to register a policy:

```
switch# configure terminal
switch(config)# event manager policy modulescript
switch(config)# end
```

Related Commands

Command	Description
show event manager history events	Displays the history of EEM events.
event manager applet	Displays an applet with the EEM.

event zone

The zone server database is constantly monitored by NX-OS. When the threshold of any of the monitored zone database parameters is exceeded an Embedded Event Manager (EEM) event is triggered. This is used to generate an EEM action for the event. To override the system default thresholds at which each parameter triggers an EEM event, use the event zone command.

```
event zone zones max-per-switch | zonesets max-per-switch | zonemembers max-per-switch | dbsize
max-per-vsan | zone-member-ratio count
no event zone zones max-per-switch | zonesets max-per-switch | zonemembers max-per-switch | dbsize
max-per-vsan | zone-member-ratio count
```

Syntax Description

zones	Specifies the total number of configured zones at which to trigger an Embedded Event Manager event.
zonesets	Specifies the threshold zoneset count at which to trigger an Embedded Event Manager event.
zonemembers	Specifies the total number of zone members at which to trigger an Embedded Event Manager event.
dbsize	Specifies the threshold zone database size in bytes at which to trigger an Embedded Event Manager event.
max-per-switch	Configures the number of allowed zones on the switch.
max-per-vsan	Configures the value for each VSAN.
zone-member-ratio	Specifies the threshold zone member ratio of a device at which to trigger an Embedded Event Manager event. The range is 2 to 2000.
count	Specifies the threshold value.

Command Default

This feature is not configured by default.

Command Modes

EEM applet configuration (config-applet).

Command History

Release	Modification
8.5(1)	Added the zone-member-ratio keyword.
6.2(11)	This command was introduced.

Usage Guidelines

By default, zoning resource alert thresholds are controlled by system EEM policies. These are:

Policy Name	Default Value	Default Action
__zone_zones_max_per_sw	16000 for the switch	syslog
__zone_zonesets_max_per_sw	1000 for the switch	syslog

Policy Name	Default Value	Default Action
__zone_members_max_per_sw	32000 for the switch	syslog
__zone_dbsize_max_per_vsan	4000000 bytes per VSAN	syslog
__zone_member_ratio	8 peers per device	syslog

Fan-out ratio is the number of target ports zoned to a single initiator. Fan-in ratio is the number of initiators zoned to a single target port. Zone member ratio is a superset of fan-out and fan-in ratios.

These policies log syslog messages when preconfigured thresholds are reached to alert the user of high resource usage by the zone service. The thresholds and actions may be over ridden by the user or the actions augmented by further actions (such as sending an SNMP trap).

Examples

This example shows the default system per VSAN maximum zone database size EEM policy and, overrides the database size alert threshold and shows the new policy information.. The default action is retained.

```
switch# show event manager system-policy __zone_dbsize_max_per_vsan

      Name : __zone_dbsize_max_per_vsan
      Description : Syslog warning when Zone database size exceeds the max limit of 4000000
                  bytes for a vsan.
      Overridable : Yes

switch# configure terminal
switch(config)# event manager applet newzonedb override __zone_dbsize_max_per_vsan
switch(config-applet)# event zone dbsize max-per-vsan 1000000
switch(config-applet)# action 1.0 policy-default
switch(config-applet)# end
switch# show ev man policy internal newzonedb
      Name : newzonedb      (overrides __zone_dbsize_max_per_vsan)
      Policy Type : applet
      Event Specification : event zone dbsize max-per-vsan 1000000
      action 1.0 policy-default
Event Specification active on : Active
```

This example shows how to configure and activate an EEM applet to override the maximum zone count on a system. The default action is overridden by an action to generate a syslog message.

```
switch# configure terminal
switch(config)# event manager applet zonemaxsw override __zone_zones_max_per_sw
switch(config-applet)# action 1.0 syslog priority informational msg "zone zonemaxswitch
override"
switch(config-applet)# end
```

This example shows how to configure and activate an EEM applet to override the maximum zoneset count on a system. The default action is overridden by an action to generate a syslog message.

```
switch# configure terminal
switch(config)# event manager applet zonesetmaxsw override __zone_zonesets_max_per_sw
switch(config-applet)# action 1.0 syslog priority informational msg "zone zonesetmaxswitch
```

```

override"
switch(config-applet)# end

```

This example shows how to configure and activate an EEM applet called zoneratio to override the default system policy and configure the zone member ratio limit to 20. The default action, syslog, is retained.

```

switch# configure terminal
switch(config)# event manager applet zoneratio override __zone_member_ratio
switch(config-applet)# event zone zone-member-ratio 20
switch(config-applet)# action 1.0 policy-default
switch(config-applet)# end

```

Related Commands

Command	Description
action	Configures an action in an EEM applet.
show event manager event-types	Displays information about EEM event triggers.
show event manager history events	Displays the history of EEM events.
show event manager policy internal	Displays user policies that override system policies.
show event manager system-policy	Displays the default system EEM applets.
show zone analysis	Display detailed analysis and statistical information about the zoning database including information about the zone member ratio if configured.

exit

To exit any configuration mode or close an active terminal session and terminate the EXEC, use the exit command at the system prompt.

```
exit
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC and configuration modes.

Command History	Release	Modification
	4.1(1b)	Modified the command output.
	1.0(2)	This command was introduced.

Usage Guidelines Use the exit command at the EXEC levels to exit the EXEC mode. Use the exit command at the configuration level to return to privileged EXEC mode. Use the exit command in interface configuration mode to return to configuration mode. You also can press Ctrl-Z, or use the end command, from any configuration mode to return to EXEC mode.



Note The exit command is associated with privilege level 0. If you configure AAA authorization for a privilege level greater than 0, this command will not be included in the command set for that privilege level.

Examples

The following example displays an exit from the submode:

```
switch(config-port-monitor) # exit
switch(config) #
```

The following example displays an exit from the interface configuration mode for VRRP to return to the interface configuration mode:

```
switch(config-if-vrrp) # exit
switch(config-if) #
```

The following example displays an exit from the interface configuration mode to return to the configuration mode:

```
switch(config-if) # exit
switch(config) #
```

The following example shows how to exit an active session (log-out):

```
switch# exit
```

Related Commands

Command	Description
end	Returns you to EXEC mode.



F Commands

- [fabric](#), on page 484
- [fabric-binding activate](#), on page 485
- [fabric-binding database copy](#), on page 487
- [fabric-binding database diff](#), on page 488
- [fabric-binding database vsan](#), on page 489
- [fabric-binding enable](#), on page 491
- [fabric-membership](#), on page 492
- [fcalias clone](#), on page 493
- [fcalias name](#), on page 494
- [fcalias rename](#), on page 495
- [fcanalyzer local](#), on page 496
- [fcanalyzer remote](#), on page 501
- [filter](#), on page 502
- [fcc enable](#), on page 504
- [fc-management database](#), on page 505
- [fc-management enable](#), on page 506
- [fcc priority](#), on page 507
- [fcdomain](#), on page 508
- [fcdomain abort](#), on page 509
- [fcdomain allowed](#), on page 510
- [fcdomain auto-reconfigure](#), on page 512
- [fcdomain commit](#), on page 514
- [fcdomain contiguous-allocation](#), on page 515
- [fcdomain distribute](#), on page 516
- [fcdomain domain](#), on page 517
- [fcdomain fabric-name](#), on page 519
- [fcdomain fcid database](#), on page 520
- [fcdomain fcid persistent](#), on page 521
- [fcdomain optimize](#), on page 522
- [fcdomain priority](#), on page 524
- [fcdomain restart](#), on page 526
- [fcdroplateny](#), on page 527
- [fcflow stats](#), on page 529

- [fcid-allocation](#), on page 531
- [fcid-last-byte](#), on page 532
- [fcinterop fcid-allocation](#), on page 533
- [fcinterop loop-monitor](#), on page 534
- [fcip-enhanced](#), on page 535
- [fcip enable](#), on page 537
- [fcip profile](#), on page 538
- [fens bulk-notify](#), on page 539
- [fens no-bulk-notify](#), on page 540
- [fens proxy-port](#), on page 541
- [fens reject-duplicate-pwwn vsan](#), on page 542
- [fcping](#), on page 543
- [fc-redirect version2 enable](#), on page 545
- [fc-redirect ivr-support enable](#), on page 547
- [fcroute](#), on page 548
- [fcroute-map vsan](#), on page 550
- [ferxbcredit extended enable](#), on page 552
- [fcs plat-check-global vsan](#), on page 553
- [fcs register](#), on page 554
- [fcs virtual-device-add](#), on page 555
- [fcsp](#), on page 556
- [fcsp dhchap devicename](#), on page 558
- [fcsp dhchap dhgroup](#), on page 560
- [fcsp dhchap hash](#), on page 562
- [fcsp dhchap password](#), on page 564
- [fcsp enable](#), on page 566
- [fcsp esp sa](#), on page 567
- [fcsp timeout](#), on page 568
- [fctimer](#), on page 569
- [fctimer abort](#), on page 570
- [fctimer commit](#), on page 571
- [fctimer distribute](#), on page 572
- [fctrace](#), on page 573
- [fc-tunnel](#), on page 574
- [feature](#), on page 577
- [feature analytics](#), on page 579
- [feature congestion-isolation](#), on page 580
- [feature ficon](#), on page 582
- [feature fpm](#), on page 584
- [feature telemetry](#), on page 585
- [feature vmis](#), on page 586
- [ficon distribute](#), on page 587
- [ficon logical-port assign port-numbers](#), on page 588
- [ficon port default-state prohibit-all](#), on page 589
- [ficon slot assign port-numbers](#), on page 590
- [ficon swap](#), on page 592

- [ficon-tape-read-accelerator](#), on page 594
- [ficon-tape-accelerator vsan](#), on page 595
- [ficon vsan \(EXEC mode\)](#), on page 597
- [ficon vsan \(configuration mode\)](#), on page 599
- [ficon vsan diagnostics](#), on page 600
- [file](#), on page 601
- [find](#), on page 602
- [flex-attach virtual-pwwn](#), on page 603
- [flex-attach virtual-pwwn auto](#), on page 604
- [flex-attach virtual-pwwn interface](#), on page 605
- [flogi scale enable](#), on page 606
- [flogi quiesce timeout](#), on page 607
- [flowgroup](#), on page 608
- [format](#), on page 609
- [fpm congested device](#), on page 611
- [fpm congested device recover](#), on page 613
- [fpm congestion-signal](#), on page 614
- [fpm dirl](#), on page 615
- [fpm fpin](#), on page 617
- [fspf config vsan](#), on page 618
- [fspf cost](#), on page 620
- [fspf dead-interval](#), on page 621
- [fspf enable vsan](#), on page 622
- [fspf hello-interval](#), on page 623
- [fspf passive](#), on page 624
- [fspf retransmit-interval](#), on page 625

fabric

To add a fabric to the cluster, use the fabric command in the Cisco SME cluster configuration submode.

```
fabric fabric name
```

Syntax Description

fabric name	Specifies the fabric name. The maximum length is 32 characters.
-------------	---

Command Default

None.

Command Modes

Cisco SME cluster configuration submode.

Command History

Release	Modification
3.2(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example adds a fabric named sw-xyz to a cluster:

```
switch# config terminal
switch(config)# sme cluster c1
switch(config-sme-cl)# fabric sw-xyz
```

Related Commands

Command	Description
show sme cluster	Displays information about Cisco SME cluster.

fabric-binding activate

To activate fabric binding in a VSAN, use the fabric-binding activate command in configuration mode. To disable this feature, use the no form of the command.

```
fabric-binding activate vsan vsan-id [force]
no fabric-binding activate vsan vsan-id
```

Syntax Description		
vsan vsan-id		Specifies the VSAN. The ID of the VSAN is from 1 to 4093.
force		(Optional) Forces fabric binding activation.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	3.0(1)	Extended support for fabric binding to Fibre Channel VSANs.

Usage Guidelines Fabric binding is configured on a per-VSAN basis and can be implemented in both FICON VSANs and Fibre Channel VSANs.

Examples The following example activates the fabric binding database for the specified VSAN:

```
switch# config terminal
switch(config)# fabric-binding activate vsan 1
```

The following example deactivates the fabric binding database for the specified VSAN:

```
switch(config)# no fabric-binding activate vsan 10
```

The following example activates the fabric binding database for the specified VSAN forcefully, even if the configuration is not acceptable:

```
switch(config)# fabric-binding activate vsan 3 force
```

The following example reverts to the previously, configured state or to the factory default (if no state is configured):

```
switch(config)# no fabric-binding activate vsan 1 force
```

Related Commands

Command	Description
fabric-binding database	Configures a fabric binding database.
fabric-binding enable	Enables fabric binding.

fabric-binding database copy

To copy from the active fabric binding database to the configuration fabric binding database, use the fabric-binding database copy command in EXEC mode.

```
fabric-binding database copy vsan vsan-id
```

Syntax Description

vsan vsan-id	Specifies the VSAN. The ID of the VSAN is from 1 to 4093.
-----------------	---

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(1)	This command was introduced.
3.0(1)	Extended support for fabric binding to Fibre Channel VSANs.

Usage Guidelines

Fabric binding is configured on a per-VSAN basis and can be implemented in both FICON VSANs and Fibre Channel VSANs.

If the configured database is empty, this command is not accepted.

Examples

The following example copies from the active database to the configuration database in VSAN 1:

```
switch# fabric-binding database copy vsan 1
```

Related Commands

Command	Description
fabric-binding diff	Provides the differences between the fabric binding databases.

fabric-binding database diff

To view the differences between the active database and the configuration database in a VSAN, use the fabric-binding database diff command in EXEC mode.

```
fabric-binding database diff active | config vsan vsan-id
```

Syntax Description

active	Provides information on the differences in the active database with respect to the configuration database.
config	Provides information on the differences in the configuration database with respect to the active database.
vsan vsan-id	Specifies the VSAN. The ID of the VSAN is from 1 to 4093.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(1)	This command was introduced.
3.0(1)	Extended support of fabric binding to Fibre Channel VSANs.

Usage Guidelines

Fabric binding is configured on a per-VSAN basis and can be implemented in both FICON VSANs and Fibre Channel VSANs.

Examples

The following example displays the differences between the active database and the configuration database in VSAN 1:

```
switch# fabric-binding database diff active vsan 1
```

The following example displays information on the differences between the configuration database and the active database:

```
switch# fabric-binding database diff config vsan 1
```

Related Commands

Command	Description
fabric-binding copy	Copies from the active to the configuration fabric binding database.

fabric-binding database vsan

To configure a user-specified fabric binding list in a VSAN, use the fabric-binding database vsan command in configuration mode. To disable an FC alias, use the no form of the command.

```
fabric-binding database vsan vsan-id swwn switch-wwn domain domain-id
no fabric-binding database vsan vsan-id swwn switch-wwn domain domain-id
```

Syntax Description	Parameter	Description
	vsan-id	Specifies the VSAN. The ID of the VSAN is from 1 to 4093.
	swwn switch-wwn	Configures the switch WWN in dotted hex format.
	domain domain-id	Specifies the specified domain ID. The domain ID is a number from 1 to 239.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	3.0(1)	Extended support of fabric binding to Fibre Channel VSANs.

Usage Guidelines Fabric binding is configured on a per-VSAN basis and can be implemented in both FICON VSANs and Fibre Channel VSANs.

In a FICON VSAN, the fabric binding feature requires all sWWNs connected to a switch and their persistent domain IDs to be part of the fabric binding active database. In a Fibre Channel VSAN, only the sWWN is required; the domain ID is optional.

A user-specified fabric binding list contains a list of switch WWNs (sWWNs) within a fabric. If an sWWN attempts to join the fabric, and that sWWN is not on the list or the sWWN is using a domain ID that differs from the one specified in the allowed list, the ISL between the switch and the fabric is automatically isolated in that VSAN and the switch is denied entry into the fabric.

The persistent domain ID must be specified along with the sWWN. Domain ID authorization is required in FICON VSANs where the domains are statically configured and the end devices reject a domain ID change in all switches in the fabric.



Note All switches in a non-FICON VSAN must be running Cisco MDS SAN-OS Release 3.x or later.

Examples

The following example enters the fabric binding database submode and adds the sWWN and domain ID of a switch to the configured database list:

```
switch# config terminal
```

```
switch(config)# fabric-binding database vsan 5
switch(config-fabric-binding)# swwn 21:00:05:30:23:11:11:11 domain 102
```

The following example deletes a fabric binding database for the specified VSAN:

```
switch# config terminal
switch(config)# no fabric-binding database vsan 10
```

The following example deletes the sWWN and domain ID of a switch from the configured database list:

```
switch# config terminal
switch(config)# fabric-binding database vsan 5
switch(config-fabric-binding)# no swwn 21:00:15:30:23:1a:11:03 domain 101
```

Related Commands

Command	Description
fabric-binding activate	Activates fabric binding.
fabric-binding enable	Enables fabric binding.

fabric-binding enable

To enable fabric binding in a VSAN, use the fabric-binding enable command. To disable fabric binding, use the no form of the command.

```
fabric-binding enable
no fabric-binding enable
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	3.0(1)	Extended support of fabric binding to Fibre Channel VSANs.
	NX-OS 4.1(1b)	This command was deprecated.

Usage Guidelines Fabric binding is configured on a per-VSAN basis and can be implemented in both FICON VSANs and Fibre Channel VSANs.

The fabric binding feature must be enabled in each switch in the fabric that participates in the fabric binding.

Examples The following example enables fabric binding on that switch:

```
switch# config t
switch(config)# fabric-binding enable
```

The following example disables fabric binding on that switch:

```
switch# config t
switch(config)# no fabric-binding enable
```

Related Commands	Command	Description
	fabric-binding activate	Activates fabric binding.
	fabric-binding database	Configures a fabric binding database.

fabric-membership

To configure a node to a fabric, use the fabric-membership command. To remove the node from the fabric, use the no form of the command,

```
fabric-membership fabric name
no fabric-membership fabric name
```

Syntax Description

fabric name	Specifies the fabric name. The maximum length is 32 characters.
-------------	---

Command Default

None.

Command Modes

Cisco SME cluster node configuration submode.

Command History

Release	Modification
3.2(2)	This command was introduced.

Usage Guidelines

Use the fabric-membership command to put a node in a fabric. This command has to be configured before the interface sme slot/port [force] can be accepted. It also cannot be removed if the interface sme slot/port [force] command is enabled.

Examples

The following example specifies a fabric to which the node belongs:

```
switch# config t
switch(config)# sme cluster clustername1
switch(config-sme-cl)# node local
switch(config-sme-cl-node)# fabric-membership f1
```

Related Commands

Command	Description
interface sme	Configures the Cisco SME interface to a cluster.
shutdown	Enables or disables an interface.
show interface sme	Displays interface information.

fcalias clone

To clone a Fibre Channel alias, use the fcalias clone command.

```
fcalias clone origFcalias-Name cloneFcalias-Name vsan vsan-id
```

Syntax Description		
origFcalias-Name cloneFcalias-Name		Clones a Fibre Channel alias from the current name to a new name. Maximum length of names is 64 characters.
vsan		Specifies the clone Fibre Channel alias is for a VSAN.
vsan-id		The ID of the VSAN is from 1 to 4093.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.1(1a)	This command was introduced.

Usage Guidelines To disable an FC alias, use the no form of the fcalias name command.

Examples The following examples show how to clone a fcalias named origAlias to cloneAlias on VSAN 45:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcalias clone origAlias cloneAlias vsan 45
```

Related Commands	Command	Description
	show fcalias	Displays the member name information in a Fibre Channel alias (fcalias).

fcalias name

To configure an FC alias, use the `fcalias name` command. To disable an FC alias, use the `no` form of the command.

```
fcalias name alias name vsan vsan-id
no fcalias name alias name vsan vsan-id
```

Syntax Description

alias-name	The name of the fcalias. Maximum length is 64 characters.
vsan	The fcalias is for a VSAN.
vsan-id	The ID of the VSAN is from 1 to 4093.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

To include multiple members in any alias, use the FCID, fWWN, or pWWN values.

Examples

The following examples show how to configure an fcalias called AliasSample on VSAN 3:

```
switch# config terminal
switch(config)# fcalias name AliasSample
vsan 3
switch(config-fcalias)#
```

Related Commands

Command	Description
member (fcalias configuration mode)	Configures alias member for a specified zone.

fcalias rename

To rename a Fibre Channel alias (fcalias), use the fcalias rename command.

```
fcalias rename current-name new-name vsan vsan-id
```

Syntax Description

current-name	Specifies the current fcalias name. The maximum length is 64.
new-name	Specifies the new fcalias name. The maximum length is 64.
vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to rename an fcalias:

```
switch# config terminal
switch(config)# fcalias rename oldalias newalias vsan 10
```

Related Commands

Command	Description
fcalias name	Configures fcalias names.
show fcalias	Displays fcalias information.

fcanalyzer local

To configure local Cisco Fabric Analyzer, use the `fcanalyzer local` command in EXEC mode.

```
fcanalyzer | ethanalyzer local [interface inband | mgmt [capture-filter expression] [brief] [[display-filter
expression] [[limit-captured-frames number] [[limit-frame-size bytes] [write uri2]]]] | [interface inband
| mgmt [dump-pkt]]]
```

Syntax Description

interface	(Optional) Begins live capture on following interface.
inband	(Optional) Specifies an inband interface (default interface to capture on).
mgmt	(Optional) Specifies an management interface.
capture-filter	(Optional) Filters frames using a capture filter expression.
expression	Specifies capture filter expression.
brief	(Optional) Displays the protocol summary in a brief.
display-filter	(Optional) Filters frames using display filter expression.
expression	Specifies display filter expression.
limit-captured-frames number	(Optional) Limits the number of frames captured to 10. The range is 0 to 2147483647 frames. Use 0 if you do not want to limit the captured frames.
limit-frame-size bytes	(Optional) Limits the size of the frame captures. The range is 64 to 65536 bytes.
write	(Optional) Saves the captured frames to a specified file.
uri2	The filename to be written in (bootflash: or volatile:).
dump-pkt	Specifies Hex (ASCII) dumps packet, troubleshoot packet analyzer.

Command Default

Number of packets captured by default is changed from 100 to 10.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 4.1(1a)	Changed the display-filter syntax description.
NX-OS 4.2(2)	Moved local capture to EXEC mode, added support for capturing on mgmt interface along with inband (fc-interface). Also added capture-filter support and support for hex dump of packets.
1.0(2)	This command was introduced.

Usage Guidelines

You can capture Fibre Channel control traffic from a switch and decode it without disrupting connectivity and without having to be local to the point of analysis.



Note When you capture on inband interface packets from the supervisor to the line card module are captured and vice versa.



Note Multiword capture and display filter expressions need to be either single-quoted or double-quoted depending on what the expression itself contains.



Note To stop capture at any time press Ctrl+C.

Examples

The following example shows how to display only protocol summary on VSAN1:

```
switch# fcanalyzer local interface inband brief

Capturing on inband interface
 0.000000    ff.fa.01 -> ff.fa.01    FC OHMS(Cisco MDS)
 0.001033    ff.fa.04 -> ff.fa.04    FC OHMS(Cisco MDS)
 4.996424    ff.fa.01 -> ff.fa.01    FC OHMS(Cisco MDS)
 4.997452    ff.fa.04 -> ff.fa.04    FC OHMS(Cisco MDS)
 9.996536    ff.fa.01 -> ff.fa.01    FC OHMS(Cisco MDS)
 9.997470    ff.fa.04 -> ff.fa.04    FC OHMS(Cisco MDS)
14.996572    ff.fa.01 -> ff.fa.01    FC OHMS(Cisco MDS)
14.997590    ff.fa.04 -> ff.fa.04    FC OHMS(Cisco MDS)
19.996463    ff.fa.01 -> ff.fa.01    FC OHMS(Cisco MDS)
19.997415    ff.fa.04 -> ff.fa.04    FC OHMS(Cisco MDS)
switch#
```

The following example shows how to display capture on inband interface:

```
switch# fcanalyzer local interface inband

Capturing on inband interface
Frame 1 (148 bytes on wire, 148 bytes captured)
  Arrival Time: Apr 15, 2010 11:20:47.577355000
    Time delta from previous packet: 0.000000000 seconds
    Time since reference or first frame: 0.000000000 seconds
  Frame Number: 1
    Packet Length: 148 bytes
    Capture Length: 148 bytes
Ethernet II, Src: 00:00:00:00:00:0a, Dst: 00:00:00:00:ee:00
  Destination: 00:00:00:00:ee:00 (00:00:00:00:ee:00)
  Source: 00:00:00:00:00:0a (00:00:00:00:00:0a)
  Type: Unknown (0xfcfc)
MDS Header(Unknown(0)/Unknown(0))
  MDS Header
    ...0 0000 0111 0110 = Packet Len: 118
    ... 0000 0000 00.. = Dst Index: 0x0000
    ... ..01 0010 0000 = Src Index: 0x0120
    ... 0000 0000 0001 = VSAN: 1
```

```

MDS Trailer
  EOF: Unknown (0)
  CRC: 0xdeadbeef
Fibre Channel
  R_CTL: 0x20(Extended Link Services/0x0)
switch#

```

The following example shows how to display a hex dump of packets:

```

switch# fcanalyzer local interface inband dump-pkt
Warning: Couldn't obtain netmask info (eth2: no IPv4 address assigned).
Capturing on eth2
  0.000000    ff.fa.01 -> ff.fa.01    FC OHMS(Cisco MDS)

0000  00 00 00 00 ee 00 00 00 00 00 00 0a fc fc 81 00  .....
0010  00 72 ff 00 01 20 00 01 00 00 00 10 01 00 20 ff  .r...
0020  fa 01 00 ff fa 01 01 00 00 03 00 00 00 00 ff ff  .....
0030  ff ff 00 00 00 00 00 00 00 00 00 00 03 49 00 00  .....I..
0040  00 29 f6 1f 73 d9 00 00 00 00 00 00 00 00 00 00  .).s.....
0050  00 00 00 00 00 00 00 00 ff fa 01 00 ff fa 01 00 00  .....
0060  09 96 00 00 00 00 00 00 00 00 04 00 00 00 02 00 00  .....
0070  00 00 01 00 00 00 ff ff ff ff 00 09 f5 00 2b 99  .....+.
0080  86 d2 8b df 4e 02 0b aa aa aa 00 00 de ad be ef  ....N.....

  0.001112 80:57:00:00:cb:07 -> 81:00:00:72:e7:00 LLC I P, N(R) = 127, N(S) = 16
; DSAP NULL LSAP Group, SSAP 68 Command

0000  81 00 00 72 e7 00 80 57 00 00 cb 07 00 10 01 68  ...r...W.....h
0010  20 ff fa 01 00 ff fa 01 01 00 00 03 00 00 00 00  .....
0020  ff ff ff ff 00 00 00 00 00 00 00 00 00 00 03 49  .....I
0030  00 00 00 29 f6 1f 73 d9 00 00 00 29 f6 1f d4 00  ...).s....)....
0040  00 00 00 00 00 00 00 00 ff fa 01 00 ff fa 01  .....
0050  00 00 09 96 00 00 00 00 00 00 04 00 00 00 02  .....
0060  00 00 00 00 01 00 00 00 ff ff ff ff 00 09 f5 00  .....
0070  2b 99 86 d2 8b df 4e 02 0b aa aa aa 00 00 de ad  +....N.....
0080  4d 94  .....M.

  0.001763    ff.fa.04 -> ff.fa.04    FC OHMS(Cisco MDS)

0000  00 00 00 00 ee 00 00 00 00 00 00 0a fc fc 81 00  .....
0010  00 96 ff 80 81 20 00 01 00 00 00 10 01 00 20 ff  .....
0020  fa 04 00 ff fa 04 01 00 00 00 00 00 00 00 ff ff  .....
0030  ff ff 00 00 00 00 00 00 00 00 00 00 03 49 00 00  .....I..
0040  00 29 f6 1f fc e2 00 00 00 00 00 00 00 00 00 00  .).....
0050  00 00 00 00 00 00 00 00 ff fa 04 00 ff fa 04 00 00  .....
0060  09 96 00 00 00 00 00 00 00 00 00 00 01 00 00  .....
0070  00 00 06 08 20 00 06 08 20 00 00 30 d1 00 f6 cc  ....0....
0080  99 87 01 c8 72 e1 ad c5 a0 dd 09 c3 d6 2d 56 8b  ....r.....-V.
0090  18 96 0a 43 2f 90 15 bb 70 63 bd 7b e1 b3 47 7a  ...C/...pC{..Gz
00a0  3a 49 42 ac 2a ef 71 ca cd 7a 8e a3 a7 e4 00 00  :IB.*.q..z.....
00b0  de ad be ef  ....

```

The following example shows how to use a display filter on inband interface and display its summary:

```

switch# fcanalyzer local interface inband brief display-filter 'mdshdr.vsan==0x1 && (fc.d_id
== "ff.fa.01") || (fc.s_id == "ff.fa.04")'
Capturing on inband interface
  0.000000    ff.fa.01 -> ff.fa.01    FC OHMS(Cisco MDS)
  0.001782    ff.fa.04 -> ff.fa.04    FC OHMS(Cisco MDS)

```

```

4.996741    ff.fa.01 -> ff.fa.01    FC OHMS(Cisco MDS)
4.997725    ff.fa.04 -> ff.fa.04    FC OHMS(Cisco MDS)
9.996670    ff.fa.01 -> ff.fa.01    FC OHMS(Cisco MDS)
9.997483    ff.fa.04 -> ff.fa.04    FC OHMS(Cisco MDS)
14.996623   ff.fa.01 -> ff.fa.01    FC OHMS(Cisco MDS)
14.997642   ff.fa.04 -> ff.fa.04    FC OHMS(Cisco MDS)
19.996739   ff.fa.01 -> ff.fa.01    FC OHMS(Cisco MDS)
19.997554   ff.fa.04 -> ff.fa.04    FC OHMS(Cisco MDS)
switch#

```

The following example shows how to write captured packets in PCAP format and display captures on the screen:

```

switch# fcanalyzer local interface inband display-filter 'mdshdr.vsan==0x1 && (fc.d_id ==
"ff.fa.01") || (fc.s_id == "ff.fa.04")' limit-captured-frames 2 write bootflash:fc_cap
Frame 2 (160 bytes on wire, 160 bytes captured)
  Arrival Time: May  6, 2010 09:53:38.020767000
  Time delta from previous packet: 0.000000000 seconds
  Time since reference or first frame: 0.000000000 seconds
  Frame Number: 2
  Packet Length: 160 bytes
  Capture Length: 160 bytes
Ethernet II, Src: 00:00:00:00:00:0a, Dst: 00:00:00:00:ee:00
  Destination: 00:00:00:00:ee:00 (00:00:00:00:ee:00)
  Source: 00:00:00:00:00:0a (00:00:00:00:00:0a)
  Type: Unknown (0xfcfc)
MDS Header(Unknown(0)/Unknown(0))
  MDS Header
    ...0 0000 1000 0010 = Packet Len: 130
    .... 0000 0000 00.. = Dst Index: 0x0000
    .... ..01 0010 0000 = Src Index: 0x0120
    .... 0000 0000 0001 = VSAN: 1
  MDS Trailer
    EOF: Unknown (0)
    CRC: 0xdeadbeef
Fibre Channel
  R_CTL: 0x20(Extended Link Services/0x0)
  Dest Addr: ff.fa.01
  CS_CTL: 0x00
  Src Addr: ff.fa.01
  Type: Ext Link Svc (0x01)
  F_CTL: 0x000000 Exchange Originator, Seq Initiator, CS_CTL, Last Data Frame
- No Info, ABTS - Abort/MS,
  0... .. = ExgRpd: Exchange Originator
  .0.. .. = SeqRec: Seq Initiator
  ..0. .. = ExgFst: NOT exchg first
  ...0 .. = ExgLst: NOT exchg last
  .... 0... .. = SeqLst: NOT seq last
  .... ..0. .. = Pri: CS_CTL
  .... ..0 .. = TSI: NOT transfer seq initiative
  .... .. 00.. .. = LDF: Last Data Frame - No Info (0x000000)
)
  .... .. 00 .. = A01: no ack required (0x000000)
  .... .. ..0. .. = RetSeq: NOT retransmitted sequence
  .... .. .. 00 .. = AA: ABTS - Cont (0x000000)
  .... .. .. 0... = RelOff: rel offset NOT set
SEQ_ID: 0x00
DF_CTL: 0x00
SEQ_CNT: 0
OX_ID: 0xffff
RX_ID: 0xffff
Parameter: 0x00000000
Data (106 bytes)

```

```

0000  01 00 00 00 00 00 04 1a 00 00 00 34 19 a0 be 60  .....4...`
0010  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  .....
0020  00 ff fa 01 00 ff fa 01 00 00 09 96 00 00 00 00  .....
0030  00 00 00 04 00 00 00 02 00 00 00 00 01 00 00 00  .....
0040  ff ff ff ff 00 1c c0 00 c1 24 50 6e 4d aa 55 a6  .....$PnM.U.
0050  19 81 9c d3 6d b2 58 34 8a 30 6a e6 d6 cf 31 ff  ....m.X4.0j...1.
0060  ca cd 83 0e 00 00 de ad be ef  .....
switch#

```

The following example shows how to use capture filter on the mgmt interface and redirect the console output to a file:

```

switch# fcanalyzer local interface mgmt capture-filter "arp" > mgmt_capture.txt
Capturing on mgmt interface
switch#

```

Related Commands

Command	Description
show fcanalyzer	Displays the list of hosts configured for a remote capture.

fcanalyzer remote

To configure remote Cisco Fabric Analyzer, use the `fcanalyzer remote` command in configuration mode. To disable this command, use the `no` form of the command.

```
no fcanalyzer remote ip address [active [port-number]]
```

Syntax Description	ip-address	Maximum length is 1024 characters.
	active	(Optional) Enables active mode (passive is the default) with the remote host.
	port-number	(Optional) Specifies the port number.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines You can capture Fibre Channel control traffic from a switch and decode it without having to disrupt connectivity and without having to be local to the point of analysis.

Examples The following example shows how to configure remote Cisco Fabric analyzer:

```
switch(config)# fcanalyzer remote 1.1.1.1
switch(config)#
```

Related Commands	Command	Description
	clear fcanalyzer	Clears the entire list of configured hosts.
	show fcanalyzer	Displays the list of hosts configured for a remote capture.

filter

To specify the fields of the certificate map, use the filter command in configuration mode. The CA certificate or certificate chain is assumed to already be available in Privacy Enhanced Mail (PEM) (base-64) encoded format.

```
filter altname-email email-id | altname-upn username | subject-name subject-name
```

Syntax Description

altname-email email-id	Specifies an Email ID as an alternate name. The maximum size is 64 characters.
altname-upn username	Specifies user principal name as an alternate name. The maximum size is 64 characters.
subject-name subject-name	Specifies subject name of the certificate. The maximum size is 64 characters

Command Default

None.

Command Modes

Configuration submode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

%username% substitutes the user's login name.

%hostname% substitute the peer hostname.



Note

Two maps currently can be configured for a given issuer name. The certificate will be filtered based on these two configured maps. If a default configuration is provided then the certificates are filtered against the default map in case if there is no map for that particular issuer name.

Examples

The following example shows how to configure an Email ID as an alternate name:

```
switch(config)# crypto certificatemap mapname map1
switch(config-certmap-filter)# filter subject-name cn=%username%,ou=PKI,o=Cisco Systems,c=US

switch(config-certmap-filter)#
```

The following example shows how to configure the user principal as an alternate name:

```
switch(config-certmap-filter)# filter altname-email %username%@cisco.com
switch(config-certmap-filter)#
```

The following example shows how to configure the subject name as an certificate:

```
switch(config-certmap-filter)# filter altname-upn%username%@%hostname%
switch(config-certmap-filter)#
```

Related Commands

Command	Description
show crypto ssh-auth-map	Displays mapping filters applied for SSH authentication.

fcc enable

To enable Fibre Channel Congestion Control (FCC), use the `fcc enable` command in configuration mode. To disable this feature, use the `no` form of the command.

```
fcc enable
no fcc enable
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Release	Modification
NX-OS 5.0(1a)	This command was deprecated.
1.0(2)	This command was introduced.

Usage Guidelines This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples The following example shows how to enable FCC:

```
switch# config terminal
switch(config)# fcc enable
```

The following example shows how to disable FCC:

```
switch# config terminal
switch(config)# no fcc enable
```

Command	Description
<code>show fcc</code>	Displays FCC settings.

fc-management database

To configure the Fibre Channel Common Transport (FC-CT) Management Security database, use the `fc-management database` command.

```
fc-management database vsan vsan-id
```

Syntax Description

vsan	Specifies the VSAN.
vsan-id	Specifies the VSAN ID. The range is from 1 to 4093.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 6.2(9)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the management security database:

```
switch(config)# fc-management database vsan 1
switch(config-fc-mgmt)#
```

Related Commands

Command	Description
fc-management enable	Enables the FC-CT Management Security.

fc-management enable

To enable the Fibre Channel Common Transport (FC-CT) Management Security, use the `fc-management enable` command. To disable this feature command, use the `no fc-management enable` command.

```
fc-management enable
no fc-management enable
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	NX-OS 6.2(9)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable the FC-CT management security:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fc-management enable
switch(config)#
```

Related Commands	Command	Description
	<code>show fc-management</code>	Displays the FC-CT management security information.

fcc priority

To assign the FCC priority to the entire switch, use the `fcc priority` command in configuration mode. To revert to the default, use the `no` form of the command.

```
fcc priority number
no fcc priority number
```

Syntax Description

number	The FCC priority threshold. The range is 0 to 7, where 0 is the lowest priority and 7 the highest priority.
--------	---

Command Default

The default priority is 4.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
5.0(1a)	This command was deprecated.

Usage Guidelines

FCC reduces the congestion in the traffic without interfering with the standard Fibre Channel protocol.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example shows how to configure the FCC priority threshold as 2:

```
switch# config terminal
switch(config)# fcc priority 2
```

Related Commands

Command	Description
show fcc	Displays FCC settings.

fcdomain

To enable domain selection on the switch and participation in the Fibre Channel fabric topology, use the `fcdomain` command. To disable the domain and withdraw from the Fibre Channel fabric, use the `no` form of this command.

```
fcdomain vsan ID
no fcdomain vsan ID
```

Syntax Description

vsan ID	Specifies the VSAN ID. Range is 1–4093.
---------	---

Command Default

Fibre Channel domains are enabled for all VSANs.

Command Modes

Configuration mode (config)

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

If you disable a Fibre Channel domain on a switch, that switch has no identity in the VSAN. It can neither communicate with other switches in the fabric nor allocate FCIDs to attached edge devices.

This command is not available on N Port Virtualization (NPV) enabled switches as they do not require this functionality. Functions requiring FC domains are handled by the upstream NPIV enabled switch instead.

Examples

The following example displays how to enable the Fibre Channel domain in VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain vsan 10
```

The following example displays how to disable the Fibre Channel domain in VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no fcdomain vsan 10
```

Related Commands

Command	Description
show fcdomain	Displays the Fibre Channel domain information.

fcdomain abort

To discard pending changes to the domain configuration in a VSAN and release the Cisco Fabric Services (CFS) lock, use the `fcdomain abort` command.

```
fcdomain abort vsan ID
```

Syntax Description	vsan id	Specifies a VSAN ID. The range is 1 to 4093.

Command Default None.

Command Modes Configuration mode (config)

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines The pending changes to the domain configuration are cached until the changes are committed. Discarding pending configuration changes should normally be done using the `no fcdomain commit` command. However, when another user has left pending configuration changes without committing them, use this command to force the changes to be abandoned and the session lock to be released. Ensure to check that the other user is no longer logged in to the switch and making changes first.

Examples

The following example displays how to discard pending changes to the domain configuration in VSAN 10 and release the CFS lock:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain abort vsan 10
```

Related Commands	Command	Description
	<code>fcdomain commit</code>	Commits pending changes to the domain configuration in VSAN and releases the CFS lock.
	<code>show cfs lock</code>	Displays currently held CFS locks.
	<code>show fcdomain pending-diff</code>	Displays pending configuration changes.
	<code>show fcdomain</code>	Displays the Fibre Channel domain information.
	<code>show users</code>	Displays currently logged in users.

fcdomain allowed

To configure a set of domain IDs that are allowed in a VSAN, use the `fcdomain allowed` command. To remove this configuration, use the `no` form of this command.

```
fcdomain allowed domain-IDs vsan ID
```

```
no fcdomain allowed domain-IDs vsan ID
```

Syntax Description

domain-IDs	Specifies a set of domain IDs. Two domain IDs separated by a '-' denotes a range of consecutive domain IDs. Nonconsecutive domain IDs are separated by ','. Range is 1–239.
vsan ID	Specifies the VSAN ID. Range is 1–4093.

Command Default

All domain IDs are allowed.

Command Modes

Configuration mode (config)

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

A set of allowed domain IDs must satisfy the following conditions:

- If this switch is a principal switch, all the currently assigned domain IDs must be in the allowed set.
- If this switch is a subordinate switch, the local runtime domain ID must be in the allowed set.
- The locally configured domain ID of the switch must be in the allowed set.
- The intersection of the assigned domain IDs with other already configured domain ID sets must not be empty.

If you configure an allowed set on one switch in a fabric, we recommend that you configure the same set in all other switches in the fabric to ensure consistency or use CFS to distribute the configuration.

Examples

The following example displays how to configure set of allowed domain IDs to 2-10,20,30 in VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain allowed 2-10,20,30 vsan 10
```

If CFS distribution for `fcdomain` is enabled, the following command is required for the allowed list configuration to take effect:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
```

```
switch(config)# fcdomain commit vsan 10
```

The following example displays how to reset the set of allowed domain IDs list back to default for VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no fcdomain allowed 2-10,20,30 vsan 10
```

Related Commands

Command	Description
fcdomain abort	Discards pending changes to the domain configuration in a VSAN and releases the CFS lock.
fcdomain commit	Commits pending changes to the domain configuration in VSAN and releases the CFS lock.
show fcdomain	Displays the Fibre Channel domain information.
show fcdomain allowed	Displays the allowed domain IDs.

fcdomain auto-reconfigure

To enable the automatic reconfiguration of FC domains in the event of overlap during a fabric merge in a VSAN or range of VSANs, use the `fcdomain auto-reconfigure` command. To disable the automatic reconfiguration option, use the `no` form of this command.

```
fcdomain auto-reconfigure vsan ID
```

```
no fcdomain auto-reconfigure vsan ID
```

Syntax Description

vsan ID	Specifies the VSAN ID. Range is 1–4093.
---------	---

Command Default

Automatic reconfiguration is disabled.

Command Modes

Configuration mode (config)

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

Duplicate domains refer to multiple switches selecting the same domain ID in the same VSAN. When connected together, switches with such a configuration will fail to merge and become isolated in the affected VSAN.

Enabling automatic reconfiguration on switches with a duplicate domain IDs before connecting their fabrics together causes a disruptive domain reconfiguration (RCF) to be automatically triggered immediately when they are connected. This will cause the switches with duplicate domain IDs to reselect a domain. Switches that change their domain ID will cause all attached end devices to log out and log in again. This will cause traffic disruption on those devices.

Enabling automatic reconfiguration on switches after they are isolated does not trigger a reconfiguration. The fabrics remains isolated. You can initiate a reconfiguration by manually changing the configured domain ID on one of the switches and thus eliminating the domain overlap and allowing the fabrics to merge.

Examples

The following example displays how to enable the automatic reconfiguration option in VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain auto-reconfigure vsan 10
```

The following example displays how to disable the automatic reconfiguration option in VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no fcdomain auto-reconfigure vsan 10
```


Related Commands

Command	Description
fcdomain domain	Configures a domain manually for the local switch.
show fcdomain	Displays the Fibre Channel domain information.
show fcdomain domain-list	Displays the allocated domain IDs.

fcdomain commit

To commit pending changes to the domain configuration in a VSAN and release the CFS lock, use the `fcdomain commit` command.

```
fcdomain commit vsan ID
```

Syntax Description

vsan ID	Specifies the VSAN ID. Range is 1–4093.
---------	---

Command Default

The pending changes to the domain configuration are cached until the changes are committed.

Command Modes

Configuration mode (`config`)

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

This command may be used on the switch that has the CFS lock. This will be the switch where the `fcdomain` configuration changes for the session were started. A session commit is successful after the pending configuration changes are distributed to each MDS switch in the VSAN, the configuration changes are applied to the configuration by each switch, and the session lock is released.

Examples

The following example displays how to commit pending changes to the domain configuration in VSAN 10 and release the CFS lock:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain commit vsan 10
```

Related Commands

Command	Description
<code>fcdomain abort</code>	Discards pending changes to the domain configuration in a VSAN and releases the CFS lock.
<code>show fcdomain</code>	Displays the Fibre Channel domain information.
<code>show fcdomain pending-diff</code>	Displays pending configuration changes.

fcdomain contiguous-allocation

To assign contiguous domain IDs to subordinate switches by a principle switch in a VSAN or range of VSANs, use the `fcdomain contiguous-allocation` command. To disable the contiguous domain ID assignment by the principle switch, use the `no` form of this command.

```
fcdomain contiguous-allocation vsan ID
```

```
no fcdomain contiguous-allocation vsan ID
```

Syntax Description

vsan ID	Specifies the VSAN ID. Range is 1–4093.
---------	---

Command Default

The contiguous allocation option is disabled.

Command Modes

Configuration mode (config)

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

The contiguous allocation option takes immediate effect at runtime. You need not restart the Fibre Channel domain.

Examples

The following example displays how to enable the contiguous allocation option in VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain contiguous-allocation vsan 10
```

The following example displays how to disable the contiguous allocation option in VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no fcdomain contiguous-allocation vsan 10
```

Related Commands

Command	Description
<code>show fcdomain</code>	Displays the Fibre Channel domain information.
<code>show fcdomain domain-list</code>	Displays the allocated domain IDs.

fcdomain distribute

To enable Fibre Channel domain configuration distribution using CFS, use the `fcdomain distribute` command. To disable Fibre Channel domain configuration distribution, use the `no` form of this command.

```
fcdomain distribute
no fcdomain distribute
```

Command Default

Fibre Channel domain configuration distribution is disabled.

Command Modes

Configuration mode (`config`)

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

You must enable distribution on all switches on which you want to distribute Fibre Channel domain configuration to.

Examples

The following example displays how to enable Fibre Channel domain configuration distribution using CFS:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain distribute
```

The following example displays how to disable Fibre Channel domain configuration distribution:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no fcdomain distribute
```

Related Commands

Command	Description
<code>fcdomain abort</code>	Discards pending changes to the domain configuration in a VSAN and releases the CFS lock.
<code>fcdomain commit</code>	Commits pending changes to the domain configuration in VSAN and releases the CFS lock.
<code>show cfs application</code>	Displays the CFS distribution and transport configuration of applications on a switch.

fcdomain domain

To configure a static or preferred domain ID for a switch, use the `fcdomain domain` command. To remove this configuration, use the `no` form of this command.

```
fcdomain domain dID preferred |static vsan vID
no fcdomain domain dID preferred |static vsan vID
```

dID	Specifies the domain ID in decimal or hexadecimal. Range is 0–239 in decimal and 0x0–0xef in hexadecimal.
preferred	Assigns a specific domain ID but the switch will accept a different domain ID if the specified ID is unavailable.
static	Assigns a specific domain ID but the switch will isolate itself if the specified domain ID is unavailable.
vsan vID	Specifies the VSAN ID. Range is 1–4093.

Command Default

None.

Command Modes

Configuration mode (config)

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

When you assign a static domain ID, you are requesting a specific domain ID for the switch in the VSAN. If the switch does not get the requested ID, it will isolate itself from the fabric. When you specify a preferred domain ID, you are also requesting a particular domain ID, however, if the requested domain ID is unavailable, then the switch will accept another domain ID.

While the static option can be applied at runtime after a disruptive or non-disruptive restart, the preferred option is applied at runtime only after a disruptive restart.



Note

Within a VSAN all switches should have the same domain ID type (either static or preferred). If a configuration is mixed with some switches with static domain types and others with preferred, then switches with static domain configuration may unexpectedly be isolated if their domain was allocated to a switch with a preferred domain configuration first.

Examples

The following example displays how to configure the switch in VSAN 8 to request a preferred domain ID 3 but accept any value assigned by the principal switch if the domain ID is unavailable:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain domain 3 preferred vsan 8
```

The following example displays how to configure the switch in VSAN 237 to accept only a specific value and moves the local interfaces in VSAN 237 to an isolated state if the requested domain ID is unavailable:

```
switch# configure  
Enter configuration commands, one per line. End with CNTL/Z.  
switch(config)# fcdomain domain 2 static vsan 237
```

Related Commands

Command	Description
show fcdomain	Displays the Fibre Channel domain information.
show fcdomain domain-list	Displays the allocated domain IDs.

fcdomain fabric-name

To set the fabric name of a VSAN, use the `fcdomain fabric-name` command. To revert to the default fabric name, use the `no` form of this command.

```
fcdomain fabric-name name vsan ID
```

```
no fcdomain fabric-name name vsan ID
```

Syntax Description

name	Specifies a fabric name. The fabric name is in the format hh:hh:hh:hh:hh:hh:hh:hh.
vsan ID	Specifies the VSAN ID. Range is 1–4093.

Command Default

The default fabric name is built from the VSAN number and the switch WWN.

Command Modes

Configuration mode (config)

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

The fabric name is a local configuration on the switch and is passed as a parameter in some frames (for example, FAN) to edge devices to identify the fabric it is connected to.

Examples

The following example displays how to set a fabric name for VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain fabric-name 20:1:ac:16:5e:0:21:01 vsan 10
```

The following example displays how to revert to the default fabric name in VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no fcdomain fabric-name 20:1:ac:16:5e:0:21:01 vsan 10
```

Related Commands

Command	Description
show fcdomain	Displays the Fibre Channel domain information.

fcdomain fcid database

To modify the persistent FCID database, use the `fcdomain fcid database` command.

`fcdomain fcid database`

Command Default

None.

Command Modes

Configuration mode (config)

Command History

Release	Modification
1.1(1)	This command was introduced.

Examples

The following example displays how to configure a new FCID with a whole area allocation in VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain fcid database
switch(config-fcid-db)# vsan 10 wwn 50:05:08:b2:00:71:c8:c2 fcid 0x6fee00 area
```

Related Commands

Command	Description
vsan wwn fcid	Configures an FCID for a WWN.

fcdomain fcid persistent

To enable the persistent FCID feature, use the `fcdomain fcid persistent` command. To disable this feature, use the `no` form of this command.

```
fcdomain fcid persistent vsan ID
```

```
no fcdomain fcid persistent vsan ID
```

Syntax Description	vsan ID	Specifies the VSAN ID. Range is 1–4093.

Command Default The persistent FCID feature is enabled.

Command Modes Configuration mode (config)

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines It is recommended to not disable the persistent FCID feature in VSANs with any AIX or HP-UX hosts connected. These devices may lose connectivity if the FCID assigned to them changes at the next fabric login.

A device with a persistent FCID assigned may be moved between F port interfaces. They will maintain the same FCID. Loop-attached devices (FL ports) must remain connected to the same port to which they initially logged in to.

Examples The following example displays how to enable the persistent FCID feature in VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain fcid persistent vsan 10
```

The following example displays how to disable the persistent FCID feature in VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no fcdomain fcid persistent vsan 10
```

Related Commands	Command	Description
	show fcdomain	Displays the Fibre Channel domain information.

fcdomain optimize

To enable restart optimization algorithms, use the `fcdomain optimize` command. To disable these algorithms, use the `no` form of this command.

```
fcdomain optimize fast-restart | selective-restart | scale-restart | all vsan ID
```

```
no fcdomain optimize fast-restart | selective-restart | scale-restart | all vsan ID
```

Syntax Description

fast-restart	Enables domain manager fast restart.
selective-restart	Enables domain manager selective restart.
scale-restart	Enables domain manager scale restart.
all	Enables all domain manager optimizations.
vsan ID	Specifies the VSAN ID. Range is 1–4093.

Command Default

Scale restart optimization is enabled by default.

Command Modes

Configuration mode (config)

Command History

Release	Modification
6.2(9)	Added the <code>all</code> and <code>scale-restart</code> keywords to the syntax description.
3.0(2)	Added the <code>fast-restart</code> keyword to the syntax description.
1.1(1)	This command was introduced.

Usage Guidelines

In the Fibre Channel protocol, fabric reconfiguration starts with flooding of reconfigure fabric (RCF) or build fabric (BF) frames which indicates to all the switches in the VSAN that the fabric is changing. This process is followed by principal switch selection and domain ID allocation phases. Fibre Channel domains can be started disruptively or nondisruptively. A disruptive restart sends RCF frames to the other switches in the VSAN and data traffic is disrupted on all the switches in the VSAN (including remotely segmented ISLs). A nondisruptive restart sends BF frames to the other switches in the fabric and data traffic is disrupted only on the local switch. The MDS platform has a number of optimizations available to increase scaling and the completion speed of this process.

When fast restart is enabled and a backup link is available, the domain manager needs only a few milliseconds to select a new principal link to replace the one that failed. Also, the operation to select the new principal link is only executed by the two switches that are directly attached to the failed link, not all switches in the VSAN. When a backup link is not available, the domain manager reverts to the default behavior and starts a normal build fabric phase followed by a principal switch selection phase.

When selective restart is enabled, the domain manager sends BF frames on only one peer switch link if there are multiple links between them. This benefits scaling. During the build fabric phase, frames are normally flooded on all links. A switch may have more than one link to a peer switch. In such cases, the BF frame can

be sent to only one of the links to the peer switch. This configuration reduces the number of BF frames that are to be exchanged during the build fabric phase of fabric reconfiguration.

When scale restart is enabled, a single consolidated Exchange Fabric Parameter (EFP) request will be flooded by the principal switch after the domain identifier allocation phase is completed. Normally, when principal switch assigns a domain ID to a switch (including itself) during the fabric reconfiguration phase, it transmits an Exchange Fabric Parameter (EFP) request. This request carries the domain list information of the fabric. Whenever the domain list changes, an EFP frame is flooded to the fabric. This option reduces the number of EFP requests each switch must process. Scale restart is enabled by default in all native VSANs. This option is not supported in interoperability mode and thus is not enabled in interoperability VSANs.

We recommend using the `fast-restart` option on most fabrics, especially those with many logical ports (3200 or more), where a logical port is an instance of a physical port in a VSAN.

Examples

The following example displays how to enable domain manager fast restart on VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain optimize fast-restart vsan 10
```

The following example displays how to disable domain manager fast restart on VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no fcdomain optimize fast-restart vsan 10
```

The following example displays how to enable all domain manager optimizations on VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain optimize all vsan 10
```

The following example displays how to disable all domain manager optimizations on VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no fcdomain optimize all vsan 10
```

Related Commands

Command	Description
show fcdomain	Displays the Fibre Channel domain information.

fcdomain priority

To configure the priority of the local switch in a VSAN, use the `fcdomain priority` command. To revert to the default priority, use the `no` form of this command.

```
fcdomain priority value vsan ID
```

```
no fcdomain priority value vsan ID
```

Syntax Description

value	Specifies the priority value. Range is 1–254.
vsan ID	Specifies the VSAN ID. Range is 1–4093.

Command Default

The default priority value is 128.

Command Modes

Configuration mode (config)

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

The priority of a switch is used during the principle switch selection process. During principal switch selection, the switch with the highest priority becomes the principal switch. If two switches have the same priority, the switch with the lower WWN becomes the principal switch.

1 is the highest priority and 255 is the lowest. 255 is accepted from other switches but cannot be configured on an MDS switch.

Any new switch should not be allowed to become the principal switch when it joins an existing fabric. It may cause traffic disruption when it becomes the principal switch as it may assign different domain IDs than the previous principal switch. If it has a lower switch WWN than the existing principal switch, then it can be assigned a lower priority so that it loses the principal switch selection process.

Examples

The following example displays how to configure a priority of 25 for the local switch in VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain priority 25 vsan 10
```

The following example displays how to revert the priority to the factory default (128) in VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no fcdomain priority 25 vsan 10
```

Related Commands

Command	Description
show fcdomain	Displays the Fibre Channel domain information.

fcdomain restart

To force the principal switch selection process to be restarted in a VSAN, use the `fcdomain restart` command.

```
fcdomain restart vsan ID
```

Syntax Description

vsan ID	Specifies the VSAN ID. Range is 1–4093.
---------	---

Command Default

Fabric restart is nondisruptive across all switches in the specified VSAN.

Command Modes

Configuration mode (config)

Command History

Release	Modification
6.x	The disruptive keyword was removed.
5.x	The disruptive keyword was added.
1.1(1)	This command was introduced.

Usage Guidelines

Issue the `fcdomain restart` command if you want to apply the configured domain changes to the runtime domain.

Examples

The following example displays how to force VSAN 10 to reconfigure without traffic disruption:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain restart vsan 10
```

Related Commands

Command	Description
show fcdomain	Displays the Fibre Channel domain information.

fcdroplateny

To configure the network and switch FC drop latency time, use the `fcdroplateny` command in configuration mode. To disable the FC latency time, use the `no` form of the command.

```
fcdroplateny network milliseconds [vsan vsan-id] | switch milliseconds
no fcdroplateny network milliseconds [vsan vsan-id] | switch milliseconds
```

Syntax Description		
network milliseconds	Specifies network latency. The range is 500 to 60000.	
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.	
switch milliseconds	Specifies switch latency. The range is 0 to 60000 milliseconds.	

Command Default 2000 millisecond network latency.
500 millisecond switch latency.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.
	8.2(1)	The switch keyword was deprecated.

Usage Guidelines None.

Examples The following example shows how to configure the network latency to 5000 milliseconds:

```
switch# config terminal
switch(config)#
switch(config)# fcdroplateny network 5000
switch(config)#
```

The following example shows how to revert to the default network latency:

```
switch(config)# no fcdroplateny network 5000
switch(config)#
```

The following example shows how to configure the switch latency to 4000 milliseconds:

```
switch(config)# fcdroplateny switch 4000
switch(config)#
```

The following example shows how to revert to the default switch latency:

```
switch(config)# no fcdroplateny switch 4000
switch(config)#
```

Related Commands

Command	Description
show fcdroplateny	Displays the configured FC drop latency parameters.

fcflow stats

To configure FC flow statistics, use the `fcflow stats` command in configuration mode. To disable the counter, use the `no` form of the command.

```
fcflow stats aggregated module module-number index flow-number vsan vsan-id | module
module-number index flow-number flow-numberdestination-fcid source-fcid netmask vsan vsan-id
no fcflow stats aggregated module module-number index flow-number | module module-number index
flow-number
```

Syntax Description

aggregated	Configures aggregated FC flow statistics.
module module-number	Configures FC flow statistics on a module.
index flow-number	Specifies a flow index. The range is 1 to 2147483647.
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
destination-fcid	The destination FCID in hexadecimal format.
source-fcid	The source FCID in hexadecimal format.
netmask	The mask for the source and destination FCID (restricted to 6 hexadecimal characters ranging from 0xff0000 to 0xfffff).

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

If you enable flow counters, you can enable a maximum of 1 K entries for aggregate flow and flow statistics. Be sure to assign an unused flow index to a module for each new flow. Flow indexes can be repeated across modules. The number space for flow index is shared between the aggregate flow statistics and the flow statistics.

Examples

The following example shows how to configure aggregated `fcflow` statistics for module 1:

```
switch-config# fcflow stats aggregated module 1
switch-config#
```

The following example enables the aggregated flow counter.

```
switch(config)# fcflow stats aggregated module 1 index 1005 vsan 1
```

The following example disables the aggregated flow counter.

```
switch(config)# no fcbow stats aggregated module 1 index 1005
```

The following example enables the flow counter for module 1:

```
switch(config)# fcbow stats module 1 index 1 0x145601 0x5601 0xffffffff vsan 1
```

The following example disables the flow counter for module 1.

```
switch(config)# no fcbow stats module 2 index 1001
```

Related Commands

Command	Description
show fcbow stats	Displays the configured FC drop latency parameters.

fcid-allocation

Use the `fcid-allocation` command to manually add a FCID to the default area company ID list. Use the `no` form of the command to remove a FCID from the default area company ID list.

```
fcid-allocation area company-id company-id
no fcid-allocation area company-id company-id
```

Syntax Description

area	Modifies the auto area list of company IDs.
company-id company-id	Configures the company IDs.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
2.0	This command was introduced.

Usage Guidelines

Fibre Channel standards require a unique FCID to be allocated to an N port attached to a Fx port in any switch. To conserve the number of FCIDs used, Cisco MDS 9000 Family switches use a special allocation scheme.

Some HBAs do not discover targets that have FCIDs with the same domain and area. Prior to Cisco MDS SAN-OS Release 2.0, the Cisco MDS SAN-OS software maintained a list of tested company ID (also known as Organizational Unit Identifier, or OUI) which do not exhibit this behavior. These Host Bus Adapters (HBAs) were allocated with single FCIDs, and for others a full area was allocated.

The FCID allocation scheme available in Release 1.3 and earlier, allocates a full area to these HBAs. This allocation isolates them to that area and are listed with their pWWN during a fabric login. The allocated FCIDs are cached persistently and are still available in Cisco MDS SAN-OS Release 2.0 (see the “FCID Allocation for HBAs” section on page 38-22).

As of Cisco MDS SAN-OS Release 2.0, to allow further scalability for switches with numerous ports, the Cisco MDS SAN-OS software is maintaining a list of HBAs exhibiting this behavior. Each HBA is identified by its company ID used in the pWWN during a fabric log in. A full area is allocated to the N ports with company IDs that are listed and for the others a single FCID is allocated. Irrespective of the kind (whole area or single) of FCID allocated, the FCID entries remain persistent.

Examples

The following example adds a new company ID to the default area company ID list:

```
switch# config terminal
switch(config)# fcid-allocation area company-id 0x003223
```

Related Commands

Command	Description
show fcid-allocation	Displays the configured company IDs.

fcid-last-byte

Use the `fcid-last-byte` command to allocate the last byte FCID for the fabric address. To disable the configuration or to revert to factory defaults, use the `no` form of the command.

```
fcid-last-byte last-byte-id
no fcid-last-byte last-byte-id
```

Syntax Description

last-byte-fcid	Specifies the last-byte FCID range from 0 to 250.
----------------	---

Command Default

None.

Command Modes

FICON configuration submode.

Command History

Release	Modification
1.3(1)	This command was introduced.
3.0(1)	This command was deprecated.

Usage Guidelines

This is an optional configuration. If you are not sure of the EBCDIC format to be used, we recommend retaining the `us-canada` (default) option.

Examples

The following example assigns the last byte FCID for the fabric address:

```
switch# config terminal
switch(config)# ficon vsan 2
switch(config-ficon)# fcid-last-byte 12
```

The following example removes the configured last byte FCID for the fabric address and reverts to the default:

```
switch# config terminal
switch(config)# ficon vsan 2
switch(config-ficon)# no fcid-last-byte 3
```

Related Commands

Command	Description
ficon vsan vsan-id	Enables FICON on the specified VSAN.
show ficon	Displays configured FICON details.

fcinterop fcid-allocation

To allocate FCIDs on the switch, use the `fcinterop fcid-allocation` command in configuration mode. To disable FCIDs on the switch, use the `no` form of the command.

```
fcinterop fcid-allocation auto | flat | none
no fcinterop fcid-allocation auto | flat | none
```

Syntax Description	
auto	Assigns single FCID to compatible HBAs.
flat	Assigns single FCID.
none	Assigns FCID range.

Command Default The default is `fcinterop fcid-allocation auto`.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines This command defines how the switch assigns FCIDs.

Examples The following example shows how to allocate FCIDs on the switch:

```
switch# config terminal
switch(config)# fcinterop fcid-allocation none
switch(config)# fcinterop fcid-allocation flat
switch(config)# fcinterop fcid-allocation auto
```

Related Commands	Command	Description
	show flogi database	Displays the fabric login (FLOGI) table.

fcinterop loop-monitor

To monitor removal of discs from a loop port, use the `fcinterop loop-monitor` command in configuration mode. To disable loop monitoring, use the `no` form of the command.

```
fcinterop loop-monitor
no fcinterop loop-monitor
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines This command detects devices that are removed from a looped port:

Examples

The following example shows how to enable monitoring of NL ports in a loop:

```
switch# config terminal
switch(config)# fcinterop loop-monitor
```

The following example shows how to disable monitoring of NL ports in a loop:

```
switch# config terminal
switch(config)# no fcinterop loop-monitor
```

Command	Description
<code>show flogi database</code>	Verifies if a storage device is displayed in the Fabric login (FLOGI) table.

fcip-enhanced

To set the same hashing algorithm between MDS switches for write acceleration, use the `fcip-enhanced` command. To remove write acceleration support on port channels of FCIP interfaces, use the `no` form of this command.

```
fcip-enhanced
no fcip-enhanced
```

Command Default

Disabled

Command Modes

Interface configuration (`config-if`)

Command History

Release	Modification
7.3(1)DY(1)	This command was introduced.

Usage Guidelines

Cisco MDS 9250i and MDS 9220i switches use different hashing algorithm than the hashing algorithm used in Cisco MDS 24/10 port SAN Extension Module on MDS 9700 switches. For the write acceleration feature to work, the hashing algorithm must be same on both the switches. The `fcip-enhanced` command sets the hashing algorithm in MDS 9220i or MDS 9250i same as Cisco MDS 24/10 port SAN Extension Module and this command must be used only for write acceleration.

- This command can be issued only on Cisco MDS 9250i Switches running on Cisco MDS NX-OS Release 7.3(1)DY(1) or later.
- This command can be issued only on Cisco MDS 9220i Switches running on Cisco MDS NX-OS Release 8.5(1) or later.
- This command can be issued only for port channels on FCIP interfaces.
- This command should be issued only between Cisco MDS 9220i and MDS 9250i switches and a Cisco MDS 24/10 port SAN Extension Module (on Cisco MDS 9700 Directors).
- The port channel mode must be set to active on both peers before issuing this command.
- This command must be issued before a member is added to a port channel. If an interface is already added as a member, remove the interface before issuing the command.

Example

The following example shows how to enable write acceleration support on port channels of FCIP interfaces:

```
switch# configure terminal
switch(config)# interface port-channel 1
switch(config-if)# channel mode active
switch(config-if)# fcip-enhanced
FCIP enhanced will be enabled. Please ensure the peer link is connected to m97xx
switch(config-if)# end
```

Related Commands

Command	Description
interface port-channel number	Configures the specified port channel using the default on mode.
show port-channel database	Displays the port channel configured in the default on mode and active mode.

fcip enable

To enable the FCIP feature in any switch in the Cisco MDS 9000 Family, use the `fcip enable` command.

```
fcip enable
no fcip enable
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	NX-OS 4.1(1b)	This command was deprecated.

Usage Guidelines The configuration and verification commands for the iSCSI feature are only available when FCIP is enabled on a switch. When you disable this feature, all related configurations are automatically discarded.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following command enables the FCIP feature:

```
switch(config)# fcip enable
```

The following command disables the FCIP feature (default):

```
switch(config)# no fcip enable
```

Related Commands	Command	Description
	show fcip	Displays FCIP information.

fcip profile

To create and configure an FCIP profile, use the `fcip profile` command. To remove an FCIP profile, use the `no fcip profile` form of the command.

```
fcip profile profile-id
no fcip profile profile-id
```

Syntax Description

profile-id	Specifies a ID range from 1 to 255.
------------	-------------------------------------

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

When you perform this command, the CLI enters FCIP profile configuration mode.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example shows how to configure an FCIP profile:

```
switch## config terminal
switch(config)# fcip profile 5
switch(config-profile)#
```

Related Commands

Command	Description
interface fcip interface_number use-profile profile-id	Configures the interface using an existing profile ID from 1 to 255.
show fcip profile	Displays information about the FCIP profile.
show interface fcip	Displays an interface configuration for a specified FCIP interface.

fcns bulk-notify

To enable transmission of multiple name server entry change notifications in one Messaging and Transaction Services (MTS) payload, use the `fcns bulk-notify` command. To disable bulk notify, use the `no` form of this command.

```
fcns bulk-notify
no fcns bulk-notify
```

Syntax Description This command has no keywords or arguments.

Command Default Bulk notification from the name server is disabled by default. For 6.2(9) and later releases, bulk notification from the name server is enabled by default.

Command Modes Configuration mode.

Release	Modification
6.2(7)	This command was introduced.
6.2(9)	This command was deprecated.

Usage Guidelines Enabling the `fcns bulk-notify` command would improve the performance of the components like Zone, IVR, QOS, IPS.



Note Run the `show fcns internal info global` command to determine if the bulk notification is enabled.

Examples The following example shows how to enable transmission of multiple name server entry change notifications in one MTS payload:

```
switch# config terminal
switch(config)# fcns bulk-notify
switch(config)#
```

Command	Description
<code>show fcns internal info global</code>	Displays the FCNS global configuration.

fcns no-bulk-notify

To disable transmission of multiple name server entry change notifications in one MTS payload, use the fcns no-bulk-notify command. To re-enable bulk notification once it is disabled, use the no form of this command.

```
fcns no-bulk-notify
no fcns no-bulk-notify
```

Syntax Description This command has no keywords or arguments.

Command Default Bulk notification from the name server is disabled by default. For 6.2(9) and later releases, bulk notification from the name server is enabled by default.

Command Modes Configuration mode.

Release	Modification
6.2(9)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to disable transmission of multiple name server entry change notifications in one MTS payload:

```
switch# config terminal
switch(config)# fcns no-bulk-notify
switch(config)#
```

The following example shows how to re-enable bulk notification once it has been disabled:

```
switch# config terminal
switch(config)# no fcns no-bulk-notify
switch(config)#
```

Command	Description
fcns bulk-notify	Available until Release 6.2(7) only. Enables transmission of multiple name server entry change notifications in one MTS payload.

fcns proxy-port

To register a name server proxy, use the fcns proxy-port command in configuration mode.

```
fcns proxy-port wwn-id vsan vsan-id
no fcns proxy-port wwn-id vsan vsan-id
```

Syntax Description	Parameter	Description
	wwn-id	Specifies the port WWN, with the format hh:hh:hh:hh:hh:hh:hh:hh.
	vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines One name server can be configured to proxy another name server and name server information can be displayed using the CLI. The name server can be viewed using the CLI or Cisco Fabric Manager.

All name server registration requests come from the same port whose parameter is registered or changed. If it does not, then the request is rejected.

Examples The following example shows configuring a proxy port for VSAN 2:

```
switch# config terminal
switch(config)# fcns proxy-port 21:00:00:e0:8b:00:26:d vsan 2
```

Related Commands	Command	Description
	show fcns	Displays the name server database and statistical information for a specified VSAN or for all VSANs.

fcns reject-duplicate-pwwn vsan

To reject the same pwwn from logging in the different switch, use the `fcns reject-duplicate-pwwn vsan` command in configuration mode.

```
fcns reject-duplicate-pwwn vsan vsan-id
no fcns reject-duplicate-pwwn vsan vsan-id
```

Syntax Description

vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
---------	--

Command Default

Enabled.

Command Modes

Configuration mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

None.

Examples

The following example rejects duplicate FCNS pWWNs for VSAN 2:

```
switch# configure terminal
switch(config)# fcns reject-duplicate-pwwn vsan 2
```

Related Commands

Command	Description
show fcns	Displays the name server database and statistical information for a specified VSAN or for all VSANs.

fcping

To ping an N port with a specified FCID, use the `fcping fcid` command in EXEC mode.

```
fcping device-alias aliasname | fcid fc-portdomain-controller-id | pwwn pwwn-id vsan vsan-id [count
number [timeout value [usr-priority priority]]]
```

Syntax Description

device-alias aliasname	Specifies the device alias name. Maximum length is 64 characters.
fcid	The FCID of the destination N port.
fc-port	The port FCID with the format 0xhhhhhh.
domain-controller-id	Verifies connection to the destination switch.
pwwn pwwn-id	Specifies the port WWN of the destination N port, with the format hh:hh:hh:hh:hh:hh:hh:hh.
vsan vsan-id	Specifies the VSAN ID of the destination N port. The range is 1 to 4093.
count number	(Optional) Specifies the number of frames to send. A value of 0 sends forever. The range is 0 to 2147483647.
timeout value	(Optional) Specifies the timeout value in seconds. The range is 1 to 10.
usr-priority priority	(Optional) Specifies the priority the frame receives in the switch fabric. The range is 0 to 1.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
1.2(1)	Allowed the domain controller ID as an FCID.
2.0(x)	Added the device-alias aliasname option.

Usage Guidelines

To obtain the domain controller address, concatenate the domain ID with FFCF. For example, if the domain ID is 0xda(218), the concatenated ID is 0xffffda.

Examples

The following example shows a `fcping` operation for the specified pWWN or the FCID of the destination. By default, five frames are sent.

```
switch# fcping fcid 0xd70000 vsan 1
28 bytes from 0xd70000 time = 730 usec
28 bytes from 0xd70000 time = 165 usec
```

```

28 bytes from 0xd70000 time = 262 usec
28 bytes from 0xd70000 time = 219 usec
28 bytes from 0xd70000 time = 228 usec
5 frames sent, 5 frames received, 0 timeouts
Round-trip min/avg/max = 165/270/730 usec

```

The following example shows the setting of the number of frames to be sent using the count option. The range is from 0 through 2147483647. A value of 0 will ping forever.

```

switch# fcping fcid 0xd70000 vsan 1 count 10
28 bytes from 0xd70000 time = 730 usec
28 bytes from 0xd70000 time = 165 usec
28 bytes from 0xd70000 time = 262 usec
28 bytes from 0xd70000 time = 219 usec
28 bytes from 0xd70000 time = 228 usec
28 bytes from 0xd70000 time = 230 usec
28 bytes from 0xd70000 time = 230 usec
28 bytes from 0xd70000 time = 225 usec
28 bytes from 0xd70000 time = 229 usec
28 bytes from 0xd70000 time = 183 usec
10 frames sent, 10 frames received, 0 timeouts
Round-trip min/avg/max = 165/270/730 usec

```

The following example shows the setting of the timeout value. The default period to wait is 5 seconds. The range is from 1 through 10 seconds.

```

switch# fcping fcid 0xd500b4 vsan 1 timeout 10
28 bytes from 0xd500b4 time = 1345 usec
28 bytes from 0xd500b4 time = 417 usec
28 bytes from 0xd500b4 time = 340 usec
28 bytes from 0xd500b4 time = 451 usec
28 bytes from 0xd500b4 time = 356 usec
5 frames sent, 5 frames received, 0 timeouts
Round-trip min/avg/max = 340/581/1345 usec

```

This command shows the No response from the N port message even when the N port or NL port is active. This is due to resource exhaustion at the N port or NL port. Retry the command a few seconds later.

```

switch# fcping fcid 0x010203 vsan 1
No response from the N port.
switch# fcping pwnn 21:00:00:20:37:6f:db:dd vsan 1
28 bytes from 21:00:00:20:37:6f:db:dd time = 1454 usec
28 bytes from 21:00:00:20:37:6f:db:dd time = 471 usec
28 bytes from 21:00:00:20:37:6f:db:dd time = 372 usec
28 bytes from 21:00:00:20:37:6f:db:dd time = 364 usec
28 bytes from 21:00:00:20:37:6f:db:dd time = 1261 usec
5 frames sent, 5 frames received, 0 timeouts
Round-trip min/avg/max = 364/784/1454 usec

```

The following example displays fcping operation for the device alias of the specified destination:

```

switch# fcping device-alias x vsan 1
28 bytes from 21:01:00:e0:8b:2e:80:93 time = 358 usec
28 bytes from 21:01:00:e0:8b:2e:80:93 time = 226 usec
28 bytes from 21:01:00:e0:8b:2e:80:93 time = 372 usec

```


fc-redirect version2 enable

To enable FC redirect version2 mode, use the `fc-redirect version2 enable` command in configuration mode. To disable this feature, use the no form of the command.

```
fc-redirect version2 enable
no fc-redirect version2 enable
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines AAM mode can be enabled in version1 mode also.

Examples

The following example shows how to enable FC redirect version2 mode:

```
switch# config terminal
switch(config)# fc-redirect version2 enable
```

Please make sure to read and understand the following implications before proceeding further:

- 1) This is a Fabric wide configuration. All the switches in the fabric will be configured in Version2 mode. Any new switches added to the fabric will automatically be configured in version2 mode.
- 2) SanOS 3.2.x switches CANNOT be added to the Fabric after Version2 mode is enabled. If any 3.2.x switch is added when Version2 mode is enabled, all further FC-Redirect Configuration changes will Fail across the fabric. This could lead to traffic disruption for applications like SME.
- 3) If enabled, Version2 mode CANNOT be disabled till all FC-Redirect configurations are deleted. FC-Redirect configurations can be deleted ONLY after all the relevant application configurations are deleted. Please use the command 'show fc-redirect configs' to see the list of applications that created FC-Redirect configurations.
- 4) 'write erase' will NOT disable this command. After 'write erase' on ANY switch in the fabric, the user needs to do:


```
'clear fc-redirect decommission-switch'
```

 on that that switch. Without that, if the user moves the switch to a different fabric it will try to convert all the switches in the fabric to Version2 mode automatically. This might lead to Error conditions and hence Traffic disruption.

```
Do you want to continue? (Yes/No) [No]
isola-77(config)#
```

The following example shows how to disable FC redirect version2 mode:

```
switch# config terminal
switch(config)# no fc-redirect version2 enable
WARNING: This command will disable Version2 mode throughout the fabric.
          This is NOT a recommended step.
Do you want to continue? (Yes/No) [No]
switch(config)#
```

Related Commands

Command	Description
show fc-redirect-active configs	Displays all active configurations on a switch.

fc-redirect ivr-support enable

To enable FC redirect IVR support, use the `fc-redirect ivr-support enable` command in configuration mode. To disable this feature, use the `no` form of the command.

```
fc-redirect ivr-support enable
no fc-redirect ivr-support enable
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes configuration mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable FC redirect IVR support:

```
switch# config terminal
switch(config)# fc-redirect ivr-support enable
switch(config)#
```

The following example shows how to disable FC redirect IVR support:

```
switch# config terminal
switch(config)# no fc-redirect ivr-support enable
switch(config)#
```

Related Commands	Command	Description
	<code>show fc-redirect-active configs</code>	Displays all active configurations on a switch.

fcroute

To configure Fibre Channel routes and to activate policy routing, use the `fcroute` command. To remove a configuration or revert to factory defaults, use the `no` form of the command.

```
fcroute fcid network-mask interface fc slot/port | port-channel port domain domain-id metric number
| remote | vsan vsan-id | policy fcroute-map vsan vsan-id [route-map-identifier]
no fcroute fcid network-mask interface fc slot/port | port-channel port domain domain-id metric
number | remote | vsan vsan-id | policy fcroute-map vsan vsan-id [route-map-identifier]
```

Syntax Description

fcid	Specifies the FC ID. The format is 0xhhhhhh.
network-mask	Specifies the network mask of the FC ID. The format is 0x0 to 0xfffff.
interface	Specifies an interface.
fc slot/port	Specifies a Fibre Channel interface.
port-channel port	Specifies a PortChannel interface.
domain domain-id	Specifies the route for the domain of the next hop switch. The range is 1 to 239.
metric number	Specifies the cost of the route. The range is 1 to 65535. Default cost is 10.
remote	Configures the static route for a destination switch remotely connected.
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
policy fcroute-map	Activates policy routing.
route-map-identifier	(Optional) Specifies the route map identifier. The range is 1 to 65535.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
6.2(9)	This command was deprecated.
1.0(2)	This command was introduced.
3.0(3)	Added the policy option.

Usage Guidelines

Use this command to assign forwarding information to the switch and to activate a preferred path route map.

Examples

The following example specifies the Fibre Channel interface and the route for the domain of the next hop switch for VSAN 2:

```
switch# config terminal
switch(config)# fcroute 0x111211 interface fc1/1 domain 3 vsan 2
```

The following example removes this configuration:

```
switch(config)# no fcroute 0x111211 interface fc1/1 domain 3 vsan 2
```

The following example specifies the PortChannel interface and the route for the domain of the next hop switch for VSAN 4:

```
switch# config terminal
switch(config)# fcroute 0x111211 interface port-channel 1 domain 3 vsan 4
```

The following example removes this configuration:

```
switch(config)# no fcroute 0x111211 interface port-channel 1 domain 3 vsan 4
```

The following example specifies the Fibre Channel interface, the route for the domain of the next hop switch, and the cost of the route for VSAN 1:

```
switch# config terminal
switch(config)# fcroute 0x031211 interface fc1/1 domain 3 metric 1 vsan 1
```

The following example removes this configuration:

```
switch(config)# no fcroute 0x031211 interface fc1/1 domain 3 metric 1 vsan 1
```

The following example specifies the Fibre Channel interface, the route for the domain of the next hop switch, the cost of the route, and configures the static route for a destination switch remotely connected for VSAN 3:

```
switch# config terminal
switch(config)# fcroute 0x111112 interface fc1/1 domain 3 metric 3 remote vsan 3
```

The following example removes this configuration:

```
switch(config)# no fcroute 0x111112 interface fc1/1 domain 3 metric 3 remote vsan 3
```

Related Commands

Command	Description
fcroute-map	Specifies a preferred path Fibre Channel route map.
fcroute policy fcroute-map	Activates the preferred path Fibre Channel route map.
show fcroute	Displays Fibre Channel routes.
show fcroute-map	Displays the preferred path route map configuration and status.

fcroute-map vsan

To configure a preferred path Fibre Channel route map, use the `fcroute-map vsan` command. To remove a configuration, use the `no` form of the command.

```
fcroute-map vsan vsan-id route-map-identifier
no fcroute-map vsan vsan-id route-map-identifier
```

Syntax Description

vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
route-map-identifier	Specifies the route map identifier. The range is 1 to 65535.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(3)	This command was introduced.

Usage Guidelines

As of Cisco MDS SAN-OS Release 3.0(3) and later, you can use preferred path routes for Fibre Channel to route traffic over selected paths that are not necessarily the shortest path as chosen by routing protocols such as FSPF. This kind of control allows you to choose paths based on characteristics such as frames received on a selected interface or frames with a selected source FC ID. This ensures path separation between a host and a target.

Examples

The following example specifies a Fibre Channel route map and places you in the Fibre Channel route map configuration submenu.

```
switch# config terminal
switch(config)# fcroute-map vsan 2 12
switch(config-fcroute-map)#
```

The following example removes the Fibre Channel route map.

```
switch(config)# no fcroute-map vsan 2 12
```

Related Commands

Command	Description
fcroute	Specifies Fibre Channel routes and activates policy routing.
show fcroute-map	Displays the preferred path route map configuration and status.
match (fcroute-map configuration submenu)	Specifies the source and destination FC ID match criteria.

Command	Description
set (fcroute-map configuration submode)	Specifies the interface, the preference level for this interface, and the IVR next hop VSAN ID for this interface.

fcrxbbcredit extended enable

To enable Fibre Channel extended buffer-to-buffer credits (BB_credits), use the `fcrxbbcredit extended enable` command in configuration mode. To disable the feature, use the `no` form of the command.

```
fcrxbbcredit extended enable
no fcrxbbcredit extended enable
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines Use the `fcrxbbcredit extended enable` command to enable the switchport `fcrxbbcredit extended` command. The `fcrxbbcredit extended enable` command is not supported on the following switches:

- Cisco MDS 9124 Multilayer Fabric Switch
- Cisco Fabric Switch for HP c-Class BladeSystem
- Cisco Fabric Switch for IBM BladeCenter
- Cisco MDS 9134 Multilayer Fabric Switch
- Cisco MDS 9148 Multilayer Fabric Switch
- Cisco MDS 9148S 16G Multilayer Fabric Switch
- Cisco MDS 9250i Multiservice Fabric Switch

The following example shows how to enable Fibre Channel extended BB_credits:

```
switch# config terminal
switch(config)# fcrxbbcredit extended enable
```

The following example shows how to disable Fibre Channel extended BB_credits:

```
switch# config terminal
switch(config)# no fcrxbbcredit extended enable
```

Command	Description
<code>show interface</code>	Displays interface information and status.
<code>switchport fcrxbbcredit extended</code>	Configures Fibre Channel extended BB_credits on an interface.

fcs plat-check-global vsan

To enable FCS platform and node name checking fabric-wide, use the `fcs plat-check-global vsan` command in configuration mode. To disable this feature, use the `no` form of the command.

```
fcs plat-check-global vsan vsan-id
no fcs plat-check-global vsan vsan-id
```

Syntax Description	vsan-id Specifies the VSAN ID for platform checking, which is from 1 to 4096.
---------------------------	---

Command Default	None.
------------------------	-------

Command Modes	Configuration mode.
----------------------	---------------------

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines	None.
-------------------------	-------

Examples

```
switch# config terminal
switch(config)# fcs plat-check-global vsan 2
```

Related Commands	Command	Description
	show fcs	Displays fabric configuration server information.

fcs register

To register FCS attributes, use the `fcs register` command in configuration mode. To disable this feature, use the `no` form of the command.

```
fcs register platform name name vsan vsan-id
no fcs register platform name name vsan vsan-id
```

Syntax Description

platform name name	Specifies the name of the platform to register. Maximum size is 255 characters.
vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4096.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to register FCS attributes:

```
switch# config terminal
switch(config)# fcs register
switch(config-fcs-register)# platform Platform1 vsan 10
```

Related Commands

Command	Description
show fcs	Displays fabric configuration server information.

fcs virtual-device-add

To include a virtual device in a query about zone information from an FCS, use the `fcs virtual-device-add` command in configuration mode. To remove a virtual device, use the `no` form of the command.

```
fcs virtual-device-add [vsan-ranges vsan-ids]
no fcs virtual-device-add [vsan-ranges vsan-ids]
```

Syntax Description	vsan-ranges vsan-ids (Optional) Specifies one or multiple ranges of VSANs. The range is 1 to 4093.
---------------------------	--

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	3.1(2)	This command was introduced.

Usage Guidelines VSAN ranges are entered as vsan-ids-vsan-ids. When you specify more than one range, separate each range with a comma. If no range is specified, the command applies to all VSANs.

Examples The following example shows how to add to one range of VSANs:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcs virtual-device-add vsan-ranges 2-4
```

The following example shows how to add to more than one range of VSANs:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcs virtual-device-add vsan-ranges 2-4,5-8
```

Related Commands	Command	Description
	show fcs	Displays fabric configuration server information.

fcsp

To configure a Fibre Channel Security Protocol (FC-SP) authentication mode for a specific interface in an FC-SP-enabled switch, use the `fcsp` command. To disable an FC-SP on the interface, use the `no` form of the command.

```
fcsp auto-active | auto-passive | esp manual | off | on [timeout-period]
no fcsp auto-active | auto-passive | esp manual | off | on [timeout-period]
```

Syntax Description

auto-active	Configures the auto-active mode to authenticate the specified interface.
auto-passive	Configures the auto-passive mode to authenticate the specified interface.
esp	Configures the Encapsulating Security Payroll for an interface.
manual	Configures the Encapsulating Security Payroll in manual mode.
on	Configures the auto-active mode to authenticate the specified interface.
off	Configures the auto-active mode to authenticate the specified interface.
timeout-period	(Optional) Specifies the timeout period to reauthenticate the interface. The time ranges from 0 (the default where no authentication is performed) to 100,000 minutes.

Command Default

Auto-passive.

Command Modes

Configuration mode.

Command History

Release	Modification
6.2(1)	Fibre Channel Security Protocol (FC-SP) is currently not supported on MDS 9710, but targeted for a future release.
NX-OS 4.2(1)	Added <code>esp</code> keyword for the syntax description.
1.3(1)	This command was introduced.

Usage Guidelines

To use this command, FC-SP must be enabled using the feature `fcsp` command.

Examples

The following example shows how to configure the ESP in manual mode:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fc 2/1 - 3
switch(config-if)# fcsp esp manual
switch(config-if-esp)#
```

The following example turns on the authentication mode for ports 1 to 3 in Fibre Channel interface 2:

```
switch# config terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
switch(config)# interface fc 2/1 - 3  
switch(config-if)# fcsp on  
switch(config-if)#
```

The following example reverts to the factory default of auto-passive for these Fibre Channel interfaces:

```
switch(config-if)# no fcsp
```

The following example changes these Fibre Channel interfaces to initiate FC-SP authentication, but does not permit reauthentication:

```
switch(config-if)# fcsp auto-active 0
```

The following example changes these Fibre Channel interfaces to initiate FC-SP authentication and permits reauthentication within two hours (120 minutes) of the initial authentication attempt:

```
switch(config-if)# fcsp auto-active 120
```

Related Commands

Command	Description
fcsp enable	Enables FC-SP.
show fcsp interface	Displays FC-SP-related information for a specific interface.

fcsp dhchap devicename

Asymmetric DHCHAP secrets may be used on FC-SP links. To populate the FC-SP DHCHAP secret database on the local switch with the secrets used by remote switches use the `fcsp dhchap devicename` command. To remove these entries use the `no` form of the command.

```
fcsp dhchap devicename remote-switch-wwn password [0 | 7] remote-secret
no fcsp dhchap devicename remote-switch-wwn password [0 | 7] remote-secret
```

Syntax Description

remote-switch-wwn	Switch World Wide Name (WWN) of the remote device. The WWN format is hh:hh:hh:hh:hh:hh:hh:hh.
password	Configures the DHCHAP secret for the remote device.
0	(Optional) Specifies that the secret is in cleartext.
7	(Optional) Specifies that the secret is in encrypted text. This is the default value.
remote-secret	DHCHAP secret. Maximum of 64 alphanumeric characters.

Command Default

The default entry format for the secret is encrypted.

Command Modes

Global configuration (config)

Command History

Release Modification

1.3 (1) This command was introduced.

Usage Guidelines

The `fcsp dhchap devicename` command is available only when the FC-SP feature is enabled.

Example

The following example shows how to configure an encrypted secret of a remote switch:

```
switch(config)# fcsp dhchap devicename 00:11:22:33:44:aa:bb:cc password mypassword
```

The following example shows how to remove the remote switch secret of the previous example from the local switch DHCHAP secret database:

```
switch(config)# no fcsp dhchap devicename 00:11:22:33:44:aa:bb:cc password mypassword
```

The following example shows an asymmetric secret configuration for a link between the local switch and a remote switch with switch WWN of 01:01:01:01:01:01:01:01. The secret on the local switch is 'local_secret' and the remote switch has a secret of 'far_secret'. The configuration is for the local switch and the secrets:

```
switch(config)# fcsp dhchap password 0 local_secret 01:01:01:01:01:01:01:01
switch(config)# fcsp dhchap devicename 01:01:01:01:01:01:01:01 password 0 far_secret
```

Related Commands

Command	Description
fcsp enable	Enables FC-SP.
fcsp dhchap dhgroup	Configure FC-SP group priority list.
fcsp dhchap hash	Configure FC-SP hash priority list.
fcsp dhchap password	Configure FC-SP link secrets.
show fcsp	Displays configured FC-SP information.

fcsp dhchap dhgroup

To change the FC-SP DHCHAP group priority list, use the `fcsp dhchap dhgroup` command in global configuration mode. To revert to the default group priority list, use the `no` form of this command. .

```
fcsp dhchap dhgroup group-id [group-id [group-id [group-id [group-id] ]]]
no fcsp dhchap dhgroup group-id [group-id [group-id [group-id [group-id] ]]]
```

Syntax Description

group-id 0|1|2|3|4 Specifies an FC-SP DHCHAP group priority list entry.

Command Default

The default DH group priority list, from highest to lowest is 0 4 1 2 3.

Command Modes

Global configuration (config)

Command History

Release Modification

1.3(1) This command was introduced.

Usage Guidelines

The `fcsp dhchap dhgroup` command is available only when the FC-SP feature is enabled.

There must be at least one member in the DH group priority list. Each group may only be specified once.

If you change the default FC-SP DH group priority list, ensure that you change it globally for all the switches in the fabric.

The following table maps the Cisco Group Number with the corresponding RFC Group Number and Modular Exponentiation (MODP) Group:

Table 1: Cisco Group Number with Corresponding RFC Group Number and MODP Group

Cisco Group Number	RFC Group Number	MODP Group
0	null	null DH algorithm
1	2	1024
2	—	1280
3	5	1536
4	14	2048

Example

The following example shows how to configure the used DH group list to only groups 2, 3, and 4, in the same order of priority:

```
switch(config)# fcsp dhchap dhgroup 2 3 4
```

The following example shows how to revert a previously configured DH group priority list of the 'null' group only back to the default priority list:


```
switch(config)# no fcsp dhchap dhgroup 0
```

Related Commands

Command	Description
fcsp enable	Enables FC-SP.
fcsp dhchap devicename	Configure FC-SP asymmetric secrets.
fcsp dhchap hash	Configure FC-SP hash priority list.
fcsp dhchap password	Configure FC-SP link secrets.
show fcsp	Displays configured FC-SP information.

fcsp dhchap hash

To configure the hash algorithm priority list for FC-SP DHCHAP authentication use the `fcsp dhchap hash` command. To return to the default hash algorithm priority list use the `no` form of the command.

```
fcsp dhchap hashmd5 [sha1] | sha1 [md5]
no fcsp dhchap hashmd5 [sha1] | sha1 [md5]
```

Syntax Description

`md5` (Optional) Specifies the MD5 hash algorithm.

`sha1` (Optional) Specifies the SHA-1 hash algorithm.

Command Default

The default FC-SP DHCHAP hash algorithm priority list has the following order:

- MD5
- SHA-1

Command Modes

Global configuration (config)

Command History

Release Modification

1.3(1) This command was introduced.

Usage Guidelines

The `fcsp dhchap hash` command is available only when the FC-SP feature is enabled.

If you change the default hash algorithm list order, then change it in all switches in the fabric.



Warning

If FC-SP DHCHAP authentication via AAA is enabled, the MD5 hash algorithm must be set if the AAA authentication uses RADIUS or TACACS+. This is because RADIUS and TACACS+ applications do not support other hash algorithms.

Example

The following example shows how to configure the DHCHAP authentication hash priority list to be SHA-1 followed by MD5:

```
switch(config)# fcsp dhchap hash sha1 md5
```

The following example shows how to configure the use of the SHA-1 hash algorithm only:

```
switch(config)# fcsp dhchap hash sha1
```

The following example shows how to revert the previous example to the default priority list:

```
switch(config)# no fcsp dhchap hash sha1
```

Related Commands

Command	Description
fcsp enable	Enables FC-SP.
fcsp dhchap devicename	Configure FC-SP asymmetric secrets.
fcsp dhchap dhgroup	Configure FC-SP group priority list.
fcsp dhchap password	Configure FC-SP link secrets.
show fcsp	Displays configured FC-SP information.

fcsp dhchap password

To configure the FC-SP DHCHAP secret database used for FC-SP peer switch link authentication via DHCHAP use the `fcsp dhchap password` command. To remove secrets from the FC-SP DHCHAP database use the `no` form of the command.

```
fcsp dhchap password [0 | 7] secret [remote-switch-wwn]
no fcsp dhchap password [0 | 7] secret [remote-switch-wwn]
```

Syntax Description	secret	DHCHAP secret. Maximum of 64 alphanumeric characters.
	remote-switch-wwn	(Optional) Switch World Wide Name of the remote switch to use this secret with. The WWN format is hh:hh:hh:hh:hh:hh:hh:hh.

Command Default	The default entry format for the secret is encrypted.
------------------------	---

Command Modes	Global configuration (config)
----------------------	-------------------------------

Command History	Release Modification
	1.3(1) This command was introduced.

Usage Guidelines	<p>The <code>fcsp dhchap password</code> command is available only when the FC-SP feature is enabled.</p> <p>Be sure to configure an FC-SP DHCHAP database on each switch in the fabric when this facility is being used.</p> <p>To configure a fabric-wide global FC-SP DHCHAP secret use the command without any switch WWN specifier. There can be only a single global FC-SP DHCHAP secret in a fabric. Additionally, switch specific secrets may be configured. To configure these specify the switch WWN.</p>
-------------------------	---

Example

The following example show how to configure the global FC-SP DHCHAP secret in cleartext:

```
switch(config)# fcsp dhchap password 0 mypassword
```

The following example show how to configure a secret to be used with the specified peer switch in cleartext:

```
switch(config)# fcsp dhchap password 0 mypassword 30:11:bb:cc:dd:33:11:22
```

The following example show how to remove a secret to be used with the specified peer switch by entering the secret in cleartext, even though the configuration is stored in the configuration in encrypted form:

```
switch(config)# no fcsp dhchap password 0 mypassword 30:11:bb:cc:dd:33:11:22
```

The following example shows how to configure symmetric secrets on a link between switch1 with sWWN of 01:01:01:01:01:01:01:01 and switch2 with sWWN of 02:02:02:02:02:02:02:02. The FC-SP DHCHAP secret is in cleartext format:

```
switch1(config)# fcsp dhchap password 0 very_secret 02:02:02:02:02:02:02:02
switch2(config)# fcsp dhchap password 0 very_secret 01:01:01:01:01:01:01:01
```

Related Commands

Command	Description
fcsp enable	Enables FC-SP.
fcsp dhchap devicename	Configure asymmetric secrets.
fcsp dhchap dhgroup	Configure FC-SP group priority list.
fcsp dhchap hash	Configure FC-SP hash priority list.
show fcsp	Displays configured FC-SP information.

fcsp enable

To enable the Fibre Channel Security Protocol (FC-SP) in a switch, use the `fcsp enable` command in configuration mode. Additional FC-SP commands are available when the FC-SP feature is enabled. To disable FC-SP, use the `no` form of the command.

```
fcsp enable
no fcsp enable
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	NX-OS 4.1(1b)	This command was deprecated.

Usage Guidelines None.

Examples The following example enables FC-SP:

```
switch# config terminal
switch(config)# fcsp enable
switch(config)#
```

Related Commands	Command	Description
	<code>show fcsp</code>	Displays configured FC-SP information.

fcsp esp sa

To configure the parameters for the Security Association (SA), use the `fcsp esp sa` command. To delete the SA between the switches, use the `no` form of the command.

```
fcsp esp sa spi-number
no fcsp esp sa spi-number
```

Syntax Description

spi-number	Configures the Security Protocol Interface (SPI) of the Security Association. The range is from 256 to 4294967295.
------------	--

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 5.2(1)	The spi-number range has been reduced from 256 4294967295 to 256 65536.
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the command for ESP:

```
switch(config)# fcsp esp sa 257
This is a Early Field Trial (EFT) feature. Please do not use this in a producti
on environment. Continue Y/N ? [no] y
switch(config-sa)#
```

Related Commands

Command	Description
fcsp enable	Enables FC-SP.
show fcsp interface	Displays FC-SP related information for a specific interface.

fcsp timeout

To configure the timeout value for FC-SP message, use the `fcsp timeout` command in configuration mode. Use the `no` form of the command to revert to factory defaults.

```
fcsp timeout timeout-period
no fcsp timeout timeout-period
```

Syntax Description

timeout-period	Specifies the timeout period. The time ranges from 20 to 100 seconds. The default is 30 seconds.
----------------	--

Command Default

30 seconds.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

You can only see the `fcsp timeout` command if you enter the `fcsp enable` command.

Examples

The following example configures the FCSP timeout value:

```
switch# config terminal
switch(config)# fcsp enable
switch(config)# fcsp timeout 60
```

Related Commands

Command	Description
<code>fcsp enable</code>	Enables FC-SP.
<code>show fcsp</code>	Displays configured FC-SP information.

fctimer

To change the default Fibre Channel timers, use the `fctimer` command in configuration mode. To revert to the default values, use the `no` form of the command.

```
fctimer d_s_tov milliseconds [vsan vsan-id]|e_d_tov milliseconds [vsan vsan-id]|r_a_tov milliseconds [vsan vsan-id]
```

```
no fctimer d_s_tov milliseconds [vsan vsan-id]|e_d_tov milliseconds [vsan vsan-id]|r_a_tov milliseconds [vsan vsan-id]
```

Syntax Description

d_s_tov milliseconds	Specifies the distributed services time out value. The range is 5000 to 10,000 milliseconds, with a default of 5000.
vsan vsan-id	(Optional) Specifies the VSAN ID. The range is 1 to 4096.
e_d_tov milliseconds	Specifies the error detect time out value. The range is 1000 to 4,000 milliseconds, with a default of 2000.
r_a_tov milliseconds	Specifies the resolution allocation time out value. The range is 5000 to 10,000 milliseconds, with a default of 10,000.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

The Cisco MDS 9000, Brocade, and McData FC Error Detect (ED_TOV) and Resource Allocation (RA_TOV) timers default to the same values. They can be changed if needed. In accordance with the FC-SW2 standard, these values must be the same on each switch within the fabric.

Use the `vsan` option to configure different TOV values for VSANs with special types of links such as FC or IP tunnels.

Examples

The following example shows how to change the default Fibre Channel timers:

```
switch# config terminal
switch(config)# fctimer e_d_tov 3000
switch(config)# fctimer r_a_tov 7000
```

Related Commands

Command	Description
show fctimer	Displays the configured Fibre Channel timer values.

fctimer abort

To discard a Fibre Channel timer (fctimer) Cisco Fabric Services (CFS) distribution session in progress, use the fctimer abort command in configuration mode.

```
fctimer abort
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to discard a CFS distribution session in progress:

```
switch# config terminal
switch(config)# fctimer abort
```

Related Commands	Command	Description
	fctimer distribute	Enables CFS distribution for fctimer.
	show fctimer	Displays fctimer information.

fctimer commit

To apply the pending configuration pertaining to the Fibre Channel timer (fctimer) Cisco Fabric Services (CFS) distribution session in progress in the fabric, use the fctimer commit command in configuration mode.

```
fctimer commit
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.



Note After the FC timer commit is completed the running configuration has been modified on all switches participating in fctimer distribution. You can then use the copy running-config startup-config fabric command to save the running configuration to the startup configuration on all the switches in the fabric.

Examples The following example shows how to commit changes to the active Fibre Channel timer configuration:

```
switch# config terminal
switch(config)# fctimer commit
```

Related Commands	Command	Description
	fctimer distribute	Enables CFS distribution for fctimer.
	show fctimer	Displays fctimer information.

fctimer distribute

To enable Cisco Fabric Services (CFS) distribution for Fibre Channel timer (fctimer), use the `fctimer distribute` command. To disable this feature, use the `no` form of the command.

```
fctimer distribute
no fctimer distribute
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines Before distributing the Fibre Channel timer changes to the fabric, the temporary changes to the configuration must be committed to the active configuration using the `fctimer commit` command.

Examples The following example shows how to change the default Fibre Channel timers:

```
switch# config terminal
switch(config)# fctimer distribute
```

Related Commands	Command	Description
	fctimer commit	Commits the Fibre Channel timer configuration changes to the active configuration.
	show fctimer	Displays fctimer information.

fctrace

To trace the route to an N port, use the fctrace command in EXEC mode.

```
fctrace device-alias aliasname | fcid fcid vsan vsan-id [timeout value] | pwwn pwwn-id [timeout seconds]
```

Syntax Description	
device-alias aliasname	Specifies the device alias name. Maximum length is 64 characters.
fcid fcid	The FCID of the destination N port, with the format 0xhhhhhh
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
timeout value	(Optional) Configures the timeout value. The range is 1 to 10.
pwwn pwwn-id	The PWWN of the destination N port, with the format hh:hh:hh:hh:hh:hh:hh:hh.

Command Default By default, the period to wait before timing out is 5 seconds.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.
	2.0(x)	Added the device-alias aliasname option.

Usage Guidelines None.

Examples The following example traces a route to the specified fcid in VSAN 1:

```
switch# fctrace fcid 0x660000 vsan 1
Route present for : 0x660000
20:00:00:05:30:00:5f:1e(0xffffc65)
Latency: 0 msec
20:00:00:05:30:00:61:5e(0xffffc66)
Latency: 0 msec
20:00:00:05:30:00:61:5e(0xffffc66)
```

The following example traces a route to the specified device alias in VSAN 1:

```
switch# fctrace device-alias x vsan 1
Route present for : 21:01:00:e0:8b:2e:80:93
20:00:00:05:30:00:4a:e2(0xffffc67)
```

fc-tunnel

To terminate a Fibre Channel tunnel in a destination switch, use the `fc-tunnel` command. To remove a configuration or revert it to factory defaults, use the `no` form of the command.

```
fc-tunnel enable | explicit-path name [next-address ip-address loose | strict] | tunnel-id-map tunnel-id
interface fc slot-number
no fc-tunnel enable | explicit-path name | tunnel-id-map tunnel-id
```

Syntax Description

<code>enable</code>	Enables the FC tunnel feature.
<code>explicit-path name</code>	Specifies an explicit path. Maximum length is 16 characters.
<code>next-address ip-address</code>	(Optional) Specifies the IP address of the next hop switch.
<code>loose</code>	Specifies that a direct connection to the next hop is not required.
<code>strict</code>	Specifies that a direct connection to the next hop is required.
<code>tunnel-id-map tunnel-id</code>	Specifies FC tunnel ID to an outgoing interface. The range is 1 to 255.
<code>interface fc slot/port</code>	Configures the Fiber Channel interface in the destination switch.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
6.2(5)	All the <code>fc-tunnel</code> commands are not supported in Cisco MDS 9250i Multiservice Fabric Switch.
6.2(1)	Added the output for remote span configuration on local and remote switches.
1.2(1)	This command was introduced.

Usage Guidelines

All VSANs with RSPAN traffic must be enabled. If a VSAN containing RSPAN traffic is not enabled, it will be dropped.

The FC tunnel can only be configured in the same subnet as the VSAN interface.

The Fibre Channel tunnel feature must be enabled (the `interface fc-tunnel` command) on each switch in the end-to-end path of the Fibre Channel fabric in which RSPAN is to be implemented.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example enables the FC tunnel feature:

```
switch# config terminal
switchS(config)# fc-tunnel enable
```

The following example displays remote SPAN configuration on a local switch:

```
switch(config)# fc-tunnel enable
switch(config)# interface vsan 1
switch(config)# ip address 10.10.10.66 255.255.254.0
switch(config)# no shut
switch(config)# interface fc-tunnel 102
switch(config)# source 10.10.10.66
switch(config)# destination 10.10.10.77
switch(config)# no shut
```

The following example displays remote SPAN Configuration on a remote switch:

```
switch(config)# fc-tunnel enable
switch(config)# interface vsan 1
switch(config)# ip address 10.10.10.77 255.255.254.0
switch(config)# no shut
switch(config)# interface fc1/16
switch(config)# switchport mode sd
switch(config)# fc-tunnel tunnel-id-map 102 interface fc1/16
```

The following example places you at the explicit path prompt for the path named Path and specifies that the next hop VSAN interface IP addresses:

```
switch# config terminal
switchS(config)# fc-tunnel explicit-path Path1
switchS(config-explicit-path)# next-address 209.165.200.226
switchS(config-explicit-path)# next-address 209.165.200.227
switchS(config-explicit-path)# next-address 209.165.200.228
```

The following example places you at the explicit path prompt for the path named Path and configures a minimum cost path in which this IP address exists:

```
switchS(config)# fc-tunnel explicit-path Path3
switchS(config-explicit-path)# next-address 209.165.200.226 loose
```

The following example configures the FC tunnel (100) in the destination switch (switch D):

```
switchD(config)# fc-tunnel tunnel-id-map 100 interface fc2/1
```

The following example creates two explicit paths and configures the next hop addresses for each path in the source switch (switch S):

```
switchS# config t

switchS(config)# fc-tunnel explicit-path Path1
switchS(config-explicit-path)# next-address 209.165.200.226
switchS(config-explicit-path)# next-address 209.165.200.227
switchS(config-explicit-path)# next-address 209.165.200.228
switchS(config-explicit-path)# exit
switchS(config)# fc-tunnel explicit-path Path3
```

```
switchS(config-explicit-path)# next-address 209.165.200.226 loose
```

The following example references the configured path in the source switch (switch S):

```
switchS# config t  
switchS(config)# interface fc-tunnel 100  
switchS(config)# explicit-path Path1
```


feature

To enable a feature or service on the switch, use the feature command. To disable a feature or service on the switch, use the no form of the command.

feature cimserver | cluster | crypto ike | ipsec dpvm | fport-channel-trunk | fabric-binding | fcip | fcrxbbcredit
extended fvsp | ficon | fport-channel-trunk | http-server | ioa | iscsi | ivr | npiv | npv | nxapi | port-security |
privilege | port-track | san-ext-turner | scheduler | sdv | sme | ssh | tacacs+ | telnet

no feature cimserver | cluster | crypto ike | ipsec dpvm | fport-channel-trunk | fabric-binding | fcip |
fcrxbbcredit extended fvsp | ficon | fport-channel-trunk | http-server | ioa | iscsi | ivr | npiv | npv | nxapi |
port-security | privilege | port-track | san-ext-turner | scheduler | sdv | sme | ssh | tacacs+ | telnet

Syntax Description

cimserver	Enables or disables CIM server.
cluster	Enables or disables cluster.
crypto	Sets crypto settings.
ike	Enables or disables IKE.
ipsec	Enables or disables IPsec.
dpvm	Enables or disables the Dynamic Port VSAN Membership.
fport-channel-trunk	Enables or disables the F port channel trunking feature.
fabric-binding	Enables or disables fabric binding.
fcip	Enables or disables FCIP.
fcrxbbcredit	Enables or disables the extended rx b2b credit configuration.
extended	Sets extended settings.
fvsp	Enables or disables FCSP.
ficon	Enables or disables the FICON.
http-server	Enables or disables the HTTP server.
ioa	Enables or disables I/O Accelerator.
iscsi	Enables or disables ISCSI.
ivr	Enables or disables inter-VSAN routing.
npiv	Enables or disables the NX port ID virtualization.
npv	Enables or disables the Fibre Channel N port virtualizer.
nxapi	Enables or disables NX-API.
port-security	Enables or disables the port security.

privilege	Enables or disables Cisco IOS type privilege level support.
port-track	Enables or disables the port track feature.
san-ext-turner	Enables or disables the SAN Extension Turner Tool.
scheduler	Enables or disables scheduler.
sdv	Enables or disables the SAN Device Virtualization.
sme	Enables or disables the Storage Media Encryption.
ssh	Enables or disables SSH.
tacacs+	Enables or disables TACACS+.
telnet	Enables or disables Telnet.

Command Default Disabled.

Command Modes Configuration mode.

Command History

Release	Modification
NX-OS 5.0(1a)	Added keyword privilege to the syntax description.
NX-OS 4.2(1)	Added keyword ioa to the syntax description.
NX-OS 4.1(3)	Added features fport-channel-trunk, npiv and npv to the syntax description.
NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples

The following example shows how to enable a feature on the switch :

```
switch(config)# feature privilege
switch(config)# feature fcip
switch(config)# feature cluster
switch(config)# feature ioa
switch(config)# feature fcsp
switch(config)# feature sdv
switch(config)# feature cimserver
switch(config)# feature scheduler
switch(config)# feature fport-channel-trunk
switch(config)# feature http-server
switch(config)# feature npv
switch(config)# feature npiv
```

Related Commands

Command	Description
show fcip	Displays FCIP information.

feature analytics

To enable the SAN Analytics feature on a switch, use the feature analytics command. To disable this feature, use the no form of this command.

```
feature analytics
no feature analytics
```

Syntax Description This command has no arguments or keywords.

Command Default This feature is disabled by default.

Command Modes Configuration mode (config)

Command History	Release	Modification
	8.2(1)	This command was introduced.

Usage Guidelines To use the SAN Analytics feature, you must install an appropriate license package using the install license command. For more information, see the "[Cisco MDS 9000 Series Licensing Guide](#)."

Examples The following example shows how to enable the SAN Analytics feature on a switch:

```
switch# configure terminal
switch(config)# feature analytics
```

The following example shows how to disable the SAN Analytics feature on a switch:

```
switch# configure terminal
switch(config)# no feature analytics
```

Related Commands	Command	Description
	analytics query	Installs a push analytics query.
	show analytics query	Displays the SAN analytics query information.
	show analytics type	Displays the SAN analytics type.
	ShowAnalytics	Displays the SAN analytics information in a tabular format.

feature congestion-isolation

To enable the Congestion Isolation feature, use the `feature congestion-isolation` command. To disable this feature, use the `no` form of this command.

```
feature congestion-isolation
no feature congestion-isolation
```

Syntax Description This command has no arguments or keywords.

Command Default This feature is disabled by default.

Command Modes Global configuration (config)

Command History

Release	Modification
8.5(1)	This command was deprecated.
8.1(1)	This command was introduced.

Usage Guidelines



Note From Cisco MDS NX-OS Release 8.5(1), use the `feature fpm` command instead of this command.

Enable Enhanced Receiver Ready (ER_RDY) must be enabled before enabling the Congestion Isolation feature.

Examples

The following example shows how to enable the Congestion Isolation feature:

```
switch# configure terminal
switch(config)# feature congestion-isolation
Flap the ISLs to activate ER_RDY mode on E ports. Use the CLI show flow-control r_rdy to
list the ports that are still in R_RDY mode
```

The following example shows the output when you are trying to enable the Congestion Isolation feature when ER_RDY flow-control mode is disabled:

```
switch# configure terminal
switch(config)# feature congestion-isolation
Error: Flow-control disabled. Please enable.
```

Related Commands

Command	Description
<code>congestion-isolation</code>	Manually configures a device as slow device or excludes a device that was detected as slow device by the port monitor.
<code>feature fpm</code>	Enables Fabric Performance Monitor (FPM).

Command	Description
show congestion-isolation	Displays information about the devices that are configured for congestion isolation.
system fc flow-control	Enables or disables system flow-control mode.

feature ficon

To enable the FICON feature on a switch, use the `feature ficon` command in configuration mode. To disable the feature or to revert to factory defaults, use the `no` form of the command.

```
feature ficon
no feature ficon
```

Syntax Description This command has no arguments or keywords.

Command Default The FICON feature is disabled.

Command Modes Configuration mode.

Release	Modification
NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines The effects of enabling the FICON feature in a Cisco MDS switch are as follows:

- You cannot disable in-order delivery for the FICON-enabled VSAN.
- You cannot disable fabric binding or static domain ID configurations for the FICON-enabled VSAN.
- The load balancing scheme is changed to Source ID (SID)—Destination ID (DID). You cannot change it back to SID—DID—OXID.
- The IPL configuration file is automatically created.

When FICON is enabled on a VSAN, it is implicitly enabled everywhere. However, when FICON is disabled on a VSAN, it remains globally enabled. You must explicitly disable FICON to disable it throughout the fabric.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example enables FICON on the switch:

```
switch# configure
switch(config)# feature ficon enable
```

The following example disables FICON on the switch:

```
switch# configure
switch(config)# no feature ficon
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.

feature fpm

To enable Fabric Performance Monitor (FPM), use the `feature fpm` command. To disable FPM, use the `no` form of the command.

```
feature fpm
no feature fpm
```

Command Default

FPM is disabled.

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.5(1)	This command was introduced.

Usage Guidelines

See the "Guidelines and Limitations for Fabric Notifications" section in [Cisco MDS 9000 Series Interfaces Configuration Guide, Release 8.x](#).

Examples

The following example shows how to enable FPM:

```
switch# configure
switch(config)# feature fpm
```

The following example shows how to disable FPM:

```
switch# configure
switch(config)# no feature fpm
```

Related Commands

Command	Description
<code>show fpm</code>	Displays FPM information.

feature telemetry

To enable the SAN Telemetry Streaming feature on a switch, use the feature analytics command. To disable this feature, use the no form of this command.

```
feature telemetry
```

```
no feature telemetry
```

Syntax Description This command has no arguments or keywords.

Command Default The SAN Telemetry Streaming feature is disabled.

Command Modes Configuration mode (config)

Command History	Release	Modification
	8.3(1)	This command was introduced.

Usage Guidelines The SAN Telemetry Streaming feature does not work if this command is disabled. To use the SAN Telemetry Streaming feature, you must install a PAK license using the install license command. For more information, see the [Cisco MDS 9000 Series Licensing Guide](#).

Examples The following example shows how to enable the SAN Telemetry Streaming feature on a switch:

```
switch# configure
switch(config)# feature telemetry
```

The following example shows how to disable the SAN Telemetry Streaming feature on a switch:

```
switch# configure
switch(config)# no feature telemetry
```

Related Commands	Command	Description
	show running-config telemetry	Displays the existing telemetry configuration.
	show telemetry	Displays telemetry configuration.
	telemetry	Enters SAN Telemetry Streaming configuration mode.

feature vmis

To enable the Virtual Machine Identifier (VMID) feature, use the `feature vmis` command. To disable this feature, use the `no` form of this command.

```
feature vmis
no feature vmis
```

Syntax Description This command has no arguments or keywords.

Command Default This feature is disabled by default.

Command Modes Configuration mode (config)

Release	Modification
8.2(1)	This command was introduced.

Usage Guidelines There is no mechanism in the VMID protocol for the VMIS to notify the attached hypervisor HBA driver clients of a new VE ID range. For clients to detect a new range, they must query the VMIS again. To force the clients to query again after a range modification, the user must manually log the FCIDs out and back in to the fabric. Therefore, local clients continue to tag the VM traffic with the previous range until this occurs. This restriction applies when enabling and disabling VMID, and changing the VE ID range of a VSAN.

The VMID feature is not supported in VSANs that have interoperability enabled. For more information about interoperability modes, see the "[Cisco MDS 9000 Series Switch-to-Switch Interoperability Configuration Guide](#)."

Examples The following example shows how to enable the VMID feature:

```
switch# configure terminal
switch(config)# feature vmis
```

The following example shows how to disable the VMID feature:

```
switch# configure terminal
switch(config)# no feature vmis
```

Command	Description
<code>show feature</code>	Displays status of features.
<code>show vmis database</code>	Displays all the entries in the VMIS database.

ficon distribute

To enable Cisco Fabric Services (CFS) distribution on a FICON switch so that the switch can communicate with other FICON switches and IBM z/OS, use the `ficon distribute` command. To disable the CFS distribution, use the `no` form of this command.

```
ficon distribute
no ficon distribute
```

Command Default

The CFS distribution for FICON switches is enabled by default for all VSANs.

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.4(2b)	This command was introduced.

Usage Guidelines

The `ficon distribute` and `ficon vsan diagnostics` commands are used by IBM z/OS to learn about the FICON fabric path details across a SAN for a specific device. For more information, see the appropriate IBM z/OS documentation.

If you are upgrading to Cisco MDS NX-OS Release 8.4(2b) or later release from an earlier release, the CFS distribution is enabled by default on the FICON switch. If you are downgrading from Cisco MDS NX-OS Release 8.4(2b) or later release, ensure that you disable the CFS distribution on the switch before downgrading.

Examples

The following example displays how to enable the CFS distribution on a FICON switch:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ficon distribute
```

The following example displays how to disable the CFS distribution on a FICON switch:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no ficon distribute
```

Related Commands

Command	Description
<code>ficon vsan diagnostics</code>	Enables FICON diagnostics in a VSAN.
<code>show ficon vsan diagnostics</code>	Displays the status of the FICON diagnostics.

ficon logical-port assign port-numbers

To reserve FICON port numbers for logical interfaces on the switch, use the `ficon logical-port assign port-numbers` command in configuration mode. To release the port numbers, use the `no` form of the command.

```
ficon logical-port assign port-numbers [port-numbers]
no ficon logical-port assign port-numbers [port-numbers]
```

Syntax Description

port-numbers	(Optional) Specifies the range of port numbers to assign. The range can be 0 through 153 or 0x0 through 0x99.
--------------	---

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

You must reserve port numbers for logical interfaces, such as FCIP and PortChannels, if you plan to use them.

You cannot change or release port numbers for interfaces that are active. You must disable the interfaces using the `shutdown` command.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example reserves port numbers 230 through 249 for FCIP and PortChannel interfaces:

```
switch(config)# ficon logical-port assign port-numbers 230-249
```

The following example reserves port numbers 0xe6 through 0xf9 for FCIP and PortChannel interfaces:

```
switch(config)# ficon logical-port assign port-numbers 0xe6-0xf9
```

The following example releases the port numbers:

```
switch(config)# no ficon logical-port assign port-numbers 230-249
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.

ficon port default-state prohibit-all

To set the FICON port default state to prohibit all, use the `ficon port default-state prohibit-all` command in configuration mode. To disable the feature or to revert to factory defaults, use the `no` form of the command.

```
ficon port default-state prohibit-all
no ficon port default-state prohibit-all
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(2)	This command was introduced.

Usage Guidelines You can change the default port prohibiting state to enabled in VSANs that you create and then selectively disable port prohibiting on implemented ports, if desired. Only the FICON configuration files created after you change the default have the new default setting.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example enables port prohibiting as the default for all implemented interfaces on the switch:

```
switch(config)# ficon port default-state prohibit-all
```

The following example disables port prohibiting as the default for all implemented interfaces on the switch:

```
switch(config)# no port default-state prohibit-all
```

Related Commands	Command	Description
	show ficon port default-state	Displays default FICON port prohibit state.

ficon slot assign port-numbers

To reserve FICON port numbers for a slot on the switch, use the `ficon slot assign port-numbers` command in configuration mode. To release the port numbers, use the `no` form of the command.

```
ficon slot slot assign port-numbers [port-numbers]
no ficon slot slot assign port-numbers [port-numbers]
```

Syntax Description	slot	port-numbers
	Specifies the slot number, 1 through 6.	
		Specifies the range of port numbers to assign. The range can be 0 through 153, or 0x0 through 0x99. For 9513, the port numbers can be between 0 through 249, or 0x0 through 0xf9.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines A range of 255 port numbers are available for you to assign to all the ports on a switch. You can have more than 255 physical ports on a switch and the excess ports do not have ports numbers in the default numbering scheme. When you have more than 255 physical ports on your switch, you can assign unimplemented port numbers to the ports, or assign duplicate port numbers if they are not used in the same FICON VSAN. For example, you can configure port number 1 on interface `fc1/1` in FICON VSAN 10 and `fc10/1` in FICON VSAN 20.

FICON port numbers are not changed for ports that are active. You must first disable the interfaces using the `shutdown` command.

You can configure port numbers even when no module is installed in the slot, and before FICON is enabled on any VSAN.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example reserves FICON port numbers 0 through 15 and 48 through 63 for up to 32 interfaces in slot 3:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ficon slot 3 assign port-numbers 0-15, 48-63
```

The following example reserves FICON port numbers 0 through 15 for the first 16 interfaces and 0 through 15 for the second 32 interfaces in slot 3:

```
switch(config)# ficon slot 3 assign port-numbers 0-15, 0-15
```

The following example changes the reserved FICON port numbers for up to 24 interfaces in slot 3:

```
switch(config)# ficon slot 3 assign port-numbers 0-15, 56-63
```

The following example releases the port numbers:

```
switch(config)# no ficon slot 3 assign port-numbers 0-15, 56-63
```

The following example shows the switch output when there are duplicate port numbers:

```
switch(config)
switch(config)# no ficon slot 1 assign port-numbers
switch(config)# ficon slot 1 assign port-numbers 0-14, 0
WARNING: fcl/16 and fcl/1 have duplicated port-number 0 in port VSAN 99
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.

ficon swap

To enable the FICON feature in a specified VSAN, use the `ficon swap` command in configuration mode.

```
ficon swap interface fc slot fc slot | portnumber port-number port-number [after swap noshut]
```

Syntax Description

interface	Configures the interfaces to be swapped.
fc	Specifies the Fibre Channel interface.
slot	Specifies the slot number, 1 through 6.
portnumber	Configures the FICON port number for this interface.
port-number	Specifies the port numbers that must be swapped
after swap noshut	(Optional) Initializes the port shut down after the ports are swapped.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(1)	This command was introduced.
3.0(1)	Added the interface option.

Usage Guidelines

The `ficon swap portnumber old-port-number new port-number` command causes all configuration associated with `old-port-number` and `new port-number` to be swapped, including VSAN configurations. This command is only associated with the two ports in concerned. You must enter this VSAN-independent command from the EXEC mode.

If you specify the `ficon swap portnumber after swap noshut` command, the ports are automatically initialized.

The `ficon swap interface old-interface new-interface` command allows you to swap physical Fibre Channel ports, including port numbers, when there are duplicate port numbers on the switch.

If you specify the `ficon swap interface old-interface new-interface after swap noshut` command, the ports are automatically initialized.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example swaps the contents of ports 3 with port 15, shuts them down, and automatically initializes both ports:


```
switch# ficon swap portnumber 3 15 after swap noshut
```

The following example swaps the contents of ports 3 with port 15 and shuts them down:

```
switch# ficon swap portnumber 3 15
```

The following example swaps port 1 with port 6:

```
switch# ficon swap interface fc1/1 fc1/6
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.

ficon-tape-read-accelerator

To enable FICON tape read acceleration for the FCIP interface, use the `ficon-tape-read-accelerator` command in interface configuration submenu. To disable FICON tape read acceleration for the FCIP interface, use the `no` form of the command.

```
ficon-tape-read-accelerator
no ficon-tape-read-accelerator
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Interface configuration submenu.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable FICON tape read acceleration on the FCIP interface:

```
switch# config terminal
switch(config)# interface fcip 2
switch(config-if)# ficon-tape-read-accelerator
switch(config-if)#
```

The following example shows how to disable FICON tape read acceleration on the FCIP interface:

```
switch# config terminal
switch(config)# interface fcip 2
switch(config-if)# no ficon-tape-read-accelerator
switch(config-if)#
```

Related Commands	Command	Description
	show fcip	Displays FCIP profile information.

ficon-tape-accelerator vsan

To enable FICON tape acceleration for the FCIP interface, use the `ficon-tape-accelerator vsan` command in interface configuration submode. To disable FICON tape acceleration for the FCIP interface, use the `no` form of the command.

```
ficon-tape-accelerator vsan vsan-id
no ficon-tape-accelerator vsan vsan-id
```

Syntax Description	vsan-id Specifies the VSAN ID. The range is 1 to 4093.
---------------------------	--

Command Default Disabled.

Command Modes Interface configuration submode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines Cisco MDS NX-OS software provides acceleration for FICON tape write operations over FCIP for the IBM VTS and tape libraries that support the 3490 command set. FICON tape read acceleration over FCIP is not supported.

FICON tape acceleration will not work if multiple inter-switch links (ISLs) are present in the VSAN.

FICON write acceleration and tape acceleration can be enabled at the same time on the FCIP interface.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example enables FICON tape acceleration on the FCIP interface:

```
switch# config terminal
switch(config)# interface fcip 2
switch(config-if)# ficon-tape-accelerator vsan 100
This configuration change will disrupt all traffic on the FCIP interface in all
VSANs. Do you wish to continue? [no] y
```

The following example disables FICON tape acceleration on the FCIP interface:

```
switch(config-if)# no ficon-tape-accelerator vsan 100
This configuration change will disrupt all traffic on the FCIP interface in all
VSANs. Do you wish to continue? [no] y
```

Related Commands

Command	Description
show fcip	Displays FCIP profile information.
write-accelerator	Enables write acceleration and tape acceleration for the FCIP interface.

ficon vsan (EXEC mode)

To configure FICON related parameters in EXEC mode, use the `ficon vsan` command. To remove the configuration or revert to the default values, use the `no` form of the command.

`ficon vsan vsan-id | apply file file-name | copy file old-file-name new-file-name | offline | online`

vsan-id	The FICON configuration mode for the specified VSAN (from 1 to 4096).
apply file file-name	Specifies the existing FICON configuration file-name after switch initialization. Maximum length is 80 characters.
copy file	Copies of the specified FICON configuration file.
old-file-name	Specifies the old (existing) FICON configuration file name.
new-file-name	Specifies the new name for the copied file.
offline	Logs out all ports in the VSAN that needs to be suspended.
online	Removes the offline condition to allow ports to log on again.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

When an MDS switch is booting up with saved configuration, if FICON is enabled on a VSAN, the IPL configuration file is applied automatically by the NX-OS software after the switch initialization is completed.

Use the `ficon vsan vsan-id copy file exiting-file-name save-as-file-name` command to copy an existing FICON configuration file. You can see the list of existing configuration files by issuing the `show ficon vsan vsan-id` command.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example applies the configuration from the saved files to the running configuration:

```
switch# ficon vsan 2 apply file SampleFile
```

The following example copies an existing FICON configuration file called IPL and renames it to IPL3.

```
switch# ficon vsan 20 copy file IPL IPL3
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.

ficon vsan (configuration mode)

To enable the FICON feature in a specified VSAN, use the `ficon vsan` command in configuration mode. To disable the feature or to revert to factory defaults, use the `no` form of the command.

```
ficon vsan vsan-id
no ficon vsan vsan-id
```

Syntax Description

<code>vsan vsan-id</code>	Enters the FICON configuration mode for the specified VSAN (from 1 to 4096).
---------------------------	--

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

An IPL configuration file is automatically created:

Once you enable FICON, you cannot disable in-order delivery, fabric binding, or static domain ID configurations.

When you disable FICON, the FICON configuration file is also deleted.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example enables FICON on VSAN 2:

```
switch(config)# ficon vsan 2
```

The following example disables FICON on VSAN 6:

```
switch(config)# no ficon vsan 6
```

Related Commands

Command	Description
<code>show ficon</code>	Displays configured FICON details.

ficon vsan diagnostics

To enable FICON diagnostics in a specified VSAN, use the `ficon vsan diagnostics` command. To disable this feature, use the `no` form of the command.

```
ficon vsan ID diagnostics
no ficon vsan ID diagnostics
```

Syntax Description	vsan ID	Specifies the VSAN ID. Range is 1–4093.
---------------------------	---------	---

Command Default FICON diagnostics is enabled by default.

Command Modes Configuration mode (config)

Command History	Release	Modification
	8.4(2b)	This command was introduced.

Usage Guidelines The `ficon vsan diagnostics` and `ficon distribute` commands are used by IBM z/OS to learn about the FICON fabric path details across a SAN for a specific device.

All switches must have FICON diagnostics enabled with a nonzero interval for the IBM z/OS to display useful data. The interval, in seconds, is the performance interval for gathering of performance and health information for all the FICON ports in the fabric. For more information, see the appropriate IBM z/OS documentation.

Examples The following example displays how to enable FICON diagnostics on VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ficon vsan 10 diagnostics
```

The following example displays how to disable FICON diagnostics on VSAN 10:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no ficon vsan 10 diagnostics
```

Related Commands	Command	Description
	<code>ficon distribute</code>	Enables Cisco Fabric Services (CFS) distribution on a FICON switch.
	<code>show ficon vsan diagnostics</code>	Displays the status of the FICON diagnostics.

file

To access FICON configuration files in a specified VSAN, use the file command. To disable the feature or to revert to factory defaults, use the no form of the command.

```
file file-name
no file file-name
```

Syntax Description

file-name	The FICON configuration file in the specified VSAN
-----------	--

Command Default

None.

Command Modes

FICON configuration submode.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

The configuration file submode allows you to create and edit FICON configuration files. If a specified file does not exist, it is created. Up to 16 files can be saved. Each file name is restricted to 8 alphanumeric characters.

Examples

The following example accesses the FICON configuration file called IplFile1 for VSAN 2. If this file does not exist, it is created:

```
switch# config terminal
switch(config)# ficon vsan 2
switch(config-ficon)# file IplFile1
switch(config-ficon-file)#
```

The following example deletes a previously created FICON configuration file:

```
switch(config-ficon)# no file IplFileA
```

Related Commands

Command	Description
ficon vsan	Enables FICON for a VSAN.
show ficon	Displays configured FICON details.

find

To display a list of files on a file system, use the find command in EXEC mode.

```
find filename
```

Syntax Description

filename	Specifies a search string to match to the files in the default directory. Maximum length is 64 characters.
----------	--

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

Use the find (Flash file system) command to display more details about the files in a particular file system.

Examples

The following example is sample output of all files that begin with the letter a:

```
switch# find a
./accountingd
./acl
./ascii_cfg_server
./arping
```

Related Commands

Command	Description
cd	Changes the default directory or file system.
dir	Displays all files in a given file system.

flex-attach virtual-pwwn

To map the real port WWN (pWWN) and a user-specific virtual pWWN, use the `flex-attach virtual-pwwn` command. To disable the mapping, use the `no` form of the command.

```
flex-attach virtual-pwwn vppwwn pwwn pwwn
no flex-attach virtual-pwwn vppwwn pwwn pwwn
```

Syntax Description

vppwwn	Specifies the virtual pWWN chosen by the user.
pwwn pwwn	Specifies the pWWN to be mapped to the user-specific virtual pWWN. Note pWWN must not be logged in.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
3.3(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to map the real pWWN and a user-specific virtual pWWN on an interface:

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch# (config) flex-attach virtual-pwwn 20:04:00:a0:b8:16:92:18 pwwn 21:03:00:a0:b9:16:92:16
```

Related Commands

Command	Description
flex-attach virtual-pwwn auto	Enables the FlexAttach virtual pWWN on a specific interface.
flex-attach virtual-pwwn interface	Sets the user-specific FlexAttach virtual pWWN.

flex-attach virtual-pwwn auto

To enable the FlexAttach virtual port WWN (pWWN) on a specific interface, use the flex-attach virtual-pwwn auto command. To disable the virtual pWWN, use the no form of the command.

```
flex-attach virtual-pwwn auto [interface auto interface-list]
no flex-attach virtual-pwwn auto [interface auto interface-list]
```

Syntax Description

interface auto interface-list	Specifies the interface list on which FlexAttach virtual pWWN should be enabled.
Note	All interfaces in the interface-list value must be in the shut mode. If the interface-list value is not provided, then all ports must be in the shut mode.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
3.3(1a)	This command was introduced.

Usage Guidelines

The NPV switch assigns the virtual pWWNs to the interface on which FlexAttach is enabled.

Examples

The following example shows how to enable FlexAttach virtual pWWN on a interface:

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch#(config)# flex-attach virtual-pwwn auto interface fc 1/1
```

Related Commands

Command	Description
flex-attach virtual-pwwn interface	Sets the user-specific FlexAttach virtual pWWN.

flex-attach virtual-pwwn interface

To set the user-specific FlexAttach virtual port WWN (pWWN) on an interface, use the flex-attach virtual-pwwn interface command. To disable the virtual pWWN, use the no form of the command.

```
flex-attach virtual-pwwn vpwwn interface interface [vsan vsan]
no flex-attach virtual-pwwn vpwwn interface interface [vsan vsan]
```

Syntax Description	vpwwn	Specifies the virtual pWWN chosen by the user.
	interface	Specifies the interface on which the FlexAttach virtual port has to be enabled. Note The interface must be in the shut state.
	vsan vsan	(Optional) Specifies the VSAN on which FlexAttach should be enabled.

Command Default None.

Command Modes Configuration mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to set the user-specific virtual pWWN on an interface:

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
```

Related Commands	Command	Description
	flex-attach virtual-pwwn auto	Enables the FlexAttach virtual pWWN on a specific interface.

flogi scale enable

To enable FLOGI scale optimization by increasing chassis-wide FLOGI scale limits, use the `flogi scale enable` command in global configuration mode. To disable FLOGI scale optimization, use the `no` form of this command.

```
flogi scale enable
no flogi scale enable
```

Command Default Enabled

Command Modes Global configuration

Command History	Release	Modification
	8.1(1)	This command was introduced.

Usage Guidelines This command is applicable only to Cisco MDS 9718 Directors with Fibre Channel Switching Modules.

Example

The following example shows how to enable FLOGI scale optimization:

```
switch# configure terminal
switch(config)# flogi scale enable
```

Related Commands

Command	Description
<code>flogi quiesce timeout</code>	Configures the FLOGI quiesce timeout value.

flogi quiesce timeout

To set the FLOGI quiesce timeout duration so that the device login information can be retained in the Fibre Channel Name Server (FCNS) if the device logs in again within the specified duration, use the `flogi quiesce timeout` command.

```
flogi quiesce timeout milliseconds
```

Syntax Description

milliseconds	Specifies the timeout in milliseconds. Range is 0–20000.
--------------	--

Command Default

Cisco MDS NX-OS Release 8.1(x) and Release 8.2(x): 2000 milliseconds
 Cisco MDS NX-OS Release 8.3(1) and later releases: 0 milliseconds

Command Modes

Configuration mode (config)

Command History

Release Modification

8.3(1)	Changed the default FLOGI quiesce timeout value from 2000 to 0 milliseconds.
--------	--

8.1(1)	This command was introduced.
--------	------------------------------

Usage Guidelines

See the “[FLOGI Quiesce Timeout](#)” section in the Cisco MDS 9000 Series Fabric Configuration Guide, Release 8.x.

Examples

The following example displays how to enable FLOGI scale optimization and set the quiesce timeout value to 2000 milliseconds:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# flogi scale enable
switch(config)# flogi quiesce timeout 2000
```

The following example displays how to disable FLOGI scale optimization by setting the quiesce timeout value to 0 milliseconds:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# flogi scale enable
switch(config)# flogi quiesce timeout 0
```

Related Commands

Command	Description
<code>flogi scale enable</code>	Enables FLOGI scale optimization by increasing chassis-wide FLOGI scale limits.
<code>show flogi database</code>	Lists all the FLOGI sessions through all interfaces across all VSANs.

flowgroup

To configure an IOA flow group, use the flowgroup command.

```
flowgroup {name}
no flowgroup {name}
```

Syntax Description

name	Specifies an IOA flow group name. The maximum size is 31 characters.
------	--

Command Default

None.

Command Modes

Configuration submenu.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the IOA flow group:

```
switch# conf t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ioa cluster tape_vault
switch(config-ioa-cl)# flowgroup tsm
switch(config-ioa-cl)#
```

Related Commands

Command	Description
interface ioa	Configures the IOA interface.

format

To erase all the information on a module, use the format command in EXEC mode.

```
format bootflash: | logflash: | slot0: | usb1: | usb2:
```

Syntax Description

bootflash:	Specifies bootflash: memory.
logflash:	Specifies logflash: memory.
slot0:	Specifies the flash device in slot 0.
usb1:	Specifies the USB memory in host1.
usb2:	Specifies the USB memory in host 2.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
3.3(1a)	Added the USB1 and USB 2 parameters.

Usage Guidelines

The SAN-OS and NX-OS software supports Cisco-certified CompactFlash devices that are formatted using Cisco MDS 9000 switches. Using uncertified CompactFlash devices may result in unpredictable consequences; formatting CompactFlash devices using other platforms may result in errors.

Examples

The following example erases all information on the bootflash memory.

```
switch# format bootflash:
This command is going to erase the contents of your bootflash:.
Do you want to continue? (y/n) [n]
```

The following example erases all information on the logflash memory.

```
switch# format logflash:
This command is going to erase the contents of your logflash:.
Do you want to continue? (y/n) [n]
The following example erases all information on slot0.
switch# format
slot0:
This command is going to erase the contents of your slot0:
Do you want to continue? (y/n) [n]
```

The following example erases all information on usb1:

```
switch# format
usb1:
This command is going to erase the contents of your usb1:.
Do you want to continue? (y/n) [n]
```

The following example erases all information on usb2:.

```
switch# format
usb2:
This command is going to erase the contents of your usb2:.
Do you want to continue? (y/n) [n]
```

fpm congested device

To configure a congested device, use the `fpm congested device` command. To remove the configuration, use the `no` form of the command.

```
fpm congested device exclude | static list
no fpm congested device exclude | static list
```

Syntax Description		
	exclude	Specifies to exclude a device from being detected as a congested device.
	static	Specifies to explicitly configure a device as a congested device.
	list	Specifies the list of devices.

Command Default Congested devices are not configured.

Command Modes Configuration mode (config)

Command History	Release	Modification
	8.5(1)	This command was introduced.

Examples

This example shows how to manually configure a device as a congested device. The configured device will be permanently treated as a congested device until it is removed from congestion isolation. All traffic to this device traversing the device's ISLs that are in ER_RDY flow-control mode will be routed to the low-priority VL (VL2).

```
switch# configure
switch(config)# fpm congested-device static list
switch(config-congested-dev-static)# member pwnn 10:00:00:00:c9:f9:16:8d vsan 4 credit-stall
```

This example shows how to configure a device that is to be excluded from automatic congestion isolation by the port monitor. Even when the rising threshold of a port-monitor counter is reached and the portguard action is set to cong-isolate, this device will not be isolated as a congested device, and traffic to this device traversing the device's ISLs that are in ER_RDY flow-control mode will not be routed to the low-priority VL (VL2).

```
switch# configure terminal
switch(config)# fpm congested-device exclude list
switch(config-congested-dev-exc)# member pwnn 10:00:00:00:c9:f9:16:8d vsan 4
```

Related Commands	Command	Description
	feature fpm	Enables Fabric Performance Monitor (FPM).

Command	Description
member pwwn	Explicitly includes or excludes a congested device.
show fpm	Displays FPM information.

fpm congested device recover

To recover a device from congestion, use the `fpm congested device recover` command. To remove the configuration, use the `no` form of the command.

```
fpm congested device recover pwwn pwwn vsan id
no fpm congested device recover pwwn pwwn vsan id
```

Syntax Description

pwwn pwwn	Specifies the pWWN of the device to be recovered.
vsan id	Specifies a VSAN.

Command Default

Congested devices are not configured.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.5(1)	This command was introduced.

Examples

This example shows how to recover the device with pWWN 10:00:00:00:c9:f9:16:8d in VSAN 2 from congestion actions:

```
switch# fpm congested-device recover pwwn 10:00:00:00:c9:f9:16:8d vsan 2
```

Related Commands

Command	Description
feature fpm	Enables Fabric Performance Monitor (FPM).
show fpm	Displays FPM information.

fpm congestion-signal

To specify the EDC switch-side period for sending congestion signal, use the `fpm congestion-signal` command. To revert to the default period, use the `no` form of the command.

```
fpm congestion-signal period seconds
no fpm congestion-signal period seconds
```

Syntax Description

period seconds	Specifies the EDC switch-side period for sending congestion signal.
----------------	---

Command Default

The switch-side congestion signal period is set to 1 second.

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.5(1)	This command was introduced.

Examples

This example shows how to configure the EDC interval for sending congestion signal every 30 seconds:

```
switch# configure
switch(config)# fpm congestion-signal period 30
```

Related Commands

Command	Description
feature fpm	Enables Fabric Performance Monitor (FPM).
show fpm	Displays FPM information.

fpm dirl

To configure Dynamic Ingress Rate Limiting (DIRL), use the `fpm dirl` command. To revert to the default configuration, use the `no` form of the command.

```
fpm dirl  exclude list |reduction  percentage  recovery  percentage
no fpm dirl  exclude list |reduction  percentage  recovery  percentage
```

Syntax Description

<code>exclude list</code>	Specifies the list of interfaces that are excluded from DIRL.
<code>reduction percentage</code>	Specifies the ingress rate limit reduction rate percentage.
<code>recovery percentage</code>	Specifies the congestion recovery rate percentage.

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.5(1)	This command was introduced.

Examples

This example shows how to configure DIRL to specify the ingress reduction rate to 50 percent and ingress recovery rate to 30 percent:

```
switch# configure
switch(config)# fpm dirl reduction 50 recovery 30
```

This example shows how to exclude DIRL based on interface:

```
switch# configure
switch(config)# fpm dirl exclude list
switch(config-dirl-excl)# member interface fc 1/1
switch(config-dirl-excl)# member interface fc 1/1
```

This example shows how to include FC4-type target connected device interface in DIRL:

```
switch# configure
switch(config)# fpm dirl exclude list
switch(config-dirl-excl)# fc4-feature target
```

Related Commands

Command	Description
<code>feature fpm</code>	Enables Fabric Performance Monitor (FPM).
<code>fpm dirl recover</code>	Recovers interface from DIRL rate reduction.

Command	Description
show fpm	Displays FPM information.

fpm fpin

To change FPIN notification interval, use the `fpm fpin` command. To revert to the default interval, use the `no` form of the command.

```
fpm fpin period seconds
no fpm fpin period seconds
```

Syntax Description

period seconds	Specifies the FPIN notification interval.
----------------	---

Command Default

The FPIN notification interval is negotiated between the switch and end devices.

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.5(1)	This command was introduced.

Examples

This example shows how to configure an FPIN notification interval of 30 seconds:

```
switch# configure
switch(config)# fpm fpin period 30
```

Related Commands

Command	Description
feature fpm	Enables Fabric Performance Monitor (FPM).
show fpm	Displays FPM information.

fspf config vsan

To configure an FSPF feature for the entire VSAN, use the `fspf config vsan` command in configuration mode. To delete FSPF configuration for the entire VSAN, use the `no` form of the command.

```
fspfconfigvsanvsan-idmin-ls-arrivalls-arrival-timemin-ls-intervalinterval-timeregionregion-idspfhold-timespf-holdtime
| static
nofspfconfigvsanvsan-idmin-ls-arrivalmin-ls-intervalregionspfhold-time | static
```

Syntax Description

vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
min-ls-arrival ls-arrival-time	Specifies the minimum time before a new link state update for a domain will be accepted by switch. The parameter <code>ls-arrival-time</code> is an integer specifying time in milliseconds. The range is 0 to 65535.
min-ls-interval ls-interval-time	Specifies the minimum time before a new link state update for a domain will be generated by the switch. The parameter <code>ls-interval-time</code> is an integer specifying time in milliseconds. The range is 0 to 65535.
region region-id	Specifies the autonomous region to which the switch belongs. The backbone region has <code>region-id=0</code> . The parameter <code>region-id</code> is an unsigned integer value ranging from 0 to 255.
spf	Specifies parameters related to SPF route computation.
hold-time spf-holdtime	Specifies the time between two consecutive SPF computations. If the time is small then routing will react faster to changes but CPU usage will be more. The parameter <code>spf-holdtime</code> is an integer specifying time in milliseconds. The range is 0 to 65535.
static	Forces static SPF computation.

Command Default

In the FSPF configuration mode, the default is dynamic.

If configuring `spf hold-time`, the default value for FSPF is 0.

If configuring `min-ls-arrival`, the default value for FSPF is 1000 msec.

If configuring `min-ls-interval`, the default value for FSPF is 5000 msec.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

This command configures FSPF on VSANs globally.

For the commands entered in FSPF configuration mode, you do not have to specify the VSAN number every time. This prevents configuration errors that might result from specifying the wrong VSAN number for these commands.

Examples

The following example configures FSPF globally in VSAN 1, deletes the FSPF configured in VSAN 3, disables FSPF in VSAN 5, and enables FSPF in VSAN 7:

```
switch## config terminal
switch(config)##
switch(config) # fspf config vsan 1
switch-config-(fspf-config) # spf static
switch-config-(fspf-config) # exit
switch(config) #
switch(config) # no fspf config vsan 3
switch(config) #
```

Related Commands

Command	Description
fspf cost	Configures the cost for the selected interface in the specified VSAN (from the switch(config-if)# prompt).
fspf enable	Enables FSPF routing protocol in the specified VSAN (from the switch(config-if)# prompt).
fspf hello-interval	Specifies the hello message interval to verify the health of a link in the VSAN (from the switch(config-if)# prompt).
fspf passive	Disables the FSPF protocol for the specified interface in the specified VSAN (from the switch(config-if)# prompt).
fspf retransmit	Specifies the retransmit time interval for unacknowledged link state updates in specified VSAN (from the switch(config-if)# prompt).
show fspf interface	Displays information for each selected interface.

fspf cost

To configure FSPF link cost for a Fibre Channel interface, use the `fspf cost` command. To revert to the default value, use the `no` form of the command.

```
fspfcostlink-costvsanvsan-id
nofspfcostlink-costvsanvsan-id
```

Syntax Description

link-cost	Enters FSPF link cost. The range is 1 to 30000.
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.

Command Default

1000 for 1 Gbps
 500 for 2 Gbps
 250 for 4 Gbps
 250 for 4 Gbps
 125 for 8 Gbps
 100 for 10 Gbps
 62 for 16 Gbps

Command Modes

Interface configuration submode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

FSPF tracks the state of links on all switches in the fabric, associates a cost with each link in its database, and then chooses the path with a minimal cost. The cost associated with an interface can be changed using the `fspf cost` command to implement the FSPF route selection.

Examples

The following example configures the FSPF link cost on an Fibre Channel interface:

```
switch# config terminal
switch(config)# interface fcip 1
switch(config-if)# fspf cost 5000 vsan 1
```

Related Commands

Command	Description
show fspf interface	Displays information for each selected interface.
show interface fcip	Displays an interface configuration for a specified FCIP interface.

fspf dead-interval

To set the maximum interval for which a hello message must be received before the neighbor is considered lost, use the `fspf dead-interval` command. To revert to the default value, use the `no` form of the command.

```
fspfdead-intervalsecondsvsanvsan-id
nofspfdead-intervalsecondsvsanvsan-id
```

Syntax Description	seconds	Specifies the FSPF dead interval in seconds. The range is 2 to 65535.
	vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.

Command Default 80 seconds.

Command Modes Interface configuration submode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines Access this command from the `switch(config-if)#` submode.



Note This value must be the same in the ports at both ends of the ISL.



Caution An error is reported at the command prompt if the configured dead time interval is less than the hello time interval.

Examples

The following example configures the maximum interval of 400 seconds for a hello message before the neighbor is considered lost:

```
switch# config terminal
switch(config)# interface fcip 1
switch(config-if)# fspf dead-interval 400 vsan 1
```

Related Commands	Command	Description
	<code>show fspf interface</code>	Displays information for each selected interface.
	<code>show interface fcip</code>	Displays an interface configuration for a specified FCIP interface.

fspf enable vsan

To enable FSPF for a VSAN, use the `fspf enable` command in configuration mode. To disable FSPF routing protocols, use the `no` form of the command.

```
fspf enable vsan vsan-id
no fspf enable vsan vsan-id
```

Syntax Description

vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
---------	--

Command Default

Enabled.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

This command configures FSPF on VSANs globally.

Examples

The following example enables FSPF in VSAN 5 and disables FSPF in VSAN 7:

```
switch## config terminal
switch(config)# fspf enable vsan 5
switch(config)# no fspf enable vsan 7
```

Related Commands

Command	Description
<code>fspf config vsan</code>	Configures FSPF features for a VSAN.
<code>show fspf interface</code>	Displays information for each selected interface.

fspf hello-interval

To verify the health of the link, use the fspf hello-interval command. To revert to the default value, use the no form of the command.

```
fspfhello-intervalsecondsvsanvsan-id
nofspfhello-intervalseconds vsanvsan-id
```

Syntax Description	seconds	Specifies the FSPF hello-interval in seconds. The range is 1 to 65534.
	vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.

Command Default 20 seconds.

Command Modes Interface configuration submode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines Access this command from the switch(config-if)# submode.
This command configures FSPF for the specified FCIP interface.



Note This value must be the same in the ports at both ends of the ISL.

Examples The following example configures a hello interval of 3 seconds on VSAN 1:

```
switch# config terminal
switch(config)# interface fcip 1
switch(config-if)# fspf hello-interval 3 vsan 1
```

Related Commands	Command	Description
	show fspf interface	Displays information for each selected interface.
	show interface fcip	Displays an interface configuration for a specified FCIP interface.

fspf passive

To disable the FSPF protocol for selected interfaces, use the `fspf passive` command. To revert to the default state, use the `no` form of the command.

```
fspf passive vsan vsan-id
no fspf passive vsan vsan-id
```

Syntax Description

vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
-----------------	--

Command Default

FSPF is enabled.

Command Modes

Interface configuration submode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

By default, FSPF is enabled on all E ports and TE ports. FSPF can be disabled by setting the interface as passive using the `fspf passive` command.



Note

FSPF must be enabled on the ports at both ends of the ISL for the protocol to operate correctly.

Examples

The following example disables the FSPF protocol for the selected interface on VSAN 1:

```
switch# config terminal
switch(config)# interface fcip 1
switch(config-if)# fspf passive vsan 1
```

Related Commands

Command	Description
<code>show fspf interface</code>	Displays information for each selected interface.
<code>show interface fcip</code>	Displays an interface configuration for a specified FCIP interface.

fspf retransmit-interval

To specify the time after which an unacknowledged link state update should be transmitted on the interface, use the `fspf retransmit-interval` command. To revert to the default value, use the `no` form of the command.

```
fspf retransmit-interval seconds vsan vsan-id
no spf retransmit-interval seconds vsan vsan-id
```

Syntax Description	seconds	Specifies FSPF retransmit interval in seconds. The range is 1 to 65535.
	vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.

Command Default 5 seconds.

Command Modes Interface configuration submode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines Access this command from the `switch(config-if)#` submode.



Note This value must be the same in the ports at both ends of the ISL.

Examples The following example specifies a retransmit interval of 6 seconds after which an unacknowledged link state update should be transmitted on the interface for VSAN 1:

```
switch# config terminal
switch(config)# interface fcip 1
switch(config-if)# fspf retransmit-interval 6 vsan 1
```

Related Commands	Command	Description
	<code>show fspf interface</code>	Displays information for each selected interface.
	<code>show interface fcip</code>	Displays an interface configuration for a specified FCIP interface.



G Commands

- [group](#), on page 628
- [gzip](#), on page 629
- [gunzip](#), on page 630

group

To configure a Modular Exponentiation (MODP) Diffie-Hellman (DH) group for an IKE protocol policy, use the group command in IKE policy configuration submode. To revert to the default, use the no form of the command.

```
group 1 | 2 | 5
no group
```

Syntax Description

1	Specifies 768-bit MODP DH group.
2	Specifies 1024-bit MODP DH group.
5	Specifies 1536-bit MODP DH group.

Command Default

1.

Command Modes

IKE policy configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, the IKE protocol must be enabled using the crypto ike enable command.

Examples

The following example shows how to configure the DH group for the IKE protocol:

```
switch# config terminal
switch(config)# crypto ike domain ipsec
switch(config-ike-ipsec)# policy 1
switch(config-ike-ipsec-policy)# group 1
```

Related Commands

Command	Description
crypto ike domain ipsec	Enters IKE configuration mode.
crypto ike enable	Enables the IKE protocol.
policy	Configures IKE policy parameters.
show crypto ike domain ipsec	Displays IKE information for the IPsec domain.

gzip

To compress (zip) a specified file using LZ77 coding, use the gzip command in EXEC mode.

```
gzip bootflash: | slot0: | volatile: filename
```

Syntax Description

bootflash:	Source location for the file to be compressed and destination of the compressed file.
slot0:	Source location for the file to be compressed and destination of the compressed file.
volatile:	Source location for the file to be compressed and destination of the compressed file. This is the default directory.
filename	The name of the file to be compressed.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

This command is useful in compressing large files. The output of the show tech-support command can be directed to a file and compressed for further use. The gzip command replaces the source file with a compressed .gz file.

Examples

This example directs the output of the show tech-support command to a file (Samplefile) and then zips the file and displays the difference in the space used up in the volatile: directory:

```
switch# show tech-support > Samplefile
Building Configuration ...
switch# dir
 1525859      Jul 04 00:51:03 2003  Samplefile
Usage for volatile://
 1527808 bytes used
 19443712 bytes free
 20971520 bytes total
switch# gzip volatile:Samplefile
switch# dir
 266069      Jul 04 00:51:03 2003  Samplefile.gz
Usage for volatile://
 266240 bytes used
 20705280 bytes free
 20971520 bytes total
```

Related Commands

Command	Description
gunzip	Uncompresses LZ77 coded files.

gunzip

To uncompress (unzip) LZ77 coded files, use the gunzip command in EXEC mode.

gunzip bootflash: | slot0: | volatile: filename

Syntax Description

bootflash:	Specifies the source location for the compressed file and destination of the uncompressed file.
slot0:	Specifies the source location for the compressed file and destination of the uncompressed file.
volatile:	Specifies the source location for the compressed file and destination of the uncompressed file. This is the default directory.
filename	Specifies the name of the compressed file.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

This command is useful in uncompressing large files. The gunzip command replaces the compressed .gz source file with an uncompressed file.

Examples

This example unzips a compressed file on volatile: directory and displays the space used:

```
switch# dir
 266069      Jul 04 00:51:03 2003  Samplefile.gz
Usage for volatile://
 266240 bytes used
20705280 bytes free
20971520 bytes total
switch# gunzip Samplefile
switch# dir
 1525859      Jul 04 00:51:03 2003  Samplefile
Usage for volatile://
 1527808 bytes used
19443712 bytes free
20971520 bytes total
```

Related Commands

Command	Description
gzip	Compresses a specified file using LZ77 coding.



H Commands

- [hardware ejector enable](#), on page 632
- [hardware fabric crc](#), on page 633
- [hash](#), on page 635
- [host](#), on page 636
- [host](#), on page 637
- [hw-module logging onboard](#), on page 639

hardware ejector enable

To enable the hardware card ejector functionality when the ejector lever is unlocked, use the hardware ejector enable command.

```
hardware ejector enable
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes Global configuration mode.

Release	Modification
6.2(3)	This command was introduced.

Usage Guidelines This command does not require a license.

The purpose of the ejector release button on the supervisor or linecard is to unlock the ejector release lever. When enabled, this command causes the supervisor to power down when the ejector release button is pressed. In the case of a linecard, both ejector release buttons have to be pressed in order for the power down of the linecard to occur.

Examples

This example shows the configuration command to enable the hardware power down feature when the ejector release button(s) are pressed:

```
switch# config terminal
switch(config)# hardware ejector enable
```

This example shows the configuration command to disable the hardware power down feature when the ejector release button is pressed:

```
switch# config terminal
switch(config)# no hardware ejector enable
```


hardware fabric crc

To enable internal CRC detection and isolation functionality, use the `hardware fabric crc` command in configuration mode. To disable this functionality, use the `no` form of the command.

```
hardware fabric crc [ threshold count ] [ log-only ]
no hardware fabric crc
```

Syntax Description

threshold count	(Optional) Specifies the CRC triggering threshold count per 24-hour sampling window. The range is 1–100 CRC errors.
log-only	(Optional) Specifies to log internal CRC errors without taking any isolation action.

Command Default

Disables modules that are identified as the source of the CRC errors. The default triggering threshold is 3 CRC errors per internal data link per 24 hour window.

Command Modes

Global configuration (config)

Command History

Release	Modification
8.5(1)	Internal CRC detection and error logging without isolation is enabled by default.
8.4(2)	Log only option was introduced.
6.0(x)	This command was introduced.

Usage Guidelines

Use the command without the `log-only` option to allow NX-OS to automatically determine and shutdown the module suspected to be the source of the errors.

For information on the system messages generated, see the "%XBAR-2-XBAR_MONITOR" message in the [Cisco MDS 9000 Family and Nexus 7000 Series NX-OS System Messages Reference](#).

For information on different stages of internal CRC detection, isolation, and logging, see the "High Availability Overview" chapter in the [Cisco MDS 9000 Series High Availability Configuration Guide, Release 8.x](#).

This feature is supported only on Director class switches.

The monitoring windows are consecutive—at the end of each monitoring window the CRC counters are reread and used as the new base for the next monitoring window.

Examples

The following example shows how to enable internal CRC detection, isolation, and logging with the default error rate of 3 or more internal CRC errors per internal link per 24 hours:

```
switch# config terminal
switch(config)# hardware fabric crc threshold
```

The following example shows how to enable internal CRC detection and error logging without isolation:

```
switch# config terminal  
switch(config)# hardware fabric crc log-only
```

The following example shows how to disable internal CRC detection, isolation, and error logging:

```
switch# config terminal  
switch(config)# no hardware fabric crc
```

Related Commands

Command	Description
show hardware fabric crc status	Displays the CRC status.
show logging logfile	Displays the syslog buffer on the switch.

hash

To configure a hash algorithm for an IKE protocol policy, use the hash command in IKE policy configuration submode. To revert to the default, use the no form of the command.

```
hash md5 | sha
no hash
```

Syntax Description

md5	Specifies the MD5 ⁵ hash algorithm.
sha	Specifies the SHA ⁶ .

⁵ MD5 = Message-Digest

⁶ SHA = Secure Hash Algorithm

Command Default

SHA.

Command Modes

IKE policy configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, the IKE protocol must be enabled using the crypto ike enable command.

Examples

The following example shows how to configure the hash algorithm for the IKE protocol:

```
switch# config terminal
switch(config)# crypto ike domain ipsec
switch(config-ike-ipsec)# policy 1
switch(config-ike-ipsec-policy)# hash md5
```

Related Commands

Command	Description
crypto ike domain ipsec	Enters IKE configuration mode.
crypto ike enable	Enables the IKE protocol.
policy	Configures IKE policy parameters.
show crypto ike domain ipsec	Displays IKE information for the IPsec domain.

host

To configure the host PWWN for the flow, use the host command. To delete a flow from a given flowgroup, use the no form of the command.

```
host pwwn target pwwn vsan vsan id [tape] [compression]
no host pwwn target pwwn vsan vsan id [tape] [compression]
```

Syntax Description

pwwn	Specifies the host and target pwwn for the flow.
vsan	Specifies the VSAN where this flow is accelerated.
vsan id	Specifies the vsan ID where this flow is accelerated. The range is from 1 to 4093.
tape	Enables tape acceleration.
compression	Enables compression.

Command Default

None.

Command Modes

Configuration submenu.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to add a flow from a given flowgroup:

```
switch# conf t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ioa cluster tape_vault
switch(config-ioa-cl)# flowgroup tsm
switch(config-ioa-cl-flgrp)# host 10:0:0:0:0:0:0:1 target 11:0:0:0:0:0:0:1 vsan 100 tape
switch(config-ioa-cl-flgrp)# host 10:0:0:0:0:0:0:1 target 11:0:0:0:0:0:0:1 vsan 100
compression
switch(config-ioa-cl-flgrp)# host 10:0:0:0:0:0:0:2 target 11:0:0:0:0:0:0:2 vsan 100 tape
compression
sjc-sw2(config-ioa-cl-flgrp)# end
```

Related Commands

Command	Description
flowgroup	Configures IOA flowgroup.

host

Use the host command to configure the switch offline state, the mainframe access control parameters, and the mainframe time stamp parameters. To disable the configuration or to revert to factory defaults, use the no form of the command.

```
host control [switch offline] | port control | set-timestamp
no host control [switch offline] | port control | set-timestamp
```

Syntax Description	
control	Allows the host control of FICON.
switch offline	(Optional) Allows the host to move the switch to an offline state and shut down the ports (default).
port control	Enables the host to configure FICON parameters.
set-timestamp	Allows the host to set the director clock.

Command Default Host offline control enabled.

Command Modes FICON configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines By default, the clock in each VSAN is the same as the switch hardware clock. Mainframe users are allowed to change the VSAN-clock.

Examples

The following example prohibits mainframe users from moving the switch to an offline state:

```
switch# config terminal
switch(config)# ficon vsan 2
switch(config-ficon)# no host control switch offline
```

The following example allows the host to move the switch to an offline state and shut down the ports:

```
switch(config-ficon)# host control switch offline
```

The following example prohibits mainframe users to configure FICON parameters in the Cisco MDS switch (default):

```
switch(config-ficon)# no host port control
```

The following example allows mainframe users to configure FICON parameters in the Cisco MDS switch:

```
switch(config-ficon)# host port control
```

The following example prohibits mainframe users from changing the VSAN-specific clock:

```
switch(config-ficon)# no host set-timestamp
```

The following example allows the host to set the clock on this switch (default):

```
switch(config-ficon)# host set-timestamp
```

Related Commands

Command	Description
ficon vsan vsan-id	Enables FICON on the specified VSAN.
show ficon	Displays configured FICON details.

hw-module logging onboard

To configure on-board failure logging (OBFL), use the `hw-module logging onboard` command. To disable this feature, use the `no` form of the command.

```
hw-module logging onboard [module slot] [log-type]
no hw-module logging onboard [module slot] [log-type]
```

Syntax Description	module slot	Configures OBFL for a specified module.
	log-type	Specifies the type of events for on-board failure logging.
	cpu-hog	Specifies CPU hog events.
	environmental-history	Specifies environmental history events.
	error-stats	Specifies error statistics events.
	interrupt-stats	Specifies interrupt statistics events.
	mem-leak	Specifies memory leak events.
	miscellaneous-error	Specifies miscellaneous information events.
	obfl-logs	Specifies boot uptime, device version, and OBFL history.

Command Default Enabled.

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines OBFL data uses the module's persistent logging facility to store data in its CompactFlash memory. When OBFL is disabled, the persistent logging facility discards all entries sent to it for logging.

Examples The following example configures on-board failure logging of memory leak events on module 2:

```
switch# config terminal
switch(config)# hw-module logging onboard module 2 mem-leak
```

Related Commands	Command	Description
	clear logging onboard	Clears OBFL information.
	show logging onboard	Displays OBFL information.



I Commands

- [identity](#), on page 644
- [ingress-sa](#), on page 646
- [initiator](#), on page 647
- [in-order-guarantee](#), on page 648
- [install all](#), on page 649
- [install clock-module](#), on page 655
- [install license](#), on page 657
- [install module bios](#), on page 658
- [install module epld](#), on page 659
- [install module loader](#), on page 661
- [install ssi](#), on page 662
- [interface](#), on page 664
- [interface fc](#), on page 666
- [interface fcip](#), on page 668
- [interface fc-tunnel](#), on page 671
- [interface gigabitethernet](#), on page 673
- [interface ioa](#), on page 675
- [interface iscsi](#), on page 676
- [interface mgmt](#), on page 678
- [interface port-channel](#), on page 679
- [interface sme](#), on page 681
- [interface sme \(Cisco SME cluster node configuration submode\)](#), on page 682
- [interface vsan](#), on page 684
- [ioa cluster](#), on page 685
- [ioa site-local](#), on page 686
- [ioa-ping](#), on page 687
- [ip access-group](#), on page 689
- [ip access-list](#), on page 691
- [ip address \(FCIP profile configuration submode\)](#), on page 698
- [ip address \(interface configuration\)](#), on page 699
- [ip default-gateway](#), on page 700
- [ip default-network](#), on page 701
- [ip \(destination-group\)](#), on page 702

- [ip domain-list](#), on page 704
- [ip domain-lookup](#), on page 705
- [ip domain-name](#), on page 706
- [ip name-server](#), on page 707
- [ip route](#), on page 708
- [ip routing](#), on page 709
- [ip-compression](#), on page 710
- [ips netsim delay-ms](#), on page 712
- [ips netsim delay-us](#), on page 713
- [ips netsim drop nth](#), on page 714
- [ips netsim drop random](#), on page 716
- [ips netsim enable](#), on page 718
- [ips netsim max-bandwidth-kbps](#), on page 719
- [ips netsim max-bandwidth-mbps](#), on page 720
- [ips netsim qsize](#), on page 721
- [ips netsim reorder](#), on page 722
- [ipv6 access-list](#), on page 724
- [ipv6 address](#), on page 725
- [ipv6 enable](#), on page 726
- [ipv6 nd](#), on page 727
- [ipv6 route](#), on page 729
- [ipv6 routing](#), on page 731
- [ipv6 traffic-filter](#), on page 732
- [iscsi authentication](#), on page 733
- [iscsi duplicate-wwn-check](#), on page 735
- [iscsi dynamic initiator](#), on page 737
- [iscsi enable](#), on page 739
- [iscsi enable module](#), on page 740
- [iscsi import target fc](#), on page 741
- [iscsi initiator idle-timeout](#), on page 742
- [iscsi initiator ip-address](#), on page 743
- [iscsi initiator name](#), on page 745
- [iscsi interface vsan-membership](#), on page 746
- [iscsi save-initiator](#), on page 747
- [iscsi virtual-target name](#), on page 749
- [islb abort](#), on page 752
- [islb commit](#), on page 753
- [islb distribute](#), on page 754
- [islb initiator](#), on page 756
- [islb save-initiator](#), on page 758
- [islb virtual-target name](#), on page 760
- [islb vrrp](#), on page 762
- [islb zoneset activate](#), on page 764
- [isns](#), on page 765
- [isns distribute](#), on page 766
- [isns esi retries](#), on page 767

- [isns profile name](#), on page 768
- [isns reregister](#), on page 769
- [isns-server enable](#), on page 770
- [ivr aam pre-deregister-check](#), on page 771
- [ivr aam register](#), on page 772
- [ivr abort](#), on page 773
- [ivr commit](#), on page 774
- [ivr copy active-service-group user-configured-service-group](#), on page 775
- [ivr copy active-topology user-configured-topology](#), on page 776
- [ivr copy active-zoneset full-zoneset](#), on page 777
- [ivr copy auto-topology user-configured-topology](#), on page 778
- [ivr distribute](#), on page 779
- [ivr enable](#), on page 780
- [ivr fcdomain database autonomous-fabric-num](#), on page 781
- [ivr nat](#), on page 782
- [ivr refresh](#), on page 783
- [ivr service-group activate](#), on page 784
- [ivr service-group name](#), on page 785
- [ivr virtual-fcdomain-add](#), on page 787
- [ivr virtual-fcdomain-add2](#), on page 788
- [ivr vsan-topology](#), on page 789
- [ivr vsan-topology auto](#), on page 791
- [ivr vsan-topology database](#), on page 792
- [ivr withdraw domain](#), on page 794
- [ivr zone name](#), on page 795
- [ivr zone rename](#), on page 796
- [ivr zoneset](#), on page 797
- [ivr zoneset rename](#), on page 798

identity

To configure the identity for the IKE protocol, use the `identity` command in IKE configuration submode. To delete the identity, use the `no` form of the command.

```
identity address | hostname
no identity address | hostname
```

Syntax Description

address	Sets the IKE identity to be the IPv4 address of the switch.
hostname	Sets the IKE identity to be the host name of the switch.

Command Default

None.

Command Modes

IKE configuration submode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

To use this command, the IKE protocol must be enabled using the `crypto ike enable` command.

Before configuring a certificate for the switch, configure the host name and domain name, and set the identity to be the host name. This allows the certificate to be used for authentication.



Note

The host name is the fully qualified domain name (FQDN) of the switch. To use the switch FQDN for the IKE identity, you must first configure both the switch name and the domain name. The FQDN is required for using RSA signatures for authentication. By default address is identified.

Examples

The following example shows how to set the IKE identity to the IP address of the switch:

```
switch# config terminal
switch(config)# crypto ike domain ipsec
switch(config-ike-ipsec)# identity address
```

The following example shows how to delete the IKE identity:

```
switch(config-ike-ipsec)# no identity address
```

The following example shows how to set the IKE identity to the host name:

```
switch(config-ike-ipsec)# identity hostname
```

The following example shows how to delete the IKE identity:

```
switch(config-ike-ipsec)# no identity hostname
```

Related Commands

Command	Description
crypto ike domain ipsec	Enters IKE configuration mode.
crypto ike enable	Enables the IKE protocol.
show crypto ike domain ipsec	Displays IKE information for the IPsec domain.

ingress-sa

To configure the Security Association (SA) to the ingress hardware, use the ingress-sa command. To delete the SA from the ingress hardware, use the no form of the command.

```
ingress-sa spi-number
no ingress-sa spi-number
```

Syntax Description

spi-number	The range is from 256 to 4294967295.
------------	--------------------------------------

Command Default

None.

Command Modes

Configuration submode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the SA to the ingress hardware:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fc 2/1 - 3
switch(config-if)# fcsp esp manual
switch(config-if-esp)# ingress-sa 258
switch(config-if-esp)#
```

Related Commands

Command	Description
show fcsp interface	Displays FC-SP-related information for a specific interface.

initiator

To configure the initiator version and address, use the `initiator` command IKE configuration submode. To revert to the default, use the `no` form of the command.

```
initiator version version address ip-address
no initiator version version address ip-address
```

Syntax Description

version	Specifies the protocol version number. The only valid value is 1.
address ip-address	Specifies the IP address for the IKE peer. The format is A.B.C.D.

Command Default

IKE version 2.

Command Modes

IKE configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, the IKE protocol must be enabled using the `crypto ike enable` command.

Examples

The following example shows how initiator information for the IKE protocol:

```
switch# config terminal
switch(config)# crypto ike domain ipsec
switch(config-ike-ipsec)# initiator version 1 address 10.1.1.1
```

Related Commands

Command	Description
<code>crypto ike domain ipsec</code>	Enters IKE configuration mode.
<code>crypto ike enable</code>	Enables the IKE protocol.
<code>show crypto ike domain ipsec</code>	Displays IKE information for the IPsec domain.

in-order-guarantee

To enable in-order delivery, use the in-order-guarantee command in configuration mode. To disable in-order delivery, use the no form of the command.

```
in-order-guarantee [vsan vsan-id]
no in-order-guarantee [vsan vsan-id]
```

Syntax Description

vsan vsan-id	(Optional) Specifies a VSAN ID. The range is 1 to 4093.
-----------------	---

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(4)	This command was introduced.

Usage Guidelines

In-order delivery of data frames guarantees frame delivery to a destination in the same order that they were sent by the originator.

Examples

The following example shows how to enable in-order delivery for the entire switch:

```
switch# config terminal
switch(config) # in-order-guarantee
```

The following example shows how to disable in-order delivery for the entire switch:

```
switch(config) # no in-order-guarantee
```

The following example shows how to enable in-order delivery for a specific VSAN:

```
switch(config) # in-order-guarantee vsan 3452
```

The following example shows how to disable in-order delivery for a specific VSAN:

```
switch(config) # no in-order-guarantee vsan 101
```

Related Commands

Command	Description
show in-order-guarantee	Displays the in-order-guarantee status.

install all

To upgrade all modules in any Cisco MDS 9000 family switch, use the install all command. This upgrade can happen nondisruptively or disruptively depending on the current configuration of your switch.

```
install all [asm-sfn filename | kickstart | ssi | system URL]
```

Syntax Description	
asm-sfn filename	(Optional) Upgrades the ASM image.
kickstart	(Optional) Upgrades the kickstart image.
ssi	(Optional) Upgrades the SSI image.
system	(Optional) Upgrades the system image.
URL	(Optional) Specifies the location URL of the source file to be installed.

The following table lists the aliases for URL.

bootflash:	Source location for internal bootflash memory.
slot0:	Source location for the CompactFlash memory or PCMCIA card.
volatile:	Source location for the volatile file system.
tftp:	Source location for a Trivial File Transfer Protocol (TFTP) network server. The syntax for this URL is tftp: [[//location] /directory] /filename.
ftp:	Source location for a File Transfer Protocol (FTP) network server. The syntax for this URL is ftp: [[//location] /directory] /filename.
sftp:	Source location for a Secure Trivial File Transfer Protocol (SFTP) network server. The syntax for this URL is sftp: [[//<username@>location] /directory] /filename.
scp:	Source location for a Secure Copy Protocol (SCP) network server. The syntax for this URL is scp: [[//location] /directory] /filename.
image-filename	The name of the source image file.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(3)	This command was introduced.
	1.2(2)	Added the asm-sfn keyword and made all keywords optional.
	2.0(1b)	Added the ssi keyword.

Usage Guidelines

The install all command upgrades all modules in any Cisco MDS 9000 Family switch.



Tip

During a software upgrade to Cisco MDS SAN-OS 3.1(3), all modules that are online are tested and the installation stops if any modules are running with a faulty CompactFlash. When this occurs, the switch can not be upgraded until the situation is corrected. A system message displays the module information and indicates that you must issue the system health cf-crc-check module CLI command to troubleshoot.

To copy a remote file, specify the entire remote path exactly as it is.



Caution

If a switchover is required when you issue the install all command from a Telnet or SSH session, all open sessions are terminated. If no switchover is required, the session remains unaffected. The software issues a self-explanatory warning at this point and provides the option to continue or terminate the installation.

Examples

The following example displays the result of the install all command if the system and kickstart files are specified locally:

```
switch# install all sys bootflash:isan-1.3.1 kickstart bootflash:boot-1.3.1

Verifying image bootflash:/boot-1.3.1
[#####] 100% -- SUCCESS

Verifying image bootflash:/isan-1.3.1
[#####] 100% -- SUCCESS

Extracting "slc" version from image bootflash:/isan-1.3.1.
[#####] 100% -- SUCCESS

Extracting "ips" version from image bootflash:/isan-1.3.1.
[#####] 100% -- SUCCESS

Extracting "system" version from image bootflash:/isan-1.3.1.
[#####] 100% -- SUCCESS

Extracting "kickstart" version from image bootflash:/boot-1.3.1.
[#####] 100% -- SUCCESS

Extracting "loader" version from image bootflash:/boot-1.3.1.
[#####] 100% -- SUCCESS

Compatibility check is done:
Module  bootable      Impact  Install-type  Reason
-----  -
1       yes    non-disruptive  rolling
2       yes     disruptive     rolling  Hitless upgrade is not supported
3       yes     disruptive     rolling  Hitless upgrade is not supported
4       yes    non-disruptive  rolling
5       yes    non-disruptive  reset
6       yes    non-disruptive  reset

Images will be upgraded according to following table:
Module  Image      Running-Version  New-Version  Upg-Required
-----  -
1       slc        1.3(2a)         1.3(1)      yes
```



```

Module 6: Waiting for module online.
Jan 18 23:43:02 Hacienda %PORT-5-IF_UP: Interface mgmt0 is up
Jan 18 23:43:19 Hacienda %LICMGR-3-LOG_LIC_NO_LIC: No license(s) present for feature
FM_SERVER_PKG. Application(s) shutdown in 53 days.
Jan 18 23:43:19 Hacienda %LICMGR-3-LOG_LIC_NO_LIC: No license(s) present for feature
ENTERPRISE_PKG. Application(s) shutdown in 50 days.
Jan 18 23:43:19 Hacienda %LICMGR-3-LOG_LIC_NO_LIC: No license(s) present for feature
SAN_EXTN_OVER_IP. Application(s) shutdown in 50 days.
Jan 18 23:43:19 Hacienda %LICMGR-3-LOG_LICAPP_NO_LIC: Application port-security running
without ENTERPRISE_PKG license, shutdown in 50 days
Jan 18 23:43:19 Hacienda %LICMGR-4-LOG_LICAPP_EXPIRY_WARNING: Application Roles evaluation
license ENTERPRISE_PKG expiry in 50 days
Jan 18 23:44:54 Hacienda %BOOTVAR-5-NEIGHBOR_UPDATE_AUTOCOPY: auto-copy supported by neighbor,
starting...

Module 1: Non-disruptive upgrading.
[#          ] 0%Jan 18 23:44:56 Hacienda %MODULE-5-STANDBY_SUP_OK: Supervisor 5
is standby
Jan 18 23:44:55 Hacienda %IMAGE_DNLD-SLOT1-2-IMG_DNLD_STARTED: Module image download
process. Please wait until completion...
Jan 18 23:45:12 Hacienda %IMAGE_DNLD-SLOT1-2-IMG_DNLD_COMPLETE: Module image download
process. Download successful.
Jan 18 23:45:48 Hacienda %MODULE-5-MOD_OK: Module 1 is online
[#####] 100% -- SUCCESS

Module 4: Non-disruptive upgrading.
[#          ] 0%Jan 18 23:46:12 Hacienda %IMAGE_DNLD-SLOT4-2-IMG_DNLD_STARTED:
Module image download process. Please wait until completion...
Jan 18 23:46:26 Hacienda %IMAGE_DNLD-SLOT4-2-IMG_DNLD_COMPLETE: Module image download
process. Download successful.
Jan 18 23:47:02 Hacienda %MODULE-5-MOD_OK: Module 4 is online
[#####] 100% -- SUCCESS

Module 2: Disruptive upgrading.
...
-- SUCCESS

Module 3: Disruptive upgrading.
...
-- SUCCESS

Install has been successful.

MDS Switch
Hacienda login:

```

The following example displays the result of the install all command if the system and kickstart files are specified remotely:

```

switch# install all system
scp://user@171.69.16.26/tftpboot/HKrel/qa/vegas/final/m9500-sflek9-mz.1.3.2a.bin kickstart
scp://user@171.69.16.26/tftpboot/HKrel/qa/vegas/final/m9500-sflek9-kickstart-mz.1.3.2a.bin
For scp://user@171.69.16.26, please enter password:
For scp://user@171.69.16.26, please enter password:

Copying image from
scp://user@171.69.16.26/tftpboot/HKrel/qa/vegas/final/m9500-sflek9-kickstart-mz.1.3.2a.bin
to bootflash://m9500-sflek9-kickstart-mz.1.3.2a.bin.
[#####] 100% -- SUCCESS

Copying image from
scp://user@171.69.16.26/tftpboot/HKrel/qa/vegas/final/m9500-sflek9-mz.1.3.2a.bin to

```

```

bootflash:///m9500-sflek9-mz.1.3.2a.bin.
[#####] 100% -- SUCCESS

Verifying image bootflash:///m9500-sflek9-kickstart-mz.1.3.2a.bin
[#####] 100% -- SUCCESS

Verifying image bootflash:///m9500-sflek9-mz.1.3.2a.bin
[#####] 100% -- SUCCESS

Extracting "slc" version from image bootflash:///m9500-sflek9-mz.1.3.2a.bin.
[#####] 100% -- SUCCESS

Extracting "ips" version from image bootflash:///m9500-sflek9-mz.1.3.2a.bin.
[#####] 100% -- SUCCESS

Extracting "system" version from image bootflash:///m9500-sflek9-mz.1.3.2a.bin.
[#####] 100% -- SUCCESS

Extracting "kickstart" version from image bootflash:///m9500-sflek9-kickstart-mz.1.3.2a.bin.
[#####] 100% -- SUCCESS

Extracting "loader" version from image bootflash:///m9500-sflek9-kickstart-mz.1.3.2a.bin.
[#####] 100% -- SUCCESS

```

Compatibility check is done:

Module	bootable	Impact	Install-type	Reason
1	yes	non-disruptive	rolling	
2	yes	disruptive	rolling	Hitless upgrade is not supported
3	yes	non-disruptive	rolling	
4	yes	non-disruptive	rolling	
5	yes	non-disruptive	reset	
6	yes	non-disruptive	reset	
7	yes	non-disruptive	rolling	
8	yes	non-disruptive	rolling	
9	yes	disruptive	rolling	Hitless upgrade is not supported

Images will be upgraded according to following table:

Module	Image	Running-Version	New-Version	Upg-Required
1	slc	1.3(1)	1.3(2a)	yes
1	bios	v1.1.0(10/24/03)	v1.0.8(08/07/03)	no
2	ips	1.3(1)	1.3(2a)	yes
2	bios	v1.1.0(10/24/03)	v1.0.8(08/07/03)	no
3	slc	1.3(1)	1.3(2a)	yes
3	bios	v1.1.0(10/24/03)	v1.0.8(08/07/03)	no
4	slc	1.3(1)	1.3(2a)	yes
4	bios	v1.1.0(10/24/03)	v1.0.8(08/07/03)	no
5	system	1.3(1)	1.3(2a)	yes
5	kickstart	1.3(1)	1.3(2a)	yes
5	bios	v1.1.0(10/24/03)	v1.0.8(08/07/03)	no
5	loader	1.2(2)	1.2(2)	no
6	system	1.3(1)	1.3(2a)	yes
6	kickstart	1.3(1)	1.3(2a)	yes
6	bios	v1.1.0(10/24/03)	v1.0.8(08/07/03)	no
6	loader	1.2(2)	1.2(2)	no
7	slc	1.3(1)	1.3(2a)	yes
7	bios	v1.1.0(10/24/03)	v1.0.8(08/07/03)	no
8	slc	1.3(1)	1.3(2a)	yes
8	bios	v1.1.0(10/24/03)	v1.0.8(08/07/03)	no
9	ips	1.3(1)	1.3(2a)	yes
9	bios	v1.1.0(10/24/03)	v1.0.8(08/07/03)	no

Do you want to continue with the installation (y/n)? [n]

Command	Description
install module bios	Upgrades the supervisor or switching module BIOS.
install module loader	Upgrades the bootloader on the active or standby supervisor or modules.
show version	Displays software image version information.

install clock-module

To upgrade the EPLD images of the clock module on a Cisco MDS 9513 Switch Director, use the install clock-module command.

```
install clock-module [epld bootflash: | slot0: | volatile:]
```

Syntax Description	
epld	(Optional) Installs the clock module EPLD from the EPLD image.
bootflash:	(Optional) Specifies the local URI containing EPLD image.
slot0:	(Optional) Specifies the local URI containing EPLD image.
volatile:	(Optional) Specifies the local URI containing EPLD image.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines Use this command on the active supervisor to install the standby clock module EPLD from the specified EPLD image. After upgrading the clock module, power cycle the entire chassis for the change to take effect. It is not sufficient to reboot the chassis; you must turn the power off and on.



Note This command is supported only on the Cisco MDS 9513 Multilayer Switch Director.

Examples

The following example upgrades the EPLD images for the clock module:

```
switch# install clock-module epld bootflash:m9000-epld-3.0.0.278.img
Len 3031343, CS 0x58, string MDS series EPLD image, built on Fri Nov 11 01:11:09 2005
EPLD Curr Ver New Ver
-----
Clock Controller 0x03 0x04
There are some newer versions of EPLDs in the image!
Do you want to continue (y/n) ? y
Proceeding to program Clock Module B.
Do you want to switchover Clock Modules after programming Clock Module B.
System Will Reset! y/n) ?n

|

Clock Module B EPLD upgrade is successful.
```

Related Commands

Command	Description
show version clock-module epld	Displays the current EPLD versions on the clock module.

install license

To program the supervisor or switching module BIOS, use the install license command.

```
install license [bootflash: | slot0: | volatile:] file-name
```

Syntax Description

bootflash:	(Optional) Specifies the source location for the license file.
slot0:	(Optional) Specifies the source location for the license file.
volatile:	(Optional) Specifies the source location for the license file.
file-name	Specifies the name of the license file.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.2(1)	This command was introduced.

Usage Guidelines

If a target filename is provided after the source URL, the license file is installed with that name. Otherwise, the filename in the source URL is used. This command also verifies the license file before installing it.

Examples

The following example installs a file named license-file which resides in the bootflash: directory:

```
switch# install license bootflash:license-file
```

Related Commands

Command	Description
show license	Displays license information.

install module bios

To program the supervisor or switching module BIOS, use the `install module bios` command.

```
install module module-number bios system [bootflash: | slot0: | volatile:system-image]
```

Syntax Description

module-number	Specifies the module number from slot 1 to 9 in a Cisco MDS 9500 Series switch. Specifies the module number from slot 1 to 2 in a Cisco MDS 9200 Series switch.
system	(Optional) Specifies the system image to use (optional). If system is not specified, the current running image is used.
bootflash:	(Optional) Specifies the source location for internal bootflash memory
slot0:	(Optional) Specifies the source location for the CompactFlash memory or PCMCIA card.
volatile:	(Optional) Specifies the source location for the volatile file system.
system-image	(Optional) Specifies the name of the system or kickstart image.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(3)	This command was introduced.

Usage Guidelines

If the BIOS is upgraded, you need to reboot to make the new BIOS effective. You can schedule the reboot at a convenient time so traffic will not be impacted.

The console baud rate automatically reverts to the default rate (9600) after any BIOS upgrade.

The URL is always the system image URL in the supervisor module, and points to the `bootflash:` or `slot0:` directories.

Examples

The following example shows how to perform a nondisruptive upgrade for the system:

```
switch# install module 1 bios
Started bios programming .... please wait
###
BIOS upgrade succeeded for module 1
```

In this example, the switching module in slot 1 was updated.

install module epld

To upgrade the electrically programmable logical devices (EPLDs) module, use the `install module epld` command. This command is only for supervisor modules, not switching modules.

```
install module module-number epld [bootflash: | ftp: | scp: | sftp: | tftp: | volatile:]
```

Syntax Description	Parameter	Description
	module-number	Enters the number for the standby supervisor modules or any other line card.
	bootflash:	(Optional) Specifies the source location for internal bootflash memory.
	ftp	(Optional) Specifies the local/remote URI containing EPLD image.
	scp	(Optional) Specifies the local/remote URI containing EPLD image.
	sftp	(Optional) Specifies the local/remote URI containing EPLD image.
	tftp	(Optional) Specifies the local/remote URI containing EPLD image.
	volatile:	(Optional) Specifies the source location for the volatile file system.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.2(1)	This command was introduced.

Usage Guidelines Issue this command from the active supervisor module to update any other module. If you forcefully upgrade a module that is not online, all EPLDs are forcefully upgraded. If the module is not present in the switch, an error is returned. If the module is present, the command process continues. Do not insert or extract any modules while an EPLD upgrade or downgrade is in progress.

Examples The following example upgrades the EPLDs for the module in slot 2:

```
switch# install module 2 epld scp://user@10.6.16.22/users/dino/epld.img

The authenticity of host '10.6.16.22' can't be established.
RSA1 key fingerprint is 55:2e:1f:0b:18:76:24:02:c2:3b:62:dc:9b:6b:7f:b7.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.6.16.22' (RSA1) to the list of known hosts.
user@10.6.16.22's password:
epld.img          100% |*****| 1269 KB    00:00
Module Number                2
EPLD                        Curr Ver    New Ver
-----
Power Manager                0x06
XBUS IO                      0x07        0x08
```

```

UD chip Fix                                0x05
Sahara                                     0x05      0x05

Module 2 will be powered down now!!
Do you want to continue (y/n) ? y
\ <-----progress twirl
Module 2 EPLD upgrade is successful
    
```

The following example forcefully upgrades the EPLDs for the module in slot 2:

```

switch# install module 2 epld scp://user@10.6.16.22/epld-img-file-path

Module 2 is not online, Do you want to continue (y/n) ? y
cchetty@171.69.16.22's password:
epld.img          100% |*****| 1269 KB    00:00
\ <-----progress twirl
Module 2 EPLD upgrade is successful
    
```

Related Commands

Command	Description
show version epld	Displays the available EPLD versions.
show version modulenumbr epld	Displays the current EPLD versions.

install module loader

To upgrade the bootloader on either the active or standby supervisor module, use the install module loader command. This command is only for supervisor modules, not switching modules.

```
install module module-number loader kickstart [bootflash: | slot0: | volatile:kickstart-image]
```

Syntax Description	Parameter	Description
	module-number	Enters the module number for the active or standby supervisor modules (only slot 5 or 6).
	kickstart	Specifies the kickstart image to use.
	bootflash:	(Optional) Specifies the source location for internal bootflash memory
	slot0:	(Optional) Specifies the source location for the CompactFlash memory or PCMCIA card.
	volatile:	(Optional) Specifies the source location for the volatile file system.
	kickstart-image	Specifies the name of the kickstart image.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(3)	This command was introduced.

Usage Guidelines Before issuing the install module loader command, be sure to read the release notes to verify compatibility issues between the boot loader and the kickstart or system images.

If you install a loader version that is the same as the currently installed version, the loader will not be upgraded. When both the current version and the installed version are the same, use the init system command to force a loader upgrade.

Examples The following example shows how to perform a non disruptive upgrade for the system:

```
switch# install module 6 loader bootflash:kickstart_image
```

Related Commands	Command	Description
	show version	Verifies the output before and after the upgrade.

install ssi

To perform a nondisruptive upgrade of the SSI image on an SSM, use the install ssi command.

```
install ssi bootflash: | slot0: | modflash: file-name module slot
```

Syntax Description

bootflash:	Specifies the source location for the SSI boot image file.
slot0:	Specifies the source location for the SSI boot image file.
modflash:	Specifies the source location for the SSI boot image file.
file-name	Specifies the SSI boot image filename.
module slot	Specifies the module slot number.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
5.0(x)	This command has been deprecated (install ssi command is not supported for gen 2 card).
2.1(2)	This command was introduced.

Usage Guidelines

You can use the install ssi command to upgrade or downgrade the SSI boot image if the SSM is only configured for Fibre Channel switching. If your SSM is configured for VSFN or Intelligent Storage Services, you must use the boot command to reconfigure the SSI boot variable and reload the module.

The install ssi command implicitly sets the SSI boot variable.



Note

The SSM must be running EPLD version 2.1(2) to use the install ssi command. You must install the SSM on a Cisco MDS 9500 Series switch to update the EPLD.



Note

The install ssi command does not support files located on the SSM modflash.

Examples

The following example installs the SSI boot image on the module in slot 2:

```
switch# install ssi bootflash:lm9000-ek9-ssi-mz.2.1.2.bin module 2
```

Related Commands

Command	Description
boot	Configures the boot variables.
show boot	Displays the current contents of boot variables.
show module	Verifies the status of a module.

interface

To configure an interface on the Cisco MDS 9000 Family of switches, use the interface command in configuration mode.

```
interface cpp module-numberprocessor-numbervsan-id | ethernet slot number\ port-number |
ethernet-port-channel ethernet-port-channel-number | fc slot number | port number | fc-tunnel tunnel-id |
mgmt | port-channel port-channel-number | vfc vfc-id | vfc port-channel vfc port-channel-id | vsan vsan-id
nointerface cpp module-numberprocessor-numbervsan-id | ethernet slot number\ port-number |
ethernet-port-channel ethernet-port-channel-number | fc slot number | port number | fc-tunnel tunnel-id |
mgmt | port-channel port-channel-number | vfc vfc-id | vfc port-channel vfc port-channel-id | vsan vsan-id
```



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs as follows:

Syntax Description

cpp	Configures a Control Plane Process (CPP) interface.
module-number	Specifies the module number. The range is 1 to 10.
processor-number	Specifies the processor number. The range is from 1 to 1.
vsan-id	Specifies the VSAN ID. The range is from 1 to 4093.
ethernet	Specifies the Ethernet IEEE 802.3z.
slot number / port number	Specifies the Ethernet slot number and port number. Slot range is from 1 to 253 and port number range is from 1 to 128.
ethernet-port-channel	Ethernet Port Channel interface. The range is from 513 to 4096.
ethernet-port-channel-number	Specifies the Port Channel number. The range is from 513 to 4096.
fc	(Optional) Configures a Fiber Channel interface on an MDS 9000 Family switch (see the interface fc command).
slot number / port number	Specifies the slot number. The range is from 1 to 10. Specifies the FC slot number and port number. Slot range is from 1 to 10 and port number range is from 1 to 48.
fc-tunnel	Configures a Fiber Channel link interface (see the interface fc-tunnel command).
tunnel-id	Specifies the tunnel ID. The range is from 1 to 255.
mgmt	Configures a management interface (see the interface mgmt command).
port-channel	Configures a Port Channel interface (see the interface port-channel command).
port-channel-number	Specifies the Port Channel number. The range is from 1 to 256.

vfc	Specifies the Virtual FC interface.
vfc-id	Specifies the virtual interface ID or slot. The range is from 1 to 8192.
vfc-port-channel	Specifies the virtual FC port-channel interface
vfc-port-channel-id	Specifies the virtual interface ID. The range is from 513 to 4096.
vsan	Specifies the IPFC VSAN interface.
vsan-id	Specifies the VSAN ID. The range is from 1 to 4093.

Command Default None.

Command Modes Configuration mode.

Command History

Release	Modification
3.0(2)	This command was introduced.

Usage Guidelines You can specify a range of interfaces by issuing a command with the following example format:
 interface fc1/1 - 5 , fc2/5 - 7
 The spaces are required before and after the dash (-) and before and after the comma (,).



Note For Cisco MDS 9500, 9700 and 9250i Series Switches support ethernet , vfc, vfc-port-channel and ethernet-port-channel commands.

Examples The following example selects the mgmt 0 interface and enters interface configuration submode:

```
switch# config terminal
switch(config)# interface mgmt 0
```

Related Commands

Command	Description
show interface	Displays an interface configuration for a specified interface.

interface fc

To configure a Fibre Channel interface on the Cisco MDS 9000 Family of switches, use the interface fc command in EXEC mode. To revert to defaults, use the no form of the command.

```
interface fc slot/port channel-group group-id [force] | auto fcdomain rcf-reject vsan vsan-id fcsp
| fspf cost link-cost vsan vsan-id | ficon portnumber portnumber | dead-interval seconds vsan vsan-id
| hello-interval seconds vsan vsan-id | passive vsan vsan-id | retransmit-interval seconds vsan vsan-id
no interface fc slot/port channel-group group-id [force] | auto fcdomain rcf-reject vsan vsan-id
no fspf cost link-cost vsan vsan-id | ficon portnumber portnumber | dead-interval seconds vsan vsan-id
| hello-interval seconds vsan vsan-id | passive vsan vsan-id | retransmit-interval seconds vsan vsan-id
```

Syntax Description

slot/port	Specifies a slot number and port number.
channel-group	Add to or remove chaneel group from a Port Channel.
group-id	Specifies a Port Channel group number from 1 to 128.
force	(Optional) Forcefully adds a port.
auto	Enables autocreation of Port Channels.
fcdomain	Enters the interface submode.
rcf-reject	Configures the rcf-reject flag.
vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
fcsp	Configures the FCSP for an interface.
fsfp	Configures FSPF parameters.
cost link-cost	Configures FSPF link cost. The range is 1 to 30000.
ficon	Configures FICON parameters.
portnumber portnumber	Configures the FICON port number for this interface.
dead-interval seconds	Configures FSPF dead interval in seconds. The range is 2 to 65535.
hello-interval seconds	Configures FSPF hello-interval. The range is 1 to 65535.
passive	Enables or disables FSPF on the interface.
retransmit-interval seconds	Configures FSPF retransmit interface in seconds. The range is 1 to 65535.

Command Default

Disabled.

Command Modes

Configuration mode.

Command History	Release	Modification
	NX-OS 4.2(1)	Added fcsp keyword for the syntax description.
	1.0(2)	This command was introduced.
	2.0(x)	Added the auto option to the channel-group keyword.

Usage Guidelines

You can specify a range of interfaces by entering the command with the following example format:

```
interface spacefc1/1 space-space5 space, spacefc2/5 space-space7
```

Use the `no shutdown` command to enable the interface.

The `channel-group auto` command enables autocreation of Port Channels. If autocreation of Port Channels is enabled for an interface, you must first disable this configuration before downgrading to earlier software versions or before configuring the interface in a manually configured channel group.

Examples

The following example configures ports 1 to 4 in Fibre Channel interface 9:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# int fc9/1 - 4
```

The following example enables the Fibre Channel interface:

```
switch# config terminal
switch(config)# interface fc1/1
switch(config-if)# no shutdown
```

The following example assigns the FICON port number to the selected Fibre Channel interface:

```
switch# config terminal
switch(config)# interface fc1/1
switch(config-if)# ficon portnumber 15
```

Related Commands

Command	Description
<code>show interface</code>	Displays an interface configuration for a specified interface.
<code>shutdown</code>	Disables and enables an interface.

interface fcip

To configure a Fibre Channel over IP Protocol (FCIP) interface, use the interface fcip command. To disable a FCIP interface, use the no form of the command.

```
interface fcip interface_number bport bport-keepalives channel-group number [force] fcdomain
rcf-reject vsan vsan-id ficon portnumber portnumber|fspf cost link-cost|dead-interval seconds|
hello-interval seconds|passive|retransmit-interval seconds vsan vsan-id passive-mode peer-info ipaddr
ip-address [port number] qos control control-value data data-value special-frame peer-wwn pwwn-id
tcp-connections number time-stamp [acceptable-diff number] use-profile profile-id
no interface fcip interface_number bport bport-keepalives channel-group number [force] fcdomain
rcf-reject vsan vsan-id ficon portnumber portnumber fspf cost link-cost|dead-interval seconds|
hello-interval seconds|passive|retransmit-interval seconds vsan vsan-id qos control-value data
data-value passive-mode peer-info ipaddr ip-address [port number] special-frame peer-wwn pwwn-id
tcp-connections number time-stamp [acceptable-diff number] use-profile profile-id
```

Syntax Description

interface-number	Configures the specified interface from 1 to 255.
bport	Sets the B port mode.
bport-keepalives	Sets the B port keepalive responses.
channel-group number	Specifies a PortChannel number from 1 to 128.
force	(Optional) Forcefully adds a port.
fcdomain	Enters the fcdomain mode for this FCIP interface
rcf-reject	Configures the rcf-reject flag.
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
ficon	Configures FICON parameters.
portnumber portnumber	Configures the FICON port number for this interface.
fspf	Configures FSPF parameters.
cost link-cost	Enters FSPF link cost. The range is 1 to 30000.
dead-interval seconds	Specifies the dead interval in seconds. The range is 1 to 65535.
hello-interval seconds	Specifies FSPF hello-interval in seconds. The range is 1 to 65535.
passive	Enables or disables FSPF on the interface.
retransmit-interval	Specifies FSPF retransmit interface in seconds. The range is 1 to 65535.
passive-mode	Configures a passive connection.
peer-info	Configures the peer information.
ipaddr ip-address	Specifies the peer IP address.

port number	(Optional) Specifies the peer port number. The range is 1 to 65535.
qos	Configures the differentiated services code point (DSCP) value to mark all IP packets.
control control-value	Specifies the control value for DSCP.
data data-value	Specifies the data value for DSCP.
special-frame	Configures special frames.
peer-wwn pwwn-id	Specifies the peer WWN for special frames.
switchport	Configures switchport parameters.
tcp-connections number	Specifies the number of TCP connection attempts. Valid values are 1 or 2.
time-stamp	Configures the time stamp.
acceptable-diff number	(Optional) Specifies the acceptable time difference for time stamps. The range is 1 to 60000.
use-profile profile-id	Specifies the interface using an existing profile ID. The range is 1 to 255.

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
1.1(1)	This command was introduced.
1.3(1)	Added the ficon portnumber subcommand.
2.0(x)	Added the qos subcommand.

Usage Guidelines

You can specify a range of interfaces by issuing a command with the following example format:
 interface fcip1space-space5space,spacefcip10space-space12space

Examples

The following example selects an FCIP interface and enters interface configuration submode:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fcip 1
switch(config-if)#
```

The following example assigns the FICON port number to the selected FCIP interface:

```
switch# config terminal
switch(config)# interface fcip 51
switch(config-if)# ficon portnumber 234
```

Related Commands

Command	Description
show interface fcip	Displays an interface configuration for a specified FCIP interface.

interface fc-tunnel

To configure a Fibre Channel tunnel and facilitate RSPAN traffic, use the interface fc-tunnel command. To remove a configured tunnel or revert to factory defaults, use the no form of the command.

```
interface fc-tunnel number destination ip-address | explicit-path path-name source ip-address
nointerface fc-tunnel number destination ip-address | explicit-path path-name source ip-address
```

Syntax Description	number	Specifies a tunnel ID range from 1 to 255.
	destination ip-address	Maps the IP address of the destination switch.
	explicit-path path-name	Specifies a name for the explicit path. Maximum length is 16 alphanumeric characters.
	source ip-address	Maps the IP address of the source switch.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example initiates the FC tunnel (100) in the source switch (switch S):

```
switch(config)# config terminal
switch(config)# interface fc-tunnel 100
switch(config-if)#
```

The following example maps the IP address of the source switch (switch S) to the FC tunnel (100):

```
switchS(config-if)# source 209.165.200.226
```

The following example maps the IP address of the destination switch (switch D) to the FC tunnel (100):

```
switch(config-if)# destination 209.165.200.227
```

The following example enables traffic flow through this interface:

```
switch(config-if)# no shutdown
```

The following example references the configured path in the source switch (switch S):

```
switch# config t
```

```
switch(config)# interface fc-tunnel 100
switch(config)# explicit-path Path1
```

Related Commands

Command	Description
fc-tunnel explicit-path	Configures a new or existing next-hop path.
show interface fc-tunnel	Displays an FC tunnel interface configuration for a specified interface.

interface gigabitethernet

To configure an Gigabit Ethernet interface, use the interface gigabitethernet command. To revert to the default values, use the no form of the command.

```
interface gigabitethernet slot/port cdp enable channel-group group-id [force] isns profile-name
nointerfacegigabitethernet slot/port cdp enable channel-group isns profile-name
```

Syntax Description	slot/port	Specifies a slot number and port number.
	cdp enable	Enables Cisco Discovery Protocol (CDP) configuration parameters.
	channel-group group-id	Adds to or removes from a PortChannel. The range is 1 to 128.
	force	(Optional) Forcefully adds a port.
	isns profile-name	Specifies the profile name to tag the interface. Maximum length is 64 characters.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(3a)	This command was introduced.
	1.1(1a)	Added the channel-group subcommand.
	1.3(1)	Added the isns subcommand.

Usage Guidelines You can specify a range of interfaces by issuing a command with the following example format:
 interfacegigabitethernet1/1space-space2space,space gigabitethernet3/1space-space2

Examples The following example configures the Gigabit Ethernet interface at slot 4 port 1:

```
switch# config terminal
switch(config)# interface gigabitethernet 4/1
switch(config-if)#
```

The following example enters a IP address and subnet mask for the selected Gigabit Ethernet interface:

```
switch(config-if)# ip address 209.165.200.226 255.255.255.0
```

The following example changes the IP maximum transmission unit (MTU) value for the selected Gigabit Ethernet interface:

```
switch(config-if)# switchport mtu 3000
```

The following example creates a VR ID for the selected Gigabit Ethernet interface, configures the virtual IP address for the VR ID (VRRP group), and assigns a priority:

```
switch(config-if)# vrrp 100
switch(config-if-vrrp)# address 209.165.200.226
switch(config-if-vrrp)# priority 10
```

The following example adds the selected Gigabit Ethernet interface to a channel group. If the channel group does not exist, it is created, and the port is shut down:

```
switch(config-if)# channel-group 10

gigabitethernet 4/1 added to port-channel 10 and disabled
please do the same operation on the switch at the other end of the port-channel, then do
"no shutdown" at both ends to bring them up.
```

Related Commands

Command	Description
show interface	Displays an interface configuration for a specified interface.

interface ioa

To configure an IOA interface, use the `interface ioa` command. To disable this feature, use the `no` form of the command.

```
interface ioa {slot/port}
no interface ioa {slot/port}
```

Syntax Description

slot /port	Specifies IOA slot or port number. The range is from 1 to 16 for the slot and for the port. The range is from 1 to 4.
------------	---

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure an IOA interface for a specific cluster:

```
switch(config)# interface ioa2/1
```

```
2009 May 19 18:33:08 sjc-sw2 %IOA-2-LOG_LIBBASE_SVC_LICENSE_ON_GRACE_PERIOD: (pid=8582) No
license. Feature will be shut down after a grace period of approximately 107 days
```

```
switch(config-if)# no shutdown
```

Related Commands

Command	Description
show ioa cluster summary	Displays the summary of all the IOA cluster.

interface iscsi

To configure an iSCSI interface, use the `interface iscsi` command. To revert to default values, use the `no` form of the command.

```
interface iscsi slot/port mode pass-thru | store-and-forward | cut-thru tcp qos value
no interface iscsi slot/port mode pass-thru | store-and-forward | cut-thru tcp qos value
```

slot/ port	Specifies a slot number and port number.
mode	Configures a forwarding mode.
pass-thru	Forwards one frame at a time.
store-and-forward	Forwards data in one assembled unit (default).
cut-thru	Forwards one frame at a time without waiting for the exchange to complete.
tcp qos value	Configures the differentiated services code point (DSCP) value to apply to all outgoing IP packets. The range is 0 to 63.

Command Default

Disabled.

The TCP QoS default is 0.

The forwarding mode default is store-and-forward.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(1)	This command was introduced.
2.1(1)	Added the cut-thru option for the mode subcommand.

Usage Guidelines

To configure iSCSI interface, enable iSCSI using the `iscsi enable` command.

You can specify a range of interfaces by issuing a command with the following example format:

```
interface iscsi space fc1/1space -space 5space ,space fc2/5space -space 7
```

Examples

The following example enables the iSCSI feature:

```
switch# config t
switch(config)# iscsi enable
```

The following example enables the store-and-forward mode for iSCSI interfaces 9/1 to 9/4:

```
switch(config)# interface iscsi 9/1 - 4
switch(config-if)# mode store-and-forward
```

The following example reverts to using the default pass-thru mode for iSCSI interface 9/1:

```
switch(config)# interface iscsi 9/1
switch(config-if)# mode pass-thru
```

Related Commands

Command	Description
iscsi enable	Enables iSCSI.
show interface	Displays an interface configuration for a specified interface.

interface mgmt

To configure a management interface, use the interface mgmt command in configuration mode.

```
interface mgmt number
```

Syntax Description	number	Specifies the management interface number which is 0.
---------------------------	--------	---

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines When you try to shut down a management interface(mgmt0), a follow-up message confirms your action before performing the operation. Use the force option to bypass this confirmation, if required.

Examples The following example configures the management interface, displays the options available for the configured interface, and exits to configuration mode:

```
switch# config terminal
switch(config)#
switch(config)# interface mgmt 0
switch(config-if)# exit
switch(config)#
```

The following example shuts down the interface without using the force option:

```
switch# config terminal
switch(config)# interface mgmt 0
switch(config-if)# shutdown
Shutting down this interface will drop all telnet sessions.
Do you wish to continue (y/n)? y
```

The following example shuts down the interface using the force option:

```
switch# config terminal
switch(config)# interface mgmt 0
switch(config-if)# shutdown force
switch(config-if)#
```

Related Commands	Command	Description
	show interface mgmt	Displays interface configuration for specified interface.

interface port-channel

To configure a PortChannel interface, use the interface port-channel command. To remove this configuration, use the no form of the command.

```
interface port-channel number channel mode active fcdomain rcf-reject vsan vsan-id fspf [cost
link_cost | dead-interval seconds | ficon portnumber portnumber | hello-interval seconds | isns profile-name
| passive | retransmit-interval seconds]
no interface port-channel number
```

Syntax Description

number	Specifies the PortChannel number. The range is 1 to 128.
channel mode active	Configures the channel mode for the PortChannel interface.
fcdomain	Specifies the interface subtype.
rcf-reject	Configures the rcf-reject flag.
vsan	Specifies the VSAN range.
vsan-id	Specifies the ID of the VSAN is from 1 to 4093.
fsfp	Configures the FSPF parameters.
cost	(Optional) Configures the FSPF link cost.
link_cost	Specifies the FSPF link cost which is 1-30000.
dead-interval	(Optional) Configures the FSPF dead interval.
seconds	Specifies the dead interval (in seconds) from 2-65535.
ficon	(Optional) Configures the FICON parameters.
portnumber portnumber	(Optional) Configures the FICON port number for this interface.
hello-interval	(Optional) Configures FSPF hello-interval.
seconds	Specifies the hello interval (in seconds) from 1-65535.
isns	(Optional) Tags this interface to the Internet Storage Name Service (iSNS) profile.
profile-name	Specifies the profile name to tag the interface.
passive	(Optional) Enable/disable FSPF on the interface.
retransmit-interval	(Optional) Configures FSPF retransmit interface.
seconds	Specifies the retransmit interval (in seconds) from 1-65535.

Command Default

Prior to Cisco MDS NX-OS Release 8.3(1), the CLI and the Device Manager create the PortChannel in On mode in the NPIV core switches and Active mode on the NPV switches. DCNM-SAN creates all PortChannels in Active mode.

From Cisco MDS NX-OS Release 8.4(1), the CLI and the Device Manager create the PortChannel in Active mode in the NPIV core switches.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
1.3(1)	Added channel mode active subcommand.
8.4(1)	This command was modified to change the default PortChannel mode from On to Active.

Usage Guidelines

Prior to Cisco MDS NX-OS Release 8.3(1), the CLI and the Device Manager create the PortChannel in On mode in the NPIV core switches and Active mode on the NPV switches. DCNM-SAN creates all PortChannels in Active mode. We recommend that you create PortChannels in Active mode.

From Cisco MDS NX-OS Release 8.4(1), the CLI and the Device Manager create the PortChannel in Active mode in the NPIV core switches.

Examples

The following example enters configuration mode and configures a PortChannel interface:

```
switch# config terminal
switch(config)# interface port-channel 32
switch(config-if)#
```

The following example assigns the FICON port number to the selected PortChannel port:

```
switch# config terminal
switch(config)# interface Port-channel 1
switch(config-if)# ficon portnumber 234
```

Related Commands

Command	Description
show interface	Displays interface configuration for specified interface.

interface sme

To configure the Cisco SME interface on a switch, use the interface sme command. To remove the interface, use the no form of the command,

```
interface sme slot /port
no interface sme slot /port
```

Syntax Description

slot	Identifies the number of the MPS-18/4 module slot.
port	Identifies the number of the Cisco SME port.

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
3.2(2)	This command was introduced.

Usage Guidelines

To use this command, clustering must be enabled using the cluster enable command and Cisco SME services must be activated using the sme enable command.

Once you have configured the interface, use the no shutdown command to enable the interface.

To delete the Cisco SME interface, you must first remove the switch from the cluster. Use the no sme cluster command to remove the switch from the cluster and then use the no interface command to delete the interface.

The interface commands are available in the (config-if) submode.

Examples

The following example configures and enables the Cisco SME interface on the MPS-18/4 module slot and the default Cisco SME port:

```
switch# config terminal
switch(config)# interface sme 3/1
switch(config-if)# no shutdown
```

Related Commands

Command	Description
show interface sme	Displays interface information.
shutdown	Enables or disables an interface.

interface sme (Cisco SME cluster node configuration submode)

To add Cisco SME interface from a local or a remote switch to a cluster, use the interface sme command. To delete the interface, use the no form of the command.

```
interface sme {slot/port} [force]
no interface sme {slot/port} [force]
```

Syntax Description

slot	Identifies the MPS-18/4 module slot.
port	Identifies the Cisco SME port.
force	(Optional) Forcibly clears the previous interface context in the interface.

Command Default

Disabled.

Command Modes

Cisco SME cluster node configuration submode.

Command History

Release	Modification
3.2(2)	This command was introduced.

Usage Guidelines

You have to first configure a node using the fabric-membership command before this command can be executed.

To use this command, clustering must be enabled using the cluster enable command and Cisco SME services must be activated using the sme enable command.

To delete the Cisco SME interface, first remove the switch from the cluster. Use the no sme cluster command to remove the switch from the cluster and then use the no interface command to delete the interface.

Examples

The following example specifies the fabric to which the node belongs and then adds the Cisco SME interface (4/1) from a local switch using the force option:

```
switch# config terminal
switch(config)# sme cluster clustername1
switch(config-sme-cl)# node local
switch(config-sme-cl-node)# fabric-membership f1
switch(config-sme-cl-node)# interface sme 4/1 fabric sw-xyz
```

The following example specifies the fabric to which the node belongs and then adds the Cisco SME interface (4/1) from a remote switch using the force option:

```
switch# config terminal
switch(config)# sme cluster clustername1
switch(config-sme-cl)# node 171.71.23.33
switch(config-sme-cl-node)# fabric-membership f1
switch(config-sme-cl-node)# interface sme 4/1 fabric sw-xyz
```

Related Commands

Command	Description
fabric-membership	Adds the node to a fabric.
show interface	Displays Cisco SME interface details.

interface vsan

To configure a VSAN interface, use the interface vsan command. To remove a VSAN interface, use the no form of the command.

```
interface vsan vsan-id
no interface vsan vsan-id
```

Syntax Description	vsan-id Specifies the VSAN ID. The range is 1 to 4093.
---------------------------	--

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example selects a VSAN interface and enters interface configuration submode:

```
switch# config terminal
switch(config)# interface vsan 1
switch(config-if)#
```

Related Commands	Command	Description
	show interface	Displays interface configuration for specified interface.

ioa cluster

To configure an IOA cluster, use the `ioa cluster` command. To disable this feature, use the `no` form of the command.

```
ioa cluster {cluster name}
no ioa cluster {cluster name}
```

Syntax Description	cluster name	Specifies an IOA cluster name.
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Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to configure an IOA cluster:

```
switch(config)# ioa cluster tape_vault
switch#(config-ioa-cl)#
```

Related Commands	Command	Description
	show ioa cluster	Displays detailed information of all the IOA cluster.

ioa site-local

To configure an IOA site, use the `ioa site-local` command. To disable this feature, use the `no` form of the command.

```
ioa site-local {site name}
no ioa site-local {site name}
```

Syntax Description

site name	Specifies an IOA site name. The maximum name length is restricted to 31 alphabetical characters.
-----------	--

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure an IOA local site:

```
switch# config t
switch(config)# ioa site-local SJC
switch#(config)#
```

Related Commands

Command	Description
ioa enable	Enables or disables the I/O Accelerator.

ioa-ping

To validate the connectivity between the master switch and the specified target device (for a specific flow), use the `ioa-ping` command.

```
ioa-ping host hpwwn target tpwwn vsan vid interface if0
```

Syntax Description

host	Specifies the host address.
hpwwn	Specifies the host PWWN for the flow.
target	Specifies the target address.
tpwwn	Specifies the target PWWN for the flow.
vsan	Specifies the VSAN.
vid	Specifies the VSAN ID. The range is from 1 to 4093.
interface	Specifies the interface associated with the flow.
if0	Specifies the ioa interface for the flow over which the test unit ready commands will be sent.

Command Default

Prompts for user input.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 6.2(5)	This command was introduced.

Usage Guidelines

None.



Note

`ioa-ping` will work from 6.2(5) onwards and the command has to be executed from IOA master switch only.

Examples

The following example shows how to validate the connectivity between the master switch and the specified target device:

```
switch# ioa-ping host 10:00:00:00:11:a1:01:0a target 50:0a:09:80:11:4b:01:0a vsan 11 interface
ioa 1/1

1: Round Trip Time   inf msec Device status 0
2: Round Trip Time   inf msec Device status 0
3: Round Trip Time   inf msec Device status 0
4: Round Trip Time   inf msec Device status 0
5: Round Trip Time   inf msec Device status 0
```

```
5 transmitted, 5 received ,rtt min/avg/max = inf/ inf/ inf (msec)
switch#
```

Related Commands

Command	Description
show ioa cluster	Displays detailed information of all the IOA cluster.

ip access-group

To apply an access list to an interface, use the ip access-group command in interface mode. Use the no form of this command to negate a previously issued command or revert to factory defaults.

```
ip access-group access-list-name [in | out]
```

Syntax Description	access-list-name	Specifies the IP access list name. The maximum length is 64 alphanumeric characters and the text is case insensitive.
	in	(Optional) Specifies that the group is for ingress traffic.
	out	(Optional) Specifies that the group is for egress traffic.

Command Default The access list is applied to both ingress and egress traffic.

Command Modes Interface mode.

Command History	Release	Modification
	1.2(1)	This command was introduced.

Usage Guidelines The ip access-group command controls access to an interface. Each interface can only be associated with one access list. The access group becomes active immediately.

We recommend creating all rules in an access list, before creating the access group that uses that access list.

If you create an access group before an access list, the access list is created and all packets in that interface are dropped, because the access list is empty.

The access-group configuration for the ingress traffic applies to both local and remote traffic. The access-group configuration for the egress traffic applies only to local traffic. You can apply a different access list for each type of traffic.

Examples

The following example creates an access group called aclPermit for both the ingress and egress traffic (default):

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ip access-list aclPermit permit ip any any
switch(config)# interface GigabitEthernet 3/1
switch(config-if)# ip access-group aclPermit
```

The following example deletes the access group called aclPermit:

```
switch(config-if)# no ip access-group aclPermit
```

The following example creates an access group called aclDenyTcp (if it does not already exist) for ingress traffic:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ip access-list aclDenyTcp deny tcp any any
switch(config)# interface gigabitethernet 3/1
switch(config-if)# ip access-group aclDenyTcp in
```

The following example deletes the access group called aclDenyTcp for ingress traffic:

```
switch(config-if)# no ip access-group aclDenyTcp in
```

The following example creates an access list called aclPermitUdp (if it does not already exist) for local egress traffic:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ip access-list aclPermitUdp permit udp 192.168.32.0 0.0.7.255 any
switch(config)# interface gigabitethernet 3/1
switch(config-if)# ip access-group aclPermitUdp out
```

The following example removes the access list called aclPermitUdp for local egress traffic:

```
switch(config-if)# no ip access-group aclPermitUdp out
```

Related Commands

Command	Description
ip access-list	Configures IP access control lists.
show ip access-list	Displays the IP-ACL configuration information.

ip access-list

IP access control lists can be used to filter IP packets through an interface. To configure IPv4 access control lists (ACLs), use the ip access-list command. To remove a line from an access list or completely remove the access list, use the corresponding no form of this command.

```
ip access-list name permit | deny protocol any | src-ip src-mask [ source-ports ] any |
dst-ip dst-mask [ destination-ports ] [ options ]
no ip access-list name permit | deny protocol any | src-ip src-mask [ source-ports ] any
| dst-ip dst-mask [ destination-ports ] [ options ]
no ip access-list name
```

where:

- protocol—{icmp | ip | tcp [flags {[ack]} {[all]} {[fin]} {[psh]} {[rst]} {[syn]} {[urg]}]} | udp | protocol-num}
- source-ports—[eq port {dns | ftp | ftp-data | http | ntp | radius | sftp | smtp | snmp | snmp-trap | ssh | syslog | tacacs-ds | tacacs-plus | telnet | tftp | www | wbem-http | wbem-https | port-num} | gt port port-num-low | lt port port-num-high | range port port-num-low port-num-high]
- destination-ports—[eq port {dst_dns | dst_ftp | dst_ftp-data | dst_http | dst_ntp | dst_radius | dst_sftp | dst_smtp | dst_snmp | dst_snmp-trap | dst_ssh | dst_syslog | dst_tacacs-ds | dst_tacacs-plus | dst_telnet | dst_tftp | dst_www | dst_wbem-http | dst_wbem-https | port-num} | gt port port-num-low | lt port port-num-high | range port port-num-low port-num-high]
- options—[established | icmp-type {echo | echo-reply | redirect | time-exceeded | unreachable | traceroute | icmp-msg-num} [icmp-code icmpcode-num]] [tos {delay | throughput | reliability | monetary-cost | normal service}] [log-deny]

Syntax Description

name	Specifies an access list name. The maximum length is 28 alphanumeric characters.
deny	Drops the packet if the conditions match.
permit	Forwards the packet if the conditions match.
protocol	Specifies the name or number (integer range from 0 to 255) of an IP protocol. The IP protocol name can be icmp, ip, tcp, or udp.

<p>flags flag-set</p>	<p>(Optional) Specifies TCP header flags to match. Multiple flags may be specified, separated by spaces.</p> <p>The available flag names are:</p> <ul style="list-style-type: none"> all—Any TCP flag. psh—The Push flag. It indicates the data should be immediately pushed through to the receiving user. fin—The Finish flag. It is used to clear connections. rst—Reset flag. It indicates that the receiver should delete the connection without further interaction. syn—The Synchronize flag. It is used to establish connections. urg—The Urgent flag. It indicates that the urgent field is meaningful and must be added to the segment sequence number.
<p>any</p>	<p>Specifies any source or destination IP address. The any keyword is synonymous to the address 0.0.0.0 and wildcard mask 255.255.255.255.</p>
<p>src-ip src-mask</p>	<p>Specifies the network from which the packet is sent. Mask bits are 0 for match and 1 for don't care.</p>
<p>dst-ip dst-mask</p>	<p>Specifies the network to which the packet is to be sent. Mask bits are 0 for match and 1 for don't care.</p>

<p>source-ports</p>	<p>Specifies a set of source ports to match.</p> <p>The syntax of this block is:</p> <p>operator port-set</p> <p>The following operators are available:</p> <ul style="list-style-type: none"> eq— equal to gt— greater than and including lt— less than and including range— a range of source ports (inclusive) <p>The port-set is a single value for the eq, gt, lt operators and a pair of space separated ports, in low port high port order, for the range operator. Ports may be specified as a number or a name. The range for numbers is 0 to 65535.</p> <p>The available names are as follows.</p> <p>TCP:</p> <ul style="list-style-type: none"> ftp-data (20) ftp (21) ssh (22) telnet (23) smtp (25) tacacs-plus (49) tacacs-ds (65) www (80) sftp (115) http (143) radius (1812) wbem-http (5988) wbem-https (5989) <p>UDP:</p> <ul style="list-style-type: none"> dns (53) tftp (69) ntp (123) snmp (161) snmp-trap (162) syslog (514)
---------------------	--

destination-ports	<p>Specifies a set of destination ports to match.</p> <p>The syntax of this block is:</p> <pre>operator port-set</pre> <p>The following operators are available:</p> <ul style="list-style-type: none">eq— equal togt— greater than and includinglt— less than and includingrange— a range of source ports (inclusive) <p>The port-set is a single value for the eq, gt, lt operators and a pair of space separated ports, in low port high port order, for the range operator. Ports may be specified as a number or a name. The range for numbers is 0 to 65535.</p> <p>The available names are as follows.</p> <p>TCP:</p> <ul style="list-style-type: none">dst_ftp-data (20)dst_ftp (21)dst_ssh (22)dst_telnet (23)dst_smtp (25)dst_tacacs-plus (49)dst_tacacs-ds (65)dst_www (80)dst_sftp (115)dst_http (143)dst_radius (1812)dst_wbem-http (5988)dst_wbem-https (5989) <p>UDP:</p> <ul style="list-style-type: none">dst_dns (53)dst_tftp (69)dst_ntp (123)dst_snmp (161)dst_snmp-trap (162)dst_syslog (514)
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icmp-type icmp-value	Optional) Specifies an ICMP message type to match. icmp-value may be a number or a name. The range for numbers is 0 to 255. The names are: echo-reply (0) unreachable (3) redirect (5) echo (8) time-exceeded (11) traceroute (30)
icmp-code icmptype-num	(Optional) Specifies an ICMP message code to match as a number. The range of icmptype-num is from 0 to 255.
established	(Optional) Indicates an established connection for the TCP protocol. A match occurs if the TCP datagram has the ACK, FIN, PSH, RST, or URG control bits set. The nonmatching case is that of the initial TCP datagram to form a connection.
tos tos-value	(Optional) Specifies the name of a type of service level to match. The names are: normal-service (0) monetary-cost (1) reliability (2) throughput (4) delay (8)
log-deny	(Optional) Logs an information level syslog message for each denied packet.

Command Default

No IP access lists are configured.

Command Modes

Configuration mode (config)

Command History

Release	Modification
1.2(1)	This command was introduced.

Usage Guidelines

An ACL is applied to each packet, starting at the first ACL rule. Each subsequent rule in the ACL is applied until there is a match. No further rules are applied after this. If there is no match the default rule is applied. Thus, it is important that rules are configured in the right order to achieve the desired results. Generally, 'deny' rules should be configured before 'permit' rules to ensure packets are dropped before matching an unintended 'permit' rule.

IP ACLs use an address and a wildcard mask to specify a range of IP addresses. The mask is applied to the specified address where bits in the mask that are 0 mean the corresponding bits in the specified address are

used as written (they cannot change), including 0s. Bits that are 1 in the mask mean the corresponding bits in the address may have any value (they can change and are wild). This is the inverse behaviour of subnet masks.

Using the log-deny option at the end of the individual ACL entries shows the ACL number and whether the packet was permitted or denied, in addition to port-specific information. This option causes an information logging message about the packet that matches the dropped entry (or entries).

If the ACL specified does not exist, it is created when you enter this command. If the ACL already exists, new configuration commands are added to the end of it.

Each interface has a default action that is used when all entries in an IP ACL have been checked and there is no match. For management and non-IPS Gigabit Ethernet interfaces, this is an implicit deny ip any any action at the end of the IP ACL which will drop the packet. For IP Storage (IPS) interfaces, this is an implicit permit ip any any, which allows any IPS traffic. You must explicitly add a deny ip any any rule at the end of IP ACL for IPS interfaces to match the behaviour of other interfaces.

Table 2: Unsupported Keyword Combinations

Protocol Keyword	Unsupported Keywords
ip	eq established gt lt range icmp-type
icmp	eq established gt lt range
udp	established icmp-type
tcp	icmp-type

Examples

The following example configures an IP ACL called aclPermit and permits IP traffic from any source address to any destination address:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ip access-list aclPermit permit ip any any
```

The following example removes the IP ACL called aclPermit:

```
switch# config terminal
```


Enter configuration commands, one per line. End with CNTL/Z.
 switch(config)# **no ip access-list aclPermit**

The following example appends a rule to the IP ACL called aclPermit to deny TCP traffic from any source address to any destination address:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ip access-list aclPermit deny tcp any any
```

The following example appends a rule to the IP ACL called aclPermitUdp that permits source addresses of 192.168.32.0 to 192.168.39.255. Subtracting 255.255.248.0 (subnet mask) from 255.255.255.255 yields 0.0.7.255:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ip access-list aclPermitUdp permit udp 192.168.32.0 0.0.7.255 any
```

The following example appends a rule to the IP ACL called aclPermitIpToServer that permits all IP traffic from and to the specified networks:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ip access-list aclPermitIpToServer permit ip 10.1.1.0 0.0.0.255 172.16.1.0 0.0.0.255
```

The following example appends a rule to the IP ACL called aclDenyTcpIpPrt5 that denies TCP traffic from port 5 and any source address in the range 1.2.3.0 to 1.2.3.255 to any destination:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/
switch(config)# ip access-list aclDenyTcpIpPrt5 deny tcp 1.2.3.0 0.0.0.255 eq port 5 any
```

The following example removes this entry from the IP ACL:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/
switch(config)# no ip access-list aclDenyTcpIpPrt5 deny tcp 1.2.3.0 0.0.0.255 eq port 5 any
```

Related Commands

Command	Description
ip access-group	Applies an IPv4 ACL to an interface.
ipv6 access-list	Configures an IPv6 access control list.
show ip access-list	Displays the configured IPv4 ACLs information.

ip address (FCIP profile configuration submode)

To assign the local IP address of a Gigabit Ethernet interface to the FCIP profile, use the ip address command. To remove the IP address, use the no form of the command.

```
ip address address
no ip address address
```

Syntax Description	address	Specifies the IP address.
---------------------------	---------	---------------------------

Command Default Disabled.

Command Modes FCIP profile configuration submode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines To create a FCIP profile, you must assign a local IP address of a Gigabit Ethernet interface to the FCIP profile.

Examples The following example assigns the local IP address of a Gigabit Ethernet interface to the FCIP profile:

```
switch# config terminal
switch(config)# fcip profile 5
switch(config-profile)# ip address 209.165.200.226
```

Related Commands	Command	Description
	interface fcip interface_number use-profile profile-id	Configures the interface using an existing profile ID from 1 to 255.
	show fcip profile	Displays information about the FCIP profile.

ip address (interface configuration)

To assign an IP address to a Gigabit Ethernet interface, use the `ip address` command in interface configuration submode. To remove the IP address, use the `no` form of the command.

```
ip address address netmask
no ip address address netmask
```

Syntax Description	Parameter	Description
	address	Specifies the IP address.
	netmask	Specifies the network mask.

Command Default None.

Command Modes Interface configuration submode.

Command History	Release	Modification
	1.1(2)	This command was introduced.

Usage Guidelines None.

Examples The following example assigns an IP address to a Gigabit Ethernet interface:

```
switch# config terminal
switch(config)# interface gigabitethernet 1/2
switch(config-profile)# ip address 10.5.1.1 255.255.0.0
```

Related Commands	Command	Description
	<code>interface fcip interface_number use-profile profile-id</code>	Configures the interface using an existing profile ID from 1 to 255.
	<code>show fcip profile</code>	Displays information about the FCIP profile.
	<code>show interface fcip</code>	Displays an interface configuration for a specified FCIP interface.

ip default-gateway

To configure the IP address of the default gateway, use the ip default-gateway command. To disable the IP address of the default gateway, use the no form of the command.

```
ip default-gateway destination-ip-address [interface cpp slot_number/processor-number/vsan-id]
no ip default-gateway destination-ip-address [interface cpp slot_number/processor-number/vsan-id]
```

Syntax Description

destination-ip-address	Specifies the IP address,
interface	(Optional) Configures an interface.
cpp	(Optional) Specifies a virtualization IPFC interface.
slot	(Optional) Specifies a slot number of the ASM.
processor-number	(Optional) Specifies the processor number for the IPFC interface. The current processor number is always 1.
vsan-id	(Optional) Specifies the ID of the management VSAN. The range 1 to 4093.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example configures the IP default gateway to 1.1.1.4:

```
switch# config terminal
switch(config)# ip default-gateway 1.1.1.4
```

Related Commands

Command	Description
show ip route	Displays the IP address of the default gateway.

ip default-network

To configure the IP address of the default network, use the `ip default-network` command in configuration mode. To disable the IP address of the default network, use the `no` form of the command.

```
ip default-network ip-address
no ip default-network ip-address
```

Syntax Description

ip-address	Specifies the IP address of the default network.
------------	--

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example configures the IP address of the default network to 1.1.1.4:

```
switch# config terminal
switch(config)# ip default-network 209.165.200.226
switch(config)# ip default-gateway 209.165.200.227
```

Related Commands

Command	Description
show ip route	Displays the IP address of the default gateway.

ip (destination-group)

To configure an IPv4 or IPv6 destination address for a destination group, use the ip command. To remove the destination address, use the no form of this command.

ip | ipv6 address address port number [protocol procedural-protocol encoding encoding-protocol]

Syntax Description

address address	Destination IPv4 or IPv6 address.
port number	Destination port number.
protocol procedural-protocol	Transport protocol. gRPC is the supported transport protocol.
encoding encoding-protocol	Encoding format. Google Protocol Buffers (GPB) is the supported encoding format.

Command Default

IP address is not configured for a destination group.

Command Modes

Telemetry destination group configuration mode (conf-tm-dest)

Command History

Release	Modification
8.3(1)	This command was introduced.

Usage Guidelines

When the destination group is linked to a subscription node, telemetry data is sent to the IP address and port specified in the profile.

Examples

This example shows how to configure an IPv4 and IPv6 address to a destination group with the default transport protocol and default encoding:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# destination-group 100
switch(conf-tm-dest)# ip address 1.2.3.4 port 50003 protocol gRPC encoding GPB
switch(conf-tm-dest)# destination-group 100
switch(conf-tm-dest)# ipv6 address 1::1::1:1 port 50009 protocol gRPC encoding GPB
```

This example shows how to remove an IPv4 and IPv6 address from a destination group with the default transport protocol and default encoding:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# destination-group 100
switch(conf-tm-dest)# no ip address 1.2.3.4 port 50003 protocol gRPC encoding GPB
switch(conf-tm-dest)# destination-group 100
switch(conf-tm-dest)# no ipv6 address 1::1::1:1 port 50009 protocol gRPC encoding GPB
```

Related Commands

Command	Description
destination-group	Creates a destination group and enters destination group configuration mode.
feature telemetry	Enables the SAN Telemetry Streaming feature.
show running-config telemetry	Displays the existing telemetry configuration.
show telemetry	Displays telemetry configuration.
telemetry	Enters SAN Telemetry Streaming configuration mode.

ip domain-list

To configure or un-configure one or more domain names, use the ip domain-list command in configuration mode. To disable the IP domain list, use the no form of the command.

```
ip domain-list domain-name
no ip domain-list domain-name
```

Syntax Description

domain-name	Specifies the domain name for the IP domain list. Maximum length is 80 characters.
-------------	--

Command Default

If there is a domain list, the default domain name is not used.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

When “ping dino” is initiated, IP stack will append dino.cisco.com (whatever configured in domain-name) first for Name resolution. If that doesn’t succeed, it will try with domain-list.



Note

If there is no domain list, the domain name that you specified with the ip domain-name global configuration command is used. More than one "ip domain-list "command can be entered and they will be tried in order.

Examples

The following example configures the IP domain list:

```
switch# config terminal
switch(config)# ip domain-list juniper.com
```

Related Commands

Command	Description
ip domain-lookup	Enables the DNS hostname to address translation.
ip name-server	Configures a list of name servers.
show ip route	Displays the IP address of the default gateway.

ip domain-lookup

To enable the DNS hostname to address translation, use the `ip domain-lookup` command in configuration mode. Use the `no` form of this command to disable this feature.

```
ip domain-lookup
no ip domain-lookup
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines Instead of IP addresses, you can configure the switch using meaningful names. When names are configured the switch automatically looks up the name to get its corresponding IP address.



Note In addition to `ip domain-lookup`, other commands need to be entered as well such as "ip name-server" and optionally, "ip domain-name" and "ip domain-list".

Examples

The following example configures a DNS server lookup feature:

```
switch# config terminal
switch(config)# ip domain-lookup
```

Related Commands	Command	Description
	<code>show ip route</code>	Displays the IP address of the default gateway.
	<code>ip name-server</code>	Configures a list of name servers.

ip domain-name

To configure a domain name, use the `ip domain-name` command in configuration mode. To delete a domain name, use the `no` form of the command.

```
ip domain-name domain-name
no ip domain-name domain-name
```

Syntax Description

domain-name	Specifies the domain name.
-------------	----------------------------

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

When “ping dino” is initiated, IP stack will append `dino.cisco.com` (whatever configured in `domain-name`) first for name resolution. If that doesn’t succeed, it will try with `domain-list`.

Examples

The following example configures a domain name:

```
switch# config terminal
switch(config)# ip domain-name cisco.com
```

Related Commands

Command	Description
<code>ip-name server</code>	Configures one or more IP name servers.
<code>ip domain-list</code>	Configure or un-configure one or more domain names.
<code>ip domain-lookup</code>	Enables the DNS hostname to address translation.
<code>show ip route</code>	Displays the IP address of the default gateway.

ip name-server

To configure one or more IP name servers, use the ip name-server command in configuration mode. To disable this feature, use the no form of the command.

```
ip name-server ip-address
no ip name-server ip-address
```

Syntax Description

ip-address	Specifies the IP address for the name server.
------------	---

Command Default

The default is no name servers are configured and no IP name resolution is performed.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

You can configure a maximum of six servers. By default, no server is configured.

Examples

The following example configure a name server with an IP address of 209.165.200.226:

```
switch# config terminal
switch(config)# ip name-server 209.165.200.226
```

The following example specifies the first address (209.165.200.226) as the primary server and the second address (209.165.200.227) as the secondary sever:

```
switch(config)# ip name-server 209.165.200.226 209.165.200.227
```

The following example deletes the configured server(s) and reverts to factory default:

```
switch(config)# no ip name-server
```

Related Commands

Command	Description
ip domain-lookup	Enables the DNS hostname to address translation.
ip domain-list	Configure or un-configure one or more domain names.
ip name-server	Configures one or more IP name servers.
show ip route	Displays the IP address of the default gateway.

ip route

To configure a static route, use the ip route command in configuration mode.

```
ip route ip-address subnet-mask [nexthop_ip-address] [interface gigabitethernet slot /port|mgmt 0
|port-channel channel-id|vsan vsan-id|distance distance-number]
no ip route ip-address subnet-mask [nexthop_ip-address] [interface gigabitethernet slot /port|mgmt
0|port-channel channel-id|vsan vsan-id|distance distance-number]
```

Syntax Description

ip-address	Specifies the IP address for the route.
subnet-mask	Specifies the subnet mask for the route.
nexthop_ip-address	(Optional) Specifies the IP address of the next hop switch.
interface	(Optional) Configures the interface associated with the route.
gigabitethernet slot /port	Specifies a Gigabit Ethernet interface at a port and slot.
mgmt 0	Specifies the management interface (mgmt 0).
port-channel channel-id	Specifies a PortChannel interface. The range is 1 to 128.
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
distance distance-number	(Optional) Specifies the distance metric for this route. It can be from 0 to 32766.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure a static route:

```
switch# config terminal
switch(config)# IP route 10.0.0.0 255.0.0.0 20.20.20.10 distance 10 interface vsan 1
```

Related Commands

Command	Description
show ip route	Displays the IP address routes configured in the system.

ip routing

To enable the IP forwarding feature, use the ip routing command in configuration mode. To disable this feature, use the no form of the command.

```
ip routing
no ip routing
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example enables the IP forwarding feature:

```
switch# config terminal
switch(config)# ip routing
```

Command	Description
show ip routing	Displays the IP routing state.

ip-compression

To enable compression on the FCIP link, use the ip-compression command in interface configuration submode. To disable compression, use the no form of the command.

```
ip-compression [auto | mode1 | mode2 | mode3]
no ip-compression [auto | mode1 | mode2 | mode3]
```

Syntax Description

auto	(Optional) Enables the automatic compression setting.
mode1	(Optional) Enables fast compression for the following high bandwidth links: PS-4 and IPS-8, less than 100 Mbps MPS-14/2, up to 1 Gbps
mode2	(Optional) Enables moderate compression for medium bandwidth links less than 25 Mbps.
mode3	(Optional) Enables compression for bandwidth links less than 10 Mbps.

Command Default

Disabled.

Command Modes

Interface configuration submode.

Command History

Release	Modification
1.3(1)	This command was introduced.
2.0(x)	Changed the keywords from high-throughput and high-comp-ratio to mode1, mode2, and mode3.

Usage Guidelines

When no compression mode is entered in the command, the default is auto.

The FCIP compression feature introduced in Cisco SAN-OS Release 1.3 allows IP packets to be compressed on the FCIP link if this feature is enabled on that link. By default the FCIP compression is disabled. When enabled, the software defaults to using the auto mode (if a mode is not specified).

With Cisco SAN-OS Release 2.0(1b) and later, you can configure FCIP compression using one of the following modes:

- mode1 is a fast compression mode for high bandwidth links (> 25 Mbps).
- mode2 is a moderate compression mode for moderately low bandwidth links (between 10 and 25 Mbps).
- mode3 is a high compression mode for low bandwidth links (< 10 Mbps).
- auto (default) mode determines the appropriate compression scheme based on the bandwidth of the link (the bandwidth of the link configured in the FCIP profile's TCP parameters).

The IP compression feature behavior differs between the IPS module(s) and the MPS-14/2 module. While mode2 and mode3 perform software compression in both modules, mode1 performs hardware-based compression in MPS-14/2 modules, and software compression in IPS-4 and IPS-8 modules.

In Cisco MDS SAN-OS Release 2.1(1a) and later, the auto mode option uses a combination of compression modes to effectively utilize the WAN bandwidth. The compression modes change dynamically to maximize the WAN bandwidth utilization.

Examples

The following example enables faster compression:

```
switch# config terminal
switch(config) interface fcip 1
switch(config-if) # ip-compression model
```

The following example enables automatic compression by default:

```
switch(config-if) # ip-compression
```

The following example disables compression:

```
switch(config-if) # no ip-compression
```

Related Commands

Command	Description
show interface fcip	Displays an interface configuration for a specified FCIP interface.

ips netsim delay-ms

To delay packets that arrive at a specified Gigabit Ethernet interface specifying milliseconds, use the `ips netsim delay` command in SAN extension tuner configuration submode.

```
ips netsim delay-ms milliseconds ingress gigabitethernet slot/port
```

Syntax Description	Parameter	Description
	milliseconds	Specifies the delay in milliseconds. The range is 0 to 150.
	ingress	Specifies the ingress direction.
	gigabitethernetslot/port	Specifies the the slot and port number of the Gigabit Ethernet interface.

Command Default Disabled.

Command Modes SAN extension tuner configuration submode.

Command History	Release	Modification
	3.1(1)	This command was introduced.

Usage Guidelines To use this command, you must enable the IP Network Simulator using the `ips netsim enable` command. This command introduces a delay for all packets entering the Gigabit Ethernet interface. Delay is unidirectional. To introduce delay in the opposite direction, use the slot and port number of the adjacent interface.

Examples The following example shows how to configure a delay of 50 milliseconds for packets entering Gigabit Ethernet interface 2/3:

```
switch# config terminal
switch(config)#
switch(config)# san-ext-tuner enable
switch(config)# exit
switch#
switch# ips netsim delay-ms 50 ingress gigabitethernet 2/3
```

Related Commands	Command	Description
	show ips netsim	Displays a summary of the interfaces that are currently operating in network simulation mode.
	ips netsim enable	Enables the IP Network Simulator.

ips netsim delay-us

To delay packets that arrive at a specified Gigabit Ethernet interface specifying microseconds, use the ips netsim delay command in SAN extension tuner configuration submenu.

ipsnetsimdelay-usmicrosecondsingressgigabitethernet slot/port

Syntax Description	microseconds	Specifies the delay in microseconds. The range is 0 to 150000.
	ingress	Specifies the ingress direction.
	gigabitethernet slot/port	Specifies the the slot and port number of the Gigabit Ethernet interface.

Command Default Disabled.

Command Modes SAN extension tuner configuration submenu.

Command History	Release	Modification
	3.1(1)	This command was introduced.

Usage Guidelines To use this command, you must enable the IP Network Simulator using the ips netsim enable command. This command introduces a delay for all packets entering the Gigabit Ethernet interface. Delay is unidirectional. To introduce delay in the opposite direction, use the slot and port number of the adjacent interface.

Examples The following example shows how to configure a delay of 50 microseconds for packets entering Gigabit Ethernet interface 2/3:

```
switch# config terminal
switch(config)#
switch(config)# san-ext-tuner enable
switch(config)# exit
switch#
switch# ips netsim delay-us 50 ingress gigabitethernet 2/3
```

Related Commands	Command	Description
	ips netsim enable	Enables the IP Network Simulator.
	show ips netsim	Displays a summary of the interfaces that are currently operating in network simulation mode.

ips netsim drop nth

To drop packets every nth packet at a specified Gigabit Ethernet interface, use the ips netsim drop nth command in SAN extension tuner configuration submode.

ips netsim drop nth packet burst burst-size ingress gigabitethernet slot/port | ingress gigabitethernet slot/port

Syntax Description

packet	Specifies a specific packet to drop. The range is 0 to 10,000.
burst burst-size	Specifies the packet burst size. The range is 1 to 100.
ingress	Specifies the ingress direction.
gigabitethernetslot/ port	Specifies the the slot and port number of the Gigabit Ethernet interface.

Command Default

Disabled.

Command Modes

SAN extension tuner configuration submode.

Command History

Release	Modification
3.1(1)	This command was introduced.

Usage Guidelines

To use this command, you must enable the IP Network Simulator using the ips netsim enable command.

You can configure the IP Network Simulator to simulate packet drops (even when the queue is not full) randomly (specified as a percentage) or every Nth packet. Percentage is represented as the number of packets in 10,000. For example, if you want to drop one percent of packets, then specify it as 100 packets in 10,000. To simulate a realistic scenario for IP networks using random drops, the drop percentage should be between zero and one percent of packet drops in the specified traffic direction.

If you use the optional burst parameter, then a specified number of packets are dropped. If you do not specify the burst parameter, then only one packet is dropped. The burst limit for either random or Nth drops is 1 to 100 packets. Take the burst parameter into account when specifying the percentage of packets dropped. For example, if you select a random drop of 100 packets in 10,000 (or one percent) with a burst of 2, 200 packets (or two percent) in every 10,000 packets are dropped. Specifying 2 for burst doubles the packet drop.

Examples

The following example shows how to configure an interface to drop every 100th packet, 2 packets at a time:

```
switch# config terminal
switch(config)#
switch(config)# san-ext-tuner enable
switch(config)# exit
switch#
switch# ips netsim drop nth 100 burst 2 ingress gigabitethernet 2/3
```

Related Commands

Command	Description
ips netsim enable	Enables the IP Network Simulator.
show ips netsim	Displays a summary of the interfaces that are currently operating in network simulation mode.

ips netsim drop random

To drop packets randomly at a specified Gigabit Ethernet interface, use the `ips netsim drop random` command in SAN extension tuner configuration submode.

`ips netsim drop random packet-percentage burst burst-size ingress gigabitethernet slot/port | ingress gigabitethernet slot/port`

Syntax Description

packet-percentage	Specifies the percentage of packets dropped. The range is 0 to 10000.
burst burst-size	Specifies the packet burst size. The range is 1 to 100.
ingress	Specifies the ingress direction.
gigabitethernet slot /port	Specifies the the slot and port number of the Gigabit Ethernet interface.

Command Default

Disabled.

Command Modes

SAN extension tuner configuration submode.

Command History

Release	Modification
3.1(1)	This command was introduced.

Usage Guidelines

To use this command, you must enable the IP Network Simulator using the `ips netsim enable` command.

You can configure the IP Network Simulator to simulate packet drops (even when the queue is not full) randomly (specified as a percentage) or every Nth packet. Percentage is represented as the number of packets in 10,000. For example, if you want to drop one percent of packets, then specify it as 100 packets in 10,000. To simulate a realistic scenario for IP networks using random drops, the drop percentage should be between zero and one percent of packet drops in the specified traffic direction.

If you use the optional burst parameter, then a specified number of packets are dropped. If you do not specify the burst parameter, then only one packet is dropped. The burst limit for either random or Nth drops is 1 to 100 packets. Take the burst parameter into account when specifying the percentage of packets dropped. For example, if you select a random drop of 100 packets in 10,000 (or one percent) with a burst of 2, 200 packets (or two percent) in every 10,000 packets are dropped. Specifying 2 for burst doubles the packet drop.

Examples

The following example shows how to configure an interface to drop one percent of packets:

```
switch# config terminal
switch(config)#
switch(config)# san-ext-tuner enable
switch(config)# exit
switch#
switch# ips netsim drop random 100 burst 1 ingress gigabitethernet 2/3
```

Related Commands

Command	Description
show ips netsim	Displays a summary of the interfaces that are currently operating in network simulation mode.
ips netsim enable	Enables the IP Network Simulator.

ips netsim enable

To enable two Gigabit Ethernet interfaces to operate in the network simulation mode, enter the `ips netsim enable` command in SAN extension tuner configuration submode. To disable this feature, use the `no` form of the command.

```
ips netsim enable interface gigabitethernet slot/port gigabitethernet slot/port
no ips netsim enable interface gigabitethernet slot/port gigabitethernet slot/port
```

Syntax Description	interface	Specifies that interfaces are enabled.
	gigabitethernetslot/port	Specifies the the slot and port number of the Gigabit Ethernet interface.

Command Default Disabled.

Command Modes SAN extension tuner configuration submode.

Command History	Release	Modification
	3.1(1)	This command was introduced.

Usage Guidelines This command enables two Gigabit Ethernet interfaces to simulate network characteristics. The first interface specified is the ingress port and the second interface specified is the egress port. Ports must be adjacent and the ingress interface must be an odd-numbered port.

Interfaces configured with this command can no longer be used for FCIP or iSCSI. When the SAN extension tuner configuration submode is turned off, any interface configured for network simulation reverts back to normal operation.

Examples The following example enables the IP Network Simulator and configures interfaces 2/3 and 2/4 for network simulation:

```
switch# config terminal
switch(config)#
switch(config)# san-ext-tuner enable
switch(config)# exit
switch#
switch# ips netsim enable interface gigabitethernet 2/3 gigabitethernet 2/4
```

Related Commands	Command	Description
	show ips netsim	Displays a summary of the interfaces that are currently operating in network simulation mode.

ips netsim max-bandwidth-kbps

To limit the bandwidth in kilobytes per second of a specified Gigabit Ethernet interface, use the ips netsim max-bandwidth-kbps command in SAN extension tuner configuration submode.

ips netsim max-bandwidth-kbps bandwidth ingress gigabitethernet slot/port

Syntax Description	bandwidth	Specifies the bandwidth in kilobytes per second. The range is 1000 to 1000000.
	ingress	Specifies the ingress direction.
	gigabitethernet slot/port	Specifies the the slot and port number of the Gigabit Ethernet interface.

Command Default Disabled.

Command Modes SAN extension tuner configuration submode.

Command History	Release	Modification
	3.1(1)	This command was introduced.

Usage Guidelines To use this command, you must enable the IP Network Simulator using the ips netsim enable command.

Examples The following example shows how to limit the interface bandwidth to 4500 Kbps:

```
switch# config terminal
switch(config)#
switch(config)# san-ext-tuner enable
switch(config)# exit
switch#
switch# ips netsim max-bandwidth-kbps 4500 ingress gigabitethernet 2/3
```

Related Commands	Command	Description
	ips netsim enable	Enables the IP Network Simulator.
	show ips netsim	Displays a summary of the interfaces that are currently operating in network simulation mode.

ips netsim max-bandwidth-mbps

To limit the bandwidth in megabytes per second of a specified Gigabit Ethernet interface, use the `ips netsim max-bandwidth-mbps` command in SAN extension tuner configuration submode.

```
ips netsim max-bandwidth-mbps bandwidth ingress gigabitethernet slot/port
```

Syntax Description

bandwidth	Specifies the bandwidth in megabytes per second. The range is 1 to 1000.
ingress	Specifies the ingress direction.
gigabitethernetslot/port	Specifies the the slot and port number of the Gigabit Ethernet interface.

Command Default

Disabled.

Command Modes

SAN extension tuner configuration submode.

Command History

Release	Modification
3.1(1)	This command was introduced.

Usage Guidelines

To use this command, you must enable the IP Network Simulator using the `ips netsim enable` command.

Examples

The following example shows how to limit the interface bandwidth to 45 Mbps:

```
switch# config terminal
switch(config)#
switch(config)# san-ext-tuner enable
switch(config)# exit
switch#
switch# ips netsim max-bandwidth-mbps 45 ingress gigabitethernet 2/3
```

Related Commands

Command	Description
ips netsim enable	Enables the IP Network Simulator.
show ips netsim	Displays a summary of the interfaces that are currently operating in network simulation mode.

ips netsim qsize

To limit the size of the queue on a specified Gigabit Ethernet interface, use the `ips netsim qsize` command in SAN extension tuner configuration submode.

```
ips netsim qsize queue-size ingress gigabitethernet slot/port
```

Syntax Description	queue-size	Specifies the queue size. The range is 0 to 1000000.
	ingress	Specifies the ingress direction.
	gigabitethernet slot /port	Specifies the the slot and port number of the Gigabit Ethernet interface.

Command Default Disabled.

Command Modes SAN extension tuner configuration submode.

Command History	Release	Modification
	3.1(1)	This command was introduced.

Usage Guidelines To use this command, you must enable the IP Network Simulator using the `ips netsim enable` command. This command rate limits the size of the queue on a specified Gigabit Ethernet port. The recommended queue size for network simulation is 50000 to 150000. If the queue becomes full, packets are dropped.

Examples The following example shows how to limit the queue size to 75 KB:

```
switch# config terminal
switch(config)#
switch(config)# san-ext-tuner enable
switch(config)# exit
switch#
switch# ips netsim qsize 75 ingress gigabitethernet 2/3
```

Related Commands	Command	Description
	<code>ips netsim enable</code>	Enables the IP Network Simulator.
	<code>show ips netsim</code>	Displays a summary of the interfaces that are currently operating in network simulation mode.

ips netsim reorder

To reorder packets entering a specified Gigabit Ethernet interface, use the `ips netsim reorder` command in SAN extension tuner configuration submenu.

```
ipsnetsimreordernth packetdistance dist-packet ingress gigabitethernetslot/port | nth packet ingress
gigabitethernetslot/port
| {random percent distance dist-packet ingress gigabitethernet slot/port
| random percent ingress gigabitethernet slot/port}
```

Syntax Description

nth packet	Specifies a specific packet reordered. The range is 0 to 10,000.
distance dist-packet	Specifies the distance between the packet to be reordered and the packet at the head of the queue. The range is 1 to 10.
ingress	Specifies the ingress direction.
gigabitethernetslot/port	Specifies the the slot and port number of the Gigabit Ethernet interface.
random percent	Specifies the percentage of packets passed before a reorder. The range is 0 to 10,000.

Command Default

Disabled.

Command Modes

SAN extension tuner configuration submenu.

Command History

Release	Modification
3.1(1)	This command was introduced.

Usage Guidelines

To use this command, you must enable the IP Network Simulator using the `ips netsim enable` command.

You can configure network simulator to reorder packets (even when the queue is not full) randomly (specified as a percentage) or every Nth packet. Percentage is represented as the number of packets in 10,000. For example, if you want to reorder one percent of packets, then specify it as 100 packets in 10,000. To simulate a realistic scenario for IP networks using random reordering, the percentage should be between zero and one percent of packet reordered in the specified traffic direction.

If you use the optional burst parameter, then the specified number of packets will be reordered. If you do not specify the burst parameter, then only one packet is reordered.

Examples

The following example shows reordering at 50 percent with a distance limit of 5:

```
switch# config terminal
switch(config)#
switch(config)# san-ext-tuner enable
```

```
switch(config)# exit
switch#
switch# ips netsim reorder random 50 distance 5 ingress gigabitethernet 2/3
```

The following example shows reordering of every 50th packet with a distance limit of 5:

```
switch# config terminal
switch(config)#
switch(config)# san-ext-tuner enable
switch(config)# exit
switch#
switch# ips netsim reorder nth 50 distance 5 ingress gigabitethernet 2/3
```

Related Commands

Command	Description
ips netsim enable	Enables the IP Network Simulator.
show ips netsim	Displays a summary of the interfaces that are currently operating in network simulation mode.

ipv6 access-list

To configure an IPv6 access control list (ACL) and enter IPv6-ACL configuration submode, use the `ipv6 access-list` command in configuration mode. To discard an IPv6 ACL, use the `no` form of the command.

```
ipv6 access-list list-name
no ipv6 access-list list-name
```

Syntax Description	list-name Specifies an IP access control list name. The maximum size is 64.
---------------------------	---

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines Before using the `ipv6 access-list` command to configure an IPv6 ACL on a switch, become familiar with the features of IPv6 and its extended addressing capabilities. In particular, it is important to understand the different types of IPv6 address formats, the IPv6 address prefix format, and the different IPv6 address types. For detailed information about IPv6.

Examples The following example configures an IPv6 access list called List1 and enters IPv6-ACL configuration submode:

```
switch # config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ipv6 access-list List1
switch(config-ipv6-acl)#
```

The following example removes the IPv6 access list called List1 and all of its entries:

```
switch(config)# no ipv6 access-list List1
switch(config)#
```

Related Commands	ipv6 route	Configures an IPv6 static route.
	ipv6 routing	Enables IPv6 unicast routing.
	show ipv6 access-list	Displays a summary of ACLs.
	show ipv6 route	Displays the IPv6 static routes configured on the switch.
	show ipv6 routing	Displays the IPv6 unicast routing configured on the switch.

ipv6 address

To enable IPv6 processing and configure an IPv6 address on the interface, use the `ipv6 address` command in interface configuration submode. To remove an IPv6 address, use the `no` form of the command.

```
ipv6 address ipv6-address-prefix
no ipv6 address ipv6-address-prefix
```

Syntax Description	<code>ipv6-address-prefix</code> Specifies the IPv6 address prefix. The format is X:X:X::X/n .
---------------------------	--

Command Default	None.
------------------------	-------

Command Modes	Interface configuration submode.
----------------------	----------------------------------

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines You can use the `ipv6 address` command to enable IPv6 processing and configure the IPv6 address on the interface. An IPv6 address must be configured on an interface for the interface to forward IPv6 traffic. Assigning a unicast address generates a link local address and implicitly enables IPv6.



Note The `ipv6-address-prefix` argument in the `ipv6 address` command must be in the form documented in RFC 2373, where the address is specified in hexadecimal using 16-bit values between colons. A slash mark (/) precedes a decimal value that indicates how many of the high-order contiguous bits of the address comprise the prefix (the network portion of the address).

Examples

The following example assigns a unicast IPv6 address to the interface and enables IPv6 processing on the interface:

```
switch#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)#interface gigabitethernet 2/2
switch(config-if)#ipv6 address 2001:0DB8:800:200C::417A/64
```

Related Commands	<code>ipv6 enable</code>	Enables IPv6 processing on the interface.
	<code>ipv6 nd</code>	Configures IPv6 neighbor discovery commands on the interface.
	<code>ipv6 traffic-filter</code>	Configures IPv6 ACLs to filter traffic for packets on the interface.
	<code>show interface</code>	Displays interface configuration information.

ipv6 enable

To enable IPv6 processing and configure an IPv6 link-local address on the interface, use the `ipv6 enable` command in interface configuration submenu. To disable IPv6 processing and remove the link-local address, use the `no` form of the command.

```
ipv6 enable
no ipv6 enable
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Interface configuration submenu.

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines When you enable IPv6 on an interface, a link local address is automatically assigned. This address is used for communication on the switch:

Examples The following example enables IPv6 processing on the interface:

```
switch#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)#interface gigabitethernet 2/2
switch(config-if)#ipv6 enable
```

The following example disables IPv6 processing on the interface:

```
switch(config-if)# no ipv6 enable
```

Related Commands	
ipv6 address	Configures the IPv6 address and enables IPv6 processing.
ipv6 nd	Configures IPv6 neighbor discovery commands on the interface.
ipv6 traffic-filter	Configures IPv6 ACLs to filter traffic for packets on the interface.
show interface	Displays interface configuration information.

ipv6 nd

To configure IPv6 neighbor discovery commands on the interface, use the `ipv6 nd` command in interface configuration submenu. To remove IPv6 neighbor discovery configuration commands, use the `no` form of the command.

```
ipv6 nd dad attempts number | reachable-time time | retransmission-time time
no ipv6 nd dad attempts number | reachable-time time | retransmission-time time
```

Syntax Description	
<code>dad attempts number</code>	Configures duplicate address detection (DAD) attempts. The range is 0 to 15.
<code>reachable-time time</code>	Configures reachability time. Specifies the reachability time in milliseconds. The range is 1000 to 3600000.
<code>retransmission-time time</code>	Configures the retransmission timer. Specifies the retransmission time in milliseconds. The range is 1000 to 3600000.

Command Default

DAD attempts: 0.
 Reachable-time: 30000 milliseconds.
 Retransmission-time: 1000 milliseconds.

Command Modes

Interface configuration submenu.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines

A router must be able to determine the link-local address for each of its neighboring routers in order to ensure that the target address (the final destination) in a redirect message identifies the neighbor router by its link-local address. For static routing, the address of the next-hop router should be specified using the link-local address of the router; for dynamic routing, all IPv6 routing protocols must exchange the link-local addresses of neighboring routers.



Note A high number of DAD attempts (greater than 2) can delay address assignment.

For complete information about IPv6 neighbor discovery.

Examples

The following example sets the duplicate address detection attempts count to 2:

```
switch# config terminal
switch(config)# interface gigabitethernet 2/2
switch(config-if)# ipv6 nd dad attempts 2
```

The following example sets the reachability time to 10000 milliseconds:

```
switch(config-if)# ipv6 nd reachability-time 10000
```

The following example sets the retransmission time to 20000 milliseconds:

```
switch(config-if)# ipv6 nd retransmission-time 20000
```

Related Commands

ipv6 address	Configures the IPv6 address and enables IPv6 processing.
ipv6 enable	Enables IPv6 processing on the interface.
ipv6 traffic-filter	Configures IPv6 ACLs to filter traffic for packets on the interface.
show interface	Displays interface configuration information.

ipv6 route

To configure an IPv6 static route, use the `ipv6 route` command in configuration mode. To remove or disable an IPv6 static route, use the `no` form of the command.

```
ipv6 route destination-address-prefix next-hop-address [distance distance-metric | interface gigabitethernet slot/port | mgmt number | port-channel number | vsan vsan-id] [distance distance-metric]
no ipv6 route destination-address-prefix next-hop-address [distance distance-metric | interface gigabitethernet slot/port | mgmt number | port-channel number | vsan vsan-id] [distance distance-metric]
```

Syntax Description

destination-address-prefix	Specifies the IPv6 destination address prefix. The format is X:X:X::X/n .
next-hop-address	Specifies the next hop IPv6 address. The format is X:X:X::X .
distance	(Optional) Configures an IPv6 route metric.
distance-metric	Specifies a distance metric for the specified route. The range is 0 to 32766.
interface	(Optional) Configures a next hop IPv6 address.
gigabitethernet slot/port	(Optional) Specifies a Gigabit Ethernet slot and port number.
mgmt number	(Optional) Specifies the management interface.
port-channel number	(Optional) Specifies a PortChannel number. The range is 1 to 128
vsan vsan-id	(Optional) Specifies an IPFC VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

Before using the `ipv6 route` command to configure IPv6 features on a switch, become familiar with the features of IPv6 and its extended addressing capabilities. In particular, it is important to understand the different types of IPv6 address formats, the IPv6 address prefix format, and the different IPv6 address types.

Examples

The following example configures a static default IPv6 route on a Gigabit Ethernet interface:

```
switch # config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ipv6 route ::/0 gigabitethernet 3/1
```

The following example configures a fully specified static route on a Gigabit Ethernet interface:

```
switch(config)# ipv6 route 2001:0DB8::/32 gigabitethernet 3/2
```

The following example configures a recursive static route to a specified next hop address:

```
switch(config)# ipv6 route 2001:0DB8::/32 2001:0DB8:2002::1
```

The following example configures a recursive static route to a specified next hop address, from which the output interface is automatically derived, and to a specified interface:

```
switch(config)# ipv6 route 2001:0DB8::/32 2001:0DB8:2002::1 gigabitethernet 3/2
```

The following example configures a static IPv6 route with an administrative distance of 20.

```
switch(config)# ipv6 route 2001:0DB8::/32 interface gigabitethernet 2/0 distance 20
```

Related Commands

ipv6 access-list	Configures an IPv6 access control list (ACL) and enters IPv6-ACL configuration submode.
ipv6 routing	Enables IPv6 unicast routing.
show ipv6 access-list	Displays a summary of ACLs.
show ipv6 route	Displays the static IPv6 routes configured on the switch.
show ipv6 routing	Displays the IPv6 unicast routing configured on the switch.

ipv6 routing

To enable IPv6 unicast routing, use the `ipv6 routing` command in configuration mode. To disable IPv6 unicast routing, use the `no` form of the command.

```
ipv6 routing
no ipv6 routing
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines Before using the `ipv6 routing` command to configure IPv6 features on a switch, become familiar with the features of IPv6 and its extended addressing capabilities. In particular, it is important to understand the different types of IPv6 address formats, the IPv6 address prefix format, and the different IPv6 address types.

Examples The following example enables IPv6 routing:

```
switch # config terminal
switch(config)# ipv6 routing
```

The following example disables IPv6 routing:

```
switch(config)# no ipv6 routing
```

Related Commands		
<code>ipv6 access-list</code>		Configures an IPv6 access control list (ACL) and enters IPv6-ACL configuration submode.
<code>ipv6 route</code>		Configures a static IPv6 route.
<code>show ipv6 access-list</code>		Displays a summary of ACLs.
<code>show ipv6 route</code>		Displays the static IPv6 routes configured on the switch.
<code>show ipv6 routing</code>		Displays the IPv6 unicast routing configured on the switch.

ipv6 traffic-filter

To configure IPv6 access control lists (ACLs) to filter traffic for packets on the interface, use the `ipv6 traffic-filter` command in interface configuration submenu. To remove an IPv6-ACL traffic filter on the switch, use the `no` form of the command.

```
ipv6 traffic-filter access-list-name in | out
no ipv6 traffic-filter access-list-name in | out
```

Syntax Description

access-list-name	Specifies the name of an access control list for packets. The maximum size is 64 characters.
in	Configures inbound packets.
out	Configures outbound packets.

Command Default

None.

Command Modes

Interface configuration submenu.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example configures a traffic filter, called `testfilter`, for inbound packets:

```
switch# config terminal
switch(config)# interface gigabitethernet 2/2
switch(config-if)# ipv6 traffic-filter testfilter in
```

Related Commands

ipv6 address	Configures the IPv6 address and enables IPv6 processing.
ipv6 enable	Enables IPv6 processing on the interface.
ipv6 nd	Configures IPv6 ACLs to filter traffic for packets on the interface.
show interface	Displays interface configuration information.

iscsi authentication

To configure the default authentication method for iSCSI, use the `iscsi authentication` command. To revert to the default, use the `no` form of the command.

```
iscsi authentication chap | chap-none | none | username username password [0 | 7] password
no iscsi authentication chap | chap-none | none | username
```

Syntax Description

chap-none	Configures either the CHAP or no authentication.
chap	Configures the Challenge Handshake Authentication Protocol (CHAP) authentication method.
none	Specifies that no authentication is required for the selected interface
username username	Assigns CHAP username to be used when switch is authenticated. Specifies the name of the user. Maximum length is 128 characters.
password	Configures the password for the username.
0	(Optional) Specifies that the password is a cleartext CHAP password.
7	(Optional) Specifies that the password is an encrypted CHAP password. The password is limited to 128 characters.
password	Specifies a password for the username. The password length is limited to 128 characters.

Command Default

chap-none.

The default password is a cleartext password.

Command Modes

Configuration mode.

Command History

Release	Modification
1.1(1)	This command was introduced.
2.0(x)	Added the username option.

Usage Guidelines

By default, the Cisco MDS 9000 Family switch accepts an iSCSI initiator with either no authentication or CHAP authentication. If CHAP authentication is always required, use the `iscsi authentication chap` command. If no authentication is always required, use the `iscsi authentication none` command.

Use the `chap-none` option to override the global configuration which might have been configured to allow only one option either CHAP or none but not both.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example configures CHAP only for iSCSI authentication:

```
switch# config terminal  
switch(config)# iscsi authentication chap
```

Related Commands

Command	Description
show iscsi global	Displays all iSCSI initiators configured by the user.

iscsi duplicate-wwn-check

To check the current running configuration for conflicts between iSCSI initiators' static WWN allocation and what the system thinks is available in its WWN pool, use the `iscsi duplicate-wwn-check` command in configuration mode.

```
iscsi duplicate-wwn-check
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.1(2)	This command was introduced.

Usage Guidelines Prior to Cisco MDS SAN-OS Release 2.1(2), WWNs assigned to static iSCSI initiators by the system can be inadvertently returned to the system when an upgrade fails or the system software is manually downgraded (that is, when you manually boot up an older Cisco MDS SAN-OS release without using the `install all` command). In these instances, the system can later assign those WWNs to other iSCSI initiators (dynamic or static) and cause conflicts.

As of Cisco MDS SAN-OS Release 2.1(2), you can use the `iscsi duplicate-wwn-check` command to check for and remove any configured WWNs that belong to the system.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example shows how to check the current running configuration for conflicts between iSCSI initiators' static WWN allocation and what the system thinks is available in its WWN pool:

```
switch# config terminal
Enter configuration command, one per line. End with CNTL/Z.
switch(config)# iscsi duplicate-wwn-check
```

```
List of Potential WWN Conflicts:
-----
Node : iqn.test-local-nwnn:1-local-pwnn:1
nWWN : 22:03:00:0d:ec:02:cb:02
pWWN : 22:04:00:0d:ec:02:cb:02
```

The following example shows how to remove the conflicting nWWN and pWWN:

```
switch(config)# iscsi initiator name iqn.test-local-nwnn:1-local-pwnn:1
switch(config-iscsi-init)# no static nWWN 22:03:00:0d:ec:02:cb:02
switch(config-iscsi-init)# no static pWWN 22:04:00:0d:ec:02:cb:02
```

Related Commands

Command	Description
iscsi initiator name	Assigns an iSCSI name and changes to iSCSI initiator configuration submode.
static	Assigns persistent WWNs to an iSCSI initiator in iSCSI initiator configuration submode.
show iscsi initiator	Displays information about configured iSCSI initiators.

iscsi dynamic initiator

To configure dynamic initiator modes, use the `iscsi dynamic initiator` command in configuration mode. To revert to the default mode, use the `no` form of the command.

```
iscsi dynamic initiator deny | islb
no dynamic initiator deny | islb
```

Syntax Description

deny	Specifies that dynamic initiators are denied from logging on to the MDS switch.
islb	Specifies iSLB dynamic initiator mode.

Command Default

iSCSI.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

Three dynamic initiator modes are supported:

- iSCSI—Dynamic initiators are treated as iSCSI initiators and can access dynamic virtual targets and configured iSCSI virtual targets.
- iSLB—Dynamic initiators are treated as iSLB initiators and can access dynamic virtual targets.
- Deny—Dynamic initiators are not allowed to log in to the MDS switch.

iSCSI dynamic initiator is the default mode of operation. This configuration is distributed using CFS.



Note Configuring dynamic initiator modes is supported only through the CLI, not through Device Manager or Fabric Manager.

A dynamic iSCSI initiator can be converted to a static iSCSI initiator and its WWNs can be made persistent.

A dynamic iSLB initiator can be converted to a static iSLB initiator and its WWNs can be made persistent.



Note You cannot convert a dynamic iSCSI initiator to a static iSLB initiator, or a dynamic iSLB initiator to a static iSCSI initiator.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following command configures the dynamic initiator mode as iSLB:

```
switch(config)# iscsi dynamic initiator islb
```

The following command configures the dynamic initiator mode as deny:

```
switch(config)# iscsi dynamic initiator deny
```

The following command reverts to the default dynamic initiator mode of iSCSI:

```
switch(config)# no iscsi dynamic initiator deny
```

Related Commands

Command	Description
iscsi save-initiator	Permanently saves the automatically assigned nWWN or pWWN mapping.
show iscsi global	Displays global iSCSI configured information.

iscsi enable

To enable the iSCSI feature in any Cisco MDS switch, use the `iscsi enable` command. To disable this feature, use the `no` form of the command.

```
iscsi enable
no iscsi enable
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	3.2(2c)	Updated the example command.
	NX-OS 4.1(1)	This command was deprecated.

Usage Guidelines The configuration and verification commands for the iSCSI feature are only available when iSCSI is enabled on a switch. When you disable this feature, all related configurations are automatically discarded.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following command enables the iSCSI feature:

```
switch(config)# iscsi enable
switch(config)# iscsi enable module 8
switch(config)# int iscsi 2/1
switch(config-if)#
switch(config)# no shutdown
```

The following command disables the iSCSI feature (default):

```
switch(config)# no iscsi enable
```

iscsi enable module

To enable iSCSI features for each IPS linecard to create corresponding iSCSI interfaces, use the `iscsi enable module` command.

```
iscsi enable module module-num
```

Syntax Description

module-num	Specifies the desired IPS linecard module number on which iSCSI interfaces need to be enabled.
------------	--

Command Default

iSCSI interfaces are disabled on IPS linecards by default.

Command Modes

Configuration mode.

Command History

Release	Modification
3.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to enable the iSCSI interface on a desired module number on the switch:

```
switch# config terminal
switch(config)# iscsi enable module 1
```



Note

The iSCSI feature must be enabled before executing this command.

Related Commands

Command	Description
iscsi enable	Enables the iSCSI features but does not create the interfaces.

iscsi import target fc

To allow dynamic mapping of Fibre Channel targets, use the `iscsi import target fc` command. To disable this feature, use the `no` form of the command.

```
iscsi import target fc
no iscsi import target fc
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines This command directs iSCSI to dynamically import all Fibre Channel targets into iSCSI.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example allows dynamic mapping of Fibre Channel targets:

```
switch# config terminal
switch(config)# iscsi import target fc
```

The following example disables dynamic mapping of Fibre Channel targets:

```
switch(config)# no iscsi import target fc
```

Related Commands	Command	Description
	show iscsi global	Displays all iSCSI initiators configured by the user.

iscsi initiator idle-timeout

To configure the iSCSI initiator idle timeout, use the `iscsi initiator idle-timeout` command. To revert to the default, use the `no` form of the command.

```
iscsi initiator idle-timeout seconds
no iscsi initiator idle-timeout seconds
```

Syntax Description

seconds	Specifies the timeout in seconds. The range is 0 to 3600.
---------	---

Command Default

300 seconds.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3	This command was introduced.

Usage Guidelines

When the idle timeout value is set to 0, the initiator information is cleared immediately after the last session from the initiator terminates.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example configures the iSCSI initiator idle timeout to 180 seconds:

```
switch# config terminal
switch(config)# iscsi initiator idle-timeout 180
```

The following example reverts the default value of 300 seconds:

```
switch# config terminal
switch(config)# no iscsi initiator idle-timeout 240
```

Related Commands

Command	Description
show iscsi global	Displays global iSCSI configuration information.

iscsi initiator ip-address

To assign persistent WWNs to an iSCSI initiator or assign an iSCSI initiator into VSANs other than the default VSAN, use the `iscsi initiator ip-address` command. To revert to the default, use the `no` form of the command.

```
iscsi initiator ip-address ipaddress static nwwn | pwwn wwn-id | system-assign number vsan vsan-id
no iscsi initiator ip-address ipaddress static nwwn | pwwn wwn-id | system-assign number vsan
vsan-id
```

Syntax Description	Parameter	Description
	<code>ipaddress</code>	Specifies the initiator IP address.
	<code>nwwn</code>	Configures the initiator node WWN hex value.
	<code>pwwn</code>	Configures the peer WWN for special frames.
	<code>wwn-id</code>	Enters the pWWN or nWWN ID.
	<code>system-assign number</code>	Generates the nWWN value automatically. The number ranges from 1 to 64.
	<code>vsan vsan-id</code>	Specifies a VSAN ID. The range is 1 to 4093.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines Under a circumstance where an iSCSI initiator needs to have a persistent binding to FC WWNs, this command should be used. Also, an iSCSI initiator can be put into multiple VSANs. An iSCSI host can become a member of one or more VSANs.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following command configures an iSCSI initiator. using the IP address of the initiator node:

```
switch(config)# iscsi initiator ip address 209.165.200.226
```

The following command deletes the configured iSCSI initiator.

```
switch(config)# no iscsi initiator ip address 209.165.200.226
```

The following command uses the switch's WWN pool to allocate the nWWN for this iSCSI initiator and keeps it persistent:

```
switch(config-(iscsi-init))# static nWWN system-assign
```

The following command assigns the user provided WWN as nWWN for the iSCSI initiator. You can only specify one nWWN for each iSCSI node:

```
switch(config-(iscsi-init))# nWWN 20:00:00:05:30:00:59:11
```

The following command uses the switch's WWN pool to allocate two pWWNs for this iSCSI initiator and keeps it persistent:

```
switch(config-(iscsi-init))# static pWWN system-assign 2
```

The following command assigns the user provided WWN as pWWN for the iSCSI initiator:

```
switch(config-(iscsi-init))# pWWN 21:00:00:20:37:73:3b:20
```

Related Commands

Command	Description
show iscsi initiator	Displays information about configured iSCSI initiators.

iscsi initiator name

To configure an iSCSI initiator name and change to iSCSI configuration mode, use the `iscsi initiator name` command. To revert to factory defaults, use the `no` form of the command.

```
iscsi initiator name name
no iscsi initiator name name
```

Syntax Description

name	Enters the initiator name to be used. The minimum length is 16 characters and maximum is 223 characters.
------	--

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(2)	This command was introduced.

Usage Guidelines

Under a circumstance where an iSCSI initiator needs to have a persistent binding to FC WWNs, this command should be used. Also, an iSCSI initiator can be put into multiple VSANs. An iSCSI host can become a member of one or more VSANs.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example configures an iSCSI initiator using the iSCSI name of the initiator node:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# iscsi initiator name iqn.1987-02.com.cisco.initiator
```

Related Commands

Command	Description
show iscsi initiator	Displays information about configured iSCSI initiators.

iscsi interface vsan-membership

To configure VSAN membership for iSCSI interfaces, use the `iscsi interface vsan-membership` command. Use the `no` form of this command to disable this feature or to revert to factory defaults.

```
iscsi interface vsan-membership
no iscsi interface vsan-membership
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines If the `iscsi interface vsan-membership` command is disabled, you will not be able to configure iSCSI VSAN membership.



Caution Changing the VSAN membership, the forwarding mode, and the authentication of an iSCSI interface that is part of an iSLB VRRP group impacts load balancing on the interface.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples The following command enables the iSCSI interface VSAN membership:

```
switch# config terminal
switch(config)# iscsi interface vsan-membership
```

The following command disables the iSCSI interface VSAN membership (default):

```
switch(config)# no iscsi interface vsan-membership
```

Command	Description
<code>show iscsi initiator</code>	Displays information about configured iSCSI initiators.

iscsi save-initiator

To permanently save the automatically assigned nWWN and pWWN mapping, use the `iscsi save-initiator` command.

```
iscsi save-initiator [ip-address ip-address | name name]
```

Syntax Description	
ip-address ip-address	(Optional) Specifies the initiator IP address.
name name	(Optional) Specifies the initiator name to be used from 1 to 255 characters. The minimum length is 16 characters.

Command Default If initiator name or IP address is not specified, the nWWN and pWWN mapping for all initiators becomes permanent.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines After executing the `iscsi save-initiator` command, issue the `copy running-config startup-config` to save the nWWN and pWWN mapping across switch reboots.

After a dynamic iSCSI initiator has logged in, you may decide to permanently save the automatically assigned nWWN and pWWN mapping so this initiator uses the same mapping the next time it logs in.

You can convert a dynamic iSCSI initiator to static iSCSI initiator and make its WWNs persistent.



Note You cannot convert a dynamic iSCSI initiator to a static iSLB initiator or a dynamic iSLB initiator to a static iSCSI initiator.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example shows how to save the nWWN and pWWN mapping for all the initiators:

```
switch(config)# iscsi save-initiator
```

The following example shows how to save the nWWN and pWWN mapping for an initiator named `iqn.1987-02.com.cisco.initiator`:

```
switch(config)# iscsi save-initiator name iqn.1987-02.com.cisco.initiator
```

Related Commands

Command	Description
iscsi initiator	Configures an iSCSI initiator.
show iscsi initiator	Displays information about configured iSCSI initiators.

iscsi virtual-target name

To create a static iSCSI virtual target, use the `iscsi virtual-target` command. To revert to the default values, use the `no` form of the command.

```
iscsi virtual-target name name advertise interface gigabitethernet slot/port [.subinterface] | port-channel
channel-id [.subinterface] all-initiator-permit initiator initiator-name | ip-address ipaddress [netmask]
permit pwwn pwwn-id [fc-lun number iscsi-lun number [secondary-pwwn pwwn-id [sec-lun number]]
| secondary-pwwn pwwn-id] revert-primary-port trespass
no iscsi virtual-target name name advertise interface gigabitethernet slot/port [.subinterface] |
port-channel channel-id [.subinterface] all-initiator-permit initiator initiator-name | ip-address ipaddress
[netmask] permit pwwn pwwn-id [fc-lun number iscsi-lun number [secondary-pwwn pwwn-id
[sec-lun number]] | secondary-pwwn pwwn-id] revert-primary-port trespass
```

Syntax Description

name	Enters the virtual target name to be used. The minimum length is 16 characters and maximum of 223 bytes.
advertise interface	Advertises the virtual target name on the specified interface.
gigabitethernet slot/port subinterface	Selects the Gigabit Ethernet interface or subinterface to configure.
port-channel channel-id subinterface	Selects the Port Channel interface or subinterface to configure.
all-initiator-permit	Enables all iSCSI initiator access to this target.
initiator	Configures specific iSCSI initiator access to this target.
initiator-name	Specifies the iSCSI initiator name to be used access a specified target. Maximum length is 255 characters.
ip-address ip-address	Specifies the iSCSI initiator IP address.
permit	Permits access to the specified target.
pwwn pwwn-id	Specifies the peer WWN ID for special frames.
secondary-pwwn pwwn-id	(Optional) Specifies the secondary pWWN ID.
fc-lun number	(Optional) Specifies the Fibre Channel Logical Unit Number (LUN).
iscsi-lun number	(Optional) Specifies the iSCSI virtual target number.
sec-lun number	(Optional) Specifies the secondary Fibre Channel LUN.
revert-primary-port trespass	Moves LUNs forcefully from one port to another.

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
1.1(1)	This command was introduced.
1.3(1)	Added revert-to-primary and trespass subcommands.

Usage Guidelines

This command is used to configure a static iSCSI target for access by iSCSI initiators. A virtual target may contain a subset of LUs of an FC target or one whole FC target.

Do not specify the LUN if you want to map the whole Fibre Channel target to an iSCSI target. All Fibre Channel LUN targets are exposed to iSCSI.

**Note**

The CLI interprets the LUN identifier value as a hexadecimal value whether or not the 0x prefix is included.

One iSCSI target cannot contain more than one Fibre Channel target.

**Note**

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example creates a static virtual target and enters ISCSI target configuration submode:

```
switch# config terminal
switch(config)# iscsi virtual-target name 0123456789ABDEFGHI
switch(config-iscsi-tgt)#
```

The following command advertises the virtual target only on the specified interface. By default, it is advertised on all interfaces in all IPS modules.

```
switch(config-iscsi-tgt)# advertise interface gigabitethernet 4/1
```

The following command maps a virtual target node to a Fibre Channel target:

```
switch(config-iscsi-tgt)# pwwn 26:00:01:02:03:04:05:06
```

The following command enters the secondary pWWN for the virtual target node:

```
switch(config-iscsi-tgt)# pwwn 26:00:01:02:03:04:05:06 secondary-pwwn 66:00:01:02:03:04:05:02
```

Use the LUN option to map different Fibre Channel LUNs to different iSCSI virtual targets. If you have already mapped the whole Fibre Channel target, you will not be able to use this option.

```
switch(config-iscsi-tgt)# pwwn 26:00:01:02:03:04:05:06 fc-lun 0 iscsi-lun 0
```

The following command allows the specified iSCSI initiator node to access this virtual target. You can issue this command multiple times to allow multiple initiators.

```
switch(config-iscsi-tgt)# initiator iqn.1987-02.com.cisco.initiator1 permit
```

The following command prevents the specified initiator node from accessing virtual targets:

```
switch(config-iscsi-tgt)# no initiator iqn.1987-02.com.cisco.initiator1 permit
```

The following command allows the specified IP address to access this virtual target:

```
switch(config-iscsi-tgt)# initiator ip-address 209.165.200.226 permit
```

The following command prevents the specified IP address from accessing virtual targets:

```
switch(config-iscsi-tgt)# no initiator ip-address 209.165.200.226 permit
```

The following command allows all initiators in this subnetwork to access this virtual target:

```
switch(config-iscsi-tgt)# initiator ip-address 10.50.0.0 255.255.255.0 permit
```

The following command prevents all initiators in this subnetwork from accessing virtual targets:

```
switch(config-iscsi-tgt)# no initiator ip-address 10.50.0.0 255.255.255.0 permit
```

The following command allows all initiator nodes to access this virtual target:

```
switch(config-iscsi-tgt)# all-initiator-permit
```

The following command prevents any initiator node from accessing virtual targets:

```
switch(config-iscsi-tgt)# no all-initiator-permit
```

The following command configures a primary and secondary port and moves the LUNs from one port to the other using the trespass command:

```
switch# config terminal
switch(config)# iscsi virtual-target name iqn.1987-02.com.cisco.initiator
switch(config-iscsi-tgt)# pwn 50:00:00:a1:94:cc secondary-pwn 50:00:00:a1:97:ac
switch(config-iscsi-tgt)# trespass
```

Related Commands

Command	Description
show iscsi virtual target	Displays information about iSCSI virtual targets.

islb abort

To discard a pending iSCSI Server Load Balancing (iSLB) configuration, use the islb abort command.

```
islb abort
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines You can use the islb abort command to discard the pending changes to the iSLB configuration and release the fabric lock. This action has no effect on the active configuration on any switch in the fabric.

The islb abort command can be issued only by the user who started the Cisco Fabric Services (CFS) session and only on the switch that started the CFS session.

Examples The following example discards the pending iSLB configuration distribution:

```
switch# config t
switch(config)# islb abort
```

Command	Description
clear islb session	Clears a pending iSLB configuration. This command can be issued on any switch by a user with admin privileges.
islb commit	Commits the iSLB configuration distribution and releases the fabric lock.
show islb cfs-session status	Displays iSLB information.
show islb pending	Displays the pending configuration changes.
show islb pending-diff	Displays the differences between the pending configuration and the current configuration.

islb commit

To commit a pending iSCSI server load balancing (iSLB) configuration, use the `islb commit` command.

```
islb commit
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines You can use the `islb commit` command to commit the pending changes to the iSLB configuration and release the fabric lock. This action changes the active configuration on all Cisco MDS switches in the fabric.

The `islb commit` command can be issued only by the user who started the Cisco Fabric Services (CFS) session and only on the switch that started the CFS session.

Examples

The following example commits the pending iSLB configuration distribution:

```
switch# config t
switch(config)# islb commit
```

Related Commands	Command	Description
	<code>clear islb session</code>	Clears a pending iSLB configuration. This command can be issued on any switch by a user with admin privileges.
	<code>islb abort</code>	Discards the pending iSLB configuration distribution and releases the fabric lock.
	<code>islb distribute</code>	Enables iSLB configuration distribution.
	<code>show islb cfs-session status</code>	Displays iSLB information.
	<code>show islb pending</code>	Displays the pending configuration changes.
	<code>show islb pending-diff</code>	Displays the differences between the pending configuration and the current configuration.

islb distribute

To enable Cisco Fabric Services for iSCSI Server Load Balancing (iSLB) configuration, use the `islb distribute` command. To disable the iSLB configuration distribution, use the `no` form of the command

```
islb distribute
no islb distribute
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines You can use the `islb distribute` command to enable the distribution of iSLB configuration information to other Cisco MDS switches in the fabric using the Cisco Fabric Services (CFS) infrastructure. You can synchronize the iSLB configuration across the fabric from the console of a single MDS switch.



Note The only initiator configuration that is distributed throughout the fabric using CFS is a statically mapped, iSLB initiator configuration. Dynamically mapped and statically mapped iSCSI initiator configurations are not distributed. iSCSI initiator idle-timeout and global authentication parameters are also distributed.

If you are using both iSLB and inter-VSAN routing (IVR), ensure that the following conditions are satisfied; otherwise, traffic may be disrupted in the fabric.

- You must enable both features on at least one switch in the fabric.
- You must configure and activate zoning from the switch for normal zones, IVR zones, and and iSLB zones.

Examples

The following example enables iSLB configuration distribution:

```
switch# config t
switch(config)# islb distribute
```

The following example disables iSLB configuration distribution:

```
switch(config)# no islb distribute
```

Related Commands

Command	Description
<code>clear islb session</code>	Clears a pending iSLB configuration. This command can be issued on any switch by a user with admin privileges.

Command	Description
islb abort	Discards the pending iSLB configuration distribution and releases the fabric lock.
islb commit	Commits the iSLB configuration distribution and releases the fabric lock.

islb initiator

To configure the iSCSI server load balancing (iSLB) initiator and enter iSLB initiator configuration submode, use the `islb initiator` command. To delete the configured iSLB initiator, use the `no` form of the command.

```
islb initiator ip-address ip-address|ip6-address | name name
no islb initiator name name
```

Syntax Description

ip-address	Specifies the iSLB initiator node IP address.
ip-address	Specifies the initiator IPv4 address.
ip6-address	Specifies the initiator IPv6 address.
name name	Specifies the iSLB initiator node name. The maximum size is 223.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

You can use the `islb initiator` command to enter iSLB initiator configuration submode to configure static mapping for an iSLB initiator.

Examples

The following example enters iSLB initiator configuration submode to configure static mapping (using the IPv4 `ip-address` option) for an iSLB initiator:

```
switch# config t
switch(config)# islb initiator ipaddress 10.1.2.3
switch(config-islb-init)#
```

The following example deletes the configured iSLB initiator:

```
switch(config)# no islb initiator ipaddress 10.1.2.3
```

The following example enters iSLB initiator configuration submode to configure static mapping (using the IPv6 option) for an iSLB initiator:

```
switch# config t
switch(config)# islb initiator ipaddress 1111.2222.3333.4::5
switch(config-islb-init)#
```

The following example deletes the configured iSLB initiator:

```
switch(config)# no islb initiator ipaddress 1111.2222.3333.4::5
```

The following example enters iSLB initiator configuration submode to configure static mapping (using the name option) for an iSLB initiator:

```
switch# config t  
switch(config)# islb initiator name iqn.1987-02.co..cisco.initiator  
switch(config-islb-init)#
```

The following example deletes the configured iSLB initiator:

```
switch(config)# no islb initiator ipaddress name iqn.1987-02.co..cisco.initiator
```

Related Commands

Command	Description
show islb initiator configured	Displays iSLB initiator configuration information.
show islb initiator detail	Displays more detailed information about the iSLB configuration.
show islb initiator iscsi-session	Displays iSLB session details.
show islb initiator summary	Displays iSLB initiator summary information.

islb save-initiator

To permanently save the automatically assigned nWWN and pWWN mapping for the iSLB initiator, use the `islb save-initiator` command.

```
islb save-initiator [ip-address ip-address | name name]
```

Syntax Description

ip-address ip-address	(Optional) Specifies the initiator IP address. The format is A.B.C.D or X:X:X::X.
name name	(Optional) Specifies the initiator name to be used from 1 to 223 characters.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

Saving the automatically assigned nWWN and pWWN mapping allows the initiator to use the same mapping the next time it logs in.

You can convert a dynamic iSLB initiator to a static iSLB initiator and make its WWNs persistent.



Note You cannot convert a dynamic iSCSI initiator to a static iSLB initiator or a dynamic iSLB initiator to a static iSCSI initiator.



Note Making the dynamic mapping for iSLB initiators static is the same as for iSCSI.



Note Only a statically mapped iSLB initiator configuration is distributed throughout the fabric using CFS. Dynamically and statically configured iSCSI initiator configurations are not distributed.

Examples

The following example saves the nWWNs and pWWNs that have automatically been assigned to the iSLB initiator whose name is specified:

```
switch# config t
switch(config)# islb save-initiator name iqn.1987-02.com.cisco.initiator
```

The following example saves the nWWNs and pWWNs that have automatically been assigned to the iSLB initiator whose IPv4 address is specified:

```
switch(config)# islb save-initiator ip-address 10.10.100.11
```

The following example saves the nWWNs and pWWNs that have automatically been assigned to all the iSLB initiators:

```
switch(config)# islb save-initiator
```

Please execute "copy run start" to keep the WWNs persistent across switch reboots

Related Commands

Command	Description
show islb session	Displays detailed iSLB session information.

islb virtual-target name

To configure an iSLB virtual target and enter iSLB target configuration submode, use the islb virtual-target name command. To revert to the default values, use the no form of the command.

```
islb virtual-target name name all-initiator-permit | initiator initiator-name permit | ip address A.B.C.D
permit | X:X:X: :X permit | pWWN permit | revert-primary-port permit | trespass permit
no islb virtual-target name name all-initiator-permit | initiator initiator-name permit | ip address A.B.C.D
permit | X:X:X: :X permit | pWWN permit | revert-primary-port permit | trespass permit
```

Syntax Description

name	Specifies the virtual target name to be used. The minimum length is 16 bytes and the maximum length is 223 bytes.
all-initiator-permit	Configures all iSLB initiators to access the target.
initiator	Configures the iSLB initiator to access the target.
initiator-name	Specifies the initiator name. The minimum length is 16 bytes and the maximum length is 223 bytes.
X:X:X::X permit	Permits access to the specified target.
ip address	Specifies the initiator IP address. The format is A.B.C.D or X:X:X::X .
pWWN permit	Specifies the pWWN of the Fibre Channel target. The format is hh:hh:hh:hh:hh:hh:hh:hh .
revert-primary-port permit	Reverts to the primary port when it becomes active again.
trespass permit	Enables trespass support.

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

This command is used to configure a static target for access by iSLB initiators.

Examples

The following example creates a static virtual target and enters iSLB target configuration submode:

```
switch# config terminal
switch(config)# islb virtual-target name ABCDEFGHIJ1234567890
ips-hacl(config-islb-tgt)#
```

The following example allows all iSLB initiators to access the target:


```
ips-hacl(config-islb-tgt)# all-initiator-permit
```

The following command allows the specified IP address to access this virtual target:

```
switch(config-islb-tgt)# initiator ip-address 209.165.200.226 permit
```

The following example prevents the specified IP address from accessing virtual targets:

```
switch(config-islb-tgt)# no initiator ip-address 209.165.200.226 permit
```

The following example allows all initiators in this subnetwork to access this virtual target:

```
switch(config-islb-tgt)# initiator ip-address 10.50.0.0 255.255.255.0 permit
```

The following example prevents all initiators in this subnetwork from accessing virtual targets:

```
switch(config-islb-tgt)# no initiator ip-address 10.50.0.0 255.255.255.0 permit
```

The following example maps a pWWN to a Fibre Channel target:

```
ips-hacl(config-islb-tgt)# pwwn 26:00:01:02:03:04:05:06
```

Related Commands

Command	Description
show islb virtual-target	Displays information about iSLB virtual targets.

islb vrrp

To configure iSCSI server load balancing (iSLB) on a Virtual Router Redundancy Protocol (VRRP) group, use the `islb vrrp` command. To disable the iSLB configuration on the VRRP group, use the `no` form of the command.

```
islb vrrp group-number load-balance | ipv6 group-number load-balance
no islb vrrp group-number load-balance | ipv6 group-number load-balance
```

Syntax Description

group-number	Specifies an IPv4 Virtual Router group number. The range is 1 to 255.
load-balance	Enables load balancing on the VRRP group.
ipv6	Specifies IPv6 on the VRRP group.
group-number	Specifies an IPv6 Virtual Router group number. The range is 1 to 255.
load-balance	Enables load balancing on the VRRP group.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

The host is configured with a VRRP address as the portal address. When the VRRP master port receives the first iSCSI session from an initiator, it assigns a slave port to serve that particular host. The information is synchronized to all switches via Cisco Fabric Services (CFS) if recovery is needed when a master port fails. The initiator gets a temporary redirect iSCSI login response. The host then logs in to the slave port at its physical IP address. If the slave port goes down, the host will revert to the master port. The master port knows through CFS that the slave port has gone down and redirects the host to another slave port.

There are separate VRRP groups for IPv4 and IPv6. Each address family is allowed 256 virtual routers.



Note

An initiator can also be redirected to the physical IP address of the master interface.



Tip

The load balancing distribution is based on the number of initiators on a port and not on the number of sessions.



Caution

A Gigabit Ethernet interface configured for iSLB can only be in one VRRP group because redirected sessions do not carry information about the VRRP IP address or group. This restriction allows the slave port to uniquely identify the VRRP group to which it belongs.

**Caution**

Changing the VSAN membership, the forwarding mode, and the authentication of an iSCSI interface that is part of an iSLB VRRP group impacts load balancing on the interface.

The following example enables VRRP load balancing for IPv4 Virtual Router group 20:

```
switch# config t
switch(config)# islb vrrp 20 load-balance
```

The following example disables VRRP load balancing for IPv4 Virtual Router group 20:

```
switch(config)# no islb vrrp 20 load-balance
```

The following example enables VRRP load balancing for IPv6 Virtual Router group 30:

```
switch(config)# islb vrrp ipv6 30 load-balance
```

The following example disables VRRP load balancing for IPv6 Virtual Router group 30:

```
switch(config)# no islb ipv6 30 load-balance
```

Related Commands

Command	Description
show islb session	Displays detailed iSLB session information.

islb zoneset activate

To activate iSCSI server load balancing (iSLB) auto zones, use the `islb zoneset activate` command.

```
islb zoneset activate
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines Auto-zoning of the initiator with the initiator targets is enabled by default.

A zone set must be active for a VSAN for auto-zones to be created in that VSAN. The `zoneset activate` command creates auto-zones only if at least one other change has been made to the zone set.

Examples The following example activates an iSLB auto zone:

```
switch# config t
switch(config)# islb zoneset activate
```

Related Commands	Command	Description
	<code>show zoneset active</code>	Displays active zone sets.

isns

To tag a Gigabit Ethernet or PortChannel interface to an Internet Storage Name Service (iSNS) profile, use the `isns` command in interface configuration submode. To untag the interface, use the `no` form of the command.

```
isns profile-name
no isns profile-name
```

Syntax Description

profile-name	Specifies the iSNS profile name.
--------------	----------------------------------

Command Default

Disabled.

Command Modes

Interface configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, iSNS must be enabled using the `isns-server enable` command.

Use the `isns reregister` command in EXEC mode to reregister associated iSNS objects (tagged to an iSNS profile) with the iSNS server.

Examples

The following example shows how to tag a Gigabit Ethernet interface to an iSNS profile:

```
switch# config terminal
switch(config)# interface gigabitethernet 1/2
switch(config-if)# isns Profile1
```

The following example shows how to tag a PortChannel interface to an iSNS profile:

```
switch# config terminal
switch(config)# interface port-channel 2
switch(config-if)# isns Profile2
```

Related Commands

Command	Description
<code>isns reregister</code>	Reregisters the iSNS object.
<code>isns-server enable</code>	Enables the iSNS server.
<code>show interface gigabitethernet</code>	Displays configuration and status information for a specified Gigabit Ethernet interface.
<code>show interface port-channel</code>	Displays configuration and status information for a specified PortChannel interface.
<code>show isns</code>	Displays iSNS information.

isns distribute

To enable Cisco Fabric Services (CFS) distribution for Internet Storage Name Service (iSNS), use the `isns distribute` command. To disable this feature, use the `no` form of the command.

```
isns distribute
no isns distribute
```

Syntax Description This command has no other arguments or keywords.

Command Default Enabled.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, iSNS must be enabled using the `isns-server enable` command.

You can configure the pWWN and nWWN of iSCSI initiators and permit a group of iSCSI initiators to share a given nWWN and pWWN pair by using a proxy initiator. The number of iSCSI initiators that register with the iSNS server is more than the number of iSCSI targets that register with the iSNS server. To synchronize the iSCSI initiator entries across switches, you can distribute the iSCSI initiator configuration to iSNS servers across switches.

Examples The following example shows how to initiate iSNS information distribution:

```
switch# config terminal
switch(config)# isns distribute
```

The following example shows how to cancel iSNS information distribution:

```
switch# config terminal
switch(config)# no isns distribute
```

Related Commands	Command	Description
	<code>isns-server enable</code>	Enables the iSNS server.
	<code>show isns</code>	Displays iSNS information.

isns esi retries

To configure the number of entity status inquiry (ESI) retry attempts, use the `isns esi retries` command in configuration mode. To revert to the default value, use the `no` form of the command.

```
isns esi retries number
no isns esi retries number
```

Syntax Description

number	Specifies the number of retries. The range is 0 to 10.
--------	--

Command Default

3 retries.

Command Modes

Configuration mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, Internet Storage Name Service (iSNS) must be enabled using the `isns-server enable` command.

The iSNS client queries the ESI port at user-configured intervals. Receipt of a response indicates that the client is still alive. Based on the configured value, the interval specifies the number of failed tries before which the client is deregistered from the server.

Examples

The following example shows how change the ESI retries limit to eight:

```
switch# config terminal
switch(config)# isns esi retries 8
```

Related Commands

Command	Description
<code>isns-server enable</code>	Enables the iSNS server.
<code>show isns</code>	Displays iSNS information.

isns profile name

To create an Internet Storage Name Service (iSNS) profile and enter iSNS profile configuration submode, use the `isns profile name` command in configuration mode. To delete the iSNS profile, use the `no` form of the command.

```
isns profile name profile-name
no isns profile name profile-name
```

Syntax Description

profile-name	Specifies the profile name. Maximum length is 64 characters.
--------------	--

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

To use this command, iSNS must be enabled using the `isns-server enable` command.

Examples

The following example shows how to specify an iSNS profile name and enter iSNS profile configuration submode:

```
switch# config terminal
switch(config)# isns profile name UserProfile
switch(config-isns-profile)#
```

Related Commands

Command	Description
server	Configures a server IP address in an iSNS profile.
show isns	Displays iSNS information.

isns reregister

To register all Internet Storage Name Service (iSNS) objects for an interface that is already tagged to an iSNS profile, use the `isns register` command.

```
isns reregister gigabitethernet slot/number | port-channel channel-group
```

Syntax Description	gigabitethernet slot/port	Specifies tagged Gigabit Ethernet interface slot and port.
	port-channel channel-group	Specifies tagged PortChannel group. The range is 1 to 128.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines Use this command to reregister portals and targets with the iSNS server for a tagged interface.

Examples The following command reregisters portal and targets for a tagged interface:

```
switch# isns reregister gigabitethernet 1/4
```

Related Commands	Command	Description
	show isns profile	Displays details for configured iSNS profiles.

isns-server enable

To enable the Internet Storage Name Service (iSNS) server, use the `isns-server enable` command in configuration mode. To disable iSNS, use the `no` form of the command.

```
isns-server enable
no isns-server enable
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines Performing the `isns-server enable` command enables the commands used to configure iSNS.

Examples The following example shows how to enable iSNS:

```
switch# config terminal
switch(config)# isns-server enable
```

The following example shows how to disable iSNS:

```
switch# config terminal
switch(config)# no isns-server enable
```

Command	Description
<code>isns distribute</code>	Enables iSNS distributed support.
<code>isns esi retries</code>	Configures ESI retry attempts.
<code>isns profile name</code>	Creates and configures iSNS profiles.
<code>server</code>	Configures iSNS server attributes.
<code>show isns</code>	Displays iSNS information.

ivr aam pre-deregister-check

To configure fabric precheck before deregistering IVR with AAM, use the `ivr aam pre-deregister-check` command in configuration mode.

```
ivr aam pre-deregister-check
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes configuration mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to configure precheck before deregistering IVR with AAM:

```
switch# config terminal
switch(config)# feature ivr
switch(config-if)# ivr distribute
switch(config-if)# ivr nat
switch(config-if)# ivr commit
switch(config-if)# ivr aam pre-deregister-check
switch(config-if)#
```

Related Commands	Command	Description
	show ivr aam	Displays ivr aam status.

ivr aam register

To register IVR with AAM, use the `ivr aam register` command in configuration submode. To deregister IVR with AAM, use the `no` form of the command.

```
ivr aam register
no ivr aam register
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes configuration mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to register IVR with AAM:

```
switch# config terminal
switch(config)# feature ivr
switch(config-if)# ivr distribute
switch(config-if)# ivr nat
switch(config-if)# ivr commit
switch(config-if)# ivr aam register
switch(config-if)# 2009 Oct 20 22:12:32 isola-77 last message repeated 7 times
```

The following example shows how to deregister IVR with AAM:

```
switch# config terminal
switch(config)# feature ivr
switch(config-if)# ivr distribute
switch(config-if)# ivr nat
switch(config-if)# ivr commit
switch(config-if)# ivr aam pre-deregister-check
switch(config)# no ivr aam register
```

You could use "show ivr aam pre-deregister-check" to check pre-deregister status. If the status indicates a failure, but you still go ahead with the commitment, the deregister might fail.

```
switch(config)#
```

Related Commands	Command	Description
	show ivr aam	Displays IVR AAM status.

ivr abort

To discard an Inter-VSAN Routing (IVR) CFS distribution session in progress, use the `ivr abort` command in configuration mode.

```
ivr abort
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to discard an IVR CFS distribution session in progress:

```
switch# config terminal  
switch(config)# ivr abort
```

Related Commands	Command	Description
	<code>ivr distribute</code>	Enables CFS distribution for IVR.
	<code>show ivr</code>	Displays IVR CFS distribution status and other details.

ivr commit

To apply the pending configuration pertaining to the Inter-VSAN Routing (IVR) Cisco Fabric Services (CFS) distribution session in progress in the fabric, use the `ivr commit` command in configuration mode.

```
ivr commit
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to apply an IVR configuration to the switches in the fabric:

```
switch# config terminal
switch(config)# ivr commit
```

Related Commands	Command	Description
	ivr distribute	Enables CFS distribution for IVR.
	show ivr	Displays IVR CFS distribution status and other details.

ivr copy active-service-group user-configured-service-group

To copy the active service group to the user-configured service group, use the `ivr copy active-service-group user-configured-service-group` command in EXEC mode.

```
ivr copy active-service-group user-configured-service-group
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None.

Examples The following example copies the active service group to the user-defined service group:

```
switch# ivr copy active-service-group user-configured-service-group
```

```
Successfully copied active service group to user-configured service group database
```

Related Commands	Command	Description
	clear ivr service-group database	Clears the IVR service group database.
	show ivr service-group	Displays IVR service groups.

ivr copy active-topology user-configured-topology

To copy the active inter-VSAN routing (IVR) VSAN topology to the user configured topology, use the `ivr copy active-topology user-configured-topology` command in EXEC mode.

```
ivr copy active-topology user-configured-topology
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines The `ivr copy active-topology user-configured-topology` command is useful if you need to edit the active IVR topology, which is not allowed. Instead you copy the active IVR topology to the user configured topology, and then edit the user configured topology.

Examples The following example copies the active IVR topology to the user configured topology:

```
switch# ivr copy active-topology user-configured-topology
Successfully copied active VSAN-topology to user-configured topology database
```

Related Commands	Command	Description
	<code>ivr copy active-zoneset full-zoneset</code>	Copies the active zone set to the full zone set.
	<code>ivr copy auto-topology user-configured topology</code>	Copies the automatically discovered inter-VSAN routing (IVR) VSAN topology to the user configured topology.
	<code>show ivr vsan topology</code>	Displays the IVR VSAN topology configuration.

ivr copy active-zoneset full-zoneset

To copy the active zone set to the full zone set, use the `ivr copy active-zoneset full-zoneset` command in EXEC mode.

```
ivr copy active-zoneset full-zoneset
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines Copying the active zone set to the full zone set may overwrite common zone and zone set configurations in the full zoning database.

Examples The following example copies the active zone set to the full zone set:

```
switch# ivr copy active-zoneset full-zoneset

WARNING: This command may overwrite common zones/zonesets
         in the IVR full zoneset database
Please enter yes to proceed.(y/n) [n]?
```

Related Commands	Command	Description
	<code>ivr copy active-topology user-configured topology</code>	Copies the active inter-VSAN routing (IVR) VSAN topology to the user configured topology.
	<code>ivr copy auto-topology user-configure topology</code>	Copies the automatically discovered inter-VSAN routing (IVR) VSAN topology to the user configured topology.
	<code>show ivr zoneset active</code>	Displays the active IVR zone set.

ivr copy auto-topology user-configured-topology

To copy the automatically discovered inter-VSAN routing (IVR) VSAN topology to the user configured topology, use the `ivr copy auto-topology user-configured-topology` command in EXEC mode.

```
ivr copy auto-topology user-configured-topology
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC configuration mode.

Command History	Release	Modification
	2.1(1a)	This command was introduced.

Usage Guidelines After using the `ivr copy auto-topology user-configured-topology` command to copy the automatically discovered VSAN topology into the user- configured topology you must use the `ivr commit` command to apply the pending configuration changes to the IVR topology using Cisco Fabric Services (CFS) distribution.

Examples The following example copies the automatically discovered VSAN topology into the user configured topology:

```
switch# ivr copy auto-topology user-configured-topology
```

Related Commands	Command	Description
	<code>ivr commit</code>	Applies the changes to the IVR topology.
	<code>ivr copy active-topology user-configured topology</code>	Copies the active inter-VSAN routing (IVR) VSAN topology to the user configured topology.
	<code>ivr copy active-zoneset full-zoneset</code>	Copies the active zone set to the full zone set.
	<code>show ivr vsan topology</code>	Displays the IVR VSAN topology configuration .

ivr distribute

To enable Cisco Fabric Services (CFS) distribution for Inter-VSAN Routing (IVR), use the `ivr distribute` command. To disable this feature, use the `no` form of the command.

```
ivr distribute
no ivr distribute
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable IVR fabric distribution:

```
switch# config terminal
switch(config)# ivr distribute
```

Related Commands	Command	Description
	<code>ivr commit</code>	Commits temporary IVR configuration changes to the active configuration.
	<code>show ivr</code>	Displays IVR CFS distribution status and other details.

ivr enable

To enable the Inter-VSAN Routing (IVR) feature, use the `ivr enable` command in configuration mode. To disable this feature, use the `no` form of the command.

```
ivr enable
no ivr enable
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Release	Modification
1.3(1)	This command was introduced.
NX-OS 4.1(1b)	This command was deprecated.

Usage Guidelines The IVR feature must be enabled in all edge switches in the fabric that participate in the IVR.

The configuration and display commands for the IVR feature are only available when IVR is enabled on a switch.

When you disable this configuration, all related configurations are automatically discarded.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following command enters the configuration mode and enables the IVR feature on this switch:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ivr enable
```

Command	Description
<code>show ivr</code>	Displays IVR feature information.

ivr fcdomain database autonomous-fabric-num

To create IVR persistent FC IDs, use the `ivr fcdomain database autonomous-fabric-num` command. To delete the IVR fcdomain entry for a given AFID and VSAN, use the `no` form of the command.

```
ivr fcdomain database autonomous-fabric-num afid-num vsan vsan-id
no ivr fcdomain database autonomous-fabric-num afid-num vsan vsan-id
```

Syntax Description

afid-num	Specifies the current AFID. The range is 1 to 64.
vsan vsan-id	Specifies the current VSAN. The range is 1 to 4093.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
2.1(2)	This command was introduced.

Usage Guidelines

This configuration only takes effect when NAT mode is enabled.

Examples

The following example shows how to enter IVR fcdomain database configuration submode for AFID 10 and VSAN 20:

```
switch# config t
switch(config)# ivr fcdomain database autonomous-fabric-num 10 vsan 20
switch(config) fcdomain#
```

The following example shows how to delete all persistent FC ID database entries for AFID 10 and VSAN 20:

```
switch# config t
switch(config)# no ivr fcdomain database autonomous-fabric-num 10 vsan 20
```

Related Commands

Command	Description
show ivr fcdomain database	Displays IVR fcdomain database entry information.

ivr nat

To explicitly enable Network Address Translation (NAT) functionality for Inter-VSAN Routing (IVR), use the `ivr nat` command in configuration mode. To disable this feature, use the `no` form of the command.

```
ivr nat
no ivr nat
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	2.1(1a)	This command was introduced.

Usage Guidelines The `ivr nat` command allows you to explicitly enable NAT functionality of IVR. Upgrading to SAN-OS Release 2.x from SAN-OS Release 1.3.x does not automatically enable the Fibre Channel NAT functionality. This command also allows you to continue to operate in non-NAT mode even in SAN-OS Release 2.x and later and NX-OS.



Note You might need to operate in non-NAT mode to support proprietary protocols that embed FCIDs in the frame payloads.

Examples

The following example shows how to explicitly enable NAT functionality for IVR:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ivr nat
```

Related Commands	Command	Description
	show ivr	Displays IVR feature information.

ivr refresh

To refresh devices being advertised by Inter-VSAN Routing (IVR), use the `ivr refresh` command in EXEC mode.

```
ivr refresh
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	2.0(2)	This command was introduced.

Usage Guidelines The IVR refresh command runs internally when IVR zone set or topology is activated. The limit for the maximum number of IVR zones per VSAN is 250 zones (two members per zone).

Examples The following example shows refresh devices being advertised by IVR:

```
switch# ivr refresh
```

Related Commands	Command	Description
	ivr enable	Enables the Inter-VSAN Routing (IVR) feature.
	ivr withdraw domain	Withdraws an overlapping virtual domain from a specified VSAN.

ivr service-group activate

To activate an inter-VSAN routing (IVR) service group, use the `ivr service-group activate` command in configuration mode. To disable this feature, use the `no` form of the command.

```
ivr service-group activate [default-sg-deny]
no ivr service-group activate [default-sg-deny]
```

Syntax Description

default-sg-deny	(Optional) Sets the policy to deny for the default service group.
-----------------	---

Command Default

Deactivated.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

You must activate a configured IVR service group for the IVR service group to take effect. Once a configured IVR service group is activated, it replaces the currently activated service group, if there is one.

Activating an IVR service group with the `default-sg-deny` option sets the default service group policy to deny. To change the default service group policy to allow, issue the `ivr service-group activate` command again, but without the `default-sg-deny` option.

Examples

The following example activates the default IVR service group:

```
switch# config terminal
switch(config)# ivr service-group activate
```

The following example sets the default IVR service group policy to deny:

```
switch# config terminal
switch(config)# ivr service-group activate default-sg-deny
```

The following example disables the default service group:

```
switch# config terminal
switch(config)# no ivr service-group activate
```

Related Commands

Command	Description
<code>ivr enable</code>	Enables inter-VSAN routing (IVR).
<code>ivr service-group name</code>	Configures an inter-VSAN routing (IVR) service group.
<code>show ivr service-group database</code>	Displays an inter-VSAN routing service group database.

ivr service-group name

To configure an Inter-VSAN Routing (IVR) service group, use the `ivr service-group name` command in configuration mode. To disable this feature, use the `no` form of the command.

```
ivr service-group name service-group
no ivr service-group name service-group
```

Syntax Description	service-group Specifies the service group name.
---------------------------	---

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	2.1(1a)	This command was introduced.

Usage Guidelines In a complex network topology, you might only have a few IVR-enabled VSANs. To reduce the amount of traffic to non-IVR-enabled VSANs, you can configure a service group that restricts the traffic to the IVR-enabled VSANs. A service group is a combination of AFIDs and VSANs. Up to 16 service groups can be configured. A VSAN or AFID can belong to just one service group. When a new IVR-enabled switch is added to the network, you must update the service group to include the new VSANs.

There can be a maximum of 128 AFID/VSAN combinations in all service group. However, all 128 combinations can be in one service group.

The default service group ID is 0. The default service group is for all VSANs that are not a part of a user-defined service group.

Before configuring an IVR service group, you must enable the following:

- IVR using the `ivr commit` command
- IVR distribution using the `ivr commit` command
- Automatic IVR topology discovery using the `ivr commit auto` command.

Using the `autonomous-fabric-id` (IVR topology database configuration) command, you can restrict the IVR traffic to the AFIDs and VSANs configured in the service group.

Examples

The following example shows how to configure an IVR service group and change to IVR service group configuration mode:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ivr enable
switch(config)# ivr vsan-topology auto
switch(config)# ivr service-group name serviceGroup1
switch(config-ivr-sg)#
```

Related Commands

Command	Description
ivr enable	Enables the Inter-VSAN Routing (IVR) feature
ivr vsan-topology auto	Enables automatic discovery of the IVR topology.
show ivr	Displays IVR feature information.

ivr virtual-fcdomain-add

To add the Inter-VSAN Routing (IVR) virtual domains in a specific VSAN(s) to the assigned domains list in that VSAN, use the `ivr virtual-fcdomain-add` command. To delete the IVR virtual domains, use the `no` form of the command.

```
ivr virtual-fcdomain-add vsan-ranges vsan-range
no ivr virtual-fcdomain-add vsan-ranges vsan-range
```

Syntax Description	<code>vsan-ranges vsan-range</code>	Specifies the IVR VSANs or range of VSANs. The range of values for a VSAN ID is 1 to 4093.
---------------------------	-------------------------------------	--

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(4)	This command was introduced.

Usage Guidelines Use the `no ivr virtual-fcdomain-add` command to remove the currently active domains from the `fcdomain` manager list in a specified VSAN.

Examples

The following command adds the IVR virtual domains in VSAN:

```
switch# config terminal
switch(config)# ivr virtual-fcdomain-add vsan-ranges 1
```

The following command reverts to the factory default of not adding IVR virtual domains:

```
switch# config terminal
switch(config)# no ivr virtual-fcdomain-add vsan-ranges 1
```

Related Commands	Command	Description
	<code>ivr withdraw domain</code>	Removes overlapping domains.
	<code>show ivr virtual-fcdomain-add-status</code>	Displays the configured VSAN topology for a fabric.

ivr virtual-fcdomain-add2

To configure the request domain_ID (RDI) mode in a specific autonomous fabric ID (AFID) and VSAN for all IVR-enabled switches, use the `ivr virtual-fcdomain-add2` command. To delete the RDI mode, use the `no` form of the command.

```
ivr virtual-fcdomain-add2 autonomous-fabric-id value vsan-ranges value
no ivr virtual-fcdomain-add2 autonomous-fabric-id value vsan-ranges value
```

Syntax Description		
	fabric-id value	Specifies the fabric ID on which the RDI mode needs to be configured.
	vsan-ranges value	Specifies the VSAN range value on which the RDI mode needs to be configured.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines This is a CFS distributable command.

Examples The following example configures the RDI mode on a specific AFID and VSAN:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch# ivr virtual-fcdomain-add2 autonomous-fabric-id 1 vsan-ranges 2
switch# fabric is now locked for configuration. Please 'commit' configuration when done.
switch(config)# ivr commit
```

Related Commands	Command	Description
	show ivr virtual-fcdomain-add-status2	Displays the RDI mode in a specific AFID and VSAN for all IVR-enabled switches.

ivr vsan-topology

To configure manual or automatic discovery of the Inter-VSAN Routing (IVR) topology, use the `ivr vsan-topology` command in configuration mode.

```
ivr vsan-topology activate | auto
```

Syntax Description

activate	Configures manual discovery of the IVR topology and disables automatic discovery mode.
auto	Configures automatic discovery of the IVR topology.

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(1)	This command was introduced.
2.1(1a)	Added auto keyword.

Usage Guidelines

To use this command you must first enable IVR using the `ivr enable` command and configure the IVR database using the `ivr vsan-topology database` command.



Caution

Active IVR topologies cannot be deactivated. You can only switch to automatic topology discovery mode.

Examples

The following `ivr vsan-topology activate` command activates the VSAN topology database:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ivr enable
switch(config)# ivr vsan-topology database
switch(config-ivr-topology-db)# autonomous-fabric-id 1 switch 20:00:00:00:30:00:3c:5e
vsan-ranges 2,2000
switch(config)# ivr vsan-topology activate
```

The following command enables VSAN topology database auto mode, which allows the switch to automatically discover the IVR topology:

```
switch(config)# ivr vsan-topology auto
```

Related Commands

Command	Description
autonomous-fabric-id(IVR topology database configuration)	Configure an autonomous phobic ID into the IVR topology database.

Command	Description
ivr enable	Enables the Inter-VSAN Routing (IVR) feature.
show ivr	Displays IVR feature information.

ivr vsan-topology auto

To configure automatic discovery of the Inter-VSAN Routing (IVR) topology, use the `ivr vsan-topology auto` command in configuration mode.

```
ivr vsan-topology auto
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines To use this command you must first enable IVR using the `ivr enable` command. IVR configuration distribution must be enabled using the `ivr distribute` command before configuring automatic topology discovery. Once automatic IVR topology discovery is enabled, you cannot disable IVR configuration distribution.

Examples The following command enables VSAN topology database auto mode, which allows the switch to automatically discover the IVR topology.

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ivr enable
switch(config)# ivr distribute

    activate  Activate VSAN topology database for inter-VSAN routing
    auto      Enable discovery of VSAN topology for inter-VSAN routing
    database  Configure VSAN topology database for inter-VSAN routing
switch(config)# ivr vsan-topology auto
switch(config)#
```

Related Commands	Command	Description
	ivr enable	Enables the Inter-VSAN Routing (IVR) feature.
	autonomous-fabric-id (IVR topology database configuration)	Configure an autonomous phobic ID into the IVR topology database
	<code>show ivr</code>	Displays IVR feature information.

ivr vsan-topology database

To configure an Inter-VSAN Routing (IVR) topology database, use the `ivr vsan-topology database` command in configuration mode. To delete an IVR topology database, use the `no` form of the command.

```
ivr vsan-topology database
no ivr vsan-topology database
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines To use this command you must first enable IVR using the `ivr enable` command. You can have up to 64 VSANs (or 128 VSANs as of Cisco MDS SAN-OS Release 2.1(1a)) in an IVR topology. Specify the IVR topology using the following information:

- The switch WWNs of the IVR-enabled switches.
- A minimum of two VSANs to which the IVR-enabled switch belongs.
- The autonomous fabric ID (AFID), which distinguishes two VSANs that are logically and physically separate, but have the same VSAN number. Cisco MDS SAN-OS Release 1.3(1) and later NX-OS supports only one default AFID (AFID 1) and thus does not support non-unique VSAN IDs in the network. As of Cisco MDS SAN-OS Release 2.1(1a), you can specify up to 64 AFIDs.



Note The use of a single AFID does not allow for VSANs that are logically and physically separate but have the same VSAN number in an IVR topology.



Caution You can only configure a maximum of 128 IVR-enabled switches and 64 distinct VSANs (or 128 distinct VSANs as of Cisco MDS SAN-OS Release 2.1(1a)) in an IVR topology.

The `no ivr vsan-topology database` command only clears the configured database, not the active database. You can only delete the user-defined entries in the configured database. Auto mode entries only exist in the active database.

Examples

The following command enters configuration mode, enables the IVR feature, enters the VSAN topology database, and configures the pWWN-VSAN association for VSANs 2 and 2000:

```
switch# config terminal
```


Enter configuration commands, one per line. End with CNTL/Z.

```
switch(config)# ivr enable
```

```
switch(config)# ivr vsan-topology database
```

```
switch(config-ivr-topology-db)# autonomous-fabric-id 1 switch 20:00:00:00:30:00:3c:5e  
vsan-ranges 2,2000
```

Related Commands

Command	Description
autonomous-fabric-id(IVR topology database configuration)	Configures an autonomous fabric ID into the IVR topology database
ivr enable	Enables the Inter-VSAN Routing (IVR) feature.
show ivr	Displays IVR feature information.

ivr withdraw domain

To withdraw overlapping virtual domain from a specified VSAN, use the `ivr withdraw domain` command in EXEC mode.

```
ivr withdraw domain domain-id vsan vsan-id
```

Syntax Description

domain-id	Specifies the domain id. The range is 1 to 239.
vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(4)	This command was introduced.

Usage Guidelines

When you enable the `ivr virtual-fdomain-add` command, links may fail to come up due to overlapping virtual domain identifiers. If so, temporarily withdraw the overlapping virtual domain from that VSAN using the `ivr withdraw domain` command in EXEC mode.

Examples

The following command withdraws overlapping domains:

```
switch# ivr withdraw domain 10 vsan 20
```

Related Commands

Command	Description
<code>show ivr virtual-fdomain-add-status</code>	Displays the configured VSAN topology for a fabric.

ivr zone name

To configure a zone for Inter-VSAN Routing (IVR), use the `ivr zone name` command. To disable a zone for IVR, use the `no` form of the command.

```
ivr zone name ivzs-name
no ivr zone name ivz-name
```

Syntax Description

ivz-name	Specifies the IVZ name. Maximum length is 59 characters.
----------	--

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

This command enters IVR zone configuration submode.

Examples

The following command enters the configuration mode, enables the IVR feature, creates an IVZ, and adds a pWWN-VSAN member:

```
switch# config terminal
switch(config)# ivr enable
switch(config)# ivr zone name Ivz_vsan2-3
switch(config-ivr-zone)# member pwn 21:00:00:e0:8b:02:ca:4a vsan 3
```

Related Commands

Command	Description
show ivr	Displays IVR feature information.

ivr zone rename

To rename an inter-VSAN routing (IVR) zone, use the `ivr zone rename` command.

```
ivr zone rename current-name new-name
```

Syntax Description

current-name	Specifies the current zone name. The maximum size is 64 characters.
new-name	Specifies the new zone name. The maximum size is 64 characters.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example renames the IVR zone from east to west:

```
switch# ivr zone rename east west
```

Related Commands

Command	Description
ivr zone name	Creates and configures an IVR zone.
show ivr	Displays IVR information.

ivr zoneset

To configure a zoneset for Inter-VSAN Routing (IVR), use the `ivr zoneset` command. To revert to the factory defaults, use the `no` form of the command.

```
ivr zoneset activate name ivzs-name [force] | name ivzs-name
no ivr zoneset activate name ivzs-name [force] | name ivzs-name
```

Syntax Description		
	activate	Activates a previously configured IVZS.
	force	(Optional) Forces a IVZS activation
	name ivzs-name	Specifies the IVZS name. Maximum length is 59 characters.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines This command enters IVR zoneset configuration submode.



Note To replace the active IVR zone set with a new IVR zone set without disrupting traffic, activate the new IVR zone set without deactivating the current active IVR zone set.

Examples

The following command enters the configuration mode, enables the IVR feature, creates an IVZS, adds a IVZ member, and activates the IVZS:

```
switch# config terminal
switch(config)# ivr enable
switch(config)# ivr zoneset name Ivr_zoneset1
switch(config-ivr-zoneset)# member Ivz_vsan2-3
switch(config-ivr-zoneset)# exit
switch(config)# ivr zoneset activate name IVR_ZoneSet1
```

Related Commands	Command	Description
	show ivr	Displays IVR feature information.

ivr zoneset rename

To rename an inter-VSAN routing (IVR) zone set, use the `ivr zoneset rename` command.

```
ivr zoneset rename current-name new-name
```

Syntax Description

current-name	Specifies the current zone set name. The maximum size is 64 characters.
new-name	Specifies the new zone set name. The maximum size is 64 characters.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example renames the IVR zone set from north to south:

```
switch# ivr zoneset rename north south
```

Related Commands

Command	Description
ivr zoneset name	Creates and configures an IVR zone set.
show ivr	Displays IVR information.



J Commands

- [job name](#), on page 800

job name

To assign a job to a command schedule, use the job name command. To remove the job, use the no form of the command.

```
job name job-name
no job name job-name
```

Syntax Description

job-name	Specifies the job name for the command schedule to run.
----------	---

Command Default

None.

Command Modes

Scheduler schedule configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, the command scheduler must be enabled using the scheduler enable command.

You can configure multiple jobs in a command schedule.

Examples

The following example shows how to specified the job for a command schedule:

```
switch# config terminal
switch(config)# scheduler schedule name MySchedule
switch(config-schedule)# job name MyJob
```

Related Commands

Command	Description
scheduler enable	Enables the command scheduler.
scheduler schedule name	Configures a schedule for the command scheduler.
show scheduler	Displays scheduler information.



K Commands

- [keepalive](#), on page 802
- [key](#), on page 803
- [key \(sa configuration submode\)](#), on page 805
- [key-ontape](#), on page 806

keepalive

To configure the message keepalive interval for the IKE protocol, use the `keepalive` command in IKE configuration submode. To revert to the default, use the `no` form of the command.

```
keepalive seconds
no keepalive seconds
```

Syntax Description

seconds	Specifies the number of seconds for the keepalive interval. The range is 120 to 86400.
---------	--

Command Default

3600 seconds or 1 hour.

Command Modes

IKE configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

The keepalive interface only applies to IKE version 2 tunnels.

To use this command, the IKE protocol must be enabled using the `crypto ike enable` command.

Examples

The following example shows how to configure the keepalive interval:

```
switch# config terminal
switch(config)# crypto ike domain ipsec
switch(config-ike-ipsec)# keepalive 7200
```

Related Commands

Command	Description
<code>crypto ike domain ipsec</code>	Enters IKE configuration mode.
<code>crypto ike enable</code>	Enables the IKE protocol.
<code>show crypto ike domain ipsec</code>	Displays IKE information for the IPsec domain.

key

To configure the preshared key for the IKE protocol, use the `key` command in IKE configuration submode. To revert to the default, use the `no` form of the command.

```
key key-id address ip-address | hostname name
no key key-id address ip-address | hostname name
```

Syntax Description

key-id	Specifies the ID for the preshared key. The maximum length is 128 characters.
address ip-address	Specifies the peer IP address. The format is A . B . C . D .
hostname name	Specifies the peer host name. The maximum length is 128 characters.

Command Default

None.

Command Modes

IKE configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.
3.0(1)	Added the <code>hostname</code> keyword.

Usage Guidelines

To use this command, the IKE protocol must be enabled using the `crypto ike enable` command.



Note The `key` command supports only the IPv4 format for IP address.

Examples

The following example shows how to configure the key:

```
switch# config terminal
switch(config)# crypto ike domain ipsec
switch(config-ike-ipsec)# key ctct address 209.165.200.226
```

The following example shows how to delete the configured key:

```
switch(config-ike-ipsec)# no key ctct address 209.165.200.226
```

The following example shows how to set the preshared key for the specified peer:

```
switch(config-ike-ipsec)# key sample hostname node1
```

The following example shows how to delete the preshared key for the specified peer:

```
switch(config-ike-ipsec)# no key sample hostname node1
```

Related Commands

Command	Description
crypto ike domain ipsec	Enters IKE configuration mode.
crypto ike enable	Enables the IKE protocol.
show crypto ike domain ipsec	Displays IKE information for the IPsec domain.

key (sa configuration submode)

To configure the key for the current Security Association[SA], use the key command. To delete the key from the current SA, use the no form of the command.

```
key key
no key key
```

Syntax Description

key	Specifies the key for encryption as a 16-byte hexadecimal string. The maximum size of the string is 34.
-----	---

Command Default

None.

Command Modes

Configuration submode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the key for the current SA:

```
switch# config t
switch(config)# fcsp esp sa 257
This is a Early Field Trial (EFT) feature. Please do not use this in a producti
on environment. Continue Y/N ? [no] y
switch(config-sa)# key 0x1234
switch(config-sa)#
```

Related Commands

Command	Description
fcsp enable	Enables FC-SP.
show fesp interface	Displays FC-SP-related information for a specific interface.

key-ontape

To configure keys on the tape mode and store the encrypted security keys on the backup tapes, use the key-ontape command. To disable this feature, use the no form of the command.

```
key-ontape
no key-ontape
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Cisco SME cluster configuration submode.

Release	Modification
3.2(2)	This command was introduced.

Usage Guidelines This command allows the encrypted security keys to be stored on the backup tapes.



Note This feature is supported only for unique keys.

Before using this command, automatic volume grouping should be disabled by using the auto-volgrp command.

Examples

The following example enables the key-ontape feature:

```
switch# config terminal
switch(config)# sme cluster clustername1
switch(config-sme-cl)# key-ontape
```

The following example disables the key-ontape feature:

```
switch# config terminal
switch(config)# sme cluster clustername1
switch(config-sme0-cl)# no key-ontape
```

Related Commands

Command	Description
no shared-key	Specifies unique key mode.
no auto-volgrp	Disables automatic volume grouping.
show sme cluster key	Displays information about cluster key database.
show sme cluster tape	Displays information about tapes.



L Commands

- [ldap search-map](#), on page 808
- [ldap-search-map](#), on page 809
- [ldap-server deadtime](#), on page 810
- [ldap-server host](#), on page 811
- [ldap-server port](#), on page 813
- [ldap-server timeout](#), on page 814
- [lifetime seconds](#), on page 815
- [line com1](#), on page 816
- [line console](#), on page 819
- [line vty](#), on page 822
- [link-state-trap \(SME\)](#), on page 823
- [load-balancing](#), on page 824
- [load-balancing \(Cisco IOA cluster Configuration submode\)](#), on page 825
- [locator-led](#), on page 826
- [logging abort](#), on page 827
- [logging commit](#), on page 828
- [logging console](#), on page 829
- [logging distribute](#), on page 830
- [logging level](#), on page 831
- [logging level pmon](#), on page 832
- [logging level port](#), on page 834
- [logging logfile](#), on page 836
- [logging module](#), on page 837
- [logging monitor](#), on page 838
- [logging origin-id](#), on page 839
- [logging server](#), on page 841
- [logging timestamp](#), on page 844
- [logical-type](#), on page 845

ldap search-map

To configure a search map, use the `ldap search-map` command. To disable this feature, use the `no` form of the command.

```
ldap search-map map-name
no ldap search-map map-name
```

Syntax Description

map-name	Specifies the name of the search map. The maximum length is 128 characters.
----------	---

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to specify the LDAP search mapping table:

```
switch(config)# ldap search-map map1
switch(config-ldap-search-map)#
```

Related Commands

Command	Description
show ldap-server groups	Displays the configured LDAP server groups.

ldap-search-map

To attach the configured LDAP search map to the group, use the `ldap search-map` command. To disable this feature, use the `no` form of the command.

```
ldap-search-map map-name
no ldap-search-map map-name
```

Syntax Description

map-name	Specifies the name of the search map. The maximum length is 128 characters.
----------	---

Command Default

None.

Command Modes

Configuration submenu.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the name of the LDAP search mapping table:

```
switch(config)# ldap search-map map1
switch(config-ldap)#
```

Related Commands

Command	Description
show ldap-server groups	Displays the configured LDAP server groups.

ldap-server deadtime

To configure global LDAP server deadtime period in seconds, use the `ldap-server deadtime` command. To disable this feature, use the `no` form of the command.

`ldap-server deadtime minutes`
`no ldap-server deadtime minutes`

Syntax Description

minutes	Specifies LDAP server deadtime period in minutes. The range is from 1 to 60 minutes. Default is 5 minutes.
---------	--

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure global LDAP server deadtime period in seconds:

```
switch(config)# ldap-server deadtime 5
switch(config)#
```

Related Commands

Command	Description
<code>show ldap-server groups</code>	Displays the configured LDAP server groups.

ldap-server host

To configure global LDAP server IP address, use the `ldap-server host` command in configuration mode. To disable this feature, use the `no` form of the command.

```
ldap-server host server-name | ip-address enable-ssl | [port port number] [timeout timeout in seconds]
| rootDN rootDN password [7 password | password] [port port number] [timeout timeout in seconds]
| test rootDN DN string [username user-name] [password [7 password | password]] [idle-time n]
no ldap-server host server-name | ip-address enable-ssl | [port port number] [timeout timeout in
seconds] | rootDN rootDN password [7 password | password] [port port number] [timeout timeout
in seconds] | test rootDN DN string [username user-name] [password [7 password | password]]
[idle-time n]
```

Syntax Description

server-name	Specifies LDAP server DNS name. The maximum length is 255 characters.
ip-address	Specifies LDAP server IP address.
enable-ssl	Specifies LDAP server, enable SSL. Note From Cisco MDS NX-OS Release 8.1(1) and later, LDAP over Secure Sockets Layer (SSL) supports SSL version 3 and Transport Layer Security (TLS) versions 1.0 and 1.2. From Cisco MDS NX-OS Release 6.2(29) and later, LDAP over Secure Sockets Layer (SSL) supports SSL version 3 and Transport Layer Security (TLS) versions 1.0 and 1.2.
port	Specifies LDAP server port.
port-number	Specifies port number. The range is from 1 to 65535.
root DN	Specifies LDAP rootDN for the LDAP server database.
rootDN	The maximum length is 63 characters and default is empty string.
password 7 pasword	Specifies encrypted bind password for root. The maximum length is 63 characters and default is empty string.
password password	Specifies bind password for root. The maximum length is 63 characters and default is empty string
test rootDN DN string	Specifies the test keyword which turns on automated testing for the feature. The rootDN keyword is mandatory and is followed by the rootDN to be used to bind to ldap server to verify its state.
username user-name	Specifies the username that would be used to do a test bind.
password password	Specifies the password to be used in the packets. When a password cannot be obtained, the default of test is used for test packets.

idle-time n	Specifies the time for which the server has to remain idle before test packet(s) are sent out. If any of the responses are not received, the server is assumed dead. The default idle-time is 0, but can be configured as low as 1 minute.
timeout timeout in seconds	Specifies the timeout period to wait for a response from the server before client can declare a timeout failure. The range is from 1 to 60 seconds.

Command Default

Port - Globally configured value (“ldap-server port <n>”), in absence of which a value of 389. Timeout- Globally configured value (“ldap-server timeout <n>”), in absence of which a value of 5 seconds.

idle-time- Default is 0.

testrootDN-Default value dc=test, dc=com.

username- default value is test.

Password- For test commands default value is test.

Command Modes

Configuration submode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.
NX-OS 6.2(29)	LDAP over Secure Sockets Layer (SSL) supports SSL version 3 and Transport Layer Security (TLS) versions 1.0 and 1.2 on Cisco MDS NX-OS Release 6.2(29) and later.
NX-OS 8.1(1)	LDAP over Secure Sockets Layer (SSL) supports SSL version 3 and Transport Layer Security (TLS) versions 1.0 and 1.2 on Cisco MDS NX-OS Release 8.1(1) and later.

Usage Guidelines

None.

Examples

The following example shows how to Specify the test keyword turns on automated testing for the feature:

```
switch(config)# ldap-server host 10.64.66.140 test rootDN cn=Manager,dc=acme,dc=com user
test password secret idle-time 1
```

The following example shows how to enable TLS while connecting to the server:

```
switch(config)# ldap-server host 10.64.66.140 enable-ssl
switch(config)#
```

The following example shows how to configure LDAP server port:

```
switch(config)# ldap-server host 10.64.66.140 root DN cn=Manager, dc=acme, dc=com password
secret port 389
switch(config)#
```

Related Commands

Command	Description
show ldap-server groups	Displays the configured LDAP server groups.

ldap-server port

To configure global LDAP server port, use the `ldap-server port` command in configuration mode. To disable this feature, use the `no` form of the command.

```
ldap-server port port-number
```

Syntax Description	port-number	Specifies port number. The range is from 1 to 65535.
---------------------------	-------------	--

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to configure global LDAP server port:

```
switch(config)# no ldap-server port 65532
switch(config)#
```

Related Commands	Command	Description
	show ldap-server groups	Displays the configured LDAP server groups.

ldap-server timeout

To configure global timeout period in seconds, use the `ldap-server timeout` command in configuration mode. To disable this feature, use the `no` form of the command.

```
ldap-server timeout timeout in second
no ldap-server timeout timeout in second
```

Syntax Description

timeout in seconds	Specifies timeout value in seconds. The default timeout value is 5 seconds and valid range is from 1 to 60 seconds. This value will be used only for those servers for which timeout is not configured at a per-server level.
--------------------	---

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure global LDAP server timeout in seconds:

```
switch(config)# no ldap-server timeout 1
switch(config)#
```

Related Commands

Command	Description
<code>show ldap-server groups</code>	Displays the configured LDAP server groups.

lifetime seconds

To configure the security association (SA) lifetime duration for an IKE protocol policy, use the lifetime seconds command in IKE policy configuration submode. To revert to the default, use the no form of the command.

```
lifetime seconds seconds
no lifetime seconds seconds
```

Syntax Description	seconds	Specifies the lifetime duration in seconds. The range is 600 to 86400.
---------------------------	---------	--

Command Default 86,400 seconds.

Command Modes IKE policy configuration submode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, the IKE protocol must be enabled using the crypto ike enable command. The lifetime seconds command overrides the default.

Examples The following example shows how to configure the SA lifetime duration for the IKE protocol:

```
switch# config terminal
switch(config)# crypto ike domain ipsec
switch(config-ike-ipsec)# policy 1
switch(config-ike-ipsec-policy)# lifetime seconds 6000
```

Related Commands	Command	Description
	crypto ike domain ipsec	Enters IKE configuration mode.
	crypto ike enable	Enables the IKE protocol.
	policy	Configures IKE protocol policy.
	show crypto ike domain ipsec	Displays IKE information for the IPsec domain.

line com1

To configure auxiliary COM 1 port, use the line com1 command. To negate the previously issued command or to revert to factory defaults, use the no form of the command.

```
linecom1->databitsnumber | flowcontrolhardware | modemin | init-stringdefault | user-input |
set-stringuser-inputstring | parityeven | none | odd | speedspeed | stopbits1 | 2
nolinecom1->databitsnumber | flowcontrolhardware | modemin | init-string | set-stringuser-input | parityeven
| none | odd | speedspeed | stopbits1 | 2
```

Syntax Description

databits number	Specifies the number of databits per character. The range is 5 to 8.
flowcontrol hardware	Enables modem flow on the COM1 port control.
modem	Enables the modem mode.
in	Enables the COM 1 port to only connect to a modem.
init-string default	Writes the default initialization string to the modem.
set-string user-input string	Sets the user-specified initialization string to its corresponding profile. Maximum length is 80 characters.
init-string user-default	Writes the provided initialization string to the modem.
parity	Sets terminal parity.
even	Sets even parity.
none	Sets no parity.
odd	Sets odd parity.
speed speed	Sets the transmit and receive speeds. The range is 110 to 115, 200 baud.
stopbits	Sets async line stopbits.
1	Sets one stop bit.
2	Sets two stop bits.

Command Default

9600 Baud
8 databits
1 stopbit
Parity none
Default init string

Command Modes

Configuration mode.

Command History

Release	Modification
1.2(2)	This command was introduced.
3.0(1)	Added an example to show the user-input initialization string for the Supervisor-2 module.

Usage Guidelines

The `line com1` command available in `config t` command mode. The `line com1` configuration commands are available in `config-com1` submenu.

You can perform the configuration specified in this section only if you are connected to the console port or the COM1 port.

We recommend you use the default initialization string. If the required options are not provided in the user-input string, the initialization string is not processed.

You must first set the user-input string before initializing the string.

Examples

The following example configures a line console and sets the options for that terminal line:

```
switch## config terminal
switch(config)#
switch(config)# line com1
switch(config-com1)# databits 6
switch(config-com1)# parity even
switch(config-com1)# stopbits 1
```

The following example disables the current modem from executing its functions:

```
switch# config terminal
switch(config)# line com1
switch(config-com1)# no modem in
```

The following example enables (default) the COM1 port to only connect to a modem:

```
switch# config terminal
switch(config)# line com1
switch(config-com1)# modem in
```

The following example writes the initialization string to the modem. This is the default.

```
switch# config terminal
switch(config)# line com1
switch(config-com1)# modem init-string default
```

The following example assigns the user-specified initialization string for a Supervisor-1 module to its corresponding profile:

```
switch# config terminal
switch(config)# line com1
switch(config-com1)# modem set-string user-input ATE0Q1&D2&C1S0=3\015
```

The following example assigns the user-specified initialization string for a Supervisor-2 module to its corresponding profile:

```
switch# config terminal
```

```
switch(config)# line com1
switch(config-com1)# modem set-string user-input ATE0QOV1&D0&C0S0=1
```

The following example deletes the configured initialization string:

```
switch# config terminal
switch(config)# line com1
switch(config-com1)# no modem set-string user-input ATE0Q1&D2&C1S0=3\015
```

The following example writes the user-specified initialization string to the modem:

```
switch# config terminal
switch(config)# line com1
switch(config-com1)# modem init-string user-input
```

Related Commands

Command	Description
line console	Configures primary terminal line.
line vty	Configures virtual terminal line.
show line com1	Displays COM1 information.

line console

To configure a terminal line, use the line console command. To negate the previously issued command or to revert to factory defaults, use the no form of the command.

```
lineconsole->databitsnumber | exec-timeoutminutes | modem in | init-string | set-stringuser-inputstring |
parityeven | none | odd | speedspeed | stopbits1 | 2
nolineconsole databits number | exec-timeoutminutes | modemin | init-stringdefault | user-input |
set-stringuser-inputstring | parityeven | none | odd | speedspeed | stopbits1 | 2
```

Syntax Description

databits number	Specifies the number of databits per character. The range is 5 to 8.
exec-timeout minutes	Configures exec timeout in minutes. The range is 0 to 525,600. To disable, set to 0 minutes.
modem	Enables the modem mode.
in	Enables the COM 1 port to only connect to a modem.
init-string default	Writes the default initialization string to the modem.
init-string user-input	Writes the provided initialization string to the modem.
set-string user-input string	Sets the user-specified initialization string to its corresponding profile. Maximum length is 80 characters.
parity	Sets terminal parity.
even	Sets even parity.
none	Sets no parity.
odd	Sets odd parity.
speed speed	Sets the transmit and receive speeds. Valid values for Supervisor-1 modules are between 110 and 115,200 bps (110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 57600, 115200). Valid values for Supervisor-2 modules are 9600, 19200, 38400, and 115200.
stopbits	Sets async line stopbits.
1	Sets one stop bit.
2	Sets two stop bits.

Command Default

9600 Baud.
 8 databits.
 1 stopbit.
 Parity none.
 Default init string.

Command Modes

Configuration mode.

Command History

Release	Modification
1.2(2)	This command was introduced.
3.0(1)	Modified the speed option by specifying speeds for the Supervisor-1 module and Supervisor-2 module.

Usage Guidelines

The line console command available in config t command mode. The line console configuration commands are available in config-console submodule.

When setting the speed option, be sure to specify one of the exact values.

Examples

The following example configures a line console and sets the options for that terminal line:

```
switch## config terminal
switch(config)##
switch(config)# line console
switch(config-console)# databits 60
switch(config-console)# exec-timeout 60
switch(config-console)#
```

```
flowcontrol software
switch(config-console)# parity even
switch(config-console)# stopbits 1
```

The following example disables the current modem from executing its functions:

```
switch# config terminal
switch(config)# line console
switch(config-console)# no modem in
```

The following example enables (default) the COM1 port to only connect to a modem:

```
switch# config terminal
switch(config)# line console
switch(config-console)# modem in
```

The following example writes the initialization string to the modem. This is the default.

```
switch# config terminal
switch(config)# line console
switch(config-console)# modem init-string default
```

The following example assigns the user-specified initialization string to its corresponding profile:

```
switch# config terminal
switch(config)# line console
switch(config-console)# modem set-string user-input ATE0Q1&D2&C1S0=3\015
```

The following example deletes the configured initialization string:

```
switch# config terminal
```

```
switch(config)# line console
switch(config-console)# no modem set-string user-input ATE0Q1&D2&C1S0=3\015
```

The following example writes the user-specified initialization string to the modem:

```
switch# config terminal
switch(config)# line console
switch(config-console)# modem init-string user-input
```

Related Commands

Command	Description
line com1	Configures the auxiliary COM 1 port
line vty	Configures virtual terminal line.
show line console	Displays console information.

line vty

To configure a virtual terminal line, use the line vty command. To negate the previously issued command or to revert to factory defaults, use the no form of the command.

```
linevty->exec-timeoutminutes | session-limitnumber
nolinevtyexec-timeout | session-limitnumber
```

Syntax Description

exec-timeout minutes	Configures timeout in minutes. The range is 0 to 525600. To disable, set to 0 minutes.
session-limit number	Configures the number of VSH sessions. The range is 1 to 64.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

The line vty command is available in config t command mode. The line vty configuration commands are available in config-line submode.

Examples

The following example configures a virtual terminal line and sets the timeout for that line:

```
switch## config terminal
switch(config)# line vty
switch(config-line)# exec-timeout 60
```

Related Commands

Command	Description
line com1	Configures the auxiliary COM 1 port.
line console	Configures primary terminal line.

link-state-trap (SME)

To enable an Simple Network Management Protocol (SNMP) link state trap on an interface, use the link-state-trap command. To disable this feature, use the no form of the command.

```
link-state-trap
no link-state-trap
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Interface configuration submenu.

Command History	Release	Modification
	3.2(2)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable the link-state-trap on the Fibre Channel interface:

```
switch# config t
switch(config)# interface fc 1/1
switch(config-if)# link-state-trap
switch(config-if)#
```

The following example shows how to disable the link-state-trap on the Fibre Channel interface:

```
switch# config t
switch(config)# interface fc 1/1
switch(config-if)# no link-state-trap
switch(config-if)#
```

Related Commands	Command	Description
	show interface	Displays interface information.

load-balancing

To enable cluster reload balancing for all targets or specific targets, use the load-balancing command. To disable this command, use the no form of the command.

```
load-balancing enable | target wwn
no load-balancing enable | target wwn
```

Syntax Description

enable	Enables cluster load balancing.
target wwn	Specifies the world-wide name (WWN) of the target port.

Command Default

None.

Command Modes

Cisco SME cluster configuration submode.

Command History

Release	Modification
3.3(1a)	This command was introduced.

Usage Guidelines

The reload balancing operation is performed by the Cisco SME administrator for all or specific target ports. This operation first unbinds all the targets from the Cisco SME interfaces. The targets are then associated, one at a time, based on the load-balancing algorithm.

The reload balancing operation can be triggered if the targets remain unconnected due to errors in the prior load balancing operations in the backend.

Examples

The following example enables reload balancing in Cisco SME:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# load-balancing enable
switch(config-sme-cl-node)#
```

The following example adds the host to the Cisco SME interface based on the load-balancing policy:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# load-balancing 17:11:34:44:44:12:14:10
switch(config-sme-cl-node)#
```

Related Commands

Command	Description
show sme cluster	Displays Cisco SME information.

load-balancing (Cisco IOA cluster Configuration submode)

To enable cluster reload balancing of all flows in an IOA cluster, use the load-balancing command.

```
load-balancing enable | target wwn
no load-balancing enable | target wwn
```

Syntax Description	enables	Enables cluster load balancing.
	target pwwn	Specifies the world-wide name (WWN) of the target port.

Command Default None.

Command Modes Cisco IOA cluster Configuration submode.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable cluster reload balancing of all targets:

```
rtp-sw1(config)# ioa cluster tape_vault
rtp-sw1(config-ioa-cl)# load-balancing enable
switch#(config-ioa-cl)# load-balancing10:00:00:00:00:00:00
This command will first disable all the IT nexuses (only for a target if specified) and then enable them back. This process is disruptive. Also, in case you abort the request in the middle, you can enable load balancing back by executing the command 'load-balancing enable'.
Do you wish to continue? (yes/no) [no] y
Cluster config fails: This switch is not the master switch, configuration change not allowed. (0x420f003c)
switch#(config-ioa-cl)#
```

Related Commands	Command	Description
	interface ioa	Configures the IOA interface.

locator-led

To blink an LED on the system, use the locator-led command. To restore the default LED state, use the no form of this command.

```
locator-led chassis | fan f-number | module slot | powersupply ps-number | xbar x-number
no locator-led chassis | fan f-number | module slot | powersupply ps-number | xbar x-number
```

Syntax Description

chassis	Blinks the chassis LED.
fan f-number	Blinks the LED that represents the configured fan number. The range depends on the platform. Use ? to see the range.
module slot	Blinks the module LED. The range depends on the platform. Use ? to see the range.
powersupply ps-number	Blinks the power supply LED. The range depends on the platform. Use ? to see the range.
xbar x-number	Blinks the xbar module LED. The range depends on the platform. Use ? to see the range.

Command Default

The locator LED is off.

Command Modes

Any command mode

network-admin network-operator vdc-admin vdc-operator

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

Use the locator-led command to flash the LED on a component in the system. You can use this blinking LED to identify the component to an administrator in the data center.

This command is available only in modular Cisco MDS switches.

Examples

This example shows how to blink the LED for module 4:

```
switch# locator-led module 4
```

Related Commands

Command	Description
show locator-led status	Displays the status of locator LEDs on the system.

logging abort

To discard the logging Cisco Fabric Services (CFS) distribution session in progress, use the logging abort command in configuration mode.

```
logging abort
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to discard logging CFS distribution session in progress:

```
switch# config terminal  
switch(config)# logging abort
```

Related Commands	Command	Description
	show logging	Displays logging information.

logging commit

To apply the pending configuration pertaining to the logging Cisco Fabric Services (CFS) distribution session in progress in the fabric, use the logging commit command in configuration mode.

```
logging commit
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to distribute the current logging configuration on this switch to all participating switches in the fabric:

```
switch# config terminal
switch(config)# logging commit
```

Related Commands	Command	Description
	logging server	Sends system messages to a remote logging server.
	show logging	Displays logging information.

logging console

To set console logging, use the logging console command. To negate the previously issued command or to revert to factory defaults, use the no form of the command.

```
logging console [severity-level]
no logging console [severity-level]
```

Syntax Description

severity-level	(Optional) Specifies the maximum severity of messages logged. The range is 0 to 7, where 0 is emergency, 1 is alert, 2 is critical, 3 is error, 4 is warning, 5 is notify, 6 is informational, and 7 is debugging.
----------------	--

Command Default

Disabled.
The default severity level is 2.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

The switch logs messages at or above the configured severity level.

Examples

The following example reverts console logging to the factory set default severity level of 2 (critical). Logging messages with a severity level of 2 or above will be displayed on the console.

```
switch# config terminal
switch(config)# logging console 2
```

Related Commands

Command	Description
show logging	Displays logging configuration information.

logging distribute

To enable distribution of the logging configuration to other switches in the fabric via Cisco Fabric Services (CFS), use the logging distribute command. To disable this feature, use the no form of the command.

```
logging distribute
no logging distribute
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines This option must be enabled on all switches in the fabric for them to participate in fabric-wide updates of the logging configuration.

Examples The following example shows how to enable distribution of the logging configuration on the local switch:

```
switch# configure terminal
switch(config)# logging distribute
```

Related Commands	Command	Description
	logging commit	Commits the logging configuration to other switches in the fabric.
	logging server	Configures details of a remote logging server.
	show cfs	Displays the information of switches in the fabric that have CFS enabled.
	show logging	Displays logging information.

logging level

To modify message logging facilities, use the logging level command. To negate the previously issued command or to revert to factory defaults, use the no form of the command.

```
logging level facility-name severity-level
no logging level facility-name severity-level
```

Syntax Description	
facility-name	Specifies the required facility name (for example acl, or ivr, or port, etc.)
severity-level	Specifies the maximum severity of messages logged. The range is 0 to 7, where 0 is emergency, 1 is alert, 2 is critical, 3 is error, 4 is warning, 5 is notify, 6 is informational, and 7 is debugging.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines The switch logs messages at or above the configured severity level.

Examples Configures Telnet or SSH logging for the kernel facility at level 4 (warning). As a result, logging messages with a severity level of 4 or above will be displayed:

```
switch# config terminal
switch(config)# logging level kernel 4
```

Related Commands	Command	Description
	show logging	Displays logging configuration information.

logging level pmon

To configure logging level for port monitor syslog messages, use the logging level pmon command. To remove this configuration, use the no form of this command.

```
logging level pmon severity-level
no logging level pmon
```

Syntax Description

severity-level	Specifies the severity of messages logged. The range is 0–7, where 0 is emergency, 1 is alert, 2 is critical, 3 is error, 4 is warning, 5 is notify, 6 is informational, and 7 is debugging.
----------------	--

Command Default

The default severity level is warning (4).

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.4(1)	Added support for configuring severity level for port monitor.
1.3(1)	This command was introduced.

Usage Guidelines

Use the show logging level pmon command to verify the configured port monitor severity level.

Examples

The following example displays how to configure logging for port monitor at level 3 (error). As a result, logging messages with a severity level of 2–3 will be displayed:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# logging level pmon 3
```

The following example displays the syslog message when the severity level configured for port monitor is error (3):

```
PMON-SLOT1-3-RISING_THRESHOLD_REACHED: Invalid Words has reached the rising threshold
(port=fcl/1 [chars], value=90).
PMON-SLOT1-3-FALLING_THRESHOLD_REACHED: Invalid Words has reached the falling threshold
(port=fcl/1 [chars], value=0).
```

The following example displays the syslog message when the severity level configured for port monitor is warning (4):

```
PMON-SLOT1-4-WARNING_THRESHOLD_REACHED_UPWARD: Invalid Words has reached warning threshold
in the upward direction (port fcl/1 [chars], value = 90).
PMON-SLOT1-3-RISING_THRESHOLD_REACHED: Invalid Words has reached the rising threshold
(port=fcl/1 [chars], value=90).
PMON-SLOT1-4-WARNING_THRESHOLD_REACHED_DOWNWARD: Invalid Words has reached warning threshold
in the downward direction (port fcl/1 [chars], value = 0).
PMON-SLOT1-3-FALLING_THRESHOLD_REACHED: Invalid Words has reached the falling threshold
```



```
(port=fc1/1 [chars], value=0).
```

Related Commands

Command	Description
show logging	Displays logging configuration information.

logging level port

To configure logging level for port syslog messages, use the `logging level port` command. To remove this configuration, use the `no` form of this command.

```
logging level port severity-level | link-failure | critical | notif
```

```
no logging level port severity-level | link-failure | critical | notif
```

Syntax Description

severity-level	Specifies the severity of messages logged. The range is from 0 to 7, where 0 is emergency, 1 is alert, 2 is critical, 3 is error, 4 is warning, 5 is notify, 6 is informational, and 7 is debugging.
link-failure	Specifies logging level for port link failure syslog messages.
critical	Specifies that when an active link fails, the message that is issued is a critical level (2) message: %PORT-2-IF_DOWN_LINK_FAILURE_CRIT.
notif	Specifies that when an active link fails, the message that is issued is a notification level (5) message: %PORT-5-IF_DOWN_LINK_FAILURE.

Command Default

The default severity is the notification level (5).

Command Modes

Configuration mode (config)

Command History

Release	Modification
1.3(1)	This command was introduced.

Examples

The following example displays how to configure Telnet or SSH logging for port at level 4 (warning). As a result, logging messages with a severity level of 4 or above will be displayed:

```
switch# configure
switch(config)# logging level port 4
```

The following example displays how to configure Telnet or SSH logging for critical port link failure messages. As a result, logging messages that are critical will be displayed:

```
switch# configure
switch(config)# logging level port link-failure critical
```

The following example displays the syslog message when a critical port link failure is configured:

```
PORT-2-IF_DOWN_LINK_FAILURE_CRIT: Interface [chars] is down (Link failure)
```

The following example displays the syslog message when a notification port link failure is configured:

```
PORT-5-IF_DOWN_LINK_FAILURE: Interface [chars] is down (Link failure [chars]) [chars] [chars]
```

Command	Description
show logging	Displays logging configuration information.

logging logfile

To set message logging for logfile, use the logging logfile command. To negate the previously issued command or to revert to factory defaults, use the no form of the command.

```
logging logfile filename severity-level [size filesize]
no logging logfile filename severity-level [size filesize]
```

Syntax Description

filename	Specifies the log filename. Maximum length is 80 characters.
severity-level	Specifies the maximum severity of messages logged. The range is 0 to 7, where 0 is emergency, 1 is alert, 2 is critical, 3 is error, 4 is warning, 5 is notify, 6 is informational, and 7 is debugging.
size filesize	(Optional) Specifies the log file size. The range is 4096 to 4194304 bytes.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

The switch logs messages at or above the configured severity level.

Examples

The following example configures logging information for errors or events above a severity level of 3 (errors) to be logged in a file named ManagerLogFile. By configuring this limit, the file size is restricted to 3,000,000 bytes:

```
switch# config terminal
switch(config)# logging logfile
ManagerLogFile 3 size 3000000
```

Related Commands

Command	Description
show logging	Displays logging configuration information.

logging module

To set message logging for linecards, use the logging module command. To negate the previously issued command or to revert to factory defaults, use the no form of the command.

```
logging module [severity-level]
no logging module [severity-level]
```

Syntax Description	severity-level (Optional) Specifies the maximum severity of messages logged. The range is 0 to 7, where 0 is emergency, 1 is alert, 2 is critical, 3 is error, 4 is warning, 5 is notify, 6 is informational, and 7 is debugging.
---------------------------	---

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example sets message logging for modules at level 7:

```
switch## config terminal
switch(config)# logging module 7
```

Related Commands	Command	Description
	show logging	Displays logging configuration information.

logging monitor

To set monitor message logging, use the logging monitor command. To negate the previously issued command or to revert to factory defaults, use the no form of the command.

logging monitor severity level

Syntax Description		
logging monitor		Sets message logging.
severity level		Specifies the maximum severity of messages logged. The range is 0 to 7, where 0 is emergency, 1 is alert, 2 is critical, 3 is error, 4 is warning, 5 is notify, 6 is informational, and 7 is debugging.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example sets terminal line (monitor) message logging at level 2:

```
switch## config terminal
switch(config)# logging monitor 2
```

Related Commands	Command	Description
	show logging	Displays logging configuration information.

logging origin-id

To specify the hostname, IP address, or a text string in the system messages that are sent to remote syslog servers, use the `logging origin-id` command. To remove this configuration, use the `no` form of this command.

```
logging origin-id hostname | ip address | string word [rfc-order]
```

```
no logging origin-id hostname | ip address | string word [rfc-order]
```

Syntax Description	hostname	ip address	string word
	Specifies to use the switch name as the origin ID in system messages.	Specifies to use the specified IP address address as the origin ID in system messages.	Specifies to use the single word word as the origin ID in system messages. No spaces or quoting is allowed. word is truncated to 200 characters in messages.

Command Default This feature is disabled by default.

Command Modes Configuration mode (config#)

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines The hostname option has no arguments as it uses the name configured by the `switchname configured` command. By default, header fields in remote logging messages are sent in the Cisco specific order of 'origin ID-timestamp-message'. If a remote syslog server does not accept this ordering use the `rfc-order` option to send message header fields ordering in the syslog RFC order of 'timestamp-origin ID-message'.

If the system timestamp format command is enabled it overrides the `rfc-order` option to make remote system logging messages RFC 5424 compliant. This is a standard format and allows messages from multiple platforms and vendors to be more easily managed together on remote servers.

Examples The following example displays how to specify to add the host name to the system messages that are sent to the remote syslog servers:

```
switch# configure
switch(config)# logging origin-id hostname
```

The following example displays how to specify to add the IP address of the switch that is sending the system messages to the remote syslog servers:

```
switch# configure
switch(config)# logging origin-id ip 192.0.2.2
```

The following example displays how to specify to append a custom string to the system messages that are sent to the remote syslog servers:

```
switch# configure  
switch(config)# logging origin-id word switch2
```

Command	Description
show logging	Displays logging configuration information.
switchname	Configure the switchname.
system timestamp format	Configures the system logging timestamp format.

logging server

To send system messages to a remote logging server, use the logging server command.

```
logging server name [severity-level] [ port number ] [ secure [ trustpoint client-identity
name ] ] [ facility facility-name ]
```

Syntax Description

server name	Specifies the host name or IPv4/IPv6 address of the remote system logging server.
severity-level	(Optional) Specifies the minimum severity of messages logged. The range is 0 to 7, where 0 is emergency, 1 is alert, 2 is critical, 3 is error, 4 is warning, 5 is notify, 6 is informational, and 7 is debugging.
port number	(Optional) Specifies the port number. Range is from 1 - 65535. The default port number for unsecure connections is UDP 514 and for secure connections is TCP 6514.
secure	(Optional) Sets the transport to TCP, the destination port to the default secure port, and enables TLS and mutual authentication of switch and destination server using identity certificates signed by a trusted CA.
trustpoint client-identity name	(Optional) Specifies to use identity certificates from the specified trust point. When this option is not specified certificates from all trust points are tried until authentication succeeds. name is the name of a trust point configured on the switch.

facility facility-name	(Optional) Specifies the facility to tag the message with. The options are: <ul style="list-style-type: none"> • auth • authpriv • cron • daemon • ftp • kernel • local0 • local1 • local2 • local3 • local4 • local5 • local6 • local7 • lpr • mail • news • syslog • user • uucp
------------------------	--

Command Default

The default unsecure port is UDP 514. The default secure port is TCP 6514 with TLS.

Command Modes

Configuration mode.

Command History

Release	Modification
9.2(1)	Added the secure and trustpoint client-identity name options.
1.0(2)	This command was introduced.

Usage Guidelines

Remote logging destinations may be specified by a name, IPv4 or IPv6 address. If using a name as the destination address then ensure that it exists as a local ip host configuration or is a valid DNS name and DNS lookup is enabled.

The maximum configurable remote logging destinations is 3.

If the connection to a secure remote logging destination is lost, then the switch will not attempt to reconnect until the next system message to that destination must be sent.

If the secure option is specified and no identity certificates are installed, then connection to the specified remote destination will not be established.

Examples

The following example displays how to enable message logging to the specified remote server for severity 7 and higher (up to severity 0) messages:

```
switch## config terminal
switch(config)# logging server sanjose 7
```

The following example displays how to configure a secure, encrypted connection to a remote syslog server using TCP destination port 55551 and only identity certificates installed in the trust point called tp1:

```
switch## config terminal
switch(config)# logging server 192.168.0.1 port 55551 secure trustpoint client-identity tp1
```

Related Commands

Command	Description
crypto ca trustpoint	Installs identity certificates from a trusted Certificate Authority.
ip host	Configures a name to IP address mapping.
show hosts	Displays local name to IP address mappings.
show logging	Displays system message logging configuration information.
system timestamp format	Configures the timestamp format of logs.

logging timestamp

To set the time increment for the message logging time stamp, use the logging timestamp command. To negate the previously issued command or to revert to factory defaults, use the no form of the command.

```
logging timestamp microseconds | milliseconds | seconds
no logging timestamp microseconds | milliseconds | seconds
```

Syntax Description

microseconds	Sets the logging time stamp to microseconds.
milliseconds	Sets the logging time stamp to milliseconds.
seconds	Sets the logging time stamp to seconds.

Command Default

Seconds.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example sets the logging time stamp to milliseconds:

```
switch## config terminal
switch(config)# logging timestamp milliseconds
```

Related Commands

Command	Description
show logging	Displays logging configuration information.

logical-type

To configure a logical-type policy, use the logical-type command. To disable a logical-type policy, use the no form of this command.

```
logical-type {all | core | edge}
no logical-type {all | core | edge}
```

Syntax Description

all	Specifies both core ports and edge ports. This is the default value.
core	Specifies the port's logical type as core or E.
edge	Specifies the port's logical type as edge or F.

Command Default

Specifies both core ports and edge ports.

Command Modes

Port monitor configuration (config-port-monitor)

Command History

Release	Modification
8.1(1)	This command was introduced.

Usage Guidelines

- From Cisco MDS NX-OS Release 8.1(x), the port-type {access-port | trunks | all} command is replaced with the logical-type {core | edge | all} command, and port-type is replaced with logical-type, access-port is replaced with edge, and trunks is replaced with core.
- The default policy uses its own internal logical type, which is the same for all ports.

Examples

The following example shows how to configure port monitoring for a core port:

```
switch# configure terminal
switch(config)# port-monitor name cisco
switch(config-port-monitor)# logical-type core
```

Related Commands

Command	Description
show interface	Displays the status of an interface.
show port-monitor	Displays all port-monitor policies.
switchport logical-type	Configures a logical type for a port in an interface and a port in a port channel.

logical-type



M Commands

- [match](#), on page 848
- [match](#) (fcroute-map configuration submode), on page 850
- [match address](#), on page 852
- [mcast root](#), on page 853
- [member](#) (fcalias configuration submode), on page 854
- [member](#) (ivr zone configuration), on page 856
- [member](#) (zone configuration and zoneset-zone configuration submode), on page 858
- [member](#) (zoneset configuration submode), on page 861
- [member](#) (zoneset-zone configuration submode), on page 862
- [member pwn](#), on page 864
- [metric](#) (iSLB initiator configuration), on page 866
- [mkdir](#), on page 867
- [mode](#), on page 868
- [modem connect line](#), on page 869
- [monitor counter](#) (port-group-monitor configuration mode), on page 870
- [monitor counter](#) (port-monitor configuration mode), on page 872
- [monitor counter tx-slowport-count](#), on page 874
- [monitor counter tx-slowport-oper-delay](#), on page 875
- [monitor counter txwait](#), on page 876
- [monitor session](#), on page 877
- [move](#), on page 878
- [mutual-chap username](#) (iSCSI initiator configuration and iSLB initiator configuration), on page 879

match

To configure QoS class map match criteria, use the match command in class map configuration submode. Remove QoS class map match criteria, use the no form of the command.

```
match any|destination-address fc-id [mask address-mask]|destination-device-alias name|destination-wwn
wwn-id|input-interface fc slot/port|source-address fc-id [mask address-mask]|source-device-alias
name|source-wwn wwn-id
nomatch any|destination-address fc-id [mask address-mask]|destination-device-alias name|
destination-wwn wwn-id|input-interface fc slot/port|source-address fc-id [mask address-mask]|
source-device-alias name|source-wwn wwn-id
```

Syntax Description

any	Enables matching of any frame.
destination-address fc-id	Specifies the destination FCID to match frames.
mask address-mask	(Optional) Specifies an address mask to match frames. The range is 0x0 to 0xffffffff.
destination-device-alias name	Specifies the destination device alias to match frames. Maximum length is 64 characters.
destination-wwn wwn-id	Specifies the destination WWN to match frames.
input-interface fc slot/port	Specifies the source Fibre Channel interface to match frames.
source-address fc-id	Specifies the source FCID to match frames.
source-device-alias name	Specifies the source device alias to match frames. Maximum length is 64 characters.
source-wwn wwn-id	Specifies the source WWN to match frames.

Command Default

None.

Command Modes

Class map configuration submode.

Command History

Release	Modification
1.3(1)	This command was introduced.
2.0(x)	Added the destination-device-alias and source-device-alias options.

Usage Guidelines

You can access this command only if you enable the QoS data traffic feature using the qos enable command.

Examples

The following example creates a class map called MyClass1 and places you in the class map configuration submode to match any (default) criteria specified for this class:


```
switch# config terminal
switch(config)# qos class-map MyClass1 match-any
switch(config-cmap)# match any
```

The following example specifies a destination address match for frames with the specified destination FCID:

```
switch(config-cmap)# match destination-address 0x12ee00
```

The following example specifies a source address and mask match for frames with the specified source FCID. Mask refers to a single or entire area of FCIDs:

```
switch(config-cmap)# match source-address 0x6d1090 mask 0
```

The following example specifies a destination WWN to match frames:

```
switch(config-cmap)# match destination-wwn 20:01:00:05:30:00:28:df
Operation in progress. Please check class-map parameters
```

The following example specifies a source WWN to match frames:

```
switch(config-cmap)# match source-wwn 23:15:00:05:30:00:2a:1f
Operation in progress. Please check class-map parameters
```

The following example specifies a source interface to match frames:

```
switch(config-cmap)# match input-interface fc 2/1
Operation in progress. Please check class-map parameters
```

The following example removes a match based on the specified source interface:

```
switch(config-cmap)# no match input-interface fc 3/5
```

Related Commands

Command	Description
qos enable	Enables QoS.
show qos	Displays QoS information.

match (fcroute-map configuration submode)

To configure Fibre Channel route map match criteria, use the match command in Fibre Channel route map configuration submode. To remove the match criteria, use the no form of the command.

```
match source-fcid source-fcid [network-mask] dest-fcid destination-fcid [network-mask]
no match source-fcid source-fcid [network-mask] dest-fcid destination-fcid [network-mask]
```

Syntax Description

source-fcid source-fcid	Specifies the source FC ID match criteria. The format is 0xhhhhhh.
network_mask	Specifies the network mask of the FC ID. The range is 0x0 to 0xffffffff.
dest-fcid destination-fcid	Specifies the destination FC ID. The format is 0xhhhhhh.

Command Default

The FC ID match criteria mask default value is 0xffffffff.

Command Modes

Fibre Channel route map configuration submode.

Command History

Release	Modification
3.0(3)	This command was introduced.

Usage Guidelines

None.

Examples

The following example specifies the FC ID match criteria with the default mask value of 0xffffffff.

```
switch# config terminal
switch(config)# fcroute-map vsan 2 12
switch(config-fcroute-map)# match source-fcid 0x123456 dest-fcid 0x567890
```

The following example specifies the FC ID match criteria with a mask value of 0xffffffff.

```
switch# config terminal
switch(config)# fcroute-map vsan 2 12
switch(config-fcroute-map)# match source-fcid 0x123456 0xffffffff dest-fcid 0x567890 0xffffffff
```

The following example removes the FC ID match criteria.

```
switch(config-fcroute-map)# no match source-fcid 0x123456 0xffffffff dest-fcid 0x567890
0xffffffff
```



Note

The only valid mask value is 0xffffffff.

Related Commands	Command	Description
	fcroute	Specifies Fibre Channel routes and activates policy routing.
	fcroute-map vsan	Specifies a preferred path Fibre Channel route map.
	show fcroute-map	Displays the preferred path route map configuration and status.
	set (fcroute-map configuration submode)	Specifies the interface, the preference level for this interface, and the IVR next hop VSAN ID for this interface.

match address

To configure match addresses in an IPsec crypto map with an access control list (ACL), use the match address command in IPsec crypto map configuration submode. To not match addresses, use the no form of the command.

```
match address acl-name
no match address [acl-name]
```

Syntax Description

acl-name	Specifies the ACL name. Maximum length is 64 characters.
----------	--

Command Default

None.

Command Modes

IPsec crypto map configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, the IKE protocol must be enabled using the crypto ike enable command.

Examples

The following example shows how to match addresses in an IPsec crypto map with an ACL:

```
switch# config terminal
switch(config)# crypto map domain ipsec x 1
switch(config-crypto-map-ip)# match address UserACL
```

Related Commands

Command	Description
crypto ike domain ipsec	Enters IKE configuration mode.
crypto ike enable	Enables the IKE protocol.
show crypto map domain ipsec	Displays IPsec crypto map information.

mcast root

To configure the multicast feature, use the `mcast root` command in configuration mode. To revert to the default, use the `no` form of the command.

```
mcast root lowest | principal vsan vsan-id
no mcast root lowest | principal vsan vsan-id
```

Syntax Description		
	lowest	Specifies the lowest domain switch as root.
	principal	Specifies the principal switch as root.
	vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default principal

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to configure the multicast root VSAN:

```
switch# config terminal
switch(config)#mcast root principal vsan 4001
```

Related Commands	Command	Description
	show mcast	Displays multicast information.

member (fcalias configuration submode)

To add a member name to an Fibre Channel alias on a VSAN, use the member command in fcalias configuration submode. To remove a member name from an FC alias, use the no form of the command.

```
member device-alias aliasname [lun lun-id] | domain-id domain-id [lun lun-id] | fcid fc-id [lun lun-id]
| fwwn fwwn-id | interface fc slot/port [domain-id domain-id | swwn swwn-id] | ip-address ipv4|ipv6 |
pwwn pwwn-id [lun lun-id] | symbolic-nodename nodename
nomember device-alias aliasname [lun lun-id] | domain-id domain-id [lun lun-id] | fcid fc-id [lun
lun-id] | fwwn fwwn-id | interface fc slot/port [domain-id domain-id | swwn swwn-id] | ip-address
ipv4|ipv6 | pwwn pwwn-id [lun lun-id] | symbolic-nodename nodename
```

Syntax Description

device-alias aliasname	Specifies the member device alias. Maximum length is 64 characters.
lun lun-id	(Optional) Specifies the member LUN ID. The format is 0xhhhh [:hhh [:hhh [:hhh]]], where h is a hexadecimal digit.
domain-id domain-id	Specifies the member domain ID. The range is 1 to 239.
fcid fc-id	Specifies the member FC ID. The format is 0xhhhhh, where h is a hexadecimal digit.
fwwn fwwn-id	Specifies the member fWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal digit.
interface fc slot/port	Specifies the member interface ID.
swwn swwn-id	(Optional) Specifies the member sWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal digit.
ip-address ipv4|ipv6	Specifies a member IP address in either IPv4 format, A.B.C.D , or IPv6format, X:X:X::X/n .
pwwn pwwn-id	Specifies the member pWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal digit.
symbolic-nodename nodename	Specifies the member symbolic node name. The maximum length is 255 characters.

Command Default

None.

Command Modes

Fcalias configuration submode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to add a member to an FC alias called samplealias:

```
switch# config terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
switch(config)# fcalias name samplealias  
switch(config-fcalias)#
```

The following example defines an IPv6 address for the member:

```
switch(switch(config-fcalias)# member ip-address 2020:dbc0:80::4076
```

The following example shows how to delete the specified member:

```
switch(config-fcalias)# no member ip-address 2020:dbc0:80::4076
```

Related Commands

Command	Description
fcalias name	Configures an FC alias.
show fcalias	Displays the member name information in an FC alias.

member (ivr zone configuration)

To add a member name to an Inter-VSAN Routing (IVR) zone, use the member command in IVR zone configuration submode. To remove a member name from an fcalias, use the no form of the command.

```
member device-alias aliasname lun lun-id vsan vsan-id autonomous-fabric-id afid | vsan vsan-id
autonomous-fabric-id afid | pwwn pwwn-id lun lun-id vsan vsan-id autonomous-fabric-id afid | vsan
vsan-id autonomous-fabric-id afid
no member device-alias aliasname lun lun-id vsan vsan-id autonomous-fabric-id afid | vsan vsan-id
autonomous-fabric-id afid | pwwn pwwn-id lun lun-id vsan vsan-id autonomous-fabric-id afid | vsan
vsan-id autonomous-fabric-id afid
```

Syntax Description

device-aliasaliasname	Specifies the member device alias. Maximum length is 64 characters.
lun lun-id	Specifies the member LUN ID. The format is 0xhhhh [:hhh [:hhh [:hhh]]], where h is a hexadecimal digit.
vsanvsan-id	Specifies the VSAN ID. The range is 1 to 4093.
autonomous-fabric-id afid	Specifies the AFID to the local VSAN.
pwwn pwwn-id	Specifies the member pWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal digit.

Command Default

None.

Command Modes

IVR zone configuration submode.

Command History

Release	Modification
1.3(1)	This command was introduced.
2.1(1a)	Added lun parameter.

Usage Guidelines

You can configure an IVR zone member based on the specified pWWN and LUN value or, based on the specified pWWN, LUN value, and AFID.



Note

The CLI interprets the LUN identifier value as a hexadecimal value whether or not the 0x prefix is included.

Examples

The following example shows how to configure an IVR zone member based on the device alias VSAN, and the AFID:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ivr zone name IvrLunZone
switch(config-ivr-zone)# member device-alias Switch4 vsan 1 autonomous-fabric-id 14
```


The following example shows how to configure an IVR zone member based on the pWWN, VSAN, and the AFID:

```
switch# config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
switch(config)# ivr zone name IvrLunZone
switch(config-ivr-zone)# member pwn 29:00:00:05:30:00:06:ea vsan 1 autonomous-fabric-id
14
```

Related Commands

Command	Description
show ivr zone	Displays the IVR zone information.

member (zone configuration and zoneset-zone configuration submode)

To add a member name to a Fibre Channel zone set zone member, use the member command in zone set zone configuration submode. To remove a member name from a zone set zones, use the no form of the command.

```
member device-alias aliasname [lun lun-id] | domain-id domain-id [lun lun-id] | fcid fc-id [lun lun-id]
| fwwn fwwn-id | interface fc slotport [domain-id domain-id | swwn swwn-id] | ip-address ipv4/ipv6 |
pwwn pwwn-id [lun lun-id] | symbolic-nodename nodename
nomember device-alias aliasname [lun lun-id] | domain-id domain-id [lun lun-id] | fcid fc-id [lun
lun-id] | fwwn fwwn-id | interface fc slotport [domain-id domain-id | swwn swwn-id] | ip-address
ipv4/ipv6 | pwwn pwwn-id [lun lun-id] | symbolic-nodename nodename
```

Syntax Description

device-alias aliasname	Specifies the member device alias. Maximum length is 64 characters.
both	Specifies the device type as both.
initiator	Specifies the device type as initiator.
target	Specifies the device type as target.
lun lun-id	(Optional) Specifies the member LUN ID. The format is 0xhhhh [:hhh [:hhh [:hhh]]], where h is a hexadecimal digit.
domain-id domain-id	Specifies the member domain ID. The range is 1 to 239.
alias-name	The name of the fcalias. Maximum length is 64 characters.
port-number port	Specifies the member port number. The range is 0 to 255.
fcid fc-id	Specifies the member FC ID. The format is 0xhhhhhh, where h is a hexadecimal digit.
fwwn fwwn-id	Specifies the member fWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal digit.
interface fc slot/port	Specifies the member interface ID.
swwn swwn-id	Specifies the member sWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal digit.
ip-address ipv4|ipv6	Specifies a member IP address in either IPv4 format, A.B.C.D , or IPv6format, X:X:X::X/n .
pwwn pwwn-id	Specifies the member pWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal digit.
symbolic-nodename nodename	Specifies the member symbolic node name. The maximum length is 255 characters.

Command Default

This command can be used in both zone configuration submode and zoneset-zone configuration submode.

Command Modes

Zone set zone configuration submode and zoneset-zone configuration submode.

Command History

Release	Modification
5.2(6)	Added the keywords both, initiator, target to the syntax description.
1.0(2)	This command was introduced.
2.1(1a)	Added zoneset-zone configuration submode.
3.0(1)	Added the IPv6 IP address format.

Usage Guidelines

Create a zone set zone member only if you need to add member to a zone from the zone set prompt.

Examples

The following example shows how to enter the device type as target:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# zone name zs1 vsan 1
switch(config-zone)# member device-alias a target
switch(config-zone)#
```

The following example shows how to add a member to a zone called zs1 on VSAN 1:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# zone name zs1 vsan 1
switch(config-zone)# member fcid 0x111112
```

The following example shows how to add a zone to a zoneset called Zoneset1 on VSAN 1:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# zoneset name ZoneSet1 vsan 1
switch(config-zoneset-zone)# member fcid 0x111112
```

The following example shows how to assign an iSCSI IPv6 address-based membership into a zone:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# zoneset name ZoneSet1 vsan 1
switch(config-zoneset-zone)# member ipv6-address 2001:0DB8:800:200C::417A
```

The following example shows how to delete the specified device from a zone:

```
switch(config-zoneset-zone)# no member ipv6-address 2001:0DB8:800:200C::417A
```

Related Commands

Command	Description
show zoneset	Displays zone set information.

Command	Description
zoneset (configuration submode)	Used to specify a name for a zone set.
zone name (zone set configuration submode)	Configures a zone in a zoneset.

member (zoneset configuration submode)

To configure zone set zone members, use the member command in zone set configuration submode. To remove a zone set member, use the no form of the command.

```
member member-name
no member member-name
```

Syntax Description	member-name	Specifies the member name. Maximum length is 64 characters.
---------------------------	-------------	---

Command Default None.

Command Modes Zone set configuration submode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to add a member zone to a zone set:

```
switch# config terminal
switch(config)# zoneset name Zoneset1 vsan 10
switch(config-zoneset)# member ZoneA
```

Related Commands	Command	Description
	show zone	Displays zone information.
	zoneset name	Creates a zone set.

member (zoneset-zone configuration submode)

To add a member name to a Fibre Channel zone set zone member, use the member command in zone set zone configuration submode. To remove a member name from a zone set zones, use the no form of the command.

```
member device-alias aliasname [lun lun-id] | domain-id domain-id port-number port | fcalias alias-name
[lun lun-id] | fcid fc-id [lun lun-id] | fwwn fwwn-id | interface fc slot/port [domain-id domain-id |
swwn swwn-id] | ip-address ip-address | pwwn pwwn-id [lun lun-id] | symbolic-nodename nodename
no member device-alias aliasname [lun lun-id] | domain-id domain-id port-number port | fcalias
alias-name [lun lun-id] | fcid fc-id [lun lun-id] | fwwn fwwn-id | interface fc slot/port [domain-id
domain-id | swwn swwn-id] | ip-address ip-address | pwwn pwwn-id [lun lun-id] | symbolic-nodename
nodename
```

Syntax Description

device-alias aliasname	Specifies the member device alias. Maximum length is 64 characters.
lun lun-id	Specifies the member LUN ID. The format is 0xhhhh [:hhh [:hhh [:hhh]]], where h is a hexadecimal digit.
domain-id domain-id	Specifies the member domain ID. The range is 1 to 239.
alias-name	The name of the fcalias. Maximum length is 64 characters.
port-number port	Specifies the member port number. The range is 0 to 255.
fcid fc-id	Specifies the member FC ID. The format is 0xhhhhh, where h is a hexadecimal digit.
fwwn fwwn-id	Specifies the member fWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal digit.
interface fc slot/port	Specifies the member interface ID.
swwn swwn-id	Specifies the member sWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal digit.
ip-address ip-address	Specifies a member IP address.
pwwn pwwn-id	Specifies the member pWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal digit.
symbolic-nodename nodename	Specifies the member symbolic node name. The maximum length is 255 characters.

Command Default

None.

Command Modes

Zone set zone configuration submode.

Command History

Release	Modification
2.1(1)	This command was introduced.

Usage Guidelines

Create a zone set zone member only if you need to add member to a zone from the zone set prompt.

Examples

The following example shows how to configure an fcalias called AliasSample on VSAN 3.

```
switch# config terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
switch(config)# zoneset name ZoneSet1 vsan 1  
switch(config-zoneset)# zone name InLineZone1  
switch(config-zoneset-zone)# member fcid 0x111112
```

Related Commands

Command	Description
show zoneset	Displays zone set information.

member pwwn

To explicitly include or exclude a device as a congested device, use the `member pwwn pwwn vsan id [credit-stall]` command. To return to the default configuration, use the `no` form of the command.

```
member pwwn pwwn vsan id [ credit-stall ]
no member pwwn pwwn vsan id [ credit-stall ]
```

Syntax Description

pwwn	Specifies the congested device's pWWN.
vsan id	Specifies a VSAN.
credit-stall	Specifies to explicitly add a congested device with the portguard action as credit stall.

Command Default

Congested devices are not configured.

Command Modes

Congested device configuration mode (config-congested-dev-static)
 Congested device configuration mode (config-congested-dev-exc)

Command History

Release	Modification
8.5(1)	This command was introduced.

Examples

This example shows how to manually configure a device as a congested device. The configured device will be permanently treated as a congested device until it is removed from congestion isolation. All traffic to this device traversing the device's ISLs that are in ER_RDY flow-control mode will be routed to the low-priority VL (VL2).

```
switch# configure
switch(config)# fpm congested-device static list
switch(config-congested-dev-static)# member pwwn 10:00:00:00:c9:f9:16:8d vsan 4 credit-stall
```

This example shows how to configure a device that is to be excluded from automatic congestion isolation by the port monitor. Even when the rising threshold of a port-monitor counter is reached and the portguard action is set to cong-isolate, this device will not be isolated as a congested device, and traffic to this device traversing the device's ISLs that are in ER_RDY flow-control mode will not be routed to the low-priority VL (VL2).

```
switch# configure terminal
switch(config)# fpm congested-device exclude list
switch(config-congested-dev-exc)# member pwwn 10:00:00:00:c9:f9:16:8d vsan 4
```

Related Commands

Command	Description
feature fpm	Enables Fabric Performance Monitor (FPM).

Command	Description
fpm congested-device	Configures a congested device.
show fpm	Displays FPM information.

metric (iSLB initiator configuration)

To assign a load-balancing metric for an iSLB initiator, use the metric command in iSLB initiator configuration submode. To revert to the default load-balancing metric, use the no form of the command.

```
metric metric
no metric metric
```

Syntax Description

metric metric	Specifies a load-balancing metric. The range is 10 to 10000.
---------------	--

Command Default

1000

Command Modes

iSLB initiator configuration submode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

You can assign a load metric to each initiator for weighted load balancing. The load calculated is based on the number of initiators on a given iSCSI interface. This feature accommodates initiators with different bandwidth requirements. For example, you could assign a higher load metric to a database server than to a web server. Weighted load balancing also accommodates initiators with different link speeds.

Examples

The following example specifies a load-balancing metric for the iSLB initiator:

```
switch# config t
switch(config)# islb initiator ip-address 100.10.10.10
switch (config-islb-init)# metric 100
```

The following example reverts to the default load-balancing metric:

```
switch (config-islb-init)# no
metric 100
```

Related Commands

Command	Description
islb initiator	Assigns an iSLB name and IP address to the iSLB initiator and enters iSLB initiator configuration submode.
show islb initiator configured	Displays iSLB initiator information for the specified configured initiator.
show islb initiator detail	Displays detailed iSLB initiator information.
show islb initiator summary	Displays iSLB initiator summary information.

mkdir

To create a directory in the flash file system, use the mkdir command in EXEC mode.

```
mkdir directory
```

Syntax Description	directory	Name of the directory to create.
---------------------------	-----------	----------------------------------

Command Default None.

Command Modes EXEC

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines This command is only valid on Class C flash file systems.

You can specify whether to create the directory on bootflash:, slot0, or volatile:. If you do not specify the device, the switch creates the directory on the current directory.

Examples

The following example creates a directory called test in the slot0: directory:

```
switch# mkdir slot0:test
```

The following example creates a directory called test at the current directory level. If the current directory is slot0:mydir, this command creates a directory called slot0:mydir/test.

```
switch# mkdir test
```

Related Commands	Command	Description
	dir	Displays a list of files on a file system.
	rmdir	Removes an existing directory in the flash file system.

mode

To configure the ESP mode, use the mode command. To delete the ESP mode, use the no form of the command.

```
mode gcm | gmac
no mode gcm | gmac
```

Syntax Description

gcm	Specifies the GCM mode for the interface.
gmac	Specifies the GMAC mode for the interface.

Command Default

None.

Command Modes

Configuration submode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the GCM mode for the interface:

```
switch(config-if-esp)# mode gcm
switch(config-if-esp)#
```

The following example shows how to configure the GMAC mode for the interface:

```
switch(config-if-esp)# mode gmac
switch(config-if-esp)#
```

Related Commands

Command	Description
fcsp enable	Enables FCSP.

modem connect line

To enable a modem connection when the switch is already in operation, use the `modem connect line` command in EXEC mode.

```
modem connect line com1 | console
```

Syntax Description

com1	Connects the modem through a COM1 line connection.
console	Connects the modem through a console line connection.

Command Default

Disabled.

Command Modes

EXEC mode.

Command History

Release	Modification
1.2(2)	This command was introduced.

Usage Guidelines

If the switch is already in operation when the modem is connected, issue this command to notify the software that a modem is going to be added.

You must issue the `modem connect line` command before setting the user-input string for initialization.

Examples

The following example announces a modem connection from the line console:

```
switch# modem connect line console
```

The following example announces a modem connection from the COM1 port:

```
switch# modem connect line com1
```

monitor counter (port-group-monitor configuration mode)

To configure monitoring of a specific counter within a Port Group Monitor policy, use the monitor counter command. To remove polling functionality for a specific counter within Port Group Monitor policy, use the no form of the command.

```
monitor counter rx-performance | tx-performance poll-interval interval delta rising-threshold rising
threshold falling-threshold low threshold
```

```
no monitor counter rx-performance | tx-performance poll-interval interval delta rising-threshold rising
threshold falling-threshold low threshold
```

Syntax Description

rx-performance	Configures RX performance counter.
tx-performance	Configures TX performance counter.
poll-interval	Configures poll interval for counter.
interval	Displays poll interval in seconds. The range is from 0 to 2147483647.
delta	Displays the threshold type.
rising-threshold	Configures the upper threshold value.
rising-threshold	Sets numerical upper threshold limit. The range is from 0 to 100.
falling-threshold	Configures the lower threshold value.
low-threshold	Sets numerical low threshold limit. The range is from 0 to 100.

Command Default

None.

Command Modes

Configuration Port Group Monitor mode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

When the no monitor counter command is used in the config-port-group-monitor mode, it turns-off the monitoring of that specific counter in the given policy.

Examples

The following example shows how to configure monitoring of a specific counter within a Port Group Monitor policy:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)#port-group-monitor name pgmon
switch(config-port-group-monitor)# monitor counter rx-performance
switch(config-port-group-monitor)# monitor counter tx-performance
switch(config-port-group-monitor)#
```

The following example shows how to turn off the monitoring of a specific counter in the given policy:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no port-group-monitor name pgmon
switch(config-port-group-monitor)# no port-group-monitor rx-performance
switch(config-port-group-monitor)# no port-group-monitor tx-performance
switch(config-port-group-monitor)# show port-group-monitor
-----
Port Group Monitor : enabled
-----
Policy Name : pgmonAdmin status : Not Active
Oper status  : Not Active
Port type    : All Port Groups
-----Counter
Threshold Interval %ge Rising Threshold %ge Falling Threshold portguard-----
-----RX Performance Delta 60 80 20
YesTX Performance Delta 60 80 20
No-----
```

Related Commands

Command	Description
show port-group-monitor	Displays Port Group Monitor information.

monitor counter (port-monitor configuration mode)

To configure monitoring of a specific counter within a Port Monitor policy, use the monitor counter command. To remove polling functionality for a specific counter within Port Monitor policy, use the no form of the command.

```
monitor counter credit-loss-reco | invalid-crc | invalid-words | link-loss | lr-rx | lr-tx | rx-datarate | signal-loss
| sync-loss | timeout-discards | tx-credit-not-available | tx-datarate | tx-discards
no monitor counter credit-loss-reco | invalid-crc | invalid-words | link-loss | lr-rx | lr-tx | rx-datarate |
signal-loss | sync-loss | timeout-discards | tx-credit-not-available | tx-datarate | tx-discards
```

Syntax Description

credit-loss-reco	Configures credit loss recovery counter.
invalid-crc	Configures invalid crc counter.
invalid-words	Configures invalid words counter.
link-loss	Configures link failure counter.
lr-rx	Configures the number of link reset responses received by the Fc port.
lr-tx	Configures link reset responses transmitted by the FC port.
rx-datarate	Configure rx performance counter.
signal-loss	Configures the signal loss counter.
sync-loss	Configures the sync loss counter.
timeout-discards	Configure timeout discards counter.
tx-credit-not-available	Configure credit not available counter.
tx-datarate	Configure tx performance counter.
tx-discards	Configure tx discards counter.

Command Default

All counters are monitored by default in this release.

Command Modes

Configuration Port Monitor mode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

When the no monitor counter command is used in the config-port-group-monitor mode, it turns-off the monitoring of that specific counter in the given policy.

This command is available in port-monitor-configuration mode.

Examples

The following example shows how to configure the credit loss recovery counter within a Port Monitor policy:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# port-monitor name pgmon
switch(config-port-monitor)# monitor counter credit-loss-reco
switch(config-port-monitor)#
```

Related Commands

Command	Description
port-monitor	
counter	Displays the individual counter.
show port-monitor	Displays Port Monitor information.

monitor counter tx-slowport-count

To configure monitoring of the tx-slowport-count counter, use the monitor counter tx-slowport-count command. To remove monitoring of tx-slowport-count, use the no form of the command.

```
monitor counter tx-slowport-count
no monitor counter tx-slowport-count
```

Syntax Description There are no keywords or arguments for this command.

Command Default None.

Command Modes Configuration Port Group Monitor mode.

Release	Modification
6.2(13)	This command was introduced.

Examples

The following example shows how to configure monitoring of the tx-slowport-count counter within a Port Monitor policy:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# port-monitor name pmon
switch(config-port-monitor)# monitor counter tx-slowport-count
switch(config-port-monitor)#
```

The following example shows how to turn off monitoring of the tx-slowport-count counter within a Port Monitor policy:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# port-monitor name pmon
switch(config-port-monitor)# no monitor counter tx-slowport-count
switch(config-port-monitor)#
```

Command	Description
show port-monitor	Displays Port Monitor information.

monitor counter tx-slowport-oper-delay

To configure monitoring of the tx-slowport-oper-delay counter, use the monitor counter tx-slowport-oper-delay command. To remove monitoring of tx-slowport-count, use the no form of the command.

```
monitor counter tx-slowport-oper-delay
no monitor counter tx-slowport-oper-delay
```

Syntax Description

There are no keywords or arguments for this command.

Command Default

None.

Command Modes

Configuration Port Group Monitor mode.

Command History

Release	Modification
6.2(13)	This command was introduced.

Examples

The following example shows how to configure monitoring of the tx-slowport-oper-delay counter within a Port Monitor policy:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# port-monitor name pmon
switch(config-port-monitor)# monitor counter tx-slowport-oper-delay
switch(config-port-monitor)#
```

The following example shows how to turn off monitoring of the tx-slowport-oper-delay counter within a Port Monitor policy:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# port-monitor name pmon
switch(config-port-monitor)# no monitor counter tx-slowport-oper-delay
switch(config-port-monitor)#
```

Related Commands

Command	Description
show port-monitor	Displays Port Monitor information.

monitor counter txwait

To configure monitoring of the txwait counter, use the `no monitor counter txwait` command. To remove monitoring of txwait, use the `no` form of the command.

```
monitor counter txwait
no monitor counter txwait
```

Syntax Description There are no keywords or arguments for this command.

Command Default None.

Command Modes Configuration Port Group Monitor mode.

Release	Modification
6.2(13)	This command was introduced.

Examples

The following example shows how to configure monitoring of the txwait counter within a Port Monitor policy:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# port-monitor name pmon
switch(config-port-monitor)# monitor counter txwait
switch(config-port-monitor)#
```

The following example shows how to turn off monitoring of the txwait counter within a Port Monitor policy:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# port-monitor name pmon
switch(config-port-monitor)# no monitor counter txwait
switch(config-port-monitor)#
```

Command	Description
show port-monitor	Displays Port Monitor information.

monitor session

To configure a SPAN session, use the monitor session command. To remove a configured SPAN feature or revert it to factory defaults, use the no form of the command.

```
monitor session session-id
no span session session-id
```

Syntax Description

session-id	Specifies the SPAN session ID. The range is 1 to 48.
------------	--

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure a local SPAN session in RX mode:

```
switch# config terminal
switch(config)# monitor session 1 rx
switch(config-monitor)#
```

The following example shows how to delete a local SPAN session in RX mode:

```
switch(config)# no
monitor session 1 rx
```

The following example shows how to configure a local SPAN with port-channel as source in tx mode:

```
switch(config)# monitor session 1 tx
switch(config-monitor)#
```

Related Commands

Command	Description
destination interface	Configures a SPAN destination interface.
source	Configures a SPAN source.
show monitor session	Displays specific information about a SPAN session.

move

To remove a file from the source file and place it in the destination file, use the move command in EXEC mode.

```
move bootflash: | slot0: | volatile: [directory /] filename bootflash: | slot0: | volatile: [directory /] filename
```

Syntax Description

bootflash:	Source or destination location for internal bootflash memory.
slot0:	Source or destination location for the CompactFlash memory or PCMCIA card.
volatile:	Source or destination location for volatile memory.
directory	(Optional) Specifies the name of the directory.
filename	(Optional) Specifies the name of the file to move or create.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

If you do not specify the directory name in the command line, the switch prompts you for it.

Examples

The following example moves the file called samplefile from the slot0 directory to the mystorage directory:

```
switch# move slot0:samplefile slot0:mystorage/samplefile
```

Related Commands

Command	Description
dir	Displays a list of files on a file system.
mkdir	Creates a directory in the flash file system.
rmdir	Removes an existing directory in the flash file system.

mutual-chap username (iSCSI initiator configuration and iSLB initiator configuration)

To assign a username for the initiator's challenge, use the mutual-chap username command in iSCSI initiator configuration submenu. To remove the username, use the no form of the command.

```
mutual-chap username username password 0 cleartext-password | 7 encrypted-password password
no mutual-chap username username password 0 cleartext-password | 7 encrypted-password password
```

Syntax Description

username username	Specifies a username. The maximum size is 32.
password	Specifies a password for the initiator's challenge.
0 cleartext-password	Specifies that the password is a cleartext CHAP password.
7 encrypted-password	Specifies that the password is an encrypted CHAP password.
password	Specifies a password for the username. The maximum size is 32.

Command Default

None.

Command Modes

iSCSI initiator configuration submenu.
iSLB initiator configuration submenu.

Command History

Release	Modification
2.0(1b)	This command was introduced.
3.0(1)	Added iSLB initiator configuration submenu.

Usage Guidelines

The iSLB initiator can authenticate the Cisco MDS switch's initiator target during the iSCSI login phase. This authentication requires the user to configure a username and password for the switch to present to the iSLB initiator. The provided password is used to calculate a CHAP response to a CHAP challenge sent to the IPS port by the initiator.

Examples

The following example shows how to configure a username, password type, and password for an iSCSI initiator challenge (mutual CHAP):

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# iscsi initiator name ign.1987-02.com.cisco.initiator
switch(config-iscsi-init)# mutual-chap username userName password 0 cisco
switch(config-iscsi-init)# mutual-chap username userNameTest password 0 test
switch(config-iscsi-init)#
```

The following example assigns a username and password to the initiator's challenge for an iSLB initiator:

```
switch# config t
switch(config)# islb initiator ip-address 100.10.10.10
switch (config-islb-init)# mutual-chap username tester password K9c4*1
```

The following example removes the username and password from the initiator's challenge for an iSLB initiator:

```
switch (config-islb-init)# no mutual-chap username tester password K9c4*1
```

Related Commands

Command	Description
islb initiator	Assigns an iSLB name and IP address to the iSLB initiator and enter s iSLB initiator configuration submode.
iscsi initiator name	Assigns an iSCSI name and changes to iSCSI initiator configuration submode.
show iscsi initiator	Displays iSCSI initiator information.
show iscsi initiator configured	Displays iSCSI initiator information for the configured iSCSI initiator.
show iscsi initiator detail	Displays detailed iSCSI initiator information.
show iscsi initiator summary	Displays iSCSI initiator summary information.
show islb initiator	Displays iSLB initiator information.
show islb initiator configured	Displays iSLB initiator information for the configured iSLB initiator.
show islb initiator detail	Displays detailed iSLB initiator information.
show islb initiator summary	Displays iSLB initiator summary information.



N Commands

- [native-autonomous-fabric-num](#), on page 882
- [node](#), on page 883
- [node \(Cisco IOA cluster node configuration submode\)](#), on page 884
- [npiv enable](#), on page 885
- [nport](#), on page 886
- [nport pwwn](#), on page 887
- [npv auto-load-balance disruptive](#), on page 888
- [npv enable](#), on page 889
- [npv traffic-map analysis clear](#), on page 890
- [npv traffic-map server-interface](#), on page 891
- [ntp abort](#), on page 892
- [ntp allow](#), on page 893
- [ntp authenticate](#), on page 895
- [ntp authentication-key](#), on page 897
- [ntp commit](#), on page 899
- [ntp distribute](#), on page 900
- [ntp logging](#), on page 902
- [ntp peer](#), on page 903
- [ntp server](#), on page 905
- [ntp source-interface](#), on page 907
- [ntp sync-retry](#), on page 909
- [ntp trusted-key](#), on page 910
- [nxapi http port port-number](#), on page 911
- [nxapi https port port-number](#), on page 912
- [nxapi ssl ciphers weak](#), on page 913
- [nxapi ssl protocols](#), on page 914
- [nxapi sandbox](#), on page 915
- [nwwn \(DPVM database configuration submode\)](#), on page 916
- [nwwn \(SAN extension configuration mode\)](#), on page 917

native-autonomous-fabric-num

To create an IVR persistent FC ID database entry, use the `native-autonomous-fabric-num` command in `fcdomain` database configuration submode. To delete all IVR persistent FC ID database entries for a given AFID and VSAN, use the `no` form of the command.

```
native-autonomous-fabric-num afid-num native-vsan vsan-id domain domain-id
no native-autonomous-fabric-num afid-num native-vsan vsan-id domain domain-id
```

Syntax Description

<code>afid-num</code>	Specifies the native AFID. The range is 1 to 64.
<code>native-vsan vsan-id</code>	Specifies the native VSAN ID. The range is 1 to 4093.
<code>domain domain-id</code>	Specifies the domain ID. The range is 1 to 239.

Command Default

None.

Command Modes

`fcdomain` database configuration submode.

Command History

Release	Modification
2.1(2)	This command was introduced.

Usage Guidelines

There is only one domain ID associated with an AFID and VSAN. If you change the domain ID, all the associated FC ID mapping records are also changed.

Examples

The following example shows how to create an entry for a native AFID, VSAN, and domain:

```
switch# config t
switch(config)# ivr fcdomain database autonomous-fabric-num 10 vsan 20
switch(config-fcdomain)# native-autonomous-fabric-num 20 native-vsan 30 domain 15
switch(config-fcdomain-fcid)#
```

The following example shows how to remove all entries for a native AFID and VSAN:

```
switch# config t
switch(config)# ivr fcdomain database autonomous-fabric-num 10 vsan 20
switch(config-fcdomain)# no native-autonomous-fabric-num 20 native-vsan 30
```

Related Commands

Command	Description
<code>ivr fcdomain database autonomous-fabric-num</code>	Creates IVR persistent FC IDs.
<code>show ivr fcdomain database</code>	Displays IVR fcdomain database entry information.

node

To configure Cisco SME switch, use the node command. To disable this command, use the no form of the command.

```
node local | A.B.C.D | X:X::X /n | DNS name
nonode local | A.B.C.D | X:X::X /n | DNS name
```

Syntax Description

local	Configures the local switch.
A.B.C.D	Specifies the IP address of the remote switch in IPv4 format.
X:X::X/n	Specifies the IP address of the remote switch in IPv6 format.
DNS name	Specifies the name of the remote database.

Command Default

None.

Command Modes

Cisco SME cluster configuration submode.

Command History

Release	Modification
3.2(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example adds the Cisco SME interface from a local switch:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# node local
switch(config-sme-cl-node)#
```

The following example adds the Cisco SME interface from a remote switch:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# node 171.71.23.33
switch(config-sme-cl-node)#
```

Related Commands

Command	Description
show sme cluster cluster name node	Displays Cisco SME node information about a local or remote switch.

node (Cisco IOA cluster node configuration submode)

To configure IOA switch, use the node command. To delete a node to the cluster, use the no form of the command.

```
node local | remote-node-name or ip-address
no node local | remote-node-name or ip-address
```

Syntax Description

local	Specifies local node as a part of the cluster.
remote-node-name	Specifies either through the DNS name or IPV4/IPV6 address.

Command Default

None.

Command Modes

Cisco IOA cluster node configuration submode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the local switch:

```
switch(config)# ioa cluster tape_vault
switch#(config-ioa-cl)# node local
switch(config-ioa-cl-node)# node 172.23.144.95
2009 May 19 21:06:57 sjc-sw2 %CLUSTER-2-CLUSTER_QUORUM_GAIN: Cluster 0x2143000dec3ee782 now
  has quorum with 1 nodes
2009 May 19 21:07:03 sjc-sw2 %CLUSTER-2-CLUSTER_QUORUM_GAIN: Cluster 0x2143000dec3ee782 now
  has quorum with 2 nodes
sjc-sw2(config-ioa-cl-node)# end
```

Related Commands

Command	Description
interface ioa	Configures the IOA interface.

npiv enable

To enable N port identifier virtualization (NPIV) for all VSANs on a switch, use the `npiv enable` command in configuration mode. To disable NPIV, use the `no` form of the command.

```
npiv enable
no npiv enable
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines NPIV provides a means to assign multiple port IDs to a single N Port. This feature allows multiple applications on the N port to use different identifiers and allows access control, zoning, and port security to be implemented at the application level.

You must globally enable NPIV for all VSANs on the MDS switch to allow the NPIV-enabled applications to use multiple N port identifiers.



Note All of the N Port Identifiers are allocated in the same VSAN.

Examples

The following example enables NPIV for all VSANs on the switch:

```
switch# config terminal
switch(config)# npiv enable
```

The following example disables NPIV for all VSANs on the switch:

```
switch(config)# no npiv enable
```

Related Commands	Command	Description
	show interface	Displays interface configurations.

nport

To configure the site and VSAN ID of the N ports, use the nport command. To delete the N port from the IOA cluster, use the no form of the command.

```
nport pwwn pwwn site site name vsan vsan-id
no nport pwwn pwwn site site name vsan vsan-id
```

Syntax Description

pwwn	Specifies the N port.
pwwn	Specifies the N port PWWN. The format is hh:hh:hh:hh:hh:hh:hh:hh.
site	Specifies an IOA site.
site name	Specifies an IOA site name. The maximum length is 31 characters.
vsan	Specifies the VSAN where this flow is accelerated.
vsan id	Specifies the VSAN ID where this flow is accelerated. The range is from 1 to 4093.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the site and VSAN ID of the N port:

```
switch(config-ioa-cl)# nport pwwn 10:0:0:0:0:0:0:1 site SJC vsan 100
switch(config-ioa-cl)# no nport pwwn 11:0:0:0:0:0:0:1 site SJC vsan 100
switch(config-ioa-cl)# end
```

Related Commands

Command	Description
show ioa cluster summary	Displays the summary of all the IOA clusters.

nport pwwn

To configure the N Port pWWN for the SAN extension tuner, use the `nport pwwn` command in SAN extension configuration mode. To revert to the default value, use the `no` form of the command.

```
nport pwwn pwwn-id vsan vsan-id interface gigabitethernet slot/port
no nport pwwn pwwn-id vsan vsan-id interface gigabitethernet slot/port
```

Syntax Description		
	<code>pwwn-id</code>	Specifies the port WWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
	<code>vsan vsan-id</code>	Specifies the VSAN ID. The range is 1 to 4093.
	<code>interface gigabitethernet slot/port</code>	Specifies the Gigabit Ethernet interface slot and port.

Command Default None.

Command Modes SAN extension configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to add an entry to the SAN extension tuner database:

```
switch# san-ext-tuner
switch(san-ext)# nport pwwn 11:22:33:44:55:66:77:88 vsan 1 interface gigabitethernet 1/1
```

Related Commands	Command	Description
	<code>san-ext-tuner</code>	Enters SAN extension configuration mode.
	<code>show san-ext-tuner</code>	Shows SAN extension tuner information.

npv auto-load-balance disruptive

To enable autoloading balance disruptive, use the `npv auto-load-balance disruptive` command in configuration mode. To disable this feature, use the `no` form of the command.

```
npv auto load-balancing disruptive
no npv auto load-balancing disruptive
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	3.3(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable autoloading balance disruptive:

```
switch(config)# npv auto-load-balance disruptive
Enabling this feature may flap the server interfaces whenever load is not in a balanced state. This process may result in traffic disruption. Do you want to proceed? (y/n):
Please enter y or n Y
switch(config)#
```

Related Commands	Command	Description
	<code>npv traffic-map server interface</code>	Configures server interface traffic engineering.

npv enable

To enable N port virtualization (NPV), use the `npv enable` command in configuration mode. To disable this feature, use the `no` form of the command.

```
npv enable
no npv enable
```

Syntax Description

This command has no other arguments or keywords.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
3.2(1)	This command was introduced.

Usage Guidelines

When NPV is enabled, all configurations are erased and the switch is rebooted. The switch restarts in the NPV mode. All configuration and verification commands for NPV are available only when NPV is enabled on the switch. When you disable this feature, all related configurations are automatically erased and the switch is rebooted.

Examples

The following example shows how to enable NPV:

```
switch# config
switch(config)# npv enable
```

Related Commands

Command	Description
<code>show npv status</code>	Displays the NPV current status.

npv traffic-map analysis clear

To reset the link load values collected for NPV external interface utilization analysis, use the npv traffic-map analysis clear command.

```
npv traffic-map analysis clear
```

Command Default None.

Command Modes Configuration mode (config)

Command History	Release	Modification
	8.5(1)	This command was introduced.

Usage Guidelines This command only resets the link load values to zero. It does not restart the sampling interval timer.

Examples The following example displays how to reset the throughput values:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# npv traffic-map analysis clear
```

Related Commands	Command	Description
	show npv traffic-map proposed	Displays a proposed mapping of server interfaces to external interfaces.

npv traffic-map server-interface

To configure the server interface based traffic engineering, use the `npv traffic-map server-interface` command in configuration mode. To revert to the default value, use the `no` form of the command.

```
npv traffic-map server-interface if -range external-interface if-range
no npv traffic-map server-interface if-range external-interface if-range
```

Syntax Description	if-range	Range may vary from 1 to 1.
---------------------------	----------	-----------------------------

Command Default	None.
------------------------	-------

Command Modes	Configuration mode.
----------------------	---------------------

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines	None.
-------------------------	-------

Examples The following example shows how to configure NPV traffic map server interface:

```
switch(config)# npv traffic-map server-interface fc1/1 external-interface fc1/2
switch(config)# npv traffic-map server-interface fc1/4-5 external-interface fc1/6-7
switch(config)# no npv traffic-map server-interface fc1/4-5 external-interface fc1/6-7
switch(config)# no npv traffic-map server-interface fc1/1 external-interface fc1/2
switch(config)#
```

Related Commands	Command	Description
	show npv-traffic-map	Displays information about the NPV traffic map.

ntp abort

To terminate and unlock the existing Network Time Protocol (NTP) Cisco Fabric Services (CFS) distribution session on a switch, use the `ntp abort` command in configuration mode.

```
ntp abort
```

Syntax Description This command has no other arguments or keywords.

Command Default This command terminates the current NTP CFS session.

Command Modes Configuration mode (config)

Command History

Release	Modification
2.0(x)	This command was introduced.

Examples

The following example displays how to terminate the NTP CFS distribution session in progress:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ntp abort
```

Related Commands

Command	Description
<code>ntp commit</code>	Commits the NTP configuration changes to the active configuration.
<code>ntp distribute</code>	Enables CFS distribution for NTP.
<code>show ntp status</code>	Displays the status of the NTP CFS distribution.

ntp allow

To enable processing of Network Time Protocol (NTP) control mode and private mode packets, use the `ntp allow` command. To disable this feature, use the `no` form of this command.

```
ntp allow private | control [rate-limit seconds]
no ntp allow private | control
```

Syntax Description		
	private	Specifies to process the private mode packets.
	control	Specifies to process the control mode packets.
	rate-limit seconds	Specifies the quiet period in which further control mode packets are ignored after processing one. The default time duration is 3 seconds, which means that a control mode packet is processed or responded every 3 seconds. Range is from 1 to 65535.

Command Default Processing of control and private mode packets is disabled by default for security reasons.

Command Modes Configuration mode (config)

Command History	Release	Modification
	6.2(13)	This command was introduced.

Examples

The following example displays how to enable the processing of private mode packets:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ntp allow private
```

The following example displays how to enable the processing or responding of control mode packets every 3 seconds:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ntp allow control
```

The following example displays how to enable the processing or responding of control mode packets every 10 seconds:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ntp allow control rate-limit 10
```

Related Commands

Command	Description
show ntp	Displays NTP information.

ntp authenticate

To prevent the system from synchronizing with unauthenticated, unconfigured NTP peers, use the `ntp authenticate` command. To allow synchronization with unauthenticated, unconfirmed NTP peers, use the `no` form of this command.

```
ntp authenticate
no ntp authenticate
```

Syntax Description This command has no arguments or keywords.

Command Default Unkeyed NTP symmetric-active, broadcast, and multicast packets are trusted by default. This feature is disabled by default.

Command Modes Configuration mode (config)

Command History	Release	Modification
	5.0(1a)	This command was introduced.

Usage Guidelines If the `ntp authenticate` command is specified, when a symmetric-active, broadcast, or multicast packet is received, the system will not synchronize to the peer unless the packet carries one of the authentication keys specified in the `ntp trusted-key` command.



Note This command does not authenticate peer associations configured via the `ntp server` and `ntp peer` commands. To authenticate NTP server and NTP peer associations, specify the `key` keyword.

Examples

The following example displays how to enable NTP authentication:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ntp authenticate
```

The following example displays how to disable NTP authentication:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no ntp authenticate
```

Related Commands	Command	Description
	<code>ntp authentication-key</code>	Configures an NTP authentication key for a device to synchronize to a time source after enabling the NTP authentication.

Command	Description
ntp trusted-key	Specifies one or more keys that a time source must provide in its NTP packets in order for the device to synchronize to it.
show ntp authentication-status	Displays the status of NTP authentication.

ntp authentication-key

To configure a Network Time Protocol (NTP) authentication key for a device to synchronize to a time source after enabling the NTP authentication, use the `ntp authentication-key` command. To remove the NTP authentication key, use the `no` form of this command.

```
ntp authentication-key id md5 key [0 | 7]
no ntp authentication-key id md5 key [0 | 7]
```

Syntax Description	id	Authentication key identifier. The range is from 1 to 65535.
	md5	Specifies the MD5 algorithm for authentication.
	key	Authentication key. The maximum key size is 15.
	0	(Optional) Specifies the encryption type to be Clear text.
	7	(Optional) Specifies the encryption type to be Encrypted.

Command Default No NTP keys are configured by default. When configuring an authentication key the default CLI encryption type is clear text.

Command Modes Configuration mode (config)

Command History	Release	Modification
	5.0(1a)	This command was introduced.

Usage Guidelines Enable NTP authentication before configuring an NTP authentication key.

The device does not synchronize to a time source unless the source has one of these authentication keys and the key number is specified by the `ntp trusted-key` command.

Authentication keys are always stored in the switch configuration in the encrypted format. If a user configures a key as clear text, the key will automatically be converted before installation into the configuration.

Examples The following example displays how to configure an NTP authentication key:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ntp authentication-key 42 md5 key1_12
```

The following example displays how to remove the NTP authentication key:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no ntp authentication-key 42 md5 key1_12
```

Related Commands

Command	Description
show ntp authentication-keys	Displays a list of configured NTP authentication keys.

ntp commit

To apply pending Network Time Protocol (NTP) configuration to an NTP Cisco Fabric Services (CFS) enabled peers in a fabric, use the ntp commit command.

```
ntp commit
```

Syntax Description This command has no other arguments or keywords.

Command Default This command commits changes pending in the current NTP CFS session.

Command Modes Configuration mode (config)

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines Once the ntp commit command is issued, the running configuration is modified on all switches that are part of the NTP CFS domain. Use the copy running-config startup-config fabric command to save the running configuration to the startup configuration on all the switches.

Examples The following example displays how to commit changes to the active NTP configuration:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ntp commit
```

Related Commands	Command	Description
	ntp abort	Terminates the NTP configuration.
	ntp distribute	Enables CFS distribution for NTP.
	show ntp pending-diff	Displays the differences between the pending NTP configuration changes and the active NTP configuration.
	show ntp status	Displays the status of the NTP CFS distribution.

ntp distribute

To enable Cisco Fabric Services (CFS) distribution of Network Time Protocol (NTP) configuration, use the `ntp distribute` command. To disable this feature, use the `no` form of the command.

```
ntp distribute
```

Syntax Description This command has no other arguments or keywords.

Command Default NTP configuration distribution to other switches is disabled by default.

Command Modes Configuration mode (config)

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines In order to enable NTP distribution with CFS, you must have already enabled CFS distribution for the device using the `cfs distribute` command.

If CFS is disabled for NTP, then NTP does not distribute any configuration changes and does not accept a distribution from other devices in the fabric.

The `ntp distribute` command enables NTP to distribute its configurations through CFS. To distribute an NTP configuration change, enter the change and then use the `ntp commit` command.

After CFS distribution is enabled for NTP, then the entry of an NTP configuration command locks the fabric for NTP until the `ntp commit` command is entered. During the lock, no changes can be made to the NTP configuration by any other device in the fabric except the device where the lock was activated.

Before distributing the configuration changes to the fabric, the temporary changes to the configuration must be committed to the active configuration using the `ntp commit` command.

Examples

The following example displays how to distribute the active NTP configuration to the fabric:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ntp distribute
```

Related Commands

Command	Description
<code>cfs distribute</code>	Globally enables CFS distribution for all applications on the device.
<code>clear ntp session</code>	Clears the application configuration session, discards pending changes, and releases the lock on a fabric.
<code>ntp abort</code>	Terminates the NTP configuration.
<code>ntp allow</code>	Enables processing of the control mode and private mode packets.

Command	Description
ntp commit	Commits the NTP configuration changes to the active configuration.
show cfs status	Displays the global CFS distribution status for the device.
show ntp pending-diff	Displays the differences between the pending NTP configuration changes and the active NTP configuration.
show ntp status	Displays the status of the NTP CFS distribution.

ntp logging

To enable Network Time Protocol (NTP) logging to generate NTP event syslogs, use the `ntp logging` command. To disable NTP logging, use the `no` form of this command.

```
ntp logging
no ntp logging
```

Syntax Description This command has no other arguments or keywords.

Command Default NTP logging is disabled by default.

Command Modes Configuration mode (config)

Release	Modification
5.0(1a)	This command was introduced.

Examples

The following example displays how to enable NTP logging:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ntp logging
```

The following example displays how to disable NTP logging:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no ntp logging
```

Related Commands

Command	Description
<code>show ntp logging-status</code>	Displays the NTP logging status.
<code>show ntp statistics</code>	Displays the NTP statistics.

ntp peer

To configure a device as a Network Time Protocol (NTP) peer, use the `ntp peer` command. To remove the device as an NTP peer, use the `no` form of this command.

```
ntp peer ip-address ipv6-address dns-name [key id] [prefer] [maxpoll interval] [minpoll interval]
no ntp peer ip-address ipv6-address dns-name
```

Syntax Description

ip-address	IPv4 address.
ipv6-address	IPv6 address.
dns-name	Domain Name Server (DNS) name.
key id	(Optional) Key ID. The range is from 1 to 65535.
prefer	(Optional) Specifies the given NTP peer as the preferred one.
maxpoll interval	(Optional) Maximum interval to poll a peer, in seconds. Default interval is 6.
minpoll interval	(Optional) Minimum interval to poll a peer, in seconds. Default interval is 4.

Command Default

No NTP peers are configured by default.

Command Modes

Configuration mode (config)

Command History

Release	Modification
5.0(1a)	Added the key id keyword.
2.0(x)	This command was introduced.

Usage Guidelines

The `ntp peer` command is part of the NTP Cisco Fabric Services (CFS) distribution.

NX-OS NTP supports time stamp references for NTP versions 4, 3, and 2. The version used is based on negotiation with each peer. Order of version priorities is, from highest to lowest, v4 to v3 to v2.

An NTP server is an authoritative source of NTP updates. The local device will follow the time of a server, but the server will not update from the local device's time. NTP peers send out updates and also adjust to incoming peer updates so that all peers converge to the same time. A device may have associations with multiple servers or peers.

In some versions of NX-OS, NTP will not sync to a time source if difference between the time source and the local clock is greater than 1 day. To force the switch to update with the received NTP time use the `ntp sync-retry` command after enabling NTP on the switch and waiting several minutes for peering to stabilize.

If you configure a key to be used while communicating with the NTP peer, make sure that the key exists as a trusted key on the device.

Examples

The following example displays how to configure an NTP peer:

```
switch# configure  
Enter configuration commands, one per line. End with CNTL/Z.  
switch(config)# ntp peer 190.0.2.1 key 123 prefer minpoll 4 maxpoll 10
```

The following example displays how to remove the NTP peer:

```
switch# configure  
Enter configuration commands, one per line. End with CNTL/Z.  
switch(config)# no ntp peer 190.0.2.1
```

Related Commands

Command	Description
ntp server	Configures an NTP server.
ntp sync-retry	Restarts NTP service and resynchronizes to peers.
show ntp peers	Displays all the NTP peers.
show ntp peer-status	Displays the status for all the server and peers.

ntp server

To configure a device as a Network Time Protocol (NTP) server, use the `ntp server` command. To remove the device as an NTP peer, use the `no` form of this command.

```
ntp server ip-address ipv6-address dns-name [key id ][prefer ][maxpoll interval ][minpoll interval]
no ntp server ip-address ipv6-address dns-name
```

Syntax Description

ip-address	IPv4 address.
ipv6-address	IPv6 address.
dns-name	Domain Name Server (DNS) name.
key id	(Optional) Key ID. The range is from 1 to 65535.
prefer	(Optional) Specifies the given NTP peer as the preferred one.
maxpoll interval	(Optional) Maximum interval to poll a peer, in seconds. Default interval is 6.
minpoll interval	(Optional) Minimum interval to poll a peer, in seconds. Default interval is 4.

Command Default

No NTP server are configured by default.

Command Modes

Configuration mode (config)

Command History

Release	Modification
5.0(1a)	Added the key id keyword.
2.0(x)	This command was introduced.

Usage Guidelines

The `ntp server` command is part of the NTP Cisco Fabric Services (CFS) distribution.

NX-OS NTP supports time stamp references for NTP versions 4, 3, and 2. The version used is based on negotiation with each peer. Order of version priorities is, from highest to lowest, v4 to v3 to v2.

An NTP server is an authoritative source of NTP updates. The local device will follow the time of a server, but the server will not update from the local device's time. NTP peers send out updates and also adjust to incoming peer updates so that all peers converge to the same time. A device may have associations with multiple servers or peers.

In some versions of NX-OS, NTP will not sync to a time source if difference between the time source and the local clock is greater than 1 day. To force the switch to update with the received NTP time use the `ntp sync-retry` command after enabling NTP on the switch and waiting several minutes for peering to stabilize.

If you configure a key to be used while communicating with the NTP server, make sure that the key exists as a trusted key on the device.

Examples

The following example displays how to configure an NTP server:

```
switch# configure  
Enter configuration commands, one per line. End with CNTL/Z.  
switch(config)# ntp server 190.0.2.1 key 123 prefer minpoll 4 maxpoll 10
```

The following example displays how to remove the NTP server:

```
switch# configure  
Enter configuration commands, one per line. End with CNTL/Z.  
switch(config)# no ntp server 190.0.2.1
```

Related Commands

Command	Description
ntp peer	Configures a device as an NTP peer.
ntp sync-retry	Restarts NTP service and resynchronizes to peers.
show ntp peers	Displays all the NTP peers.
show ntp peer-status	Displays the status for all the server and peers.

ntp source-interface

To override the default source address of Network Time Protocol (NTP) packets sent from the switch, use the ntp source-interface command. To remove an NTP source interface, use the no form of this command.

```
ntp source-interface ethernet slot/port.sub-interface | mgmt number | port-channel number
no ntp source-interface ethernet slot/port.sub-interface | mgmt number | port-channel number
```

Syntax Description	ethernet slot/port.sub-interface	Ethernet interface.
	mgmt number	Management interface (mgmt 0).
	port-channel number	Port channel number.

Command Default This default source address of NTP packets is mgmt0.

Command Modes Configuration mode (config)

Command History	Release	Modification
	4.1(3)	This command was introduced.

Usage Guidelines Only a single ntp source-interface command can be specified. All NTP packets sent through all interfaces will use the address specified by this command as the source address.

Examples

The following example displays how to configure an Ethernet interface:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ntp source-interface ethernet 2/2
```

The following example displays how to remove an Ethernet interface:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no ntp source-interface ethernet 2/2
```

The following example displays how to configure the management 0 interface:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ntp source-interface mgmt 0
```

The following example displays how to remove the management 0 interface:

```
switch# configure
```

Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# **no ntp source-interface mgmt 0**

The following example displays how to configure a port channel:

```
switch# configure  
Enter configuration commands, one per line. End with CNTL/Z.  
switch(config)# ntp source-interface port-channel 1
```

The following example displays how to remove the port channel:

```
switch# configure  
Enter configuration commands, one per line. End with CNTL/Z.  
switch(config)# no ntp source-interface port-channel 1
```

Related Commands

Command	Description
show ntp source-interface	Displays information about the configured NTP source interface.

ntp sync-retry

To retry synchronization with configured servers, use the `ntp sync-retry` command.

```
ntp sync-retry
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	4.1(1b)	Added a note.
	3.3(1a)	This command was introduced.

Usage Guidelines None.



Note If the user changes the `mgmt0` ip address, NX-OS should conditionally do an internal `ntp synchronization-retry`.

Examples

The following example displays the `sup-fc0` message logs:

```
switch# ntp sync-retry
```

Related Commands	Command	Description
	<code>ntp distribute</code>	Enables CFS distribution for NTP.
	<code>show ntp</code>	Displays NTP information.

ntp trusted-key

To configure one or more keys that a time source must provide in its Network Time Protocol (NTP) packets in order for the device to synchronize to it, use the `ntp trusted-key` command. To remove the NTP trusted key, use the `no` form of this command.

```
ntp trusted-key id
no ntp trusted-key id
```

Syntax Description

i	Trusted key identifier. The range is from 1 to 65535.
----------	---

Command Default

No trusted keys are configured by default.

Command Modes

Configuration mode (config)

Command History

Release	Modification
5.0(1a)	This command was introduced.

Usage Guidelines

You must configure an NTP authentication key using the `ntp authentication-key` command before configuring an NTP trusted key. You must use the NTP authentication key as the NTP trusted key number.

This command provides protection against accidentally synchronizing the device to a time source that is not trusted.

Examples

The following example displays how to configure an NTP trusted key:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ntp trusted-key 42
```

The following example displays how to remove the NTP trusted key:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no ntp trusted-key 42
```

Related Commands

Command	Description
<code>ntp authentication-key</code>	Configures an NTP authentication key for a device to synchronize to a time source after enabling the NTP authentication.
<code>show ntp authentication-keys</code>	Displays a list of configured NTP authentication keys.
<code>show ntp source-interface</code>	Displays the status of NTP authentication.

nxapi http port *port-number*

To configure an HTTP port to access the NX-API Developer Sandbox, use the `nxapi http port port-number` command in global configuration mode. To disable HTTP, use the `no` form of this command.

```
nxapi http port port-number
no nxapi http
```

Syntax Description	port	HTTP port number
	port-number	Specifies the HTTP port number. The range is from 0 to 65535.
		Note The default HTTP port number to access the NX-API Developer Sandbox is 8080.

Command Default None

Command Modes Global configuration (config)

Command History	Release	Modification
	7.3(0)D1(1)	This command was introduced.

Usage Guidelines The feature `nxapi` command must be used to enable the NX-API feature before you configure HTTP to access the NX-API Developer Sandbox.

Ensure that the `port-number` configured is not used by other services like SSH, Telnet.

The following example shows how to configure an HTTP port to access the NX-API Developer Sandbox:

```
switch# configure terminal
switch(config)# feature nxapi
switch(config)# nxapi http port 1010
```

Related Commands	Command	Description
	<code>feature nxapi</code>	Enables NX-API.
	<code>nxapi sandbox</code>	Enables the NX-API Developer Sandbox.
	<code>nxapi https port port-number</code>	Configures an HTTPS port to access the NX-API Developer Sandbox.

nxapi https port *port-number*

To configure an HTTPS port to access the NX-API Developer Sandbox, use the `nxapi https` command in global configuration mode. To disable HTTPS, use the `no` form of this command.

```
nxapi https port port-number
no nxapi https
```

Syntax Description	port	HTTPS port number.
	port-number	Specifies the HTTPS port number. The range is from 0 to 65535.

Command Default None

Command Modes Global configuration (config)

Command History	Release	Modification
	7.3(0)D1(1)	This command was introduced.

Usage Guidelines The feature `nxapi` command must be used to enable the NX-API feature before you configure HTTPS to access the NX-API Developer Sandbox.

Ensure that the `port-number` configured is not used by other services like SSH, Telnet.

The following example shows how to configure an HTTPS port to access the NX-API Developer Sandbox:

```
switch# configure terminal
switch(config)# feature nxapi
switch(config)# nxapi https port 443
```

Related Commands	Command	Description
	<code>feature nxapi</code>	Enables NX-API.
	<code>nxapi sandbox</code>	Enables the NX-API Developer Sandbox.
	<code>nxapi http port port-number</code>	Configures an HTTP port to access the NX-API Developer Sandbox.

nxapi ssl ciphers weak

To allow weak SSL ciphers for NX-API HTTPS connections, use the `nxapi ssl ciphers weak` command. To disable accepting weak ciphers, use the `no` form of this command.

```
nxapi ssl ciphers weak
```

```
no nxapi ssl ciphers weak
```

Command Default

Starting from Cisco MDS NX-OS 8.3(1) weak ciphers are disabled by default. Prior releases allow weak ciphers by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

Weak ciphers are defined as encryption or decryption algorithms that use key sizes that are less than 128 bits.

The following ciphers are disabled by the `no` option:

- TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256
- secp256r1
- ffdhe3072

The following example displays how to allow weak SSL ciphers for NX-API HTTPS connections:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# nxapi ssl ciphers weak
```

Related Commands

Command	Description
feature nxapi	Enables NX-API.

nxapi ssl protocols

To configure accepted Secure Sockets Layer (SSL) transports for NX-API HTTPS connections, use the `nxapi ssl protocols` command. To return to the default list of accepted SSL transports, use the `no` form of this command.

```
nxapi ssl protocols [SSLv3] [TLSv1] [TLSv1.1] [TLSv1.2]
```

```
no nxapi ssl protocols
```

Syntax Description

SSLv3	Specifies the SSL version 3.
TLSv1	Specifies the Transport Layer Security (TLS) version 1.0.
TLSv1.1	Specifies the Transport Layer Security (TLS) version 1.1.
TLSv1.2	Specifies the Transport Layer Security (TLS) version 1.2.

Command Default

Starting in Cisco MDS NX-OS 8.3(1), only TLS1.1 and TLS1.2 are enabled by default.
Starting in Cisco MDS NX-OS 8.5(1), only TLS1.2 is enabled by default.

Command Modes

Global configuration (config)

Command History

Release Modification

1.1(1) This command was introduced.

Usage Guidelines

Older versions of SSL transport protocol are easier to exploit. Enable only the most recent versions of SSL transport protocol that the connecting devices support for the most secure connections to NX-API.

The following example displays how to allow TLS versions 1.0, 1.1 and 1.2 HTTPS connections to NX-API:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# nxapi ssl protocol TLSv1 TLSv1.1 TLSv1.2
```

The following example displays how to allow only TLS version 1.2 HTTPS connections to NX-API:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# nxapi ssl protocols TSLv1.2
```

Related Commands

Command	Description
feature nx-api	Enables NX-API.

nxapi sandbox

To enable the NX-API Developer Sandbox, use the `nxapi sandbox` command in global configuration mode. To disable the NX-API Developer Sandbox, use the `no nxapi sandbox` command.

```
nxapi sandbox
no nxapi sandbox
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes Global configuration (config)

Command History	Release	Modification
	7.3(0)D1(1)	This command was introduced.

Usage Guidelines The `feature nxapi` command must be used to enable the NX-API feature before you enable the NX-API Developer Sandbox.

The following example shows how to enable the NX-API Developer Sandbox:

```
switch# configure terminal
switch(config)# feature nxapi
switch(config)# nxapi sandbox
```

Related Commands

Command	Description
feature nxapi	Enables NX-API.

nwwn (DPVM database configuration submode)

To add a device to a dynamic port VSAN membership (DPVM) database using the nWWN, use the `nwwn` command in DPVM database configuration submode. To remove a device from a DPVM database using the nWWN, use the `no` form of the command.

```
nwwn nwwn-id vsan vsan-id
no nwwn nwwn-id vsan vsan-id
```

Syntax Description

nwwn-id	Specifies the node WWN ID. The format is hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

DPVM database configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, DPVM must be enabled using the `dpvm enable` command.

Examples

The following example shows how to add an entry to the DPVM database:

```
switch# config terminal
switch(config)# dpvm database
switch(config-dpvm-db)# nwwn 11:22:33:44:55:66:77:88 vsan 1
```

The following example shows how to delete an entry from the DPVM database:

```
switch(config-dpvm-db)# no nwwn 11:22:33:44:55:66:77:88 vsan 1
```

Related Commands

Command	Description
dpvm database	Configures the DPVM database.
show dpvm	Displays DPVM database information.

nwwn (SAN extension configuration mode)

To configure the nWWN for the SAN extension tuner, use the nwwn command in SAN extension configuration submode.

```
nwwn nwwn-id
```

Syntax Description

nwwn-id	Specifies the nWWN address. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
---------	---

Command Default

None.

Command Modes

SAN extension configuration mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to add an entry to the SAN extension tuner database:

```
switch# san-ext-tuner
switch(san-ext)# nwwn 20:42:00:0b:46:79:f1:80
```

Related Commands

Command	Description
san-ext-tuner	Enters SAN extension configuration mode.
show san-ext-tuner	Shows SAN extension tuner information.

nwwn (SAN extension configuration mode)



O Commands

- [ocsp url](#), on page 920
- [odrt.bin](#), on page 921
- [open](#), on page 923
- [out-of-service](#), on page 924
- [out-of-service module](#), on page 926
- [out-of-service xbar](#), on page 927

ocsp url

To configure the HTTP URL of the Online Certificate Status Protocol (OCSP) for the trust point CA, use the `ocsp url` command in trust point configuration submode. To discard the OCSP configuration, use the `no` form of the command.

```
ocsp url url
no ocsp url url
```

Syntax Description

<code>url</code>	Specifies the OCSP URL. The maximum size is 512 characters.
------------------	---

Command Default

None.

Command Modes

Trust point configuration submode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

The MDS switch uses the OCSP protocol to check the revocation status of a peer certificate (presented to it during the security or authentication exchange for IKE or SSH, for example), only if the revocation checking methods configured for the trust point include OCSP as one of the methods. OCSP checks the certificate revocation status against the latest CRL on the CA using the online protocol, which generate network traffic and also requiring that the OCSP service of the CA be available online in the network.

If revocation checking is performed by the cached CRL at the MDS switch, no network traffic is generated. The cached CRL does not contain the latest revocation information.

You must authenticate the CA for the trust point before configuring the OCSP URL for it.

Examples

The following example shows how to specify the URL for OCSP to use to check for revoked certificates:

```
switch# config terminal
switch(config)# crypto ca trustpoint admin-ca
switch(config-trustpoint)# ocsp url http://admin-ca.cisco.com/ocsp
```

The following example shows how to remove the URL for OCSP:

```
switch(config-trustpoint)# no ocsp url http://admin-ca.cisco.com/ocsp
```

Related Commands

Command	Description
<code>crypto ca crl-request</code>	Configures a CRL or overwrites the existing one for the trust point CA.
<code>revocation-check</code>	Configures trust point revocation check methods.
<code>show crypto ca crl</code>	Displays configured CRLs.

odrt.bin

To perform offline data recovery of Cisco SME, use the odrt.bin command on Linux-based systems. This command allows you to recover data when the MSM-18/4 module or the Cisco MDS 9222i fabric switch is not available.

```
odrt.bin [--help] [--version] -h | -l | -r | -w if =input_device_or_file | of =output_device_or_file | kf
=key_export_file | verbose =level
```

Syntax Description	
--help	(Optional) Displays information on the tool.
--version	(Optional) Displays the version of the tool.
-h	Reads and prints the tape header information on the tape.
-l	Lists all SCSI devices.
-r	Reads the tape device and writes data to intermediate file(s).
-w	Reads the intermediate file(s) on disk and writes data to the tape.
if	Specifies the input device or file.
of	Specifies the output device or file.
kf	Specifies the volume group filename.
verbose	Specifies the level of verbose.

Command Default None.

Command Modes None. This command runs from the Linux shell.

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines The odrt.bin command operates in the following steps:

- **Tape-to-disk**– In this mode, the odrt.bin command reads the encrypted data from the tape and stores it as intermediate files on the disk. This mode is invoked with the '-r' flag. The input parameter is the tape device name and filename on the disk is the output parameter.
- **Disk-to-tape**– In this mode, the odrt.bin command reads intermediate files on the disk, decrypts and decompresses (if applicable) the data and writes the clear-text data to the tape. The decryption key is obtained from the volume group file that is exported from the Cisco Key Management Center (KMC). This mode is invoked with the '-w' flag. The input parameter is the filename on the disk and tape device name is the output parameter. The volume group file name (key export file) is also accepted as a parameter. Key export password needs to be entered at the command prompt.

Examples

The following command reads and prints the Cisco tape header information on the tape:

```
odrt -h if=/dev/sg0
```

The following example read the data on tape into intermediate file(s) on disk:

```
odrt -r if=/dev/sg0 of=diskfile
```

The following command reads the encrypted/compressed data in intermediate file(s) and writes back the decrypted/decompressed data to the tape:

```
odrt -w if=diskfile of=/dev/sg0 kf=c1_tb1_Default.dat
```

A sample output of the odrt command follows:

```
[root@ips-host06 odrt]# ./odrt.bin -w if=c of=/dev/sg2
kf=sme_L700_IBMLT03_Default.dat verbose=3
Log file: odrt30072
Please enter key export password:
Elapsed 0:3:39.28, Read 453.07 MB, 2.07 MB/s, Write 2148.27 MB, 9.80 MB/s
Done
```

open

To open a file or command pipeline and return a channel identifier in Tcl, use the open command.

```
open filename
```

Syntax Description	filename	The name of the file to be opened.
--------------------	----------	------------------------------------

Command Default None.

Command Modes Interactive Tcl shell and Tcl script.

Command History	Release	Modification
	NX-OS 5.1(1)	This command was introduced.

Usage Guidelines This is a standard Tcl command documented in Tcl documentation with the following modifications:
Access to files and directories is limited to user space only. Access to system filesystem and system commands is not permitted.

Examples The following example shows that access is denied to system files:

```
switch-tcl# open "/etc/hosts" r
Permission denied. couldn't open "/etc/hosts": permission denied
switch-tcl#
```

The following examples shows that access is denied to system commands:

```
switch-tcl# open "| cat /etc/hosts" r
Permission denied. couldn't execute "cat": not owner
switch-tcl#
```

Related Commands	Command	Description
	cli	Execute an NX-OS CLI command in Tcl verbosely.
	clis	Execute an NX-OS CLI command in Tcl silently.

out-of-service

To put an interface out of service, use the out-of-service command in interface configuration submode. To restore the interface to service, use the no form of the command.

```
out-of-service [force]
no out-of-service [force]
```

Syntax Description

force	(Optional) Configures the interface that should be forced out of service.
-------	---

Command Default

None.

Command Modes

Interface configuration submode.

Command History

Release	Modification
NX-OS 5.2(1)	This command was deprecated.
3.0(1)	This command was introduced.

Usage Guidelines

Before using the out-of-service command, you must disable the interface using the shutdown command.

When an interface is out of service, all the shared resources for the interface are released, as is the configuration associated with those resources.



Caution

Taking interfaces out of service releases all the shared resources to ensure that they are available to other interfaces. This causes the configuration in the shared resources to revert to default when the interface is brought back into service. Also, an interface cannot come back into service unless the default shared resources for the port are available. The operation to free up shared resources from another port is disruptive.

Examples

The following example shows how to take an interface out of service:

```
switch# config terminal
switch(config)# interface fc 1/1
switch(config-if)# shutdown
switch(config-if)# out-of-service
Putting an interface into out-of-service will cause its shared resource
configuration to revert to default
Do you wish to continue(y/n)? [n]
```

The following example makes an interface available for service:

```
switch(config-if)# no out-of-service
```

Related Commands

Command	Description
shutdown	Disables an interface.
show interface	Displays the status of an interface.

out-of-service module

To perform a graceful shutdown of an integrated crossbar on the supervisor module of a Cisco MDS 9500 Series Director, use the out-of-service module command in EXEC mode.

out-of-service module slot

Syntax Description

slot	The slot refers to the chassis slot number for Supervisor-1 module or Supervisor-2 module where the integrated crossbar is located.
------	---

Command Default

None.

Command Modes

EXEC.

Command History

Release	Modification
NX-OS 5.2(1)	Applicable for supervisor module only.
3.0(1)	This command was introduced.

Usage Guidelines

Before removing a crossbar from an MDS 9500 Series Director, you must perform a graceful shutdown of the crossbar.



Note

To reactivate the integrated crossbar, you must remove and reinsert or replace the Supervisor-1 or Supervisor-2 module.

For additional information about crossbar management, refer to the Cisco MDS 9000 Family CLI Configuration Guide .

Examples

The following example shows how to perform a graceful shutdown of the integrated crossbar:

```
switch# out-of-service module 2
```

Related Commands

Command	Description
out-of-service xbar	Performs a graceful shutdown of an external crossbar switching module in a Cisco MDS 9513 Director.
show module	Displays the status of a module.

out-of-service xbar

To perform a graceful shutdown of the external crossbar switching module of a Cisco MDS 9513 Director, use the out-of-service xbar command in EXEC mode.

```
out-of-service xbar slot
no out-of-service xbar slot
```

Syntax Description

slot	Specifies the external crossbar switching module slot number, either 1 or 2. The slot refers to the external crossbar switching module slot number.
------	---

Command Default

None.

Command Modes

EXEC.

Command History

Release	Modification
NX-OS 5.2(1)	This command was deprecated.
3.0(1)	This command was introduced.

Usage Guidelines

Before removing a crossbar from an MDS 9500 Series Director, you must perform a graceful shutdown of the crossbar.

The slot refers to the external crossbar switching module slot number.



Note

To reactivate the external crossbar switching module, you must remove and reinsert or replace the crossbar switching module.



Caution

Taking the crossbar out-of-service may cause supervisor switchover.

For additional information about crossbar management, refer to the Cisco MDS 9000 Family CLI Configuration Guide .

Examples

The following example shows how to perform a graceful shutdown of the external crossbar switching module of a Cisco MDS 9513 Director:

```
switch# out-of-service xbar 1
```

Related Commands

Command	Description
out-of-service module	Performs a graceful shutdown of an integrated crossbar on the supervisor module of a Cisco MDS 9500 Series Director.

Command	Description
show module	Displays the status of a module.



P Commands

- [passive-mode](#), on page 931
- [password strength-check](#), on page 932
- [path](#), on page 933
- [pathtrace](#), on page 935
- [peer \(DMM job configuration submode\)](#), on page 942
- [peer-info ipaddr](#), on page 943
- [periodic-inventory notification](#), on page 945
- [permit \(IPv6-ACL configuration\)](#), on page 946
- [phone-contact](#), on page 949
- [ping](#), on page 950
- [policy](#), on page 952
- [port](#), on page 953
- [portaddress](#), on page 954
- [port-channel persistent](#), on page 956
- [port-group-monitor activate](#), on page 957
- [port-group-monitor enable](#), on page 958
- [port-group-monitor name](#), on page 959
- [port-license](#), on page 960
- [port-monitor activate](#), on page 961
- [port-monitor check-interval](#), on page 962
- [port-monitor cong-isolation-recover](#), on page 963
- [port-monitor dirl](#), on page 964
- [port-monitor enable](#), on page 965
- [port-monitor fpin](#), on page 966
- [port-monitor name](#), on page 967
- [port-security](#), on page 969
- [port-security abort](#), on page 972
- [port-security commit](#), on page 973
- [port-security database](#), on page 974
- [port-security distribute](#), on page 976
- [port-security enable](#), on page 977
- [port-track enable](#), on page 978
- [port-track force-shut](#), on page 979

- [port-track interface](#), on page 980
- [power redundancy-mode \(MDS 9500 switches\)](#), on page 981
- [power redundancy-mode \(MDS 9700 switch\)](#), on page 983
- [poweroff module](#), on page 986
- [priority](#), on page 987
- [priority-flow-control long-distance](#), on page 988
- [priority-flow-control mode](#), on page 989
- [purge analytics](#), on page 990
- [purge fcdomain fcid](#), on page 992
- [purge module](#), on page 993
- [pwc](#), on page 994
- [pwd](#), on page 995
- [pwwn \(DPVM database configuration submode\)](#), on page 996
- [pwwn \(fcdomain database configuration submode\)](#), on page 997
- [pwwn \(fc-management database configuration submode\)](#), on page 998
- [pwwn \(SDV virtual device configuration submode\)](#), on page 1000

passive-mode

To configure the required mode to initiate an IP connection, use the `passive-mode` command. To enable passive mode for the FCIP interface, use the `no` form of the command.

```
passive-mode
no passive-mode
```

Syntax Description This command has no keywords or arguments.

Command Default Disabled

Command Modes Interface configuration submode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines Access this command from the `switch(config-if)#` submode.

By default, the active mode is enabled to actively attempt an IP connection.

If you enable the passive mode, the switch does not initiate a TCP connection and only waits for the peer to connect to it.

Examples The following example enables passive mode on an FCIP interface:

```
switch# config terminal
switch(config)# interface fcip 1
switch(config-if)# passive-mode
```

Related Commands	Command	Description
	<code>show interface fcip</code>	Displays an interface configuration for a specified FCIP interface.

password strength-check

To enable password strength checking, use the password strength-check command. To disable this feature, use the no form of the command.

```
password strength-check
no password strength-check
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes Configuration mode.

Release	Modification
NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines When you enable password strength checking, the NX-OS software only allows you to create strong passwords.

The characteristics for strong passwords included the following:

- At least 8 characters long
- Does not contain many consecutive characters (such as abcd)
- Does not contain many repeating characters (such as aaabb)
- Does not contain dictionary words
- Does not contain proper names
- Contains both uppercase and lowercase characters
- Contains numbers

The following are examples of strong passwords:

- If2COM18
- 2004AsdfLkj30

Examples

The following example shows how to enable secure standard password:

```
switch(config)# password strength-check
switch(config)#
```

Related Commands

Command	Description
show password strength-check	Displays if the password strength check is enabled.

path

To add a sensor to a sensor group, use the path command. To remove the sensor, use the no form of this command.

```
path analytics: query
path show_stats_range
```

```
no path analytics: query
no path show_stats_range
```

Syntax Description

Table 3: Syntax Description

Sensor Name	Sensor Description	Parameter	Parameter Description
analytics	Data traffic analytics information.	query	A user defined analytics query name.
show_stats_range	Interface counter information. range is a single FC interface or a continuous range of FC interfaces separated by '!'.	Not applicable	No parameters.

Command Default

No sensor paths are configured.

Command Modes

Telemetry sensor configuration mode (conf-tm-sensor)

Command History

Release	Modification
8.3(1)	This command was introduced.

Usage Guidelines

The distinguished name of a sensor is followed by the parameters for the sensor. Not all sensors have parameters. Multiple sensors may be added to a sensor group. This allows discontinuous interface ranges to be defined in a single sensor group.

Examples

This example shows how to add interface counters for fc3/1 to a sensor group:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# sensor-group 1
switch(conf-tm-sensor)# path show_stats_fc3/1
```

This example shows how to remove an analytics query from a sensor group:

```
switch# configure
switch(config)# telemetry
```

```
switch(config-telemetry)# sensor-group 2
switch(conf-tm-sensor)# no path analytics:init
```

Related Commands

Command	Description
analytics query	Configure a user-defined analytics query.
feature analytics	Enable the SAN Analytics feature.
feature telemetry	Enables the SAN Telemetry Streaming feature.
sensor-group	Creates a sensor group and enters sensor group configuration.
show running-config telemetry	Displays the existing telemetry configuration.
show rdp	Displays RDP details of a device.
show telemetry	Displays telemetry runtime information.
telemetry	Enters SAN Telemetry Streaming configuration mode.

pathtrace

To display per-hop interface information along the paths between 2 devices, use the pathtrace command.

```
pathtrace domain id | fcid id vsan id [[reverse] [detail] | [multipath]]
```

Syntax Description

domain id	Traces the paths to all the edge devices in the domain ID. The range is from 1 to 239.
fcid id	Specifies the Fibre Channel ID of the destination N-port. The range is from 0x0 to 0xfffff.
vsan id	Specified the VSAN ID. The range is from 1 to 4094.
reverse	(Optional) Displays information about the reverse (or return) path.
detail	(Optional) Displays detailed information about each egress interface at every hop.
multipath	(Optional) Displays information about all Equal-Cost Multipath (ECMP) links.

Command Default

None.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.3(1)	This command was modified. The multipath keyword was added.
6.2(5)	This command was introduced.

Usage Guidelines

- If the pathtrace command is executed in a path where devices do not support the Pathtrace feature, the pathtrace request packets are dropped and the command is not processed.
- The Pathtrace feature is supported only on Cisco MDS NX-OS Release 6.2(5) and later releases.
- The Pathtrace feature is not supported in Inter-VSAN Routing (IVR).

Depending on the keywords used, Pathtrace displays the following information for every egress interface in a path:

Name	Description	Limitations
Speed/Spd	The operational speed of an active interface. It represents the capable bandwidth of an inactive interface.	Not displayed for internal interfaces.
TxRt/Tx	The bits transmitted per second.	Not displayed for internal interfaces.
RxRt/Rx	The bits received per second.	Not displayed for internal interfaces.

Name	Description	Limitations
TxFram	The number of frames transmitted.	Not displayed for internal interfaces.
RxFram	The number of frames received.	Not displayed for internal interfaces.
TxB_B/TxB2B	The transmit buffer-to-buffer credit that is remaining.	Not displayed for internal interfaces.
RxB_B/RxB2B	The receive buffer-to-buffer credit that is remaining.	Not displayed for internal interfaces.
Errors	The aggregate of ingress and egress errors.	Not displayed for internal interfaces.
Discard/Discards	The aggregate of ingress and egress frame discards.	Not displayed for internal interfaces.
CRC	The Cyclic Redundancy Check (CRC) errors on the incoming frames.	Not displayed for internal interfaces.
TxWait	An interface's total transmission waiting time due to nonavailability of transmit buffer-to-buffer credits.	Displays a percentage of transmit wait time for last 1 second, 1 minute, 1 hour, and last 72 hours.
ZoneDrops	The number of frames dropped due to access control list (ACL) rules.	Displays only for Cisco MDS 9700 48-Port 32-Gbps Fibre Channel Switching Module (DS-X9648-1536K9).
FibDrops	The number of frames dropped due to forwarding information base (FIB) rules.	Displays only for Cisco MDS 9700 48-Port 32-Gbps Fibre Channel Switching Module (DS-X9648-1536K9).

Examples

The following example shows how to trace the path between a switch in which the command is executed and an edge device, using the edge device's FCID:

```
switch# pathtrace fcid 0xca016c vsan 2000
switch# pathtrace fcid 0xca016c vsan 2000
The final destination port type is F_Port
```

```
-----
Hop Domain In-Port          Out-Port          Speed Cost  Switchname
-----
0  111   embedded          fc1/6             4G   250   switch1
1  202   fc1/6             fc1/1             2G   -     switch2
NOTE: The stats are displayed for the egress interface only
```


The following example shows how to trace both the forward path and the return path between a switch in which the command is executed and all the edge devices in domain 83 on the 'sw-fcip69' switch:

```
switch# pathtrace domain 83 vsan 70 reverse
The final destination port type is Embedded
-----
Hop Domain In-Port          Out-Port          Speed      Cost  Switchname
-----
0  144  embedded                vfc69(Eth1/8)    10.0G     100  sw-ioa-70
1  83   vfc69(Eth1/1)          embedded          -         -    sw-fcip69
2  83   embedded                vfc69(Eth1/1)    10.0G     100  sw-fcip69
3  144  vfc69(Eth1/8)          embedded          -         -    sw-ioa-70
```

NOTE: The stats are displayed for the egress interface only

The following example shows how to display detailed information about the interfaces (both the forward path and the return path) between a switch in which the command is executed and an edge device, using the edge device's FCID:

```
switch# pathtrace fcid 0xca016c vsan 2000 reverse detail
The final destination port type is F_Port
-----
Hop 0          Domain In-Port          Out-Port          Speed Cost  Switchname
-----
              111  embedded                fc1/6             4G   250  switch1
-----
Stats for egress port: fc1/6
TxRt (B/s): 2944
RxRt (B/s): 3632
TxB_B: 32
RxB_B: 32
TxFrame: 137467
RxFrame: 137475
Errors: 0
Discard: 0
CRC: 0
-----
Hop 1          Domain In-Port          Out-Port          Speed Cost  Switchname
-----
              202  fc1/6                 fc1/1             2G   -    switch2
-----
Stats for egress port: fc1/1
TxRt (B/s): 1424
RxRt (B/s): 1528
TxB_B: 0
RxB_B: 32
TxFrame: 711
RxFrame: 649
Errors: 0
Discard: 15
CRC: 0
-----
Hop 2          Domain In-Port          Out-Port          Speed Cost  Switchname
-----
              202  embedded                fc1/6             4G   250  switch2
-----
Stats for egress port: fc1/6
TxRt (B/s): 3632
RxRt (B/s): 2952
TxB_B: 32
RxB_B: 32
TxFrame: 137476
RxFrame: 137467
```

```

Errors: 0
Discard: 0
CRC: 0

```

```

-----
Hop 3      Domain In-Port      Out-Port      Speed Cost  Switchname
          111    fc1/6          embedded      -    -    switch1
-----

```

Stats for egress port: embedded

```

TxRt (B/s): -
RxRt (B/s): -
TxB_B: -
RxB_B: -
TxFrame: -
RxFrame: -
Errors: -
Discard: -
CRC: -

```

NOTE: The stats are displayed for the egress interface only

The following example shows how to trace the path between a switch in which the pathtrace command is executed and all the edge devices in the specified domain and VSAN:

```

switch# pathtrace domain 83 vsan 70
The final destination port type is Embedded

```

```

-----
Hop Domain In-Port      Out-Port      Speed      Cost  Switchname
-----
0  144    embedded      vfc69(Eth1/8)  10.0G     100  sw-ioa-70
1  83     vfc69(Eth1/1)  embedded      -         -    sw-fcip69
-----

```

NOTE: The stats are displayed for the egress interface only

The following example shows how to trace all the links (including equal-cost parallel links) in the paths between all the edge devices in a domain and a switch in which the command is executed for Fibre Channel, FCIP, and vFC respectively:

```

switch# pathtrace domain 238 vsan 1 multipath

```

***NOTE ***

```

I - Ingress
E - Egress
M - Member Port-channel
* - Fport

```

```

.....
PATH 1  switch1 switch2
Domain  236      235

```

```

-----
HOP 1  switch1 (fc1/11) (E) ----- (I) (fc1/12) switch2
-----

```

Interface	Spd(G)	Tx(B/s)	Rx(B/s)	TxB2B	RxB2B	Errors	Discards	CRC
TxWait (1s/1m/1h/72h)		FibDrops	ZoneDrops					
(E) fc1/11	8.0	84	44	64	64	0	2	0
-		-						0%/0%/0%/0%
(I) fc1/12	8.0	44	84	64	64	0	0	0
-		-						0%/0%/0%/0%

```

-----
HOP 2  switch2 (fc1/3) (E) *End Device
-----

```

Interface	Spd(G)	Tx(B/s)	Rx(B/s)	TxB2B	RxB2B	Errors	Discards	CRC
-----------	--------	---------	---------	-------	-------	--------	----------	-----

```

TxWait(1s/1m/1h/72h) FibDrops      ZoneDrops
-----
(E) fc1/3      4.0      0      0      16      64      0      0      0      0%
-
.....
PATH 2  switch1 switch2
Domain  236      235
.....
HOP 1  switch1(fc1/12) (E)----- (I) (fc1/11) switch2
-----
Interface Spd(G) Tx(B/s) Rx(B/s) TxB2B RxB2B Errors Discards CRC
TxWait(1s/1m/1h/72h) FibDrops      ZoneDrops
-----
(E) fc1/12  8.0      64      180     64      64      0      0      0      0%
-
(I) fc1/11  8.0      180     64      64      64      0      0      0      0%
-
-----
HOP 2  switch2(fc1/3) (E) *End Device
-----
Interface Spd(G) Tx(B/s) Rx(B/s) TxB2B RxB2B Errors Discards CRC
TxWait(1s/1m/1h/72h) FibDrops      ZoneDrops
-----
(E) fc1/3  4.0      0      0      16      64      0      0      0      0%
-
-----

switch# pathtrace domain 132 vsan 447 multipath
***NOTE ***
I - Ingress
E - Egress
M - Member Port-channel
* - Fport
.....
PATH 1  switch1 switch2
Domain  187      132
.....
-----
HOP 1  switch1(port-channel216) (E)----- (I) (port-channel216) switch2
-----
Interface          InputRate (B/s)      OutputRate (B/s)      InputFrames (/sec)
OutputFrames (/sec)
-----
(E) port-channel216 3393959              640827945              161838662680576      1375239938244608
(M) fcip50          292049                55048436                3239                  27507
(M) fcip51          291539                55052889                3237                  27508
(M) fcip52          291702                55080573                3239                  27522
(M) fcip53          278265                52552382                3090                  26258
(M) fcip54          278291                52561525                3090                  26263
(M) fcip55          278346                52559754                3090                  26262
(M) fcip65          291647                55073072                3238                  27518
(M) fcip66          278491                52584017                3092                  26274
(M) fcip67          278362                52571056                3091                  26268
(M) fcip86          278290                52554341                3090                  26259

```

(M) fcip87	278426	52587737	3092	26276
(M) fcip88	278551	52602163	3093	26283
(I) port-channel216	640830213	3394016	1375252823146496	161842957647872
(M) fcip50	55058685	292105	27512	3240
(M) fcip51	55080107	291690	27522	3239
(M) fcip52	55097520	291794	27530	3240
(M) fcip53	52559881	278311	26262	3090
(M) fcip54	52570959	278345	26268	3091
(M) fcip55	52571081	278410	26268	3091
(M) fcip65	55051714	291539	27507	3237
(M) fcip66	52564219	278387	26264	3091
(M) fcip67	52562847	278324	26264	3090
(M) fcip86	52564931	278345	26265	3091
(M) fcip87	52571632	278350	26268	3091
(M) fcip88	52576637	278416	26271	3091

```
switch# pathtrace domain 83 vsan 70 multipath
```

```
***NOTE ***
```

```
I - Ingress
```

```
E - Egress
```

```
M - Member Port-channel
```

```
* - Fport
```

```
.....
```

```
PATH 1  switch1 switch2
```

```
Domain  144      83
```

```
.....
```

```
-----
```

```
HOP 1          switch1(vfc69) (E) ----- (I) (vfc69) switch2
```

```
-----
```

Interface	Spd(G)	FcoeOut(Oct)	FcoeIn(Oct)	FcoeOutPkt	FcoeInPkt
-----------	--------	--------------	-------------	------------	-----------

```
-----
```

(E) vfc69	10.0	165604	153648	697	700
-----------	------	--------	--------	-----	-----

(I) vfc69	10.0	153716	166276	701	698
-----------	------	--------	--------	-----	-----

**Note**

- In the output, embedded indicates that the respective port is an HBA interface in an edge device.
- Some of the terminologies used in the multipath outputs are defined in the following table:

Term	Description
FCIP	
InputRate(B/s)	The number of bytes received per second on the in port of an FCIP link.
OutputRate(B/s)	The number of bytes received per second on the out port of an FCIP link.
InputFrames(/sec)	The number of frames received per second on the in port of an FCIP link.
OutputFrames(/sec)	The number of frames received per second on the out port of an FCIP link.
vFC	
FcoeOut(Oct)	The number of egress FCoE octets on a vFC interface.
FcoeIn(Oct)	The number of ingress FCoE octets on a vFC interface.
FcoeOutPkt	The number of egress FCoE packets on a vFC interface.
FcoeInPkt	The number of ingress FCoE packets on a vFC interface.

Related Commands

Command	Description
FCtrace	Traces the path to a destination device by displaying the corresponding switch's pWWN at every hop.

peer (DMM job configuration submode)

To add peer SSM information to a job, use the peer command in DMM job configuration submode. To remove the peer SSM information from a job, use the no form of the command.

```
peer ip-address
no peer ip-address
```

Syntax Description

ip-address	Specifies the peer SSM IP address. The format for the IP address is A.B.C.D.
------------	--

Command Default

None.

Command Modes

DMM job configuration submode.

Command History

Release	Modification
3.2(1)	This command was introduced.

Usage Guidelines

In a dual-fabric topology, the migration job runs on an SSM in each fabric. The two SSMs exchange messages over the management IP network, so each SSM needs the IP address of the peer.

Examples

The following example shows how to add peer SSM information to a job:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# dmm module 3 job 1 create
Started New DMM Job Configuration.
Do not exit sub-mode until configuration is complete and committed
switch(config-dmm-job)# peer 224.2.1.2
switch(config-dmm-job)#
```

Related Commands

Command	Description
show dmm ip-peer	Displays the IP peer of a DMM port.
show dmm job	Displays job information.

peer-info ipaddr

To configure the peer information for the FCIP interface, use the `peer-info ipaddr` command. To remove the peer information for the FCIP interface, use the `no` form of the command.

```
peer-info ipaddr address [port number]
no peer-info ipaddr address [port number]
```

Syntax Description

ipaddr address	Configures the peer IP address.
port number	Configures a peer port. The range is 1 to 65535.

Command Default

None.

Command Modes

Interface configuration submode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

The basic FCIP configuration uses the peer's IP address to configure the peer information. You can also use the peer's port number, port profile ID, or port WWN to configure the peer information. If you do not specify a port, the default 3225 port number is used to establish connection.

Examples

The following command assigns an IP address to configure the peer information. Since no port is specified, the default port number, 3225, is used:

```
switch# config terminal
switch(config)# interface fcip 10
switch(config-if)# peer-info ipaddr 209.165.200.226
```

The following command deletes the assigned peer port information:

```
switch(config-if)# no peer-info ipaddr 209.165.200.226
```

The following command assigns the IP address and sets the peer TCP port to 3000. The valid port number range is from 0 to 65535:

```
switch(config-if)# peer-info ipaddr 209.165.200.226 port 3000
```

The following command deletes the assigned peer port information:

```
switch(config-if)# no peer-info ipaddr 209.165.200.226 port 2000
```

Related Commands

Command	Description
show interface fcip	Displays an interface configuration for a specified FCIP interface.

periodic-inventory notification

To enable the periodic inventory notification message dispatches, use the periodic-inventory notification command Call Home configuration submode. To revert to the default state, use the no form of the command.

```
periodic-inventory notification [interval days]
no periodic-inventory notification
```

Syntax Description	interval days (Optional) Specifies the notification interval. The range is 1 to 30.
---------------------------	---

Command Default	Disabled. The initial default interval is 7 days.
------------------------	--

Command Modes	Call Home configuration submode.
----------------------	----------------------------------

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines	None.
-------------------------	-------

Examples

The following example shows how to enable periodic inventory notification and use the default interval:

```
switch# config terminal
switch(config)# callhome
switch(config-callhome)# periodic-inventory notification
```

The following example shows how to enable periodic inventory notification and set the interval to 10 days:

```
switch# config terminal
switch(config)# callhome
switch(config-callhome)# periodic-inventory notification interval 10
```

Related Commands	Command	Description
	callhome	Enters Call Home configuration submode.
	show callhome	Displays Call Home configuration information.

permit (IPv6-ACL configuration)

To configure permit conditions for an IPv6 access control list (ACL), use the permit command in IPv6-ACL configuration submode. To remove the conditions, use the no form of the command.

```

permit ipv6-protocol-number | ipv6 source-ipv6-prefix/prefix-length | any | host source-ipv6-address
dest-ipv6-prefix/prefix-length | any | host dest-ipv6-address [log-deny]
permit icmp source-ipv6-prefix/prefix-length | any | host source-ipv6-address dest-ipv6-prefix /prefix-length
| any | host dest-ipv6-address [icmp-type] [icmp-code] [log-deny]
permit tcp source-ipv6-prefix/prefix-length | any | host source-ipv6-address [source-port-operator
source-port-number | range source-port-number source-port-number] dest-ipv6-prefix/prefix-length | any
| host dest-ipv6-address [dest-port-operator dest-port-number | range dest-port-number dest-port-number]
[established] [log-deny]
permit udp source-ipv6-prefix/prefix-length | any | host source-ipv6-address [source-port-operator
source-port-number | range source-port-number source-port-number] dest-ipv6-prefix/prefix-length | any
| host dest-ipv6-address [dest-port-operator dest-port-number | range dest-port-number dest-port-number]
[log-deny]
no permit ipv6-protocol-number | ipv6 | icmp | tcp | udp

```

Syntax Description

ipv6-protocol-number	Specifies an IPv6 protocol number. The range is 0 to 255.
ipv6	Applies the ACL to any IPv6 packet.
source-ipv6-prefix/prefix-length	Specifies a source IPv6 network or class of networks. The format is X:X:X::X/n .
any	Applies the ACL to any source or destination prefix.
host source-ipv6-address	Applies the ACL to the specified source IPv6 host address. The format is X:X:X::X .
dest-ipv6-prefix /prefix-length	Specifies a destination IPv6 network or class of networks. The format is X:X:X::X/n .
host dest-ipv6-address	Applies the ACL to the specified destination IPv6 host address. The format is X:X:X::X .
log-deny	(Optional) For packets that are dropped, creates an informational log message about the packet that matches the entry. The message includes the input interface.
icmp	Applies the ACL to any Internet Control Message Protocol (ICMP) packet.
icmp-type	Specifies an ICMP message type. The range is 0 to 255.
icmp-code	Specifies an ICMP message code. The range is 0 255.
tcp	Applies the ACL to any TCP packet.
source-port-operator	Specifies an operand that compares the source ports of the specified protocol. The operands are lt (less than), gt (greater than), and eq (equals).

source-port-number	Specifies the port number of a TCP or UDP port. The number can be from 0 to 65535. A range requires two port numbers.
udp	Applies the ACL to any UDP packet.
dest-port-operator	Specifies an operand that compares the destination ports of the specified protocol. The operands are lt (less than), gt (greater than), and eq (equals).
dest-port-number	Specifies the port number of a TCP or UDP port. The number can be from 0 to 65535. A range requires two port numbers.
range	Specifies a range of ports to compare for the specified protocol.
established	(Optional) Indicates an established connection, which is defined as a packet whose SYN flag is not set.

Command Default None.

Command Modes IPv6-ACL configuration submode.

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines The following guidelines can assist you in configuring an IPv6-ACL. For complete information, refer to the Cisco MDS 9000 Family CLI Configuration Guide .

- You can apply IPv6-ACLs to VSAN interfaces, the management interface, Gigabit Ethernet interfaces on IPS modules and MPS-14/2 modules, and Ethernet PortChannel interfaces. However, if IPv6-ACLs are already configured in a Gigabit Ethernet interface, you cannot add this interface to a Ethernet PortChannel group.



Caution Do not apply IPv6-ACLs to just one member of a PortChannel group. Apply IPv6-ACLs to the entire channel group.

- Use only the TCP or ICMP options when configuring IPv6-ACLs on Gigabit Ethernet interfaces.
- Configure the order of conditions accurately. Because the IPv6-ACL filters are applied sequentially to the IP flows, the first match determines the action taken. Subsequent matches are not considered. Be sure to configure the most important condition first. If no conditions match, the software drops the packet.

Examples

The following example configures an IPv6-ACL called List, enters IPv6-ACL submode, and adds an entry that permits IPv6 traffic from any source address to any destination address:

```
switch# config terminal
switch(config)# ipv6 access-list List1
switch(config-ipv6-acl)# permit tcp any any
```

The following example removes a permit condition set for any destination prefix on a specified UDP host:

```
switch# config terminal
switch(config)# ipv6 access-list List1
switch(config-ipv6-acl)# no
  permit udp host 2001:db8:200d::4000 any
```

The following example removes the IPv6-ACL called List1 and all its entries:

```
switch# config terminal
switch(config)# no ipv6 access-list List1
```

Related Commands

Command	Description
ipv6 access-list	Configures an IPv6 ACL and enters IPv6-ACL configuration submode.
deny	Configures deny conditions for an IPv6 ACL.

phone-contact

To configure the telephone contact number with the Call Home function, use the phone-contact command in Call Home configuration submenu. To disable this feature, use the no form of the command.

```
phone-contact [number]
no phone-contact [number]
```

Syntax Description

number	(Optional) Configures the customer's phone number. Allows up to 17 alphanumeric characters in international phone format. Note Do not use spaces. Use the + prefix before the number.
--------	---

Command Default

None.

Command Modes

Call Home configuration submenu.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the telephone contact number with the Call Home function:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# phone-contact +1-800-123-4567
```

Related Commands

Command	Description
callhome	Configures the Call Home function.
callhome test	Sends a dummy test message to the configured destination(s).
show callhome	Displays configured Call Home information.

ping

To diagnose basic network connectivity, use the ping command in EXEC mode.

```
ping [ipv6] host-nameip-address [count repeat-count] [interface gigabitethernet slot/port|mgmt number
|port-channel number|vsan vsan-id] [size size [timeout timeout]]
```

Syntax Description

ipv6	Sends IPv6 echo messages.
host-name	Specifies the host name of system to ping. Maximum length is 64 characters.
ip-address	Specifies the address of the system to ping.
count repeat-count	Specifies the repeat count. The range is 0 to 64.
interface	Specifies the interface on which the ping packets are to be sent.
gigabitethernet slot/port	Specifies a Gigabit Ethernet slot and port number.
mgmt number	Specifies the management interface.
port-channel number	Specifies a PortChannel number. The range is 1 to 256.
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
size size	Specifies the size. The range is 10 to 2000.
timeout timeout	Specifies the timeout. The range is 1 to 10.

Command Default

Prompts for input fields.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
3.0(1)	Added the ipv6 argument.

Usage Guidelines

The ping (Packet Internet Groper) program sends an echo request packet to an address, and then awaits a reply. The ping output can help you evaluate path-to-host reliability, delays over the path, and whether the host can be reached or is functioning.

Verify connectivity to the TFTP server using the ping command.

To abnormally terminate a ping session, type the Ctrl-C escape sequence.

Examples

The following example pings the system 192.168.7.27:

```
switch# ping 192.168.7.27
```

```
PING 192.168.7.27 (192.168.7.27): 56 data bytes
64 bytes from 192.168.7.27: icmp_seq=0 ttl=255 time=0.4 ms
64 bytes from 192.168.7.27: icmp_seq=1 ttl=255 time=0.2 ms
64 bytes from 192.168.7.27: icmp_seq=2 ttl=255 time=0.2 ms
64 bytes from 192.168.7.27: icmp_seq=3 ttl=255 time=0.2 ms
--- 209.165.200.226 ping statistics ---
13 packets transmitted, 13 packets received, 0% packet loss
round-trip min/avg/max = 0.2/0.2/0.4 ms
```

The following command shows the prompts that appear when you enter the ping command without an IP address:

```
switch# ping
Target IP address: 209.165.200.226
Repeat count [5]: 4
Datagram size [100]: 5
Timeout in seconds [2]: 1
Extended commands [n]: 3
PING 209.165.200.226 (209.165.200.226) 5(33) bytes of data.
--- 209.165.200.226 ping statistics ---
4 packets transmitted, 0 received, 100% packet loss, time 3017ms
```

policy

To enter IKE policy configuration and configure a policy for the IKE protocol, use the `policy` command in IKE configuration submode. To delete the policy, use the `no` form of the command.

```
policy priority
no policy priority
```

Syntax Description

priority	Specifies the priority for the IKE policy. The range is 1 to 255, where 1 is the high priority and 255 is the lowest.
----------	---

Command Default

None.

Command Modes

IKE configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, the IKE protocol must be enabled using the `crypto ike enable` command.

Examples

The following example shows how to configure a policy priority number for the IKE protocol:

```
switch# config terminal
switch(config)# crypto ike domain ipsec
switch(config-ike-ipsec)# policy 1
switch(config-ike-ipsec-policy)#
```

Related Commands

Command	Description
<code>crypto ike domain ipsec</code>	Enters IKE configuration mode.
<code>crypto ike enable</code>	Enables the IKE protocol.
<code>show crypto ike domain ipsec</code>	Displays IKE information for the IPsec domain.

port

To assign the TCP port number of a Gigabit Ethernet interface to the FCIP profile or a listener peer port for a iSCSI interface, use the port command. Use the no form of the command to negate the command or revert to factory defaults.

```
port number
no port number
```

Syntax Description	port number	Configures a peer port. The range is 1 to 65535.
---------------------------	-------------	--

Command Default	Disabled
------------------------	----------

Command Modes	Fcip profile configuration submode.
----------------------	-------------------------------------

Interface configuration submode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines	Associates the profile with the assigned local port number. If a port number is not assigned for a FCIP profile, the default TCP port 3225 is used.
-------------------------	---

Examples	The following example configures port 5000 on FCIP interface 5:
-----------------	---

```
switch# config terminal
switch(config)# fcip profile 5
switch(config-profile)# port 5000
```

The following example configures port 4000 on iSCSI interface 2/1:

```
switch# config terminal
switch(config)# interface iscsi 2/1
switch(config-profile)# port 4000
```

Related Commands	Command	Description
	show fcip profile	Displays information about the FCIP profile.
	interface fcip interface_number use-profile profile-id	Configures the interface using an existing profile ID from 1 to 255.
	show interface fcip	Displays an interface configuration for a specified FCIP interface.

portaddress

To enable the FICON feature in a specified VSAN, use the `ficon vsan` command in configuration mode. To disable the feature or to revert to factory defaults, use the `no` form of the command.

```
portaddress portaddress block name string prohibit portaddress portaddress
no portaddress portaddress block name string prohibit portaddress portaddress
```

Syntax Description

portaddress	Specifies the FICON port number for this interface. The range is 0 to 254.
block	Blocks a port address.
name string	Configures a name for the port address. Maximum length is 24 characters.
prohibit portaddress	Prohibits communication with a port address.

Command Default

None.

Command Modes

FICON configuration submode.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

The shutdown/no shutdown port state is independent of the block/no block port state. If a port is shutdown, unblocking that port will not initialize the port.

You cannot block or prohibit CUP port (0XFE).

If you prohibit ports, the specified ports are prevented from communicating with each other. Unimplemented ports are always prohibited.

Examples

The following example disables a port address and retains it in the operationally down state:

```
switch# config terminal
switch(config)# ficon vsan 2
switch(config-ficon)# portaddress 1
switch(config-ficon-portaddr)# block
```

The following example enables the selected port address and reverts to the factory default of the port address not being blocked:

```
switch(config-ficon-portaddr)# no block
```

The following example prohibits port address 1 in VSAN 2 from talking to ports 3:

```
switch(config-ficon-portaddr)# prohibit portaddress 3
```

The following example removes port address 5 from a previously-prohibited state:

```
switch(config-ficon-portaddr)# no prohibit portaddress 5
```

The following example assigns a name to the port address:

```
switch(config-ficon-portaddr)# name SampleName
```

The following example deletes a previously configured port address name:

```
switch(config-ficon-portaddr)# no name SampleName
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.

port-channel persistent

To convert an automatically created PortChannel to a persistent PortChannel, use the `port-channel persistent` command in EXEC mode.

```
port-channel port-channel number persistent
```

Syntax Description	port-channel number	Specifies the PortChannel number. The range is 1 to 256.
---------------------------	---------------------	--

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.1(3)	Added usage guideline.
	2.0(x)	This command was introduced.

Usage Guidelines The auto mode support is not available after 4.x. Any previously automatically created PortChannel needs to be made persistent by using the `port-channel persistent` command. This command needs to be run on both sides of the auto Port Channel.

Examples The following example shows how to change the properties of an automatically created channel group to a persistent channel group:

```
switch# port-channel 10 persistent
```

Related Commands	Command	Description
	show interface port-channel	Displays PortChannel interface information.
	show port-channel	Displays PortChannel information.

port-group-monitor activate

To activate the specified Port Group Monitor policy, use the port-group-monitor activate command. To deactivate the Port Group Monitor policy, use the no form of the command.

```
port-group-monitor activate name
no port-group-monitor activate name
```

Syntax Description

name	(Optional) Specifies the name of the port group policy. The maximum size is 32 characters.
------	--

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to activate the Port Group Monitor policy:

```
switch(config)# port-group-monitor activate pgmon
switch(config)#
```

The following example shows how to deactivate the Port Group Monitor policy:

```
switch(config)# no port-group-monitor activate pgmon
switch(config)#
```

Related Commands

Command	Description
show port-group-monitor	Displays Port Group Monitor information.

port-group-monitor enable

To enable the Port Group Monitor feature, use the port-group-monitor enable command. To disable this feature, use the no form of the command.

```
port-group-monitor enable
no port-group-monitor enable
```

Syntax Description This command has no arguments or keywords.

Command Default Enable.

Command Modes Configuration mode.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable Port Group Monitor:

```
switch(config)# port-group-monitor enable
switch(config)#
```

The following example shows how to disable Port Group Monitor:

```
switch(config)# no port-group-monitor enable
switch(config)#
```

Related Commands	Command	Description
	show port-group-monitor	Displays Port Group Monitor information.

port-group-monitor name

To create the Port Group Monitor policy, use the port-group-monitor name command. To delete Port Group Monitor policy, use the no form of the command.

```
port-group-monitor name policy-name
no port-group-monitor name policy-name
```

Syntax Description

policy-name	Displays the policy name. Maximum size is 32 characters.
-------------	--

Command Default

Rising threshold is 80, falling threshold is 20, and interval is 60.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to create Port Group Monitor policy name:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# port-group-monitor name pgmon
switch(config-port-group-monitor) #
```

The following example shows how to delete Port Group Monitor policy:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no port-group-monitor name pgmon
switch(config) #
```

Related Commands

Command	Description
port-group-monitor activate	Activates the default port-group-monitor policy.
monitor counter	Configure monitoring of a specific counter within a Port Group Monitor policy.
counter	Configure individual counter in a port-group-monitor policy to use non-default values.
show port-group-monitor	Displays Port Group Monitor information.

port-license

To make a port eligible or ineligible to acquire a port activation license on a Cisco MDS 9124 switch, use the port-license command.

```
port-license acquire
no port-license acquire
```

Syntax Description

acquire	Grants a license to a port.
---------	-----------------------------

Command Default

None.

Command Modes

Interface configuration submenu.

Command History

Release	Modification
3.1(1)	This command was introduced.

Usage Guidelines

If a port already has a license, then no action is taken and the port-license command returns successfully. If a license is unavailable, then the port will remain unlicensed.



Note

This command is supported on the Cisco MDS 9124 switch only.

Examples

The following example shows how to make a port eligible to acquire a license:

```
switch# config t
switch (config)# interface fc1/1
switch (config-if)# port-license
```

The following example shows how to acquire a license for a port, and then copies the configuration to the startup configuration so that the new licensing configuration is maintained:

```
switch# config t
switch(config)# interface fc1/1
switch(config-if)#
switch(config-if)# port-license acquire
switch(config-if)# end
switch# copy running-config startup-config
```

Related Commands

Command	Description
show port-licenses	Displays port licensing information for a Cisco MDS 9124 switch.

port-monitor activate

To activate the specified port monitor policy, use port-monitor activate command. To deactivate the policy, use the no form of the command.

```
port-monitor activate [name]
no port-monitor activate [name]
```

Syntax Description	name (Optional) Name of PMON port policy.
---------------------------	---

Command Default	None.
------------------------	-------

Command Modes	Configuration mode.
----------------------	---------------------

Command History	Release	Modification
	4.1(1b)	This command was introduced.

Usage Guidelines If no name is given, the port monitor activates the default policy. Presently one policy is activated on one port type. Two policies can be active but on different port types. If the specified policy is not active, it is a redundant operation.

Examples

The following example shows how to activate the port monitor default policy:

```
switch(config)# port-monitor activate
switch(config)#
```

The following example shows how to activate the port monitor Cisco policy:

```
switch(config)# port-monitor activate pmon_policy
switch(config)#
```

Related Commands	Command	Description
	show port-monitor	Displays all port monitor policies.

port-monitor check-interval

To check errors at a lesser time interval compared to a poll interval, use the port-monitor check-interval command. To disable check-interval, use the no form of the command.

```
port-monitor check-interval seconds
no port-monitor check-interval seconds
```

Syntax Description

seconds	Specifies the check-interval time in seconds.
---------	---

Command Default

Enabled.

Command Modes

Configuration mode.

Command History

Release	Modification
7.3(1)D1(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the check interval time to 30 seconds:

```
switch# configure terminal
switch(config)# port-monitor check-interval 30
```

Related Commands

Command	Description
show port-monitor	Displays all port monitor policies.

port-monitor cong-isolation-recover

To configure congestion isolation recover, use the `port-monitor cong-isolation-recover` command. To revert to the default configuration, use the `no` form of the command.

```
port-monitor cong-isolation-recover recovery-interval seconds | isolate-duration hours num-occurrence
number
no port-monitor cong-isolation-recover recovery-interval seconds | isolate-duration hours
num-occurrence number
```

Syntax Description

recovery-interval seconds	Specifies the FPIN recovery interval.
isolate-duration hours	Specifies the FPIN isolate interval.
num-occurrence number	Specifies the number of occurrence.

Command Default

The congestion isolation recover is set to 900 seconds (15 minutes).

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.5(1)	This command was introduced.

Examples

This example shows how to configure the `isolate-duration` to 24-hours and the number of rising threshold occurrences to be detected in this interval to 3:

```
switch# configure
switch(config)# port-monitor cong-isolation-recover isolate-duration 24 num-occurrence 3
```

This example shows how to configure the `recovery-interval` to 15 minutes:

```
switch# configure
switch(config)# port-monitor cong-isolation-recover recovery-interval 15
```

Related Commands

Command	Description
feature fpm	Enables Fabric Performance Monitor (FPM).
show port-monitor	Displays counter information for a port monitor policy.

port-monitor dirl

To specify the recovery interval for DIRL, use the `port-monitor dirl` command. To revert to the default interval, use the `no` form of the command.

```
port-monitor dirl recovery-interval seconds
no port-monitor dirl recovery-interval seconds
```

Syntax Description

recovery-interval seconds	Specifies the DIRL recovery interval.
---------------------------	---------------------------------------

Command Default

The DIRL recovery interval is set to 60 seconds.

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.5(1)	This command was introduced.

Examples

This example shows how to configure the DIRL recovery interval of 60 seconds:

```
switch# configure
switch(config)# port-monitor fpin recovery-interval 60
```

Related Commands

Command	Description
feature fpm	Enables Fabric Performance Monitor (FPM).
show port-monitor	Displays counter information for a port monitor policy.

port-monitor enable

To enable the user to activate or deactivate policies, use the port-monitor enable command. To disable port monitor policies, use the no form of the command.

```
port-monitor enable
no port-monitor enable
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes Configuration mode.

Command History	Release	Modification
	4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable port monitor:

```
switch(config)# port-monitor enable
switch(config)# no port-monitor enable
```

Related Commands	Command	Description
	show port-monitor	Displays all port monitor policies.

port-monitor fpin

To specify the recovery interval for FPIN, use the `port-monitor fpin` command. To revert to the default interval, use the `no` form of the command.

```
port-monitor fpin recovery-interval seconds | isolate-duration hours num-occurrence number
no port-monitor fpin recovery-interval seconds | isolate-duration hours num-occurrence number
```

Syntax Description

recovery-interval seconds	Specifies the FPIN recovery interval.
isolate-duration hours	Specifies the FPIN isolate interval.
num-occurrence number	Specifies the number of occurrence.

Command Default

The FPIN recovery interval is set to 900 seconds (15 minutes).

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.5(1)	This command was introduced.

Examples

This example shows how to configure the FPIN recovery interval of 1200 seconds (20 minutes):

```
switch# configure
switch(config)# port-monitor fpin recovery-interval 1200
```

This example shows how to configure the isolate-duration to 24-hours and the number of rising threshold occurrences to be detected in this interval to 3:

```
switch# configure
switch(config)# port-monitor fpin isolate-duration 24 num-occurrence 3
```

Related Commands

Command	Description
feature fpm	Enables Fabric Performance Monitor (FPM).
show port-monitor	Displays counter information for a port monitor policy.

port-monitor name

To configure a new port monitor policy and enters port monitor configuration mode, use the port-monitor name command. To delete port monitor policy, use the no form of the command.

```
port-monitor name policy-name
no port-monitor name policy-name
```

Syntax Description

policy-name	Displays the policy name.
-------------	---------------------------

Command Default

By default 16 individual counters are added and it defaults to port-type all.

Command Modes

Configuration mode.

Command History

Release	Modification
4.1(1b)	This command was introduced.

Usage Guidelines

To enable the monitoring of various counters the following basic steps need to be done:

- Configure the port-monitor policy name
- Configure the types of ports included in the policy
- Configure any counters with non-default values that are needed
- Turn off the monitoring of any counters that are not needed (and are on by default) and turn on the monitoring of any counters that are needed if they are by default turned off
- Activate port-monitor policy

Examples

The following example shows how to create a user defined policy by name cisco and to assign the default values to the name:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# port-monitor name pmon_policy
switch(config-port-monitor)# show port-monitor pmon_policy
Policy Name   : pmon_policy
Admin status  : Not Active
Oper status   : Not Active
Port type     : All Ports
```

Counter	event	Warning	Threshold	Threshold	Interval	Rising	Threshold	event	Falling	Threshold
					PMON	Portguard				
Link Loss	4	Not enabled	Delta	60	5			4	1	
Sync Loss	4	Not enabled	Delta	60	5			4	1	
Signal Loss	4	Not enabled	Delta	60	5			4	1	
Invalid Words			Delta	60	1			4	0	

port-monitor name

4	Not enabled		Not enabled			
Invalid CRC's	Delta	60	5	4	1	
4	Not enabled		Not enabled			
State Change	Delta	60	100	2	0	
4	Not enabled		Not enabled			
TX Discards	Delta	60	200	4	10	
4	Not enabled		Not enabled			
LR RX	Delta	60	5	4	1	
4	Not enabled		Not enabled			
LR TX	Delta	60	5	4	1	
4	Not enabled		Not enabled			
Timeout Discards	Delta	60	200	4	10	
4	Not enabled		Not enabled			
Credit Loss Reco	Delta	1	1	4	0	
4	Not enabled		Not enabled			
TX Credit Not Available	Delta	1	10%	4	0%	
4	Not enabled		Not enabled			
RX Datarate	Delta	60	80%	4	20%	
4	Not enabled		Not enabled			
TX Datarate	Delta	60	80%	4	20%	
4	Not enabled		Not enabled			
TX-Slowport-Oper-Delay	Absolute	1	50ms	4	0ms	
4	Not enabled		Not enabled			
TXWait	Delta	1	40%	4	0%	
4	Not enabled		Not enabled			

Related Commands

Command	Description
counter	Displays the individual counter.
monitor-counter	Configure the monitoring of a specific counter within a port-monitor policy.
port-monitor activate	Configures the specified port monitor policy.
port-type	Configures port type policies.
show port-monitor	Displays all port monitor policies.

port-security

To configure port security features and reject intrusion attempts, use the port-security command in configuration mode. Use the no form of the command to negate the command or revert to factory defaults.

```
port-security activate vsan vsan-id [force | no-auto-learn] | auto-learn vsan vsan-id | database vsan
vsan-id any-wwn | pwwn wwn | nwwn wwn | swwn wwn [fwwn wwn | interface fc slot/port | port-channel
number | swwn wwn [interface fc slot/port | port-channel number]]
no port-security activate vsan vsan-id [force | no-auto-learn] | auto-learn vsan vsan-id | database vsan
vsan-id any-wwn | pwwn wwn | nwwn wwn | swwn wwn [fwwn wwn | interface fc slot/port | port-channel
number | swwn wwn [interface fc slot/port | port-channel number]]
```

Syntax Description

activate	Activates a port security database for the specified VSAN and automatically enables auto-learn.
vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
force	(Optional) Forces the database activation.
no-auto-learn	(Optional) Disables the autolearn feature for the port security database.
auto-learn	Enables auto-learning for the specified VSAN.
database	Enters the port security database configuration mode for the specified VSAN.
any-wwn	Specifies any WWN to login to the switch.
nwwn wwn	Specifies the node WWN as the Nx port connection.
pwwn wwn	Specifies the port WWN as the Nx port connection.
swwn wwn	Specifies the switch WWN as the xE port connection.
fwwn wwn	Specifies a fabric WWN login.
interface	Specifies the device or switch port interface through which each device is connected to the switch.
fc slot/port	Specifies a Fibre Channel interface by the slot and port.
port-channel number	Specifies a PortChannel interface. The range is 1 to 128.

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
1.2(1)	This command was introduced.

Release	Modification
2.0(x)	Add the optional swwn keyword to the subcommands under the port-security database vsan command.

Usage Guidelines

When you activate the port security feature, the auto-learn option is also automatically enabled. You can choose to activate the port-security feature and disable autolearn using the port-security activate vsan number no-auto-learn command. In this case, you need to manually populate the port security database by individually securing each port.

If the auto-learn option is enabled on a VSAN, you cannot activate the database for that VSAN without the force option.

Examples

The following example activates the port security database for the specified VSAN, and automatically enables autolearning:

```
switch# config terminal
switch(config)# port-security activate vsan 1
```

The following example deactivates the port security database for the specified VSAN, and automatically disables auto-learn:

```
switch# config terminal
switch(config)# no port-security activate vsan 1
```

The following example disables the auto-learn feature for the port security database in VSAN 1:

```
switch# config terminal
switch(config)# port-security activate vsan 1 no-auto-learn
```

The following example enables auto-learning so the switch can learn about any device that is allowed to access VSAN 1. These devices are logged in the port security active database:

```
switch# config terminal
switch(config)# port-security auto-learn vsan 1
```

The following example disables auto-learning and stops the switch from learning about new devices accessing the switch. Enforces the database contents based on the devices learnt up to this point.

```
switch# config terminal
switch(config)# no port-security auto-learn vsan 1
```

The following example enters the port security database mode for the specified VSAN:

```
switch# config terminal
switch(config)# port-security database vsan 1
switch(config-port-security)#
```

The following example configures any WWN to login through the specified interfaces:

```
switch(config-port-security)# any-wwn interface fc1/1 - fc1/8
```

The following example configures the specified pWWN to only log in through the specified fWWN.

```
switch(config-port-security) # pwn 20:11:00:33:11:00:2a:4a fwn 20:81:00:44:22:00:4a:9e
```

The following example deletes the specified pWWN configured in the previous step:

```
switch(config-port-security) # no pwn 20:11:00:33:11:00:2a:4a fwn 20:81:00:44:22:00:4a:9e
```

The following example configures the specified pWWN to only log in through the specified sWWN:

```
switch(config-port-security) # pwn 20:11:00:33:11:00:2a:4a swn 20:00:00:0c:85:90:3e:80
```

The following example deletes the specified pWWN configured in the previous step:

```
switch(config-port-security) # no pwn 20:11:00:33:11:00:2a:4a swn 20:00:00:0c:85:90:3e:80
```

The following example configures the specified nWWN to log in through the specified fWWN:

```
switch(config-port-security) # nwn 26:33:22:00:55:05:3d:4c fwn 20:81:00:44:22:00:4a:9e
```

The following example configures the specified pWWN to login through any port on the local switch:

```
switch(config-port-security) # pwn 20:11:33:11:00:2a:4a:66
```

The following example configures the specified sWWN to only login through PortChannel 5:

```
switch(config-port-security) # swn 20:01:33:11:00:2a:4a:66 interface port-channel 5
```

The following example configures any WWN to log in through the specified interface:

```
switch(config-port-security) # any-wwn interface fc3/1
```

The following example deletes the wildcard configured in the previous step:

```
switch(config-port-security) # no any-wwn interface fc2/1
```

The following example deletes the port security configuration database from the specified VSAN:

```
switch# config terminal
switch(config)# no port-security database vsan 1
switch(config)#
```

The following example forces the VSAN 1 port security database to activate despite conflicts:

```
switch(config)# port-security activate vsan 1 force
```

Related Commands

Command	Description
show port-security database	Displays configured port security information.

port-security abort

To discard the port security Cisco Fabric Services (CFS) distribution session in progress, use the port-security abort command in configuration mode.

```
port-security abort vsan vsan-id
```

Syntax Description

vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
--------------	--

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to discard a port security CFS distribution session in progress:

```
switch# config terminal
switch(config)# port-security abort vsan 33
```

Related Commands

Command	Description
port-security distribute	Enables CFS distribution for port security.
show port-security	Displays port security information.

port-security commit

To apply the pending configuration pertaining to the port security Cisco Fabric Services (CFS) distribution session in progress in the fabric, use the port-security commit command in configuration mode.

```
port-security commit vsan vsan-id
```

Syntax Description	vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
---------------------------	--------------	--

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to commit changes to the active port security configuration:

```
switch# config terminal
switch(config)# port-security commit vsan 13
```

Related Commands	Command	Description
	port-security distribute	Enables CFS distribution for port security.
	show port-security	Displays port security information.

port-security database

To copy the port security database or to view the difference within the port security database, use the port-security database command in EXEC mode.

```
port-security database copy | diff active | config vsan vsan-id
```

Syntax Description

copy	Copies the active database to the configuration database.
diff	Provides the difference between the active and configuration port security database.
active	Writes the active database to the configuration database.
config	Writes the configuration database to the active database.
vsan vsan-id	Specifies the VSAN ID. The ranges is 1 to 4093.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.2(1)	This command was introduced.

Usage Guidelines

If the active database is empty, the port-security database is empty.

Use the port-security database diff active command to resolve conflicts.

Examples

The following example copies the active to the configured database:

```
switch# port-security database copy vsan 1
```

The following example provides the differences between the active database and the configuration database:

```
switch# port-security database diff active vsan 1
```

The following example provides information on the differences between the configuration database and the active database:

```
switch# port-security database diff config vsan 1
```

Related Commands

Command	Description
port-security database	Copies and provides information on the differences within the port security database.

Command	Description
show port-security database	Displays configured port security information.

port-security distribute

To enable Cisco Fabric Services (CFS) distribution for port security, use the port-security distribute command. To disable this feature, use the no form of the command.

```
port-security distribute
no port-security distribute
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines Before distributing the Fibre Channel timer changes to the fabric, the temporary changes to the configuration must be committed to the active configuration using the port-security commit command.

Examples The following example shows how to distribute the port security configuration to the fabric:

```
switch# config terminal
switch(config)# port-security distribute
```

Related Commands	Command	Description
	port-security commit	Commits the port security configuration changes to the active configuration.
	show port-security	Displays port security information.

port-security enable

To enable port security, use the port-security enable command in configuration mode. To disable port security, use the no form of the command.

```
port-security enable
no port-security enable
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.
	NX-OS 4.1(1b)	This command was deprecated.

Usage Guidelines Issuing the port-security enable command enables the other commands used to configure port security.

Examples The following example shows how to enable port security:

```
switch# config terminal
switch(config)# port-security enable
```

The following example shows how to disable port security:

```
switch# config terminal
switch(config)# no port-security enable
```

Related Commands	Command	Description
	show port-security	Displays port security information.

port-track enable

To enable port tracking for indirect errors, use the port-track enable command in configuration mode. To disable this feature, use the no form of the command.

```
port-track enable
no port-track enable
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines The software brings the linked port down when the tracked port goes down. When the tracked port recovers from the failure and comes back up again, the tracked port is also brought up automatically (unless otherwise configured).

Examples The following example shows how to enable port tracking:

```
switch# config terminal
switch(config)# port-track enable
```

The following example shows how to disable port tracking:

```
switch# config terminal
switch(config)# no port-track enable
```

Command	Description
show interface fc	Displays configuration and status information for a specified Fibre Channel interface.
show interface port-channel	Displays configuration and status information for a specified PortChannel interface.

port-track force-shut

To force a shutdown of a tracked port, use the port-track force-shut command in interface configuration submode. To reenable the port tracking, use the no form of the command.

```
port-track force-shut
no port-track force-shut
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Interface configuration submode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines Use the port-track force-shut to keep the linked port down, even though the tracked port comes back up. You must explicitly bring the port up when required using the no port-track force-shut command.

Examples The following example shows how to force the shutdown of an interface and the interfaces that it is tracking:

```
switch# config terminal
switch(config)# interface fc 1/2
no port-track force-shut
```

Related Commands	Command	Description
	port-track enable	Enables port tracking.
	show interface fc	Displays configuration and status information for a specified Fibre Channel interface.
	show interface port-channel	Displays configuration and status information for a specified PortChannel interface.

port-track interface

To enable port tracking for specific interfaces, use the port-track interface command in interface configuration submode. To disable this feature, use the no form of the command.

```
port-track interface fc slot/port | fcip port | gigabitethernet slot/port | port-channel port [vsan vsan-id]
no port-track interface fc slot/port | fcip port | gigabitethernet slot/port | port-channel port [vsan vsan-id]
```

Syntax Description

fc slot/port	Specifies a Fibre Channel interface.
fcip port	Specifies a FCIP interface.
gigabitethernet slot/port	Specifies a Gigabit Ethernet interface.
port-channel port	Specifies a PortChannel interface. The range is 1 to 128.
vsan vsan-id	(Optional) Specifies a VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

Interface configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

When the ports that an interface is tracking goes down, the interface also goes down. When the tracked port comes backup, the linked interface also comes back up. Use the port-track force-shut command to keep the linked interface down.

Examples

The following example shows how to enable port tracking for specific interfaces:

```
switch# config terminal
switch(config)# interface fc 1/2
switch(config-if)# port-track interface port-channel 2
switch(config-if)# port-track interface fcip 5
```

Related Commands

Command	Description
port-track enable	Enables port tracking.
port-track force-shut	Forcefully shuts an interface for port tracking.
show interface fc	Displays configuration and status information for a specified Fibre Channel interface.
show interface port-channel	Displays configuration and status information for a specified PortChannel interface.

power redundancy-mode (MDS 9500 switches)

To configure the capacity of the power supplies on the Cisco MDS 9500 Family of switches, use the power redundancy-mode command in configuration mode. Use the no form of the command to negate the command or revert to factory defaults.

```
power redundancy-mode combined [force] | redundant
no power redundancy-mode combined [force] | redundant
```

Syntax Description		
	combined	Configures power supply redundancy mode as combined.
	force	Forces combined mode without prompting.
	redundant	Configures power supply redundancy mode as redundant.

Command Default Redundant mode.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines If power supplies with different capacities are installed in the switch, the total power available differs based on the configured mode:

- In redundant mode, the total power is the lesser of the two power supply capacities. This reserves enough power to keep the system powered on in case of a power supply failure. This is the recommended or default mode.
- In combined mode, the total power is twice the lesser of the two power supply capacities. In case of a power supply failure, the entire system could be shut down, depending on the power usage at that time.
- When a new power supply is installed, the switch automatically detects the power supply capacity. If the new power supply has a capacity that is lower than the current power usage in the switch and the power supplies are configured in redundant mode, the new power supply will be shut down.
- When you change the configuration from combined to redundant mode and the system detects a power supply that has a capacity lower than the current usage, the power supply is shut down. If both power supplies have a lower capacity than the current system usage, the configuration is not allowed.

Examples

The following examples demonstrate how the power supply redundancy mode could be set:

```
switch(config)# power redundancy-mode combined
WARNING: This mode can cause service disruptions in case of a power supply failure. Proceed
? [y/n] y
switch(config)# power redundancy-mode redundant
```

Related Commands

Command	Description
copy running-config startup-config	Copies all running configuration to the startup configuration.
show environment power	Displays status of power supply modules, power supply redundancy mode, and power usage summary.

power redundancy-mode (MDS 9700 switch)

To configure the capacity of the power supplies on the Cisco MDS 9700 Family of switches, use the power redundancy-mode command in configuration mode. Use the no form of the command to negate the command or revert to factory defaults.

```
power redundancy-mode combined [force] | insrc-redundant | ps-redundant | redundant
no power redundancy-mode combined [force] | insrc-redundant | ps-redundant | redundant
```

Syntax Description	
combined	Configures power supply redundancy mode as combined.
force	Forces combined mode without prompting.
insrc-redundant	Configure power supply redundancy mode as grid/AC input source redundant.
ps-redundant	Configure power supply redundancy mode as PS redundant.
redundant	Configures power supply redundancy mode as redundant.

Command Default Redundant mode.

Command Modes Configuration mode.

Command History	Release	Modification
	6.2(1)	This command was introduced.

Usage Guidelines None

Examples The following example shows how to configure the power supply redundancy mode as grid/AC input source redundant:

```
switch(config)# power redundancy-mode insrc-redundant
switch(config)# 2014 May 29 12:40:22 mds9706 %PLATFORM-4-PFM_PS_RED_MODE_CHG: Power redundancy
mode changed to insrc-redundant
switch(config)# show environment power
Power Supply:
Voltage: 50 Volts
Power
Supply      Model                Actual      Total
              Output          Capacity    Status
              (Watts )        (Watts )
-----
1          DS-CAC97-3KW          333 W       3000 W    Ok
2          DS-CAC97-3KW          345 W       3000 W    Ok
3          DS-CAC97-3KW          345 W       3000 W    Ok
4          DS-CAC97-3KW          337 W       3000 W    Ok
Module      Model                Actual      Power
              Draw          Allocated    Status
              (Watts )        (Watts )
-----
1          DS-X9848-480K9        354 W       500 W     Powered-Up
```

power redundancy-mode (MDS 9700 switch)

3	DS-X97-SF1-K9	107 W	190 W	Powered-Up
4	DS-X97-SF1-K9	105 W	190 W	Powered-Up
6	DS-X9448-768K9	403 W	650 W	Powered-Up
Xb1	DS-X9706-FAB1	48 W	85 W	Powered-Up
Xb2	DS-X9706-FAB1	47 W	85 W	Powered-Up
Xb3	DS-X9706-FAB1	48 W	85 W	Powered-Up
Xb4	DS-X9706-FAB1	48 W	85 W	Powered-Up
Xb5	DS-X9706-FAB1	48 W	85 W	Powered-Up
Xb6	DS-X9706-FAB1	48 W	85 W	Powered-Up
fan1	DS-C9706-FAN	29 W	300 W	Powered-Up
fan2	DS-C9706-FAN	29 W	300 W	Powered-Up
fan3	DS-C9706-FAN	33 W	300 W	Powered-Up

N/A - Per module power not available

Power Usage Summary:

```

-----
Power Supply redundancy mode (configured)           InSrc-Redundant
Power Supply redundancy mode (operational)         InSrc-Redundant
Total Power Capacity (based on configured mode)     6000 W
Total Power of all Inputs (cumulative)              12000 W
Total Power Output (actual draw)                   1360 W
Total Power Allocated (budget)                     3090 W
Total Power Available for additional modules        2910 W
switch(config)#

```

The following example shows how to configure the power supply redundancy mode as PS redundant:

```

switch(config)# power redundancy-mode ps-redundant
switch(config)# 2014 May 29 12:40:22 mds9706 %PLATFORM-4-PFM_PS_RED_MODE_CHG: Power redundancy
mode changed to ps-redundant
switch(config)# show environment power
Power Supply:
Voltage: 50 Volts
Power
Supply      Model                Actual      Total
              Output      Capacity    Status
              (Watts )    (Watts )
-----
1          DS-CAC97-3KW             333 W       3000 W    Ok
2          DS-CAC97-3KW             345 W       3000 W    Ok
3          DS-CAC97-3KW             345 W       3000 W    Ok
4          DS-CAC97-3KW             341 W       3000 W    Ok
Module     Model                Actual      Power
              Draw      Allocated    Status
              (Watts )    (Watts )
-----
1          DS-X9848-480K9          364 W       500 W     Powered-Up
3          DS-X97-SF1-K9           107 W       190 W     Powered-Up
4          DS-X97-SF1-K9           105 W       190 W     Powered-Up
6          DS-X9448-768K9          403 W       650 W     Powered-Up
Xb1       DS-X9706-FAB1           48 W        85 W     Powered-Up
Xb2       DS-X9706-FAB1           47 W        85 W     Powered-Up
Xb3       DS-X9706-FAB1           48 W        85 W     Powered-Up
Xb4       DS-X9706-FAB1           48 W        85 W     Powered-Up
Xb5       DS-X9706-FAB1           48 W        85 W     Powered-Up
Xb6       DS-X9706-FAB1           48 W        85 W     Powered-Up
fan1      DS-C9706-FAN            26 W       300 W     Powered-Up
fan2      DS-C9706-FAN            29 W       300 W     Powered-Up
fan3      DS-C9706-FAN            33 W       300 W     Powered-Up
N/A - Per module power not available
Power Usage Summary:
-----
Power Supply redundancy mode (configured)           PS-Redundant
Power Supply redundancy mode (operational)         PS-Redundant
Total Power Capacity (based on configured mode)     9000 W
Total Power of all Inputs (cumulative)              12000 W

```



```
Total Power Output (actual draw)          1364 W
Total Power Allocated (budget)            3090 W
Total Power Available for additional modules 5910 W
switch(config)#
```

Related Commands

Command	Description
copy running-config startup-config	Copies all running configuration to the startup configuration.
show environment power	Displays status of power supply modules, power supply redundancy mode, and power usage summary.

poweroff module

To power off individual modules in the system, use the `poweroff module` command in configuration mode. Use the `no` form of this command to power up the specified module.

```
poweroff module slot
no poweroff module slot
```

Syntax Description

slot	Specifies the slot number for the module.
------	---

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

Use the `poweroff module` command to power off individual modules. The `poweroff module` command cannot be used to power off supervisor modules.

Examples

The following example powers off and powers up module 1:

```
switch# config terminal
switch(config)# poweroff module 1
switch(config)#
switch(config)# no poweroff module 1
switch(config)#
```

Related Commands

Command	Description
<code>copy running-config startup-config</code>	Copies all running configuration to the startup configuration.
<code>show module</code>	Displays information for a specified module.

priority

To configure the priority in a QoS policy map class, use the `priority` command in QoS policy class map configuration submenu. To disable this feature, use the `no` form of the command.

```
priority high | low | medium
no priority high | low | medium
```

Syntax Description	high	Configures the frames matching the class-map as high priority.
	low	Configures the frames matching the class-map as low priority.
	medium	Configures the frames matching the class-map as medium priority.

Command Default The default priority is low.

Command Modes QoS policy map class configuration submenu.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines Before you can configure the priority in a QoS policy map class you must first:

- Enable the QoS data traffic feature using the `qos enable` command.
- Configure a QoS class map using the `qos drr-q` command.
- Configure a QoS policy map using the `qos policy-map` command.
- Configure a QoS policy map class using the `class` command.

Examples The following example shows how to select the QoS policy class-map1 and configure the frame priority as high:

```
switch(config-pmap)# class class-map1
switch(config-pmap-c)# priority high
Operation in progress. Please check class-map parameters
```

Related Commands	Command	Description
	<code>class</code>	Configure a QoS policy map class.
	<code>qos class-map</code>	Configures a QoS class map.
	<code>qos enable</code>	Enables the QoS data traffic feature on the switch.
	<code>qos policy-map</code>	Configures a QoS policy map.
	<code>show qos</code>	Displays the current QoS settings.

priority-flow-control long-distance

To enable the long distance Priority Flow Control (PFC), use the long-distance command. To disable this feature, use the no form of the command.

```
priority-flow-control long-distance
no priority-flow-control long-distance
```

Syntax Description This command has no arguments or keywords.

Command Default Default value for long-distance is set to False.

Command Modes Interface Configuration mode.

Release	Modification
6.2(9)	Added the long-distance keyword to the syntax description.

Usage Guidelines This command does not require a license.

Examples The following example shows how to enable the long distance priority flow control:

```
switch(config)#interface ethernet-port-channel 1023
switch(config-if)# priority-flow-control long-distance
switch(config-if)#
```

The following example shows how to disable the long distance priority flow control:

```
switch(config)#interface ethernet-port-channel 1023
switch(config-if)# no priority-flow-control long-distance
switch(config-if)#
```

Related Commands	Command	Description
	show sys int eth-qos port-node ethernet intf	Displays all the attributes of the interface including long distance.

priority-flow-control mode

To enable the mode Priority Flow Control (PFC), use the `priority-flow-control mode` command. To disable this feature, use the no form of the command.

```
priority-flow-control mode auto | off | on
no priority-flow-control mode auto | off | on
```

Syntax Description

auto	Sets the PFC mode to automatic.
off	Sets the PFC mode to off.
on	Sets the PFC mode to on.

Command Default

Default value for mode is set to auto.

Command Modes

Interface Configuration mode.

Command History

Release	Modification
5.1(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

The following example shows how to set the PFC mode to on:

```
switch# configure terminal
switch(config)# interface ethernet 2/5
switch(config-if)# priority-flow-control mode on
switch(config-if)#
```

The following example shows how to set the PFC mode to off:

```
switch# configure terminal
switch(config)# interface ethernet 2/5
switch(config-if)# priority-flow-control mode off

switch(config-if)#
```

Related Commands

Command	Description
show interface priority-flow-control	Displays the status of priority flow control (PFC) on all interfaces.

purge analytics

To delete specific view instance and its associated flow metrics, use the purge analytics command.

```
purge analytics query "query_string"
```

Syntax Description

query "query_string"	Query syntax.
----------------------	---------------

Command Default

None.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.3(1)	This command was modified. Added the query keyword. This command has changed from purge analytics "query_string" to purge analytics query "query_string".
8.2(1)	This command was introduced.

Usage Guidelines



Note

- The "query_string" must have the format "select all from <view-name>".
- You can clear the flow metrics without installing a push query.
- The where clause in the purge query can accept only the port key field.

Purge deletes specific view instance and its associated flow metrics, whereas clear resets flow metrics of a view instance momentarily. When you purge a view instance, the view instance and its associated flow metrics are deleted from the database. After purging the database, the database will continue to collect flow metrics for the specified "query_string". The "query_string" is a query syntax where you can specify query semantics such as select, table, limit, and so on. For example, "select all from fc-scsi.port." For more information, see the ["Cisco MDS 9000 Series NX-OS SAN Analytics and Telemetry Configuration Guide."](#)

Using a combination of sort and limit in the "query_string" allows you to display the first record or the last record of the flow metrics that is used for sorting. This data is useful in determining the port that has the most IO transactions, port that is using the least read and write IO bandwidth, and so on.

Examples

This example shows an output after purging a view instance and its flow metrics:

```
switch# purge analytics query "select all from fc-scsi.scsi_target where port=fc3/17"
switch# show analytics query "select all from fc-scsi.scsi_target where port=fc3/17"
Table is empty for query "select all from fc-scsi.scsi_target where port=fc3/17"
```

Related Commands

Command	Description
analytics query	Installs a push analytics query.
clear analytics	Resets all flow metrics for a view instance.
feature analytics	Enables the SAN Analytics feature on a switch.
show analytics query	Displays the SAN analytics query information.
show analytics type	Displays the SAN analytics type.
ShowAnalytics	Displays the SAN analytics information in a tabular format.

purge fcdomain fcid

To purge persistent FCIDs, use the `purge fcdomain fcid` command in EXEC mode.

```
purge fcdomain fcid vsan vsan-id
```

Syntax Description

vsan vsan-id	Indicates that FCIDs are to be purged for a VSAN ID. The range is 1 to 4093.
-----------------	--

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to purge all dynamic unused FCIDs in VSAN 4:

```
switch# purge fcdomain fcid vsan 4
switch#
```

The following example shows how to purge all dynamic unused FCIDs in VSANs 4, 5, and 6:

```
switch# purge fcdomain fcid vsan 3-5
switch#
```


purge module

To delete configurations in the running configuration for nonexistent modules, use the `purge module` command in EXEC mode.

```
purge module slot running-config
```

Syntax Description	slot	Specifies the module slot number.
	running-config	Purges the running configuration from the specified module.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines This command cannot be issued on a supervisor module.

Examples The following example displays the output of the `purge module` command issued on the module in slot 8:

```
switch# purge module 8 running-config  
switch#
```

pwc

To view your present working context (PWC), use the `pwc` command in any mode.

```
pwc
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes All.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows the present working context:

```
switch# config t
switch(config)# islb initiator ip-address 120.10.10.2
switch(config-islb-init)# pwc
(config t) -> (islb initiator ip-address 120.10.10.2)
```

Related Commands	Command	Description
	pwd	Displays the current directory location.

pwd

To display the current directory location, use the `pwd` command in EXEC mode.

`pwd`

Syntax Description This command has no keywords or arguments.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example changes the directory and displays the current directory:

```
switch# cd bootflash:logs
switch# pwd
bootflash:/logs
```

Related Commands	Command	Description
	<code>cd</code>	Changes the current directory to the specified directory.
	<code>dir</code>	Displays the contents of a directory.

pwwn (DPVM database configuration submode)

To add a device to a dynamic port VSAN membership (DPVM) database using the pWWN, use the pwwn command in DPVM database configuration submode. To remove a device from a DPVM database using the pWWN, use the no form of the command.

```
pwwn pwwn-id vsan vsan-id
no pwwn pwwn-id vsan vsan-id
```

Syntax Description

pwwn-id	Specifies the port WWN ID. The format is hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

DPVM database configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, DPVM must be enabled using the dpvm enable command.

Examples

The following example shows how to add an entry to the DPVM database:

```
switch# config terminal
switch(config)# dpvm database
switch(config-dpvm-db)# pwwn 11:22:33:44:55:66:77:88 vsan 1
```

The following example shows how to delete an entry from the DPVM database:

```
switch(config-dpvm-db)# no pwwn 11:22:33:44:55:66:77:88 vsan 1
```

Related Commands

Command	Description
dpvm database	Configures the DPVM database.
show dpvm	Displays DPVM database information.

pwwn (fcdomain database configuration submode)

To map a pWWN to a persistent FC ID for IVR, use the pwwn command in IVR fcdomain database configuration submode. To remove the mapping for the pWWN, use the no form of the command.

```
pwwn pwwn-id fc-id
no pwwn pwwn-id
```

Syntax Description	
pwwn-id	Specifies the pWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
fc-id	Specifies the FC ID of the device.

Command Default None.

Command Modes fcdomain database configuration submode.

Command History	Release	Modification
	2.1(2)	This command was introduced.

Usage Guidelines Only one FC ID can be mapped to a pWWN.

Examples The following example shows how to map the pWWN to the persistent FC ID:

```
switch# config t
switch(config)# ivr fcdomain database autonomous-fabric-num 10 vsan 20
switch(config-fcdomain)# native-autonomous-fabric-num 20 native-vsan 30 domain 15
switch(config-fcdomain-fcid)# pwwn 11:22:33:44:55:66:77:88 0x123456
```

The following example shows how to remove the mapping between the pWWN and the FC ID:

```
switch# config t
switch(config)# ivr fcdomain database autonomous-fabric-num 10 vsan 20
switch(config-fcdomain)# native-autonomous-fabric-num 20 native-vsan 30 domain 15
switch(config-fcdomain-fcid)# no pwwn 11:22:33:44:55:66:77:88
```

Related Commands	Command	Description
	ivr fcdomain database autonomous-fabric-num	Creates IVR persistent FC IDs.
	native-autonomous-fabric-num	Creates an IVR persistent FC ID database entry.
	show ivr fcdomain database	Displays IVR fcdomain database entry information.

pwwn (fc-management database configuration submode)

To configure the device port WWN, use the pwwn command. To disable this feature, use the no form of the command.

```
pwwn dev_pwwn feature all | fcs | fdmi | unzoned-ns | zone operation both | read | write
no pwwn dev_pwwn feature all | fcs | fdmi | unzoned-ns | zone [operation both | read | write]
```

Syntax Description

dev-pwwn	The WWN of the device. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
feature	Specifies the name of the feature.
all	Enables or disables all FC-CT queries.
fcs	Enables or disables the FC-CT query for the fabric configuration server.
fdmi	Enables or disables the FC-CT query for Fabric Device Common Interface (FDMI).
unzoned-ns	Enables or disables the FC-CT query for unzoned name server.
zone	Enables or disables the FC-CT query for zone server.
operation	(Optional) Specifies the read and write management FC-CT query.
both	Specifies both read and write query.
read	Specifies the get query.
write	Specifies the write query.

Command Default

None.

Command Modes

FC-management mode.

Command History

Release	Modification
6.2(9)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure an entry in the FC management security database:

```
switch(config)# fc-management database vsan 1
switch(config-fc-mgmt)#
switch(config-fc-mgmt)# pwwn 1:1:1:1:1:1:1:1 feature all operation both
Successful.
switch(config-fc-mgmt)#
switch(config-fc-mgmt)# pwwn 2:2:2:2:2:2:2:2 feature all operation read
Successful.
```

```

switch(config-fc-mgmt)#
switch(config-fc-mgmt)# pwwn 3:3:3:3:3:3:3:3 feature all operation write
Successful.
switch(config-fc-mgmt)#
switch(config-fc-mgmt)# show fc-management database
Fc-Management Security Database
-----
VSAN PWWN FC-CT Permissions per FC services
-----
1 01:01:01:01:01:01:01:01 Zone(RW), Unzoned-NS(RW), FCS(RW), FDMI(RW)
1 02:02:02:02:02:02:02:02 Zone(R), Unzoned-NS(R), FCS(R), FDMI(R)
1 03:03:03:03:03:03:03:03 Zone(W), Unzoned-NS(W), FCS(W), FDMI(W)
-----
Total 3 entries
switch(config-fc-mgmt)#

```

Related Commands

Command	Description
fc-management database	Configures the Fibre Channel Common Transport (FC-CT) management security database.

pwwn (SDV virtual device configuration submode)

To add a pWWN to a virtual device, use the pwwn command in SDV virtual device configuration submode. To remove a pWWN from a virtual device, use the no form of the command.

```
pwwn pwwn-name [primary]
no pwwn pwwn-name [primary]
```

Syntax Description

pwwn-name	Specifies the pWWN of a real device. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
primary	Configures the virtual device as a real device.

Command Default

None.

Command Modes

SDV virtual device configuration submode.

Command History

Release	Modification
3.1(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to add a pWWN to a virtual device:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# sdv virtual-device name sqa2 vsan 1
switch(config-sdv-virt-dev)# pwwn 21:00:00:04:cf:cf:45:40
```

Related Commands

Command	Description
sdv enable	Enables or disables SAN device virtualization.
show sdv statistics	Displays SAN device virtualization statistics.



Q Commands

- [qos class-map](#), on page 1002
- [qos control](#), on page 1003
- [qos control priority](#), on page 1004
- [qos dwrr-q](#), on page 1005
- [qos enable](#), on page 1006
- [qos policy-map](#), on page 1007
- [qos priority](#), on page 1008
- [qos service](#), on page 1009
- [quiesce](#), on page 1010

qos class-map

To create and define a traffic class with match criteria that will be used to identify traffic, use the `qos class-map` command in configuration mode. To remove a previously-configured class, use the `no` form of the command.

```
qos class-map class [match-all | match-any]
no qos class-map class
```

Syntax Description

class-name	Specifies a class map name. Maximum length is 63 alphanumeric characters.
match-all	(Optional) Specifies a logical AND operator for all matching statements in this class. (default).
match-any	(Optional) Specifies a logical OR operator for all matching statements in this class.

Command Default

match-all

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

You can access this command only if you enable the QoS data traffic feature using the `qos enable` command.

Examples

The following example shows how to create a QoS class map and enter class map configuration mode:

```
switch# config terminal
switch(config)# qos class-map MyClass1
switch(config-cmap)#
```

Related Commands

Command	Description
show qos	Displays configured QoS information.

qos control

To configure the QOS for control and data packets, use the qos control command. Use the no form of this command to disable this feature or revert to its factory defaults.

```
qos control value data value
no qos control value data value
```

Syntax Description

value	Applies the control DSCP value to all FCIP frames in the control TCP connection.
data value	Applies the data DSCP value applies to all FCIP frames in the data TCP connection.

Command Default

Enabled.

Command Modes

Interface configuration mode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

Use this command to cause FCIP to mark outbound packets with the DSCP values desired. This will allow the IP network to apply QOS policies appropriately.

Examples

The following example configures the QOS for control and data packets:

```
switch# config terminal
switch(config)# interface fcip 2
switch(config-if)# qos control 1 data 62
switch(config-if)#
```

Related Commands

Command	Description
show interface fcip	Displays the FCIP interface including QoS settings.

qos control priority

To enable the QoS priority assignment for control traffic feature on the Cisco MDS 9000 family of switches, use the `qos control priority` command in configuration mode. To revert to the factory default, use the `no` form of the command.

```
qos control priority 0
no qos priority control 0
```

Syntax Description

0	Specifies the lowest priority. To revert to the highest priority, use the <code>no</code> form of the command.
---	--

Command Default

Enabled and priority 7 are the defaults.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example sets the QoS priority assignment to the highest level.

```
switch# config terminal
switch(config)# no qos control priority 0
```

Related Commands

Command	Description
<code>show qos</code>	Displays configured QoS information.

qos dwrr-q

To associate a weight with a deficit weighted round robin (DWRR) scheduler queue, use the `qos dwrr-q` command in configuration mode. To remove a previously configured class, use the `no` form of the command.

```
qos dwrr-q high | low | medium weight value
no qos dwrr-q high | low | medium weight value
```

Syntax Description		
	high	Assigns the DWRR queue high option to DWRR queues.
	low	Assigns the DWRR queue low option to DWRR queues.
	medium	Assigns the DWRR queue medium option to DWRR queues.
	weight value	Specifies DWRR queue weight.

Command Default 10

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines You can access this command only if you enable the QoS data traffic feature using the `qos enable` command.

Examples The following example specifies the DWRR queue priority:

```
switch# config terminal
switch(config)# qos dwrr-q high weight 50
```

The following example reverts to the default value of 10:

```
switch(config)# no qos dwrr-q high weight 50
```

Related Commands	Command	Description
	show qos	Displays configured QoS information.

qos enable

To enable the QoS priority assignment for data traffic feature on the Cisco MDS 9000 family of switches, use the `qos enable` command in configuration mode. To disable the QoS priority assignment for control traffic feature, use the `no` form of the command.

```
qos enable
no qos enable
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines None.

Examples The following example disables the QoS priority assignment feature:

```
switch# config terminal
switch(config)# qos enable
```

Related Commands	Command	Description
	<code>show qos</code>	Displays configured QoS information.

qos policy-map

To specify the class of service, use the `qos policy-map` command in configuration mode. To remove a previously configured class, use the `no` form of the command.

```
qos policy-map policy-name
no qos policy-map policy-name
```

Syntax Description

policy-name	Specifies a policy map name. Maximum length is 63 alphanumeric characters.
-------------	--

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

You can access this command only if you enable the QoS data traffic feature using the `qos enable` command.

As an alternative, you can map a class map to a Differentiated Services Code Point (DSCP). The DSCP is an indicator of the service level for a specified frame. The DSCP value ranges from 0 to 63. A dscp value of 46 is disallowed.

Examples

The following example creates a policy map called `MyPolicy` and places you in the `policy-map` submode:

```
switch(config)# qos policy-map MyPolicy
switch(config-pmap)#
```

Related Commands

Command	Description
<code>qos enable</code>	Enables the QoS data traffic feature on the switch.
<code>show qos</code>	Displays configured QoS information.

qos priority

To configure the quality of server (QoS) priority attribute in a zone attribute group, use the `qos priority` command in zone attribute configuration submode. To revert to the default, use the `no` form of the command.

```
qos priority high | low | medium
no qos priority high | low | medium
```

Syntax Description

high	Specifies high priority.
low	Specifies low priority.
medium	Specifies medium priority.

Command Default

Low.

Command Modes

Zone attribute configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to set the QoS priority attribute for a zone attribute group:

```
switch# config terminal
switch(config)# zone-attribute-group name admin-attributes vsan 10
switch(config-attribute-group)# qos priority medium
```

Related Commands

Command	Description
<code>show zone-attribute-group</code>	Displays zone attribute group information.
<code>zone-attribute-group name</code>	Configures zone attribute groups.

qos service

To apply a service policy, use the `qos service` command in configuration mode. To remove a previously configured class, use the `no` form of the command.

```
qos service policy policy-name vsan vsan-id
no qos service policy policy-name vsan vsan-id
```

Syntax Description	policy-name	Associates a policy map with the VSAN.
	vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines You can access this command only if you enable the QoS data traffic feature using the `qos enable` command.

Examples The following example applies a configured policy to VSAN 3:

```
switch(config)# qos service policy MyPolicy vsan 3
Operation in progress. Please check policy-map parameters
```

The following example deletes a configured policy that was applied to VSAN 7:

```
switch(config)# no qos service policy OldPolicy vsan 7
Operation in progress. Please check policy-map parameters
```

Related Commands	Command	Description
	show qos	Displays configured QoS information.

quiesce

To gracefully shut down an ISL in a PortChannel, use the quiesce command in configuration mode. To disable this feature, use the no form of the command.

```
quiesce interface fc slot / port
no quiesce interface fc slot / port
```

Syntax Description

interface fc slot/port	Specifies the interface to be quiesced.
------------------------	---

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(1)	This command was introduced.
2.0(2b)	This command was deprecated and the functionality integrated into the shutdown command.

Usage Guidelines

The following conditions return an error:

- The interface is not part of PortChannel.
- The interface is not up.
- The interface is the last operational interface in the PortChannel:

Examples

The following example gracefully shuts down the one end of the ISL link in a PortChannel:

```
switchA# quiesce interface fc 2/1
WARNING: this command will stop forwarding frames to the specified interfaces. It is intended
to be used to gracefully shutdown interfaces in a port-channel. The procedure is:
1. quiesce the interfaces on both switches.
2. shutdown the interfaces administratively.
Do you want to continue? (y/n) [n] y
```

Related Commands

Command	Description
show interface	Displays interface configuration and status information.



R Commands

- [radius abort](#), on page 1013
- [radius commit](#), on page 1014
- [radius distribute](#), on page 1015
- [radius-server deadtime](#), on page 1016
- [radius-server directed-request](#), on page 1017
- [radius-server host](#), on page 1018
- [radius-server key](#), on page 1020
- [radius-server retransmit](#), on page 1021
- [radius-server test](#), on page 1022
- [radius-server timeout](#), on page 1024
- [rate-mode bandwidth-fairness](#), on page 1025
- [rate-mode oversubscription-limit](#), on page 1026
- [read command-id](#), on page 1028
- [read-only](#), on page 1029
- [reload](#), on page 1030
- [revocation-check](#), on page 1032
- [rlir preferred-cond fcid](#), on page 1034
- [rmdir](#), on page 1036
- [rmon alarm](#), on page 1037
- [rmon event](#), on page 1039
- [rmon hcalarm](#), on page 1041
- [role abort](#), on page 1043
- [role commit](#), on page 1044
- [role distribute](#), on page 1045
- [role name](#), on page 1046
- [rsakeypair](#), on page 1048
- [rscn](#), on page 1050
- [rscn abort vsan](#), on page 1051
- [rscn coalesce swrscn vsan](#), on page 1052
- [rscn commit vsan](#), on page 1053
- [rscn distribute](#), on page 1054
- [rscn event-tov](#), on page 1055
- [rscn permit type nport event switch-config](#), on page 1057

- [rspan-tunnel](#), on page 1058
- [rule](#), on page 1059
- [run-script](#), on page 1060

radius abort

To discard a RADIUS Cisco Fabric Services (CFS) distribution session in progress, use the radius abort command in configuration mode.

```
radius abort
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to discard a RADIUS CFS distribution session in progress:

```
switch# config terminal  
switch(config)# radius abort
```

Related Commands	Command	Description
	radius distribute	Enables CFS distribution for RADIUS.
	show radius	Displays RADIUS CFS distribution status and other details.

radius commit

To apply the pending configuration pertaining to the RADIUS Cisco Fabric Services (CFS) distribution session in progress in the fabric, use the radius commit command in configuration mode.

```
radius commit
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines After the "radius commit" is done the running configuration has been modified on all switches participating in radius distribution. You can then use the "copy running-config startup-config fabric" command to save the running-config to the startup-config on all the switches in the fabric.

Examples The following example shows how to apply a RADIUS configuration to the switches in the fabric:

```
switch# config terminal
switch(config)# radius commit
```

Related Commands	Command	Description
	radius distribute	Enables CFS distribution for RADIUS.
	show radius	Displays RADIUS CFS distribution status and other details.

radius distribute

To enable Cisco Fabric Services (CFS) distribution for RADIUS, use the radius distribute command. To disable this feature, use the no form of the command.

```
radius distribute
no radius distribute
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable RADIUS fabric distribution:

```
switch# config terminal
switch(config)# radius distribute
```

Related Commands	Command	Description
	radius commit	Commits temporary RADIUS configuration changes to the active configuration.
	show radius	Displays RADIUS CFS distribution status and other details.

radius-server deadline

To set a periodic time interval where a nonreachable (nonresponsive) RADIUS server is monitored for responsiveness, use the radius-server deadline command. To disable the monitoring of the nonresponsive RADIUS server, use the no form of the command.

```
radius-server deadline time
no radius-server deadline time
```

Syntax Description

time	Specifies the time interval in minutes. The range is 1 to 1440.
------	---

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

Setting the time interval to zero disables the timer. If the dead time interval for an individual RADIUS server is greater than zero (0), that value takes precedence over the value set for the server group.

When the dead time interval is 0 minutes, RADIUS server monitoring is not performed unless the RADIUS server is part of a server group and the dead time interval for the group is greater than 0 minutes.

Examples

The following example shows how to set a duration of 10 minutes:

```
switch# config terminal
switch(config)# radius-server deadline 10
```

Related Commands

Command	Description
deadline	Sets a time interval for monitoring a nonresponsive RADIUS server.
show radius-server	Displays all configured RADIUS server parameters.

radius-server directed-request

To specify a RADIUS server to send authentication requests to when logging in, use the radius-server directed-request command. To revert to sending the authentication request to the configured group, use the no form of the command.

```
radius-server directed-request
no radius-server directed-request
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines The user can specify the username@servername during login. The user name is sent to the server name for authentication.

Examples The following example shows how to specify a RADIUS server to send authentication requests to when logging in:

```
switch# config terminal
switch(config)# radius-server directed-request
```

Related Commands	Command	Description
	show radius-server	Displays all configured RADIUS server parameters.
	show radius-server directed request	Displays a directed request RADIUS server configuration.

radius-server host

To configure RADIUS server parameters, use the radius-server host command. Use the no form of this command to revert to the factory defaults.

```
radius-server host server-nameipv4-addressipv6-address [key [0|7] shared-secret] [accounting] [acct-port
port-number] [auth-port port-number] [authentication] [retransmit count] [test idle-time time|password
password|username name] [timeout seconds [retransmit count]]
```

```
no radius-server host server-nameipv4-addressipv6-address [key [0|7] shared-secret] [accounting]
[acct-port port-number] [auth-port port-number] [authentication] [retransmit count] [test idle-time
time|password password|username name] [timeout seconds [retransmit count]]
```

Syntax Description

server-name	Specifies the RADIUS server DNS name. Maximum length is 253 characters.
ipv4-address	Specifies the RADIUS server IP address in the format A.B.C.D .
ipv6-address	Specifies the RADIUS server IP address in the format X:X::X .
auth-port port-number	(Optional) Configures the RADIUS server port for authentication.
acct-port port-number	(Optional) Configures the RADIUS server port for accounting.
authentication	Configures authentication.
retransmit count	(Optional) Configures the number of times the switch tries to connect to a RADIUS server(s) before reverting to local authentication. The range is 1 to five times and the default is 1 time.
accounting	(Optional) Configures accounting.
key	(Optional) Configures the RADIUS server shared secret key.
0	(Optional) Configures a preshared key specified in clear text (indicated by 0) to authenticate communication between the RADIUS client and server. This is the default.
7	(Optional) Configures a preshared key specified in encrypted text (indicated by 7) to authenticate communication between the RADIUS client and server.
shared-secret	Configures a preshared key to authenticate communication between the RADIUS client and server.
test	(Optional) Configures parameters to send test packets to the RADIUS server.
idle-time time	Specifies the time interval (in minutes) for monitoring the server. The time range is 1 to 1440 minutes.
password password	Specifies a user password in the test packets. The maximum size is 32.
username name	Specifies a user name in the test packets. The maximum size is 32.
timeout seconds	(Optional) Specifies the timeout (in seconds) between retransmissions to the RADIUS server. The default is 1 second and the valid range is 1 to 60 seconds.

Command Default Idle-time is not set. Server monitoring is turned off.
 Timeout is 1 second.
 Username is test.
 Password is test.

Command Modes Configuration mode.

Command History	Release	Modification
	NX-OS 4.1(3)	Changed the command output.
	1.0(2)	This command was introduced.
	3.0(1)	Added the ipv6-address argument and the test option.

Usage Guidelines When the idle time interval is 0 minutes, periodic RADIUS server monitoring is not performed.

Examples The following example configures RADIUS server authentication parameters:

```
switch# config terminal
switch(config)# radius-server host 10.10.2.3 key HostKey
switch(config)# radius-server host 10.10.2.3 auth-port 2003

switch(config)# radius-server host 10.10.2.3 acct-port 2004
switch(config)# radius-server host 10.10.2.3 accounting
switch(config)# radius-server host radius2 key 0 abcd
switch(config)# radius-server host radius3 key 7 1234
switch(config)# radius-server host 10.10.2.3 test idle-time 10
switch(config)# radius-server host 1.1.1.1 test username user1 password pass idle-time 1
switch(config)# radius-server host 10.10.2.3 test username tester
switch(config)# radius-server host 10.10.2.3 test password 2B9ka5
```

Related Commands	Command	Description
	show radius-server	Displays RADIUS server information.

radius-server key

To configure a global RADIUS shared secret, use the radius-server key command. Use the no form of this command to removed a configured shared secret.

```
radius-server key [0 | 7] shared-secret
no radius-server key [0 | 7] shared-secret
```

Syntax Description

0	(Optional) Configures a preshared key specified in clear text (indicated by 0) to authenticate communication between the RADIUS client and server. This is the default.
7	(Optional) Configures a preshared key specified in encrypted text (indicated by 7) to authenticate communication between the RADIUS client and server.
shared-secret	Configures a preshared key to authenticate communication between the RADIUS client and server.

Command Default

No RADIUS key is configured.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

You need to configure the RADIUS preshared key to authenticate the switch to the RADIUS server. The length of the key is restricted to 65 characters and can include any printable ASCII characters (white spaces are not allowed). You can configure a global key to be used for all RADIUS server configurations on the switch. You can override this global key assignment by explicitly using the key option in the radius-server host command. Global key configuration is exempted from CFS distribution.

Examples

The following examples provide various scenarios to configure RADIUS authentication:

```
switch# config terminal
switch(config)# radius-server key AnyWord
switch(config)# radius-server key 0 AnyWord
switch(config)# radius-server key 7 public
```

Related Commands

Command	Description
show radius-server	Displays RADIUS server information.

radius-server retransmit

To globally specify the number of times the switch should try a request with a RADIUS server, use the radius-server retransmit command. To revert to default value, use the no form of the command.

```
radius-server retransmit count
no radius-server retransmit count
```

Syntax Description

count	Configures the number of times the switch tries to connect to a RADIUS server(s) before reverting to local authentication. The range is 1 to 5 times.
-------	---

Command Default

1 retransmission

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example configures the number of retransmissions to 3:

```
switch# config terminal
switch(config)# radius-server retransmit 3
```

Related Commands

Command	Description
show radius-server	Displays RADIUS server information.

radius-server test

To configure the test parameter for an individual server, use the radius-server test command. To disable this feature, use the no form of the command.

```
radius-server test username username |[password password [idle-time time]] |[idle-time time] |password
password [idle-time time] | idle-time time
no radius-server test username username |[password password [idle-time time]] |[idle-time time] |
password password [idle-time time] | idle-time time
```

Syntax Description

username	Specifies the username in test packets.
user name	Specifies the username. The maximum size is 32 characters.
password	(Optional) Specifies the user password in test packets.
password	Specifies the user password. The maximum size is 32 characters.
idle-time	(Optional) Specifies the time interval for monitoring the server.
time period	Specifies the time period in minutes. The range is from 1 to 4440.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

Defaults will be used for anything not provided by CLI. Also doing a "no" of any parameters will revert it back to default.

Examples

The following example shows how to display the username in test packets:

```
switch# config t
switch(config)# radius-server test username test idle-time 0
switch(config)# radius-server test username test password test idle-time 0
switch(config)#
```

The following example shows how to display the time interval for monitoring the server:

```
switch(config)# radius-server test idle-time 0
switch(config)#
```

The following example shows how to display the user password in test packets:

```
switch(config)# radius-server test password test idle-time 0
switch(config)#
```

Related Commands

Command	Description
show radius-server	Displays all configured RADIUS server parameters.

radius-server timeout

To specify the time between retransmissions to the RADIUS servers, use the radius-server timeout command. You can revert the retransmission time to its default by issuing the no form of the command.

```
radius-server timeout seconds
no radius-server timeout seconds
```

Syntax Description

seconds	Specifies the time (in seconds) between retransmissions to the RADIUS server. The range is 1 to 60 seconds.
---------	---

Command Default

1 second

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example configures the timeout value to 30 seconds:

```
switch# config terminal
switch(config)# radius-server timeout 30
```

Related Commands

Command	Description
show radius-server	Displays RADIUS server information.

rate-mode bandwidth-fairness

To enable or disable bandwidth fairness among ports in a port group, use the `rate-mode bandwidth-fairness` command in configuration mode. To disable bandwidth fairness, use the `no` form of the command.

```
rate-mode bandwidth-fairness module module-id
no rate-mode bandwidth-fairness module module-id
```

Syntax Description	module module-id	Specifies the module number.
---------------------------	------------------	------------------------------

Command Default Enabled.

Command Modes Configuration mode.

Command History	Release	Modification
	3.1(2)	This command was introduced.

Usage Guidelines Enter the command separately for each module you want to enable or disable bandwidth fairness.



Note This feature is only supported on 48-port and 24-port 4-Gbps Fibre Channel switching modules.

Examples

The following example shows how to enable bandwidth fairness for a module:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# rate-mode bandwidth-fairness module 1
```

The following example shows how to disable bandwidth fairness for a module:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no rate-mode bandwidth-fairness module 1
```

Related Commands	Command	Description
	show module bandwidth-fairness	Displays bandwidth fairness status.

rate-mode oversubscription-limit

To enable or disable restrictions on oversubscription ratios, use the rate-mode oversubscription-limit command.

```
rate-mode oversubscription-limit module module number
no rate-mode oversubscription-limit module module number
```

Syntax Description

module module-number	Identifies the specific module on which oversubscription ratio restrictions will be enabled or disabled.
----------------------	--

Command Default

Oversubscription ratios are restricted for all 24-port and 48-port switching modules.

Command Modes

Configuration mode.

Command History

Release	Modification
3.1(1)	This command was introduced.

Usage Guidelines

When restrictions on oversubscription ratios are disabled, the bandwidth allocation among the shared ports is proportionate to the configured speed (if the configured speed is auto, then bandwidth is allocated assuming a speed of 4 Gbps).

You must explicitly shut down and take out of service shared ports before disabling oversubscription ratio restrictions on them.

The configuration is not saved to the startup configuration unless you explicitly enter the copy running-config startup-config command.



Caution

You must enable restrictions on oversubscription ratios before you can downgrade modules to a previous release.

Examples

The following example disables restrictions on oversubscription ratios for a module (there are only dedicated ports, so a shutdown is not necessary):

```
switch# config t
switch(config)# no rate-mode oversubscription-limit module 2
```

The following example shows how to view the status of a module's oversubscription ratios:

```
switch# show running-config
version 3.1(1)
...
no rate-mode oversubscription-limit module 2
interface fc2/1
    switchport speed 2000
interface fc2/1
...
```

Related Commands

Command	Description
copy running-config startup-config	Saves the new oversubscription ratio configuration to the startup configuration.
show port-resources module	Displays the rate mode status of ports.

read command-id

To configure a SCSI read command for a SAN tuner extension N port, use the read command-id command.

```
read command-id cmd-id target pwwn transfer-size bytes [outstanding-ios value [continuous |
num-transactions number]]
```

Syntax Description

cmd-id	Specifies the command identifier. The range is 0 to 2147483647.
target pwwn	Specifies the target port WWN. The format is hh:hh:hh:hh:hh:hh:hh:hh.
transfer-size bytes	Specifies the transfer size in multiples of 512 bytes. The range is 512 to 8388608.
outstanding-ios value	(Optional) Specifies the number of outstanding I/Os. The range is 1 to 1024.
continuous	(Optional) Specifies that the command is performed continuously.
num-transactions number	(Optional) Specifies a number of transactions. The range is 1 to 2147483647.

Command Default

None.

Command Modes

SAN extension N port configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To stop a SCSI read command in progress, use the stop command.

Examples

The following example configures a continuous SCSI read command:

```
switch# san-ext-tuner
switch(san-ext)# nwwn 10:00:00:00:00:00:00:00
switch(san-ext)# nport pwwn 12:00:00:00:00:00:00:56 vsan 13 interface gigabitethernet 1/2
switch(san-ext-nport)# read command-id 100 target 22:22:22:22:22:22:22:22 transfer-size
512000 outstanding-ios 2 continuous
```

Related Commands

Command	Description
nport pwwn	Configures a SAN extension tuner N port.
san-ext-tuner	Enables the SAN extension tuner feature.
show san-ext-tuner	Displays SAN extension tuner information.
stop	Cancels a SCSI command in progress on a SAN extension tuner N port.

read-only

To configure the read-only attribute in a zone attribute group, use the read-only command in zone attribute configuration submenu. To revert to the default, use the no form of the command.

```
read-only
no read-only
```

Syntax Description This command has no other arguments or keywords.

Command Default Read-write.

Command Modes Zone attribute configuration submenu.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines This command only configures the read-only attribute for enhanced zoning. To enable broadcast zoning for basic mode, use the attribute read-only subcommand after entering zone configuration mode using the zone name command.

Examples The following example shows how to set the read-only attribute for a zone attribute group:

```
switch# config terminal
switch(config)# zone-attribute-group name admin-attributes vsan 10
switch(config-attribute-group)# read-only
```

Related Commands	Command	Description
	show zone-attribute-group	Displays zone attribute group information.
	zone mode enhanced vsan	Enables enhanced zoning for a VSAN.
	zone name	Configures zone attributes.
	zone-attribute-group name	Configures zone attribute groups.

reload

To reload the entire switch, an active supervisor module, a standby supervisor module, or a specific module, or to force a netboot on a given module, use the reload command in EXEC mode.

```
reload [ system non-disruptive | module number [ force-dnld | non-disruptive ] ]
```

Syntax Description

system	(Optional) Reloads the switch. Note This option is available only on the fabric switches.
module number	(Optional) Reloads a specific module or active or standby supervisor module. Note Fabric switches have only one module — module 1. Consequently, the entire switch is reloaded if we reload module 1.
force-dnld	(Optional) Reloads, initiates netboot, and forces the download of the latest module firmware version to a specific module.
non-disruptive	Reloads the switch or module nondisruptively with the same image.

Command Default

Reboots the entire switch.

Command Modes

EXEC mode.

Command History

Release	Modification
8.4(2)	Added the system and non-disruptive keywords.
1.0(2)	This command was introduced.

Usage Guidelines

Use the reload command to reboot the system, or to reboot a specific module, or to force a netboot on a specific module. The reload command used by itself, powers down all the modules and reboots the supervisor modules.

Use the reload module module-number command, if the given slot has a module or standby supervisor module, to power-cycle that module. If the given slot has an active supervisor module, then it causes the currently active supervisor module to reboot and the standby supervisor module becomes active.

The reload module module-number force-dnld command is similar to the previous command. This command forces netboot to be performed. If the slot contains a module, then the module netboots with the latest firmware and updates its corresponding flash with this image.

The reload module module-number non-disruptive and reload system non-disruptive commands are similar to the previous command. These commands nondisruptively netboots the module. If the slot contains a module, then the module netboots with the same image that it was using before the update. These commands are used to rectify any software issues that you may encounter by nondisruptively netbooting the module.

Examples

The following example shows how to reboot the entire switch:

```
switch# reload
This command will reboot the system. (y/n)? y
```

The following example shows how to reboot a fabric switch, for example Cisco MDS 9396T, nondisruptively:

```
switch# reload system non-disruptive
```

The following example show how to initiate netboot on a specific module:

```
switch# reload module 8 force-dnld
```

The following example shows how to reload module 8 with the same image on a Cisco MDS 9700 switch nondisruptively:

```
switch# reload module 8 non-disruptive
```

The following example shows how to reboot a specific module on a Cisco MDS 9700 switch:

```
switch# reload module 8
reloading module 8 ...
```

The following example shows how to reboot an active supervisor module on a Cisco MDS 9710 switch (if module 5 is the active supervisor):

```
switch# reload module 5
This command will cause supervisor switchover. (y/n)? y
```

Related Commands

Command	Description
copy system:running-config nvram:startup-config	Copies any file from a source to a destination.
install	Installs a new software image.

revocation-check

To configure trust point revocation check methods, use the `revocation-check` command in trust point configuration submode. To discard the revocation check configuration, use the `no` form of the command.

```
revocation-check crl [none | oosp [none]] | none | oosp [crl [none] | none]
no revocation-check crl [none | oosp [none]] | none | oosp [crl [none] | none]
```

Syntax Description

<code>crl</code>	Specifies the locally stored certificate revocation list (CRL) as the place to check for revoked certificates.
<code>none</code>	(Optional) Specifies that no checking be done for revoked certificates.
<code>oosp</code>	(Optional) Specifies the Online Certificate Status Protocol (OCSP) for checking for revoked certificates.

Command Default

By default, the revocation checking method for a trust point is CRL.

Command Modes

Trust point configuration submode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

You must authenticate the CA and configure the OCSP URL before configuring OCSP as a revocation checking method.

The revocation checking configuration allows one or more of the methods to be specified as an ordered list for revocation checking. During peer certificate verification, each method is tried in the specified order until one method succeeds by providing the revocation status. When `none` is specified as the method, it means that there is no need to check the revocation status, which treats the peer certificate as not revoked. If `none` is the first method specified in the method list, subsequent methods are not allowed to be specified because checking is not required.

Examples

The following example shows how to check for revoked certificates using OCSP on a URL that must have been previously configured:

```
switch# config terminal
switch(config)# crypto ca trustpoint admin-ca
switch(config-trustpoint)# revocation-check oosp
```

The following example shows how to check for revoked certificates in the locally stored CRL:

```
switch(config-trustpoint)# revocation-check crl
```

The following example shows how to check revocation status first using locally cached CRL and then, if needed, using OCSP. If CRL is not yet cached locally, only OCSP checking is attempted:

```
switch(config-trustpoint)# revocation-check crl oosp
```

The following example shows how to do no checking for revoked certificates:


```
switch(config-trustpoint)# revocation-check none
```

Related Commands

Command	Description
crypto ca crl-request	Configures a CRL or overwrites the existing one for the trust point CA.
ocsp url	Configures details of the trust point OSCP.
show crypto ca crl	Displays configured CRLs.

rlir preferred-cond fcid

To specify a preferred host to receive Registered Link Incident Report (RLIR) frames, use the `rlir preferred-cond fcid` command in configuration mode. To remove a preferred host, use the `no` form of the command.

```
rlir preferred-cond fcid fc-id vsan vsan-id
no rlir preferred-cond fcid fc-id vsan vsan-id
```

Syntax Description

fcid fc-id	Specifies the FC ID. The format is 0x>hhhhh .
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.

Command Default

By default, the MDS switch sends RLIR frames to one of the hosts in the VSAN with the register function set to “conditionally receive” if no hosts have the register function set to “always receive.”

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(3)	This command was introduced.

Usage Guidelines

The MDS switch sends RLIR frames to the preferred host only if it meets the following conditions:

- No host in the VSAN is registered for RLIR with the registration function set to “always receive.” If one or more hosts in the VSAN are registered as “always receive,” then RLIR sends only to these hosts and not to the configured preferred host.
- The preferred host is registered with the registration function set to “conditionally receive.”



Note

If all registered hosts have the registration function set to “conditionally receive,” then the preferred host receives the RLIR frames.

You can specify only one RLIR preferred host per VSAN.

Examples

The following example specifies FC ID 0x654321 as the RLIR preferred host for VSAN 2:

```
switch# config t
switch(config)# rlir preferred-cond fcid 0x654321 vsan 2
```

The following example removes FC ID 0x654321 as the RLIR preferred host for VSAN 2:

```
switch# config t
switch(config)# no rlir preferred-cond fcid 0x654321 vsan 2
```

Related Commands

Command	Description
show rlir	Displays information about RLIR, Link Incident Record Registration (LIRR), and Distribute Registered Link Incident Record (DRLIR) frames.
clear rlir	Clears the RLIRs.
debug rlir	Enables RLIR debugging.

rmdir

To delete an existing directory from the flash file system, use the rmdir command in EXEC mode.

```
rmdir [bootflash: | slot0: | volatile:] directory
```

Syntax Description

bootflash:	(Optional) Source or destination location for internal bootflash memory.
slot0:	(Optional) Source or destination location for the CompactFlash memory or PCMCIA card.
volatile:	(Optional) Source or destination location for volatile file system.
directory	Name of the directory to remove.

Command Default

Uses the current default directory.

Command Modes

EXEC Mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

This command is only valid on flash file systems.

The rmdir command deletes an existing directory at the current directory level or at a specified directory level. The directory must be empty to be deleted.

Examples

The following example deletes the directory called test in the slot0 directory:

```
switch# rmdir slot0:test
```

The following example deletes the directory called test at the current directory level. If the current directory is slot0:mydir, this command deletes the slot0:mydir/test directory.

```
switch# rmdir delete
```

Related Commands

Command	Description
dir	Displays a list of files on a file system.
mkdir	Creates a new directory in the flash file system.

rmon alarm

To configure a 32 bit remote monitoring (RMON) alarm, use the rmon alarm command in configuration mode. To delete an RMON alarm, use the no form of the command.

```
rmon alarm alarm-number mib-object sample-interval absolute|delta rising-threshold value [rising-event]
falling-threshold value [falling-event] [owner alarm-owner]
no rmon alarm alarm-number
```

Syntax Description

alarm-number	Specifies the RMON alarm number. The range is 1 to 65535.
mib-object	Specifies the MIB object to monitor. Maximum length is 80 characters. Note The MIB object identifier must be fully numbered, dotted-decimal notation, not the text string description.
sample-interval	Specifies the sample interval in seconds. The range is 1 to 2147483647.
absolute	Tests each sample directly.
delta	Tests the difference (delta) between the current and previous sample.
rising-threshold value	Specifies the rising threshold value. The range is -2147483648 to 2147483647.
rising-event	(Optional) Specifies the event to trigger on rising threshold crossing. The range is 1 to 65535. If no event is specified, event 0 is used.
falling-threshold value	Specifies the falling threshold value. The range is -2147483648 to 2147483647.
falling-event	(Optional) Specifies the event to trigger on rising threshold crossing. The range is 1 to 65535. If no event is specified, event 0 is used.
owner alarm-owner	(Optional) Specifies an owner for the alarm. Maximum size is 80 characters.

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

Use the rmon event command to configure the events for alarms.

The maximum number of RMON alarms currently is only configurable through the device manager and threshold manager GUI. A CLI command is not available to change this maximum value.



Note We recommend setting alarm sample intervals to 30 seconds or higher to prevent excessive load on the system.

Examples

The following example configures a 32-bit alarm number 20 for ifInErrors (OID 1.3.6.1.2.1.2.2.1.14) on interface fc 1/1. The sample interval is 30 seconds and delta samples are tested. The rising threshold is 15 errors per sample window; reaching this level triggers event 1. The falling threshold is 0 errors in the sample window which triggers event 0 (no action). The owner is 'ifInErrors.fc1/1@test'.

```
switch# config terminal
switch(config)# rmon alarm 20 1.3.6.1.2.1.2.2.1.14.16777216 30 delta rising-threshold 15
1 falling-threshold 0 owner ifInErrors.fc1/1@test
```

Related Commands

Command	Description
rmon event	Configures an RMON event.
rmon hcalarm	Configures the 64-bit RMON alarm.
show rmon	Displays RMON configuration and logging information.
show snmp host	Displays the SNMP trap destination information.
snmp-server host	Specifies the recipient of an SNMP notification.

rmon event

To configure a remote monitoring (RMON) event, use the `rmon event` command in configuration mode. To delete an RMON event, use the `no` form of the command.

```
rmon event event-number [description text [owner owner-name] | log [trap community-string]
[description text] [owner owner-name] | trap community-string [description text] [owner owner-name]
| owner owner-name]
no rmon event event-number
```

Syntax Description

event-number	Specifies the RMON event number. The range is 1 to 65535.
description text	(Optional) Specifies a description of the event. Maximum length is 80 characters.
owner owner-name	(Optional) Specifies an owner for the alarm. Maximum length is 80 characters.
log	(Optional) Generates an RMON log entry in the onboard RMON log when the event is triggered by an alarm.
trap community-string	(Optional) Generates an SNMP trap with the specified community name when the event is triggered by an alarm. The maximum length is 32 characters.

Command Default

Disabled.

Command Modes

Configuration mode

Command History

Release	Modification
4.1(1b)	Modified the command output.
2.0(x)	This command was introduced.

Usage Guidelines

You can trigger the events created by this command with alarms configured using the `rmon alarm` or `rmon hcalarm` commands.

The `log` option logs the event to a local log file on the MDS switch. The `trap` option uses the onboard SNMP agent to send an SNMP trap to a remote NMS.



Note Events can be used by both `rmon alarm` (32-bit) and `hcalarm` (64-bit) commands.

Examples

The following example configures RMON event1 to log the onboard RMON log and send an SNMP trap to public community trap destinations. The description is public and is owned by switchname.

```
switch# config terminal
rmon event 1 log trap public description FATAL(1) owner !switchname
switch(config)#
```

The following example configures RMON event3 to log the onboard RMON log and send an SNMP trap to public community trap destinations. The description is error and is owned by switchname:

```
switch# config terminal
rmon event 3 log trap public description ERROR(3) owner !switchname
switch(config)#
```

The following example configures RMON event4 to log the onboard RMON log and send an SNMP trap to public community trap destinations. The description is warning and is owned by switchname:

```
switch# config terminal
rmon event 4 log trap public description WARNING(4) owner !switchname
switch(config)#
```

The following example configures RMON event5 to log the onboard RMON log and send an SNMP trap to public community trap destinations. The description is information and is owned by switchname:

```
switch# config terminal
rmon event 4 log trap public description INFORMATION(5) owner !switchname
switch(config)#
```

The following example configures RMON event 2 to log the onboard RMON log and send an SNMP trap to public community trap destinations. The description is CriticalErrors and is owned by test:

```
switch# config terminal
switch(config)# rmon event 2 log trap public description CriticalErrors owner test
```

Related Commands

Command	Description
rmon alarm	Configures a 32-bit RMON alarm.
rmon hcalarm	Configures a 64-bit RMON alarm.
show rmon	Displays RMON configuration and logging information.

rmon hcalarm

To configure a 64-bit remote monitoring (RMON) high-capacity alarm (hcalarm), use the `rmon hcalarm` command in configuration mode. To delete an RMON hcalarm, use the `no` form of the command.

```
rmon hcalarm alarm-number mib-object sample-interval absolute | delta rising-threshold-high value
rising-threshold-low value [rising-event] [falling-threshold-high value falling-threshold-low value
[falling-event]] | falling-threshold-high value falling-threshold-low value [falling-event] [owner
alarm-owner]
```

```
no rmon hcalarm alarm-number mib-object sample-interval absolute | delta rising-threshold-high value
rising-threshold-low value [rising-event] [falling-threshold-high value falling-threshold-low value
[falling-event]] | falling-threshold-high value falling-threshold-low value [falling-event] [owner
alarm-owner]
```

Syntax Description

alarm-number	Specifies the RMON hcalarm number. The range is 1 to 65535.
mib-object	Specifies the MIB object to monitor. Maximum length is 80 characters. Note The MIB object identifier must be fully numbered, dotted-decimal notation, not the text string description.
sample-interval	Specifies the sample interval in seconds. The range is 1 to 65535.
absolute	Tests each sample directly.
delta	Tests the difference (delta) between the current and previous sample.
rising-threshold-high value	Configures the upper 32 bits of the 64-bit rising threshold value. The range is 0 to 4294967295.
rising-threshold-low value	Configures the lower 32 bits of the 64-bit rising threshold value. The range is 0 to 4294967295.
rising-event	(Optional) Specifies the event to trigger on rising threshold crossing. The range is 1 to 65535.
falling-threshold-high value	Configures the upper 32 bits of the 64-bit falling threshold value. The range is 0 to 4294967295.
falling-threshold-low value	Configures the lower 32 bits of the 64-bit falling threshold value. The range is 0 to 4294967295.
falling-event	(Optional) Specifies the event to trigger on falling threshold crossing. The range is 0 to 65535.
owner alarm-owner	(Optional) Specifies an owner for the alarm. Maximum size is 80 characters.

Command Default

64-bit alarms.

Command Modes

Configuration mode

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

Event number 0 is a predefined null (or no operation) event. When no event is specified by the user in an alarm this event is automatically used by the system. The event causes no action to be taken when triggered, however, the alarm is still reset. The event cannot be redefined by the user. It is a predefined event and you can only create events in the range from 1 to 65535.

To configure a high-capacity RMON alarm, use the CISCO-HC-ALARM-MIB.

The maximum number of RMON alarms is currently configurable through the device manager and threshold manager GUI. A CLI command is not available to change this maximum value.

**Note**

We recommend setting alarm sample intervals to 30 seconds or higher to prevent excessive load on the system.

Examples

The following example configures 64-bit alarm number 2 for ifHCInOctets (OID 1.3.6.1.2.1.31.1.1.1.6) on interface fc 12/1. The sample interval is 30 seconds and delta samples are tested. The rising threshold is 240,000,000,000 bytes per sample window (an average of 8,000,000,000 bytes per second); reaching this level triggers event 4. The falling threshold is 180,000,000,000 bytes in the sample window (an average of 6,000,000,000 bytes per second) which triggers event 0 (no action) and resets the alarm. The owner is 'ifHCInOctets.fc12/1@test'.

```
switch# config terminal
switch#(config) rmon hcalarm 2 1.3.6.1.2.1.31.1.1.1.6.22544384 30 delta rising-threshold-high
 55 rising-threshold-low 3776798720 4 falling-threshold-high 41 falling-threshold-low
3906340864 owner ifHCInOctets.fc12/1@test
```

Related Commands

Command	Description
rmon alarm	Configures a 32-bit RMON alarm.
rmon event	Configures an RMON event.
rmon hcalarm	Configures a 64-bit RMON alarm.
show rmon	Displays RMON configuration and logging information.
show snmp host	Displays the SNMP trap destination information.
snmp-server host	Specifies the recipient of an SNMP notification.

role abort

To discard an authorization role Cisco Fabric Services (CFS) distribution session in progress, use the role abort command in configuration mode.

```
role abort
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to discard an authorization role CFS distribution session in progress:

```
switch# config terminal
switch(config)# role abort
```

Related Commands	Command	Description
	role distribute	Enables CFS distribution for authorization roles.
	show role	Displays authorization role information.

role commit

To apply the pending configuration pertaining to the authorization role Cisco Fabric Services (CFS) distribution session in progress in the fabric, use the role commit command in configuration mode.

```
role commit
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.



Note Once the "role commit" is done the running configuration has been modified on all switches participating in the role distribution. You can then use the "copy running-config startup-config fabric" command to save the running-config to the startup-config on all the switches in the fabric.

Examples

The following example shows how to apply an authorization role configuration to the switches in the fabric:

```
switch# config terminal
switch(config)# role commit
```

Related Commands	Command	Description
	role distribute	Enables CFS distribution for authorization roles.
	show role	Displays authorization roles information.

role distribute

To enable Cisco Fabric Services (CFS) distribution for authorization roles, use the `role distribute` command. To disable this feature, use the `no` form of the command.

```
role distribute
no role distribute
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable fabric distribution for authorization roles:

```
switch# config terminal
switch(config)# role distribute
```

Related Commands	Command	Description
	<code>role commit</code>	Commits temporary to the authorization role configuration changes to the active configuration.
	<code>show role</code>	Displays authorization role information.

role name

To configure and assign users to a new role or to modify the profile for an existing role, use the role name command in configuration mode. Use the no form of this command to delete a configured role.

```
role name [max-length 64] [name] [description user description] [rule number attribute-admin
permit clear feature name|permit config feature name|permit debug feature name|permit show
feature name] [rule number deny clear feature name|deny config feature name|deny debug feature
name|deny exec feature name|deny show feature name]
no role name name [description user description] [rule number permit clear feature name|permit
config feature name|permit debug feature name|permit show feature name] [rule number deny
clear feature name|deny config feature name|deny debug feature name|deny exec feature name
|deny show feature name]
```

Syntax Description

max-length 64	(Optional) Allows the user to configure role name length of 64 characters. The default role name length is 16 characters.
name	Name of the role to be created or modified. The maximum string length is 64.
description	(Optional) Adds a description for the role. The maximum size is 128.
user description	(Optional) Adds description of users to the role.
rule number	(Optional) Enters the rule keyword. The rule number is from 1 to 256.
attribute-admin	Grants network-admin privileges to the role.
permit	(Optional) Adds commands to the role.
deny	(Optional) Removes commands from the role.
clear	(Optional) Clears the commands.
feature name	Enters the feature name. The maximum size of the feature name is 32.
config	(Optional) Configures commands.
debug	(Optional) Debug commands
show	(Optional) Show commands
exec	(Optional) Exec commands

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
8.3(1)	This command was modified. The attribute-admin keyword was added.

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

Users are assigned roles. Roles are assigned rules. Roles are a group of rules defining a user's access to certain commands. The rules within roles can be assigned to permit or deny access to the following commands:

- clear— Clear commands
- config— Configuration commands
- debug— Debug commands
- exec— EXEC commands
- show— Show commands

These commands can have permit or deny options within that command line.

Examples

The following example shows how to assign users to a new role:

```
switch# config terminal
switch(config)#role name max-length 64
switch(config)# role name techdocs
switch(config-role)#
switch(config)#
switch(config-role)# description Entire Tech. Docs. group
switch(config-role)# no
description
switch# config terminal
switch(config)# role name sangroup
switch(config-role)#
switch(config-role)# rule 1 permit config
switch(config-role)# rule 2 deny config feature fspf
switch(config-role)# rule 3 permit debug feature zone
switch(config-role)# rule 4 permit exec feature fcping
switch(config-role)# no rule 4
switch(config)# no role name sangroup
switch(config)# no role name max-length 64
Role: network-operator
Description: Predefined Network Operator group. This role cannot be modified
Access to Show commands and selected Exec commands
```

Related Commands

Command	Description
show role	Displays all roles configured on the switch including the rules based on each role.

rsakeypair

To configure and associate the RSA key pair details to a trust point, use the `rsakeypair` command in trust point configuration submode. To disassociate the RSA key pair from the trust point, use the `no` form of the command.

```
rsakeypair key-pair-label [key-pair-size]
no rsakeypair key-pair-label [key-pair-size]
```

Syntax Description

key-pair-label	Specifies a name for the RSA key pair. The maximum size is 64 characters.
key-pair-size	(Optional) Specifies a size for the RSA key pair. The size can range from 512 to 2048.

Command Default

The default key pair size is 512 if the key pair is not already generated.

Command Modes

Trust point configuration submode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

Only one RSA key pair can be associated with a trust point CA, even though the same key pair can be associated with many trust point CAs. This association must occur before enrolling with the CA to obtain an identity certificate. If the key pair had been generated previously (using the `crypto key generate` command), then the key pair size, if specified, should be the same as that was used during generation. If the specified key pair is not yet generated, it will be generated during enrollment using the `crypto ca enroll` command.

The `no` form of the `rsakeypair` command disassociates (but never destroys) the key pair from the trust point. Before issuing the `no rsakeypair` command, first remove the identity certificate, if present, from the trust point CA. Doing so ensures the consistency of the association between the identity certificate and the key pair for a trust point.

Examples

The following example shows how to associate an RSA key pair to a trust point:

```
switch# config terminal
switch(config)# crypto ca trustpoint admin-ca
switch(config-trustpoint)# rsakeypair adminid-key
```

The following example shows how to disassociate an RSA key pair from a trust point:

```
switch(config-trustpoint)# no rsakeypair adminid-key
```

Related Commands

Command	Description
<code>crypto ca enroll</code>	Requests certificates for the switch's RSA key pair created for the trust point CA.
<code>crypto key generate rsa</code>	Configures RSA key pair information.

Command	Description
show crypto key mypubkey rsa	Displays information about configured RSA key pairs.

rscn

To configure a registered state change notification (RSCN), a Fibre Channel service that informs Nx ports about changes in the fabric, use the rscn command in configuration mode.

```
rscn multi-pid | suppress domain-swrsn vsan vsan-id
```

Syntax Description		
multi-pid		Sends RSCNs in multi-PID format.
suppress domain-swrsn		Suppresses transmission of domain format SW-RCSNs.
vsan vsan-id		Configures VSAN information or membership. The ID of the VSAN is from 1 to 4093.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example configures RSCNs in multi-PID format:

```
switch# config terminal
switch(config)# rscn multi-pid vsan 1
```

Related Commands	Command	Description
	show rscn src-table	Displays state change registration table.
	show rscn statistics	Displays RSCN statistics.

rscn abort vsan

To cancel a Registered State Change Notification (RSCN) configuration on a VSAN, use the `rscn abort vsan` command in configuration mode. To reverse the cancellation, use the `no` form of the command.

```
rscn abort vsan vsan-id
no rscn abort vsan vsan-id
```

Syntax Description

vsan-id	Specifies a VSAN where the RSCN configuration should be cancelled. The ID of the VSAN is from 1 to 4093.
---------	--

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example cancels an RSCN configuration on VSAN 1:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# rscn abort vsan 1
```

Related Commands

Command	Description
<code>clear rscn session vsan</code>	Clears the RSCN session for a specified VSAN.
<code>rscn commit vsan</code>	Commits a pending RSCN configuration on a specified VSAN.
<code>rscn distribute</code>	Enables the distribution of an RSCN configuration.
<code>rscn event-tov</code>	Configures an RSCN event timeout.
<code>show rscn</code>	Displays the RSCN configuration information.

rscn coalesce swrscn vsan

To enable coalescing of Switch Registered State Change Notification (SWRSCN) before sending, use the `rscn coalesce swrscn vsan` command in configuration mode. To disable coalesce SWRSCN, use the no form of the command.

```
rscn coalesce swrscn vsan vsan-id [delay milliseconds]
no rscn coalesce swrscn vsan vsan-id
```

Syntax Description

vsan-id	Specifies a VSAN ID range. The range is from 1 to 4093.
delay	Specifies the delay in milliseconds to achieve swrscn coalesce.
milliseconds	Specifies the Swrscn coalesce delay in milliseconds (default 500ms). The range is from 100 to 2000.

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
6.2(7)	This command was introduced.

Usage Guidelines

This feature can be enabled in a fabric where all the switches are MDS and are running 6.2(7) and above.

Examples

The following example shows how to enable coalesce SWRSCN:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# rscn coalesce swrscn vsan 1

switch(config)#
```

The following example shows how to configure 100 milliseconds delay for coalesce SWRSCN:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# rscn coalesce swrscn vsan 1 delay 100
switch(config)#
```

rscn commit vsan

To apply a pending Registered State Change Notification (RSCN) configuration, use the `rscn commit vsan` command in configuration mode. To discard a pending RSCN configuration, use the `no` form of the command.

```
rscn commit vsan vsan-id
no rscn commit vsan vsan-id
```

Syntax Description

vsan-id	Specifies a VSAN where the RSCN configuration should be committed. The ID of the VSAN is from 1 to 4093.
---------	--

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

If you commit the changes made to the active database, the configuration is committed to all the switches in the fabric. On a successful commit, the configuration change is applied throughout the fabric and the lock is released.



Note

Once the "rscn commit" is done the running configuration has been modified on all switches participating in rscn distribution. You can then use the "copy running-config startup-config fabric" command to save the running-config to the startup-config on all the switches in the fabric.

Examples

The following example commits an RSCN configuration on VSAN 1:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# rscn commit vsan 1
```

Related Commands

Command	Description
<code>clear rscn session vsan</code>	Clears the RSCN session for a specified VSAN.
<code>rscn abort vsan</code>	Cancels a pending RSCN configuration on a specified VSAN.
<code>rscn distribute</code>	Enables the distribution of an RSCN configuration.
<code>rscn event-tov</code>	Configures an RSCN event timeout.
<code>show rscn</code>	Displays RSCN configuration information.

rscn distribute

To enable distribution of a Registered State Change Notification (RSCN) configuration, use the `rscn distribute` command in configuration mode. To disable the distribution, use the `no` form of the command.

```
rscn distribute
no rscn distribute
```

Syntax Description This command has no arguments or keywords.

Command Default RSCN timer distribution is disabled.

Command Modes Configuration mode.

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines The RSCN timer configuration must be the same on all switches in the VSAN; otherwise, the link will not come up. Cisco Fabric Service (CFS) automatically distributes the RSCN timer configuration to all switches in a fabric. Only the RSCN timer configuration distributed.



Note For the CFS distribution to operate correctly for the RSCN timer configuration, all switches in the fabric must be running Cisco SAN-OS Release 3.0(1) or later.

Examples The following example enables the distribution of an RSCN configuration:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# rscn distribute
```

Command	Description
<code>clear rscn session vsan</code>	Clears the RSCN session for a specified VSAN.
<code>rscn abort vsan</code>	Cancels a pending RSCN configuration on a specified VSAN.
<code>rscn commit vsan</code>	Applies a pending RSCN configuration.
<code>rscn event-tov</code>	Configures an RSCN event timeout.
<code>show rscn</code>	Displays RSCN configuration information.

rscn event-tov

To configure an event timeout value for a Registered State Change Notification (RSCN) on a specified VSAN, use the `rscn event-tov` command in configuration mode. To cancel the event timeout value and restore the default value, use the `no` form of the command.

```
rscn event-tov timeout vsan vsan-id
no rscn event-tov timeout vsan vsan-id
```

Syntax Description

timeout	Specifies an event timeout value in milliseconds. The range is 0 to 2000.
vsan-id	Specifies a VSAN where the RSCN event timer should be used. The ID of the VSAN is from 1 to 4093.

Command Default

The default timeout values are 2000 milliseconds for Fibre Channel VSANs and 1000 milliseconds for FICON VSANs.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

Before changing the timeout value, you must enable RSCN configuration distribution using the `rscn distribute` command.

The RSCN timer is registered with Cisco Fabric Services (CFS) during initialization and switchover. For high availability, if the RSCN timer distribution crashes and restarts or a switchover occurs, it resumes normal functionality from the state prior to the crash or switchover.



Note

You can determine configuration compatibility when downgrading to an earlier Cisco MDS SAN-OS release using the `show incompatibility system` command. You must disable RSCN timer distribution support before downgrading to an earlier release.

Examples

The following example configures an RSCN event timeout value on VSAN 1:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# rscn event-tov 20 vsan 1
Successful. Commit should follow for command to take effect.
```

Related Commands

Command	Description
<code>rscn abort vsan</code>	Cancels a pending RSCN configuration on a specified VSAN.

Command	Description
rscn commit vsan	Applies a pending RSCN configuration.
rscn distribute	Enables distribution of an RSCN configuration.
clear rscn session vsan	Clears the RSCN session for a specified VSAN.
show rscn	Displays RSCN configuration information.

rscn permit type nport event switch-config

To enable Registered State Change Notification (RSCN) on management port IP address changes or switch name changes, use the `rscn permit type nport event switch-config` command. To disable RSCN, use the `no` form of the command.

```
rscn permit type nport event switch-config vsan vsan-id
no rscn permit type nport event switch-config vsan vsan-id
```

Syntax Description	Parameter	Description
	vsan	Specifies the VSAN.
	vsan-id	Specifies the VSAN ID. The range is from 1 to 4093.

Command Default RSCN will not be sent on management port IP address changes or switch name changes.

Command Modes Configuration mode.

Command History	Release	Modification
	5.2(8)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable RSCN on management port changes:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# rscn permit type nport event switch-config vsan 1
switch(config)#
```

Related Commands	Command	Description
	show rscn	Displays RSCN configuration information.

rspan-tunnel

To associate and bind the SPAN tunnel (ST) port with the RSPAN tunnel, use the rspan-tunnel command.

```
rspan-tunnel interface fc-tunnel tunnel-id
rspan-tunnel interface fc-tunnel tunnel-id
```

Syntax Description

rspan-tunnel	Configures the remote SPAN (RSPAN) tunnel.
interface	Specifies the interface to configure this tunnel.
fc-tunnel tunnel-id	Specifies the FC tunnel interface. The range is 1 to 255.

Command Default

None.

Command Modes

Interface configuration submenu.

Command History

Release	Modification
1.2(1)	This command was introduced.

Usage Guidelines

The interface is not operationally up until the Fibre Channel tunnel mapping is configured in the source and destination switches.

Examples

The following example configures an interface to associate and bind the ST port with the RSPAN tunnel and enables traffic flow through this interface:

```
switchS# config t
switchS(config)# interface fc2/1
switchS(config-if)# rspan-tunnel interface fc-tunnel 100
switchS(config-if)# no shutdown
```

rule

show rscn	Displays RSCN configuration information.
-----------	--

To specify the tape volume group regular expression, use the rule command. To disable this feature, use the no form of the command.

```
rule range range | regexp regular expression
no rule range range | regexp regular expression
```

Syntax Description		
range range	Specifies the crypto tape volume barcode range. The maximum length is 32 characters.	
regexp regular expression	Specifies the volume group regular expression. The maximum length is 32 characters.	

Command Default None.

Command Modes Cisco SME crypto tape volume group configuration submode.

Command History	Release	Modification
	3.2(2)	This command was introduced.

Usage Guidelines None.

Examples The following example specifies the volume group regular expression:

```
switch# config t
switch(config)# sme cluster cl
switch(config-sme-cl)# tape-bkgrp tbgl
switch(config-sme-cl-tape-bkgrp)# tape-volgrp tvl
switch(config-sme-cl-tape-bkgrp-volgrp)#rule regexp rl
```

Related Commands	Command	Description
	show sme cluster	Displays information about Cisco SME cluster.
	tape-bkgrp groupname	Configures crypto backup group.
	tape-volgrp volume groupname	Configures crypto backup volume group.

run-script

To execute the commands specified in a file, use the run-script command.

```
run-script [bootflash: | slot0: | volatile:] filename
```

Syntax Description

bootflash:	(Optional) Source or destination location for internal bootflash memory.
slot0:	(Optional) Source or destination location for the CompactFlash memory or PCMCIA card.
volatile:	(Optional) Source or destination location for volatile file system.
filename	Name of the file containing the commands.

Command Default

Uses the current default directory.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
3.0(1)	Updated the Usage Guidelines and Examples with information about user-defined variables.

Usage Guidelines

To use this command, be sure to create the file and specify commands in the required order.

The run-script command accepts user-defined variables as parameters.

Examples

The following example executes the CLI commands specified in the testfile that resides in the slot0 directory:

```
switch# show file slot0:testfile
conf t
interface fc 1/1
no shutdown
end
sh interface fc1/1
```

In response to the run-script command, this is the file output:

```
switch# run-script slot0:testfile
'conf t'
Enter configuration commands, one per line. End with CNTL/Z.
'interface fc 1/1'
'no shutdown'
'end'
'sh interface fc1/1'
fc1/1 is down (Fcot not present)
  Hardware is Fibre Channel
  Port WWN is 20:01:00:05:30:00:48:9e
  Admin port mode is auto, trunk mode is on
```

```

vsan is 1
Beacon is turned off
Counter Values (current):
  0 frames input, 0 bytes, 0 discards
  0 runts, 0 jabber, 0 too long, 0 too short
  0 input errors, 0 CRC, 0 invalid transmission words
  0 address id, 0 delimiter
  0 EOF abort, 0 fragmented, 0 unknown class
  0 frames output, 0 bytes, 0 discards
  Received 0 OLS, 0 LRR, 0 NOS, 0 loop inits
  Transmitted 0 OLS, 0 LRR, 0 NOS, 0 loop inits
Counter Values (5 minute averages):
  0 frames input, 0 bytes, 0 discards
  0 runts, 0 jabber, 0 too long, 0 too short
  0 input errors, 0 CRC, 0 invalid transmission words
  0 address id, 0 delimiter
  0 EOF abort, 0 fragmented, 0 unknown class
  0 frames output, 0 bytes, 0 discards
  Received 0 OLS, 0 LRR, 0 NOS, 0 loop inits
  Transmitted 0 OLS, 0 LRR, 0 NOS, 0 loop inits

```

The following example shows how you can pass user-defined variables to the run-script command:

```

switch# run-script bootflash:test2.vsh var1="fc1/1" var2="brief"
switch # show interface $(var1) $(var2)
-----
Interface Vsan Admin Admin Status SFP Oper Oper Port
Mode Trunk Mode Speed Channel
Mode (Gbps)
-----
fc1/1 1 auto on sfpAbsent -- -- --

```




S Commands

- [salt \(sa configuration submode\)](#), on page 1067
- [san-ext-tuner enable](#), on page 1068
- [santap module](#), on page 1070
- [scaling batch enable](#), on page 1072
- [scheduler](#), on page 1073
- [scsi-flow distribute](#), on page 1076
- [scsi-flow flow-id](#), on page 1077
- [scsi-target](#), on page 1079
- [sdv abort vsan](#), on page 1081
- [sdv commit vsan](#), on page 1082
- [sdv enable](#), on page 1083
- [sdv virtual-device name](#), on page 1084
- [secure-erase abort job](#), on page 1085
- [secure-erase create algorithm](#), on page 1086
- [secure-erase create job](#), on page 1087
- [secure-erase create-vi vsan](#), on page 1088
- [secure-erase destroy algorithm](#), on page 1089
- [secure-erase destroy job](#), on page 1090
- [secure-erase destroy-vi vsan](#), on page 1091
- [secure-erase start job](#), on page 1092
- [secure-erase stop job](#), on page 1093
- [secure-erase validate job](#), on page 1094
- [security-mode](#), on page 1095
- [send](#), on page 1096
- [sensor-group](#), on page 1097
- [server](#), on page 1098
- [server \(configure session submode\)](#), on page 1099
- [server \(DMM job configuration submode\)](#), on page 1100
- [server \(iSNS profile configuration mode\)](#), on page 1101
- [server \(radius configuration\)](#), on page 1102
- [server \(tacacs+ configuration\)](#), on page 1103
- [set \(IPsec crypto map configuration submode\)](#), on page 1104
- [set interface preference-strict \(fcroute-map configuration submode\)](#), on page 1106

- setup, on page 1107
- setup ficon, on page 1108
- setup sme, on page 1109
- shared-keymode, on page 1110
- shutdown, on page 1111
- shutdown (Cisco SME and IOA cluster configuration submode), on page 1112
- site-id, on page 1113
- sleep, on page 1114
- sme, on page 1115
- snmp port, on page 1116
- snmp-server, on page 1117
- snmp-server aaa-user cache-timeout, on page 1119
- snmp-server aaa exclusive-behavior enable, on page 1120
- snmp-server community, on page 1121
- snmp-server contact, on page 1122
- snmp-server enable traps, on page 1123
- snmp-server enable traps fcdomain, on page 1126
- snmp-server enable traps link cisco, on page 1127
- snmp-server enable traps zone, on page 1128
- snmp-server globalEnforcePriv, on page 1129
- snmp-server host, on page 1130
- snmp-server location, on page 1132
- snmp-server tcp-session, on page 1133
- snmp-server traps entity fru, on page 1134
- snmp-server user, on page 1135
- snsr-grp, on page 1137
- source, on page 1139
- span max-queued-packets, on page 1141
- span session, on page 1142
- span session source interface, on page 1144
- special-frame, on page 1145
- ssh, on page 1146
- ssh connect, on page 1148
- ssh key, on page 1149
- ssh name, on page 1151
- ssh server enable, on page 1153
- ssl, on page 1154
- ssm enable feature, on page 1155
- ssm upgrade delay, on page 1158
- static (iSCSI initiator configuration and iSLB initiator configuration), on page 1159
- stop, on page 1161
- storage (DMM job configuration submode), on page 1162
- streetaddress, on page 1163
- subscription, on page 1164
- suspend, on page 1165
- switchname, on page 1167

- [switchport auto-negotiate](#), on page 1168
- [switchport beacon](#), on page 1169
- [switchport description](#), on page 1170
- [switchport duplex](#), on page 1171
- [switchport encap](#), on page 1172
- [switchport fcbbscn](#), on page 1173
- [switchport fcrxbbcredit](#), on page 1175
- [switchport fcrxbuFSIZE](#), on page 1177
- [switchport fec](#), on page 1178
- [switchport fec tts](#), on page 1180
- [switchport fill-pattern](#), on page 1182
- [switchport ignore](#), on page 1183
- [switchport ingress-rate](#), on page 1185
- [switchport initiator id](#), on page 1186
- [switchport link-diag](#), on page 1187
- [switchport logical-type](#), on page 1189
- [switchport max-npiv-limit](#), on page 1190
- [switchport mode](#), on page 1191
- [switchport mtu](#), on page 1193
- [switchport owner](#), on page 1194
- [switchport promiscuous-mode](#), on page 1195
- [switchport proxy-initiator](#), on page 1196
- [switch-priority](#), on page 1198
- [switchport rate-mode](#), on page 1199
- [switchport speed](#), on page 1203
- [switchport trunk allowed vsan](#), on page 1205
- [switchport trunk-max-npiv-limit](#), on page 1206
- [switchport trunk mode](#), on page 1207
- [switch-wwn](#), on page 1209
- [system cores](#), on page 1211
- [system default interface congestion mode](#), on page 1212
- [system default interface congestion timeout](#), on page 1213
- [system default interface pause mode](#), on page 1215
- [system default interface pause timeout](#), on page 1216
- [system default rib ipfc-mcast-deny](#), on page 1217
- [system default switchport](#), on page 1218
- [system default zone default-zone permit](#), on page 1220
- [system default zone distribute full](#), on page 1221
- [system default zone gs](#), on page 1222
- [system default zone mode enhanced](#), on page 1223
- [system default zone smart-zone](#), on page 1224
- [system delayed-traps enable mode](#), on page 1225
- [system delayed-traps timer](#), on page 1226
- [system fc flow-control](#), on page 1227
- [system hap-reset](#), on page 1228
- [system health \(configuration mode\)](#), on page 1229

- [system health cf-crc-check](#), on page 1232
- [system health cf-re-flash](#), on page 1233
- [system health clear-errors](#), on page 1234
- [system health external-loopback](#), on page 1236
- [system health internal-loopback](#), on page 1238
- [system health module](#), on page 1240
- [system health serdes-loopback](#), on page 1243
- [system heartbeat](#), on page 1245
- [system kernel core](#), on page 1246
- [system memlog](#), on page 1247
- [system port pacer mode F interface-login-threshold](#), on page 1248
- [system startup-config](#), on page 1249
- [system statistics reset](#), on page 1250
- [system switchover \(configuration mode\)](#), on page 1251
- [system switchover \(EXEC mode\)](#), on page 1252
- [system timeout congestion-drop](#), on page 1253
- [system timeout no-credit-drop](#), on page 1255
- [system timeout slowport-monitor](#), on page 1257
- [system timestamp format](#), on page 1258
- [system trace](#), on page 1261
- [system watchdog](#), on page 1262

salt (sa configuration submode)

To configure the salt for the Security Association (SA), use the key command. To delete the salt from the SA, use the no form of the command.

```
salt salt
no salt salt
```

Syntax Description

salt	Specifies the salt for encryption. The range is from 0x0 to 0xffffffff.
------	---

Command Default

None.

Command Modes

Configuration submode

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the salt for the current SA:

```
switch# config t
switch(config)# fcsp esp sa 257
This is a Early Field Trial (EFT) feature. Please do not use this in a producti
on environment. Continue Y/N ? [no] y
switch(config-sa)# salt 0x0
```

Related Commands

Command	Description
fcsp enable	Enables FC-SP.
show fcsp interface	Displays FC-SP related information for a specific interface.

san-ext-tuner enable

To enable the IP Network Simulator to simulate a variety of data network conditions, use the `san-ext-tuner enable` command.

```
san-ext-tuner enable
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode

Release	Modification
3.1(1)	This command was introduced.

Usage Guidelines The IP Network Simulator tool is used for network simulation and is supported on the 8-port IP Storage Services (IPS-8) module and 4-port IP Storage Services (IPS-4) module only. You must also have either the SAN extension over IP package for IPS-8 modules (SAN_EXTN_OVER_IP) or SAN extension over IP package for IPS-4 modules (SAN_EXTN_OVER_IP_IPS4), so that you can enable the SAN Extension Tuner, a prerequisite for enabling and using the network simulator.

You must have a pair of Gigabit Ethernet ports dedicated for each Ethernet path requiring simulation; these ports cannot provide FCIP or iSCSI functionality while simulation occurs. The remaining ports that are not performing network simulations can run FCIP or iSCSI. Ports dedicated to network simulation must be adjacent, and always begin with an odd-numbered port. For example, GE 1/1 and GE 1/2 would be a valid pair, while GE 2/2 and GE 2/3 would not.



Note This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example shows how to enable the SAN Extension Tuner and enable a pair of ports for network simulation:

```
switch#
conf t
switch(config)#
switch(config)#
san-ext-tuner enable
switch(config)#
exit
switch#
switch#
ips netsim enable interface gigabitethernet 2/3 gigabitethernet 2/4
```

Related Commands

Command	Description
show ips netsim	Displays a summary of the interfaces that are currently operating in network simulation mode.
show ips statsnetsim ingress	Displays the parameters and statistics of interfaces currently operating in network simulation mode for the specified direction of traffic.

santap module

To configure the mapping between the Storage Services Module (SSM) and the VSAN where the appliance is configured, use the `santap module` command in configuration mode. To disable this feature, use the `no` form of the command.

```
santap module slot-number appl-vsan vsan-id [cvt-name cvt-name] | dvt target-pwwn target-pwwn
target-vsan target-vsan-id dvt-name dvt-name dvt-vsan dvt-vsan-id [dvt-port port-number]
[lun-size-handling enable/disable] [io-timeout timeout-value]
no santap module slot-number appl-vsan vsan-id [cvt-name cvt-name] | dvt target-pwwn target-pwwn
```

Syntax Description

slot-number	Specifies the slot number of the SSM where the control virtual target (CVT) is created.
appl-vsan vsan-id	Specifies the appliance VSAN identification number used to communicate with the appliance. The range is 1 to 4093.
cvt-name cvt-name	(Optional) Specifies the control virtual target (CVT) name. The maximum size is 80 characters.
dvt	Configures the data virtual target (DVT).
target-pwwn target-pwwn	Specifies the target pWWN for the DVT. The format is hh:hh:hh:hh:hh:hh:hh:hh.
target-vsan target-vsan-id	Specifies the target VSAN for the DVT. The range for the real target-vsan-id is 1 through 4093.
dvt-name dvt-name	Specifies the DVT name. The maximum size is 80 characters.
dvt-vsan dvt- vsan-id	Specifies the DVT VSAN. The range for the dvt-vsan-id is 1 through 4093.
dvt-port port-number	(Optional) Specifies the DVT port. The range for the port number is 1 through 32.
lun-size-handling enable/disable	(Optional) Enables or disables LUN size handling. Specify 1 to enable or 0 to disable LUN size handling, with the default being enable.
io-timeout timeout-value	(Optional) Specifies the I/O timeout value. The range is 10 to 200 seconds, with the default being 10 seconds.

Command Default

Disabled.

The IO-timeout is 10 seconds.

Lun-size-handling is Enabled.

Command Modes

onfiguration mode.

Command History	Release	Modification
	2.1(1a)	This command was introduced.
	3.0(1)	Added the following options: cvt-name, dvt, target-pwwn, target-vsan, dvt-name, dvt-vsan, dvt-port, lun-size-handling, and io-timeout.

Usage Guidelines

To access this command, you must first enable the SANTap feature on the SSM using the `ssm enable feature` command.

When the `lun-size-handling` option is set (enabled), the maximum logical block addressing (LBA) for DVT LUN is set to 2 TB. As a result, there is no issue with LUN resizing.



Note You can delete `dvt target-pwwn` using the `no santap module slot dvt target-pwwn` command. Other `dvt` options are not supported by the `no` form of the command.

Examples

The following example shows the configuration of the SSM where the SANTap feature is enabled and the VSAN used to communicate with the appliance:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# santap module 1 appl-vsan 1
```

Related Commands

Command	Description
<code>show santap module</code>	Displays the configuration and statistics of the SANTap feature.
<code>ssm enable feature</code>	Enables the SANTap feature on the SSM.

scaling batch enable

To enable scalability in the Cisco SME configuration, use the scaling batch enable command. To disable this feature, use the no form of the command.

```
scaling batch enable
no scaling batch enable
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Cisco SME cluster onfiguration submode

Command History	Release	Modification
	NX-OS 4.1(3)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable Cisco SME scalability:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# scaling batch enable
switch(config-sme-cl)#
```

Related Commands	Command	Description
	show santap module	Displays the configuration and statistics of the SANTap feature.
	ssm enable feature	Enables the SANTap feature on the SSM.

scheduler

To schedule a maintenance job, use the scheduler command. To disable a job, use the no form of the command.

```
scheduler aaa-authentication [username username] password [0 | 7] password |job name job-name |
logfile size filesize |schedule name schedule-name
no scheduler aaa-authentication [username username] password [0 | 7] password |job name job-name
|logfile size filesize |schedule name schedule-name
```

Syntax Description

aaa-authentication	Specifies AAA credentials for AAA authentication of a remote user.
username	(Optional) Specifies the remote user and specifies the username. If the username keyword is not specified in the command, the currently logged-in user's name will be used.
username	(Optional) Specifies the remote user username.
password	Specifies the password of the logged-in remote user for AAA authentication.
0	(Optional) Specifies that the password is in clear text.
7	(Optional) Specifies that the password is encrypted.
password	Specifies the remote user's password. If the encryption level was not specified (0 or 7), the supplied password will be encrypted.
job name	Specifies a scheduler job.
job-name	Specifies the name of the scheduler job. The maximum length is 31 characters.
logfile size	Specifies a log file configuration.
filesize	Specifies the size of the log file. The range is 16 to 1024 KB.
schedule name	Specifies a scheduler schedule.
schedule-name	Specifies the name of the schedule. The maximum length is 31 characters.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
NX-OS 4.1(3)	Deleted a note from the Usage Guidelines.
NX-OS 4.1(1b)	Added a note to the Usage Guidelines.
2.0(x)	This command was introduced.

Usage Guidelines

Scheduler job configurations may not be edited. They need to be deleted and reconfigured to make changes. Jobs may comprise of multiple commands which can be entered in a single line by using ";" as the delimiter between commands.

A user's credentials are checked by the scheduler before allowing them to create, delete or run a scheduled jobs. Use the scheduler aaa-authentication command to configure a remote user's (a user without local credentials) credentials. The scheduler uses these credentials to verify that the user account is still active on the AAA server each time before it starts the job.

To use the command scheduler. You do not need to obtain any license.

Examples

The following example shows how to enable the scheduler command:

```
switch# config t
switch(config)# feature scheduler
switch(config)#
```

The following example shows how to specify the password for the currently logged-in remote user:

```
switch# config t
switch(config)# scheduler aaa-authentication password newpwd
switch(config)#
```

The following example shows how to specify a clear text password for the currently logged-in remote user:

```
switch# config t
switch(config)# scheduler aaa-authentication password 0 X12y34Z56a
switch(config)#
```

The following example shows how to specify a name and password for a remote user:

```
switch# config t
switch(config)# scheduler aaa-authentication username newuser password newpwd3
switch(config)#
```

The following example shows how to specify scheduler logfile size:

```
switch(config)# scheduler logfile size 512 switch(config)#
```

The following example shows how to define a name for the schedule and enters the submode for that schedule:

```
switch(config)# scheduler schedule name my_timetable
switch(config-schedule)#
```

The following example shows how to specify a schedule to run jobs:

```
switch(config-schedule)# time daily 1:23
switch(config-schedule)#
```

The following example shows how to define a job that uses variables:

```
switch(config)# scheduler job name my_job
switch(config-job)# cli var name timestamp ${TIMESTAMP};copy running-config
```

```
bootflash:/${SWITCHNAME}-cfg.${timestamp};copy bootflash:/${SWITCHNAME}-cfg.${timestamp}
tftp://1.2.3.4/
switch(config-job)# exit
switch(config)#
```

Related Commands

Command	Description
cli var	Defines a variable.
feature scheduler	Enables the scheduler.
job name	Specifies a scheduler job.
show scheduler time	Displays scheduler information.
time	Specifies a schedule start time.

scsi-flow distribute

To enable SCSI flow distribution through CFS, use the `scsi-flow distribute` command. To disable the SCSI flow distribution, use the `no` form of the command.

```
scsi-flow distribute
no scsi-flow distribute
```

Syntax Description This command has no arguments or keywords.

Command Default SCSI flow distribution is enabled.

Command Modes Configuration mode

Release	Modification
2.0(2)	This command was introduced.

Usage Guidelines You must enable the SCSI flow feature on the Storage Services Module (SSM) before you can configure an SCSI flow. Use the `ssm enable feature module slot-number` command to enable the SCSI flow feature on the SSM.

Examples The following example enables distribution of SCSI flow services using CFS:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# scsi-flow distribute
```

The following example disables distribution of SCSI flow services:

```
switch(config)# no scsi-flow distribute
```

Command	Description
<code>show santap module</code>	Displays SCSI flow configuration and status.
<code>ssm enable feature</code>	Enables the SCSI flow feature on the SSM.

scsi-flow flow-id

To configure SCSI flow services, use the `scsi-flow flow-id` command. To disable the SCSI flow services, use the `no` form of the command.

```
scsi-flow flow-id flow-id initiator-vsan vsan-id initiator-pwwn wwn target-vsan vsan-id target-pwwn
wwn | statistics | write-acceleration [buffers count]
no scsi-flow flow-id flow-id statistics | write-acceleration
```

Syntax Description

flow-id	Configures the SCSI flow identification number. The range is 1 to 65535.
initiator-vsan vsan-id	Specifies the initiator VSAN identification number. The range is 1 to 4093.
initiator-pwwn wwn	Configures initiator side pWWN.
target-vsan vsan-id	Configures target VSAN identification number of the SCSI flow.
target-pwwn wwn	Configures the target side pWWN.
statistics	Enables statistics gathering.
write-acceleration	Enables write acceleration.
buffers count	(Optional) Configures the write acceleration buffer count. The range is 1 to 40000 and the default is 1024.

Command Default

SCSI flow services are disabled.

Command Modes

Configuration mode

Command History

Release	Modification
2.0(2)	This command was introduced.

Usage Guidelines

You must enable the SCSI flow feature on the Storage Services Module (SSM) before you can configure a SCSI flow. Use the `ssm enable feature module slot-number` command to enable the SCSI flow feature on the SSM.

Examples

The following example configures an SCSI flow with a flow identifier of 4 and the following attributes:

- Initiator VSAN number—101
- Initiator port WWN—21:00:00:e0:8b:05:76:28
- Target VSAN number—101
- Target port—WWN 21:00:00:20:37:38:67:cf

```
switch# config terminal
switch(config)# scsi-flow flow-id 4 initiator-vsan 101 initiator-pwwn 21:00:00:e0:8b:05:76:28
target-vsan 101 target-pwwn 21:00:00:20:37:38:67:cf
```

The following example disables a SCSI flow with a flow identifier of 4:

```
switch(config)# no scsi-flow flow-id 4
```

The following example configures SCSI flow 4 to gather statistics about the SCSI flow:

```
switch(conf)# scsi-flow flow-id 4 statistics
```

The following example disables the statistics gathering feature on SCSI flow 4:

```
switch(conf)# no scsi-flow flow-id 4 statistics
```

The following example configures SCSI flow 4 with write acceleration:

```
switch(conf)# scsi-flow flow-id 4 write-acceleration
```

The following example configures SCSI flow 4 with write acceleration and buffers of 1024 credits:

```
switch(conf)# scsi-flow flow-id 4 write-acceleration buffer 1024
```

The following example disables the write acceleration feature on SCSI flow 4:

```
switch(conf)# no
scsi-flow flow-id 4 write-acceleration
```

Related Commands

Command	Description
show scsi-flow	Displays SCSI flow configuration and status.
ssm enable feature	Enables the SCSI flow feature on the SSM.

scsi-target

To configure SCSI target discovery, use the `scsi-target` command in configuration mode. To remove SCSI target discovery, use the `no` form of the command.

```
scsi-target auto-poll [vsan vsan-id] | discovery | ns-poll [vsan vsan-id] | on-demand [vsan vsan-id]
no scsi-target auto-poll [vsan vsan-id] | discovery | ns-poll [vsan vsan-id] | on-demand [vsan vsan-id]
```

Syntax Description	
auto-poll	Configures SCSI target auto polling globally or per VSAN.
vsan vsan-id	(Optional) Specifies a VSAN ID. The range is 1 to 4093.
discovery	Configures SCSI target discovery.
ns-poll	Configures SCSI target name server polling globally or per VSAN.
on-demand	Configures SCSI targets on demand globally or per VSAN.

Command Default SCSI target discovery for each option is on.

Command Modes Configuration mode

Command History	Release	Modification
	3.0(1a)	This command was introduced.

Usage Guidelines Automatic global SCSI target discovery is on by default. Discovery can also be triggered for specific VSANs using `on-demand`, `name server polling`, or `auto-polling` options. All options are on by default. Use the `no scsi-target discovery` command to turn off all discovery options. You can also turn off specific options by using the `no` form of the command.

Examples The following example configures SCSI target auto-polling discovery for VSAN 1:

```
switch# config t
switch(config)# scsi-target auto-poll vsan 1
```

The following example removes SCSI target auto-polling discovery for VSAN 1:

```
switch# config t
switch(config)# no scsi-target auto-poll vsan 1
```

The following example configures an SCSI target discovery:

```
switch# config t
switch(config)# scsi-target discovery
```

The following example removes a SCSI target discovery:

```
switch# config t
switch(config)# no scsi-target discovery
```

The following example configures SCSI target ns-polling discovery for VSAN 1:

```
switch# config t
switch(config)# scsi-target ns-poll vsan 1
```

The following example removes SCSI target ns-polling discovery for VSAN 1:

```
switch# config t
switch(config)# no scsi-target ns-poll vsan 1
```

The following example configures SCSI target on-demand discovery for VSAN 1:

```
switch# config t
switch(config)# scsi-target on-demand vsan 1
```

The following example removes SCSI target on-demand discovery for VSAN 1:

```
switch# config t
switch(config)# no scsi-target on-demand vsan 1
```

Related Commands

Command	Description
discover scsi-target	Discovers SCSI targets on local storage to the switch or remote storage across the fabric.
show scsi-target	Displays information about existing SCSI target configurations.

sdv abort vsan

To terminate an SDV configuration for a specified VSAN, use the `sdv abort vsan` command in configuration mode.

```
sdv abort vsan vsan-id
```

Syntax Description

vsan-id	Specifies the number of the VSAN. The range is 1 to 4093.
---------	---

Command Default

Disabled.

Command Modes

Configuration mode

Command History

Release	Modification
4.x	This command was deprecated.
3.1(2)	This command was introduced.

Usage Guidelines

To use this command, you must enable SDV using the `sdv enable` command.

Examples

The following example shows how to terminate an SDV configuration for a specified VSAN:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# sdv abort vsan 2
```

Related Commands

Command	Description
<code>sdv enable</code>	Enables SDV.
<code>show sdv database</code>	Displays the SDV database.

sdv commit vsan

To commit an SDV configuration to a specified VSAN, use the `sdv commit vsan` command in configuration mode. To remove the SDV configuration for a specified VSAN, use the `no` form of the command.

```
sdv commit vsan vsan-id
no sdv commit vsan vsan-id
```

Syntax Description

vsan-id	Specifies the number of the VSAN. The range is 1 to 4093.
---------	---

Command Default

Disabled.

Command Modes

Configuration mode

Command History

Release	Modification
4.x	This command was deprecated.
3.1(2)	This command was introduced.

Usage Guidelines

To use this command, you must enable SDV using the `sdv enable` command.

Examples

The following example shows how to commit an SDV configuration to a specified VSAN:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# sdv commit vsan 2
```

The following example shows how to uncommit an SDV configuration from a specified VSAN:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no sdv commit vsan 2
```

Related Commands

Command	Description
<code>sdv enable</code>	Enables SDV.
<code>show sdv database</code>	Displays the SDV database.

sdv enable

To enable SDV on the switch, use the `sdv enable` command in configuration mode. To disable SDV, use the `no sdv enable` form of the command.

```
sdv enable
no sdv enable
```

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled.

Command Modes

Configuration mode

Command History

Release	Modification
4.x	This command was deprecated.
3.1(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to enable SDV:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# sdv enable
```

The following example shows how to disable SDV:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no sdv enable
```

Related Commands

Command	Description
<code>show sdv database</code>	Displays the SDV database.
<code>show virtual-device</code>	Displays the virtual devices.

sdv virtual-device name

To create a virtual device name for a specified VSAN, use the `sdv virtual-device name` command in configuration mode. To remove the name, use the `no` form of the command.

```
sdv virtual-device name device-name vsan vsan-id
no sdv virtual-device name device-name vsan vsan-id
```

Syntax Description

device-name	Specifies the name of the device. The maximum size is 32.
vsan vsan-id	Specifies the number of the VSAN. The range is 1 to 4093.

Command Default

Disabled.

Command Modes

Configuration mode

Command History

Release	Modification
4.x	This command was deprecated.
3.1(2)	This command was introduced.

Usage Guidelines

To use this command, you must enable SDV using the `sdv enable` command.

No more than 1000 virtual targets can be created in a single VSAN.

No more than 128 devices can be defined as virtual devices.

Examples

The following example shows how to create a virtual device name for a VSAN, and then specify both the primary and secondary pWWNs:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# sdv virtual-device name vdev1 vsan 2
switch(config-sdv-virt-dev)# pwn 21:00:00:04:cf:cf:45:40 primary
switch(config-sdv-virt-dev)# pwn 21:00:00:04:cf:cf:38:d6
```

The following example shows how to remove the virtual device name:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no sdv virtual-device name vdev1 vsan 2
```

Related Commands

Command	Description
<code>sdv enable</code>	Enables SDV.
<code>show sdv database</code>	Displays the SDV database.

secure-erase abort job

To terminate a Secure Erase job, use the `secure-erase abort job` command in configuration mode.

```
secure-erase module-id abort job job-id
```

Syntax Description	Parameter	Description
	module-id	Specifies the desired module number of the SSM on which Secure Erase is provisioned.
	job-id	Specifies the job ID of the target.

Command Default None.

Command Modes Configuration mode

Command History	Release	Modification
	6.2(1)	This command was deprecated.
	3.3(1a)	This command was introduced.

Usage Guidelines This command does not wait for the completion of current patterns. A terminated job cannot be restarted. A job can be terminated only when it has one or more sessions in the running state.

Examples The following example shows how to abort a Secure Erase job:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 abort job 1
```

Related Commands	Command	Description
	<code>secure-erase start job</code>	Restarts all sessions in a job.
	<code>secure-erase stop job</code>	Stops all sessions in a job.
	<code>secure-erase validate job</code>	Validates a job in a session.

secure-erase create algorithm

To configure a Secure Erase algorithm on a specific slot of the intelligent linecard where Secure Erase is provisioned, use the `secure-erase module create algorithm` command in configuration mode.

```
secure-erase module module-id create algorithm algorithm-id
```

Syntax Description

module-id	Specifies the desired slot number of the intelligent linecard on which Secure Erase is provisioned.
algorithm-id	Specifies the algorithm ID. The range is 0 to 9.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to create a Secure Erase algorithm:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 create algorithm 3
```

Related Commands

Command	Description
<code>secure-erase create-vi vsan</code>	Creates a VI for a specific VSAN.

secure-erase create job

To create a Secure Erase job, use the `secure-erase create job` command in configuration mode.

```
secure-erase module module-id create job job-id
```

Syntax Description	Parameter	Description
	module module-id	Specifies the desired module number of the Storage Services Module (SSM) on which Secure Erase is provisioned.
	job-id	Specifies a unique number to identify a Secure Erase job. The range is 1 to 9999. Note You will be prompted to choose a different ID if the job ID chosen already exists.

Command Default None.

Command Modes Configuration mode

Command History	Release	Modification
	6.2(1)	This command was deprecated.
	3.3(1a)	This command was introduced.

Usage Guidelines A Secure Erase job contains the following information:

- The target enclosure where Secure Erase needs to be performed. Multiple target ports spanning multiple VSANs can be a part of one target enclosure.
- Multiple target ports, VIs, and Secure Erase sessions can be added. These target ports and VIs can be a part of different VSANs.

Examples

The following example shows how to create a Secure Erase job:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 create job 1
```

Related Commands	Command	Description
	add-tgt job	Defines a target enclosure and adds multiple target ports for a specific Secure Erase job.

secure-erase create-vi vsan

To create a VI for a specific VSAN, use the `secure-erase create-vi vsan` command in configuration mode.

```
secure-erase module module-id create-vi vsan vsan-id
```

Syntax Description

module module-id	Specifies the desired slot number of the SSM on which Secure Erase is provisioned.
vsan-id	Specifies the VSAN ID of the target port being added.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

You do not need to provide the job ID because VIs can be used commonly across jobs.

Examples

The following example shows how to create VIs for a VSAN:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 create-vi vsan 1
```

Related Commands

Command	Description
create job	Creates a Secure Erase job.

secure-erase destroy algorithm

To destroy a Secure Erase algorithm, use the `secure-erase destroy algorithm` command in configuration mode.

```
secure-erase module module-id destroy algorithm algorithm-id
```

Syntax Description

module module-id	Displays the slot number of the SSM on which Secure Erase is provisioned.
algorithm-id	Displays the algorithm ID. The range is 0 to 9.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to destroy an algorithm:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 destroy algorithm 1
```

Related Commands

Command	Description
<code>secure-erase destroy- vi vsan</code>	Destroys a Secure Erase VSAN.

secure-erase destroy job

To destroy a Secure Erase job, use the secure-erase destroy job command in configuration mode.

```
secure-erase module-id destroy job job-id
```

Syntax Description

module-id	Specifies the desired module number of the SSM on which Secure Erase is provisioned.
job-id	Specifies the job ID of the target.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

This command destroys a Secure Erase job. A job can be destroyed only when there are no active sessions running.

Examples

The following example shows how to validate a Secure Erase job:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 destroy job 1
```

Related Commands

Command	Description
secure-erase start job	Starts all sessions in a job.
secure-erase stop job	Stops all sessions in a job.

secure-erase destroy-vi vsan

To destroy a VI for a specific VSAN, use the secure-erase destroy-vi vsan command in configuration mode.

```
secure-erase module module-id destroy-vi vsan vsan-id
```

Syntax Description

module module-id	Displays the slot number of the SSM on which Secure Erase is provisioned.
vsan-id	Displays the VSAN-ID of the target.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to destroy a VSAN:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 destroy-vi vsan 1
```

Related Commands

Command	Description
secure-erase destroy algorithm	Destroys a Secure Erase algorithm.

secure-erase start job

To restart all sessions in a job, use the secure-erase start job command in configuration mode.

```
secure-erase module module-id start job job-id
```

Syntax Description

module module-id	Specifies the desired module number of the SSM on which Secure Erase is provisioned.
job-id	Starts a specific job ID of the target.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

This command starts all sessions in a job. If the active sessions have reached the maximum limit, the remaining sessions are queued. The queued sessions start when one or more sessions are complete or terminated.

A job can be started only when it has one or more sessions in the stopped state or ready state.

Examples

The following example shows how to start a session in a Secure Erase job:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 start job 1
```

Related Commands

Command	Description
secure-erase stop job	Stops all sessions in a job.

secure-erase stop job

To stop all sessions in a job, use the secure-erase stop job command in configuration mode.

```
secure-erase module-id stop job job-id
```

Syntax Description

module-id	Specifies the desired module number of the SSM on which Secure Erase is provisioned.
job-id	Stops the specific job ID of the target.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

This command waits for the completion of the current pattern and pauses the pattern sequence. A stopped job can be restarted.

A job can be stopped only when it has one or more sessions in the running state.

Examples

The following example shows how to stop a session in a Secure Erase job:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 stop job 1
```

Related Commands

Command	Description
secure-erase start job	Restarts all sessions in a job.

secure-erase validate job

To validate a Secure Erase job, use the `secure-erase validate job` command in configuration mode.

```
secure-erase module-id validate job job-id
```

Syntax Description

module-id	Specifies the desired module number of the SSM on which Secure Erase is provisioned.
job-id	Specifies the job ID of the target.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to validate a Secure Erase job:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# secure-erase module 2 validate job 1
```

Related Commands

Command	Description
secure-erase abort job	Terminates a job in a session.
secure-erase start job	Restarts all sessions in a job.
secure-erase stop job	Stops all sessions in a job.

security-mode

To configure the Cisco SME security settings, use the security-mode command. To delete the security settings, use the no form of the command.

```
security-mode basic | standard | advanced schema threshold threshold total total
no security-mode basic | standard | advanced schema threshold threshold total total
```

Syntax Description		
basic	Sets the Cisco SME security level to basic.	
standard	Sets the Cisco SME security level to standard.	
advanced	Sets the Cisco SME security level to advanced.	
schema	Configures the recovery schema.	
threshold threshold	Configures the recovery schema threshold. The limit is 2-3.	
total total	Configures the recovery schema total. The limit is 5-5.	

Command Default None.

Command Modes Cisco SME cluster configuration submode

Command History	Release	Modification
	3.2(2)	This command was introduced.

Usage Guidelines None.

Examples The following example sets the security mode to basic:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# security-mode basic
```

The following example sets the security mode to advanced:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# security-mode advanced schema threshold 3 total 5
```

Related Commands	Command	Description
	show sme cluster	Displays information about the security settings.

send

To send a message to all active CLI users currently using the switch, use the send command in EXEC mode.

```
send message-text
```

Syntax Description

message-text	Specifies the text of your message.
--------------	-------------------------------------

Command Default

None.

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

This message is restricted to 80 alphanumeric characters with spaces.

Examples

The following example sends a warning message to all active users about the switch being shut down:

```
switch# send Shutting down the system in 2 minutes. Please log off.
Broadcast Message from admin@excal-112
      (/dev/pts/3) at 16:50 ...
Shutting down the system in 2 minutes. Please log off.
```


sensor-group

To create a sensor group and enter sensor group configuration mode, use the `sensor-group` command. To remove the sensor group, use the `no` form of this command.

```
sensor-group id
```

```
no sensor-group id
```

Syntax Description

id	Sensor group ID. Range is from 1 to 4095.
----	---

Command Default

No sensor group exists.

Command Modes

Telemetry configuration mode (`config-telemetry`)

Command History

Release	Modification
8.3(1)	This command was introduced.

Usage Guidelines

Currently, only numeric sensor group ID values are supported. The sensor group defines nodes that are monitored for telemetry reporting.

Examples

This example shows how to add a sensor group:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# sensor-group 100
```

This example shows how to remove a sensor group:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# no sensor-group 100
```

Related Commands

Command	Description
<code>feature telemetry</code>	Enables the SAN Telemetry Streaming feature.
<code>path</code>	Adds a sensor path of an interface or a query name to a sensor group.
<code>show running-config telemetry</code>	Displays the existing telemetry configuration.
<code>show telemetry</code>	Displays telemetry configuration.
<code>telemetry</code>	Enters SAN Telemetry Streaming configuration mode.

server

To add a server to the server group, use the server command. To disable this feature, use the no form of the command.

```
server ip address or DNS name
no serverip addressor DNS name
```

Syntax Description

ipaddress or DNS name	Specifies LDAP server name.
-----------------------	-----------------------------

Command Default

None.

Command Modes

Configuration submenu

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

This CLI is allowed to be configured multiple times for different servers. These servers will be tried sequentially in case of failure with one server. Also the same server can belong to multiple groups.

Examples

The following example shows how to configure LDAP server name:

```
switch(config)# aaa group server ldap a
switch(config-ldap)# server local
Error: specified LDAP server not found, first configure it using ldap-server hos
t... and then retry
switch(config-ldap)#
```

Related Commands

Command	Description
show ldap-server groups	Displays the configured LDAP server groups.

server (configure session submode)

To configure a data migration session, use the server command in session configuration submode. To remove the data migration session, use then no form of the command.

```
server pwwn src_tgt pwwn src_lun src-lun dst_tgt pwwn dst_lun dst-lun
no server pwwn src_tgt pwwn src_lun src-lun dst_tgt pwwn dst_lun dst-lun
```

Syntax Description		
pwwn		Specifies the pWWN of the server. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
src_tgt pwwn		Specifies the pWWN of the source target. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
src_lun src-lun		Specifies the source LUN number in hex notation. The range is 0x0 to 0xff.
dst_tgt pwwn		Specifies the pWWN of the destination target. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
dst_lun dst-lun		Specifies the destination LUN in hex notation. The range is 0x0 to 0xff.

Command Default None.

Command Modes Configure session submode

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to configure a source target, source LUN, destination target, and destination LUN in a session:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# dmm module 3 job 1 session
switch(config-session)# server 12:13:1d:1c:2d:2d:3f:3a src_tgt 12:13:1d:1c:2d:2d:3f:3a
src_lun 0x1 dst_tgt 12:13:1d:1c:2d:2d:3f:3a dst_lun 0x5
```

Related Commands	Command	Description
	show dmm ip-peer	Displays job information.
	show dmm srvr-vt-login	Displays server VT login information.

server (DMM job configuration submode)

To add a server HBA port to the DMM job, use the server command in DMM job configuration submode. To remove the server HBA port, use the no form of the command.

```
server vsan vsan-id pwwn port-wwn
no server vsan vsan-id pwwn port-wwn
```

Syntax Description

vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
pwwn port-wwn	Specifies the port worldwide name of the server HBA port. The format is hh:hh:hh:hh:hh:hh:hh:hh , where h is a hexadecimal number.

Command Default

None.

Command Modes

DMM job configuration submode

Command History

Release	Modification
3.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to add server information to a DMM job:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# dmm module 3 job 1 create
Started New DMM Job Configuration.
Do not exit sub-mode until configuration is complete and committed
switch(config-dmm-job)# server vsan 3 pwwn 1d:22:3a:21:3c:44:3b:51
switch(config-dmm-job)#
```

Related Commands

Command	Description
show dmm ip-peer	Displays job information.
show dmm srvr-vt-login	Displays server VT login information.

server (iSNS profile configuration mode)

To add a server in an Internet Storage Name Service (iSNS) profile, use the server command in iSNS profile configuration submenu. To delete a server from an iSNS profile, use the no form of the command.

```
server server-id
no server server-id
```

Syntax Description	server-id Specifies the server address. The format is A.B.C.D.
---------------------------	--

Command Default None.

Command Modes iSNS profile configuration submenu

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines An iSNS profile can have only one server address. To change the server address, you must delete the current server and add the new one.

Examples The following example shows how to add a server address to an iSNS profile:

```
switch# config terminal
switch(config)# isns profile name UserProfile
switch(config-isns-profile)# server 10.1.1.1
```

The following example shows how to delete a server address from an iSNS profile:

```
switch# config terminal
switch(config)# isns profile name AdminProfile
switch(config-isns-profile)# no server 10.2.2.2
```

Related Commands	Command	Description
	isns-server enable	Enables the iSNS server.
	isns profile name	Creates iSNS profiles.
	show isns	Displays iSNS information.

server (radius configuration)

To configure a RADIUS server, use the server command in RADIUS configuration submenu. To discard the configuration, use the no form of the command.

```
server [ipv4-addressipv6-addressdns name]
no server [ipv4-addressipv6-addressdns name]
```

Syntax Description

ipv4-address	(Optional) Specifies the RADIUS server IP address in the format A.B.C.D .
ipv6-address	(Optional) Specifies the RADIUS server IP address in the format X:X::X .
name	(Optional) Specifies the RADIUS DNS server name. The maximum size is 255.

Command Default

None.

Command Modes

RADIUS configuration submenu

Command History

Release	Modification
1.3(1)	This command was introduced.
3.0(1)	Added the ipv6-address argument.

Usage Guidelines

None.

Examples

The following example shows the server command in RADIUS configuration submenu:

```
switch# config terminal
switch(config)# aaa group server radius testgroup
switch(config-radius)# server myserver
```

Related Commands

Command	Description
radius-server host	Configures RADIUS server parameters.
show radius-server	Displays RADIUS server configuration parameters.

server (tacacs+ configuration)

To configure a TACACS+ server, use the server command in TACACS+ configuration submode. To discard the configuration, use the no form of the command.

```
server [ipv4-addressipv6-addressdns-name]
no server [ipv4-addressipv6-addressdns-name]
```

Syntax Description	
ipv4-address	(Optional) Specifies the TACACS+ server IP address in the format A.B.C.D .
ipv6-address	(Optional) Specifies the TACACS+ server IP address in the format X:X::X .
dns-name	(Optional) Specifies the TACACS+ DNS server name. The maximum size is 255.

Command Default None.

Command Modes TACACS+ configuration submode

Command History	Release	Modification
	1.3(1)	This command was introduced.
	3.0(1)	Added the ipv6-address argument.

Usage Guidelines None.

Examples The following example shows the server command in RADIUS configuration submode:

```
switch# config terminal
switch(config)# aaa group server tacacs+ testgroup
switch(config-
tacacs+
)# server myserver
```

Related Commands	Command	Description
	show tacacs-server	Displays TACACS+ server configuration parameters.
	tacacs-server host	Configures TACACS+ server parameters.

set (IPsec crypto map configuration submode)

To configure attributes for IPsec crypto map entries, use the set command in IPsec crypto map configuration submode. To revert to the default values, use the no form of the command.

```
set peer ip-address | auto-peer | pfs [group1 | group14 | group2 | group5] | security-association lifetime
gigabytes number | kilobytes number | megabytes number | seconds number | transform-set
set-name set-name-list
no set peer ip-address | auto-peer | pfs | security-association lifetime gigabytes | kilobytes | megabytes |
seconds | transform-set
```

Syntax Description

peer	Specifies an allowed encryption/decryption peer.
ip-address	Specifies a static IP address for the destination peer.
auto-peer	Specifies automatic assignment of the address for the destination peer.
pfs	Specifies the perfect forwarding secrecy.
group1	(Optional) Specifies PFS DH Group1 (768-bit MODP).
group14	(Optional) Specifies PFS DH Group14 (2048-bit MODP).
group2	(Optional) Specifies PFS DH Group2 (1024-bit MODP).
group5	(Optional) Specifies PFS DH Group5 (1536-bit MODP).
security-association lifetime	Specifies the security association lifetime in traffic volume or time in seconds.
gigabytes number	Specifies a volume-based key duration in gigabytes. The range is 1 to 4095.
kilobytes number	Specifies a volume-based key duration in kilobytes. The range is 2560 to 2147483647.
megabytes number	Specifies a volume-based key duration in megabytes. The range is 3 to 4193280.
seconds number	Specifies a time-based key duration in seconds. The range is 600 to 86400.
transform-set	Configures the transform set name or set name list.
set-name	Specifies a transform set name. Maximum length is 63 characters.
set-name-list	Specifies a comma-separated transform set name list. Maximum length of each name is 63 characters. You can specify a maximum of six lists.

Command Default

None.

PFS is disabled by default. When it is enabled without a group parameter, the default is group1.

The security association lifetime defaults to global setting configured by the crypto global domain ipsec security-association lifetime command.

Command Modes

IPsec crypto map configuration submode

Command History

Release	Modification
2.0(1b)	This command was introduced.

Usage Guidelines

To use this command, IPsec must be enabled using the `crypto ipsec enable` command.

Examples

The following example shows how to configure IPsec crypto map attributes:

```
switch# config terminal
switch(config)# crypto map domain ipsec x 1
switch(config-crypto-map-ip)# set peer auto-peer
```

Related Commands

Command	Description
<code>crypto global domain ipsec security-association lifetime</code>	Configures the global security association lifetime value.
<code>crypto ipsec enable</code>	Enables IPsec.
<code>show crypto map domain ipsec</code>	Displays IPsec crypto map information.

set interface preference-strict (fcroute-map configuration submode)

To configure a Fibre Channel or PortChannel interface strictly by preference level, use the set interface preference-strict command. To remove the configuration, use the no form of the command.

```
set interface preference-strict
no set interface preference-strict
```

Syntax Description This command has no arguments or keywords.

Command Default The set interface preference-strict default setting is disabled.

Command Modes Fibre Channel route-map configuration submode.

Release	Modification
3.0(3)	This command was introduced.

Usage Guidelines None.

Examples The following example specifies an interface with a strict preference level.

```
switch# config terminal
switch(config)#
switch(config)# fcroute-map vsan 2 12
switch(config-fcroute-map)# set interface preference-strict
```

The following example removes the strict preference level from an interface.

```
switch(config-fcroute-map)# no set interface preference-strict
```

Command	Description
fcroute	Specifies Fibre Channel routes and activates policy routing.
fcroute-map vsan	Specifies a preferred path Fibre Channel route-map.
show fcroute-map	Displays Fibre Channel route-maps.
match (fcroute-map configuration submode)	Specifies the source and destination FC ID match criteria.
set (fcroute-map configuration submode)	Specifies the interface, the preference level for this interface, and the IVR next hop VSAN ID for this interface.

setup

To enter the switch setup mode, use the setup command in EXEC mode.

```
setup
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines The setup utility guides you through the basic configuration process. Type Ctrl-c at any prompt to skip the remaining configuration options and proceed with what is configured to that point.

If you do not want to answer a previously configured question, or if you want to skip answers to any questions, press Enter. If a default answer is not available (for example switch name), the switch uses what is already configured, and skips to the next question.

Examples

The following example shows how to enter switch setup mode:

```
switch# setup
---- Basic System Configuration Dialog ----
This setup utility will guide you through the basic configuration of
the system. Setup configures only enough connectivity for management
of the system.
*Note: setup always assumes a predefined defaults irrespective
of the current system configuration when invoked from CLI.
Press Enter incase you want to skip any dialog. Use ctrl-c at anytime
to skip away remaining dialogs.
Would you like to enter the basic configuration dialog (yes/no): yes
```

setup ficon

To enter the automated FICON setup mode, use the setup ficon command in EXEC mode.

```
setup ficon
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines The setup utility guides you through the basic configuration process. Type Ctrl-c at any prompt to skip the remaining configuration options and proceed with what is configured to that point.

If you do not want to answer a previously configured question, or if you want to skip the answers to any questions, press Enter. If a default answer is not available (for example switch name), the switch uses what is already configured, and skips to the next question.

Examples The following example shows how to enter switch setup mode:

```
switch# setup ficon
---- Basic System Configuration Dialog ----
--- Ficon Configuration Dialog ---
This setup utility will guide you through basic Ficon Configuration
on the system.
Press Enter if you want to skip any dialog. Use ctrl-c at anytime
to skip all remaining dialogs.
Would you like to enter the basic configuration dialog (yes/no): yes
```

setup sme

To run the basic SME setup facility, use the setup sme command.

```
setup sme
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines Use the setup sme command to create the sme-admin and sme-recovery roles for Cisco SME.

Examples The following example creates the sme-admin and sme-recovery roles:

```
switch# setup sme
Set up two roles necessary for SME, sme-admin and sme-recovery? (yes/no) [no] y
SME setup done
```

Related Commands	Command	Description
	show role	Displays information about the various Cisco SME role configurations.

shared-keymode

To configure the shared key mode, use the shared-keymode command. To specify the unique key mode, use the no form of the command.

```
shared-keymode
no shared-keymode
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Cisco SME cluster configuration submode

Command History	Release	Modification
	3.2(2)	This command was introduced.

Usage Guidelines The shared-keymode command generates a single key that is used for a group of backup tapes. The no shared-keymode generates unique or specific keys for each tape cartridge.



Note The shared unique key mode should be specified if you want to enable the key-ontape feature.

Examples The following example specifies the shared key mode:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# shared-keymode
```

The following example specifies the shared unique keymode:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# no shared-keymode
```

Related Commands	Command	Description
	show sme cluster	Displays Cisco SME cluster information.

shutdown

To disable an interface, use the shutdown command. To enable an interface, use the no form of the command.

```
shutdown [force]
no shutdown [force]
```

Syntax Description

force	(Optional) Forces the shutdown of the mgmt 0 interface without a prompt message.
-------	--

Command Default

All interfaces are shutdown by default except the mgmt0 interface.

Command Modes

Interface configuration submode

Command History

Release	Modification
1.0(1)	This command was introduced.

Usage Guidelines

When you try to shut down a management interface (mgmt0), a followup prompt message confirms your action before performing the operation. Use the force option to bypass this confirmation, if required.

Examples

The following example shows how to enable an interface:

```
switch# config terminal
switch(config)# interface fc 1/2
switch(config-if)# no shutdown
```

The following example shows how to disable an interface:

```
switch# config terminal
switch(config)# interface mgmt 0
switch(config-if)# shutdown
Shutting down this interface will drop all telnet sessions.
Do you wish to continue (y/n)? y
```

The following example shows how to forcefully disable the mgmt 0 interface:

```
switch# config terminal
switch(config)# interface mgmt 0
switch(config-if)# shutdown force
```

Related Commands

Command	Description
interface	Specifies an interface and enters interface configuration submode.
show interface	Displays interface information.
system default switchport	Configures port attributes.

shutdown (Cisco SME and IOA cluster configuration submode)

To disable a cluster for recovery, use the shutdown command. To enable the cluster for recovery, use the no form of the command.

```
shutdown
no shutdown
```

Syntax Description This command has no arguments or keywords.

Command Default SME and IOA clusters are shutdown.

Command Modes Cisco SME and IOA cluster configuration submode

Release	Modification
3.2(2)	This command was introduced.

Usage Guidelines To disable operation of a cluster for the purpose of recovery, use the shutdown command. To enable the cluster for normal usage, use the no shutdown command.

The default state for clusters is no shutdown. Use the shutdown command for cluster recovery.

Examples The following example restarts the cluster after recovery is complete:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# no shutdown
```

The following example disables the SME cluster operation in order to start recovery:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# shutdown
```

The following example disables the IOA cluster operation:

```
switch# config t
switch(config)# ioa cluster c1
switch(config-ioa-cl)# shutdown
```

Command	Description
show ioa cluster	Displays information about the Cisco IOA cluster.
show sme cluster	Displays information about the Cisco SME cluster.

site-id

To configure the site ID with the Call Home function, use the `site-id` command in Call Home configuration submode. To disable this feature, use the `no` form of the command.

```
site-id site-number
no site-id site-number
```

Syntax Description

site-number	Identifies the unit to the outsourced throughput. Allows up to 256 alphanumeric characters in free format.
-------------	--

Command Default

None.

Command Modes

Call Home configuration submode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the site ID in the Call Home configuration:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# site-id Site1ManhattanNY
```

Related Commands

Command	Description
callhome	Configures the Call Home function.
callhome test	Sends a dummy test message to the configured destination(s).
show callhome	Displays configured Call Home information.

sleep

To delay an action by a specified number of seconds, use the sleep command.

```
sleep seconds
```

Syntax Description

seconds	Specifies the delay in number of seconds. The range is 0 to 2147483647.
---------	---

Command Default

None.

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

This command is useful within scripts.

Examples

The following example shows how to create a script called test-script:

```
switch# show file slot0:test-script
discover scsi-target remote
sleep 10
show scsi-target disk
switch# run-script slot0:test-script
```

When you execute the slot0:test-script, the switch executes the discover scsi-target remote command, and then waits for 10 seconds before executing the show scsi-target disk command.

The following example shows how to delay the switch prompt return:

```
switch# sleep 30
```

You will see the switch prompt return after 30 seconds.

sme

To enable or disable the Cisco SME services, use the `sme` command.

```
sme cluster name | transport ssl trustpoint trustpoint label
```

Syntax Description

cluster	Configures the cluster.
name	Identifies the cluster name.
transport	Configures the transport information.
ssl	Configures the transport SSL information.
trustpoint	Configures the transport SSL trustpoint.
trustpoint label	Identifies the trustpoint label.

Command Default

Disabled.

Command Modes

Configuration mode

Command History

Release	Modification
3.2(2c)	This command was introduced.

Usage Guidelines

Cisco SME services must be enabled to take advantage of the encryption and security features.

To use this command, you must enable Cisco SME clustering using the `feature cluster` command.

Examples

The following example shows how to configure a cluster:

```
switch# config t
sw-sme-n1(config)# sme cluster clustername
sw-sme-n1(config-sme-cl)#
```

snmp port

Use the `snmp port` command to enable SNMP control of FICON configurations. To disable the configuration or to revert to factory defaults, use the `no` form of the command.

```
snmp port control
no snmp port control
```

Syntax Description This command has no arguments or keywords.

Command Default SNMP control of FICON configurations is enabled.

Command Modes FICON configuration submode

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines By default, SNMP users can configure FICON parameters through the Fabric Manager application. You can prohibit this access, if required, by using the `no snmp port control` command.

Examples The following example prohibits SNMP users from configuring FICON parameters:

```
switch(config)# ficon vsan 2
switch(config-ficon)# no
snmp port control
```

The following example allows SNMP users to configure FICON parameters (default):

```
switch(config-ficon)# snmp port control
```

Command	Description
ficon vsan vsan-id	Enables FICON on the specified VSAN.
show ficon	Displays configured FICON details.

snmp-server

To configure the SNMP server information, switch location, and switch name, use the `snmp-server` command in configuration mode. To remove the system contact information, use the `no` form of the command.

```
snmp-server community string [group group-name | ro | rw] | contact [name] | location [location]
no snmp-server community string [group group-name | ro | rw] | contact [name] | location [location]
```

Syntax Description

community string	Specifies SNMP community string. Maximum length is 32 characters.
group group-name	(Optional) Specifies group name to which the community belongs. Maximum length is 32 characters.
ro	(Optional) Sets read-only access with this community string.
rw	(Optional) Sets read-write access with this community string.
contact	Configures system contact.
name	(Optional) Specifies the name of the contact. Maximum length is 80 characters.
location	Configures system location.
location	(Optional) Specifies system location. Maximum length is 80 characters.

Command Default

The default community access is read-only (ro).

Command Modes

Configuration mode

Command History

Release	Modification
1.0(3)	This command was introduced.
2.0(1b)	Added group option.

Usage Guidelines

None.

Examples

The following example sets the contact information, switch location, and switch name:

```
switch# config terminal
switch(config)# snmp-server contact NewUser
switch(config)# no snmp-server contact NewUser
switch(config)# snmp-server location SanJose
switch(config)# no snmp-server location SanJose
```

Related Commands

Command	Description
show snmp	Displays SNMP information.

snmp-server aaa-user cache-timeout

To configure the Simple Network Management Protocol (SNMP) time-out value for synchronized AAA users, use the `snmp-server aaa-user cache-timeout` command in configuration mode. To revert to the default settings, use the `no` form of the command.

```
snmp-server aaa-user cache-timeout seconds
no snmp-server aaa-user cache-timeout seconds
```

Syntax Description	seconds	Timeout value, in seconds. The range is from 1 to 86400. The default is 60000.
---------------------------	---------	--

Command Default 60000 seconds

Command Modes Global configuration mode

Command History	Release	Modification
	4.2(1)	This command was introduced.

Usage Guidelines This command does not require a license.

Examples The following example shows how to configure the AAA user synchronization timeout value:

```
switch# config terminal
switch(config)# snmp-server aaa-user cache-timeout 6000
```

Related Commands	Command	Description
	show snmp	Displays information about SNMP.

snmp-server aaa exclusive-behavior enable

To enable AAA exclusive behavior on the SNMP server, use the `snmp-server aaa exclusive-behavior enable` command in configuration mode. To disable the exclusive behavior command, use the `no` form of the command.

```
snmp-server aaa exclusive-behavior enable
no snmp-server aaa exclusive-behavior enable
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode

Command History	Release	Modification
	6.2(1)	This command was introduced.

Usage Guidelines This command when configured will make enable exclusive behavior between local users and aaa users.

- if testuser is local user and if aaa is on, then the queries for testuser will fail saying no such user.
- If testuser2 is aaa user and if aaa is off, then the queries for testuser2 will fail saying no such user.
- If testuser3 is used in both local and aaa user, then if aaa is on then queries with remote credentials succeed and queries with local credential fail saying incorrect password. If aaa is off then queries with local remote credentials succeed and queries with remote credential fail saying incorrect password.

Examples The following example shows how to enable the aaa exclusive behavior:

```
switch# config t
switch(config)# snmp-server aaa exclusive-behavior enable
switch(config)#
```

The following example shows how to disable the aaa exclusive behavior:

```
switch(config)# no snmp-server aaa exclusive-behavior enable
switch(config)#
```

Related Commands	Command	Description
	show snmp	Displays SNMP information.

snmp-server community

To set the SNMP server community string, use the `snmp-server community` command in configuration mode. To remove the SNMP server community string, use the `no` form of the command.

```
snmp-server community string [group group-name]
no snmp-server community string [group group-name]
```

Syntax Description

community string	SNMP community string.
group group-name	(Optional) Group to which the community belongs.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
4.1(1b)	This command was introduced.

Usage Guidelines

None.

Examples

The following example sets the SNMP server community string:

```
switch# config t
switch(config)# snmp-server community public group network-operator
switch(config)#
switch(config)# no snmp-server community public group network-operator
switch(config)#
```

Related Commands

Command	Description
show snmp	Displays SNMP information.

snmp-server contact

To modify server contact, use the `snmp-server contact` command in configuration mode. To remove the SNMP server contact, use the `no` form of the command.

```
snmp-server contact line
no snmp-server contact line
```

Syntax Description

line	(Optional) Modifies the system contact.
------	---

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
4.1(1b)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to modify the server contact:

```
switch# config t
switch(config)# snmp-server contact line
switch(config)#
switch(config)# no snmp-server contact line
switch(config)#
```

Related Commands

Command	Description
show snmp	Displays SNMP information.

snmp-server enable traps

To enable SNMP server notifications (informs and traps), use the `snmp-server enable traps` command. To disable the SNMP server notifications, use the `no` form of the command.

```
snmp-server enable traps [entity [fru] | fcc | fcdomain | fcns | fdmi | fspf | license | link [cisco] | ietf [cisco]
| ietf-extended [cisco] | port-security | rscn [els | ils] | snmp [authentication] | vrrp | zone
[default-zone-behavior-change | merge-failure | merge-success | request-reject]]
no snmp-server enable traps [entity [fru] | fcc | fcdomain | fcns | fdmi | fspf | license | link [cisco] | ietf
[cisco] | ietf-extended [cisco] | port-security | rscn [els | ils] | snmp [authentication] | vrrp | zone
[default-zone-behavior-change | merge-failure | merge-success | request-reject]]
```

Syntax Description

entity	(Optional) Enables all SNMP entity notifications.
fru	(Optional) Enables only SNMP entity FRU notifications.
fcc	(Optional) Enables SNMP Fibre Channel congestion control notifications.
fcdomain	(Optional) Enables SNMP Fibre Channel domain notifications.
fcns	(Optional) Enables SNMP Fibre Channel name server notifications.
fdmi	(Optional) Enables SNMP Fabric Device Management Interface notifications.
fsfp	(Optional) Enables SNMP Fabric Shortest Path First notifications.
license	(Optional) Enables SNMP license manager notifications.
link	(Optional) Enables SNMP link traps.
cisco	(Optional) Enables Cisco cieLinkUp/cieLinkDown.
ietf	(Optional) Enables standard linkUp/linkDown trap.
ietf-extended	(Optional) Enables standard linkUp/linkDown trap with extra varbinds.
port-security	(Optional) Enables SNMP port security notifications.
rscn	(Optional) Enables all SNMP Registered State Change Notification notifications.
els	(Optional) Enables only SNMP RSCN ELS notifications.
ils	(Optional) Enables only SNMP RSCN ILS notifications.
snmp	(Optional) Enables all SNMP agent notifications.
authentication	(Optional) Enables only SNMP agent authentication notifications.
vrrp	(Optional) Enables SNMP Virtual Router Redundancy Protocol notifications.
zone	(Optional) Enables all SNMP zone notifications.

default-zone-behavior-change	(Optional) Enables only SNMP zone default zone behavior change notifications.
merge-failure	(Optional) Enables only SNMP zone merge failure notifications.
merge-success	(Optional) Enables only SNMP zone merge success notifications.
request-reject	(Optional) Enables only SNMP zone request reject notifications.

Command Default

All the notifications listed in the Syntax Description table are disabled by default except for the following: entity fru, vrrp, license, link, and any notification not listed (including the generic notifications such as coldstart, warmstart, and linkupdown).

Command Modes

Configuration mode

Command History

Release	Modification
2.0(1b)	This command was introduced.
2.1(2)	<ul style="list-style-type: none"> • Added the link option. • Renamed the standard option to ietf. • Renamed the standard-extended option to ietf-extended.

Usage Guidelines

If the snmp-server enable traps command is entered without keywords, all notifications (informs and traps) are enabled.

As of Cisco MDS SAN-OS Release 2.1(2), you can configure the linkUp/linkDown notifications that you want to enable on the interfaces. You can enable the following types of linkUp/linkDown notifications:

- Cisco—Only traps (cieLinkUp, cieLinkDown) defined in CISCO-IF-EXTENSION-MIB.my are sent for an interface, if ifLinkUpDownTrapEnable (defined in IF-MIB) is enabled for that interface.
- IETF—Only traps (linkUp, linkDown) defined in IF-MIB are sent for an interface, if ifLinkUpDownTrapEnable (defined in IF-MIB) is enabled for that interface. Only the varbinds defined in the trap definition are sent with the traps.
- IETF extended—Only traps (linkUp, linkDown) defined in IF-MIB are sent for an interface, if ifLinkUpDownTrapEnable (defined in IF-MIB) is enabled for that interface. In addition to the varbinds defined in the trap definition, varbinds defined in the IF-MIB specific to the Cisco Systems implementation are sent. This is the default setting.
- IETF cisco—Traps (linkUp, linkDown) defined in IF-MIB and traps (cieLinkUp, cieLinkDown) defined in CISCO-IF-EXTENSION-MIB.my are sent for an interface, if ifLinkUpDownTrapEnable (defined in IF-MIB) is enabled for that interface. Only the varbinds defined in the trap definition are sent with the linkUp and linkDown traps.
- IETF extended cisco—Traps (linkUp, linkDown) defined in IF-MIB and traps (cieLinkUp, cieLinkDown) defined in CISCO-IF-EXTENSION-MIB.my are sent for an interface, if ifLinkUpDownTrapEnable (defined in IF-MIB) is enabled for that interface. In addition to the varbinds defined in the linkUp and linkDown trap definition, varbinds defined in the IF-MIB specific to the Cisco Systems implementation are sent with the linkUp and linkDown traps.

Examples

The following example enables all the SNMP notifications listed in the Syntax Description table:

```
switch# config terminal
switch(config)# snmp-server traps
```

The following example enables all SNMP entity notifications:

```
switch# config terminal
switch(config)# snmp-server traps entity
```

The following example enables (default) only standard extended linkUp/linkDown notifications:

```
switch# config t
switch(config)# snmp-server enable traps link
```

The following example enables only Cisco Systems defined cieLinkUp/cieLinkDown notifications:

```
switch# config terminal
switch(config)# snmp-server enable traps link cisco
```

Related Commands

Command	Description
show snmp	Displays SNMP information.
snmp-server host	Configures SNMP server host information.

snmp-server enable traps fcdomain

To enable SNMP FC domain traps, use the `snmp-server enable traps fcdomain` command in configuration mode. To disable FC domain trap, use the no form of the command.

```
snmp-server enable traps fcdomain
no snmp-server enable traps fcdomain
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode

Release	Modification trap
4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable SNMP FC domain traps:

```
switch# config t
switch(config)# snmp-server enable traps fcdomain
switch(config)#
switch(config)# no snmp-server enable traps fcdomain
switch(config)#
```

Command	Description
show snmp	Displays SNMP information.
show snmp trap	Displays SNMP traps.

snmp-server enable traps link cisco

To enable Cisco cieLinkUp and cieLinkDown traps, use the `snmp-server enable traps link cisco` command in configuration mode. To disable Cisco link trap, use the `no` form of the command.

```
snmp-server enable traps link cisco
no snmp-server enable traps link cisco
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode

Command History	Release	Modification trap
	4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable SNMP FC domain traps:

```
switch# config t
switch(config)# snmp-server enable traps link cisco
switch(config)#
switch(config)# no snmp-server enable traps link
switch(config)#
```

Related Commands	Command	Description
	show snmp	Displays SNMP information.
	show snmp trap	Displays SNMP traps.

snmp-server enable traps zone

To enable SNMP zone traps, use the `snmp-server enable traps zone` command in configuration mode. To disable zone trap, use the `no` form of the command.

```
snmp-server enable traps zone
no snmp-server enable traps zone
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode

Command History	Release	Modification trap
	4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable SNMP zone traps:

```
switch# config t
switch(config)# snmp-server enable traps zone
switch(config)#
switch(config)# no snmp-server enable traps zone
switch(config)#
```

Related Commands	Command	Description
	show snmp	Displays SNMP information.
	show snmp trap	Displays SNMP traps.

snmp-server globalEnforcePriv

To globally enforce privacy for all SNMP users, use the `snmp-server globalEnforcePriv` command in configuration mode. To disable global privacy, use the `no` form of the command.

```
snmp-server globalEnforcePriv
no snmp-server globalEnforcePriv
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode

Command History	Release	Modification
	2.1(0)	This command was introduced.

Usage Guidelines None.

Examples The following example enables globally enforced privacy for all SNMP users:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# snmp-server globalEnforcePriv
```

Related Commands	Command	Description
	show snmp	Displays SNMP information.

snmp-server host

To specify the recipient of an SNMP notification, use the `snmp-server host` global configuration command. To remove the specified host, use the `no` form of the command.

```
snmp-server host ipv4-addressipv6-addressdns-name [traps | informs] [version 1 | 2c | 3 [auth | noauth |
priv]] community-string [udp-port port]
no snmp-server host ipv4-addressipv6-addressdns-name [traps | informs] [version 1 | 2c | 3 [auth | noauth |
priv]] community-string [udp-port port]
```

Syntax Description

ipv4-address	Specifies the IPv4 address of the host (the targeted recipient).
ipv6-address	Specifies the IPv6 address of the host (the targeted recipient).
dns-name	Specifies the DNS server name of the host (the targeted recipient). SNMP hostname using DSN server name starting with 0. or 127. is not supported.
traps	(Optional) Sends SNMP traps to this host.
informs	(Optional) Sends SNMP informs to this host.
version	(Optional) Specifies the version of the Simple Network Management Protocol (SNMP) used to send the traps. Version 3 is the most secure model, as it allows packet encryption with the <code>priv</code> keyword.
1	SNMPv1 (default). This option is not available with informs.
2c	SNMPv2C.
3	SNMPv3 has three optional keywords (<code>auth</code> , <code>no auth</code> (default), or <code>priv</code>).
auth	(Optional) Enables Message Digest 5 (MD5) and Secure Hash Algorithm (SHA) packet authentication
noauth	(Optional) Specifies the <code>noAuthNoPriv</code> security level.
priv	(Optional) Enables Data Encryption Standard (DES) packet encryption (privacy).
community-string	Sends a password-like community string with the notification operation.
udp-port port	(Optional) Specifies the port UDP port of the host to use. The default is 162.

Command Default

Sends SNMP traps.

Command Modes

Configuration mode

Command History

Release	Modification
1.0(3)	This command was introduced.

Usage Guidelines

If you use the version keyword, one of the following must be specified: 1, 2c, or 3.

Examples

The following example specify the recipient of an SNMP notification:

```
switch# config terminal  
switch(config)# snmp-server host 10.1.1.1 traps version 2c abcddsfsf udp-port 500
```

Related Commands

Command	Description
show snmp	Displays SNMP information.
snmp-server host	Configures SNMP server host information.

snmp-server location

To modify system location, use `snmp-server location` command. To remove the SNMP server location, use the `no` form of the command.

```
snmp-server location
no snmp-server location
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode

Command History	Release	Modification
	4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example sets the SNMP server community string:

```
switch# config t
switch(config)# snmp-server location line
switch(config)#
```

Related Commands	Command	Description
	show snmp	Displays SNMP information.

snmp-server tcp-session

To enable one time authentication for SNMP over a TCP session, use the `snmp-server tcp-session` command in configuration mode. To disable one time authentication for SNMP over a TCP session, use the `no` form of the command.

```
snmp-server tcp-session [auth]
no snmp-server tcp-session [auth]
```

Syntax Description

<code>auth</code>	(Optional) Enables one time authentication for SNMP over a TCP session.
-------------------	---

Command Default

One time authentication for SNMP over a TCP session is on.

Command Modes

Configuration mode

Command History

Release	Modification
3.1	This command was introduced.

Usage Guidelines

None.

Examples

The following example enables one time authentication for SNMP over a TCP session:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# snmp-server tcp-session auth
```

Related Commands

Command	Description
<code>show snmp</code>	Displays SNMP information.

snmp-server traps entity fru

To enable SNMP entity FRU trap, use the `snmp-server traps entity fru` command in configuration mode. To disable entity FRU trap, use the `no` form of the command.

```
snmp-server enable traps entity fru
no snmp-server enable traps entity fru
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode

Release	Modification trap
4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable SNMP entity FRU trap:

```
switch# config t
switch(config)# snmp-server enable traps entity fru
switch(config)#
```

Command	Description
<code>show snmp</code>	Displays SNMP information.
<code>show snmp trap</code>	Displays SNMP traps.

snmp-server user

To configure SNMP user information, use the `snmp-server user` command in configuration mode. To disable the configuration or to revert to factory defaults, use the `no` form of the command.

```
snmp-server user username group-name [auth md5|sha password [priv [password [auto|localizedkey
[auto]]] | aes-128 password [auto|localizedkey [auto]| auto| localizedkey [auto]]]]
no snmp-server user name [group-name|auth md5|sha password [priv [password [auto|localizedkey
[auto]]] | aes-128 password [auto|localizedkey [auto]| auto| localizedkey [auto]]]]
```

Syntax Description

username	Specifies the user name. Maximum length is 32 characters.
group-name	(Optional) Specifies role group to which the user belongs. Maximum length is 32 characters.
auth	(Optional) Sets authentication parameters for the user.
md5	Sets HMAC MD5 algorithm for authentication.
sha	Uses HMAC SHA algorithm for authentication.
password	(Optional) Specifies user password. Maximum length is 64 characters.
priv	(Optional) Sets encryption parameters for the user.
auto	(Optional) Specifies whether the user is autogenerated (volatile).
localizedkey	(Optional) Sets passwords in localized key format.
aes-128	(Optional) Sets 128-byte AES algorithm for privacy.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
4.2(1)	This command was deprecated.
4.1(1b)	Added engineID options.
1.0(2)	This command was introduced.
1.0(3)	Added the localizedkey option.
2.0(1b)	Added the auto and aes128 options.

Usage Guidelines

The localized keys are not portable across devices as they contain information on the engine ID of the device. If a configuration file is copied into the device, the passwords may not be set correctly if the configuration file was generated at a different device. We recommend that passwords be explicitly configured to the desired passwords after copying the configuration into the device.

SNMP Version 3 is the most secure model, as it allows packet encryption with the `priv` keyword.

To assign multiple roles to a user, perform multiple `snmp-server user username group-name` commands. The `group-name` argument is defined by the `role name` command.

Examples

The following example sets the user authentication and SNMP engine ID for a notification target user:

```
switch# config terminal
switch(config)# snmp-server user notifUser network-admin auth sha abcd1234 engineID
00:12:00:00:09:03:00:05:48:00:74:30
```

The following example sets the user information:

```
switch# config terminal
switch(config)# snmp-server user joe network-admin auth sha abcd1234 engineID
switch(config)# snmp-server user sam network-admin auth md5 abcdefgh
switch(config)# snmp-server user Bill network-admin auth sha abcd1234 priv abcdefgh
switch(config)# snmp-server user user1 network-admin auth md5 0xab0211gh priv 0x45abf342
localizedkey
```

Related Commands

Command	Description
<code>role name</code>	Configures role profiles.
<code>show snmp</code>	Displays SNMP information.
<code>snmp-server host</code>	Configures SNMP server host information.

snsr-grp

To link a sensor group to a subscription node and set the data sampling interval, use the `snsr-grp` command. To remove the sensor group, use the `no` form of this command.

```
snsr-group id sample-interval interval
```

```
no snsr-group
```

Syntax Description	id	Sensor group ID. Range is from 1 to 4095.
	sample-interval interval	Data sampling interval in milliseconds. Range is from 0 to 604800000.

Command Default No sensor group exists.

Command Modes Telemetry subscription configuration mode (`conf-tm-sub`)

Command History	Release	Modification
	8.3(1)	This command was introduced.

Usage Guidelines Currently, sensor group ID supports only numeric ID values. The interval value is specified by the user and the value is milliseconds. The minimum supported interval is 30000 milliseconds. An interval value greater than the minimum value creates a frequency-based subscription, in which telemetry data is sent periodically at the specified interval.

Examples This example shows how to link a sensor group to a subscription node and set the data sampling interval of 30000 milliseconds:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# subscription 100
switch(conf-tm-sub)# snsr-grp 100 sample-interval 30000
```

This example shows how to remove the sensor group:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# subscription 100
switch(conf-tm-sub)# no snsr-grp 100
```

Related Commands	Command	Description
	feature telemetry	Enables the SAN Telemetry Streaming feature.

Command	Description
sensor-group	Creates a sensor group and enters sensor group configuration.
show running-config telemetry	Displays the existing telemetry configuration.
show telemetry	Displays telemetry configuration.
subscription	Creates a subscription node and enters subscription node configuration mode.
telemetry	Enters SAN Telemetry Streaming configuration mode.

source

To configure the SPAN session source, use the source command in Configuration mode. To revert to the default settings, use the no form of this command.

```
source filter vsan vsan-id | interface ethernetsource | ethernet-port-channel | fc module-number | port-channel
port-channel-number | sup-eth | sup-fc inband interface number | vlan vlan-id | vsan vsan-id
no source filter vsan vsan-id | interface ethernet | ethernet-port-channel | fc module-number | port-channel
port-channel-number | sup-eth | sup-fc inband interface number | vlan vlan-id | vsan vsan-id
```

Syntax Description

filter	Configures SPAN session filter.
vsan	Specifies the VSAN.
vsan-id	Specifies the VSAN ID. The range is from 1 to 4093
interface	Specifies the interface type.
ethernet	Specifies the ethernet.
ethernet-port-channel	Specifies the ethernet port channel interface.
fc	Specifies Fibre channel interface.
module-number	Specifies the module number. The range is from 1 to 10.
port-channel	Specifies the port channel interface.
port-channel-number	Specifies the port channel number. The range is from 1 to 256.
sup-eth	Specifies the ethernet inband interface.
sup-fc	Specifies the fibre channel inband interface.
inband interface number	Specifies the inband interface. The range is from 0 to 0.
vlan	Specifies the VLAN.
vlan-id	Specifies the VLAN ID. The range is from 1 to 4093.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	Added the keywords ethernet, ethernet-port-channel, sup-eth,vlan to the syntax description.

Usage Guidelines

None.

Examples

The following example shows how to configure the SPAN traffic in ingress, egress and both directions:

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# monitor session 1
switch(config-monitor)# source interface fc 1/5 rx
switch(config-monitor)# source interface fc 1/5 tx
switch(config-monitor)# source interface fc 1/5 both
switch(config-monitor)# destination interface fc 1/5
```

Related Commands

Command	Description
show monitor session all	Displays all information about the Switched Port Analyzer (SPAN) session.

span max-queued-packets

To configure the SPAN max-queued-packets, use the `span max-queued-packets` command in configuration mode. To disable the SPAN drop-threshold, use the `no` form of the command.

```
span max-queued-packets id
no span max-queued-packets id
```

Syntax Description

id	Specifies the SPAN max-queued-packets threshold ID. The range is 1 to 8191.
----	---

Command Default

15.

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	This command was deprecated.
3.3(1a)	This command was introduced.

Usage Guidelines

This command is supported only on a ISOLA platform.

Examples

The following example shows how to configure the SPAN max-queued-packets:

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# span max-queued-packets 1
```

Related Commands

Command	Description
<code>show span drop-counters</code>	Displays the SPAN drop-counters.
<code>show span max-queued-packets</code>	Displays the SPAN max-queued-packets.

span session

To configure a SPAN session, use the span session command. To remove a configured SPAN feature or revert it to factory defaults, use the no form of the command.

```
span session session-id destination | filter | no | rate-optional | source | suspend
no span session session-id destination | filter | no | rate-optional | source | suspend
```

Syntax Description

session-id	Specifies the SPAN session ID. The range is 1 to 16.
destination	Specifies the destination configuration.
filter	Specifies the filter configuration.
no	Specifies the default value.
rate-optional	Specifies the rate limit for SPAN packets on FCOE module. IS there a variable associated with this? Does this have a range.
source	Specifies the source configuration.
suspend	Specifies the SPAN suspended session.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	This command was deprecated.
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure a SPAN session:

```
switch# config terminal
switch(config)# span session 1
switch(config-span)#
```

The following example shows how to delete a SPAN session:

```
switch(config)# no
span session 1
```

Related Commands	Command	Description
	destination interface	Configures a SPAN destination interface.
	show span session	Displays specific information about a SPAN session.
	source	Configures a SPAN source.
	span session	Selects or configures the SPAN session and changes to SPAN configuration submode.
	suspend	Suspends a SPAN session.
	switchport	Configures the switch port mode on the Fibre Channel interface.

span session source interface

To configure the SPAN traffic in both ingress (rx) and egress (tx) directions, use the `span session source interface` command in Configuration mode. To revert this command, use the `no` form of this command.

interface

```
span session session-id source interface interface type
no span session session-id source interface interface type
```

Syntax Description

session-id	Specifies the SPAN session ID.
interface type	Specifies the destination interface mapped to a Fiber Channel or FC tunnel.

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
6.2(1)	This command was deprecated.
1.0(x)	This command was introduced.
3.3(1a)	Enabled SPAN traffic in both ingress (rx) and egress (tx) directions for Generation 2 Fabric Switches.

Usage Guidelines

None.

Examples

The following example shows how to configure the SPAN traffic in both ingress and egress directions:

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# span session 1
switch(config-span)# source interface fc 1/5 rx
switch(config-span)# source interface fc 1/5 tx
switch(config-span)# destination interface fc 1/5
```

Related Commands

Command	Description
show span session	Displays specific information about a Switched Port Analyzer (SPAN) session.

special-frame

To enable or disable special frames for the FCIP interface, use the special-frame command. To disable the passive mode for the FCIP interface, use the no form of the command.

```
special-frame peer-wwn pwwn-id [profile-id profile-number]
no special-frame peer-wwn pwwn-id
```

Syntax Description	peer-wwn pwwn-id	Specifies the peer WWN ID for special frames.
	profile-id profile-number	(Optional) Specifies the peer profile ID. The range is 1 to 255.

Command Default Disabled.

Command Modes Interface configuration submode

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines Access this command from the switch(config-if)# submode.

When a new TCP connection is established, an FCIP special frame (if enabled) makes one round trip from the FCIP profile and initiates the TCP connect operation to the FCIP profile receiving the TCP connect request and back. Use these frames to identify the FCIP link endpoints, to learn about the critical parameters shared by Fibre Channel and FCIP profile pairs involved in the FCIP link, and to perform configuration discovery.

Examples The following example configures the special frames:

```
switch# config terminal
switch(config)# interface fcip 1
switch(config)# special-frame peer-pwwn 11:11:11:11:11:11:11:11
switch(config)# special-frame peer-pwwn 22:22:22:22:22:22:22:22 profile-id 10
```

Related Commands	Command	Description
	show interface fcip	Displays an interface configuration for a specified FCIP interface.

ssh

To initiate a Secure Shell (SSH) session, use the `ssh` command in EXEC mode.

```
ssh hostname | userid@hostname
```

Syntax Description

hostname	Specifies the name or IP address of the host to access.
userid @ hostname	Specifies a user name on a host.

Command Default

The default user name is admin.

Command Modes

EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to initiate an SSH session using a host name:

```
switch# ssh host1
admin@host1's password:
```

The following example shows how to initiate an SSH session using a host IP address:

```
switch# ssh 10.2.2.2
admin@10.1.1.1's password:
```

The following example shows how to initiate an SSH session using a user name host name:

```
switch# ssh user1@host1
user1@host1's password:
```



Note

The `ssh` command supports only AES-CTR ciphers from version 5.2(8g) and version 6.2(13) onwards, because the other ciphers are considered to be weak by Federal Information Processing Standards (FIPS).



Note

To discover the fabric in DCNM with 5.2(8g) and 6.2(13) images, you must install DCNM 7.1(2); as it supports the AES-CTR ciphers.

Related Commands

Command	Description
feature ssh	Enables SSH server.
show ssh key	Displays SSH key information.

ssh connect

To log in to a destination using a channel of previously established SSH session, use the ssh connect command.

```
ssh connect label
```

Syntax Description	label Handle of an already established SSH session.
---------------------------	---

Command Default	No sessions are defined.
------------------------	--------------------------

Command Modes	Privileged EXEC (#)
----------------------	---------------------

Command History	Release Modification
------------------------	-----------------------------

8.3(1)	This command was introduced.
--------	------------------------------

Usage Guidelines	Enable feature ssh and configure the ssh name command before executing the ssh connect command.
-------------------------	---

The following example shows how to connect to a destination over SSH with a local name of 'me@host'. This name has already been configured using the ssh name command.

```
switch# ssh connect me@host
host$
```

Related Commands	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>ssh name</td> <td>Opens an SSH session to a destination and apply label to it.</td> </tr> <tr> <td>sscp</td> <td>Redirects the output using streaming secure copy (sscp) to a named SSH connection.</td> </tr> <tr> <td>show ssh names</td> <td>Displays all shareable SSH sessions established on the switch.</td> </tr> </tbody> </table>	Command	Description	ssh name	Opens an SSH session to a destination and apply label to it.	sscp	Redirects the output using streaming secure copy (sscp) to a named SSH connection.	show ssh names	Displays all shareable SSH sessions established on the switch.
Command	Description								
ssh name	Opens an SSH session to a destination and apply label to it.								
sscp	Redirects the output using streaming secure copy (sscp) to a named SSH connection.								
show ssh names	Displays all shareable SSH sessions established on the switch.								

ssh key

To generate an SSH key, use the `ssh key` command in configuration mode. To delete SSH keys, use the `no` form of the command.

```
ssh key dsa | rsa [rsa_mod] [force]
no ssh key [dsa | rsa]
```

Syntax Description

dsa	Specifies a DSA key.
rsa	Specifies an RSA key.
rsa_mod	(Optional) The modulus of the RSA key. The range is from 768 to 2048. Starting from Cisco MDS NX-OS Release 8.4(1), the range is from 1024 to 4096.
force	(Optional) Forces the generation of DSA SSH keys even when the keys are present.

Command Default

The default key-pair modulus is 1024 bits.

Command Modes

Configuration mode

Command History

Release	Modification
1.0(2)	This command was introduced.
8.4(1)	The ssh key rsa range was modified to 4096 bits.

Usage Guidelines

It is required to disable the SSH service prior to using the `no` form of the command to delete all SSH keys. This, in turn, requires all SSH sessions to be closed. To access the switch without SSH, either log in through the console, or enable Telnet access. Ensure to generate new keys when re-enabling the SSH service. SSH access to the switch will be denied if no SSH keys are installed.

Examples

The following example shows how to generate an RSA key-pair:

```
switch(config)# ssh key rsa 1024
generating rsa key.....
generated rsa key
```

The following example shows how to replace an SSH server key using DSA with the `force` option:

```
switch(config)# no ssh server enable
switch(config)# ssh key dsa force
switch(config)# ssh server enable
```

The following example shows how to delete all SSH key-pairs on the switch:

```
switch(config)# no ssh key
cleared RSA keys
```

Related Commands

Command	Description
feature ssh	Enable or disable SSH service.
show ssh key	Displays SSH key information.

ssh name

To create an SSH session from the switch to a destination for other commands to use, use the ssh name command. To close the SSH session, use the no form of the command.

```
ssh name label user-name destination
```

```
no ssh name label
```

Syntax Description

label	Configures a name of the SSH session.
user-name	Specifies a username to log in to the remote SSH server.
destination	Specifies a domain name or IP address of the remote SSH server.

Command Default

No sessions are defined.

Command Modes

Privileged EXEC (#)

Command History

Release Modification

8.3(1)	This command was introduced.
--------	------------------------------

Usage Guidelines

The ssh name command opens an SSH session to the destination as the named user when it is entered. If the user needs to enter a password to log in to the destination then it must be entered at this time. If the user has passwordless SSH configured then no password is required. After authentication, the user is returned to the switch prompt and the SSH session kept open in the background for use by other commands. These subsequent commands do not need to authenticate again with the destination as they use the session opened by this command.

Sessions stay open even after the user who created the sessions logs out. The sessions can be manually closed with the no form of the command or will be closed automatically when the supervisor resets (for example, during a supervisor switchover in a dual supervisor system).

This command is not stored in the switch configuration. After a reload, the command configurations are lost and you need to reconfigure the command.

Enable feature ssh before configuring the ssh name command.

The following example shows how to create an SSH session to destination 192.168.1.1 as user 'ajax', and give it a name of 'me@host' that can be used later by other commands. In the following example, non-passwordless authentication is used:

```
switch# ssh name me@host ajax 192.168.1.1
```

```
The authenticity of host '192.168.1.1 (192.168.1.1)' can't be established.
RSA key fingerprint is SHA256:4VbYNa7hJLPu/4jQEk6Ymn2KU+IMRkrX/miJIEVIP34.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.1.1' (RSA) to the list of known hosts.
This is a Cisco managed device to be used only for authorized purposes.
Your use is monitored for security, asset protection, and policy compliance.
```

```
Outbound-ReKey for 192.168.1.1
Inbound-ReKey for 192.168.1.1
```

This is a Cisco managed device to be used only for authorized purposes.
Your use is monitored for security, asset protection, and policy compliance.

```
me@host @192.168.1.1's password:
```

Related Commands

Command	Description
ssh connect	Initiates an SSH session to a named SSH destination.
sscp	Redirects the output using streaming secure copy (sscp) to a named SSH destination.
show ssh names	Displays all shareable SSH sessions established on the switch.

ssh server enable

To enable the SSH server, use the `ssh server enable` command in configuration mode. To disable the SSH service, use the `no` form of the command.

```
ssh server enable
no ssh server enable
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode

Command History	Release	Modification
	1.0(2)	This command was introduced.
	8.1(1)	This command was replaced with feature ssh.

Usage Guidelines None.

Examples The following example enables the SSH server:

```
switch# config terminal
switch(config)# ssh server enable
updated
```

The following example disables the SSH server:

```
switch# config terminal
switch(config)# no
ssh server enable
updated
```

Related Commands	Command	Description
	show ssh server	Displays SSH server information.
	ssh key	Generates an SSH key.

ssl

To configure Secure Sockets Layer (SSL), use the `ssl` command. Use the `no` form of this command to disable this feature.

```
ssl kmc
no ssl kmc
```

Syntax Description

kmc	Enables SSL for Key Management Center (KMC) communication.
-----	--

Command Default

None.

Command Modes

Cisco SME cluster configuration mode submode

Command History

Release	Modification
3.3(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example enables SSL:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# ssl kmc
```

ssm enable feature

To enable a feature on the Storage Services Module (SSM), use the `ssm enable feature` command. To disable the feature on the module, use the `no` form of the command.

```
ssm enable feature dmm force interface fc slot-port | module slot node slot | interface fc slot-port |
module slot | invista bootflash:uri | force module slot-number | modflash:uri | module slot-number |
slot0:uri | interface fc slot-port-port | module slot-number | force module slot-number | modflash:uri |
module slot-number | slot0:uri | santap force module slot-number | interface fc slot-port-port | module
slot-number | scsi-flow force module slot-number | interface fc slot-port-port | module slot-number
no ssm enable feature dmm force interface fc slot-port | module slot node slot | interface fc slot-port |
module slot | invista bootflash:uri | force module slot-number | modflash:uri | module slot-number |
slot0:uri | interface fc slot-port-port | module slot-number | force module slot-number | modflash:uri |
module slot-number | slot0:uri | santap force module slot-number | interface fc slot-port-port | module
slot-number | scsi-flow force module slot-number | interface fc slot-port-port | module slot-number
```

Syntax Description

dmm	Specifies the DMM feature on the SSM.
force	Forces a switching module reload.
interface	Specifies the interface.
fc slot/port	Specifies the Fiber Channel slot and port numbers.
node slot	Specifies the node number for partial provisioning of Storage Services Node card. The range is from 0 to 3 characters.
module slot	Specifies the SSM module slot number.
invista	Enables the Invista feature on the SSM.
bootflash: uri	Specifies the source location for internal bootflash with image name.
force	Forces an immediate configuration change.
module slot-number	Specifies the slot number of the SSM.
modflash: uri	Specifies the source location for internal modflash with image name.
slot0:uri	Specifies the source location for the CompactFlash memory or PC card with image name.
interface fc slot/port	Specifies the interface to be configured.
fc slot/port	Configures the Fibre Channel interface.
fc slot/port-port	Configures the Fibre Channel interface range of ports. See the Usage Guidelines for this command for a list of interface range restrictions.
santap	Enables the SANTap feature on the SSM.
scsi-flow	Enables the SCSI flow feature on the SSM.

Command Default Disabled.

Command Modes Configuration mode

Release	Modification
NX-OS 5.0(1a)	Added node keyword to the syntax description.
3.2(1)	Added dmm keyword to the syntax description.
2.0(2b)	This command was introduced.
2.1(1a)	Added emcsr, nasb, and santap options.
3.0(1)	Changed the name of the emcsr option to invista.

Usage Guidelines Use the `ssm enable feature scsi-flow` command to enable the SCSI flow feature on an SSM.

The features `invista` and `nsp` can only be provisioned on a module basis. The features `nasb`, `santap`, and `scsi-flow` can be provisioned on either a module or a range of interfaces.

The image must be specified when configuring the `invista` and `nsp` features.

Starting with NX-OS 4.1(1b), DMM must be enabled using the `ssm enable feature dmm` command before using the SLD tool.



Caution The `force` option is only applicable when unprovisioning (using the `no` parameter). Using the `force` parameter without the `no` keyword causes the SSM to reload.

For SAN-OS Release 2.1 and later NX-OS Release 4.1 images, intelligent services can be configured on a range of interfaces with the following restrictions:

- The minimum range is four interfaces.
- The range of interfaces must be specified in multiples of four interfaces. For example, 4, 8, 12, 16, 20, 24, 28, 32.
- Ranges start at the following specific ports: 1, 5, 9, 13, 17, 21, 25, and 29.

Examples

The following example shows how to enable DMM on a module with the node ID which is stored as a part of the key:

```
switch(config)# ssm enable feature dmm module 4 node 2
is node is 0
is force is 0
is node is 0
is force is 0
Got node information
is node is 1
is force is 0
Provisioning failed: Specified module is either not an ILC(SSM/18+4/9222i) or not
online yet
switch(config)#
```

The following example shows how to enable DMM on a module:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ssm enable feature dmm module 1
```

The following example shows how to enable DMM on an interface:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ssm enable feature dmm interface fc 1/1 - 4
```

The following example shows how to force a reload on some of the ports on a module:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ssm enable feature dmm force interface fc 1/1 - 8, fc 1/13 - 16
```

The following example enables the Invista feature on the SSM in slot 4:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config) ssm enable feature invista module 4
```

The following example enables the Invista feature using the bootflash image name:

```
switch(config) ssm enable feature invista bootflash:image_name
```

The following example enables the Invista feature using the image name found on the PC card flash module in slot0:

```
switch(config) ssm enable feature invista slot0:image_name
```

The following example disables the Invista feature on the SSM in slot 4:

```
switch(config) no ssm enable feature invista force module 4
```

The following example enables the SANTap feature on the SSM in slot 4:

```
switch(config) ssm enable feature santap module 4
```

The following example enables the SCSI flow feature on the SSM in slot 4:

```
switch(config) ssm enable feature scsi-flow module 4
```

Related Commands

Command	Description
scsi-flow distribute	Configures the SCSI flow services.
show scsi-flow	Displays SCSI flow configuration and status.

ssm upgrade delay

To configure the upgrade delay time, use the `ssm upgrade delay` command. To clear the already set upgrade value, use the no form of the command.

```
ssm upgrade delay string
no ssm upgrade delay string
```

Syntax Description

string	Specifies the delayed time in seconds. The range is from 1 to 600.
--------	--

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines

During the upgrade, the second SSM and MSM and the subsequent SSMs and MSMs would be delayed by the configured delay value.

Examples

The following example shows how to configure the SSM upgrade delay time:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ssm upgrade delay 500
switch(config)#
```

Related Commands

Command	Description
<code>ssm enable feature</code>	Enables the SCSI flow feature on the SSM.

static (iSCSI initiator configuration and iSLB initiator configuration)

To assign persistent WWNs to an iSCSI initiator or iSLB initiator, use the static command in iSCSI initiator configuration submode or iSLB initiator configuration submode. To disable this feature, use the no form of the command.

```
static nwwn | pwwn wwn-id | system-assign
no static nwwn | pwwn wwn-id | system-assign
```

Syntax Description

nwwn	Configures the initiator node WWN hex value.
pwwn	Configures the peer WWN for special frames.
wwn-id	Specifies the pWWN or nWWN ID.
system-assign	Generates the pWWN or nWWN value automatically.

Command Default

None.

Command Modes

iSCSI initiator configuration submode

iSLB initiator configuration submode

Command History

Release	Modification
1.3(2)	This command was introduced.
3.0(1)	Added iSLB initiator configuration submode.

Usage Guidelines

We recommend using the system-assign option. If you manually assign a WWN, you must ensure its uniqueness. You should not use any previously-assigned WWN.

If you use system-assign option to configure WWNs for an iSLB initiator, when the configuration is saved to an ASCII file, the system-assigned WWNs are also saved. If you subsequently perform a write erase, you must manually delete the WWN configuration from the ASCII file. Failing to do so can cause duplicate WWN assignments if the ASCII configuration file is reapplied on the switch.

Examples

The following example uses the switch WWN pool to allocate the nWWN for this iSCSI initiator and to keep it persistent:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# iscsi ?
  authentication  Configure global iscsi authentication parameters
  enable         Enable/Disable iSCSI
  import         Configure import of FC targets to iSCSI domain
```

static (iSCSI initiator configuration and iSLB initiator configuration)

```

initiator          Configure iSCSI initiator
interface          Configure iSCSI interface property
save-initiator    Make WWNs for initiator persistent
virtual-target    Configure iSCSI Virtual Target
switch(config)# iscsi initiator ?
idle-timeout      ISCSI initiator idle timeout value in seconds
ip-address        ISCSI initiator node ip address
name              ISCSI initiator node name
switch(config)# iscsi initiator name ?
<WORD>           Enter Initiator node name (max 223) (Max Size - 223)
switch(config)# iscsi initiator name test ?
<cr>             Carriage Return
switch(config)# iscsi initiator name iqn.1987-02.com.cisco.initiator
switch(config-iscsi-init)# static nwwn system-assign

```

The following example uses the switch WWN pool to allocate two pWWNs for this iSCSI initiator and to keep it persistent:

```
switch(config-iscsi-init)# static pwwn system-assign 2
```

The following example shows a system-assigned pWWN for an iSLB initiator:

```

switch# config t
switch(config)# islb initiator ip-address 209.165.200.226
switch(config-islb-init)# static pwwn system-assign 4

```

The following example removes the system-assigned pWWN for the iSLB initiator:

```

switch (config-islb-init)# no
static pwwn system-assign 4

```

Related Commands

Command	Description
iscsi initiator name	Assigns an iSCSI name and changes to iSCSI initiator configuration submode.
islb initiator	Assigns an iSLB name and IP address to the iSLB initiator and enters iSLB initiator configuration submode.
show iscsi initiator	Displays information about configured iSCSI initiators.
show iscsi initiator configured	Displays iSCSI initiator information for the configured iSCSI initiator.
show iscsi initiator detail	Displays detailed iSCSI initiator information.
show iscsi initiator summary	Displays iSCSI initiator summary information.
show islb initiator	Displays iSLB initiator information.
show islb initiator configured	Displays iSLB initiator information for the specified configured initiator.
show islb initiator detail	Displays detailed iSLB initiator information.
show islb initiator summary	Displays iSLB initiator summary information.

stop

To stop SCSI commands in progress on a SAN tuner extension N port, use the stop command.

```
stop all | command-id cmd-id
```

Syntax Description	all	Stops all SCSI commands.
	command-id cmd-id	Stops a specific SCSI command identified by the command number. The range is 0 to 2147483647.

Command Default None.

Command Modes SAN extension N port configuration submode

Command History	Release	Modification
	2.0(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example stops all SCSI command on a SAN extension tuner N port:

```
switch# san-ext-tuner
switch(san-ext)# nwwn 10:00:00:00:00:00:00
switch(san-ext)# nport pwwn 12:00:00:00:00:00:00:56 vsan 13 interface gigabitethernet 1/2
switch(san-ext-nport)# stop all
```

The following example stops a specific SCSI command on a SAN extension tuner N port:

```
switch# san-ext-tuner
switch(san-ext)# nwwn 10:00:00:00:00:00:00
switch(san-ext)# nport pwwn 12:00:00:00:00:00:00:56 vsan 13 interface gigabitethernet 1/2
switch(san-ext-nport)# stop command-id 100
```

Related Commands	Command	Description
	nport pwwn	Configures a SAN extension tuner N port.
	read command-id	Configures a SCSI read command for a SAN extension tuner N port.
	san-ext-tuner	Enables the SAN extension tuner feature.
	show san-ext-tuner	Displays SAN extension tuner information.
	write command-id	Configures a SCSI write command for a SAN extension tuner N port.

storage (DMM job configuration submode)

To add a storage port to a DMM job, use the storage command in DMM job configuration submode.

```
storage vsan vsan-id pwwn port-wwn existing | new
```

Syntax Description

vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
pwwn port-wwn	Specifies the world-wide name of the storage port. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
existing	Specifies a port on the existing storage.
new	Specifies a port on the new storage.

Command Default

None.

Command Modes

DMM job configuration submode.

Command History

Release	Modification
3.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to add storage information to a DMM job:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# dmm module 3 job 1 create
Started New DMM Job Configuration.
Do not exit sub-mode until configuration is complete and committed
switch(config-dmm-job)# storage vsan 3 pwwn 1d:22:3a:21:3c:44:3b:51 existing
switch(config-dmm-job)#
```

Related Commands

Command	Description
show dmm ip-peer	Displays job information.
show dmm srvr-vt-login	Enables DMM.

streetaddress

To configure the street address with the Call Home function, use the `streetaddress` command in Call Home configuration submenu. To disable this feature, use the `no` form of the command.

```
streetaddress street-address
no streetaddress street-address
```

Syntax Description

street-address	Specifies the customer's street address where the equipment is located. Allows up to 256 alphanumeric characters in free format for the street number, city, state, and zip (combined).
----------------	---

Command Default

None.

Command Modes

Call Home configuration submenu

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the street address in the Call Home configuration:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# streetaddress 1234 Picaboo Street, AnyCity, AnyState, 12345
```

Related Commands

Command	Description
callhome	Configures the Call Home function.
callhome test	Sends a dummy test message to the configured destinations.
show callhome	Displays configured Call Home information.

subscription

To create a subscription node and enter subscription node configuration mode, use the subscription command. To remove the subscription node, use the no form of this command.

```
subscription id
```

```
no subscription id
```

Syntax Description

id	Sensor subscription ID. Range is from 1 to 4095.
----	--

Command Default

No subscription node exists.

Command Modes

Telemetry configuration mode (config-telemetry)

Command History

Release	Modification
8.3(1)	This command was introduced.

Usage Guidelines

Currently, subscription ID supports only numeric ID values.

Examples

This example shows how to create a subscription node and enter subscription node configuration mode:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# subscription 100
```

This example shows how to remove the subscription node:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# no subscription 100
```

Related Commands

Command	Description
feature telemetry	Enables the SAN Telemetry Streaming feature.
sensor-group	Creates a sensor group and enters sensor group configuration.
show running-config telemetry	Displays the existing telemetry configuration.
show telemetry	Displays telemetry configuration.
telemetry	Enters SAN Telemetry Streaming configuration mode.

suspend

To suspend a switched port analyzer (SPAN) session, use the suspend command in SPAN session configuration submode. To disable the suspension, use the no form of the command.

```
suspend
no suspend
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes SPAN session configuration submode

Command History	Release	Modification
	6.2(1)	This command was deprecated.
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to suspend a SPAN session:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# span session 1
switch(config-span)# suspend
switch(config-span)# do show span session 1
Session 1 (admin suspended)
  Destination is not configured
  No session filters configured
  Ingress (rx) sources are
    fc3/13,
  Egress (tx) sources are
    fc3/13,
switch(config-span)#
```

The following example shows how to disable the suspension of the SPAN session:

```
switch(config-span)# no suspend
```

Related Commands	Command	Description
	destination interface	Configures a SPAN destination interface.
	show span session	Displays specific information about a SPAN session.
	source	Configures a SPAN source.

Command	Description
span session	Selects or configures the SPAN session and changes to SPAN configuration submode.
switchport	Configures the switch port mode on the Fibre Channel interface.

switchname

To change the name of the switch, use the switchname command in configuration mode. To revert the switch name to the default name, use the no form of the command.

```
switchname name
no switchname name
```

Syntax Description

name	Specifies a switch name. Maximum length is 32 characters.
------	---

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example changes the name of the switch to myswitch1:

```
switch# config terminal
switch(config)# switchname myswitch1
```

The following example changes the name of the switch to the default:

```
myswitch1(config)# no switchname
```

Related Commands

Command	Description
snmp-server	Sets the contact information, switch location, and switch name within the limit of 20 characters (without spaces).

switchport auto-negotiate

To enable autonegotiation on an Ethernet-based SAN extension interface, use the `switchport auto-negotiate` command. To disable autonegotiation, use the `no` form of this command.

```
switchport auto-negotiate
no switchport auto-negotiate
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes Interface configuration submode (config-if)

Command History	Release	Modification
	NX-OS 1.1(1)	This command was introduced.

Usage Guidelines This command is available only on Ethernet-based SAN extension interfaces, specifically Gigabit Ethernet and IPS type interfaces. It is not available on FCoE Ethernet interfaces or the management interface.

Examples The following example shows how to enable autonegotiation on a Gigabit Ethernet interface:

```
switch# configure terminal
switch(config)# interface gigabitethernet 2/2
switch(config-if)# switchport auto-negotiate
```

Related Commands	Command	Description
	show interface	Displays an interface status and statistics.

switchport beacon

To enable the beacon LED on an interface, use the `switchport beacon` command. To disable the beacon LED on the interface, use the `no` form of this command.

```
switchport beacon
no switchport beacon
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Interface configuration submode (config-if)

Command History	Release	Modification
	NX-OS 1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to enable the beacon LED on an interface:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport beacon
```

Related Commands	Command	Description
	show interface	Displays interface status and statistics.

switchport description

To specify the description for an interface, use the switchport description command. To delete the interface description, use the no form of this command.

```
switchport description text
no switchport description text
```

Syntax Description

text	Specifies the interface description. Maximum length is 254 characters.
------	--

Command Default

None.

Command Modes

Interface configuration submenu (config-if)

Command History

Release	Modification
NX-OS 1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to add a description to an interface:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport description Host Linux4943 port 2
```

Related Commands

Command	Description
show interface description	Displays descriptions from all interfaces.

switchport duplex

To specify the Ethernet duplex mode as full, half, or autonegotiate on a management interface, use the `switchport duplex` command. To return the interface to the default mode, use the `no` form of this command.

```
switchport duplex auto | full | half
no switchport duplex auto | full | half
```

Syntax Description	
auto	Specifies the duplex mode as autonegotiate.
full	Specifies the duplex mode as full.
half	Specifies the duplex mode as half.

Command Default The default duplex of the management interface is full.

Command Modes Interface configuration submode (config-if)

Command History	Release	Modification
	NX-OS 4.0	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to set the duplex mode to auto on a management interface:

```
switch# configure terminal
switch(config)# interface mgmt 0
switch(config-if)# switchport duplex auto
```

Related Commands	Command	Description
	show interface	Displays interface status and statistics.

switchport encap

To send SPAN traffic through the fabric to a remote switch the SD port must be connected to a neighbor switch and the egress traffic encapsulated in EISL encapsulation to conform to the interswitch frame format. To configure EISL encapsulation on an interface, use the switchport encap command. To remove the configuration, use the no form of this command.

```
switchport encap eisl
no switchport encap eisl
```

Syntax Description

eisl	Specifies extended ISL (EISL) encapsulation on an interface.
------	--

Command Default

Disabled.

Command Modes

Interface configuration submenu (config-if)

Command History

Release	Modification
NX-OS 1.0(2)	This command was introduced.

Usage Guidelines

This command sets the egress frame format of an interface in the SD port mode. When enabled, all egress frames are encapsulated in the EISL frame format.

Examples

The following example shows how to configure EISL encapsulation on an interface:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport encap eisl
```

Related Commands

Command	Description
show interface	Displays interface status and statistics.
show span session	Displays the status of SPAN sessions.

switchport fcbbn

Credit recovery on Fibre Channel links is facilitated by the buffer to buffer state change notification feature. This allows loss of credits on a link to be detected and recovered. To enable buffer to buffer state change notification on an interface, use the switchport fcbbn command. To disable notification, use the no form of this command.

```
switchport fcbbn value value
no switchport fcbbn
```

Syntax Description

value	Specifies the buffer-to-buffer state change number (BB_SC_N). The range is 1 to 15.
value	

Command Default

The default value for switchport fcbbn is enabled for E ports in all releases. Starting with Cisco MDS NX-OS 8.2(1), it is enabled by default for F ports. Starting with Cisco MDS NX-OS 8.4(1), it is enabled by default for NP ports.

The default BB_SC_N value for all port types is 14. A BB_SC_N value of 14 results in buffer to buffer credit recovery primitives being sent in a interval of 16,384 frames/credits.

Command Modes

Interface configuration submode (config-if)

Command History

Release	Modification
8.4(2)	The value keyword and value variable were introduced.
3.0(1)	This command was introduced.

Usage Guidelines

The BB_SC_N value is the value negotiated between the two sides of the link in the Exchange Link Parameters (ELP) for E ports and in the FLOGI and ACC (FLOGI) for F or NP ports. This value determines the interval for which buffer to buffer recovery primitives are sent and is the exponent of the base of 2. The value negotiated is the larger of the values of the two sides.



Caution This command causes traffic disruption on the specified interface.

Examples

The following example shows how to enable buffer to buffer credit recovery on an interface and set the BB_SC_N to the default value of 14:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport fcbbn
```

Examples

The following example shows how to specify the BB_SC_N to 7:



Note A BB_SC_N value of 7 results in buffer to buffer credit recovery primitives being sent in a interval of 128 frames/credits.

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport fcbbscn value 7
```

Examples

The following example shows how to disable buffer to buffer credit recovery on an interface:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# no switchport fcbbscn
```

Related Commands

Command	Description
show interface counters detailed	Displays the interface counters.

switchport fcrxbbcredit

Each Fibre Channel interface may be assigned receive buffer to buffer credits from 3 types of buffer pools. To configure receive buffer to buffer credits on an interface, use the switchport fcrxbbcredit command. To remove the configuration, use the no form of this command.

```
switchport fcrxbbcredit std_bufs [mode E | Fx] | default | performance-buffers defaultperf_bufs | extended
ext_bufs
no switchport fcrxbbcredit std_bufs [mode E | Fx] | default | performance-buffers default perf_bufs |
extended ext_bufs
```

Syntax Description

std_bufs	Specifies count of standard B2B credits. The range is 1 to 500.
mode	(Optional) Restricts the standard receive B2B credit to the specified port mode.
E	Specifies Inter-Switch Link port mode.
Fx	Specifies fixed F and F-loop port modes.
performance-buffers	Configures receive performance buffer allocation on the port.
default	Specifies to use the default credits depending on the port type and capabilities.
perf_bufs	Specifies performance receive B2B credits. The range is 1 to 145.
extended	Configures extended B2B credits.
ext_bufs	Specifies count of extended receive B2B credits. The range is 256 to 4095.

Command Default

None.

Command Modes

Interface configuration submode (config-if)

Command History

Release	Modification
NX-OS 2.0(1b)	Added the extended keyword to the syntax.
NX-OS 1.1(1)	This command was introduced.

Usage Guidelines



Caution

This command causes traffic disruption on the specified interface.

Configure the feature fcrxbbcredit extended command to enable access to the switchport fcrxbbcredit command. The switchport fcrxbbcredit command will not be available until the extended credit feature is enabled.

Extended buffer to buffer credits are intended for long haul links where a high RTT causes more frames to be in flight than normal at linerate. They are advertised to the link peer and require an ENTERPRISE_PKG license.

Performance buffers are intended to absorb short bursts on higher speed ingress interfaces destined for lower speed or mildly congested egress interfaces. They are internal to the switch and are not advertised to the link peer. They are only available in 12-port 4-Gbps and 4-port 10 Gbps switching modules.

Examples

The following example shows how to configure default credits on an interface:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport fcrxbbcredit default
```

Related Commands

Command	Description
feature fcrxbbcredit extended	Enables extended receive B2B credits.
show interface	Displays interface status and statistics.

switchport fcrxbufsize

To configure the maximum size of the receive data buffer on an interface, use the `switchport fcrxbufsize` command. To remove the configuration, use the `no` form of this command.

```
switchport fcrxbufsize buffer-size
no switchport fcrxbufsize buffer-size
```

Syntax Description

buffer-size	Specifies maximum frame size for the interface. The range is 256 to 2112 bytes.
-------------	---

Command Default

The default receive data buffer size is 2112 bytes.

Command Modes

Interface configuration submode (config-if)

Command History

Release	Modification
NX-OS 1.0(2)	This command was introduced.

Usage Guidelines



Caution

This command causes traffic disruption on the specified interface.



Note

From Cisco MDS NX-OS 8.2(1), the `switchport fcrxbufsize` command is obsolete on the Cisco MDS 9700 48-Port 16-Gbps Fibre Channel Switching Module and Cisco MDS 9700 48-Port 32-Gbps Fibre Channel Switching Module.

Examples

The following example shows how to set the frame size for an interface:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport fcrxbufsize 256
```

Related Commands

Command	Description
show interface	Displays interface status and statistics.

switchport fec

To configure the Forward Error Correction (FEC) on an interface, use the `switchport fec` command. To remove the configuration, use the `no` form of this command.

```
switchport fec
no switchport fec
```

Syntax Description	fec	Configures the FEC state on an interface.
---------------------------	-----	---

Command Default Disabled.

Command Modes Interface configuration submode (config-if)

Command History	Release	Modification
	9.2(1)	Both Forward Error Correction (FEC) and Transmitter Training Signal (TTS) must be configured on Cisco MDS 48-Port 64-Gbps Fibre Channel Switching Module (DS-X9748-3072K9) to use FEC at 16-Gbps speed. A warning message is displayed in the <code>switchport fec</code> command output when only FEC is configured.
	6.2(7)	This command was introduced.

Usage Guidelines



Caution This command causes traffic disruption on the specified interface.



Note This command is only accepted on ports with the speed fixed to 16 Gbps and FEC already enabled.

Use the `switchport fec` command in the interface configuration mode to configure FEC on an interface.



Note FEC TTS is supported on the DS-X9448-768K9 Generation 5 module in Cisco MDS NX-OS Release 6.2(11c) and later 6.2(11x) releases, and Cisco MDS NX-OS Release 6.2(15) and later releases. It is not supported in Cisco MDS NX-OS Release 6.2(13).

Examples

The following example shows how to configure FEC on a Fibre Channel interface:

```
switch# config t
switch(config)# interface fc 1/1
switch(config-if)# switchport fec
```

The following example shows a warning message that TTS must be configured on the Cisco MDS 48-Port 64-Gbps Fibre Channel Switching Module (DS-X9748-3072K9) to use FEC at 16-Gbps speed:

```
switch# config t
switch(config)# interface fc7/1
switch(config-if)# switchport speed 16000
switch(config-if)# switchport fec
fc7/1: (warning) FEC on this module requires TTS to function at 16 Gbps. Please configure
'switchport fec tts'.
```

To resolve this error, configure the switchport fec tts command on the interface.

Related Commands

Command	Description
show interface fc	Displays the status of the specified Fibre Channel interface.

switchport fec tts

To configure the Forward Error Correction (FEC) and the Transmitter Training Signal (TTS) on an interface, use the `switchport fec tts` command. To remove the configuration, use the `no` form of this command.

```
switchport fec [tts]
no switchport fec [tts]
```

Syntax Description	tts	(Optional) Enables Transmitter Training Signal (TTS) allowing negotiation of FEC capability.
---------------------------	-----	--

Command Default Disabled.

Command Modes Interface configuration submode (config-if)

Command History	Release	Modification
	NX-OS 6.2(11c)	This command was introduced.

Usage Guidelines



Caution This command causes traffic disruption on the specified interface.



Note This command is only accepted on ports with the speed fixed to 16 Gbps and FEC already enabled.

Use the `switchport fec tts` command only after configuring FEC using the `switchport fec` command.

The TTS is not used by 4 and 8-Gbps Fibre Channel ports. From 32 Gbps and higher, its use is mandatory. For 16 Gbps Fibre Channel ports, EA variants must transmit the TTS during the link speed negotiation, but the use of it by the receiver is optional, and EL variants must not use TTS.



Note FEC TTS is supported on the DS-X9448-768K9 Generation 5 module in Cisco MDS NX-OS Release 6.2(11c) and later 6.2(11x) releases and Cisco MDS NX-OS Release 6.2(15) and later releases. It is not supported in Cisco MDS NX-OS Release 6.2(13).

Examples

The following example show how to configure FEC with TTS on an interface:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport fec
switch(config-if)# switchport fec tts
```

Related Commands

Command	Description
show interface fc	Displays the status of the specified Fibre Channel interface.

switchport fill-pattern

To configure the link fill pattern on an interface, use the switchport fill-pattern command.

```
switchport fill-pattern IDLE | ARBFF speed 8000
```

Syntax Description

IDLE	Configures the fill pattern as IDLE.
ARBFF	Configures the fill pattern as ARBff.
speed	Select speed to apply setting to.
8000	Specifies 8-Gbps link speed.

Command Default

The default setting for the link fill pattern is ARBff.

Command Modes

Interface configuration submode (config-if)

Command History

Release	Modification
NX-OS 5.2(6)	This command was introduced.

Usage Guidelines



Caution

This command causes traffic disruption on the specified interface.

Examples

The following example shows how to configure the fill pattern as ARBff on an interface:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport fill-pattern ARBFF speed 8000
```

Related Commands

Command	Description
show interface	Displays interface status and statistics.

switchport ignore

To prevent the detection of certain error events from disabling Fibre Channel interfaces, use the `switchport ignore` command. To revert to the default settings, use the `no` form of this command.

```
switchport ignore bit-errors | interrupt-thresholds
no switchport ignore bit-errors | interrupt-thresholds
```

Syntax Description	bit-errors	Ignore the bit errors.
	interrupt-thresholds	Ignore interrupt thresholds.

Command Default None.

Command Modes Interface configuration submode (config-if)

Command History	Release	Modification
	NX-OS 6.2	The interrupt-thresholds keyword was added.
	NX-OS 2.1(1a)	This command was introduced.

Usage Guidelines The bit error rate threshold is used by the switch to detect an increased error rate before performance degradation seriously affects traffic.

Bit errors can occur for the following reasons:

- Faulty or bad cable
- Faulty or bad GBIC or SFP
- GBIC or SFP is specified to operate at 1 Gbps, but is used at 2 Gbps
- Short haul cable is used for long haul or long haul cable is used for short haul
- Momentary sync loss
- Loose cable connection at one or both ends
- Improper GBIC or SFP connection at one or both ends

A bit error rate threshold is detected when 15 error bursts occur in a 5-minute period. By default, the switch disables the interface when the threshold is reached. After fixing the source of the bit errors, an affected interface should be re-enabled with the `shutdown` and `no shutdown` command sequence.

Interrupts thresholds are used by the switch to detect excessive internal interrupts before they affect switch performance.

Interrupt thresholds can occur because of continuous primitive sequence (NOS/OLS/LR/LRR).



Note Regardless of the setting of the switchport ignore bit-errors command, the switch generates a syslog message when bit error threshold events are detected.

Examples

The following example shows how to prevent the detection of bit error events from disabling an interface:

```
switch# configure terminal
switch(config)# interface fc1/1
switch(config-if)# switchport ignore bit-errors
```

Related Commands

Command	Description
show interface	Displays interface status and statistics.

switchport ingress-rate

To configure the port rate limit for a specified interface, use the `switchport ingress-rate` command in interface configuration mode. Use the `no` form of the command to delete the configured switch port information.

```
switchport ingress-rate limit
no switchport ingress-rate limit
```

Syntax Description

limit	Specifies the ingress rate limit as a percentage. The range is 1 to 100.
-------	--

Command Default

Disabled.

Command Modes

Interface configuration submode

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

Access this command from the `switch(config-if)#` submode. This command is only available if the following conditions are true:

- The QoS feature is enabled using the `qos enable` command.
- The command is entered in a Cisco MDS 9100 series switch.

Examples

The following example configures the ingress rate limit on a Fibre Channel interface:

```
switch# config terminal
switch(config)# interface fc 2/5
switch(config-if)# switchport ingress-rate 5
```

Related Commands

Command	Description
<code>show interface fc</code>	Displays an interface configuration for a specified Fibre Channel interface.

switchport initiator id

To configure the iSCSI initiator ID mode, use the `switchport initiator id` command in interface configuration submode. To delete the iSCSI initiator ID mode, use the `no` form of the command.

```
switchport initiator id ip-addressname
no switchport initiator id ip-addressname
```

Syntax Description

ip-address	Identifies initiators using the IP address.
name	Identifies initiators using the specified name.

Command Default

The iSCSI initiator ID mode is disabled.

Command Modes

Interface configuration submode under the `iscsi interface x/x` command

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example configures the iSCSI initiator ID mode for an iSCSI interface:

```
switch# config terminal
switch(config)# interface iscsi 2/5
switch(config-if)# switchport initiator id ip-address
switch(config-if)# switchport initiator name
```

Related Commands

Command	Description
<code>show interface iscsi</code>	Displays an interface configuration for a specified iSCSI interface.

switchport link-dia

To enable the link diagnostic mode on a diagnostic port, use the `switchport link-dia` command in interface configuration mode. To exit the link diagnostic mode, use the `no` form of this command.

```
switchport link-dia
```

```
no switchport link-dia
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled

Command Modes Interface configuration mode (config-if)

Command History	Release	Modification
	8.2(1)	This command was introduced.

Usage Guidelines The diagnostic port must be in admin shutdown status to enter the link diagnostic mode.

The following example shows how to configure the link diagnostic mode on a diagnostic port:

```
configure terminal
interface fc 1/1
 shutdown
 switchport link-dia
 no shutdown
end
```

The following example shows how to unconfigure the link diagnostic mode on a diagnostic port:

```
configure terminal
interface fc 1/1
 shutdown
 no switchport link-dia
 no shutdown
end
```

Related Commands	Command	Description
	<code>diagnostic result interface fc test link-dia</code>	Displays the results of the link diagnostics tests that are performed on a diagnostic port.
	<code>diagnostic start interface fc test link-dia</code>	Runs link diagnostics tests on a diagnostic port.
	<code>diagnostic stop interface fc test link-dia</code>	Stops the link diagnostics tests that are running on a diagnostic port.

Command	Description
show diagnostic test link-dia status	Checks the status of the link diagnostics tests that are running on the switch.

switchport logical-type

To change the port type so that port monitor and congestion timeout features apply core type policies and not the more aggressive edge type policies to Inter-Switch Links (ISLs), use the `switchport logical-type` command. To remove the logical type, use the `no` form of this command.

```
switchport logical-type {auto | core | edge}
no switchport logical-type {auto | core | edge}
```

Syntax Description	auto	Description
	auto	Detects the logical type for a port automatically. This is the default value.
	core	Specifies the logical type for a port as core or E.
	edge	Specifies the logical type for a port as edge or F.

Command Default Automatically detects the logical type for a port.

Command Modes Interface configuration (config-if)

Command History	Release	Modification
	8.1(1)	This command was introduced.

Usage Guidelines Logical type core must be configured for ports that connect a core switch to a Cisco N-Port Virtualizer (Cisco NPV) switch, from the port monitor and system timeout perspective. If the logical type is not configured as core, the port monitor and system timeout consider the operational port mode of such ports, for F ports are considered under the edge policy in the port monitor.

Examples The following example shows how to set the logical type for a port as core:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport logical-type core
```

Related Commands	Command	Description
	logical-type	Configures logical-type policies.
	show interface	Displays the status of an interface.
	switchport	Configures a switch's port parameter on a Fibre Channel, Gigabit Ethernet, or management interface.

switchport max-npiv-limit

To configure the maximum number of logins that are allowed on a nontrunking interface, use the switchport max-npiv-limit command. To remove the configuration, use the no form of this command.

```
switchport max-npiv-limit max-npivs
no switchport max-npiv-limit max-npivs
```

Syntax Description

max-npivs	Specifies the maximum logins for the interface. The range is from 1 to 256.
-----------	---

Command Default

None.

Command Modes

Interface configuration submenu (config-if)

Command History

Release	Modification
NX-OS 6.2(7)	This command was introduced.

Usage Guidelines



Note

Both switchport max-npiv-limit and switchport trunk-max-npiv-limit commands can be configured on a port or Port Channel. The current port mode determines the type of configuration used. If the port is nontrunking, the max-npiv-limit setting is used. If the port is trunking, the trunk-max-npiv-limit setting is used.

If a login limit is reached on a port and it receives a login request, then a syslog message is logged and the login rejected.

Examples

The following example shows how to configure the maximum number of logins on an F-port to 4:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport max-npiv-limit 4
```

Related Commands

Command	Description
show interface	Displays interface status and statistics.
switchport trunk-max-npiv-limit	Configures the maximum number of logins that are allowed on a trunk port.

switchport mode

To configure the Fibre Channel mode of an interface, use the switchport mode command. To remove the configuration, use the no form of this command.

```
switchport mode E | F | FL | Fx | NP | SD | ST | auto
no switchport mode E | F | FL | Fx | NP | SD | ST | auto
```

Syntax	Description
E	Configures fixed Inter-Switch Link port mode.
F	Specifies fixed F port mode.
FL	Specifies fixed F-loop port mode.
Fx	Specifies fixed F and F-loop port modes.
NP	Specifies fixed N port virtualizer mode.
SD	Specifies fixed SPAN destination port mode.
ST	Specifies fixed trunked SPAN port mode.
auto	Specifies autosense mode.

Command Default The default port mode is auto.

Command Modes Interface configuration submode (config-if)

Command History	Release	Modification
	NX-OS 4.1(3)	Added the F and NP port mode.
	NX-OS 3.0(1)	Added the ST option to the syntax.
	NX-OS 1.0(2)	This command was introduced.

Usage Guidelines



Caution This command causes traffic disruption on the specified interface.

A port must be in dedicated mode before it can be set to E mode.

Examples

The following example shows how to configure fixed Inter-Switch Link mode on an interface:

```
switch# configure terminal  
switch(config)# interface fc 1/1  
switch(config-if)# switchport mode E
```

Related Commands

Command	Description
show interface	Displays interface status and statistics.
show port-resources	Displays the rate mode of module ports.

switchport mtu

To configure the Ethernet layer maximum transmission unit (MTU) on an Ethernet-based SAN extension interface, use the `switchport mtu` command. To remove the configuration, use the `no` form of this command.

```
switchport mtu size
no switchport mtu size
```

Syntax Description

size	Specifies the MTU size in bytes. The range is 576 to 9216.
------	--

Command Default

The default size is 1500 bytes.

Command Modes

Interface configuration submode (config-if)

Command History

Release	Modification
NX-OS 1.0(2)	This command was introduced.

Usage Guidelines

This command is available only on Ethernet-based SAN extension interfaces, specifically Gigabit Ethernet and IPS type interfaces. It is not available on FCoE Ethernet interfaces or the management interface.

Examples

The following example shows how to configure the Ethernet MTU to 3000 bytes on a Gigabit Ethernet interface:

```
switch# configure terminal
switch(config)# interface gigabitethernet 2/2
switch(config-if)# switchport mtu 3000
```

Related Commands

Command	Description
show interface	Displays interface status and statistics.

switchport owner

To configure a descriptive owner string on an interface, use the switchport owner command. To remove the configuration, use the no form of this command.

```
switchport owner owner
no switchport owner
```

Syntax Description

owner	(Optional) Specifies the owner. The maximum length of the string is 80 characters.
-------	--

Command Default

None.

Command Modes

Interface configuration submenu (config-if)

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the owner string on an interface:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch (config)# interface fcl/1
Switch (config-if)# switchport owner StorageOps
```

Related Commands

Command	Description
show interface	Displays interface status and statistics.

switchport promiscuous-mode

To enable promiscuous mode on an Ethernet-based SAN extension interface, use the `switchport promiscuous-mode` command. To disable the promiscuous mode, use the `no` form of this command.

```
switchport promiscuous-mode off | on
no switchport promiscuous-mode off | on
```

Syntax Description	off	Description
	off	Disables promiscuous mode on an interface.
	on	Enables promiscuous mode on an interface.

Command Default Disabled.

Command Modes Interface configuration submode (config-if)

Command History	Release	Modification
	NX-OS 1.1(1)	This command was introduced.

Usage Guidelines This command is available only on Ethernet-based SAN extension interfaces, specifically Gigabit Ethernet and IPS type interfaces. It is not available on FCoE Ethernet interfaces or the management interface.

Examples The following example enables promiscuous mode on a Gigabit Ethernet interface:

```
switch# configure terminal
switch(config)# interface gigabitethernet 2/2
switch(config-if)# switchport promiscuous-mode on
```

Related Commands	Command	Description
	show interface	Displays interface status and statistics.

switchport proxy-initiator

To configure the iSCSI proxy initiator mode on an iSCSI interface, use the `switchport proxy-initiator` command in interface configuration submode. To delete the iSCSI proxy initiator mode, use the no form of the command.

```
switchport proxy-initiator [nwwn wwn pwwn wwn]
no switchport proxy-initiator [nwwn wwn pwwn wwn]
```

Syntax Description	
nwwn wwn	(Optional) Specifies the node WWN.
pwwn wwn	(Optional) Specifies the port WWN.

Command Default The iSCSI proxy initiator mode is disabled.

Command Modes Interface configuration submode under the `iscsi interface x/x` command

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines When you do not include the WWNs in the command, the IPS port dynamically assigns a pWWN and nWWN to the proxy initiator.



Caution Enabling proxy initiator mode on an iSCSI interface that is part of an iSLB VRRP group impacts load balancing on the interface.

Examples

The following example configures the iSCSI proxy initiator mode for a iSCSI interface using WWNs:

```
switch# config terminal
switch(config)# interface iscsi 2/5
switch(config-if)# switchport proxy-initiator nwwn 11:11:11:11:11:11:11:11 pwwn
22:22:22:22:22:22:22:22
```

The following example configures the iSCSI proxy initiator mode for a iSCSI interface without WWNs:

```
switch# config terminal
switch(config)# interface iscsi 2/5
switch(config-if)# switchport proxy-initiator
```

The following example deletes the iSCSI proxy initiator mode for a iSCSI interface:

```
switch(config-if)# switchport proxy-initiator
```

Related Commands

Command	Description
show interface iscsi	Displays an interface configuration for a specified iSCSI interface.

switch-priority

To configure the switch priority with the Call Home function, use the switch-priority command in Call Home configuration submode. To disable this feature, use the no form of the command.

```
switch-priority priority-value
no switch-priority priority-value
```

Syntax Description

priority-value	Specifies the priority level. 0 is the highest priority and 7 the lowest.
----------------	---

Command Default

None.

Command Modes

Call Home configuration submode

Command History

Release	Modification
4.1(1b)	Added usage guidelines.
1.0(2)	This command was introduced.

Usage Guidelines

The Call Home switch priority is specific to each switch in the fabric. It is set by the switch administrator to guide the operations personnel who receive the Call Home messages as to which messages should be serviced first. For example, the switch priority of a trading floor switch may be set higher than that of a switch in a tape backup network because the trading floor users may not be able to tolerate as much service interruption as the backup network.

Examples

The following example shows how to configure the switch priority in the Call Home configuration:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# switch-priority 0
```

Related Commands

Command	Description
callhome	Configures the Call Home function.
callhome test	Sends a dummy test message to the configured destination(s).
show callhome	Displays configured Call Home information.

switchport rate-mode

Each interface belongs to a port group and each port group has access to a preallocated subset of the backplane bandwidth. On full bandwidth modules, all interfaces have access to the backplane bandwidth at maximum interface speed. On oversubscribed modules, the total of the maximum interface speeds exceeds the allocated backplane bandwidth of the port group. To configure the port group bandwidth-allocation mode of an interface, use the switchport rate-mode command. To remove the configuration, use the no form of this command.

```
switchport rate-mode dedicated | shared
no switchport rate-mode dedicated | shared
```

Syntax Description	dedicated	Specifies dedicated bandwidth for the interface.
	shared	Specifies shared bandwidth for the interface.

Command Default For oversubscribed modules, the default port group mode is shared. For full bandwidth modules, the only available mode is dedicated.

Command Modes Interface configuration submode (config-if)

Command History	Release	Modification
	NX-OS 3.0(1)	This command was introduced.

Usage Guidelines



Caution This command causes traffic disruption on the specified interface.

The maximum port speed of an interface, combined with the rate mode, determines the amount of shared resources available to the ports in the port group. In the case of dedicated rate mode, the port group resources are reserved even though the bandwidth is not used. For oversubscribed port groups, if an interface is configured for autosensing (auto) then bandwidth equal to the maximum supported speed of the interface is reserved, even if the link comes up at a lower speed. If the autosensing maximum speed is configured (for example, auto max 8000) then only that much bandwidth is reserved and the remaining possible bandwidth is available for other interfaces in the port group.

Table 4: Default Speed and Buffer Configuration

Switching Module	Speed	Port Mode	Rate Mode	Receive Credits (min/max/default)
DS-X9304-18K9, Cisco MDS 9000 18/4-Port Multiservice Module (MSM-18/4)	1, 2, or 4 Gbps	Fx	Shared	1/16/16
		Fx	Dedicated	2/250/16
		E-port	Dedicated	2//250/250

Switching Module	Speed	Port Mode	Rate Mode	Receive Credits (min/max/default)
DS-C9222i-K9, Cisco MDS 9222i Switch	1, 2, or 4 Gbps	Fx	Shared	1/16/16
		Fx	Dedicated	2/250/16
		E-port	Dedicated	2//250/250
DS-X9704, Cisco MDS 9000 Family 4-Port 10-Gbps Fibre Channel Switching Module	10 Gbps	NA	Shared	NA
		Fx	Dedicated	2/750/16
		E-port	Dedicated	2/750/750
DS-X9248-48K9, Cisco MDS 9000 4/44-Port Host-Optimized 8-Gbps Fibre Channel Switching Module	1, 2, 4, or 8 Gbps	Fx	Shared	1/32/32
		Fx	Dedicated	2/250/32
		E-port	Dedicated	2/250/125
DS-X9248-96K9, Cisco MDS 9000 48-Port 8-Gbps Fibre Channel Switching Module	1, 2, 4, or 8 Gbps	Fx	Shared	1/32/32
		Fx	Dedicated	2/500/32
		E-port	Dedicated	2/500/250
DS-X9224-96K9, Cisco MDS 9000 24-Port 8-Gbps Fibre Channel Switching Module	1, 2, 4, or 8 Gbps	Fx	Shared	1/32/32
		Fx	Dedicated	2/500/32
		E-port	Dedicated	2/500/500
DS-C9148-K9, Cisco MDS 9148 48-Port Multilayer Fabric Switch	1, 2, 4, or 8 Gbps	NA	Shared	NA
		Fx	Dedicated	1/125/32
		E-port	Dedicated	1/125/32
DS-C9134-K9, Cisco MDS 9134 34-Port Multilayer Fabric Switch	1, 2, or 4 Gbps	NA	Shared	NA
		Fx	Dedicated	1/61/16
		E-port	Dedicated	1/61/16
DS-C9124-K9, Cisco MDS 9124 24-Port Multilayer Fabric Switch	1, 2, or 4 Gbps	NA	Shared	NA
		Fx	Dedicated	1/61/16
		E-port	Dedicated	1/61/16
DS-C9134-K9, Cisco MDS 9134 32-Port Fabric Switch	1, 2, or 4 Gbps	NA	Shared	NA
		Fx	Dedicated	1/61/64
		E-port	Dedicated	2/61/64

Switching Module	Speed	Port Mode	Rate Mode	Receive Credits (min/max/default)
DS-C9124, Cisco MDS 9124 24-Port Fabric Switch	1, 2, or 4 Gbps	Fx	Shared	2/16/16
		Fx	Dedicated	2/250/16
		E-port	Dedicated	2/250/250
DS-C9222i-K9, Cisco MDS 9222i 18-Port Multiservice Modular Switch	1, 2, or 4 Gbps	Fx	Shared	2/16/16
		Fx	Dedicated	2/250/16
		E-port	Dedicated	2/250/250
DS-X9248-256K9, Cisco MDS 9000 48-Port Advanced Fibre Channel Module	1, 2, 4, or 8 Gbps	Fx	Shared	1/125/32
		Fx	Dedicated	2/250/16
DS-X9232-256K9, Cisco MDS 9000 32-Port Advanced Fibre Channel Module	1, 2, 4, or 8 Gbps	Fx	Shared	1/125/32
		Fx	Dedicated	2/250/16

When configuring port modes, observe the following guidelines:

- Auto port mode and E port mode cannot be configured in the shared rate mode.
- The 4-port 10-Gbps module does not support the FL port mode.
- Generation 2 modules do not support the TL port mode.
- Shared to dedicated ports must be configured in the following order: speed, rate mode, port mode, and credit.
- Dedicated to shared ports must be configured in the following order: credit, port mode, rate mode, and speed.

When configuring port channels, observe the following guidelines:

- When an interface is out of service, it cannot be part of a port channel.
- The 24-port module and the 48-port module support making ports out of service. In a shared resource configuration, an out-of-service port reverts to its default values when it comes back into service.
- The maximum number of port channels for Generation 2 modules is 256.
- The number of port channels is independent of the type of supervisor module.
- When using the force option to add a port channel to a configuration that uses Generation 2 modules, the force addition can fail for a Generation 2 interface if resources are unavailable.

Examples

The following example reserves shared (default) bandwidth for an interface:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport rate-mode shared
```

Related Commands

Command	Description
show interface	Displays interface status and statistics.
show port-resources	Displays the rate mode of module ports.

switchport speed

To configure the speed of an interface, use the switchport speed command. To return to the default speed, use the no form of this command.

```
switchport speed 1000 | 2000 | 4000 | 8000 | 10000 | 16000 | auto [max 2000 | 4000 | 8000 | 16000]
no switchport speed 1000 | 2000 | 4000 | 8000 | 10000 | 16000 | auto [max 2000 | 4000 | 8000 | 16000]
```

Syntax Description

1000	Configure the link speed to be fixed at 1-Gbps speed.
2000	Configure the link speed to be fixed at 2-Gbps speed.
4000	Configure the link speed to be fixed at 4-Gbps speed.
8000	Configure the link speed to be fixed at 8-Gbps speed.
10000	Configure the link speed to be fixed at 10-Gbps speed.
16000	Configure the link speed to be fixed at 16-Gbps speed.
auto	Configures autosense speed.
max 2000	(Optional) Limits maximum link speed to 2 Gbps.
max 4000	(Optional) Limits maximum link speed to 4 Gbps.
max 8000	(Optional) Limits maximum link speed to 8 Gbps.
max 16000	(Optional) Limits maximum link speed to 16 Gbps.

Command Default

The default speed mode is auto.

The default maximum autosense speed is the maximum port speed.

Command Modes

Interface configuration submode (config-if)

Command History

Release	Modification
NX-OS 3.0(1)	Added the 4000 option to the speed keyword.
NX-OS 1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example configures the speed of a Fibre Channel interface to be fixed at 16 Gbps:

```
switch# configure terminal
switch(config)# interface fc 1/1
```

```
switch(config-if)# switchport speed 16000
```

Related Commands

Command	Description
show interface	Displays interface status and statistics.

switchport trunk allowed vsan

To configure the list of allowed VSANs on a trunk link, use the `switchport trunk allowed vsan` command. To remove the configuration, use the `no` form of this command.

```
switchport trunk allowed vsan add vsan-id | all | vsan-id [no-warning]
```

Syntax Description	add	Configure additional allowed VSANs to the existing list.
	vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
	all	Adds all VSANs to the allowed VSAN list.

Command Default All VSANs are allowed.

Command Modes Interface configuration submode (config-if)

Command History	Release	Modification
	NX-OS 1.0(2)	This command was introduced.

Usage Guidelines If the allowed VSANs on a trunk are a set of noncontiguous VSANs, use the `switchport trunk allowed vsan vsan-id` command first and then use the `switchport trunk allowed vsan add` command to complete the set of desired VSANs. The commands in the configuration are automatically rebuilt in numerical order by NX-OS.

Examples The following example shows how to limit the VSANs on an interface to VSAN 10 to 20 and 50:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport trunk allowed vsan 10-20
switch(config-if)# switchport trunk allowed vsan add 50
```

Related Commands	Command	Description
	show interface	Displays interface status and statistics.

switchport trunk-max-npiv-limit

To configure the maximum number of logins that are allowed on a trunking interface, use the `switchport trunk-max-npiv-limit` command. To remove the configuration, use the `no` form of this command.

```
switchport trunk-max-npiv-limit max-npivs
no switchport trunk-max-npiv-limit max-npivs
```

Syntax Description

max-npivs	Specifies the maximum NPVI logins per trunk interface. The range is from 1 to 512.
-----------	--

Command Default

None.

Command Modes

Interface configuration submenu (config-if)

Command History

Release	Modification
NX-OS 6.2(7)	This command was introduced.

Usage Guidelines

Both `switchport max-npiv-limit` and `switchport trunk-max-npiv-limit` commands can be configured on a port or Port Channel. The current port mode determines the type of configuration used. If the port is nontrunking, the `max-npiv-limit` setting is used. If the port is trunking, the `trunk-max-npiv-limit` setting is used.

If a login limit is reached on a port and it receives a login request, then a syslog message is logged and the login rejected.

Examples

The following example shows how to configure the maximum number of allowed logins on a trunking interface to 500:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport trunk-max-npiv-limit 500
```

Related Commands

Command	Description
show interface	Displays interface status and statistics.
switchport max-npiv-limit	Configures the maximum number of logins that are allowed on a port.

switchport trunk mode

To specify the trunk mode for an interface, use the `switchport trunk mode` command. To remove the configuration, use the `no` form of this command.

```
switchport trunk mode auto | off | on
no switchport trunk mode auto | off | on
```

Syntax Description

auto	Specifies the trunk mode to be auto.
off	Disables trunking mode.
on	Enables trunking mode.

Command Default

The default trunk mode is `on`.

Command Modes

Interface configuration submode (`config-if`)

Command History

Release	Modification
NX-OS 1.0(2)	This command was introduced.

Usage Guidelines



Caution

This command causes traffic disruption on the specified interface.



Note

During ISSU, the admin trunk mode is set to `off` for up and operationally non trunking ports to avoid network disruption due to misbehaving peer devices.

By default, trunk mode is enabled on all Fibre Channel interfaces (modes E, F, FL, Fx, ST, and SD) on non-NPV switches. On NPV switches, by default, trunk mode is disabled. You can configure trunk mode as `on` (enabled), `off` (disabled), or `auto` (automatic). The trunk mode configuration at the two ends of an ISL, between two switches, determine the trunking state of the link and the port modes at both ends.

Table 5: Trunk Mode Status Between Switches

Port Type	Configured Trunk Mode		Resulting State and Port Mode	
	Switch 1	Switch 2	Trunking State	Port Mode
E ports	On	Auto or on	Trunking (EISL)	TE port
	Off	Auto, on, or off	No trunking (ISL)	E port
	Auto	Auto	No trunking (ISL)	E port

Configured Trunk Mode			Resulting State and Port Mode	
Port Type	Switch 1	Switch 2	Trunking State	Port Mode
Port Type	Core Switch	NPV Switch	Trunking State	Link Mode
F and NP ports	On	Auto or on	Trunking	TF-TNP link
	Auto	On	Trunking	TF-TNP link
	Off	Auto, on, or off	No trunking	F-NP link

Examples

The following example shows how to set the trunk mode to auto on an interface:

```
switch# configure terminal
switch(config)# interface fc 1/1
switch(config-if)# switchport trunk mode auto
```

Related Commands

Command	Description
show interface	Displays interface status and statistics.

switch-wwn

To configure a switch WWN in an autonomous fabric ID (AFID) database, use the switch-wwn command in AFID database configuration submode. To disable this feature, use the no form of this command.

```
switch-wwn wwn-id autonomous-fabric-id fabric-id vsan-ranges vsan-range | default-autonomous-fabric-id
fabric-id vsan-ranges vsan-range
no switch-wwn wwn-id autonomous-fabric-id fabric-id vsan-ranges vsan-range |
default-autonomous-fabric-id fabric-id vsan-ranges vsan-range
```

Syntax Description

wwn-id	Specifies the port WWN, with the format hh:hh:hh:hh:hh:hh:hh:hh.
autonomous-fabric-id fabric-id	Specifies the fabric ID for the IVR topology.
vsan-ranges vsan-range	Specifies the IVR VSANs or range of VSANs. The range of values for a VSAN ID is 1 to 4093.
default-autonomous-fabric-id fabric-id	Specifies the default fabric ID for the IVR topology.

Command Default

Disabled.

Command Modes

AFID database configuration submode

Command History

Release	Modification
2.1(1a)	This command was introduced.

Usage Guidelines

Using the default-autonomous-fabric-id keyword configures the default AFID for all VSANs not explicitly associated with an AFID.

Examples

The following example adds a switch WWN, an AFID, and a range of VSANs to the AFID database:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ivr vsan-topology ?
  activate  Activate VSAN topology database for inter-VSAN routing
  auto      Enable discovery of VSAN topology for inter-VSAN routing
  database  Configure VSAN topology database for inter-VSAN routing
switch(config)# ivr vsan-topology auto
switch(config)# autonomous-fabric-id database
AFID database is used only when VSAN Topology is in AUTO mode
switch(config-afid-db)# ?
autonomous-fabric-id cfg. cmd:
  do        EXEC command
  exit      Exit from this submode
  no        Negate a command or set its defaults
  switch-wwn Enter Switch WWN of a switch
switch(config-afid-db)# switch ?
  <hh:hh:hh:hh:hh:hh:hh:hh> Enter a WWN in dotted hex notation
switch(config-afid-db)# switch 28:1d:00:05:30:00:06:ea ?
  autonomous-fabric-id      Enter Autonomous Fabric ID
```

```

    default-autonomous-fabric-id Enter default Autonomous Fabric ID
switch(config-afid-db)# switch 28:1d:00:05:30:00:06:ea autonomous-fabric-id ?
  <1-64> Enter an autonomous fabric ID
switch(config-afid-db)# switch 28:1d:00:05:30:00:06:ea autonomous-fabric-id 14 ?
  vsan-ranges Enter VSANs in this autonomous-fabric-id at this switch
switch(config-afid-db)# switch 28:1d:00:05:30:00:06:ea autonomous-fabric-id 14 v
san-ranges ?
  <1-4093> Enter upto 5 ranges of VSAN identifiers
switch(config-afid-db)# switch 28:1d:00:05:30:00:06:ea autonomous-fabric-id 14 vsan-ranges
1-4 ?
  , Comma
  <cr> Carriage Return
switch(config-afid-db)# switch-wwn 28:1d:00:05:30:00:06:ea autonomous-fabric-id 14 vsan-ranges
1-4

```

The following example adds a switch WWN and the default AFID to the AFID database:

```

switch(config-afid-db)# ?
autonomous-fabric-id cfg. cmd:
  do EXEC command
  exit Exit from this submode
  no Negate a command or set its defaults
  switch-wwn Enter Switch WWN of a switch
switch(config-afid-db)# switch-wwn ?
  <hh:hh:hh:hh:hh:hh:hh:hh> Enter a WWN in dotted hex notation
switch(config-afid-db)# switch-wwn 28:1d:00:05:30:00:06:ea ?
  autonomous-fabric-id Enter Autonomous Fabric ID
  default-autonomous-fabric-id Enter default Autonomous Fabric ID
switch(config-afid-db)# switch-wwn 28:1d:00:05:30:00:06:ea default-autonomous-fabric-id ?
  <1-64> Enter a default autonomous fabric ID
switch(config-afid-db)# switch-wwn 28:1d:00:05:30:00:06:ea default-autonomous-fabric-id 16
?
  <cr> Carriage Returnswitch(config-afid-db)# switch-wwn 28:1d:00:05:30:00:06:ea
default-autonomous-fabric-id 16

```

Related Commands

Command	Description
autonomous-fabric-id-database	Enters AFID database configuration submode.
show autonomous-fabric-id-database	Displays the contents of the AFID database.

system cores

To enable copying the core and log files periodically, use the `system cores` command in configuration mode. To revert the switch to factory defaults, use the `no` form of the command.

```
system cores slot0: | tftp:
no system cores
```

Syntax Description

slot0:	Selects the destination file system.
tftp:	Selects the destination file system.

Command Default

Disabled.

Command Modes

Configuration mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

Create any required directory before entering this command. If the directory specified by this command does not exist, the switch software logs a syslog message each time a copy cores is attempted.

Examples

The following example enables periodic copying core and log files:

```
switch# config terminal
switch(config)# system cores slot0:coreSample
```

The following example disables periodic copying core and log files:

```
switch(config)# no
system cores
```

Related Commands

Command	Description
show system cores	Displays the currently configured scheme for copying cores.

system default interface congestion mode

To configure the default interface congestion mode, use the `system default interface congestionmode` command. To disable this feature, use the `no` form of the command.

```
system default interface congestion mode core | edge
no system default interface congestion mode core | edge
```

Syntax Description

core	Specifies the core port type.
edge	Specifies the edge port type.

Command Default

None.

Command Modes

Global configuration mode

Command History

Release	Modification
5.2(6)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to configure the default interface congestion mode for the core port type:

```
switch# config terminal
switch(config)# system default interface congestion mode core
switch(config)#
```

The following example shows how to disable the default interface congestion mode for the edge port type:

```
switch# config terminal
switch(config)# no system default interface congestion mode edge
switch(config)#
```

Related Commands

Command	Description
<code>show interface brief</code>	Displays FC port modes.
<code>show system default switchport</code>	Displays default values for switch port attributes.

system default interface congestion timeout

To configure the default timeout value for a congestion timeout, use the `systemdefault interface congestion timeout` command. To disable this feature, use the `no` form of this command.

```
system default interface congestion timeout milliseconds mode core | edge
no system default interface congestion timeout milliseconds mode core | edge
```

Syntax Description	
milliseconds	Number of milliseconds. The range is from 100 to 1000 milliseconds.
mode	Specifies the mode.
core	Specifies the core port type.
edge	Specifies the edge port type.

Command Default 500 milliseconds.

Command Modes Global configuration mode

Command History	Release	Modification
	5.2(6)	This command was introduced.

Usage Guidelines When you set a smaller timeout on the edge ports such as 100 or 200 milliseconds the congestion on the edge port is reduced by making the packets on that port time out sooner when they see the pause condition.



Note You should use the default configuration for core ports and a value that does not exceed 500 ms (100 to 200 ms preferably) for fabric edge ports.

Examples

The following example shows how to configure the default value for a congestion timeout for the core port type:

```
switch# config terminal
switch(config)# system default interface congestion timeout 100 mode core
switch(config)#
```

The following example shows how to disable the default value for a congestion timeout for the edge port type:

```
switch# config terminal
switch(config)# system default interface congestion timeout 100 mode edge
switch(config)#
```

Related Commands

Command	Description
show interface brief	Displays FC port modes.
show system default switchport	Displays default values for switch port attributes.

system default interface pause mode

To configure the default timeout value for a pause frame, use the `systemdefault interfacepause mode` command. To disable this feature, use the `no` form of this command.

```
system default interface pause mode core | edge
no system default interface pause mode core | edge
```

Syntax Description

core	Specifies the core port type.
edge	Specifies the edge port type.

Command Default

None.

Command Modes

Global configuration mode

Command History

Release	Modification
5.2(6)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to configure the default timeout value for a pause frame for the core port type:

```
switch# config terminal
switch(config)# system default interface pause mode core
switch(config)#
```

The following example shows how to disable the timeout default value for a pause frame for the edge port type:

```
switch# config terminal
switch(config)# system default interface pause mode edge
switch(config)#
```

Related Commands

Command	Description
show interface brief	Displays FC port modes.
show system default switchport	Displays default values for switch port attributes.

system default interface pause timeout

To configure the default timeout value for a pause frame, use the `system default interface pause timeout` command. To disable this feature, use the `no` form of the command.

```
system default interface pause timeout milliseconds mode core | edge
no system default interface pause timeout milliseconds mode core | edge
```

Syntax Description

milliseconds	Number of milliseconds. The range is from 100 to 500 milliseconds.
mode	Specifies the mode.
core	Specifies the core port type.
edge	Specifies the edge port type.

Command Default

500 milliseconds.

Command Modes

Global configuration mode

Command History

Release	Modification
5.2(6)	This command was introduced.

Usage Guidelines

When the port is in the state for the configured period, pause frame timeout can be enabled on that port. All frames that are sent to that port are dropped in the egress. This action frees up the buffer space in the ISL link (which carries traffic for this port) and helps to reduce congestion on other unrelated flows that use the same link.

Examples

The following example shows how to configure the timeout value pause frame for the core port type:

```
switch# config terminal
switch(config)# system default interface pause timeout 100 mode core
switch(config)#
```

The following example shows how to disable the timeout value pause for the edge port type:

```
switch# config terminal
switch(config)# system default interface pause timeout 100 mode edge
switch(config)#
```

Related Commands

Command	Description
show system default switchport	Displays default values for switch port attributes.

system default rib ipfc-mcast-deny

To configure the default behavior for an Internet protocol over Fibre Channel (IPFC) Multicast frame, use the `system default rib ipfc-mcast-deny` command in global configuration mode. To disable/remove the default configurations, use the `no` form of the command.

```
system default rib ipfc-mcast-deny
no system default rib ipfc-mcast-deny
```

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled. The system will allow the IPFC multicast traffic on F-ports.

Command Modes

Global Configuration mode.

Command History

Release	Modification
8.4(1)	This command was introduced.

Usage Guidelines

The `system default rib ipfc-mcast-deny` command can be used only when the host devices are registered as IPFC type to the switch.

Examples

The following example shows how to enable the `system default rib ipfc-mcast-deny` command:

```
switch# config terminal
switch(config)# system default rib ipfc-mcast-deny
```

The following example shows how to view the status of the `system default rib ipfc-mcast-deny` command:

```
switch# show system default rib
switch# system default rib ipfc-mcast-deny enabled
```

Related Commands

Command	Description
<code>show system default rib</code>	Displays the <code>system default rib ipfc-mcast-deny</code> command status.

system default switchport

To configure port attributes, use the `system default switchport` command in configuration mode. To disable port attributes, use the `no` form of the command.

```
system default switchport shutdown | trunk mode auto | off | on | mode auto-sw-3 | F
no system default switchport shutdown | trunk mode auto | off | on | mode auto-sw-3 | F
```

Syntax Description

shutdown	Disables or enables switch ports by default.
trunk	Configures the trunking parameters as a default.
mode	Configures the trunking mode.
auto	Enables autosense trunking.
off	Disables trunking.
on	Enables trunking.
mode auto-sw-3	Sets the error detection timeout value to 6 seconds. By default, this value is 2 seconds.
mode F	Sets the administrative mode of Fibre Channel ports to mode F.

Command Default

Enabled.

Command Modes

Configuration mode

Command History

Release	Modification
9.2(1)	Added the <code>auto-sw-3</code> option.
3.1(3)	Added the <code>mode F</code> option.
1.0(2)	This command was introduced.

Usage Guidelines

Attributes configured using this command are applied globally to all future switch port configurations, even if you do not individually specify them at that time.

This command changes the configuration of the following ports to administrative mode F:

- All ports that are down.
- All F ports that are up, whose operational mode is F, and whose administrative mode is not F.

This command does not affect non-F ports that are up; however, if non-F ports are down, this command changes the administrative mode of those ports.

Examples

The following example shows how to configure port shutdown:

```
switch# config terminal
switch(config)# system default switchport shutdown
```

The following example shows how to configure the trunk mode:

```
switch# config terminal
switch(config)# system default switchport trunkmode auto
```

The following example shows how to set the administrative mode of Fibre Channel ports to mode F:

```
switch# config terminal
switch(config)# system default switchport mode F
```

The following example shows how to set the administrative mode of Fibre Channel ports to the default:

```
switch# config terminal
switch(config)# no system default switchport mode F
```

The following example shows how to set the error detection timeout value to 6 seconds:

```
switch# config terminal
switch(config)# system default switchport mode auto-sw-3
```

Related Commands

Command	Description
show interface brief	Displays FC port modes.
show system default switchport	Displays default values for switch port attributes.

system default zone default-zone permit

To configure default values for a zone, use the `system default zone default-zone permit` command in configuration mode. To revert to the defaults, use the `no` form of the command.

```
system default zone default-zone permit
no system default zone default-zone permit
```

Syntax Description This command has no arguments or keywords.

Command Default No default values for zones.

Command Modes Configuration mode

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines This command defines the default values for the default zone for all VSANs. The default values are used when you initially create a VSAN and it becomes active. If you do not want to use the default values, use the `zone default-zone permit vsan` command to define the operational values for the default zone.

The `system default zone default-zone permit` command should only be used in conjunction with VSANs that have not yet been created; it has no effect on existing VSANs.



Note Because VSAN 1 is the default VSAN and is always present, this command has no effect on it.

Examples

The following example sets the default zone to use the default values:

```
switch# config terminal
switch(config)# system default zone default-zone permit
```

The following example restores the default setting:

```
switch(config)# no
system default zone default-zone permit
```

Command	Description
<code>show system default zone</code>	Displays default values for the default zone.
<code>zone default-zone permit vsan</code>	Defines whether a default zone (nodes not assigned a created zone) permits or denies access to all in the default zone.

system default zone distribute full

To configure default values for distribution to a zone set, use the system default zone distribute full command in configuration mode. To revert to the defaults, use the no form of the command.

```
system default zone distribute full
no system default zone distribute full
```

Syntax Description This command has no arguments or keywords.

Command Default Distribution to active zone sets only.

Command Modes Configuration mode

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines This command distributes the default values for the default zone to all VSANs. The default values are used when you initially create a VSAN and it becomes active. If you do not want to use the default values, use the zoneset distribute full vsan command to distribute the operational values for the default zone.

The system default zone distribute full command should only be used in conjunction with VSANs that have not yet been created; it has no effect on existing VSANs.



Note Because VSAN 1 is the default VSAN and is always present, this command has no effect on it.

Examples

The following example distributes default values to the full zone set:

```
switch# config terminal
switch(config)# system default zone distribute full
```

The following example distributes default values to the active zone set only:

```
switch(config)# no
system default zone distribute full
```

Related Commands	Command	Description
	show system default zone	Displays default values for the default zone.
	zoneset distribute full vsan	Distributes the operational values for the default zone to all zone sets.

system default zone gs

To configure default value for zone generic service permission, use the system default zone gs command in the configuration mode. To set the default value for zone generic service permission as none (deny), use the no form of the command.

```
system default zone gs read | read-write
no system default zone gs read | read-write
```

Syntax Description

read	Specifies the default zone generic service permission as read.
read-write	Specifies the default zone generic service permission as read-write.

Command Default

read-write.

Command Modes

Configuration mode

Command History

Release	Modification
3. 2(1)	This command was introduced.

Usage Guidelines

Setting write only as the default value for zone generic service permission is not supported.

Examples

The following example shows how to configure the default value for zone generic service permission as read only for new VSANs:

```
switch# config terminal
switch(config)# system default zone gs read
switch(config)#
```

The following example shows how to configure the default value for zone generic service permission as read-write for new VSANs:

```
switch# config terminal
switch(config)# system default zone gs read-write
switch(config)#
```

The following example shows how to configure the default value for zone generic service permission as none (deny) for new VSANs:

```
switch# config terminal
switch(config)# no system default zone gs read-write
switch(config)#
```

Related Commands

Command	Description
show system default zone	Displays the zone specific system default value settings.

system default zone mode enhanced

To configure the zone mode default value as enhanced, use the system default zone mode enhanced command in the configuration mode. To configure the zone mode default value as basic, use the no form of the command.

```
system default zone mode enhanced
no system default zone mode enhanced
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines This command configures the default value of zoning mode as basic or enhanced. The default value of zoning mode is used when a VSAN is newly created. If the VSAN is deleted and recreated, the value of the zoning mode defaults to the value specified by the configuration.

Examples The following example shows how to configure the zone mode default value as enhanced:

```
switch# config
switch# system default zone mode enhanced
```

The following example shows how to configure the zone mode default value as basic:

```
switch# config
switch# no system default zone mode enhanced
```

Related Commands	Command	Description
	show system default zone	Displays the default value of zone mode as basic and enhanced.

system default zone smart-zone

To configure the default values for smart zone, use the system default zone smart-zone command in the configuration mode. To disable this feature, use the no form of the command.

```
system default zone smart-zone enable
no system default zone smart-zone enable
```

Syntax Description

enable	Specifies the default smart zone enable or disable.
--------	---

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
5.2(6)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to configure the default values for smart-zone :

```
switch# config
switch(config)# no system default zone smart-zone enable
switch(config)#
```

Related Commands

Command	Description
show system default zone	Displays the default value of zone mode as basic and enhanced.

system delayed-traps enable mode

To configure the system-delayed trap state, use the system delayed-traps enable mode command. To disable the system-delayed trap state, use the no form of the command.

```
system delayed-traps enable mode FX
no system delayed-traps enable mode FX
```

Syntax Description

FX	Enables or disables delayed traps for operationally up FX (F/FX) mode interfaces.
----	---

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the system-delayed trap state:

```
switch(config)# system delayed-traps enable mode FX
switch(config)#
```

system delayed-traps timer

To configure the system-delayed trap timeout values, use the system delayed-traps timer command. To disable the system-delayed trap timeout values, use the no form of the command.

```
system delayed traps-timer number
no system delayed traps-timer number
```

Syntax Description

number	Indicates the delayed trap timer in minutes. The range is from 1 to 60.
--------	---

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines

System delayed traps timer is optional. If the user does not provide the timer value, default value of 4 is applied.

Examples

The following example shows how to configure system-delayed trap values:

```
switch(config)# system delayed-traps timer 30
switch(config)#
```

system fc flow-control

To enable a system flow-control mode on a link, use the `system fc flow-control` command. To disable this feature, use the `no` form of this command.

```
system fc flow-control default | er_rdy | r_rdy
no system fc flow-control
```

Syntax Description	
default	Sets the flow-control mode to default.
er_rdy	Enables the Extended Receiver Ready (ER_RDY) flow-control mode.
r_rdy	Enables the Receiver Ready (R_RDY) flow-control mode. R_RDY is the default flow-control mode.

Command Default R_RDY flow-control mode is used by default.

Command Modes Global configuration (config)

Command History	Release	Modification
	8.1(1)	This command was introduced.

- Usage Guidelines**
- Flap the Inter-Switch Links (ISLs) after enabling this feature in order to enable the respective flow-control modes.
 - Disable the Congestion Isolation feature when you migrate from ER_RDY flow-control mode to R_RDY flow-control mode.

Examples

This example shows how to enable ER_RDY flow-control mode:

```
switch# configure terminal
switch(config)# system fc flow-control er_rdy
Flap the ISLs to activate ER_RDY mode on E ports. Use the CLI show flow-control r_rdy to
list the ports that are still in R_RDY mode
```

This example shows how to enable R_RDY flow-control mode:

```
switch# configure terminal
switch(config)# system fc flow-control r_rdy
Flap the ISLs to activate R_RDY mode on E ports. Use the CLI show flow-control er_rdy to
list the ports that are still in ER_RDY mode
```

Related Commands	Command	Description
	feature congestion-isolation	Enables or disables the Congestion Isolation feature.
	show system fc flow-control	Displays the flow-control mode of a switch.

system hap-reset

Command	Description
show system default zone	Displays the default value of zone mode as basic and enhanced.

To configure the HA reset policy, use the system hap-reset command in EXEC mode. Use the no form of this command to disable this feature.

```
system hap-reset
system no hap-reset
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes EXEC mode

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines You can disable the HA policy supervisor reset feature (enabled by default) for debugging and troubleshooting purposes.

Examples The following example enables the supervisor reset HA policy:

```
switch# system hap-reset
```

system health (configuration mode)

To configure Online Health Management System (OHMS) features for a specified interface or for the entire switch, use the system health command. To disable this feature, use the no form of the command.

```
system health [failure-action | interface fc slot/port | iscsi slot/port | loopback frame-length bytes | auto
| frequency seconds]
no system health [failure-action | interface fc slot/port | iscsi slot/port]
```



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs as follows: interface bay port | ext port }

Syntax Description

failure-action	(Optional) Prevents the NX-OS software from taking any OHMS action for the entire switch.
interface	(Optional) Configures an interface.
fc slot/port	(Optional) Specifies the Fibre Channel interface to configure by slot and port number on an MDS 9000 Family switch.
iscsi slot/port	(Optional) Specifies the iSCSI interface to configure by slot and port number on an MDS 9000 Family switch.
bay port | ext port	(Optional) Configures the Fibre Channel interface on a port on a Cisco Fabric Switch for HP c-Class BladeSystem or on a Cisco Fabric Switch for IBM BladeCenter. The range is 0 to 48.
loopback	(Optional) Configures the OHMS loopback test.
frame-length bytes	(Optional) Specifies the frame-length in bytes ranging from 0 to 128 bytes for the loopback test.
auto	(Optional) Configures the frame-length to auto for the loopback test.
frequency seconds	(Optional) Specifies the loopback frequency in seconds ranging from 5 seconds (default) to 255 seconds.

Command Default

Enabled.

Frame-length is auto-size, which could range from 0 to 128.

Command Modes

Configuration mode

Command History

Release	Modification
1.3(4)	This command was introduced.
3.0(1)	Added the frame-length and auto options to the loopback keyword.

Release	Modification
3.1(2)	Added the interface bay | ext option.

Usage Guidelines

If you do not configure the loopback frequency value, the default frequency of 5 seconds is used for all modules in the switch.



Note

The no form of the command is not supported for the frame-length, auto, and frequency options.

Examples

The following example disables OHMS in this switch:

```
switch# config terminal
switch(config)# no system health
System Health is disabled.
```

The following example enables (default) OHMS in this switch:

```
switch(config)# system health
System Health is enabled.
```

The following example enables OHMS in this interface:

```
switch(config)# no system health interface fc8/1
System health for interface fc8/13 is enabled.
```

The following example disables OHMS in this interface:

```
switch(config)# system health interface fc8/1
System health for interface fc8/13 is disabled.
```

The following example configures the loopback frequency to be 50 seconds for any port in the switch:

```
switch(config)# system health loopback frequency 50
The new frequency is set at 50 Seconds.
The following example configures the loopback frame-length to auto:
switch(config)# system health loopback frame-length auto
Loopback frame-length auto-size mode is now enabled.
```

The following example prevents the switch from taking any failure action:

```
switch(config)# system health failure-action
System health global failure action is now enabled.
```

The following example prevents the switch configuration from taking OHMS action (default) in case of a failure:

```
switch(config)# no system health failure-action
System health global failure action now disabled.
```

Related Commands

Command	Description
system health external-health	Explicitly runs an external Online Health Management System (OHMS) loopback test on demand for a specified interface or module.
system health internal-loopback	Explicitly runs an internal OHMS loopback test on demand for a specified interface or module.
system health serdes-loopback	Explicitly runs an internal OHMS Serializer/Deserializer (Serdes) loopback test on demand for a Fibre Channel interface.

system health cf-crc-check

To run the CompactFlash CRC checksum test on demand, use the system health cf-crc-check command in EXEC mode.

```
system health cf-crc-check module slot
```

Syntax Description

moduleslot	Specifies the module slot number.
------------	-----------------------------------

Command Default

Enabled to automatically run in the background every 7 days.

Command Modes

EXEC mode

Command History

Release	Modification
3.1(3)	This command was introduced.

Usage Guidelines

Run the CompactFlash CRC checksum test on demand to determine if the CompactFlash firmware is corrupted and needs to be updated.

The CRC checksum test can be run on demand on the following modules:

- DS-X9016
- DS-X9032
- DS-X9302-14K9
- DS-X9308-SMIP
- DS-X9304-SMIP
- DS-X9530-SF1-K9

Examples

The following example shows how to run the CRC checksum test on demand:

```
switch# system health cf-crc-check module 4
```

Related Commands

Command	Description
show system health	Displays system health information.
show system health statistics	Displays system health statistics.

system health cf-re-flash

To update the CompactFlash firmware on demand, use the system health cf-re-flash command in EXEC mode.

```
system health cf-re-flash module slot
```

Syntax Description	moduleslot	Specifies the module slot number.
---------------------------	------------	-----------------------------------

Command Default Enabled to automatically run in the background every 30 days.

Command Modes EXEC mode

Command History	Release	Modification
	3.1(3)	This command was introduced.

Usage Guidelines The CRC checksum test and the firmware update can be enabled on the following modules:

- DS-X9016
- DS-X9032
- DS-X9302-14K9
- DS-X9308-SMIP
- DS-X9304-SMIP
- DS-X9530-SF1-K9

Examples The following example shows how to update firmware on demand:

```
switch# system health cf-re-flash module 4
```

Related Commands	Command	Description
	show system health	Displays system health information.
	show system health statistics	Displays system health statistics.

system health clear-errors

To clear previous error conditions stored in the Online Health Management System (OHMS) application's memory, use the system health clear-errors command.

```
system health clear-errors interface fc slotport | iscsi slotport
system health clear-errors module slot [battery-charger | bootflash | cache-disk | eobc | inband | loopback
| mgmt]
```



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs as follows: interface bay port | ext port }

Syntax Description

interface	Specifies the interface to be configured.
fc slot/port	Configures the Fiber Channel interface on a Cisco MDS 9000 Family switch.
iscsi slot/port	Selects the iSCSI interface to configure on a Cisco MDS 9000 Family switch.
bay port | ext port	(Optional) Configures the Fibre Channel interface on a port on a Cisco Fabric Switch for HP c-Class BladeSystem or on a Cisco Fabric Switch for IBM BladeCenter.
module slot	Specifies the required module in the switch,
battery-charger	(Optional) Configures the OHMS battery-charger test on the specified module
bootflash	(Optional) Configures the OHMS bootflash test on the specified module.
cache-disk	(Optional) Configures the OHMS cache-disk test on the specified module.
eobc	(Optional) Configures the OHMS EOBC test on the specified module.
inband	(Optional) Configures the OHMS inband test on the specified module.
loopback	(Optional) Configures the OHMS loopback test on the specified module.
mgmt	(Optional) Configures the OHMS management port test on the specified module.

Command Default

Enabled.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(4)	This command was introduced.
3.1(2)	Added the interface bay | ext option.

Usage Guidelines

You can clear the error history for Fibre Channel interfaces, iSCSI interfaces, for an entire module, or one particular test for an entire module. The battery-charger, the bootflash, the cache-disk, the eobc, the inband, the loopback, and the mgmt test options can be individually specified for a given module.

The management port test cannot be run on a standby supervisor module.

Examples

The following example clears the error history for the specified Fibre Channel interface:

```
switch# system health clear-errors interface fc 3/1
```

The following example clears the error history for the specified module:

```
switch# system health clear-errors interface module 3
```

The following example clears the management port test error history for the specified module:

```
switch# system health clear-errors module 2 mgmt
```

system health external-loopback

To explicitly run an external Online Health Management System (OHMS) loopback test on demand (when requested by the user) for a specified interface or module, use the system health external-loopback command.

```
system health external-loopback interface fc slot/port | source interface fc slot/port destination fc
slot/port [frame-length bytes [frame-count number] | frame-count number] [force]
```



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs as follows: interface bay port | ext port }

Syntax Description

interface	Configures an interface.
fc slot/port	Configures the Fibre Channel interface specified by the slot and port on an MDS 9000 Family switch.
source	Specifies the source Fibre Channel interface.
destination	Specifies the destination Fibre Channel interface.
bay | ext port	(Optional) Configures the Fibre Channel interface on a Cisco Fabric Switch for HP c-Class BladeSystem or on a Cisco Fabric Switch for IBM BladeCenter . The range is 0 to 48.
frame-length bytes	(Optional) Configures the specified length of the loopback test frame in bytes. The range is 0 to 128 bytes.
frame-count number	(Optional) Configures the specified number of frames for the loopback test. The number of frames can range from 1 to 32.
force	(Optional) Directs the software to use the non-interactive loopback mode.

Command Default

The loopback is disabled.

The frame-length is 0. The frame-count is 1.

Command Modes

EXEC mode

Command History

Release	Modification
1.3(4)	This command was introduced.
3.0(1)	Added the source and destination keywords and the frame-count and frame-length options.
3.1(2)	Added the interface bay | ext option.

Usage Guidelines

Use this command to run this test on demand for the external devices connected to a switch that are part of a long haul network.

Examples

The following example displays an external loopback command for a Fibre Channel interface:

```
switch# system health external-loopback interface fc 3/1
This will shut the requested interfaces Do you want to continue (y/n)? [n] y
External loopback test on interface fc3/1 was successful.
```

The following example displays the effect of the force option when implementing a forced loopback:

```
switch# system health external-loopback interface fc 3/1 force
External loopback test on interface fc3/1 was successful.
```

Related Commands

Command	Description
system health	Configures Online Health Management System (OHMS) features for a specified interface or for the entire switch.
system health internal-loopback	Explicitly runs an internal OHMS loopback test on demand for a specified interface or module.
system health serdes-loopback	Explicitly runs an internal OHMS Serializer/Deserializer (Serdes) loopback test on demand for a Fibre Channel interface.

system health internal-loopback

To explicitly run an internal Online Health Management System (OHMS) loopback test on demand (when requested by the user) for a specified interface or module, use the system health internal-loopback command.

```
system health internal-loopback interface fc slot/port|iscsi slot/port [frame-length bytes [frame-count number] | frame-count number]
```



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs as follows: interface [bay port | ext port]

Syntax Description

interface	Configures an interface.
fc slot/port	Configures the Fibre Channel interface specified by the slot and port on an MDS 9000 Family switch.
iscsi slot/port	Specifies the iSCSI interface to configure by slot and port on an MDS 9000 Family switch.
bay port | ext port	(Optional) Configures the Fibre Channel interface on a Cisco Fabric Switch for HP c-Class BladeSystem or on a Cisco Fabric Switch for IBM BladeCenter . The range is 0 to 48.
frame-length bytes	(Optional) Configures the specified length of the loopback test frame in bytes. The range is 0 to 128 bytes.
frame-count number	(Optional) Configures the specified number of frames for the loopback test. The number of frames can range from 1 to 32.

Command Default

The loopback is disabled.

The frame-length is 0. The frame-count is 1.

Command Modes

EXEC mode

Command History

Release	Modification
1.3(4)	This command was introduced.
3.0(1)	Added the frame-count and frame-length options.
3.1(2)	Added the interface bay | ext option.

Usage Guidelines

Internal loopback tests send and receive FC2 frames to and from the same ports and provide the round trip time taken in microseconds for the Fibre Channel interface.

Examples

The following example performs the internal loopback test for a Fibre Channel interface:

```
switch# system health internal-loopback interface iscsi 8/1
Internal loopback test on interface iscsi 8/1 was successful.
Round trip time taken is 79 useconds
```

Related Commands

Command	Description
system health	Configures Online Health Management System (OHMS) features for a specified interface or for the entire switch.
system health external-loopback	Explicitly runs an external OHMS loopback test on demand for a specified interface or module.
system health serdes-loopback	Explicitly runs an internal OHMS Serializer/Deserializer (Serdes) loopback test on demand for a Fibre Channel interface.

system health module

To configure Online Health Management System (OHMS) features for a specified module, use the system health module command. To disable these features, use the no form of this command.

```
system health module slot [battery-charger [failure-action | frequency seconds] | bootflash [failure-action | frequency seconds] | cache-disk [failure-action | frequency seconds] | cf-crc-check [failure-action | frequency frequency] | cf-re-flash [failure-action | frequency frequency] | eobc [failure-action | frequency seconds] | failure-action | inband [failure-action | frequency seconds] | loopback [failure-action] | mgmt [failure-action | frequency seconds]]
```

```
no system health module slot [battery-charger [failure-action | frequency seconds] | bootflash [failure-action | frequency seconds] | cache-disk [failure-action | frequency seconds] | cf-crc-check [failure-action | frequency frequency] | cf-re-flash [failure-action | frequency frequency] | eobc [failure-action | frequency seconds] | failure-action | inband [failure-action | frequency seconds] | loopback [failure-action] | mgmt [failure-action | frequency seconds]]
```

Syntax Description

slot	The module slot number.
battery-charger	(Optional) Configures the battery-charger test on the specified module.
failure-action	(Optional) Controls the software from taking any action if a CompactFlash failure is determined while running the CRC checksum test.
frequency seconds	(Optional) Specifies the frequency in seconds. The range for the bootflash frequency option is 10 to 255. The range for the cf-crc-check frequency option is 1 to 30. The range for the cf-re-flash frequency option is 30 to 90. For all other options, the range is 5 to 255.
bootflash	Configures the bootflash test on the specified module.
cache-disk	Configures the cache-disk test on the specified module.
cf-crc-check	Configures the CRC checksum test.
cf-re-flash	Configures the firmware update.
eobc	Configures the EOBC test on the specified module.
inband	Configures the inband test on the specified module.
loopback	Configures the loopback test on the specified module.
mgmt	Configures the management port test on the specified module.

Command Default

The default for OHMS is enabled.

The CRC Checksum test is enabled to automatically run in the background every 7 days.

The firmware update is enabled to automatically run in the background every 30 days.

The failure-action feature is enabled.

Command Modes

Configuration mode

Command History

Release	Modification
1.3(4)	This command was introduced.
3.1(3)	Added the cf-crc-check and cf-reflash options.

Usage Guidelines

The CRC checksum test and the firmware update can be enabled on the following modules:

- DS-X9016
- DS-X9032
- DS-X9302-14K9
- DS-X9308-SMIP
- DS-X9304-SMIP
- DS-X9530-SF1-K9

If you do not configure the loopback frequency value, the default frequency of 5 seconds is used for all modules in the switch.

Examples

The following example enables the battery-charger test on both batteries in the CSM module. If the switch does not have a CSM, this message is issued:

```
switch# config terminal
switch(config)# system health module 6 battery-charger
battery-charger test is not configured to run on module 6.
```

The following example enables the cache-disk test on both disks in the CSM module. If the switch does not have a CSM, this message is issued:

```
switch(config)# system health module 6 cache-disk
cache-disk test is not configured to run on module 6.
```

The following example enables the bootflash test:

```
switch(config)# system health module 6 bootflash
System health for module 6 Bootflash is already enabled.
```

The following example enables you to prevent the NX-OS software from taking any action if any component fails:

```
switch(config)# system health module 6 bootflash failure-action
System health failure action for module 6 Bootflash test is now enabled.
```

The following example enables an already-enabled bootflash test:

```
switch(config)# system health module 6 bootflash failure-action
System health failure action for module 6 Bootflash test is already enabled.
```

The following example disables the bootflash test configuration:

```
switch(config)# no system health module 6 bootflash failure-action
System health failure action for module 6 Bootflash test is now disabled.
```

The following example sets the new frequency of the bootflash test to 200 seconds:

```
switch(config)# system health module 6 bootflash frequency 200
The new frequency is set at 200 Seconds.
```

The following example enables the EOBC test:

```
switch(config)# system health module 6 eobc
System health for module 6 EOBC is now enabled.
```

The following example enables the inband test:

```
switch(config)# system health module 6 inband
System health for module 6 EOBC is now enabled.
```

The following example enables the loopback test:

```
switch(config)# system health module 6 loopback
System health for module 6 EOBC is now enabled.
```

The following example enables the management test:

```
switch(config)# system health module 6 management
System health for module 6 EOBC is now enabled.
```

The following example shows how to set the CompactFlash CRC test interval:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# system health module 6 cf-crc-check frequency 10
```

The following example shows how to set the CompactFlash CRC test failure-action feature:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# system health module 6 cf-crc-check failure-action
```

The following example shows how to set the CompactFlash reflash update interval:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# system health module 6 cf-reflash frequency 10
```

The following example shows how to set the CompactFlash reflash failure-action feature:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# system health module # cf-re-flash failure-action
```

Related Commands

Command	Description
show system health	Displays system health information.
show system health statistics	Displays system health statistics.

system health serdes-loopback

To explicitly run an internal Online Health Management System (OHMS) Serializer/Deserializer (Serdes) loopback test on demand (when requested by the user) for a Fibre Channel interface, use the system health serdes-loopback command.

```
system health serdes-loopback interface fc slot/port [frame-length bytes [frame-count number] |
frame-count number] [force]
```

Syntax Description



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs as follows: interface bay port | ext port }

interface	Configures an interface.
fc slot/port	(Optional) Configures the Fiber Channel interface specified by the slot and port on an MDS 9000 Family switch.
bay port | ext port	(Optional) Configures the Fibre Channel interface on a Cisco Fabric Switch for HP c-Class BladeSystem or on a Cisco Fabric Switch for IBM BladeCenter. The range is 0 to 48.
force	Directs the software to use the non-interactive loopback mode.
frame-length bytes	(Optional) Configures the specified length of the loopback test frame in bytes. The range is 0 to 128 bytes.
frame-count number	(Optional) Configures the specified number of frames for the loopback test. The number of frames can range from 1 to 32.

Command Default

Loopback is disabled.

The frame-length is 0. The frame-count is 1.

Command Modes

EXEC mode

Command History

Release	Modification
3.0(1)	This command was introduced.
3.1(2)	Added the interface bay | ext option.

Usage Guidelines

None.

Examples

The following example performs a Serdes loopback test within ports for an entire module:

```
switch# system health serdes-loopback interface fc 4/1
```

This will shut the requested interfaces Do you want to continue (y/n)? [n] y

```
Serdes loopback test on interface fc 4/1 was successful.
```

The following example performs a Serdes loopback test within ports for the entire module and overrides the frame count configured on the switch:

```
switch# system health serdes-loopback interface fc 3/1 frame-count 10
```

This will shut the requested interfaces Do you want to continue (y/n)? [n] y

```
Serdes loopback test passed for module 3 port 1
```

Related Commands

Command	Description
system health	Configures Online Health Management System (OHMS) features for a specified interface or for the entire switch.
system health external-loopback	Explicitly runs an external OHMS loopback test on demand for a specified interface or module.
system health internal-loopback	Explicitly runs an internal OHMS loopback test on demand for a specified interface or module.

system heartbeat

To enable system heartbeat checks, use the `system heartbeat` command in EXEC mode. Use the `no` form of this command to disable this feature.

```
system heartbeat
no system heartbeat
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes EXEC mode

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines You can disable the heartbeat checking feature (enabled by default) for debugging and troubleshooting purposes such as attaching a GDB to a specified process.

Examples The following example enables the system heartbeat checks:

```
switch# system heartbeat
```

system kernel core

To enable kernel core logging, use the `system kernel core` command. To disable this feature, use the `no` form of this command.

```
system kernel core
no system kernel core
```

Command Default Kernel core logging is disabled.

Command Modes Global configuration (config)

Command History	Release	Modification
	8.4(2c)	This command was introduced.

Usage Guidelines Kernel core logging is supported only on Cisco MDS 9718, MDS 9710, and MDS 9706 switches.

Examples This example shows how to enable kernel core logging:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# system kernel core
```

This example shows how to disable kernel core logging:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no system kernel core
```

Related Commands	Command	Description
	show cores	Displays a list of core bundles in the switch core repository.

system memlog

To collect system memory statistics, use the system memlog command in EXEC mode.

```
system memlog
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes EXEC mode

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines Use this command for debugging and troubleshooting purposes.

Examples The following example enables system memory logging:

```
switch# system memlog
```

system port pacer mode F interface-login-threshold

To enable the pacer mode for F port threshold limit, use the system port pacer mode F interface -login-threshold command.

system port pacer mode F interface-login-threshold port-threshold limit concurrent-ports port-number

Syntax Description

mode F	Specifies the F mode.
interface-login-threshold port-threshold limit	Specifies the per port threshold limit. The range is from 0 to 256.
concurrent-ports port-number	Specifies the maximum number of concurrent port bring up allowed. The range is from 1 to 16. Preferred value is 1.

Command Default

Disabled.

Command Modes

Global configuration mode

Command History

Release	Modification
6.2(7)	This command was introduced.

Usage Guidelines



Note Concurrent-ports port-number needs to be set depending upon customers topology and tune this value onto how many F ports can be brought up simultaneously.



Note Fx or FL or E ports are not supported.

Examples

The following example shows how to enable the pacer mode F for port threshold limit:

```
switch(config)#
system port pacer mode F interface-login-threshold 10 concurrent-ports 1
switch(config)#
```


system startup-config

To release a system startup configuration lock, use the `system startup-config system startup-config unlock lock-id` command in EXEC mode.

```
system startup-config unlock lock-id
```

Syntax Description	unlock lock-id	Configures the system startup-config unlock ID number. The range is 0 to 65536.
---------------------------	----------------	---

Command Default Disabled.

Command Modes EXEC

Command History	Release	Modification
	2.0(1b)	This command was introduced.

Usage Guidelines The system startup-config command allows you to unlock or release the `rr_token` lock. To determine the lock-id, use the `show system internal sysmgr startup-config locks` command.

Examples The following example releases the system configuration lock with identifier 1:

```
switch# system ?
 hap-reset      Enables resetting of local or remote sup on ha failures
 health        System health exec commands
 heartbeat      Enables heartbeat
 memlog         Generate memory log in bootflash
 no             Negate a command or set its defaults
 pss           PSS commands
 standby       System standby manual boot
 startup-config System startup-config commands
 statistics     Changes statistics configuration
 switchover    Switchover now
 watchdog       Enables watchdog
switch# system startup-config ?
 unlock        Unlock startup-config
switch# system startup-config unlock ?
 <0-65536>     Startup-config lock id
switch# system startup-config unlock 1 ?
 <cr>         Carriage Return
switch# system startup-config unlock 1
```

Related Commands	Command	Description
	show system	Displays system information.

system statistics reset

To reset the high availability statistics collected by the system, use the system statistics reset command in EXEC mode.

```
system statistics reset
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes EXEC mode

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines You can disable the system statistics reset feature (enabled by default) for debugging and troubleshooting purposes.

Examples The following example resets the HA statistics:

```
switch# system statistics reset
```

system switchover (configuration mode)

To enable a switchover for the system, use the `system switchover` command in configuration mode. To revert to the factory default setting, use the `no` form of the command.

```
system switchover ha | warm
no system switchover
```

Syntax Description

ha	Specifies an HA switchover.
warm	Specifies a warm switchover.

Command Default

Disabled.

Command Modes

Configuration mode

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example enables a HA switchover from an active supervisor module to a standby supervisor module:

```
switch# config terminal
switch(config)# system switchover ha
```

system switchover (EXEC mode)

To specifically initiate a switchover from an active supervisor module to a standby supervisor module, use the `system switchover` command in EXEC mode.

```
system switchover bypass-standby-mgmt0
```

Syntax Description

bypass-standby-mgmt0	Specifies to bypass the standby supervisor's mgmt0 interface status check before performing a switchover.
----------------------	---

Command Default

None.

Command Modes

EXEC mode

Command History

Release	Modification
9.2(1)	The bypass-standby-mgmt0 keyword was introduced.
1.3(1)	This command was introduced.

Usage Guidelines

Starting with Cisco MDS NX-OS Release 9.2(1), the `system switchover` command checks the status of the mgmt0 link on the standby supervisor of the Cisco MDS 9700 directors with dual supervisors. If the standby supervisor is not up, then the `system switchover` will not proceed and displays an error. This is to prevent the switch from losing out of band management access. To bypass this check use the `bypass-standby-mgmt0` option that is also available from Cisco MDS NX-OS Release 9.2(1).

Examples

The following example initiates a HA switchover from an active supervisor module to a standby supervisor module:

```
switch# system switchover
```

The following message is displayed when you try to perform a switchover to the standby supervisor when the `bypass-standby-mgmt0` option was not used and the standby supervisor's mgmt0 interface was down:

```
System switchover not allowed when standby supervisor mgmt0 link is down. Use the
bypass-standby-mgmt0 parameter to bypass this check and force switchover to standby
supervisor.
```

Related Commands

Command	Description
show module	Displays the HA-standby state for the standby supervisor module.
show system redundancy status	Determines whether the system is ready to accept a switchover.
show version compatibility	Determines version compatibility between switching modules.

system timeout congestion-drop

To configure the system timeout values for congestion drop, use the system timeout congestion-drop command.

```
system timeout congestion-drop number logical-type {core | edge} | default logical-type {core | edge}
```

Syntax Description

number	Number in milliseconds. The range is from 200 ms to 500 ms. The congestion timeout value should be in multiples of 10.
default	Specifies the default timeout values for congestion drop.
logical-type	Specifies the logical type for a port.
core	Specifies the core mode.
edge	Specifies the edge mode.

Command Default

The default system timeout congestion-drop value is 500 ms.

Command Modes

Global configuration mode

Command History

Release	Modification
8.1(1)	<ul style="list-style-type: none"> mode keyword was change to logical-type keyword, E keyword was changed to core keyword, and F keyword was changed to edge keyword. The system timeout congestion-drop value range was changed from 100-500 ms to 200-500 ms.
4.2(7a)	This command was introduced.

Usage Guidelines

Each packet received by the MDS is timestamped. This timer determines hold long the MDS holds packets to transmit. If the timer expires then the packet is discarded as a timeout frame.

Examples

The following example shows how to configure the system timeout values for congestion drop core mode:

```
switch# configure terminal
switch(config)# system timeout congestion-drop 210 logical-type core
```

The following example shows how to configure the default timeout values for congestion drop core mode:

```
switch(config)# system timeout congestion-drop default logical-type core
```

Related Commands

Command	Description
system timeout no-credit-drop	Configures the system timeout values for no credit drop.

system timeout no-credit-drop

To configure the system timeout values for no credit drop, use the system timeout no-credit-drop command. To disable the system timeout values, use the no form of this command.

```
system timeout no-credit-drop number logical-type edge | default logical-type edge
no system timeout no-credit-drop number logical-type edge | default logical-type edge
```

Syntax Description

number	Number in milliseconds. The range is from 1 to 500 milliseconds.
default	Specifies the default timeout values for no credit drop. The default value is 500 milliseconds.
logical-type	Specifies the logical type for a port.
edge	Specifies the edge mode.

Command Default

By default, frame dropping is disabled and the frame timeout value is 500 ms for all port types.

Command Modes

Global configuration mode

Command History

Release	Modification
8.1(1)	mode keyword was change to logical-type keyword, and F keyword was changed to edge keyword.
6.2(9)	Changed the no-credit-drop timeout value.
4.2(7a)	This command was introduced.

Usage Guidelines

This timer, when enabled, determines how long an interface is at zero Tx buffer to buffer credits before it starts dropping packets immediately and not waiting for the congestion-drop timeout.



Note no-credit- drop timeout value has been changed from 100 to 500 in multiples of 100 milliseconds. Current range changes from 1 to 500 in multiples of 1 milliseconds.

Examples

The following example shows how to configure the system timeout values for no credit drop edge mode:

```
switch(config)# system timeout no-credit-drop 100 logical-type edge
```

The following example shows how to configure the default timeout values for no credit drop edge mode:

```
switch(config)# system timeout no-credit-drop default logical-type edge
```

The following example shows how to disable the system timeout value for no credit drop edge mode:

```
switch(config)# no system timeout no-credit-drop default logical-type edge
```

Related Commands

Command	Description
system timeout congestion-drop	Configures the system timeout values for congestion drop.

system timeout slowport-monitor

To configure the system timeout values for hardware slowport monitoring, use the system timeout slowport-monitor command. To remove this feature, use the no form of this command.

```
system timeout slowport-monitor number default mode E/F
no system timeout slowport-monitor number default mode E/F
```

Syntax Description	
number	Number in milliseconds. The range is from 1 to 500 milliseconds.
default	Specifies the default timeout value for the hardware slowport monitoring. The default value is 50 milliseconds.
mode	Specifies the Port mode.
E	Specifies the E port mode.
F	Specifies the F port mode.

Command Default Disabled.

Command Modes Global configuration mode

Command History	Release	Modification
	6.2(9)	This command was introduced.

Usage Guidelines This timer, when enabled, starts the slowport monitoring of ports and collects the statistics information like average credit delay and the number of times slowport event detected count.

This command is applicable for the platforms that support hardware slowport monitoring (MDS 9710, 9706, 9250i, 9148S).

Examples The following example shows how to configure the system timeout values for hardware slowport monitoring:

```
switch(config)# system timeout slowport-monitor 10 mode F
switch(config)#
```

The following example shows how to configure the default timeout values for hardware slowport monitoring:

```
switch(config)# system timeout slowport-monitor default mode F
switch(config)#
```

Related Commands	Command	Description
	show process creditmon slowport-monitor-events	Displays the slowport monitor statistics information.

system timestamp format

To configure the uniform logging timestamp format, use the system timestamp format command. To remove this configuration, use the no form of this command.

```
system timestamp format rfc5424
```

Syntax Description

rfc5424	Specifies RFC 5424 compliant timestamps.
---------	--

Command Default

Events are logged with mixed timestamp formats.

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.4(1)	This command was introduced.

Usage Guidelines

The Uniform Timestamps feature affects:

- onboard syslog
- onboard accounting log
- various internal logs of NX-OS features

The rfc5424 option specifies to use RFC 5424 compliant timestamps for logging. RFC 5424 defines the format of the complete syslog message, but part of it is the syslog timestamp format which is used by this option.

RFC 5424 compliant timestamps have the following structure:

```
yyyy-mm-ddThh:mm:ss[.mmm[uuu]] [Z|{+|-}hh:mm]
```

where:

```

yyyy is the 4-digit year
mm is the 2-digit month of the year
dd is the 2-digit date of the month
T is a literal T
hh is the 2-digit hour of the day
mm is the 2-digit minute of the hour
.mmm is the 3-digit millisecond (optional)
uuu is the 3-digit microsecond (optional)
Z is a literal Z, used if UTC timezone is set (optional)
+ is a literal +, used if the timezone offset from UTC is positive (optional)
- is a literal -, used if the timezone offset from UTC is negative (optional)
hh is the 2-digit hour component of the timezone offset from UTC (optional)
mm is the 2-digit minute component of the timezone offset from UTC (optional)

```

Some software features log messages with timestamps that cannot be converted between formats. In the logs of such features, it is possible to have a mixture of timestamp formats. Thus, messages logged before and

after the timestamp format change will have the format that was configured at the time the log message was generated.

Not all logs support all the optional fields.

This command does not change the format of syslogs that are exported to an external syslog server via the syslog protocol.

Examples

The following example displays how to configure RFC 5424 compliant timestamps:

```
switch# configure terminal
switch(config)# system timestamp format rfc5424
```

The following example displays how to return to the original NX-OS timestamp format:

```
switch# configure terminal
switch(config)# no system timestamp format rfc5424
```

The following example displays the original timestamp format in syslog:

```
switch# show logging logfile
2019 Mar  8 09:52:04 switch last message repeated 3 times
```

The following example shows RFC 5424 compliant timestamp with the default switch timezone (UTC timezone, which is shown as Z):

```
switch# show accounting log
2019-05-28T16:39:36Z:type=update:id=192.168.1.2@pts/0:user=admin:cmd=configure terminal ;
logging level all 7 (SUCCESS)
```

The following example shows RFC 5424 compliant timestamp with a timezone offset of +1 hour:

```
switch# show accounting log
2019-05-30T07:17:51+01:00:type=update:id=192.168.1.2@pts/0:user=admin:cmd=configure terminal
; interface mgmt0 ; ipv6 enable (SUCCESS)
```

The following example displays the original timestamp format of an FCNS internal log:

```
switch# show fcns internal event-history
1) Event:E_MTS_RX, length:60, at 104710 usecs after Fri May 31 07:56:23 2019
  [REQ] Opc:MTS_OPC_SDWRAP_DEBUG_DUMP(1530), Id:0X031AF189, Ret:SUCCESS
  Src:0x00000501/7442, Dst:0x00000501/19, Flags:None
  HA_SEQNO:0X00000000, RRtoken:0x031AF189, Sync:UNKNOWN, Payloadsize:216
  Payload:
  0x0000:  01 00 2f 74 6d 70 2f 64 62 67 64 75 6d 70 34 39
```

The following example displays the timestamp format of an FCNS internal log when RFC 5424 compliant timestamping is enabled:

```
switch# show fcns internal event-history
1) Event:E_MTS_RX, length:60, at 2019-05-15T07:54:19.129048-07:00
  [REQ] Opc:MTS_OPC_SDWRAP_DEBUG_DUMP(1530), Id:0X003CE5D3, Ret:SUCCESS
  Src:0x00000501/14615, Dst:0x00000501/19, Flags:None
  HA_SEQNO:0X00000000, RRtoken:0x003CE5D3, Sync:UNKNOWN, Payloadsize:216
  Payload:
  0x0000:  01 00 2f 74 6d 70 2f 64 62 67 64 75 6d 70 32 38
```

Related Commands

Command	Description
clock format show-timezone syslog	Configure logging of timezone information in syslogs.
logging timestamp	Configure syslog timestamp resolution.
show system timestamp format	Displays the logging timestamp format.

system trace

To configure the system trace level, use the system trace command in configuration mode. To disable this feature, use the no form of the command.

```
system trace bit-mask  
no system trace
```

Syntax Description

bit-mask	Specifies the bit mask to change the trace level.
----------	---

Command Default

None.

Command Modes

Configuration mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

This command is used for debugging purposes.

Examples

The following example shows how to configure the system trace level:

```
switch# config terminal  
switch(config)# system trace 0xff
```

system watchdog

To enable watchdog checks, use the `system watchdog` command in EXEC mode. To disable this feature, use the `no` form of the command.

```
system watchdog
no system watchdog
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes EXEC mode

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines If a watchdog is not logged at every 8 seconds by the software, the supervisor module reboots the switch. You can disable the watchdog checking feature (enabled by default) for debugging and troubleshooting purposes such as attaching a GDB or a kernel GDB (KGDB) to a specified process.

Examples The following example enables the system watchdog:

```
switch# system watchdog
```



Show Commands

- [show aaa accounting](#), on page 1271
- [show aaa authentication](#), on page 1272
- [show aaa authentication login ascii-authentication](#), on page 1273
- [show aaa authentication login chap enable](#), on page 1274
- [show aaa authentication login mschapv2](#), on page 1275
- [show aaa authorization all](#), on page 1276
- [show aaa groups](#), on page 1277
- [show aaa user default-role](#), on page 1278
- [show accounting log](#), on page 1279
- [show analytics port-sampling](#), on page 1280
- [show analytics query](#), on page 1282
- [show analytics schema](#), on page 1299
- [show analytics system-load](#), on page 1304
- [show analytics flow congestion-drops](#), on page 1306
- [show arp](#), on page 1308
- [show autonomous-fabric-id database](#), on page 1309
- [show banner motd](#), on page 1310
- [show boot](#), on page 1311
- [show boot auto-copy](#), on page 1312
- [show callhome](#), on page 1314
- [show callhome transport](#), on page 1317
- [show cdp](#), on page 1318
- [show cfs](#), on page 1322
- [show cfs regions](#), on page 1325
- [show cfs static peers](#), on page 1327
- [show cfs status](#), on page 1328
- [show cimserver](#), on page 1329
- [show cimserver indications](#), on page 1330
- [show cimserver logs](#), on page 1332
- [show cimserver status](#), on page 1333
- [show cli alias](#), on page 1334
- [show cli variables](#), on page 1335
- [show clock](#), on page 1336

- [show cloud discovery](#), on page 1337
- [show cloud membership](#), on page 1338
- [show congestion-isolation](#), on page 1340
- [show consistency-checker](#), on page 1342
- [show consistency-checker analytics](#), on page 1345
- [show copyright](#), on page 1346
- [show cores](#), on page 1347
- [show crypto ca certificates](#), on page 1348
- [show crypto ca crt](#), on page 1350
- [show crypto ca remote-certstore](#), on page 1352
- [show crypto ca trustpoints](#), on page 1353
- [show crypto certificatemap](#), on page 1354
- [show crypto global domain ipsec](#), on page 1355
- [show crypto ike domain ipsec](#), on page 1356
- [show crypto key mypubkey rsa](#), on page 1357
- [show crypto map domain ipsec](#), on page 1358
- [show crypto sad domain ipsec](#), on page 1360
- [show crypto spd domain ipsec](#), on page 1361
- [show crypto ssh-auth-map](#), on page 1362
- [show crypto transform-set domain ipsec](#), on page 1363
- [show debug](#), on page 1364
- [show debug logfile](#), on page 1365
- [show debug npv](#), on page 1366
- [show debug sme](#), on page 1368
- [show device-alias](#), on page 1369
- [show device-alias status](#), on page 1372
- [show diagnostic bootup level](#), on page 1373
- [show diagnostic content module](#), on page 1374
- [show diagnostic description module](#), on page 1375
- [show diagnostic events](#), on page 1376
- [show diagnostic isl result interface](#), on page 1377
- [show diagnostic isl status](#) , on page 1378
- [show diagnostic ondemand setting](#), on page 1379
- [show diagnostic result interface fc test link-diag](#), on page 1380
- [show diagnostic result module](#), on page 1382
- [show diagnostic simulation module](#), on page 1384
- [show diagnostic status module](#), on page 1385
- [show diagnostic status module](#), on page 1386
- [show diagnostic test link-diag status](#), on page 1387
- [show dmm discovery-log](#), on page 1388
- [show dmm fp-port](#), on page 1389
- [show dmm ip-peer](#), on page 1391
- [show dmm job](#), on page 1392
- [show dmm module](#), on page 1394
- [show dmm srvr-vt-login](#), on page 1395
- [show dmm vt](#), on page 1397

- [show dpvm](#), on page 1398
- [show dpvm merge statistics](#), on page 1399
- [show dpvm merge status](#), on page 1400
- [show environment](#), on page 1401
- [show event manager environment](#), on page 1408
- [show event manager policy](#), on page 1409
- [show fabric switch information vsan](#), on page 1410
- [show fabric-binding](#) , on page 1411
- [show fc2](#), on page 1415
- [show fcalias](#), on page 1418
- [show fcanalyzer](#), on page 1419
- [show fcc](#), on page 1420
- [show fcdomain](#), on page 1421
- [show fcdroplateny](#), on page 1425
- [show fcflow stats](#), on page 1426
- [show fcfwd](#), on page 1427
- [show fcid-allocation](#), on page 1428
- [show fcip](#), on page 1429
- [show fcip counters](#), on page 1433
- [show fc-management](#), on page 1435
- [show fcns database](#), on page 1436
- [show fcns statistics](#), on page 1440
- [show fc-redirect active-configs](#), on page 1441
- [show fc-redirect configs](#), on page 1443
- [show fc-redirect peer-switches](#), on page 1444
- [show fcroute](#), on page 1446
- [show fcroute-map](#), on page 1449
- [show fcs](#), on page 1451
- [show fcsp](#), on page 1455
- [show fcsp interface](#), on page 1457
- [show fctimer](#), on page 1458
- [show fc-tunnel](#), on page 1460
- [show fdmi](#), on page 1461
- [show ficon](#), on page 1464
- [show ficon vsan diagnostics](#), on page 1471
- [show file](#), on page 1472
- [show flex-attach](#), on page 1473
- [show flex-attach info](#), on page 1474
- [show flex-attach merge status](#), on page 1476
- [show flex-attach virtual-pwvn](#), on page 1477
- [show flogi](#), on page 1479
- [show flogi database details](#), on page 1482
- [show flogi database interface](#), on page 1483
- [show flow-control](#), on page 1484
- [show fpm](#), on page 1485
- [show fspf](#), on page 1490

- [show hardware](#), on page 1493
- [show hardware capacity](#), on page 1496
- [show hardware fabric crc status](#), on page 1498
- [show hardware fabric-mode](#), on page 1499
- [show hardware internal rxwait-history](#), on page 1500
- [show hardware internal txwait-history](#), on page 1502
- [show hosts](#), on page 1504
- [show incompatibility system](#), on page 1505
- [show in-order-guarantee](#), on page 1506
- [show install all failure-reason](#), on page 1507
- [show install all impact](#), on page 1508
- [show install all status](#), on page 1510
- [show interface](#), on page 1512
- [show interface ioa](#), on page 1546
- [show interface priority-flow-control](#), on page 1548
- [show interface sme](#), on page 1550
- [show interface transceiver](#), on page 1552
- [show interface vfc](#), on page 1554
- [show inventory](#), on page 1556
- [show ioa cluster](#), on page 1557
- [show ioa cluster summary](#), on page 1560
- [show ioa internal interface ioa](#), on page 1561
- [show ip access-list](#), on page 1565
- [show ip arp](#), on page 1566
- [show ip interface](#), on page 1567
- [show ip route](#), on page 1569
- [show ip routing](#), on page 1570
- [show ip traffic](#), on page 1571
- [show ips arp](#), on page 1572
- [show ips ip route](#), on page 1573
- [show ips ipv6](#), on page 1574
- [show ips netsim](#), on page 1576
- [show ips stats](#), on page 1577
- [show ips stats fabric interface](#), on page 1580
- [show ips stats netsim](#), on page 1582
- [show ips status](#), on page 1583
- [show ipv6 access-list](#), on page 1584
- [show ipv6 interface](#), on page 1585
- [show ipv6 neighbours](#), on page 1587
- [show ipv6 route](#), on page 1588
- [show ipv6 routing](#), on page 1589
- [show ipv6 traffic](#), on page 1590
- [show isapi dpp](#), on page 1592
- [show isapi tech-support santap file](#), on page 1593
- [show iscsi global](#), on page 1595
- [show iscsi initiator](#), on page 1596

- [show iscsi session](#), on page 1598
- [show iscsi stats](#), on page 1600
- [show iscsi virtual-target](#), on page 1604
- [show islb cfs-session status](#), on page 1605
- [show islb initiator](#), on page 1606
- [show islb merge status](#), on page 1608
- [show islb pending](#), on page 1609
- [show islb pending-diff](#), on page 1610
- [show islb session](#), on page 1611
- [show islb status](#), on page 1613
- [show islb virtual-target](#), on page 1614
- [show islb vrrp](#), on page 1616
- [show isns](#), on page 1623
- [show ivr](#), on page 1626
- [show ivr aam](#), on page 1631
- [show ivr aam pre-deregister-check](#), on page 1632
- [show ivr diagnostics](#), on page 1633
- [show ivr fcdomain database](#), on page 1634
- [show ivr service-group](#), on page 1636
- [show ivr virtual-fcdomain-add-status2](#), on page 1637
- [show ivr virtual-switch-wwn](#), on page 1638
- [show kernel core](#), on page 1639
- [show ldap-search-map](#), on page 1640
- [show ldap-server](#), on page 1641
- [show ldap-server groups](#), on page 1642
- [show license](#), on page 1643
- [show line](#), on page 1645
- [show loadbalancing hash-type](#), on page 1647
- [show loadbalancing module](#), on page 1649
- [show locator-led status](#), on page 1650
- [show logging](#), on page 1652
- [show logging onboard flow-control request-timeout](#), on page 1675
- [show mcast](#), on page 1676
- [show module](#), on page 1678
- [show monitor session](#), on page 1681
- [show npv flogi-table](#), on page 1688
- [show npv internal info](#), on page 1689
- [show npv internal info traffic-map](#), on page 1691
- [show npv status](#), on page 1692
- [show npv traffic-map](#), on page 1693
- [show npv traffic-map proposed](#), on page 1694
- [show ntp authentication-keys](#), on page 1696
- [show ntp authentication-status](#), on page 1697
- [show ntp logging-status](#), on page 1698
- [show ntp peers](#), on page 1699
- [show ntp peer-status](#), on page 1700

- [show ntp pending-diff](#), on page 1701
- [show ntp pending peers](#), on page 1702
- [show ntp rts-update](#), on page 1703
- [show ntp session status](#), on page 1704
- [show ntp source-interface](#), on page 1706
- [show ntp statistics](#), on page 1707
- [show ntp status](#), on page 1710
- [show ntp trusted-keys](#), on page 1711
- [show nxapi](#), on page 1712
- [show port index-allocation](#), on page 1713
- [show port-channel](#), on page 1715
- [show port-channel compatibility-parameters](#), on page 1718
- [show port-channel consistency](#), on page 1720
- [show port-channel database](#), on page 1721
- [show port-channel internal](#), on page 1724
- [show port-channel summary](#), on page 1728
- [show port-channel usage](#), on page 1729
- [show port-group-monitor](#), on page 1730
- [show port-group-monitor active](#), on page 1732
- [show port-group-monitor status](#), on page 1733
- [show port-license](#), on page 1734
- [show port-monitor](#), on page 1735
- [show port-monitor active](#), on page 1737
- [show port-monitor status](#), on page 1739
- [show port-resources module](#), on page 1740
- [show port-security](#), on page 1743
- [show process creditmon credit-loss-event-history](#), on page 1746
- [show process creditmon credit-loss-events](#), on page 1747
- [show process creditmon event-history](#), on page 1748
- [show process creditmon slowport-monitor-events](#), on page 1749
- [show process creditmon txwait-history](#), on page 1751
- [show processes](#), on page 1753
- [show qos](#), on page 1756
- [show radius](#), on page 1758
- [show radius-server](#), on page 1759
- [show rdp](#), on page 1761
- [show rlr](#), on page 1764
- [show rmon](#), on page 1768
- [show rmon status](#), on page 1770
- [show role](#), on page 1771
- [show role](#), on page 1773
- [show rscn](#), on page 1775
- [show running radius](#), on page 1777
- [show running-config](#), on page 1779
- [show running-config callhome](#), on page 1782
- [show running-config fesp](#), on page 1783

- [show running-config telemetry](#), on page 1784
- [show san-ext-tuner](#), on page 1785
- [show santap module](#), on page 1786
- [show santap module dvt](#), on page 1792
- [show santap module dvt brief](#), on page 1793
- [show santap module dvtlun](#), on page 1795
- [show santap vttbl dvt](#), on page 1796
- [show santap vttbl dvt host](#), on page 1797
- [show scheduler](#), on page 1798
- [show scsi-flow](#), on page 1801
- [show_scsi-target](#), on page 1805
- [show sdv](#), on page 1808
- [show secure-erase algorithm](#), on page 1810
- [show secure-erase job](#), on page 1811
- [show secure-erase job detail](#), on page 1812
- [show secure-erase vsan](#), on page 1813
- [show sme cluster](#), on page 1814
- [show sme transport](#), on page 1817
- [show snmp](#), on page 1818
- [show span drop-counters](#), on page 1822
- [show span max-queued-packets](#), on page 1823
- [show sprom](#), on page 1824
- [show ssh](#), on page 1827
- [show ssl info](#), on page 1829
- [show ssm provisioning](#), on page 1830
- [show startup-config](#), on page 1831
- [show switchname](#), on page 1834
- [show system](#), on page 1835
- [show system default zone](#), on page 1838
- [show system fc flow-control](#), on page 1839
- [show system health](#), on page 1840
- [show system health isl result interface](#), on page 1846
- [show system internal snmp lc](#), on page 1847
- [show system timestamp format](#) , on page 1849
- [show tacacs+](#), on page 1850
- [show tacacs-server](#), on page 1851
- [show tech-support](#), on page 1853
- [show tech-support fc-management](#), on page 1862
- [show tech-support sme](#), on page 1863
- [show telemetry](#) , on page 1864
- [show telnet server](#), on page 1871
- [show terminal](#), on page 1872
- [show time-stamp running-config last-changed](#), on page 1873
- [show tlport](#), on page 1875
- [show topology](#), on page 1877
- [show topology isl](#), on page 1879

- [show trunk protocol](#), on page 1885
- [show user-account](#), on page 1886
- [show username](#), on page 1887
- [show users](#), on page 1888
- [show version](#), on page 1889
- [show vmis database](#), on page 1893
- [show vmis range](#), on page 1897
- [show vmis statistics](#), on page 1898
- [show vrrp](#), on page 1899
- [show vsan](#), on page 1902
- [show wwn](#), on page 1905
- [show zone](#), on page 1906
- [show zone analysis](#), on page 1913
- [show zone internal global-info](#), on page 1920
- [show zone internal vsan](#), on page 1922
- [show zone policy](#), on page 1923
- [show zone smart-zoning auto-conv](#), on page 1924
- [show zone-attribute-group](#), on page 1925
- [show zoneset](#), on page 1926
- [ShowAnalytics](#), on page 1928
- [ShowAnalyticsConsistency](#), on page 1938

show aaa accounting

To display the accounting configuration, use the show aaa accounting command.

```
show aaa accounting
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example displays accounting log configuration:

```
switch# show aaa accounting
      default: local
```

Related Commands	Command	Description
	aaa accounting default	Configures the default accounting method.

show aaa authentication

To display configured authentication information, use the show aaa authentication command.

```
show aaa authentication [login error-enable | ]
```

Syntax Description	
login error-enable	(Optional) Displays the authentication login error message enable configuration.
login mschap	(Optional) Displays the authentication login MS-CHAP enable configuration.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	2.0(x)	Added the login error-enable option.
	3.0(1)	Added the login mschap option.

Usage Guidelines None.

Examples

The following example displays the configured authentication parameters:

```
switch# show aaa authentication
      default: group TacServer local none
      console: local
      iscsi: local
      dhchap: local
```

The following example displays the authentication login error message enable configuration:

```
switch# show aaa authentication login error-enable
disabled
```

The following example displays the authentication login MS-CHAP enable configuration:

```
switch# show aaa authentication login mschap
disabled
```


show aaa authentication login ascii-authentication

To display configured ascii authentication method, use the `show aaa authentication login ascii-authentication` command.

```
show aaa authentication login ascii-authentication
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.1(3a)	enable the password aging command changed from <code>show aaa authentication login password-aging enable</code> to <code>show aaa authentication login ascii-authentication</code> .

Usage Guidelines None.

Examples The following example shows how to enable ascii authentication:

```
switch#(config)# aaa authentication login ascii-authentication
switch#(config)#
```

Related Commands	Command	Description
	<code>aaa authentication login ascii-authentication</code>	Enables the ascii authentication method.

show aaa authentication login chap enable

To display CHAP authentication for login, use the show aaa authentication login chap enable command.

```
show aaa authentication login chap enable
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display CHAP authentication for login:

```
switch# show aaa authentication login chap enable
CHAP is enabled
switch#
```

Related Commands	Command	Description
	aaa authentication login chap enable	Enables CHAP authentication for login.

show aaa authentication login mschap2

To display MS-CHAPv2 authentication for login, use the `show aaa authentication login mschap2` command.

```
show aaa authentication login mschap2
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display MS-CHAPv2 authentication for login:

```
switch# show aaa authentication login mschap2
MSCHAP V2 is disabled
switch#
```

Related Commands	Command	Description
	aaa authentication login mschap2 enable	Enables MS-CHAPv2 authentication for login.

show aaa authorization all

To display all authorization information, use the `aaa authorization all` command.

```
show aaa authorization all
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display all authorization information:

```
switch# show aaa authorization all
AAA command authorization:
    default authorization for config-commands: local
    default authorization for commands: local
```

show aaa groups

To display configured server groups, use the show aaa groups command.

```
show aaa groups
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines None.

Examples This example shows how to display configured server groups:

```
switch# show aaa groups
radius
TacServer
```

show aaa user default-role

To display the AAA user default role configuration, use the `show aaa user default-role` command.

```
show aaa user default-role
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes Any command mode

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines Use the `aaa user default-role` command to configure the AAA user default role. This command does not require a license.

Examples This example shows how to display the AAA user default role configuration:

```
switch# show aaa user default-role
enabled
```

Related Commands	Command	Description
	aaa user default-role	Enables the AAA user default role.

show accounting log

To display the accounting log contents, use the show accounting log command.

```
show accounting log [size]
```

Syntax Description	size (Optional) Specifies the size of the log to display in bytes. The range is 0 to 250000.
---------------------------	--

Command Default	None.
------------------------	-------

Command Modes	EXEC mode.
----------------------	------------

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines	None.
-------------------------	-------

Examples

The following example displays the entire accounting log:

```
switch# show accounting log
2002:stop:snmp_1033151784_171.71.49.83:admin:
Fri Sep 27 18:36:24 2002:start:_1033151784:root
Fri Sep 27 18:36:28 2002:update:::fcc configuration requested
Fri Sep 27 18:36:33 2002:start:snmp_1033151793_171.71.49.83:admin
Fri Sep 27 18:36:33 2002:stop:snmp_1033151793_171.71.49.83:admin:
Fri Sep 27 18:39:28 2002:start:snmp_1033151968_171.71.49.96:admin
Fri Sep 27 18:39:28 2002:stop:snmp_1033151968_171.71.49.96:admin:
Fri Sep 27 18:39:28 2002:start:_1033151968:root
Fri Sep 27 18:39:31 2002:update:::fcc configuration requested
Fri Sep 27 18:39:37 2002:start:snmp_1033151977_171.71.49.96:admin
Fri Sep 27 18:39:37 2002:stop:snmp_1033151977_171.71.49.96:admin:
Fri Sep 27 18:39:37 2002:start:snmp_1033151977_171.71.49.96:admin
Fri Sep 27 18:42:12 2002:start:snmp_1033152132_171.71.49.96:admin
Fri Sep 27 18:42:12 2002:stop:snmp_1033152132_171.71.49.96:admin:
Fri Sep 27 18:42:12 2002:start:snmp_1033152132_171.71.49.96:admin
Fri Sep 27 18:42:40 2002:start:snmp_1033152160_171.71.49.96:admin
...
```

The following example displays 400 bytes of the accounting log:

```
switch# show accounting log 400
Tue Dec 8 22:06:59 1981:start:/dev/pts/2_376697219:admin:
Tue Dec 8 22:07:03 1981:stop:/dev/pts/2_376697219:admin:shell terminated
Tue Dec 8 22:07:13 1981:start:/dev/pts/2_376697233:admin:
Tue Dec 8 22:07:53 1981:stop:/dev/pts/2_376697233:admin:shell terminated
Tue Dec 8 22:08:15 1981:update:/dev/ttyS0_376628597:admin:iSCSI Interface Vsan Enabled
```

Related Commands	Command	Description
	clear accounting log	Clears the accounting log.

show analytics port-sampling

To display the SAN analytics port sampling information, use the show analytics port-sampling command.

```
show analytics port-sampling module number
```

Syntax Description

module number	Module number.
---------------	----------------

Command Default

None.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.4(1)	The command output was modified.
8.3(1)	This command was introduced.

Examples

This example shows how to check the port sampling status and the instantaneous network processing unit (NPU) load:



Note

The star symbol (*) next to a port indicates that the port is currently being sampled.

```
switch# show analytics port-sampling module 1
Sampling Window Size: 12
Rotation Interval: 30
NPU LOAD : 64%      [SCSI 64%, NVMe 0%]
=====
Port                Monitored Start Time      Monitored End Time
=====
fc4/25              04/01/19 - 05:25:29      04/01/19 - 05:25:59
fc4/26              04/01/19 - 05:25:29      04/01/19 - 05:25:59
fc4/27              04/01/19 - 05:25:29      04/01/19 - 05:25:59
fc4/28              04/01/19 - 05:25:29      04/01/19 - 05:25:59
fc4/29              04/01/19 - 05:25:29      04/01/19 - 05:25:59
fc4/30              04/01/19 - 05:25:29      04/01/19 - 05:25:59
fc4/31              04/01/19 - 05:25:29      04/01/19 - 05:25:59
fc4/32              04/01/19 - 05:25:29      04/01/19 - 05:25:59
fc4/33              04/01/19 - 05:25:29      04/01/19 - 05:25:59
fc4/34              04/01/19 - 05:25:29      04/01/19 - 05:25:59
fc4/35              04/01/19 - 05:25:29      04/01/19 - 05:25:59
fc4/36              04/01/19 - 05:25:29      04/01/19 - 05:25:59
fc4/37*            04/01/19 - 05:25:59      -
fc4/38*            04/01/19 - 05:25:59      -
fc4/39*            04/01/19 - 05:25:59      -
fc4/40*            04/01/19 - 05:25:59      -
fc4/41*            04/01/19 - 05:25:59      -
fc4/42*            04/01/19 - 05:25:59      -
fc4/43*            04/01/19 - 05:25:59      -
fc4/44*            04/01/19 - 05:25:59      -
```



```

fc4/45*          04/01/19 - 05:25:59      -
fc4/46*          04/01/19 - 05:25:59      -
fc4/47*          04/01/19 - 05:25:59      -
fc4/48*          04/01/19 - 05:25:59      -

```

=====

! - Denotes port is link down but analytics enabled.

* - Denotes port in active analytics port sampling window.

Related Commands

Command	Description
analytics type	Enables the SAN Analytics feature on an interface or a range of interfaces.
feature analytics	Enables the SAN Analytics feature on a switch.
show analytics flow	Displays the SAN analytics type.
show analytics query	Displays the SAN analytics query information.
ShowAnalytics	Displays the SAN analytics information in a tabular format.

show analytics query

To display the SAN analytics query information, use the show analytics query command.

```
show analytics query "query_string" [clear] [differential] | all | name query_name [result]
```

Syntax Description

“query_string”	Query syntax.
clear	Clears all the minimum, maximum, and peak metrics after each fetch.
differential	Fetches only updated metrics.
all	Displays all queries.
name query_name	Query name.
result	Result of a push query name.

Command Default

None.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.3(1)	This command was modified. The command was changed from show analytics query {"query_string" | id result} to show analytics query {"query_string" [clear] [differential] | all | name query_name [result]}.
8.2(1)	This command was introduced.

Usage Guidelines

The show analytics query command is a pull query (one-time query) which is used to extract flow metrics that are stored in a database at the instant the query was executed. The output is in JSON format. Only one pull query can be executed at a time.

The “query_string” is a query syntax where you can specify query semantics such as select, table, limit, and so on. For example, “select all from fc-scsi.port.” For more information, see the [“Cisco MDS 9000 Series NX-OS SAN Analytics and Telemetry Configuration Guide.”](#)

Examples

This example shows the output of all the flow metrics of the SCSI initiator ITL flow view instance:

```
switch# show analytics query 'select all from fc-scsi.scsi_initiator_itl_flow'
{ "values": {
  "1": {
    "port": "fc1/1",
    "vsan": "10",
    "app_id": "255",
    "initiator_id": "0xe80041",
    "target_id": "0xd60200",
    "lun": "0000-0000-0000-0000",
```

```

"active_io_read_count": "0",
"active_io_write_count": "1",
"total_read_io_count": "0",
"total_write_io_count": "1162370362",
"total_seq_read_io_count": "0",
"total_seq_write_io_count": "1",
"total_read_io_time": "0",
"total_write_io_time": "116204704658",
"total_read_io_initiation_time": "0",
"total_write_io_initiation_time": "43996934029",
"total_read_io_bytes": "0",
"total_write_io_bytes": "595133625344",
"total_read_io_inter_gap_time": "0",
"total_write_io_inter_gap_time": "41139462314556",
"total_time_metric_based_read_io_count": "0",
"total_time_metric_based_write_io_count": "1162370358",
"total_time_metric_based_read_io_bytes": "0",
"total_time_metric_based_write_io_bytes": "595133623296",
"read_io_rate": "0",
"peak_read_io_rate": "0",
"write_io_rate": "7250",
"peak_write_io_rate": "7304",
"read_io_bandwidth": "0",
"peak_read_io_bandwidth": "0",
"write_io_bandwidth": "3712384",
"peak_write_io_bandwidth": "3739904",
"read_io_size_min": "0",
"read_io_size_max": "0",
"write_io_size_min": "512",
"write_io_size_max": "512",
"read_io_completion_time_min": "0",
"read_io_completion_time_max": "0",
"write_io_completion_time_min": "89",
"write_io_completion_time_max": "416",
"read_io_initiation_time_min": "0",
"read_io_initiation_time_max": "0",
"write_io_initiation_time_min": "34",
"write_io_initiation_time_max": "116",
"read_io_inter_gap_time_min": "0",
"read_io_inter_gap_time_max": "0",
"write_io_inter_gap_time_min": "31400",
"write_io_inter_gap_time_max": "118222",
"peak_active_io_read_count": "0",
"peak_active_io_write_count": "5",
"read_io_aborts": "0",
"write_io_aborts": "0",
"read_io_failures": "0",
"write_io_failures": "0",
"read_io_timeouts": "0",
"write_io_timeouts": "1",
"read_io_scsi_check_condition_count": "0",
"write_io_scsi_check_condition_count": "0",
"read_io_scsi_busy_count": "0",
"write_io_scsi_busy_count": "0",
"read_io_scsi_reservation_conflict_count": "0",
"write_io_scsi_reservation_conflict_count": "0",
"read_io_scsi_queue_full_count": "0",
"write_io_scsi_queue_full_count": "0",
"sampling_start_time": "1528535447",
"sampling_end_time": "1528697457"
},
.
.
.

```

```

"5": {
  "port": "fc1/8",
  "vsan": "10",
  "app_id": "255",
  "initiator_id": "0xe80001",
  "target_id": "0xe800a1",
  "lun": "0000-0000-0000-0000",
  "active_io_read_count": "0",
  "active_io_write_count": "1",
  "total_read_io_count": "0",
  "total_write_io_count": "1138738309",
  "total_seq_read_io_count": "0",
  "total_seq_write_io_count": "1",
  "total_read_io_time": "0",
  "total_write_io_time": "109792480881",
  "total_read_io_initiation_time": "0",
  "total_write_io_initiation_time": "39239145641",
  "total_read_io_bytes": "0",
  "total_write_io_bytes": "583034014208",
  "total_read_io_inter_gap_time": "0",
  "total_write_io_inter_gap_time": "41479779998852",
  "total_time_metric_based_read_io_count": "0",
  "total_time_metric_based_write_io_count": "1138738307",
  "total_time_metric_based_read_io_bytes": "0",
  "total_time_metric_based_write_io_bytes": "583034013184",
  "read_io_rate": "0",
  "peak_read_io_rate": "0",
  "write_io_rate": "7074",
  "peak_write_io_rate": "7903",
  "read_io_bandwidth": "0",
  "peak_read_io_bandwidth": "0",
  "write_io_bandwidth": "3622144",
  "peak_write_io_bandwidth": "4046336",
  "read_io_size_min": "0",
  "read_io_size_max": "0",
  "write_io_size_min": "512",
  "write_io_size_max": "512",
  "read_io_completion_time_min": "0",
  "read_io_completion_time_max": "0",
  "write_io_completion_time_min": "71",
  "write_io_completion_time_max": "3352",
  "read_io_initiation_time_min": "0",
  "read_io_initiation_time_max": "0",
  "write_io_initiation_time_min": "26",
  "write_io_initiation_time_max": "2427",
  "read_io_inter_gap_time_min": "0",
  "read_io_inter_gap_time_max": "0",
  "write_io_inter_gap_time_min": "25988",
  "write_io_inter_gap_time_max": "868452",
  "peak_active_io_read_count": "0",
  "peak_active_io_write_count": "5",
  "read_io_aborts": "0",
  "write_io_aborts": "0",
  "read_io_failures": "0",
  "write_io_failures": "0",
  "read_io_timeouts": "0",
  "write_io_timeouts": "1",
  "read_io_scsi_check_condition_count": "0",
  "write_io_scsi_check_condition_count": "0",
  "read_io_scsi_busy_count": "0",
  "write_io_scsi_busy_count": "0",
  "read_io_scsi_reservation_conflict_count": "0",
  "write_io_scsi_reservation_conflict_count": "0",
  "read_io_scsi_queue_full_count": "0",

```

```

        "write_io_scsi_queue_full_count": "0",
        "sampling_start_time": "1528535447",
        "sampling_end_time": "1528697457"
    }
}

```

This example shows the output of all the flow metrics of the NVMe initiator ITN flow view instance:

```

switch# show analytics query 'select all from fc-nvme.nvme_initiator_itn_flow'
{ "values": {
    "1": {
        "port": "fc1/9",
        "vsan": "5",
        "app_id": "255",
        "initiator_id": "0xa40160",
        "target_id": "0xa4018c",
        "connection_id": "0000-0000-0000-0000",
        "namespace_id": "1",
        "active_io_read_count": "0",
        "active_io_write_count": "0",
        "total_read_io_count": "414106348",
        "total_write_io_count": "0",
        "total_seq_read_io_count": "0",
        "total_seq_write_io_count": "0",
        "total_read_io_time": "204490863437",
        "total_write_io_time": "0",
        "total_read_io_initiation_time": "132775579977",
        "total_write_io_initiation_time": "0",
        "total_read_io_bytes": "16226866588672",
        "total_write_io_bytes": "0",
        "total_read_io_inter_gap_time": "19198018763772",
        "total_write_io_inter_gap_time": "0",
        "total_time_metric_based_read_io_count": "414106244",
        "total_time_metric_based_write_io_count": "0",
        "total_time_metric_based_read_io_bytes": "16226860198912",
        "total_time_metric_based_write_io_bytes": "0",
        "read_io_rate": "0",
        "peak_read_io_rate": "16826",
        "write_io_rate": "0",
        "peak_write_io_rate": "0",
        "read_io_bandwidth": "0",
        "peak_read_io_bandwidth": "656438400",
        "write_io_bandwidth": "0",
        "peak_write_io_bandwidth": "0",
        "read_io_size_min": "1024",
        "read_io_size_max": "262144",
        "write_io_size_min": "0",
        "write_io_size_max": "0",
        "read_io_completion_time_min": "16",
        "read_io_completion_time_max": "7057",
        "write_io_completion_time_min": "0",
        "write_io_completion_time_max": "0",
        "read_io_initiation_time_min": "16",
        "read_io_initiation_time_max": "5338",
        "write_io_initiation_time_min": "0",
        "write_io_initiation_time_max": "0",
        "read_io_inter_gap_time_min": "32",
        "read_io_inter_gap_time_max": "83725169",
        "write_io_inter_gap_time_min": "0",
        "write_io_inter_gap_time_max": "0",
        "peak_active_io_read_count": "11",
        "peak_active_io_write_count": "0",
        "read_io_aborts": "24",
    }
}

```

```

"write_io_aborts": "0",
"read_io_failures": "80",
"write_io_failures": "0",
"read_io_timeouts": "0",
"write_io_timeouts": "0",
"read_io_nvme_lba_out_of_range_count": "0",
"write_io_nvme_lba_out_of_range_count": "0",
"read_io_nvme_ns_not_ready_count": "0",
"write_io_nvme_ns_not_ready_count": "0",
"read_io_nvme_reservation_conflict_count": "0",
"write_io_nvme_reservation_conflict_count": "0",
"read_io_nvme_capacity_exceeded_count": "0",
"write_io_nvme_capacity_exceeded_count": "0",
"sampling_start_time": "1512847422",
"sampling_end_time": "1513166516"
},
.
.
.
"5": {
  "port": "fc1/9",
  "vsan": "5",
  "app_id": "255",
  "initiator_id": "0xa40165",
  "target_id": "0xa40190",
  "connection_id": "0000-0000-0000-0000",
  "namespace_id": "1",
  "active_io_read_count": "0",
  "active_io_write_count": "0",
  "total_read_io_count": "33391955",
  "total_write_io_count": "643169087",
  "total_seq_read_io_count": "0",
  "total_seq_write_io_count": "0",
  "total_read_io_time": "13005795783",
  "total_write_io_time": "131521212441",
  "total_read_io_initiation_time": "5696099596",
  "total_write_io_initiation_time": "71938348902",
  "total_read_io_bytes": "1309083368448",
  "total_write_io_bytes": "329302572544",
  "total_read_io_inter_gap_time": "19175084866843",
  "total_write_io_inter_gap_time": "19182318062480",
  "total_time_metric_based_read_io_count": "33391919",
  "total_time_metric_based_write_io_count": "643168808",
  "total_time_metric_based_read_io_bytes": "1309074355200",
  "total_time_metric_based_write_io_bytes": "329302429696",
  "read_io_rate": "0",
  "peak_read_io_rate": "574",
  "write_io_rate": "0",
  "peak_write_io_rate": "9344",
  "read_io_bandwidth": "0",
  "peak_read_io_bandwidth": "19122176",
  "write_io_bandwidth": "0",
  "peak_write_io_bandwidth": "4784384",
  "read_io_size_min": "1024",
  "read_io_size_max": "262144",
  "write_io_size_min": "512",
  "write_io_size_max": "512",
  "read_io_completion_time_min": "16",
  "read_io_completion_time_max": "5123",
  "write_io_completion_time_min": "27",
  "write_io_completion_time_max": "2254",
  "read_io_initiation_time_min": "16",
  "read_io_initiation_time_max": "3650",
  "write_io_initiation_time_min": "12",

```

```

"write_io_initiation_time_max": "1377",
"read_io_inter_gap_time_min": "32",
"read_io_inter_gap_time_max": "3234375975",
"write_io_inter_gap_time_min": "32",
"write_io_inter_gap_time_max": "38886219",
"peak_active_io_read_count": "6",
"peak_active_io_write_count": "16",
"read_io_aborts": "6",
"write_io_aborts": "18",
"read_io_failures": "30",
"write_io_failures": "261",
"read_io_timeouts": "0",
"write_io_timeouts": "0",
"read_io_nvme_lba_out_of_range_count": "0",
"write_io_nvme_lba_out_of_range_count": "0",
"read_io_nvme_ns_not_ready_count": "0",
"write_io_nvme_ns_not_ready_count": "0",
"read_io_nvme_reservation_conflict_count": "0",
"write_io_nvme_reservation_conflict_count": "0",
"read_io_nvme_capacity_exceeded_count": "0",
"write_io_nvme_capacity_exceeded_count": "0",
"sampling_start_time": "1512847422",
"sampling_end_time": "1513166516"
}
}}

```

This example shows an output of specific flow metrics for a specific initiator ID of an initiator ITL flow view type:

```

switch# show analytics query 'select port,initiator_id, target_id,lun,
total_read_io_count,total_write_io_count,read_io_rate, write_io_rate from
fc-scsi.scsi_initiator_itl_flow where initiator_id=0xe80001'
{ "values": {
  "1": {
    "port": "fc1/8",
    "initiator_id": "0xe80001",
    "target_id": "0xe800a1",
    "lun": "0000-0000-0000-0000",
    "total_read_io_count": "0",
    "total_write_io_count": "1139010960",
    "read_io_rate": "0",
    "write_io_rate": "7071",
    "sampling_start_time": "1528535447",
    "sampling_end_time": "1528697495"
  }
}}

```

This example shows an output of specific flow metrics for a specific initiator ID and LUN of an initiator ITL flow view type:

```

switch# show analytics query 'select port,initiator_id, target_id,lun,
total_read_io_count,total_write_io_count,read_io_rate, write_io_rate from
fc-scsi.scsi_initiator_itl_flow where initiator_id=0xe80001 and lun= 0000-0000-0000-0000'
{ "values": {
  "1": {
    "port": "fc1/8",
    "initiator_id": "0xe80001",
    "target_id": "0xe800a1",
    "lun": "0000-0000-0000-0000",

```

```

        "total_read_io_count": "0",
        "total_write_io_count": "1139453979",
        "read_io_rate": "0",
        "write_io_rate": "7070",
        "sampling_start_time": "1528535447",
        "sampling_end_time": "1528697559"
    }
}

```

This example shows an output of specific flow metrics for a specific LUN with the output sorted for the write_io_rate flow metrics of a target ITL flow view type:

```

switch# show analytics query 'select port,initiator_id, target_id,lun,total_read_io_count,
total_write_io_count,read_io_rate, write_io_rate from fc-scsi.scsi_initiator_itl_flow where

lun= 0000-0000-0000-0000 sort write_io_rate'
{ "values": {
  "1": {
    "port": "fc1/6",
    "initiator_id": "0xe80020",
    "target_id": "0xd60040",
    "lun": "0000-0000-0000-0000",
    "total_read_io_count": "0",
    "total_write_io_count": "1103394068",
    "read_io_rate": "0",
    "write_io_rate": "6882",
    "sampling_start_time": "1528535447",
    "sampling_end_time": "1528697630"
  },
  "2": {
    "port": "fc1/6",
    "initiator_id": "0xe80021",
    "target_id": "0xe80056",
    "lun": "0000-0000-0000-0000",
    "total_read_io_count": "0",
    "total_write_io_count": "1119199742",
    "read_io_rate": "0",
    "write_io_rate": "6946",
    "sampling_start_time": "1528535447",
    "sampling_end_time": "1528697630"
  },
  "3": {
    "port": "fc1/8",
    "initiator_id": "0xe80000",
    "target_id": "0xe80042",
    "lun": "0000-0000-0000-0000",
    "total_read_io_count": "0",
    "total_write_io_count": "1119506589",
    "read_io_rate": "0",
    "write_io_rate": "6948",
    "sampling_start_time": "1528535447",
    "sampling_end_time": "1528697630"
  },
  "4": {
    "port": "fc1/8",
    "initiator_id": "0xe80001",
    "target_id": "0xe800a1",
    "lun": "0000-0000-0000-0000",
    "total_read_io_count": "0",
    "total_write_io_count": "1139953183",
    "read_io_rate": "0",
    "write_io_rate": "7068",

```



```

        "sampling_start_time": "1528535447",
        "sampling_end_time": "1528697630"
    },
    "5": {
        "port": "fc1/1",
        "initiator_id": "0xe80041",
        "target_id": "0xd60200",
        "lun": "0000-0000-0000-0000",
        "total_read_io_count": "0",
        "total_write_io_count": "1163615698",
        "read_io_rate": "0",
        "write_io_rate": "7247",
        "sampling_start_time": "1528535447",
        "sampling_end_time": "1528697630"
    }
}
}
}

```

This example shows an output of specific flow metrics for a specific LUN with the output limited to three records and sorted for the write_io_rate flow metrics of an initiator ITL flow view type:

```

switch# show analytics query 'select port,initiator_id, target_id,lun,total_read_io_count,
total_write_io_count,read_io_rate, write_io_rate from fc-scsi.scsi_initiator_itl_flow where
lun= 0000-0000-0000-0000 sort write_io_rate limit 3'
{ "values": {
    "1": {
        "port": "fc1/6",
        "initiator_id": "0xe80020",
        "target_id": "0xd60040",
        "lun": "0000-0000-0000-0000",
        "total_read_io_count": "0",
        "total_write_io_count": "1103901828",
        "read_io_rate": "0",
        "write_io_rate": "6885",
        "sampling_start_time": "1528535447",
        "sampling_end_time": "1528697704"
    },
    "2": {
        "port": "fc1/8",
        "initiator_id": "0xe80000",
        "target_id": "0xe80042",
        "lun": "0000-0000-0000-0000",
        "total_read_io_count": "0",
        "total_write_io_count": "1120018575",
        "read_io_rate": "0",
        "write_io_rate": "6940",
        "sampling_start_time": "1528535447",
        "sampling_end_time": "1528697704"
    },
    "3": {
        "port": "fc1/6",
        "initiator_id": "0xe80021",
        "target_id": "0xe80056",
        "lun": "0000-0000-0000-0000",
        "total_read_io_count": "0",
        "total_write_io_count": "1119711583",
        "read_io_rate": "0",
        "write_io_rate": "6942",
        "sampling_start_time": "1528535447",
        "sampling_end_time": "1528697704"
    }
}
}
}

```

```
}}
```

These examples show how to clear all the minimum, maximum, and peak flow metrics:

- This example show the output before clearing the all the minimum, maximum, and peak flow metrics:



Note You must execute the clear command twice for the first time for clearing all the minimum, maximum, and peak flow metrics. Thereafter, you can execute the clear command once for clearing the flow metrics.

```
switch# show analytics query "select all from
fc-scsi.scsi_target_itl_flow where port=fcl/17"
{ "values": {
  "1": {
    "port": "fcl/17",
    "vsan": "1",
    "app_id": "255",
    "target_id": "0xef0040",
    "initiator_id": "0xef0000",
    "lun": "0000-0000-0000-0000",
    "active_io_read_count": "0",
    "active_io_write_count": "1",
    "total_read_io_count": "0",
    "total_write_io_count": "84701",
    "total_seq_read_io_count": "0",
    "total_seq_write_io_count": "1",
    "total_read_io_time": "0",
    "total_write_io_time": "7007132",
    "total_read_io_initiation_time": "0",
    "total_write_io_initiation_time": "2421756",
    "total_read_io_bytes": "0",
    "total_write_io_bytes": "86733824",
    "total_read_io_inter_gap_time": "0",
    "total_write_io_inter_gap_time": "2508109021",
    "total_time_metric_based_read_io_count": "0",
    "total_time_metric_based_write_io_count": "84701",
    "total_time_metric_based_read_io_bytes": "0",
    "total_time_metric_based_write_io_bytes": "86733824",
    "read_io_rate": "0",
    "peak_read_io_rate": "0",
    "write_io_rate": "8711",
    "peak_write_io_rate": "8711",
    "read_io_bandwidth": "0",
    "peak_read_io_bandwidth": "0",
    "write_io_bandwidth": "8920576",
    "peak_write_io_bandwidth": "8920576",
    "read_io_size_min": "0",
    "read_io_size_max": "0",
    "write_io_size_min": "1024",
    "write_io_size_max": "1024",
    "read_io_completion_time_min": "0",
    "read_io_completion_time_max": "0",
    "write_io_completion_time_min": "74",
    "write_io_completion_time_max": "844",
    "read_io_initiation_time_min": "0",
    "read_io_initiation_time_max": "0",
```

```

"write_io_initiation_time_min": "24",
"write_io_initiation_time_max": "775",
"read_io_inter_gap_time_min": "0",
"read_io_inter_gap_time_max": "0",
"write_io_inter_gap_time_min": "26903",
"write_io_inter_gap_time_max": "287888",
"peak_active_io_read_count": "0",
"peak_active_io_write_count": "3",
"read_io_aborts": "0",
"write_io_aborts": "0",
"read_io_failures": "0",
"write_io_failures": "0",
"read_io_timeouts": "0",
"write_io_timeouts": "0",
"read_io_scsi_check_condition_count": "0",
"write_io_scsi_check_condition_count": "0",
"read_io_scsi_busy_count": "0",
"write_io_scsi_busy_count": "0",
"read_io_scsi_reservation_conflict_count": "0",
"write_io_scsi_reservation_conflict_count": "0",
"read_io_scsi_queue_full_count": "0",
"write_io_scsi_queue_full_count": "0",
"sampling_start_time": "1530683133",
"sampling_end_time": "1530684301"
},
"2": {
  "port": "fc1/17",
  "vsan": "1",
  "app_id": "255",
  "target_id": "0xef0040",
  "initiator_id": "0xef0020",
  "lun": "0000-0000-0000-0000",
  "active_io_read_count": "0",
  "active_io_write_count": "0",
  "total_read_io_count": "0",
  "total_write_io_count": "84700",
  "total_seq_read_io_count": "0",
  "total_seq_write_io_count": "1",
  "total_read_io_time": "0",
  "total_write_io_time": "6973333",
  "total_read_io_initiation_time": "0",
  "total_write_io_initiation_time": "2400011",
  "total_read_io_bytes": "0",
  "total_write_io_bytes": "86732800",
  "total_read_io_inter_gap_time": "0",
  "total_write_io_inter_gap_time": "2508096990",
  "total_time_metric_based_read_io_count": "0",
  "total_time_metric_based_write_io_count": "84700",
  "total_time_metric_based_read_io_bytes": "0",
  "total_time_metric_based_write_io_bytes": "86732800",
  "read_io_rate": "0",
  "peak_read_io_rate": "0",
  "write_io_rate": "8711",
  "peak_write_io_rate": "8711",
  "read_io_bandwidth": "0",
  "peak_read_io_bandwidth": "0",
  "write_io_bandwidth": "8920576",
  "peak_write_io_bandwidth": "8920576",
  "read_io_size_min": "0",
  "read_io_size_max": "0",
  "write_io_size_min": "1024",
  "write_io_size_max": "1024",
  "read_io_completion_time_min": "0",
  "read_io_completion_time_max": "0",

```

```

        "write_io_completion_time_min": "74",
        "write_io_completion_time_max": "1134",
        "read_io_initiation_time_min": "0",
        "read_io_initiation_time_max": "0",
        "write_io_initiation_time_min": "24",
        "write_io_initiation_time_max": "345",
        "read_io_inter_gap_time_min": "0",
        "read_io_inter_gap_time_max": "0",
        "write_io_inter_gap_time_min": "26789",
        "write_io_inter_gap_time_max": "298809",
        "peak_active_io_read_count": "0",
        "peak_active_io_write_count": "3",
        "read_io_aborts": "0",
        "write_io_aborts": "0",
        "read_io_failures": "0",
        "write_io_failures": "0",
        "read_io_timeouts": "0",
        "write_io_timeouts": "0",
        "read_io_scsi_check_condition_count": "0",
        "write_io_scsi_check_condition_count": "0",
        "read_io_scsi_busy_count": "0",
        "write_io_scsi_busy_count": "0",
        "read_io_scsi_reservation_conflict_count": "0",
        "write_io_scsi_reservation_conflict_count": "0",
        "read_io_scsi_queue_full_count": "0",
        "write_io_scsi_queue_full_count": "0",
        "sampling_start_time": "1530683133",
        "sampling_end_time": "1530684301"
    }
}
}}

```

- This examples shows the output after clearing all the minimum, maximum, and peak flow metrics. The metrics that were cleared are highlighted in the output.

```

switch# show analytics query "select all from
fc-scsi.scsi_target_itl_flow where port=fcl/17" clear
{ "values": {
    "1": {
        "port": "fcl/17",
        "vsan": "1",
        "app_id": "255",
        "target_id": "0xef0040",
        "initiator_id": "0xef0000",
        "lun": "0000-0000-0000-0000",
        "active_io_read_count": "0",
        "active_io_write_count": "0",
        "total_read_io_count": "0",
        "total_write_io_count": "800615",
        "total_seq_read_io_count": "0",
        "total_seq_write_io_count": "1",
        "total_read_io_time": "0",
        "total_write_io_time": "66090290",
        "total_read_io_initiation_time": "0",
        "total_write_io_initiation_time": "22793874",
        "total_read_io_bytes": "0",
        "total_write_io_bytes": "819829760",
        "total_read_io_inter_gap_time": "0",
        "total_write_io_inter_gap_time": "23702347887",
        "total_time_metric_based_read_io_count": "0",
        "total_time_metric_based_write_io_count": "800615",
        "total_time_metric_based_read_io_bytes": "0",
        "total_time_metric_based_write_io_bytes": "819829760",
    }
}

```

```

"read_io_rate": "0",
"peak_read_io_rate": "0",
"write_io_rate": "0",
"peak_write_io_rate": "0",
"read_io_bandwidth": "0",
"peak_read_io_bandwidth": "0",
"write_io_bandwidth": "0",
"peak_write_io_bandwidth": "0",
"read_io_size_min": "0",
"read_io_size_max": "0",
"write_io_size_min": "0",
"write_io_size_max": "0",
"read_io_completion_time_min": "0",
"read_io_completion_time_max": "0",
"write_io_completion_time_min": "0",
"write_io_completion_time_max": "0",
"read_io_initiation_time_min": "0",
"read_io_initiation_time_max": "0",
"write_io_initiation_time_min": "0",
"write_io_initiation_time_max": "0",
"read_io_inter_gap_time_min": "0",
"read_io_inter_gap_time_max": "0",
"write_io_inter_gap_time_min": "0",
"write_io_inter_gap_time_max": "0",
"peak_active_io_read_count": "0",
"peak_active_io_write_count": "0",
"read_io_aborts": "0",
"write_io_aborts": "0",
"read_io_failures": "0",
"write_io_failures": "0",
"read_io_timeouts": "0",
"write_io_timeouts": "0",
"read_io_scsi_check_condition_count": "0",
"write_io_scsi_check_condition_count": "0",
"read_io_scsi_busy_count": "0",
"write_io_scsi_busy_count": "0",
"read_io_scsi_reservation_conflict_count": "0",
"write_io_scsi_reservation_conflict_count": "0",
"read_io_scsi_queue_full_count": "0",
"write_io_scsi_queue_full_count": "0",
"sampling_start_time": "1530683133",
"sampling_end_time": "1530684428"
},
}}

```

These examples show how to stream only the ITL flow metrics that have changed between streaming intervals:

- This example shows the output before using the differential option:

```

switch# show analytics query "select port, target_id, initiator_id,lun,
total_write_io_count from fc-scsi.scsi_target_itl_flow where port=fc1/17"
differential
{ "values": {
  "1": {
    "port": "fc1/17",
    "target_id": "0xef0040",
    "initiator_id": "0xef0000",
    "lun": "0001-0000-0000-0000",
    "total_write_io_count": "1515601",
    "sampling_start_time": "1530683133",

```

```

        "sampling_end_time": "1530683484"
      },
      "2": {
        "port": "fc1/17",
        "target_id": "0xef0040",
        "initiator_id": "0xef0020",
        "lun": "0000-0000-0000-0000",
        "total_write_io_count": "1515601",
        "sampling_start_time": "1530683133",
        "sampling_end_time": "1530683484"
      },
      "3": {
        "port": "fc1/17",
        "target_id": "0xef0040",
        "initiator_id": "0xef0020",
        "lun": "0001-0000-0000-0000",
        "total_write_io_count": "1515600",
        "sampling_start_time": "1530683133",
        "sampling_end_time": "1530683484"
      },
      "4": {
        "port": "fc1/17",
        "target_id": "0xef0040",
        "initiator_id": "0xef0000",
        "lun": "0000-0000-0000-0000",
        "total_write_io_count": "1515600",
        "sampling_start_time": "1530683133",
        "sampling_end_time": "1530683484"
      }
    }
  }
}
}
}
}
```

- This example shows the output with the differential option and shows only the records that have changed:

```

switch# show analytics query "select port, target_id,
initiator_id,lun,total_write_io_count from fc-scsi.scsi_target_itl_flow where port=fc1/17"

differential
{ "values": {
  "1": {
    "port": "fc1/17",
    "target_id": "0xef0040",
    "initiator_id": "0xef0000",
    "lun": "0001-0000-0000-0000",
    "total_write_io_count": "1892021",
    "sampling_start_time": "1530683133",
    "sampling_end_time": "1530683534"
  },
  "2": {
    "port": "fc1/17",
    "target_id": "0xef0040",
    "initiator_id": "0xef0020",
    "lun": "0000-0000-0000-0000",
    "total_write_io_count": "1892021",
    "sampling_start_time": "1530683133",
    "sampling_end_time": "1530683534"
  },
  "3": {
    "port": "fc1/17",
    "target_id": "0xef0040",
    "initiator_id": "0xef0000",
    "lun": "0000-0000-0000-0000",

```

```

        "total_write_io_count": "1892021",
        "sampling_start_time": "1530683133",
        "sampling_end_time": "1530683534"
    }
}}

```

This example shows an output of all the installed push analytics queries:

```

switch# show analytics query all
Total queries:7
=====
Query Name      :init
Query String    :select all from fc-scsi.scsi_initiator
Query Type      :periodic, interval 30

Query Name      :targettl
Query String    :select all from fc-scsi.scsi_target_tl_flow
Query Type      :periodic, interval 30
Query Options   :differential clear

Query Name      :port
Query String    :select all from fc-scsi.logical_port
Query Type      :periodic, interval 30

Query Name      :targetit
Query String    :select all from fc-scsi.scsi_target_it_flow
Query Type      :periodic, interval 30

Query Name      :targetitl
Query String    :select all from fc-scsi.scsi_target_itl_flow
Query Type      :periodic, interval 30
Query Options   :differential clear

Query Name      :inititl
Query String    :select all from fc-scsi.scsi_initiator_itl_flow
Query Type      :periodic, interval 30

Query Name      :initit
Query String    :select all from fc-scsi.scsi_initiator_it_flow
Query Type      :periodic, interval 30

```

This example shows how to view an installed push analytics query:

```

switch# show analytics query name tartl
Query Name      :tartl
Query String    :select all from fc-scsi.scsi_target_tl_flow
Query Type      :periodic, interval 30

```

This example shows the output of a push query that has already been configured:

```

switch# show analytics query name iniitl result
{ "values": {
    "1": {
        "port": "fc1/6",
        "vsan": "10",
        "app_id": "255",
        "initiator_id": "0xe800a0",
        "target_id": "0xd601e0",
        "lun": "0000-0000-0000-0000",
    }
}

```

```

"active_io_read_count": "0",
"active_io_write_count": "7",
"total_read_io_count": "0",
"total_write_io_count": "1008608573",
"total_seq_read_io_count": "0",
"total_seq_write_io_count": "1",
"total_read_io_time": "0",
"total_write_io_time": "370765952314",
"total_read_io_initiation_time": "0",
"total_write_io_initiation_time": "52084968152",
"total_read_io_bytes": "0",
"total_write_io_bytes": "2065630357504",
"total_read_io_inter_gap_time": "0",
"total_write_io_inter_gap_time": "16171468343166",
"total_time_metric_based_read_io_count": "0",
"total_time_metric_based_write_io_count": "1008608566",
"total_time_metric_based_read_io_bytes": "0",
"total_time_metric_based_write_io_bytes": "2065630343168",
"read_io_rate": "0",
"peak_read_io_rate": "0",
"write_io_rate": "16070",
"peak_write_io_rate": "32468",
"read_io_bandwidth": "0",
"peak_read_io_bandwidth": "0",
"write_io_bandwidth": "32912384",
"peak_write_io_bandwidth": "66494976",
"read_io_size_min": "0",
"read_io_size_max": "0",
"write_io_size_min": "2048",
"write_io_size_max": "2048",
"read_io_completion_time_min": "0",
"read_io_completion_time_max": "0",
"write_io_completion_time_min": "111",
"write_io_completion_time_max": "9166",
"read_io_initiation_time_min": "0",
"read_io_initiation_time_max": "0",
"write_io_initiation_time_min": "36",
"write_io_initiation_time_max": "3265",
"read_io_inter_gap_time_min": "0",
"read_io_inter_gap_time_max": "0",
"write_io_inter_gap_time_min": "100",
"write_io_inter_gap_time_max": "1094718",
"peak_active_io_read_count": "0",
"peak_active_io_write_count": "23",
"read_io_aborts": "0",
"write_io_aborts": "0",
"read_io_failures": "0",
"write_io_failures": "0",
"read_io_timeouts": "0",
"write_io_timeouts": "0",
"read_io_scsi_check_condition_count": "0",
"write_io_scsi_check_condition_count": "0",
"read_io_scsi_busy_count": "0",
"write_io_scsi_busy_count": "0",
"read_io_scsi_reservation_conflict_count": "0",
"write_io_scsi_reservation_conflict_count": "0",
"read_io_scsi_queue_full_count": "0",
"write_io_scsi_queue_full_count": "0",
"sampling_start_time": "1529993232",
"sampling_end_time": "1529993260"
},
"2": {
  "port": "fc1/6",
  "vsan": "10",

```



```
"app_id": "255",
"initiator_id": "0xe800a1",
"target_id": "0xd601e1",
"lun": "0000-0000-0000-0000",
"active_io_read_count": "0",
"active_io_write_count": "8",
"total_read_io_count": "0",
"total_write_io_count": "1004271260",
"total_seq_read_io_count": "0",
"total_seq_write_io_count": "1",
"total_read_io_time": "0",
"total_write_io_time": "370004164726",
"total_read_io_initiation_time": "0",
"total_write_io_initiation_time": "51858511487",
"total_read_io_bytes": "0",
"total_write_io_bytes": "2056747540480",
"total_read_io_inter_gap_time": "0",
"total_write_io_inter_gap_time": "16136686881766",
"total_time_metric_based_read_io_count": "0",
"total_time_metric_based_write_io_count": "1004271252",
"total_time_metric_based_read_io_bytes": "0",
"total_time_metric_based_write_io_bytes": "2056747524096",
"read_io_rate": "0",
"peak_read_io_rate": "0",
"write_io_rate": "16065",
"peak_write_io_rate": "16194",
"read_io_bandwidth": "0",
"peak_read_io_bandwidth": "0",
"write_io_bandwidth": "32901632",
"peak_write_io_bandwidth": "33165824",
"read_io_size_min": "0",
"read_io_size_max": "0",
"write_io_size_min": "2048",
"write_io_size_max": "2048",
"read_io_completion_time_min": "0",
"read_io_completion_time_max": "0",
"write_io_completion_time_min": "114",
"write_io_completion_time_max": "9019",
"read_io_initiation_time_min": "0",
"read_io_initiation_time_max": "0",
"write_io_initiation_time_min": "37",
"write_io_initiation_time_max": "3158",
"read_io_inter_gap_time_min": "0",
"read_io_inter_gap_time_max": "0",
"write_io_inter_gap_time_min": "101",
"write_io_inter_gap_time_max": "869035",
"peak_active_io_read_count": "0",
"peak_active_io_write_count": "19",
"read_io_aborts": "0",
"write_io_aborts": "0",
"read_io_failures": "0",
"write_io_failures": "0",
"read_io_timeouts": "0",
"write_io_timeouts": "0",
"read_io_scsi_check_condition_count": "0",
"write_io_scsi_check_condition_count": "0",
"read_io_scsi_busy_count": "0",
"write_io_scsi_busy_count": "0",
"read_io_scsi_reservation_conflict_count": "0",
"write_io_scsi_reservation_conflict_count": "0",
"read_io_scsi_queue_full_count": "0",
"write_io_scsi_queue_full_count": "0",
"sampling_start_time": "1529993232",
"sampling_end_time": "1529993260"
```

```

    }
  }}

```

Related Commands

Command	Description
analytics type	Enables the SAN Analytics feature on an interface or a range of interfaces.
clear analytics	Resets all flow metrics for a view instance.
feature analytics	Enables the SAN Analytics feature on a switch.
purge analytics	Deletes a view instance and its associated flow metrics.
show analytics flow	Displays the SAN analytics type.
show analytics port-sampling	Displays the SAN analytics port sampling information.
ShowAnalytics	Displays the SAN analytics information in a tabular format.

show analytics schema

To display the list of view instances and flow metrics supported in SAN Analytics, use the `show analytics schema` command.

```
show analytics schema fc-nvme | fc-scsi view-instance instance-name | views
```

Syntax Description		
fc-nvme		Non-Volatile Memory Express (NVMe) analytics type.
fc-scsi		Small Computer System Interface (SCSI) analytics type.
view-instance instance-name		Specifies a view instance.
views		Lists view instances.

Command Default Displays analytics schema.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	8.4(1)	This command was introduced.

Examples

This example shows the list of view instances supported in the fc-scsi analytics type:

```
switch# show analytics schema fc-scsi views

fc-scsi db schema tables:
  port
  logical_port
  app
  scsi_target
  scsi_initiator
  scsi_target_app
  scsi_initiator_app
  scsi_target_tl_flow
  scsi_target_it_flow
  scsi_initiator_it_flow
  scsi_target_itl_flow
  scsi_initiator_itl_flow
  scsi_target_io
  scsi_initiator_io
```

This example shows the list of view instances supported in the fc-nvme analytics type:

```
switch# show analytics schema fc-nvme views

fc-nvme db schema tables:
  port
  logical_port
```

```

app
nvme_target
nvme_initiator
nvme_target_app
nvme_initiator_app
nvme_target_tn_flow
nvme_target_it_flow
nvme_initiator_it_flow
nvme_target_itn_flow
nvme_initiator_itn_flow
nvme_target_io
nvme_initiator_io

```

This example shows the list of flow metrics supported in the fc-scsi.port view instance:



Note The exceed_count counters in the output will be supported in a future Cisco MDS NX-OS Release.

```

switch# show analytics schema fc-scsi view port

fc-scsi.port table schema columns:
*port
scsi_target_count
scsi_initiator_count
io_app_count
logical_port_count
scsi_target_app_count
scsi_initiator_app_count
active_io_read_count
active_io_write_count
scsi_target_it_flow_count
scsi_initiator_it_flow_count
scsi_target_itl_flow_count
scsi_initiator_itl_flow_count
scsi_target_tl_flow_count
total_abts_count
total_read_io_count
total_write_io_count
total_seq_read_io_count
total_seq_write_io_count
total_read_io_time
total_write_io_time
total_read_io_initiation_time
total_write_io_initiation_time
total_read_io_bytes
total_write_io_bytes
total_read_io_inter_gap_time
total_write_io_inter_gap_time
total_time_metric_based_read_io_count
total_time_metric_based_write_io_count
total_time_metric_based_read_io_bytes
total_time_metric_based_write_io_bytes
read_io_rate
peak_read_io_rate
write_io_rate
peak_write_io_rate
read_io_bandwidth
peak_read_io_bandwidth
write_io_bandwidth
peak_write_io_bandwidth

```

```

read_io_size_min
read_io_size_max
write_io_size_min
write_io_size_max
read_io_completion_time_min
read_io_completion_time_max
write_io_completion_time_min
write_io_completion_time_max
read_io_initiation_time_min
read_io_initiation_time_max
write_io_initiation_time_min
write_io_initiation_time_max
read_io_inter_gap_time_min
read_io_inter_gap_time_max
write_io_inter_gap_time_min
write_io_inter_gap_time_max
peak_active_io_read_count
peak_active_io_write_count
read_io_aborts
write_io_aborts
read_io_failures
write_io_failures
read_io_timeouts
write_io_timeouts
read_io_scsi_check_condition_count
write_io_scsi_check_condition_count
read_io_scsi_busy_count
write_io_scsi_busy_count
read_io_scsi_reservation_conflict_count
write_io_scsi_reservation_conflict_count
read_io_scsi_queue_full_count
write_io_scsi_queue_full_count
read_io_rate_exceed_count
write_io_rate_exceed_count
read_io_bandwidth_exceed_count
write_io_bandwidth_exceed_count
read_io_size_min_exceed_count
read_io_size_max_exceed_count
write_io_size_min_exceed_count
write_io_size_max_exceed_count
read_io_initiation_time_min_exceed_count
read_io_initiation_time_max_exceed_count
write_io_initiation_time_min_exceed_count
write_io_initiation_time_max_exceed_count
read_io_completion_time_min_exceed_count
read_io_completion_time_max_exceed_count
write_io_completion_time_min_exceed_count
write_io_completion_time_max_exceed_count
read_io_inter_gap_time_min_exceed_count
read_io_inter_gap_time_max_exceed_count
write_io_inter_gap_time_min_exceed_count
write_io_inter_gap_time_max_exceed_count
read_io_abort_exceed_count
write_io_abort_exceed_count
read_io_failure_exceed_count
write_io_failure_exceed_count
sampling_start_time
sampling_end_time

```

(* - indicates the metric is a 'key' for the table)

This example shows the list of flow metrics supported in the fc-nvme.port view instance:



Note The exceed_count counters in the output will be supported in a future Cisco MDS NX-OS Release.

```
switch# show analytics schema fc-nvme view port
```

```
fc-nvme.port table schema columns:
*port
nvme_target_count
nvme_initiator_count
io_app_count
logical_port_count
nvme_target_app_count
nvme_initiator_app_count
active_io_read_count
active_io_write_count
nvme_target_it_flow_count
nvme_initiator_it_flow_count
nvme_target_itn_flow_count
nvme_initiator_itn_flow_count
nvme_target_tn_flow_count
total_abts_count
total_read_io_count
total_write_io_count
total_seq_read_io_count
total_seq_write_io_count
total_read_io_time
total_write_io_time
total_read_io_initiation_time
total_write_io_initiation_time
total_read_io_bytes
total_write_io_bytes
total_read_io_inter_gap_time
total_write_io_inter_gap_time
total_time_metric_based_read_io_count
total_time_metric_based_write_io_count
total_time_metric_based_read_io_bytes
total_time_metric_based_write_io_bytes
read_io_rate
peak_read_io_rate
write_io_rate
peak_write_io_rate
read_io_bandwidth
peak_read_io_bandwidth
write_io_bandwidth
peak_write_io_bandwidth
read_io_size_min
read_io_size_max
write_io_size_min
write_io_size_max
read_io_completion_time_min
read_io_completion_time_max
write_io_completion_time_min
write_io_completion_time_max
read_io_initiation_time_min
read_io_initiation_time_max
write_io_initiation_time_min
write_io_initiation_time_max
read_io_inter_gap_time_min
read_io_inter_gap_time_max
write_io_inter_gap_time_min
write_io_inter_gap_time_max
```

```

peak_active_io_read_count
peak_active_io_write_count
read_io_aborts
write_io_aborts
read_io_failures
write_io_failures
read_io_timeouts
write_io_timeouts
read_io_nvme_lba_out_of_range_count
write_io_nvme_lba_out_of_range_count
read_io_nvme_ns_not_ready_count
write_io_nvme_ns_not_ready_count
read_io_nvme_reservation_conflict_count
write_io_nvme_reservation_conflict_count
read_io_nvme_capacity_exceeded_count
write_io_nvme_capacity_exceeded_count
read_io_rate_exceed_count
write_io_rate_exceed_count
read_io_bandwidth_exceed_count
write_io_bandwidth_exceed_count
read_io_size_min_exceed_count
read_io_size_max_exceed_count
write_io_size_min_exceed_count
write_io_size_max_exceed_count
read_io_initiation_time_min_exceed_count
read_io_initiation_time_max_exceed_count
write_io_initiation_time_min_exceed_count
write_io_initiation_time_max_exceed_count
read_io_completion_time_min_exceed_count
read_io_completion_time_max_exceed_count
write_io_completion_time_min_exceed_count
write_io_completion_time_max_exceed_count
read_io_inter_gap_time_min_exceed_count
read_io_inter_gap_time_max_exceed_count
write_io_inter_gap_time_min_exceed_count
write_io_inter_gap_time_max_exceed_count
read_io_abort_exceed_count
write_io_abort_exceed_count
read_io_failure_exceed_count
write_io_failure_exceed_count
sampling_start_time
sampling_end_time
    
```

(* - indicates the metric is a 'key' for the table)

Related Commands	Command	Description
	analytics query	Installs a push analytics query.
	purge analytics	Deletes a view instance and its associated flow metrics.
	purge analytics	Deletes a view instance and its associated flow metrics.
	show analytics query	Displays the SAN analytics query information.

show analytics system-load

To display the network processing unit (NPU) load per module, use the show analytics system-load command.

```
show analytics system-load
```

Syntax Description This command has no arguments or keywords.

Command Default Displays NPU load for modules.

Command Modes Privileged EXEC (#)

Command History

Release	Modification
8.4(1)	The command output was modified.
8.3(2)	This command was introduced.

Usage Guidelines

This command provides the system load information based on all ITL counts, including active and inactive ITL counts. Hence, we recommend that you use the purge analytics query “query_string” command to remove the inactive ITL counts, and then run this command to get the active ITL counts.

Examples

This example shows how to display the NPU load per module:

```
switch# show analytics system-load
n/a - not applicable
----- Analytics System Load Info
-----
| Module | NPU Load (in %) | ITLs  | ITNs  | Both  | Hosts  | Targets
|         | SCSI NVMe Total | SCSI  | NVMe  | Total | SCSI  | NVMe  | Total | SCSI  | NVMe
Total |
-----
| 1      | 0  0  0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0
| 4      | 64 0  64     | 20743  | 0      | 20743  | 0      | 0      | 0      | 346   | 0      | 346
| 5      | 0  0  0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0
| 8      | 0  0  0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0
| 12     | 0  12 12     | 0      | 300    | 300    | 0      | 0      | 0      | 0      | 40     | 40
| 13     | 0  0  0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0
| 18     | 0  13 13     | 1      | 1      | 2      | 1      | 1      | 2      | 0      | 0      | 0
| Total  | n/a n/a n/a  | 20744  | 301    | 21045  | 1      | 1      | 2      | 346   | 40     | 386
-----
As of Mon Apr 1 05:31:10 2019
```


Related Commands

Command	Description
show analytics port-sampling	Displays the SAN analytics port sampling information.
show analytics query	Displays the SAN analytics query information.

show analytics flow congestion-drops

To display the packet drops on a per-flow basis, use the show analytics flow congestion-drops command.

```
show analytics flow congestion-drops [vsan number] [module number port number]
```

Syntax Description

vsan number	VSAN number.
module number	Module number.
port number	Port number.

Command Default

Displays packet drops on a per-flow basis.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.4(1)	This command was changed from show analytics type fc-scsi flow congestion-drops [vsan number] [module number port number] to show analytics flow congestion-drops [vsan number] [module number port number].
8.2(1)	This command was introduced.

Examples

This example displays flows where frames are dropped due to congestion. The source and destination FCIP, differential frame drop count for the IT pair, and timestamp of the drops are displayed.



Note The congestion drop entries are updated every 20 seconds.

```
switch# show analytics flow congestion-drops
=====
|          | Source   | Destination | Congestion   |          | Timestamp          |
| INTF    | VSAN    | FCID       | FCID        | Drops (delta) |                    |
=====
| fc2/13 | 0002   | 0x9900E1  | 0x640000   | 00000105    | 1. 09/13/17 11:09:48.762 |
| fc2/13 | 0002   | 0x9900E1  | 0x640000   | 00000002    | 2. 09/13/17 09:05:39.527 |
| fc2/13 | 0002   | 0x990000  | 0x640020   | 00000002    | 3. 09/13/17 09:05:39.527 |
=====
| fc2/31 | 0002   | 0x640000  | 0x9900E1   | 00000084    | 1. 09/12/17 08:17:11.905 |
| fc2/31 | 0002   | 0x640000  | 0x9900E1   | 00000076    | 2. 09/12/17 05:50:37.721 |
| fc2/31 | 0002   | 0x640000  | 0x9900E1   | 00000067    | 3. 09/12/17 03:24:03.319 |
| fc2/31 | 0002   | 0x640000  | 0x9900E1   | 00000088    | 4. 09/12/17 00:57:28.019 |
| fc2/31 | 0002   | 0x640000  | 0x9900E1   | 00000088    | 5. 09/11/17 22:30:53.723 |
| fc2/31 | 0002   | 0x640000  | 0x9900E1   | 00000086    | 6. 09/11/17 20:04:18.001 |
| fc2/31 | 0002   | 0x640000  | 0x9900E1   | 00000026    | 7. 09/11/17 17:37:24.273 |
| fc2/31 | 0002   | 0x640000  | 0x9900E1   | 00000076    | 8. 09/11/17 15:10:50.240 |
| fc2/31 | 0002   | 0x640000  | 0x9900E1   | 00000074    | 9. 09/11/17 12:44:15.866 |
| fc2/31 | 0002   | 0x640000  | 0x9900E1   | 00000087    | 10. 09/11/17 10:17:41.402 |
| fc2/31 | 0002   | 0x640000  | 0x9900E1   | 00000086    | 11. 09/11/17 07:51:10.412 |
=====
```

```
| fc2/31| 0002 | 0x640000 | 0x9900E1 | 00000084 |12. 09/11/17 05:24:35.981 |
| fc2/31| 0002 | 0x640000 | 0x9900E1 | 00000083 |13. 09/11/17 02:58:01.067 |
| fc2/31| 0002 | 0x640000 | 0x9900E1 | 00000086 |14. 09/11/17 00:31:26.709 |
| fc2/31| 0002 | 0x640000 | 0x9900E1 | 00000079 |15. 09/10/17 22:04:51.399 |
| fc2/31| 0002 | 0x640000 | 0x9900E1 | 00000084 |16. 09/10/17 19:38:17.217 |
| fc2/31| 0002 | 0x640000 | 0x9900E1 | 00000082 |17. 09/10/17 17:11:42.594 |
| fc2/31| 0002 | 0x640000 | 0x9900E1 | 00000086 |18. 09/10/17 14:44:52.786 |
| fc2/31| 0002 | 0x640000 | 0x9900E1 | 00000089 |19. 09/10/17 12:18:18.394 |
| fc2/31| 0002 | 0x640000 | 0x9900E1 | 00000087 |20. 09/10/17 09:51:44.067 |
=====|
```

Related Commands

Command	Description
show analytics port-sampling	Displays the SAN analytics port sampling information.
show analytics query	Displays the SAN analytics query information.
ShowAnalytics	Displays the SAN analytics information in a tabular format.

show arp

To display Address Resolution Protocol (ARP) entries, use the show arp command.

```
show arp
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines None.

Examples This example shows how to display the ARP table:

```
switch# show arp
Protocol Address          Age (min)      Hardware Addr  Type   Interface
Internet 171.1.1.1             0             0006.5bec.699c ARPA   mgmt0
Internet 172.2.0.1             4             0000.0c07.ac01 ARPA   mgmt0
```

Command	Description
clear arp-cache	Clears the arp-cache table entries.

show autonomous-fabric-id database

To display the contents of the AFID database, use the show autonomous-fabric-id database command in EXEC mode.

```
show autonomous-fabric-id database
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode.

Command History	Release	Modification
	2.1(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows contents of the AFID database:

```
switch# show autonomous-fabric-id database
SWITCH WWN                               Default-AFID
-----
20:00:00:0c:91:90:3e:80                   5
Total: 1 entry in default AFID table
SWITCH WWN                               AFID      VSANS
-----
20:00:00:0c:91:90:3e:80                   10      1,2,5-8
Total: 1 entry in AFID table
```

Related Commands	Command	Description
	autonomous-fabric-id (IVR topology database configuration)	Configures an autonomous fabric ID into the Inter-VSAN Routing (IVR) topology database.
	autonomous-fabric-id (IVR service group configuration)	Configures an autonomous fabric ID into the IVR service group.
	autonomous-fabric-id-database	Configures an autonomous fabric ID (AFID) database.

show banner motd

To display a configured message of the day (MOTD) banner, use the show banner motd command.

```
show banner motd
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(4)	This command was introduced.

Usage Guidelines The configured MOTD banner is displayed before the login prompt on the terminal whenever a user logs in to a switch.

Examples The following example displays the configured banner message:

```
switch# show banner motd
Testing the MOTD Feature
```

The configured message is visible the next time you log in to the switch:

```
Testing the MOTD Featureswitch login:
```

Related Commands	Command	Description
	banner motd	Configures the required banner message.

show boot

To display the boot variables or modules, use the show boot command.

```
show boot [module [slotvariable-name] | sup-1 | sup-2 | variables]
```

Syntax Description

module	(Optional) Displays the boot variables for modules.
slot	Specifies a module by the slot number.
variable-name	Specifies the variable. Maximum length is 80 characters.
sup-1	(Optional) Displays the upper sup configuration.
sup-2	(Optional) Displays the lower sup configuration.
variables	(Optional) Displays the list of boot variables.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.2(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays the current contents of the boot variable:

```
switch# show boot
kickstart variable = bootflash:/kickstart-image
system variable = bootflash:/system-image
Module 2
asm-sfn variable = bootflash:/asm-image
```

The following example displays the images on the specified module:

```
switch# show boot module
Module 2
asm-sfn variable = bootflash:/asm-image
```

The following example displays a list of all boot variables:

```
switch# show boot variables
List of boot variables are:
  asm-sfn
  system
  kickstart
```

show boot auto-copy

To display state of the auto-copy feature, use the show boot auto-copy command.

```
show boot auto-copy [list]
```

Syntax Description	list (Optional) Displays the list of files to be auto-copied
---------------------------	--

Command Default	None.
------------------------	-------

Command Modes	EXEC mode.
----------------------	------------

Command History	Release	Modification
	1.2(1)	This command was introduced.

Usage Guidelines	None.
-------------------------	-------

Examples

The following example shows the message that displays on the console when you enable the auto-copy feature:

```
switch(config)# boot auto-copy
Auto-copy administratively enabled
```

The following example shows the message that displays on the console when you disable the auto-copy feature:

```
switch(config)# boot auto-copy
Auto-copy administratively disabled
```

The following example displays the current state of the auto-copy feature when it is enabled:

```
switch# show boot auto-copy
Auto-copy feature is enabled
```

The following example displays the current state of the auto-copy feature when it is disabled:

```
switch# show boot auto-copy
Auto-copy feature is disabled
```

The following example displays the ilc1.bin image being copied to the standby supervisor module's bootflash, and once this is successful, the next file will be lasilc1.bin. This command only displays files on the active supervisor module.

```
switch# show boot auto-copy list
File: /bootflash/ilc1.bin
Bootvar: ilce
File: /bootflash/lasilc1.bin
Bootvar: lasilc
```


The following example displays a typical message when the auto-copy option is disabled or if no files are copied:

```
switch# show boot auto-copy list  
No file currently being auto-copied
```

show callhome

To display Call Home information configured on a switch, use the show callhome command.

```
show callhome [destination-profile [profile profile | full-txt-destination | short-txt-destination |
XML-destination] | last action status | merge status | pending | pending-diff | script-mapping | transport-email
| user-def-cmds]
```

Syntax Description

destination-profile	(Optional) Displays the Call Home destination profile information.
profile	(Optional) Specifies the destination profile.
profile	Specifies a user-defined destination profile.
full-txt-destination	Specifies the full text destination profile.
short-txt-destination	Specifies the short text destination profile.
XML-destination	Specifies the XML destination profile.
last action status	(Optional) Displays the status of the last CFS commit or discard operation.
last merge status	(Optional) Displays the status of the last CFS merge operation.
pending	(Optional) Displays the status of pending Call Home configuration.
pending-diff	(Optional) Displays the difference between running and pending Call Home configurations.
script-mapping	(Optional) Displays the scripts that are configured for each alert-group.
transport-email	(Optional) Displays the Call Home e-mail transport information.
user-def-cmds	(Optional) Displays the CLI commands configured for each alert group.

Command Default

None

Command Modes

Privilege EXEC(#)

Command History

Release	Modification
1.0(2)	This command was introduced.
2.0(x)	Added last action status, pending, and pending-diff options.
3.0(1)	Added the user-def-cmds argument.
7.3(1)DY(1)	Added the script-mapping keyword.

Usage Guidelines



Note The script-mapping option is only for use by certain customers. Do not configure it if you are not approved by Cisco to use it.

Examples

The following example shows configured Call Home information:

```
switch# show callhome

callhome enabled
Callhome Information:
contact person name:who@where
contact person's email:person@place.com
contact person's phone number:310-408-4000
street addr:1234 Picaboo Street, Any city, Any state, 12345
site id:Site1ManhattanNewYork
customer id:Customer1234
contract id:Andiamo1234
switch priority:0
duplicate message throttling : enabled
periodic inventory : disabled
periodic inventory time-period : 7 days
distribution of callhome configuration data using cfs : disabled
```

The following example shows all destination profile information:

```
switch# show callhome destination-profile

XML destination profile information
maximum message size:250000
email addresses configured:
findout@cisco.com
Short-txt destination profile information
maximum message size:4000
email addresses configured:
person1@page.company.com
full-txt destination profile information
maximum message size:250000
email addresses configured:
person2@company2.com
```

The following example shows the full-text destination profile:

```
switch# show callhome destination-profile profile full-txt-destination

full-txt destination profile information
maximum message size:250000
email addresses configured:
person2@company2.com
```

The following example shows the short-text destination profile:

```
switch# show callhome destination-profile profile short-txt-destination

Short-txt destination profile information
maximum message size:4000
email addresses configured:
person2@company2.com
```

The following example shows the XML destination profile:

```
switch# show callhome destination-profile profile XML-destination
XML destination profile information
maximum message size:250000
email addresses configured:
findout@cisco.com
```

The following example shows email and SMTP information:

```
switch# show callhome transport-email
from email addr:user@company1.com
reply to email addr:pointer@company.com
return receipt email addr:user@company1.com
smtp server:server.company.com
smtp server port:25
```

The following example shows user-defined CLI commands for the alert groups:

```
switch# show callhome user-def-cmds
User configured commands for alert groups :
alert-group test user-def-cmd "show version"
```

Related Commands

Command	Description
alert-group	Customizes a Call Home alert group with user-defined show commands.
callhome	Configures Call Home.
callhome test	Sends a dummy test message to the configured destination(s).

show callhome transport

To display the Call Home transport configuration, use the show callhome transport command.

```
show callhome transport
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 5.2(1)	Changed the command output.
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display the Call Home transport when the proxy is not configured :

```
switch# show callhome transport
http vrf:management
from email addr:S1-2@cisco.com
smtp server:171.69.21.28
smtp server port:25
smtp server vrf:management
smtp server priority:0
http proxy server:10.64.65.62
http proxy server port:8080
http proxy status:Enabled
switch#
```

Related Commands	Command	Description
	callhome	Configures the Call Home function.

show cdp

To display CDP parameters configured globally or for a specific interface, use the show cdp command.

```
show cdp all | entry [all | name cdp-name] | global | interface [gigabitethernet slot / port | mgmt 0] |
neighbors [detail | interface gigabitethernet slot / port | mgmt 0] | traffic interface [gigabitethernet
slot / port | mgmt 0]
```

Syntax Description

all	Displays all enabled CDP interfaces.
entry	Displays CDP database entries.
all	(Optional) Displays all CDP entries in the database
name cdp-name	(Optional) Displays CDP entries that match a specified name. Maximum length is 256 characters.
global	Displays global CDP parameters.
interface	Displays CDP information for neighbors on a specified interface.
gigabitethernet slot/port	(Optional) Specifies the Gigabit Ethernet interface at the slot number and port number separated by a slash (/).
mgmt 0	(Optional) Specifies the Ethernet management interface.
neighbors	Displays all CDP neighbors.
detail	(Optional) Displays detailed information for all CDP neighbors
interface	Displays CDP information for neighbors on a specified interface.
traffic	Displays CDP traffic statistics for an interface.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

This command is allowed only on the active supervisor module in the Cisco MDS 9500 Series.

Examples

The following example displays all CDP-capable interfaces and parameters:

```
switch# show cdp all
GigabitEthernet4/1 is up
    CDP enabled on interface
```

```

    Sending CDP packets every 60 seconds
    Holdtime is 180 seconds
GigabitEthernet4/8 is down
    CDP enabled on interface
    Sending CDP packets every 60 seconds
    Holdtime is 180 seconds
mgmt0 is up
    CDP enabled on interface
    Sending CDP packets every 100 seconds
    Holdtime is 200 seconds

```

The following example displays all CDP neighbor entries:

```

switch# show cdp entry all
-----
Device ID:Switch
System Name:
Interface address(es):
Platform: cisco WS-C2950T-24, Capabilities: Switch IGMP Filtering
Interface: mgmt0, Port ID (outgoing port): FastEthernet0/24
Holdtime: 152 sec

Version:
Cisco Internetwork Operating System Software
IOS (tm) C2950 Software (C2950-I6Q4L2-M), Version 12.1(19)EA1c, RELEASE SOFTWARE
(fc2)
Copyright (c) 1986-2004 by cisco Systems, Inc.
Compiled Mon 02-Feb-04 23:29 by yenanh

Advertisement Version: 2
Native VLAN: 1
Duplex: full

```

The following example displays the specified CDP neighbor:

```

switch# show cdp entry name 0
-----
Device ID:0
Entry address(es):
  IP Address: 209.165.200.226
Platform: DS-X9530-SF1-K9, Capabilities: Host
Interface: GigabitEthernet4/1, Port ID (outgoing port): GigabitEthernet4/1
Holdtime: 144 sec
Version:
1.1(0.144)
Advertisement Version: 2
Duplex: full

```

The following example displays global CDP parameters:

```

switch# show cdp global
Global CDP information:
  CDP enabled globally
  Sending CDP packets every 60 seconds
  Sending a holdtime value of 180 seconds
  Sending CDPv2 advertisements is enabled

```

The following example displays CDP parameters for the management interface:

```

switch# show cdp interface mgmt 0
mgmt0 is up
  CDP enabled on interface

```

```

Sending CDP packets every 60 seconds
Holdtime is 180 seconds

```

The following example displays CDP parameters for the Gigabit Ethernet interface:

```

switch# show cdp interface gigabitethernet 4/1
GigabitEthernet4/1 is up
  CDP enabled on interface
  Sending CDP packets every 80 seconds
  Holdtime is 200 seconds

```

The following example displays CDP neighbors (brief):

```

switch# show cdp neighbors
Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater
Device ID         Local Intrfce  Hldtme  Capability  Platform  Port ID
0                 Gig4/1        135     H           DS-X9530-SF1-  Gig4/1
069038732(Kiowa2 mgmt0  132     T S      WS-C5500    8/11
069038747(Kiowa3 mgmt0  156     T S      WS-C5500    6/20
069038747(Kiowa3 mgmt0  158     T S      WS-C5500    5/22

```

The following example displays CDP neighbors (detail):

```

switch# show CDP neighbor detail
-----
Device ID:Switch
System Name:
Interface address(es):
Platform: cisco WS-C2950T-24, Capabilities: Switch IGMP Filtering
Interface: mgmt0, Port ID (outgoing port): FastEthernet0/24
Holdtime: 137 sec

Version:
Cisco Internetwork Operating System Software
IOS (tm) C2950 Software (C2950-I6Q4L2-M), Version 12.1(19)EA1c, RELEASE SOFTWARE
(fc2)
Copyright (c) 1986-2004 by cisco Systems, Inc.
Compiled Mon 02-Feb-04 23:29 by yenanh

Advertisement Version: 2
Native VLAN: 1
Duplex: full

```

The following example displays the specified CDP neighbor (detail):

```

switch# show CDP neighbors interface gigabitethernet 4/1 detail
-----
Device ID:0
Entry address(es):
  IP Address: 209.165.200.226
Platform: DS-X9530-SF1-K9, Capabilities: Host
Interface: GigabitEthernet4/1, Port ID (outgoing port): GigabitEthernet4/1
Holdtime: 144 sec
Version:
1.1(0.144)
Advertisement Version: 2
Duplex: full

```

The following example displays CDP traffic statistics for the management interface:

```

switch# show cdp traffic interface mgmt 0

```



```
-----  
Traffic statistics for mgmt0  
Input Statistics:  
  Total Packets: 1148  
  Valid CDP Packets: 1148  
    CDP v1 Packets: 1148  
    CDP v2 Packets: 0  
  Invalid CDP Packets: 0  
    Unsupported Version: 0  
    Checksum Errors: 0  
    Malformed Packets: 0  
Output Statistics:  
  Total Packets: 2329  
    CDP v1 Packets: 1164  
    CDP v2 Packets: 1165  
  Send Errors: 0
```

The following example displays CDP traffic statistics for the Gigabit Ethernet interface:

```
switch# show cdp traffic interface gigabitethernet 4/1  
-----  
Traffic statistics for GigabitEthernet4/1  
Input Statistics:  
  Total Packets: 674  
  Valid CDP Packets: 674  
    CDP v1 Packets: 0  
    CDP v2 Packets: 674  
  Invalid CDP Packets: 0  
    Unsupported Version: 0  
    Checksum Errors: 0  
    Malformed Packets: 0  
Output Statistics:  
  Total Packets: 674  
    CDP v1 Packets: 0  
    CDP v2 Packets: 674  
  Send Errors: 0
```

show cfs

To display Cisco Fabric Services (CFS) information, use the show cfs command.

```
show cfs application [name app-name] | lock [name app-name] | merge status [name app-name] | peers
[name app-name] | status [name app-name]
```

Syntax Description

application	Displays locally registered applications.
name app-name	(Optional) Specifies a local application information by name. Maximum length is 64 characters.
lock	Displays the state of application logical or physical locks.
merge status	(Optional) Displays CFS merge information.
peers	Displays logical or physical CFS peers.
status	Displays if CFS distribution is enabled or disabled. Enabled is the default configuration.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
2.0(1b)	This command was introduced.
2.1(1a)	<ul style="list-style-type: none"> Added status keyword. Replaced vsan with fctimer for the fctimer application in the Application field in the command output.
3.0(1)	Modified the show cfs application example with output that shows which applications support CFS distribution over IP and Fibre Channel and those that support only CFS distribution over Fibre Channel.

Usage Guidelines

None.



Note

As soon as the customer encounters the syslog "%VSHD_4_VSHD_ROLE_DATABASE_OUT_OF_SYNC", Role configuration database is found to be different between the switches during merge. Role configuration database is recommended to be identical among all switches in the fabric. Edit the configuration on one of the switches to obtain the desired role configuration database and then commit it. For more information, Refer to the System Messages Guide.

Examples

The following example shows how to display CFS physical peer information for all applications:

```
switch# show cfs peers
Physical Fabric
-----
Switch WWN                IP Address
-----
20:00:00:05:30:00:61:de  209.165.200.226 [Local]
20:00:00:0d:ec:08:66:c0  209.165.200.226
20:00:00:05:30:00:f1:e2  209.165.200.226
20:00:00:05:30:00:eb:46  209.165.200.226
20:00:00:05:30:00:cb:56  209.165.200.227
20:00:00:05:30:00:5b:5e  209.165.200.228
20:00:00:05:30:00:34:9e  209.165.200.229
Total number of entries = 7
```

The following example shows how to display CFS information for all applications on the switch:

```
switch# show cfs application
-----
Application    Enabled    Scope
-----
ntp            No        Physical-all
fscm          Yes       Physical-fc
role          No        Physical-all
rscn          No        Logical
radius        No        Physical-all
fctimer       No        Physical-fc
syslogd       No        Physical-all
callhome      No        Physical-all
fcdomain      Yes       Logical
device-alias  Yes       Physical-fc
Total number of entries = 10
```



Note The show cfs application command displays only those applications that are registered with CFS. Conditional services that use CFS do not appear in the output unless those services are running.

The following example shows how to display CFS information for the device alias application:

```
switch# show cfs application name device-alias
Enabled       : Yes
Timeout       : 5s
Merge Capable : Yes
Scope         : Physical
```

The following example shows how to display CFS merge operation information for the device alias application:

```
switch# show cfs merge status device-alias
Physical Merge Status: Success
Local Fabric
-----
Switch WWN                IP Address
-----
20:00:00:05:30:00:34:9e  209.165.200.226 [Merge Master]
20:00:00:05:30:00:5b:5e  209.165.200.227
20:00:00:05:30:00:61:de  209.165.200.228
20:00:00:05:30:00:cb:56  209.165.200.229
20:00:00:05:30:00:eb:46  209.165.200.230
20:00:00:05:30:00:f1:e2  209.165.200.231
```

The following example shows whether or not CFS distribution is enabled:

```
switch# show cfs status  
  
Fabric distribution Enabled  
switch#
```

show cfs regions

To display the list of distribution-enabled applications with peers in a region, use the show cfs region command.

```
show cfs regions [brief [region-id] | name [name app-name] | region [region-id]]
```

Syntax Description	brief region-id	(Optional) Displays all configured regions and applications without peers.
	name name app-name	(Optional) Displays all peers and region information for a given application.
	region region-id	(Optional) Displays all configured applications with peers.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows all the region information with peers:

```
switch# show cfs regions
Region-ID : 1
Application: callhome
Scope     : Physical-all
-----
Switch WWN          IP Address
-----
20:00:00:0d:ec:04:99:c0 209.165.200.226 [Local]
                        switch-
20:00:00:0d:ec:04:99:c1 209.165.200.226
                        switch-2.cisco.com
20:00:00:0d:ec:04:99:c2 209.165.200.226
                        switch-3.cisco.com
Total number of entries = 3
Region-ID : 1
Application: ntp
Scope     : Physical-all
-----
Switch WWN          IP Address
-----
20:00:00:0d:ec:06:55:c0 209.165.200.226 [Local]
                        switch-1
Total number of entries = 1
```

The following example shows the list of applications without peers in a region:

```
switch# show cfs regions brief
-----
```

show cfs regions

```

Region      Application  Enabled
-----
1           callhome    yes
1           ntp         yes

```

The following example shows the peer and region information for a given application in a region:

```

switch# show cfs regions name callhome
Region-ID : 1
Application: callhome
Scope     : Physical-all
-----
Switch WWN          IP Address
-----
20:00:00:0d:ec:06:55:c0 209.165.200.226 [Local]
                        switch 1
Total number of entries = 1

```

Related Commands

Command	Description
cfs regions	Creates a region that restricts the scope of application distribution to a selected switch.

show cfs static peers

To display all the configured static peers with status, use the show cfs static peers command.

```
show cfs static peers
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the CFS static peers:

```
-----
IP address                WWN name                Status
-----
1.2.3.4                    00:00:00:00:00:00:00    Un Reachable
1.2.3.5                    00:00:00:00:00:00:00    Un Reachable
10.64.66.47                20:00:00:0d:ec:06:55:c0  Reachable
10.64.66.56                20:00:08:00:88:04:99:80  Local
Total number of entries = 4
```

Related Commands	Command	Description
	cfs static peers	Displays configured static peers with status.

show cfs status

To display the Cisco Fabric Services (CFS) status, use the show cfs region command.

```
show cfs status
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Command History	Release	Modification
	4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the CFS status:

```
switch# show cfs status
Distribution: Enabled
Distribution over IP: Enabled (static)
IPv4 multicast address : 239.255.70.83
IPv6 multicast address : ff15::efff:4563
```

Related Commands	Command	Description
	cfs enable	Starts CFS.

show cimserver

To display the Common Information Model (CIM) configurations and settings, use the show cimserver command.

```
show cimserver [certificateName | HttpsStatus | HttpStatus | status]
```

Syntax Description	
certificateName	(Optional) Displays the installed Secure Socket Layer (SSL) certificate.
HttpsStatus	(Optional) Displays the HTTPS (secure) protocol settings for the CIM server.
HttpStatus	(Optional) Displays the HTTP (non-secure) protocol for the CIM server.
status	(Optional) Displays the CIM server status.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	5.2(1)	This command was deprecated.

Usage Guidelines None.

Examples

The following example displays CIM server certificate files:

```
switch# show cimserver certificateName
cimserver certificate file name is servcert.pem
```

The following example displays the CIM server configuration:

```
switch# show cimserver
cimserver is enabled
cimserver Http is not enabled
cimserver Https is enabled
cimserver certificate file name is servcert.pem
```

The following example displays the CIM server HTTPS status:

```
switch# show cimserver httpsstatus
cimserver Https is enabled
```

The following example displays the CIM server HTTP status:

```
switch# show cimserver httpstatus
cimserver Http is not enabled
```

show cimserver indications

To display cimserver indications such as filters, recipients, and subscriptions, use the show cimserver indication command.

```
show cimserver indication
```

Syntax Description This command has no arguments or keywords:

Command Default None.

Command Modes EXEC mode

Release	Modification
3.3(1a)	This command was introduced.
5.2(1)	This command was deprecated.

Usage Guidelines None.

Examples The following example displays the cimserver indications:

```
switch# show cimserver indication
Filter:          root/cimv2:Feb 7, 2008 2:32:11 PM
Query:          "SELECT * FROM CISCO_LinkUp"
Query Language: WQL
-----
Handler:        root/cimv2:CIM_ListenerDestinationCIMXML.Thu Feb 07 14:32:44 IST
20081202374964083
Destination:    http://10.77.91.110:59901
PersistenceType: Transient
-----
Namespace:     root/cimv2
Filter:        root/cimv2:Feb 7, 2008 2:32:11 PM
Handler:      root/cimv2:CIM_ListenerDestinationCIMXML.Thu Feb 07 14:32:44 IST
20081202374964083
Query:        "SELECT * FROM CISCO_LinkUp"
Destination:  http://10.77.91.110:59901
SubscriptionState: Enabled
The following example displays the cimserver's indication filters:
switch# show cimserver indication filters
Filter:          root/cimv2:Feb 7, 2008 2:32:11 PM
Query:          "SELECT * FROM CISCO_LinkUp"
Query Language: WQL
The following example displays the cimserver's indication recipient:
switch# show cimserver indication recipients
Handler:        root/cimv2:CIM_ListenerDestinationCIMXML.Thu Feb 07 14:32:44 IST
20081202374964083
Destination:    http://10.77.91.110:59901
PersistenceType: Transient
The following example displays the subscriptions on cimserver:
switch# show cimserver indication subscriptions
Namespace:     root/cimv2
```

```
Filter:          root/cimv2:Feb 7, 2008 2:32:11 PM
Handler:        root/cimv2:CIM_ListenerDestinationCIMXML.Thu Feb 07 14:32:44 IST
                20081202374964083
Query:          "SELECT * FROM CISCO_LinkUp"
Destination:    http://10.77.91.110:59901
SubscriptionState: Enabled
```

show cimserver logs

To display the cimserver logs, use the show cimserver logs command.

```
show cimserver logs
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.
	5.2(1)	This command was deprecated.

Usage Guidelines None.

Examples The following example displays the cimserver logs:

```
switch# show cimserver logs
02/07/2008-16:38:14 INFO    cimserver: Sent response to: localhost
02/07/2008-16:38:26 INFO    cimserver: Received request from: 10.77.91.110
02/07/2008-16:38:27 INFO    cimserver: Sent response to: 10.77.91.110
```

Related Commands	Command	Description
	cimserver loglevel	Enters cimserver log level filters.

show cimserver status

To display the cimserver status, use the show cimserver status command.

```
show cimserver status
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.
	5.2(1)	This command was deprecated.

Usage Guidelines None.

Examples The following example displays the cimserver status:

```
switch# show cimserver status
cimserver is enabled
```

Related Commands	Command	Description
	cimserver enable	Starts the cimserver.

show cli alias

To display configured aliases on a switch, use the show cli alias command.

```
show cli alias [name name]
```

Syntax Description	name name (Optional) Specifies an alias name. The maximum size of the name is 31 characters.
---------------------------	--

Command Default	None.
------------------------	-------

Command Modes	EXEC mode.
----------------------	------------

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines	The show cli alias command shows the default alias and other user-defined aliases. The default alias is alias, which means show cli alias.
-------------------------	--

Examples	The following example displays CLI aliases:
-----------------	---

```
switch# show cli alias
CLI alias commands
=====
alias  :show cli alias
env    :show environment
clock  :show clock
```

The following example displays a specific alias by name:

```
switch# show cli alias name qos
qos :show qos
```

Related Commands	Command	Description
	cli alias name	Defines a command alias name.

show cli variables

To display user-defined session and persistent CLI variables, use the show cli variables command.

```
show cli variables
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines The show CLI variables command shows all available CLI variables, including user-defined session CLI variables, user-defined persistent CLI variables, and system-defined CLI variables. There is no distinction between the types of CLI variables in the output.

Examples The following example displays CLI variables:

```
switch# show cli variables
VSH Variable List
-----
TIMESTAMP="2005-10-24-21.29.33"
testinterface="fc 1/1"
```



Note The TIMESTAMP variable shown in the output in the preceding example is a predefined variable supported by Cisco MDS NX-OS. For more information about the TIMESTAMP variable, refer to the Cisco MDS 9000 Family CLI Configuration Guide .

Related Commands	Command	Description
	cli var name	Defines a CLI session variable.
	cli var name (configuration)	Defines a CLI persistent variable.

show clock

To display the system date and time and verify the time zone configuration, use the show clock command.

```
show clock
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the system date, time, and time zone configuration:

```
switch# show clock
Fri Mar 14 01:31:48 UTC 2003
```


show cloud discovery

To display discovery information about the cloud, use the show cloud discovery command.

```
show cloud discovery config | stats | status
```

Syntax Description	
config	Displays global discovery configuration information.
stats	Displays discovery statistics information.
status	Displays discovery status information.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.
	3.2(2c)	This command was deprecated.

Usage Guidelines None.

Examples The following example shows information about a cloud:

```
switch# show cloud discovery config
Auto discovery: Enabled
```

The following example shows statistics about a cloud:

```
switch# show cloud discovery stats
Global statistics
  Number of Auto Discovery                = 4
  Number of Manual (demand) Discovery     = 0
  Number of cloud discovery (ping) messages sent = 17
  Number of cloud discovery (ping) success = 1
```

Related Commands	Command	Description
	cloud discover	Initiates manual, on-demand cloud discovery.
	cloud discovery	Configures cloud discovery.
	cloud-discovery	Enables discovery of cloud memberships.
	show cloud membership	Displays information about members of a cloud.

show cloud membership

To display membership information about the cloud, use the show cloud membership command.

```
show cloud membership [all | interface gigabitethernet slot/port | port-channel number | unresolved]
```

Syntax Description

all	(Optional) Displays all clouds and cloud members.
interface	(Optional) Displays all members of a cloud containing a specified interface.
gigabitethernet slot/port	Specifies a Gigabit Ethernet interface by slot and port number. The range is 1 to 6.
port-channel number	Specifies a PortChannel interface. The range is 1 to 128.
unresolved	(Optional) Displays unresolved members of the cloud.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.0(1)	This command was introduced.
3.2(2c)	This command was deprecated.

Usage Guidelines

None.

Examples

The following example displays the members of clouds:

```
switch# show cloud membership
Undiscovered Cloud
  port-channel 1[20:00:00:05:30:00:a7:9e] IP Addr fe80::205:30ff:fe00:a412
  port-channel 1.250[20:00:00:05:30:00:a7:9e] IP Addr 3000:2::1
  port-channel 1.250[20:00:00:05:30:00:a7:9e] IP Addr fe80::205:30ff:fe00:a412
  #members=3
Cloud 2
  port-channel 1[20:00:00:05:30:00:a7:9e] IP Addr 3000:1::1
  #members=1
Cloud 3
  GigabitEthernet1/1[20:00:00:05:30:00:a7:9e] IP Addr 10.10.10.1
  #members=1
Cloud 4
  GigabitEthernet1/2[20:00:00:05:30:00:a7:9e] IP Addr 10.10.60.1
  #members=1
```

Related Commands

Command	Description
cloud discover	Initiates manual, on-demand cloud discovery.

Command	Description
cloud discovery	Configures cloud discovery.
cloud-discovery enable	Enables discovery of cloud memberships.
show cloud discovery	Displays discovery information about a cloud.

show congestion-isolation

To display information about the devices configured for the Congestion Isolation feature, use the show congestion-isolation command.

```
show congestion-isolation exclude-list | global-list | ifindex-list | include-list | pmon-list | remote-list
| status [vsan vsan-id]
```

Syntax Description

exclude-list	Lists the devices that were manually excluded as slow devices.
global-list	Lists the devices that were detected as slow in a fabric, when the Congestion Isolation feature was enabled.
ifindex-list	Lists the interfaces that are isolated as slow devices.
include-list	Lists the devices that were manually configured as slow devices.
pmon-list	Lists the devices that were detected as slow devices on a local switch.
remote-list	Lists the devices that were detected as slow devices on remote switches (not locally detected slow devices).
status	Displays the status of the Congestion Isolation feature.
vsan	Specifies a virtual storage area network (VSAN).
vsan-id	VSAN ID. Range is 1 to 4093.

Command Default

None.

Command Modes

Privilege EXEC (#)

Command History

Release	Modification
8.5(1)	This command was deprecated.
8.1(1)	This command was introduced.

Usage Guidelines

From Cisco MDS NX-OS Release 8.5(1), use the show fpm command instead of this command.

Examples

The following example shows the list of devices that are detected as slow on a local switch:

```
switch# show congestion-isolation pmon-list vsan 4
PMON detected list for vsan 4 : PWWN(FCID)
=====
10:00:00:00:c9:f9:16:8d(0xbe0000)
```

The following example shows the global list of devices that are detected as slow in a fabric where the Congestion Isolation feature is enabled:

```
switch# show congestion-isolation global-list vsan 4
Global list for vsan 4 PWWN(FCID)
=====
10:00:00:00:c9:f9:16:8d(0xbe0000)
```

The following example shows the list of devices that are detected as slow on remote switches (not locally detected slow devices):

```
switch# show congestion-isolation remote-list vsan 4
Remote list for vsan 4 : PWWN(FCID)
=====
10:00:00:00:c9:f9:16:8d(0xbe0000)
```

The following example shows the list of devices that are manually configured as slow devices on a local switch:

```
switch# show congestion-isolation include-list vsan 4
Include list for vsan 4 : PWWN(FCID) (online/offline)
=====
10:00:00:00:c9:f9:16:8d(0xbe0000) - (Online)
switch# show fcns database vsan 4
VSAN 4:
-----
FCID TYPE PWWN (VENDOR) FC4-TYPE:FEATURE
-----
0x040000 N 10:00:40:55:39:0c:80:85 (Cisco) ipfc
0x040020 N 21:00:00:24:ff:4f:70:47 (Qlogic) scsi-fcp:target
0xbe0000 N 10:00:00:00:c9:f9:16:8d (Emulex) scsi-fcp:init slow-dev <<<slow
device [testing]Total number of entries = 3
```

The following example shows the list of devices that are manually excluded as slow devices on a local switch:

```
switch# show congestion-isolation exclude-list vsan 4
Exclude list for vsan 4 : PWWN(FCID) (online/offline)
=====
```

Related Commands	Command	Description
	congestion-isolation	Manually configures a device as a slow device or excludes a device that was detected as a slow device by the port monitor.
	congestion-isolation remove	Prevents an interface or port channel from being detected as slow by the port monitor.
	show fpm	Displays Fabric Performance Monitor (FPM) information.

show consistency-checker

To verify the consistency between various internal system tables, use the `show consistency-checker` command.

```
show consistency-checker acl-table-status | fib-table-status [module number] | pss
```

Syntax Description

<code>acl-table-status</code>	Compares software and hardware access control list (ACL) table status.
<code>fib-table-status</code>	Compares software and hardware forwarding information base (FIB) table status.
<code>module number</code>	(Optional) Module number.
<code>pss</code>	Checks for inconsistency across memory, shared, and persistent data.

Command Default

Displays consistency information for all modules.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.4(1)	This command was introduced.

Usage Guidelines

The `show consistency-checker` command is a troubleshooting tool that helps to identify inconsistent state between software and hardware tables in the switch. Such conditions are abnormal and may lead to data forwarding issues in the switch. Programmatic checking by this command assures accuracy of checks and reduces the time to identify the table inconsistencies.

This command should be used as part of troubleshooting when data forwarding issues are suspected. It compares the software state of the supervisor with the hardware state of supported I/O modules. The specified consistency check is done at the time the command is issued and the results are displayed. Detailed information about detected inconsistencies is displayed to direct further detailed debugging.

Examples

The following example runs the ACL Consistency Checker for module 3 on demand and displays the results. This example shows the abnormal case of test failure.

```
switch# show consistency-checker acl-table-status module 3
Running ACL Consistency checker. Please wait, while consistency checks are in progress!!!
```

```
-----
                                MODULE-3

Validating ingress ACL IPS entries for all fwd-engine...
Validating egress ACL IPS entries for all fwd-engine...
Validating ingress ACL FC entries
fwd-engine 0...
fwd-engine 1...
fwd-engine 2...
Validating egress ACL FC entries
fwd-engine 0...
fwd-engine 1...
fwd-engine 2...
```

```

DETAILED SUMMARY:
input
  Fwd-Engine: all
    Shadow & Hardware Sync Errors:
      Mismatch Count: HW(1) SW(1)
Hardware Mismatch Entries:
  d ALL      0      0      0 ANY      NA  4      22  0      0  78  0      0 |  1  0      0      0
  0
Shadow Mismatch Entries:
  d ALL      0      0      0  15  2ec ANY      -  4      22  0      0  78  0      0 |  1  0      0
  0      0

output
=====
SUMMARY:
MODULE : 3
  TIME TAKEN:                61.23 seconds
  IPS HARDWARE & SHADOW SYNC STATUS: FAILED
  FC HARDWARE & SHADOW SYNC STATUS: PASSED
  FC DUPLICATE CHECKS:       PASSED
=====

```

The following example runs the FIB Consistency Checker for module 1 on demand and displays the results. This example shows the abnormal case of test failures.

```

switch# show consistency-checker fib-table-status module 1
Running FC FIB Consistency checker. Please wait, while consistency checks are in progress!!!

-----
MODULE-1

Validating FIB IPS Fwd Hardware and Software Entries
fwd-engine 0...
Validating FIB FC Fwd Hardware and Software Entries
fwd-engine 0...
fwd-engine 1...
fwd-engine 2...
Validating FIB FC ADJ Hardware and Shadow Entries...
fwd-engine 0...
fwd-engine 1...
fwd-engine 2...

DETAILED SUMMARY:
Fwd Engine: 0
FORWARDING TABLE
All fields in hex except VSAN

Route          Fwd  Fwd  | Num  Grp  Path  Adj
Type  VSAN D ID  Idx  DRAM | Path Idx  Idx  Idx  VDC  FE
-----+-----+-----+-----+-----+-----+-----
Hardware Mismatch Entries:
wka  0000 fffffe  07d2  1d01 | 1    ....  ....  004c  01  00 0

Software Mismatch Entries:
wka  0000 fffffe  07d2  1d01 | 1    ....  ....  004f  01  00 0

Fwd Engine: 0
ADJACENCY TABLE
M:multicast I:D_IDX_CTL S:span B:bundle F:fcoe_bit
All fields in hex.

Adj          | Fwd
Idx  DIdx/fcoe_base M I B Span  fcoe_bit  | Idx
-----+-----+-----+-----+-----+-----+-----
Hardware Mismatch Entries:

```

show consistency-checker

```

00001  000          F F F 00000  T          | 0017 0

Software Mismatch Entries:
00001  03e          F F F 00000  F          | 0017 0
=====
SUMMARY:
Module : 1
  Time Taken:                               31.24 seconds
  FWDFC Table Hardware & Software Sync Status: PASSED
  FWDIPS Table Hardware & Software Sync Status: FAILED
    Hardware Mismatch Counts: 1
    Software Mismatch Counts: 1
  ADJFC Table Hardware & Software Sync Status: FAILED
    Hardware Mismatch Counts: 1
    Software Mismatch Counts: 1
=====

```

The following example displays the persistent storage service (PSS) Consistency Checker information on an active supervisor. This example shows the abnormal case of test failure.

```

switch# show consistency-checker pss
PSS CONSISTENCY CHECK RESULT FOR ELTM: SUCCESS
-----
No inconsistency detected in ELTM data
=====
PSS CONSISTENCY CHECK RESULT FOR ETHPM: SUCCESS
-----
No inconsistency detected in ethpm persistent, runtime and shared data.
=====
ATTRIBUTE NAME          : Flogi info Runtime Data
INCONSISTENT INTERFACE : fc2/13
-----
PSS CONSISTENCY CHECK RESULT FOR FPORT_SVR: FAILURE
-----
Please collect tech-support for fport_svr for more details.
=====
PSS CONSISTENCY CHECK RESULT FOR STP: SUCCESS
-----
No inconsistency detected in STP CBL data
=====
PSS CONSISTENCY CHECK RESULT FOR VLAN_MGR: SUCCESS
-----
No inconsistency detected in vlan_mgr persistent, runtime and shared data.
=====

```

Related Commands

Command	Description
show module	Displays module information, including the online diagnostic test status.

show consistency-checker analytics

To identify inconsistencies in SAN analytics components such as NPU, modules, queries, database, analytics ACL entries, and so on, use the show consistency-checker analytics command.

```
show consistency-checker analytics
```

Command Default

None.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
9.2(1)	This command was introduced.

Usage Guidelines

This command is a troubleshooting tool that helps to identify inconsistencies in SAN analytics components such as NPU, modules, queries, database, port-sampling configuration and so on. Such inconsistencies are abnormal and may lead to issues on the switch. Programmatic checking by this command assures accuracy of checks and reduces the time to identify such inconsistencies.

This command should be used as part of troubleshooting when SAN analytics issues are suspected. The specified consistency check is done at the time the command is issued and the results are displayed. Detailed information about the detected inconsistencies is displayed to direct further detailed debugging.

The following example displays how to display the inconsistencies in SAN analytics:

```
switch# show consistency-checker analytics

Analytics Consistency Checker:
Checking for Analytics related consistency checks for the SUP:
Checking for queries consistency... - Skipped (Queries not configured) Checking for global database consistency... - Passed Checking for query_id consistency... - Passed
Checking for Analytics related consistencies for the Line Cards:
Module 1 :

Checking for ifindex consistency... - Passed Checking for ACL consistency...
Running config: SCSI+NVME both for interface fcl/3 Running config: SCSI+NVME both for interface fcl/4 ACL TCAM: SCSI+NVME both for interface fcl/3 ACL TCAM: SCSI+NVME both for
interface fcl/4 Running config and ACL TCAM entries are consistent for all interfaces Checking for extra entries in ACL. Please wait...
No extra analytics entry found for non-analytics interfaces. Consistency check successful.
Checking for bcm status...
BCM Status passed successfully.
Checking for Port-Sampling Config Consistency.....
=====>>>>>>> Skipped (Not Configured on SUP and Linecard)

No EIOA drops seen
No MPP drops seen
XGMAC9 Port Link => UP!!!

Both XFI links are UP!

Traps observed in ncpmgr: 0
```

Related Commands

Command	Description
show consistency-checker	Verifies the consistency between various internal system tables.

show copyright

To display the NX-OS software copyright statement, use the show copyright command in EXEC mode.

```
show copyright
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(2)	This command was introduced.
	NX-OS 4.1(1b)	Changed the command output from SAN-OS to NX-OS.

Usage Guidelines Use the show copyright command to verify the copyright statement of the current NX-OS image.

Examples The following example displays copyright information for NX-OS software:

```
switch# show copyright
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2008, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php
switch#
```

show cores

To display a list of core bundles in the switch core repository, use the show cores command.

```
show cores
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines The core repository can hold around 10 core bundles. Each platform has different limits. Therefore, it is important to copy core bundles to mass storage and then delete them from the repository to free up space.

Examples This example shows the list of core bundles in the switch core repository:

```
switch# show cores
Module Instance Process-name PID Date (Year-Month-Day Time)
-----
5 1 kernel 1 2021-04-20 08:18:55
```

Related Commands	Command	Description
	clear cores	Deletes all core bundles.
	clear core_file	Deletes a single core bundle.
	copy	Copies files from source to destination.
	system cores	Automatically copies core bundles.
	system kernel	Enables kernel core logging.

show crypto ca certificates

To display configured trust point certificates, use the show crypto ca certificates command.

```
show crypto ca certificates trustpoint-label
```

Syntax Description

trustpoint-label	Specifies the name of the trust point. The maximum size is 64 characters.
------------------	---

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

This command displays the important fields in the identity certificate, if present, followed by those in the CA certificate (or each CA certificate if it is a chain, starting from the lowest to the self-signed root certificate), or the trust point. If the trust point name is not specified, all trust point certificate details are displayed.

Examples

The following example displays configured trust point certificates:

```
switch# show crypto ca certificates
Trustpoint: admin-ca
certificate:
subject= /CN=switch160
issuer= /C=US/O=cisco/CN=Aparna CA2
serial=6CDB2D9E000100000006
notBefore=Jun  9 10:51:45 2005 GMT
notAfter=May  3 23:10:36 2006 GMT
MD5 Fingerprint=0A:22:DC:A3:07:2A:9F:9A:C2:2C:BA:96:EC:D8:0A:95
purposes: sslserver sslclient ike
CA certificate 0:
subject= /C=US/O=cisco/CN=Aparna CA2
issuer= /emailAddress=amandke@cisco.com/C=IN/ST=Maharashtra/L=Pune/O=cisco/OU=netstorage/CN=Aparna CA1
serial=14A3A877000000000005
notBefore=May  5 18:43:36 2005 GMT
notAfter=May  3 23:10:36 2006 GMT
MD5 Fingerprint=32:50:26:9B:16:B1:40:A5:D0:09:53:0A:98:6C:14:CC
purposes: sslserver sslclient ike
CA certificate 1:
subject= /emailAddress=amandke@cisco.com/C=IN/ST=Maharashtra/L=Pune/O=cisco/OU=netstorage/CN=Aparna CA1
issuer= /emailAddress=amandke@cisco.com/C=IN/ST=Karnataka/L=Bangalore/O=Cisco/OU=netstorage/CN=Aparna CA
serial=611B09A1000000000002
notBefore=May  3 23:00:36 2005 GMT
notAfter=May  3 23:10:36 2006 GMT
MD5 Fingerprint=65:CE:DA:75:0A:AD:B2:ED:69:93:EF:5B:58:D4:E7:AD
purposes: sslserver sslclient ike
CA certificate 2:
subject= /emailAddress=amandke@cisco.com/C=IN/ST=Karnataka/L=Bangalore/O=Cisco/O
```

```
U=netstorage/CN=Aparna CA
issuer= /emailAddress=amandke@cisco.com/C=IN/ST=Karnataka/L=Bangalore/O=Cisco/OU
=netstorage/CN=Aparna CA
serial=0560D289ACB419944F4912258CAD197A
notBefore=May  3 22:46:37 2005 GMT
notAfter=May  3 22:55:17 2007 GMT
MD5 Fingerprint=65:84:9A:27:D5:71:03:33:9C:12:23:92:38:6F:78:12
purposes: sslserver sslclient ike
```

Related Commands

Command	Description
crypto ca authenticate	Authenticates the certificate of the CA.
show ca trustpoints	Displays trust point configurations.

show crypto ca crl

To display configured certificate revocation lists (CRLs), use the show crypto ca crl command.

```
show crypto ca crl trustpoint-label
```

Syntax Description

trustpoint-label	Specifies the name of the trust point. The maximum size is 64 characters.
------------------	---

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

This command lists serial numbers of revoked certificates in the CRL of the specified trust point.

Examples

The following example displays a configured CRL:

```
switch# show crypto ca crl admin-ca
Trustpoint: admin-ca
CRL:
Certificate Revocation List (CRL):
  Version 2 (0x1)
  Signature Algorithm: sha1WithRSAEncryption
  Issuer: /emailAddress=rviyyoka@cisco.com/C=IN/ST=Kar/L=Bangalore/O=Cisco
Systems/OU=1/CN=cisco-blr
  Last Update: Sep 22 07:05:23 2005 GMT
  Next Update: Sep 29 19:25:23 2005 GMT
  CRL extensions:
    X509v3 Authority Key Identifier:
      keyid:CF:72:E1:FE:14:60:14:6E:B0:FA:8D:87:18:6B:E8:5F:70:69:05:3F
      1.3.6.1.4.1.311.21.1:
        ...
Revoked Certificates:
  Serial Number: 1E0AE838000000000002
    Revocation Date: Mar 15 09:12:36 2005 GMT
  Serial Number: 1E0AE9AB000000000003
    Revocation Date: Mar 15 09:12:45 2005 GMT
  Serial Number: 1E721E50000000000004
    Revocation Date: Apr 5 11:04:20 2005 GMT
  Serial Number: 3D26E445000000000005
    Revocation Date: Apr 5 11:04:16 2005 GMT
  Serial Number: 3D28F8DF000000000006
    Revocation Date: Apr 5 11:04:12 2005 GMT
  Serial Number: 3D2C6EF3000000000007
    Revocation Date: Apr 5 11:04:09 2005 GMT
  Serial Number: 3D4D7DDC000000000008
    Revocation Date: Apr 5 11:04:05 2005 GMT
  Serial Number: 5BF1FE87000000000009
    Revocation Date: Apr 5 11:04:01 2005 GMT
  Serial Number: 5BF22FB300000000000A
```

```

    Revocation Date: Apr  5 11:03:45 2005 GMT
Serial Number: 5BFA4A4900000000000B
    Revocation Date: Apr  5 11:03:42 2005 GMT
Serial Number: 5C0BC22500000000000C
    Revocation Date: Apr  5 11:03:39 2005 GMT
Serial Number: 5C0DA95E00000000000D
    Revocation Date: Apr  5 11:03:35 2005 GMT
Serial Number: 5C13776900000000000E
    Revocation Date: Apr  5 11:03:31 2005 GMT
Serial Number: 4864FD5A00000000000F
    Revocation Date: Apr  5 11:03:28 2005 GMT
Serial Number: 48642E2E000000000010
    Revocation Date: Apr  5 11:03:24 2005 GMT
Serial Number: 486D4230000000000011
    Revocation Date: Apr  5 11:03:20 2005 GMT
Serial Number: 7FCB75B9000000000012
    Revocation Date: Apr  5 10:39:12 2005 GMT
Serial Number: 1A7519000000000013
    Revocation Date: Apr  5 10:38:52 2005 GMT
Serial Number: 20F1B0000000000014
    Revocation Date: Apr  5 10:38:38 2005 GMT
Serial Number: 436E43A9000000000023
    Revocation Date: Sep  9 09:01:23 2005 GMT
CRL entry extensions:
    X509v3 CRL Reason Code:
        Cessation Of Operation
Serial Number: 152D3C5E000000000047
    Revocation Date: Sep 22 07:12:41 2005 GMT
Serial Number: 1533AD7F000000000048
    Revocation Date: Sep 22 07:13:11 2005 GMT
Serial Number: 1F9EB8EA00000000006D
    Revocation Date: Jul 19 09:58:45 2005 GMT
CRL entry extensions:
    X509v3 CRL Reason Code:
        Cessation Of Operation
Serial Number: 1FCA9DC600000000006E
    Revocation Date: Jul 19 10:17:34 2005 GMT
CRL entry extensions:
    X509v3 CRL Reason Code:
        Cessation Of Operation
Serial Number: 2F1B5E2E000000000072
    Revocation Date: Jul 22 09:41:21 2005 GMT
CRL entry extensions:
    X509v3 CRL Reason Code:
        Cessation Of Operation
Signature Algorithm: sha1WithRSAEncryption
4e:3b:4e:7a:55:6b:f2:ec:72:29:70:16:2a:fd:d9:9a:9b:12:
f9:cd:dd:20:cc:e0:89:30:3b:4f:00:4b:88:03:2d:80:4e:22:
9f:46:a5:41:25:f4:a5:26:b7:b6:db:27:a9:64:67:b9:c0:88:
30:37:cf:74:57:7a:45:5f:5e:d0
    
```

Related Commands

Command	Description
crypto ca crl request	Configures a CRL or overwrites the existing one for the trust point CA.

show crypto ca remote-certstore

To display configured remote certstores, use the show crypto ca remote-certstore command.

```
show crypto ca remote certstore
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command Default None.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.



Note In the current 5.0 release only ssh-client will use remote certstore. Other applications like ike, callhome will continue using local certstore irrespective of the configurations.

Examples

The following example shows how to display configured remote certstores:

```
switch# show crypto ca remote-certstore
Remote Certstore:LDAP
CRL Timer : 10 Hours
LDAP Server group : Ldap1
switch#
```

Related Commands	Command	Description
	crypto certificatemap mapname	Specifies the certificate map that will be used for filtering the certificate request.

show crypto ca trustpoints

To display trust point configurations, use the show crypto ca trustpoints command.

```
show crypto ca trustpoints
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None.

Examples The following example displays configured trust points:

```
switch# show crypto ca trustpoints
trustpoint: CAname; key:
revokation methods:  crl
```

Related Commands	Command	Description
	crypto ca authenticate	Authenticates the certificate of the CA.
	crypto ca trustpoint	Declares the trust point certificate authority that the switch should trust.
	show crypto ca certificates	Displays configured trust point certificates.

show crypto certificatemap

To display certificatemap filters, use the show crypto certificatemap command.

```
show crypto certificatemap
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command Default None.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display certificatemap filters:

```
switch# show crypto certificatemap
Map Name: map1
Subject name: /DCBU
Altname Email: koukumar@cisco.com
Altname UPN:
switch#
```

Related Commands	Command	Description
	crypto certificatemap mapname	Specifies the certificate map that will be used for filtering the certificate request.

show crypto global domain ipsec

To display global IPsec crypto map set information, use the show crypto global domain ipsec command.

```
show crypto global domain ipsec [interface gigabitethernet slot/port | security-association lifetime]
```

Syntax Description	
interface gigabitethernet slot/port	(Optional) Displays crypto IPsec domain information for the specified Gigabit Ethernet interface slot and port.
security-association lifetime	(Optional) Displays crypto IPsec domain security association lifetime parameters.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, IPsec must be enabled using the crypto ipsec enable command.

Examples The following example shows how to display crypto global domain IPsec statistics:

```
switch# show crypto global domain ipsec
IPSec global statistics:
  Number of crypto map sets: 2
```

The following example shows how to display crypto global domain IPsec statistics for an interface:

```
switch# show crypto global domain ipsec interface gigabitethernet 1/2
IPSec interface statistics:
  IKE transaction stats: 0 num
  Inbound SA stats: 0 num, 512 max
  Outbound SA stats: 0 num, 512 max
```

The following example shows how to display crypto global domain IPsec security association lifetime parameters:

```
switch# show crypto global domain ipsec security-association lifetime
Security Association Lifetime: 4500 megabytes/3600 seconds
```

Related Commands	Command	Description
	crypto global domain ipsec security-association lifetime	Configures global attributes for IPsec.
	crypto ipsec enable	Enables IPsec.

show crypto ike domain ipsec

To display IKE protocol information, use the show crypto ike domain ipsec command.

```
show crypto ike domain ipsec [initiator [address ip-address] | keepalive | key [address ip-address] |
policy [policy-number] | sa]
```

Syntax Description

initiator	(Optional) Displays initiator configuration information.
address ip-address	Specifies the initiator peer IP address.
keepalive	(Optional) Displays keepalive for the IKE protocol in seconds
key	(Optional) Displays pre-shared authentication keys.
policy policy-number	Displays IKE configuration policies for IPsec. The range is 1 to 255.
sa	(Optional) Displays IKE Security Associations for IPsec.

Command Default

To use this command, the IKE protocol must be enabled using the crypto ike enable command.

Command Modes

EXEC mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, the IKE protocol must be enabled using the crypto ike enable command.

Examples

The following example shows how to display IKE keepalive value configuration information:

```
switch# show crypto ike domain ipsec keepalive
keepalive 3600
```

Related Commands

Command	Description
crypto ike domain ipsec	Enters IKE configuration mode.
crypto ike enable	Enables the IKE protocol.

show crypto key mypubkey rsa

To display any RSA public key configurations, use the show crypto key mypubkey rsa command.

```
show crypto key mypubkey rsa
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines None.

Examples The following example displays RSA public key configurations:

```
switch# show crypto key mupubkey rsa
key label: myrsa
key size: 512
exportable: yes
```

Command	Description
crypto ca enroll	Requests certificates for the switch's RSA key pair.
crypto key generate rsa	Generates an RSA key pair.
rsa keypair	Configures trust point RSA key pair details

show crypto map domain ipsec

To map configuration information for IPsec, use the show crypto map domain ipsec command.

```
show crypto map domain ipsec [interface gigabitethernet slot / port|tag
tag-name]
```

Syntax Description	interface gigabitethernet slot/port	(Optional) Displays IPsec map information for a specific Gigabit Ethernet interface.
	tag tag-name	(Optional) Displays IPsec map information for a specific tag name. The maximum length is 63 characters.

Command Default Displays all IPsec map information.

Command Modes

EXEC mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, IPsec must be enabled using the crypto ipsec enable command.

Examples

The following example shows how to display IPsec crypto map information:

```
switch# show crypto map domain ipsec
Crypto Map "cm10" 1 ipsec
  Peer = 10.10.10.4
  IP ACL = aclmids10
    permit ip 10.10.10.1 255.255.255.255 10.10.10.4 255.255.255.255
  Transform-sets: 3des-md5, 3des-sha, des-md5, des-sha,
  Security Association Lifetime: 450 gigabytes/3600 seconds
  PFS (Y/N): N
Crypto Map "cm10" 2 ipsec
  Peer = Auto Peer
  IP ACL = acl10
    permit ip 10.10.10.0 255.255.255.0 10.10.10.0 255.255.255.0
  Transform-sets: 3des-md5, 3des-sha, des-md5, des-sha,
  Security Association Lifetime: 450 gigabytes/3600 seconds
  PFS (Y/N): N
Crypto Map "cm11" 1 ipsec
  Peer = 10.10.11.2
  IP ACL = aclany
    permit ip any any
  Transform-sets: 3des-md5, 3des-sha, des-md5, des-sha,
  Security Association Lifetime: 450 gigabytes/3600 seconds
  PFS (Y/N): N
Crypto Map "cm50" 1 ipsec
  Peer = 10.10.50.2
  IP ACL = aclany
    permit ip any any
  Transform-sets: 3des-md5,
```

```

Security Association Lifetime: 450 gigabytes/3600 seconds
PFS (Y/N): N
Interface using crypto map set cm50:
  GigabitEthernet1/2.1
Crypto Map "cm51" 1 ipsec
  Peer = 10.10.51.2
  IP ACL = aclany
    permit ip any any
  Transform-sets: 3des-md5,
  Security Association Lifetime: 450 gigabytes/3600 seconds
  PFS (Y/N): N
Interface using crypto map set cm51:
  GigabitEthernet1/2.2
Crypto Map "cm60" 1 ipsec
  Peer = 10.10.60.2
  IP ACL = acl60
    permit ip 10.10.60.0 255.255.255.0 10.10.60.0 255.255.255.0
  Transform-sets: 3des-md5,
  Security Association Lifetime: 450 gigabytes/3600 seconds
  PFS (Y/N): N
Interface using crypto map set cm60:
  GigabitEthernet1/2
Crypto Map "cm100" 1 ipsec
  Peer = 10.10.100.221
  IP ACL = aclm100
    permit ip 10.10.100.231 255.255.255.255 10.10.100.221 255.255.255.255
  Transform-sets: 3des-md5, 3des-sha, des-md5, des-sha,
  Security Association Lifetime: 450 gigabytes/3600 seconds
  PFS (Y/N): N
Crypto Map "cm100" 2 ipsec
  Peer = Auto Peer
  IP ACL = acl100
    permit ip 10.10.100.0 255.255.255.0 10.10.100.0 255.255.255.0
  Transform-sets: 3des-md5, 3des-sha, des-md5, des-sha,
  Security Association Lifetime: 450 gigabytes/3600 seconds
  PFS (Y/N): N

```

Related Commands

Command	Description
crypto ipsec enable	Enables IPsec.
crypto map domain ipsec	Enters IPsec map configuration mode.

show crypto sad domain ipsec

To display IPsec security association database information, use the show crypto sad domain ipsec command.

```
show crypto sad domain ipsec [interface gigabitethernet slot / port [inbound | outbound sa-index index]]
```

Syntax Description	
interface gigabitethernet slot/port	(Optional) Displays IPsec security association information for a specific Gigabit Ethernet interface.
inbound	(Optional) Specifies the inbound association.
outbound	(Optional) Specifies the outbound association.
sa-index index	(Optional) Specifies the security association index. The range is 0 to 2147483647.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, IPsec must be enabled using the crypto ipsec enable command.

Examples The following example shows how to display IPsec security association information:

```
switch# show crypto sad domain ipsec
interface: GigabitEthernet4/1
  Crypto map tag: cm10, local addr. 10.10.10.1
  protected network:
    local ident (addr/mask): (10.10.10.0/255.255.255.0)
    remote ident (addr/mask): (10.10.10.4/255.255.255.255)
    current_peer: 10.10.10.4
      local crypto endpt.: 10.10.10.1, remote crypto endpt.: 10.10.10.4
      mode: tunnel, crypto algo: esp-3des, auth algo: esp-md5-hmac
    current outbound spi: 0x30e000f (51249167), index: 0
      lifetimes in seconds:: 120
      lifetimes in bytes:: 423624704
    current inbound spi: 0x30e0000 (51249152), index: 0
      lifetimes in seconds:: 120
      lifetimes in bytes:: 423624704
```

Related Commands	Command	Description
	crypto ipsec enable	Enables IPsec.

show crypto spd domain ipsec

To display the security policy database (SPD), use the show crypto spd domain ipsec command.

```
show crypto spd domain ipsec [interface gigabitethernet slot / port [policy number]]
```

Syntax Description	interface gigabitethernet slot/port	(Optional) Displays SPD information for a specific Gigabit Ethernet interface.
	policy number	(Optional) Specifies a SPD policy number.

Command Default Displays all SPD information.

Command Modes EXEC mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, IPsec must be enabled using the crypto ipsec enable command.

Examples The following example shows how to display the SPD:

```
switch# show crypto spd domain ipsec
Policy Database for interface: GigabitEthernet1/1, direction: Both
# 0:      deny  udp any port eq 500 any
# 1:      deny  udp any any port eq 500
# 2:      permit ip any any
# 63:     deny  ip any any
Policy Database for interface: GigabitEthernet1/2, direction: Both
# 0:      deny  udp any port eq 500 any
# 1:      deny  udp any any port eq 500
# 3:      permit ip 10.10.50.1 255.255.255.255 10.10.50.2 255.255.255.255
# 4:      permit ip 10.10.51.1 255.255.255.255 10.10.51.2 255.255.255.255
# 63:     deny  ip any any
```

Related Commands	Command	Description
	crypto ipsec enable	Enables IPsec.

show crypto ssh-auth-map

To display mapping filters applied for SSH authentication, use the show crypto ssh-auth-map command.

```
show crypto ssh-auth-map
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command Default None.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display mapping filters applied for SSH authentication:

```
switch# show crypto ssh-auth-map
Issuer Name: /DCBU
Map1: map1
Map2: map2
switch#
```

Related Commands	Command	Description
	crypto certificatemap mapname	Specifies the certificate map that will be used for filtering the certificate request.

show crypto transform-set domain ipsec

To display transform set information for IPsec, use the show crypto transform-set domain ipsec command.

```
show crypto transform-set domain ipsec [set-name]
```

Syntax Description	set-name (Optional) Specifies the transform set name. Maximum length is 63 characters.
---------------------------	--

Command Default Displays information for all transform sets.

Command Modes EXEC mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, IPsec must be enabled using the crypto ipsec enable command.

Examples The following example shows how to display information for all IPsec transform sets:

```
switch# show crypto transform-set domain ipsec
Transform set: ipsec_default_transform_set {esp-aes-256-ctr esp-aes-xcbc-mac}
will negotiate {tunnel}
```

Related Commands	Command	Description
	crypto ipsec enable	Enables IPsec.
	crypto transform-set domain ipsec	Configures IPsec transform set information.

show debug

To display all Cisco SME related debug commands configured on the switch, use the show debug command.

```
show debug cluster bypass | sap sap bypass | sme bypass
```

Syntax Description

cluster	Displays all the debugging flags.
bypass	Displays the bypass flags.
sap sap	Displays all debugging flags of SAP. Specifies the SAP in the range from 1 to 65535.
sme	Displays all the debugging flags of Cisco SME.
bypass	Displays all the bypass flags of Cisco SME.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.2(2c)	This command was introduced.
NX-OS 4.1(1c)	Added the syntax description.

Usage Guidelines

None.

Examples

The following example shows all debug commands configured on the switch:

```
switch# show debug
ILC helper:
  ILC_HELPER errors debugging is on
  ILC_HELPER info debugging is on
```

Related Commands

Commands	Description
debug sme	Debugs Cisco SME features.

show debug logfile

To display the debug messages that are saved in the debug log file, use the show debug logfile command.

```
show debug logfile filename
```

Syntax Description	filename	Specifies the debug log file name. Maximum length is 80 characters.
---------------------------	----------	---

Command Default None.

Command Modes EXEC mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines None.

Examples The following example displays the debug messages in the specified debug log file.

```
switch# show debug logfile SampleFile
2004 Jun 28 00:14:17 snmpd[2463]: header_fspfLinkEntry : Sending GETNEXT request
  for fspfLsrTable for vsanIndex =0,fsfpLsrDomainId = 0, fspfLsrType = 0
2004 Jun 28 00:14:17 snmpd[2463]: header_fspfLinkEntry : Sending GETNEXT request
  for fspfLsrTable for vsanIndex =0,fsfpLsrDomainId = 0, fspfLsrType = 0
2004 Jun 28 00:14:17 snmpd[2463]: header_fspfLinkEntry : Recd rsp for GETNEXT fo
r entry (vsanIndex=1,fsfpLsrDomainId = 10, fspfLsrType=0, fspfLinkIndex = 1,fsfp
LinkNbrDomainId = 84, fspfLinkPortIndex = 67331,fsfpLinkNbrPortIndex = 66064, fs
pfLinkType = 1,fsfpLinkCost = 500
2004 Jun 28 00:14:17 snmpd[2463]: header_fspfLinkEntry : Sending GETNEXT request
  for fspfLsrTable for vsanIndex =1,fsfpLsrDomainId = 209, fspfLsrType = 0
2004 Jun 28 00:14:17 snmpd[2463]: header_fspfLinkEntry : Sending GETNEXT request
  for fspfLsrTable for vsanIndex =16777216,fsfpLsrDomainId = 3506438144, fspfLsr
Type = 0
2004 Jun 28 00:14:17 snmpd[2463]: header_fspfLinkEntry : Sending GETNEXT request
  for fspfLsrTable for vsanIndex =33554432,fsfpLsrDomainId = 4009754624, fspfLsr
Type = 16777216
```

show debug npv

To display the N Port Virtualization (NPV) debug commands configured on the switch, use the show debug npv command.

```
show debug npv
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows all NPV debug commands configured on the switch:

```
switch# show debug npv
N_port Virtualizer:
  FC Receive Packets debugging is on
  FC Transmit Packets debugging is on
  FC Receive Packet header debugging is on
  FC Transmit Packet header debugging is on
  MTS Receive Packets debugging is on
  MTS Transmit Packets debugging is on
  MTS Receive Packet header/payload debugging is on
  MTS Transmit Packet header/payload debugging is on
  High Availability debugging is on
  FSM Transitions debugging is on
  Error debugging is on
  Warning debugging is on
  Trace debugging is on
  Trace Detail debugging is on
  Demux debugging is on
  Dequeue debugging is on
  Packets debugging is on
  Database debugging is on
  Timers debugging is on
  External Interface FSM Events debugging is on
  External Interface FSM Errors debugging is on
  External Interface FSM Trace debugging is on
  FLOGI FSM Events debugging is on
  FLOGI FSM Errors debugging is on
  FLOGI FSM Trace debugging is on
  Server Interface FSM Events debugging is on
  Server Interface FSM Errors debugging is on
  Server Interface FSM Trace debugging is on
  Events debugging is on
```

Related Commands

Command	Description
debug npv	Enables debugging NPV configurations.

show debug sme

To display all Cisco SME related debug commands configured on the switch, use the show debug command.

```
show debug cluster bypass | sap sap | sme bypass
```

Syntax Description	Option	Description
	cluster	Displays all the debugging flags.
	bypass	Displays the bypass flags.
	sap sap	Displays all debugging flags of SAP. Specifies the SAP in the range from 1 to 65535.
	sme	Displays all the debugging flags of Cisco SME.
	bypass	Displays all the bypass flags of Cisco SME.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(2)	This command was introduced.

Usage Guidelines None.

Examples The following example shows all debug commands configured on the switch:

```
switch# show debug
ILC helper:
  ILC_HELPER errors debugging is on
  ILC_HELPER info debugging is on
```

Related Commands	Commands	Description
	debug sme	Debugs Cisco SME features.

show device-alias

To display the device name information, use the show device-alias command.

```
show device-alias database [pending | pending-diff] | name device-name [pending] | pwwn pwwn-id
[pending] | session rejected | status | statistics | status
```

Syntax Description		
database		Displays the entire device name database.
pending	(Optional)	Displays the pending device name database information.
pending-diff	(Optional)	Displays pending differences in the device name database information.
name device-name		Displays device name database information for a specific device name.
pwwn pwwn-id		Displays device name database information for a specific pWWN. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
session		Displays the session information.
rejected		Display the rejected command list.
status		Displays the device-alias session status.
statistics		Displays device name database statistics.
status		Displays the device name database status.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	6.2(9)	Added the rejected keyword to the syntax description.
	2.0(x)	This command was introduced.

Usage Guidelines To make use of fcalias as device names instead of using the cryptic device name, add only one member per fcalias.

The device-alias configuration best practice has been described in the configuration guide.

Examples The following example shows the set of rejected device-alias commands in a session:

```
switch(config-device-alias-db)# show device-alias session rejected
To avoid command rejections, within a device alias session
Do not reuse:
a) a device alias name while configuring a rename command
b) a PWWN while configuring an add or delete command
```

c) a device alias name already renamed while configuring add command
 Rejected commands must be committed in a separate device alias session
 which may cause traffic interruption for those devices. Plan accordingly.
 Refer to this command in the NX-OS Command Reference Guide
 for more information about device alias configuration best practices

Rejected Command List

```
-----
device-alias name Dev1 pwnn 01:01:01:01:02:02:02:02
device-alias name Dev20 pwnn 01:01:01:01:02:02:02:02
switch(config-device-alias-db)#
```

The following examples shows the device-alias session status:

```
switch(config)# show device-alias session status
Last Action Time Stamp      : Tue Jul  1 01:54:21 2014
Last Action                  : Commit
Last Action Result          : Success
Last Action Failure Reason  : none
switch(config)#
```

The following example shows how to display the contents of the device alias database:

```
switch# show device-alias database
device-alias name efg pwnn 21:00:00:20:37:9c:48:e5
device-alias name fred pwnn 10:00:00:00:c9:2d:5a:de
device-alias name myalias pwnn 21:21:21:21:21:21:21:21
device-alias name test pwnn 21:00:00:20:37:6f:db:bb
device-alias name test2 pwnn 21:00:00:20:37:a6:be:35
Total number of entries = 5
```

The following example shows how to display all global fcaliases and all VSAN dependent fcaliases:

```
switch# show device-alias name efg
device-alias name efg pwnn 21:00:00:20:37:9c:48:e5
```

The following example shows how to display all global fcaliases and all VSAN dependent fcaliases:

```
switch# show device-alias statistics
      Device Alias Statistics
=====
Lock requests sent: 1
Database update requests sent: 1
Unlock requests sent: 1
Lock requests received: 0
Database update requests received: 0
Unlock requests received: 0
Lock rejects sent: 0
Database update rejects sent: 0
Unlock rejects sent: 0
Lock rejects received: 0
Database update rejects received: 0
Unlock rejects received: 0
Merge requests received: 5
Merge request rejects sent: 0
Merge responses received: 0
Merge response rejects sent: 0
Activation requests received: 5
Activation request rejects sent: 0
Activation requests sent: 0
```

```
Activation request rejects received: 0  
v_226# pwn 21:00:00:20:37:6f:dc:0e
```

Related Commands

Command	Description
device-alias name	Configures device alias names.
device-alias database	Configures device alias information.
device-alias distribute	Enables device alias CFS distribution.

show device-alias status

To view the current device alias mode setting, use the device-alias status command.

```
show device-alias status
```

Syntax Description This command has no arguments or keywords.

Command Default Basic mode.

Command Modes EXEC mode.

Command History	Release	Modification
	3.1(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display the device alias status:

```
switch# show device-alias status
Fabric Distribution: Enabled
Database:- Device Aliases 0 Mode: Basic
Locked By:- User "admin" SWWN 20:00:00:0d:ec:30:90:40
Pending Database:- Device Aliases 0 Mode: Basic
```

Related Commands	Command	Description
	device-alias commit	Commits changes to the active device alias database.
	device-alias database	Configures and activates the device alias database.

show diagnostic bootup level

To display the diagnostic bootup level information (bypass or complete) that is currently in place on the device, use the show diagnostic bootup level command.

```
show diagnostic bootup level
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	6.2(1)	This command was introduced.

Usage Guidelines None.

Examples

The following example shows how to display the diagnostic bootup level information (bypass or complete) that is currently in place on the device:

```
switch# show diagnostic bootup level
Current bootup diagnostic level: complete
switch#
```

Related Commands	Commands	Description
	debug sme	Debugs Cisco SME features.

show diagnostic content module

To display information about diagnostic test content for a module, use the show diagnostic content module command.

```
show diagnostic content module module-number | all
```

Syntax Description

module-number	Displays the module number. The range is from 1 to 10.
all	Displays all module ID.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to display information about diagnostic test content for a module:

```
switch# show diagnostic content module 1
Module 1: 2/4/8/10/16 Gbps Advanced FC Module
Diagnostics test suite attributes:
B/C/* - Bypass bootup level test / Complete bootup level test
      / NA
E/*   - Per port test / NA
M/S/* - Only applicable to active / standby unit / NA
D/N/* - Disruptive test / Non-disruptive test / NA
H/O/* - Always enabled monitoring test / Conditionally enable
d test / NA
F/*   - Fixed monitoring interval test / NA
X/*   - Not a health monitoring test / NA
E/*   - Sup to line card test / NA
L/*   - Exclusively run this test / NA
T/*   - Not an ondemand test / NA
A/I/* - Monitoring is active / Monitoring is inactive / NA
switch#
```

Related Commands

Commands	Description
debug sme	Debugs Cisco SME features.

show diagnostic description module

To display the diagnostic test description for a module, use the show diagnostic description module command.

```
show diagnostic description module module-number test [test-id test-name | all]
```

Syntax Description

module-number	Displays the module number. The range is from 1 to 10.
test	Displays the diagnostic test selection.
test-id	Displays the diagnostic test ID.
test-name	Displays the test name.
all	Displays all test ID.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to display the diagnostic test description for a module:

```
switch# show diagnostic description module 1 test all
ASICRegisterCheck :
    A health monitoring test,enabled by default that checks read/write
    access to scratch registers on ASICs on the module.
PrimaryBootROM :
    A health monitoring test that verifies the primary BootROM
    state.
SecondaryBootROM :
    A health monitoring test that verifies the secondary
    BootROM
    state.
EOBCPortLoopback :
switch#
```

Related Commands

Commands	Description
debug sme	Debugs Cisco SME features.

show diagnostic events

To display the diagnostic events by error and information event type, use the show diagnostic events command.

```
show diagnostic events [error | info]
```

Syntax Description

error	Displays the error event type.
info	Displays the information event type.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to display the diagnostic events by error event type:

```
switch# show diagnostic events error
switch#
```

Related Commands

Commands	Description
debug sme	Debugs Cisco SME features.

show diagnostic isl result interface

To display the results of a Single Hop or Multihop Traffic Test on Cisco MDS 9700 Series Switches, use the `show diagnostic isl result interface` command.

```
show diagnostic isl result interface interface id
```

Syntax Description	interface id Specifies the slot and port of an interface.				
Command Default	None				
Command Modes	Privileged EXEC mode				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>8.3(1)</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	8.3(1)	This command was introduced.
Release	Modification				
8.3(1)	This command was introduced.				

This example shows the results of a Single Hop Traffic Test:

```
switch# show diagnostic isl result interface fc 5/3
-----
Single hop Traffic test Result for port: fc5/3
Packets Transmitted:                30621868
Packets Recieved:                   30621868
ISL traffic Efficiency (percent):    100.0000
-----
```

show diagnostic isl status

To display the status of configured Inter-Switch Link (ISL) diagnostic tests per port, use the show diagnostic isl status command.

```
show diagnostic isl status index start index num number
```

Syntax Description

index	Index of an ISL diagnostic port status.
start index	Index number of an ISL diagnostic port status.
num number	Number of entries of an ISL diagnostic port status array.

Command Default

None

Command Modes

User EXEC (#)
Privileged EXEC (#)

Command History

Release	Modification
8.1(1)	This command was introduced.

Examples

This example displays ISL diagnostic tests for the port fc2/2:

```
switch# show diagnostic isl status index start 1 num 1
Status of isl_daig tests in progress:
-----
Index  Interface          Mode <Gen/Ref>          Test
-----
1      fc2/2                  Generator              MH Traffic Test
-----
```

Related Commands

Command	Description
diagnostic isl multi_hop generator	Configures an interface on a generator switch to run the Multihop Traffic Test for a given VSAN.
diagnostic isl multi_hop reflector	Enables or disables a test interface on a reflector switch by setting it to loopback mode for a given VSAN and domain ID of a generator switch for Multihop Traffic Test.

show diagnostic ondemand setting

To display the information about on demand diagnostic settings, use the show diagnostic ondemand setting command.

```
show diagnostic ondemand setting
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	6.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display the information about on demand diagnostic settings:

```
switch# show diagnostic ondemand setting
Test iterations = 1
      Action on test failure = continue until test failure
limit reaches 1
switch#
switch#
```

Related Commands	Commands	Description
	debug sme	Debugs Cisco SME features.

show diagnostic result interface fc test link-diag

To display the results of the link diagnostics tests that are performed on a diagnostic port and to check the host bus adapter (HBA) capability, use the show diagnostic result interface fc test link-diag command.

```
show diagnostic result interface fc slot/port test link-diag [peer-capability]
```

Syntax Description	slot/port	Slot and the port numbers of the Fibre Channel interface.
	peer-capability	Displays the link diagnostics capabilities of the peer device.

Command Default None

Command Modes Privileged EXEC mode

Command History	Release	Modification
	8.2(1)	This command was introduced.

Usage Guidelines

The following command output displays the results of the link diagnostics tests that are performed on a diagnostic port:

```
switch# show diagnostic result interface fc7/28 test link-diag
PWWN of peer port: 21:00:00:24:ff:17:09:ac
Status: Supported (Reflector)
Reflector loopback capabilities: Xcvr-optical Electrical
Time of Test: Thu Sep 14 00:20:11 2017
Total time taken: 30 seconds
```

Latency (ns)	Loopback Level	Tx Frames	Rx Frames	Discards		
				IN	OUT	BAD
WORDS	In-Switch	External	Status			
Remote-Switched (R)		0	0	0	0	0
0	0	-NA-				
Mac (R)		0	0	0	0	0
0	0	-NA-				
Xcvr-optical (R)		1000000	1000000	0	0	0
2136	632	Success				
Electrical (R)		20000	20000		-NA-	
-NA-	-NA-	Success				

```
Overall Status : Success
Cable Length (approx. +/- 5 metres) : 38.2 metres
```

The following command output displays the result of the terminated tests on a diagnostic port:

```
switch# show diagnostic result interface fc1/23 test link-diag
PWWN of peer port: 10:00:00:90:fa:c7:e1:e9
```

```
Status: Supported (Reflector)
Reflector loopback capabilities: Remote-switched MAC Xcvr-optical
Time of Test: Wed Sep 20 12:54:59 2017
Total time taken: 10 seconds
```

Loopback Level	WORDS	In-Switch	External	Tx Frames	Status	Rx Frames	Discards		
							IN	OUT	BAD
Remote-Switched(R)	0	0	-NA-	0		0	0	0	0
Mac(R)	0	0	-NA-	0		0	0	0	0
Xcvr-optical(R)	0	0	Stopped	439		439		-NA-	
Electrical(R)	0	0	-NA-	0		0	0	0	0

```
Overall Status : User Stop/Module Reload/PortDown/ELS error
                [DIAG TEST STOPPED]
Cable Length (approx. +/- 5 metres) : -NA-
```

The following command output displays the link diagnostics capabilities of the peer device:

```
switch# show diagnostic result interface fc1/1 test link-dia peer-capability
pWWN of Peer Port: 10:23:34:90:fa:cd:16:6c
Status: Supported (Reflector)
Reflector loopback capabilities: Remote-switched MAC Xcvr-optical
```

Related Commands

Command	Description
diagnostic start interface fc test link-dia	Runs link diagnostics tests on a diagnostic port.
diagnostic stop interface fc test link-dia	Stops the link diagnostics tests that are running on a diagnostic port.
switchport link-dia	Enables the link diagnostic mode on a diagnostic port.
show diagnostic test link-dia status	Checks the status of the link diagnostics tests that are running on the switch.

show diagnostic result module

To display the information about the diagnostic test result for a module, use the show diagnostic result module command.

```
show diagnostic result module module-number all [detail | statistics | test]
```

Syntax Description

module-number	Displays the module number. The range is from 1 to 10.
detail	(Optional) Displays the detailed result.
statistics	Displays the statistics result.
test	Displays the diagnostic test selection.
all	Displays all test ID.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to display the detailed information about the diagnostic test result for a module:

```
switch# show diagnostic result module 1 detail
Current bootup diagnostic level: complete
Module 1: 2/4/8/10/16 Gbps Advanced FC Module
  Diagnostic level at card bootup: complete
    Test results: (. = Pass, F = Fail, I = Incomplete,
      U = Untested, A = Abort, E = Error disabled)
-----
1) ASICRegisterCheck .
   Error code -----> DIAG TEST SUCC
ESS
   Total run count -----> 23
   Last test execution time ----> Fri Jun 26 21:
25:33 2009
   First test failure time ----> n/a
   Last test failure time -----> n/a
--More--
switch#
```

Related Commands

Commands	Description
debug sme	Debugs Cisco SME features.

show diagnostic simulation module

To display the information about a simulated diagnostic result for a module, use the show diagnostic simulation module command.

```
show diagnostic simulation module module-number
```

Syntax Description

module-number	Displays the module number. The range is from 1 to 10.
---------------	--

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to display the information about a simulated diagnostic result for a module:

```
switch# show diagnostic simulation module 1
Card(1): 2/4/8/10/16 Gbps Advanced FC Module

-----
-NA-
switch#
```

Related Commands

Commands	Description
debug sme	Debugs Cisco SME features.

show diagnostic status module

To display test status for a module, use the show diagnostic status module command.

```
show diagnostic status module module-number
```

Syntax Description	module-number	Displays the module number. The range is from 1 to 10.
---------------------------	---------------	--

Command Default	None.
------------------------	-------

Command Modes	EXEC mode.
----------------------	------------

Command History	Release	Modification
	6.2(1)	This command was introduced.

Usage Guidelines	None.
-------------------------	-------

Examples

The following example shows how to displays test status for a module:

```
switch# show diagnostic status module 1
<BU>-Bootup Diagnostics, <HM>-Health Monitoring Diagnostics
<OD>-OnDemand Diagnostics, <SCH>-Scheduled Diagnostics
=====
Card: (1) 2/4/8/10/16 Gbps Advanced FC Module
=====
Current running test          Run by
      -NA-                    -NA-
Currently Enqueued Test      Run by
      -NA-                    -NA-
indapex-03#
switch#
switch#
```

Related Commands	Commands	Description
	debug sme	Debugs Cisco SME features.

show diagnostic status module

To display the test status for all tests on a module, use the show diagnostic status module command.

```
show diagnostic status module module-number
```

Syntax Description	module-number	Displays the module number. The range is from 1 to 10.
---------------------------	---------------	--

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	6.2(1)	This command was introduced.

Usage Guidelines None.

Examples

The following example shows how to display the test status for all tests on a module:

```
switch# show diagnostic status module 1
<BU>-Bootup Diagnostics, <HM>-Health Monitoring Diagnostics
<OD>-OnDemand Diagnostics, <SCH>-Scheduled Diagnostics
=====
Card: (1) 2/4/8/10/16 Gbps Advanced FC Module
=====
Current running test          Run by
      -NA-                    -NA-
Currently Enqueued Test      Run by
      -NA-                    -NA-
switch#
```

Related Commands	Commands	Description
	debug sme	Debugs Cisco SME features.

show diagnostic test link-diag status

To check the status of the link diagnostics tests that are running on all the ports in a switch, use the show diagnostic test link-diag status command

```
show diagnostic test link-diag status
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes Privileged EXEC mode

Command History

Release	Modification
8.2(1)	This command was introduced.

Displaying the Status of Link Diagnostics Test

The following command output displays the status of the link diagnostics tests that are performed on a diagnostic port:

```
switch# show diagnostic test link-diag status
```

```
-----
Index  Diag-Interface      Gen-Interface      Link-diag Status
-----
                                             Remote-Switched (R)      MAC (R)
Electrical (R)      Xcvr-optical (R)
-----
1          fc1/23              fc1/9              NA                      Success                  NA
                    Running
```

Related Commands

Command	Description
switchport link-diag	Enables the link diagnostic mode on a diagnostic port.
diagnostic result interface fc test link-diag	Displays the results of the link diagnostics tests that are performed on a diagnostic port.
diagnostic start interface fc test link-diag	Runs link diagnostics tests on a diagnostic port.
diagnostic stop interface fc test link-diag	Stops the link diagnostics tests that are running on a diagnostic port.

show dmm discovery-log

To display SCSI device discovery logs, use the show dmm discovery-log command in EXEC mode.

```
show dmm discovery-log all | error
```

Syntax Description	all	Displays all entries in the device discovery SCSI log.
	error	Displays error entries in the device discovery SCSI log.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines You must connect to an SSM on your switch to execute DMM show commands. Use the show module command to determine the slot number of an SSM on your switch. Use the attach module command to connect to the SSM.

Examples The following example displays error entries:

```
switch# attach module 3
Attaching to module 3 ...
To exit type 'exit', to abort type '$.'
Bad terminal type: "ansi". Will assume vt100.
module-3# show dmm discovery-log error
005 State: 3
CDB: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Sts:0x02 SnsKey:0x02 AscAscq:0x0403
Time:    5 (ms)
LogIndex:26 HostPWWN:2c:fc:00:05:30:01:9e:88 TargetPWWN:50:06:01:62:30:60:36:64
OPC: 0x00 Lun:0x0000000000000006 State: 3
CDB: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Sts:0x02 SnsKey:0x02 AscAscq:0x0403
Time:    4 (ms)
```

Related Commands	Command	Description
	dmm module	Enables DMM configuration on a module.
	show dmm srvr-vt-login	Enables the DMM feature.

show dmm fp-port

To display front panel ports on a line card, use the show dmm fp-port command in EXEC mode.

```
show dmm fp-port
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Release	Modification
3.2(1)	This command was introduced.

Usage Guidelines You must connect to an SSM on your switch to execute DMM show commands. Use the show module command to determine the slot number of an SSM on your switch. Use the attach module slot command to connect to the SSM.

Examples The following example displays front panel ports:

```
switch# attach module 3
Attaching to module 3 ...
To exit type 'exit', to abort type '$.'
Bad terminal type: "ansi". Will assume vt100.
module-3# show dmm fp-port
Cisco DMM Front Panel Port Map
```

Port	Index	Mirage Id	DPP Id
1	0	1	2
2	1	1	2
3	2	1	2
4	3	1	2
5	4	2	3
6	5	2	3
7	6	2	3
8	7	2	3
9	8	3	6
10	9	3	6
11	10	3	6
12	11	3	6
13	12	4	7
14	13	4	7
15	14	4	7
16	15	4	7
17	16	1	1
18	17	1	1
19	18	1	1
20	19	1	1
21	20	2	4
22	21	2	4
23	22	2	4

show dmm fp-port

24	23	2	4
25	24	3	5
26	25	3	5
27	26	3	5
28	27	3	5
29	28	4	8
30	29	4	8
31	30	4	8
32	31	4	8

Related Commands

Command	Description
dmm module	Enables DMM configuration on a module.
show dmm srvr-vt-login	Enables the DMM feature.

show dmm ip-peer

To display information about the IP peers the DMM interface is connected to, use the show dmm ip-peer command in EXEC mode.

```
show dmm ip-peer
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines You must connect to an SSM on your switch to execute DMM show commands. Use the show module command to determine the slot number of an SSM on your switch. Use the attach module slot command to connect to the SSM.

Examples

The following example displays DMM IP peer information:

```
switch# attach module 3
Attaching to module 3 ...
To exit type 'exit', to abort type '$.'
Bad terminal type: "ansi". Will assume vt100.
module-3# show dmm ip-peer
                Cisco DMM IP Peer Table
-----
No      Type                SD   IP Address      TCP State
-----
  1     CONFIG_STATION      23   10.100.2.1      DOWN
  2     PEER_SSM             22   10.100.1.20     UP
  3     CONFIG_STATION      19   10.100.2.1      DOWN
```

show dmm job

To display DMM job information, use the show dmm job command in EXEC mode.

```
show dmm job job-id detail | job-fsm-eventlog | job-infra-fsm-eventlog | lun_tokens token tok-pwwn |
session [session_id sess-id] [session-event-log] | storage [tgt-pwwn tgt-pwwn] vi-pwwn vi-pwwn
[lun-event-log lun-id | tgt-event-log]
```

Syntax Description

job-id	Specifies the job ID. The range is 0 to 18446744073709551615.
detail	Displays detailed job information.
job-fsm-eventlog	Displays the Job FSM Event Log.
job-infra-fsm-eventlog	Displays the Job Infra FSM Event Log.
lun_tokens	Displays a list of job LUN tokens.
token tok-pwwn	Specifies the storage port world-wide name.
session	Displays job session information.
sess-id	(Optional) Specifies the job session. The range is 0 to 2147483647255.
session-event-log	(Optional) Displays the Session FSM Event Log.
storage	Displays the storage ports discovered by DMM.
tgt-pwwn tgt-pwwn	(Optional) Specifies the storage port world-wide name. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
vi-pwwn vi-pwwn	(Optional) Specifies the Virtual Initiator port world-wide name. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
lun-event-log lun-id	(Optional) Displays the Virtual Initiator and Target LUN FSM event log and specifies the LUN ID.
tgt-event-log	(Optional) Displays the Virtual Initiator and Target FSM Event Log.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(2)	Removed the session-id keyword from the syntax description. Changed the command output.
3.2(1)	This command was introduced.

Usage Guidelines

You must connect to an SSM on your switch to execute DMM show commands. Use the show module command to determine the slot number of an SSM on your switch. Use the attach module slot command to connect to the SSM.

Examples

The following example shows how to display a summary of the jobs:

```
switch# show dmm job
```

```

                                Data Mobility Manager Job Information
                                -----
Num Job Identifier      Name                               Type  Mode  Method DMM GUI IP Peer SSM
DPP Session  Status    Est. Time of Completion
-----
   1          1          CLI_JOB_0x1                               SRVR  ONL  METHOD-2 127.0.0.1  NOT_APPL
Number of Jobs :1
switch#
```

Related Commands

Command	Description
dmm module	Enables DMM configuration on a module.
show dmm svr-vt-login	Enables the DMM feature.

show dmm module

To display DMM module information use the show dmm module command.

```
show dmm module module-id vi-list
```

Syntax Description

module-id	Specifies the module ID. The range is 1 to 13.
vi-list	Displays the VI list.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 4.1(1b)	Added the vi-list to syntax description and the command output.
3.2(1)	This command was introduced.

Usage Guidelines

The show dmm module command displays the list of VIs assigned to each data movement engine. A storage based data migration job uses one of these VIs. Use the command to choose the VI and then use the dmm module job set-vi command to specify the VI.

Examples

The following example shows how to display a summary of all the jobs:

```
switch# show dmm module 4 vi-list
=====
DPP-Id   VI-pWWN                               VI-nWWN                               Outstanding jobs
=====
1        24:53:00:05:30:00:64:22  24:52:00:05:30:00:64:22  0
2        20:0d:00:05:30:00:64:22  2c:c4:00:05:30:00:64:21  0
3        20:0f:00:05:30:00:64:22  20:0e:00:05:30:00:64:22  0
4        24:55:00:05:30:00:64:22  24:54:00:05:30:00:64:22  0
5        24:57:00:05:30:00:64:22  24:56:00:05:30:00:64:22  0
6        20:11:00:05:30:00:64:22  20:10:00:05:30:00:64:22  0
7        24:51:00:05:30:00:64:22  24:50:00:05:30:00:64:22  0
8        24:59:00:05:30:00:64:22  24:58:00:05:30:00:64:22  0
```

Related Commands

Command	Description
dmm module	Enables DMM configuration on a module.
dmm module job set-vi	Specifies the VI for the storage based job.
show dmm srvr-vt-login	Enables the DMM feature.

show dmm srvr-vt-login

To display server virtual target login information, use the show dmm srvr-vt-login command in EXEC mode.

```
show dmm srvr-vt-login [job-id job-id] server-pwwn srvr-pwwn vt-pwwn vt-pwwn fc_rdrft-fsm-eventlog
| login-fsm-eventlog
```

Syntax Description	job-id job-id	(Optional) Specifies the job ID. The range is 0 to 18446744073709551615.
	server-pwwn srvr-pwwn	Specifies the server port world-wide name. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
	vt-pwwn vt-pwwn	Specifies the VT port worldwide name. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
	fc_rdrft-fsm-eventlog	Displays the server VT FC-Redirect FSM event log.
	login-fsm-eventlog	Displays the server VT FSM event log.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines You must connect to an SSM on your switch to execute DMM show commands. Use the show module command to determine the slot number of an SSM on your switch. Use the attach module command to connect to the SSM.

Examples

The following example shows how to display the server VT login summary:

```
switch# show dmm srvr-vt-login
=====
Data Mobility Manager Server VT Login Information
=====
  Id  Job Id   VSAN Srvr pWWN                Srvr FCID VT pWWN                VT FCID
  State (FC Redirect/Login)
=====
  1   1187978941   1  21:32:00:0d:ec:02:2d:82  0x660000  21:36:00:0d:ec:02:2d:82  0x660003
  (READY/WAITING_PLOGI)
  2   1187978941   1  21:32:00:0d:ec:02:2d:82  0x660000  21:34:00:0d:ec:02:2d:82  0x66000a
  (READY/WAITING_PLOGI)
Number of Logins :2
```

The following example shows how to display the event log for a specified VT:

```
switch# show dmm srvr-vt-login job-id 1187978941 server-pwwn 21:32:00:0d:ec:02:2d:82 vt-pwwn
21:36:00:0d:ec:02:2d:82 login-fsm-e
```

show dmm srvr-vt-login

```

=====
Server/VT Login FSM Event Log -> Job Id : 1187978941 Server : 21:32:00:0d:ec:02:2d:82 VT
: 21:36:00:0d:ec:02:2d:82
=====
Log Entry: 1 time: Fri Aug 24 11:09:19 2007
  Curr state: DMM_SRVR_VT_LOGIN_S_NULL
  Triggered event: DMM_SRVR_VT_LOGIN_E_START_ACTION
Log Entry: 2 time: Fri Aug 24 11:09:19 2007
  Curr state: DMM_SRVR_VT_LOGIN_S_WAITING_PLOGI
  Triggered event: DMM_SRVR_VT_LOGIN_E_LOGIN_DONE_OK

```

Related Commands

Command	Description
dmm module	Enables DMM configuration on a module.
show dmm srvr-vt-login	Displays the DMM feature.

show dmm vt

To display virtual target information, use the show dmm vt command in EXEC mode.

```
show dmm vt vt-job-id job-id pwwn vt-pwwn vt-fsm-eventlog
```

Syntax Description	vt-job-id job-id	Specifies the virtual target job ID. The range is 0 to 18446744073709551615.
	pwwn vt-pwwn	Specifies the virtual target port worldwide name. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
	vt-fsm-eventlog	Displays the virtual target (VT) Finite State Machine (FSM) event log.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines You must connect to an SSM on your switch to execute DMM show commands. Use the show module command to determine the slot number of an SSM on your switch. Use the attach module slot command to connect to the SSM.

Examples The following example shows how to display the virtual target information:

```
switch# attach module 3
Attaching to module 3 ...
To exit type 'exit', to abort type '$.'
Bad terminal type: "ansi". Will assume vt100.
module-3# show dmm vt
=====
Data Mobility Manager VT Information
=====
  Id Job Id      VT pWWN                VSAN FCID      IF-IDX      PORT      STATE
=====
  1  1177009472  2f:00:00:05:30:01:9e:88    3    0xee00a0    0x1110000    0x10      VT_UP
  2  1177009472  2c:fe:00:05:30:01:9e:88    3    0xee00a1    0x1110000    0x10      VT_UP
Number of VTs :2
```

Related Commands	Command	Description
	dmm module	Enables DMM configuration on a module.
	show dmm srvr-vt-login	Displays the DMM feature.

show dpvm

To display dynamic port VSAN membership (DPVM) information, use the show dpvm command.

```
show dpvm database [active] | pending | pending-diff | ports [vsan vsan-id] | status
```

Syntax Description

database	Displays both the configured and active DPVM databases.
active	Displays only the active DPVM database.
pending	Displays pending DPVM operations.
pending-diff	Displays differences between the pending DPVM operations and the active DPVM database.
ports	Displays DPVM information for the ports.
vsan vsan-id	Specifies a VSAN ID. The range is from 0 to 4093.
status	Displays DPVM status information.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, DPVM must be enabled using the dpvm enable command.

Examples

The following example shows how to display DPVM database information:

```
switch# show dpvm database
pwnn 00:00:00:00:00:00:00:01 vsan 1
pwnn 00:00:00:00:00:00:00:02 vsan 1
[Total 2 entries]
```

Related Commands

Command	Description
dpvm database	Configures the DPVM database.

show dpvm merge statistics

To display the DPVM merge statistics, use the show dpvm merge statistics command.

```
show dpvm merge statistics
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display the DPVM merge statistics:

```
switch# show dpvm merge statistics
DPVM merge statistics:
=====
Merge request received      : 0
Merge response sent        : 0
Merge response received    : 0
Activate request sent      : 0
Activate response received : 0
Application response sent  : 0
Merge success received     : 0
Merge failure received     : 0
switch#
```

Related Commands	Command	Description
	clear dpvm merge statistics	Clears the DPVM merge statistics.

show dpvm merge status

To display the DPVM merge status, use the dpvm merge status command.

```
show dpvm merge status
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.1(1b)	Enhanced the command output.

Usage Guidelines None.

Examples The following example shows how to display the conflict in DPVM database:

```
switch# show dpvm merge status
Last Merge Time Stamp      : Fri Aug  8 15:46:36 2008
Last Merge State           : Fail
Last Merge Result          : Fail
Last Merge Failure Reason  : DPVM DB conflict found during merge [cfs_status: 76] Last Merge
  Failure Details          : DPVM merge failed due to database conflict
Local Switch WWN           : 20:00:00:0d:ec:24:e5:00
Remote Switch WWN          : 20:00:00:0d:ec:09:d5:c0

-----
              Conflicting DPVM member(s)                Loc VSAN   Rem VSAN
-----
dev-alias dpvm_dev_alias_1 [21:00:00:04:cf:cf:45:ba]   1313       1414
dev-alias dpvm_dev_alias_2 [21:00:00:04:cf:cf:45:bb]   1313       1414
dev-alias dpvm_dev_alias_3 [21:00:00:04:cf:cf:45:bc]   1313       1414
[Total 3 conflict(s)]
switch#
```


show environment

To display all environment-related switch information (status of chassis clock, chassis fan modules, power supply modules, power supply redundancy mode and power usage summary, module temperature thresholds and alarm status, use the show environment command.

```
show environment [clock | fan | power | temperature]
```

Syntax Description	clock	(Optional) Displays status of chassis clock modules.
	fan	(Optional) Displays status of chassis fan modules.
	power	(Optional) Displays status of power supply modules, power supply. redundancy mode and power usage summary.
	temperature	(Optional) Displays module temperature thresholds and alarm status of temperature sensors.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the power capacity and power distribution of the system on Cisco MDS Director switches:

```
MDS9710-dir# show environment power
Power Supply:
Voltage: 50 Volts
Power
Supply      Model                Actual      Actual      Total
              Output           Input       Capacity    Status
-----
1           -----              0 W         0 W         0 W         Absent
2           -----              0 W         0 W         0 W         Absent
3           -----              0 W         0 W         0 W         Absent
4           -----              0 W         0 W         0 W         Absent
5           DS-CAC97-3KW         1228 W      1291 W      3000 W      Ok
6           DS-CAC97-3KW         1238 W      1305 W      3000 W      Ok
7           DS-CAC97-3KW         1229 W      1295 W      3000 W      Ok
8           -----              0 W         0 W         0 W         Absent

Module      Model                Actual      Power
              Draw           Allocated   Status
-----
1           DS-X9448-768K9      397 W       650 W       Powered-Up
2           DS-X9848-480K9      381 W       500 W       Powered-Up
```

show environment

3	DS-X9824-960K9	600 W	740 W	Powered-Up
4	DS-X9448-768K9	385 W	650 W	Powered-Up
5	DS-X97-SF4-K9	100 W	120 W	Powered-Up
6	DS-X97-SF4-K9	103 W	120 W	Powered-Up
7	DS-X9648-1536K9	280 W	350 W	Powered-Up
8	DS-X9334-K9	440 W	480 W	Powered-Up
9	DS-X9648-1536K9	282 W	350 W	Powered-Up
10	DS-X9334-K9	N/A	0 W	Powered-Dn
Xb1	DS-X9710-FAB3	91 W	150 W	Powered-Up
Xb2	DS-X9710-FAB3	94 W	150 W	Powered-Up
Xb3	DS-X9710-FAB3	96 W	150 W	Powered-Up
Xb4	DS-X9710-FAB3	93 W	150 W	Powered-Up
Xb5	DS-X9710-FAB3	90 W	150 W	Powered-Up
Xb6	DS-X9710-FAB3	93 W	150 W	Powered-Up
fan1	DS-C9710-FAN	40 W	600 W	Powered-Up
fan2	DS-C9710-FAN	40 W	600 W	Powered-Up
fan3	DS-C9710-FAN	45 W	600 W	Powered-Up

N/A - Per module power not available

Power Usage Summary:

```

-----
Power Supply redundancy mode (configured)           Non-Redundant (combined)
Power Supply redundancy mode (operational)         Non-Redundant (combined)

Total Power Capacity (based on configured mode)    9000 W
Total Power of all Inputs (cumulative)             9000 W
Total Power Output (actual draw)                  3695 W
Total Power Input (actual draw)                   3891 W
Total Power Allocated (budget)                    6660 W
Total Power Available for additional modules       2340 W

```

The following example displays the power capacity and power distribution of the system on Cisco MDS fabric switches:

MDS9148T-switch# **show environment power**

Power Supply:

Voltage: 12 Volts

```

-----
PS  Model                Power      Power      Status
   (Watts)      (Amp)
-----
1  -----                0.00      0.00      NotSupported
2  DS-CAC-650W-E         649.92    54.16      Ok

```

```

Mod Model                Power      Power      Power      Power      Status
   Requested Requested  Allocated Allocated
   (Watts)    (Amp)     (Watts)    (Amp)
-----
1  DS-C9148T-K9-SUP     349.92    29.16     349.92    29.16     Powered-Up

```

Power Usage Summary:

```

-----
Power Supply redundancy mode:           Redundant
Power Supply redundancy operational mode: Non-Redundant

Total Power Capacity                    649.92 W
Total Power Allocated (budget)          349.92 W

```

```

Total Power Available          -----
                               300.00 W
                               -----
    
```

The following example displays the status and alarm states of the clock, fan, power supply and temperature sensors on Cisco MDS Director switches:

MDS9710-dir# **show environment**

Power Supply:

Voltage: 50 Volts

Power Supply	Model	Actual Output	Actual Input	Total Capacity	Status
1	-----	0 W	0 W	0 W	Absent
2	-----	0 W	0 W	0 W	Absent
3	-----	0 W	0 W	0 W	Absent
4	-----	0 W	0 W	0 W	Absent
5	DS-CAC97-3KW	1228 W	1291 W	3000 W	Ok
6	DS-CAC97-3KW	1236 W	1305 W	3000 W	Ok
7	DS-CAC97-3KW	1229 W	1296 W	3000 W	Ok
8	-----	0 W	0 W	0 W	Absent

Module	Model	Actual Draw	Power Allocated	Status
1	DS-X9448-768K9	397 W	650 W	Powered-Up
2	DS-X9848-480K9	380 W	500 W	Powered-Up
3	DS-X9824-960K9	600 W	740 W	Powered-Up
4	DS-X9448-768K9	385 W	650 W	Powered-Up
5	DS-X97-SF4-K9	101 W	120 W	Powered-Up
6	DS-X97-SF4-K9	103 W	120 W	Powered-Up
7	DS-X9648-1536K9	279 W	350 W	Powered-Up
8	DS-X9334-K9	440 W	480 W	Powered-Up
9	DS-X9648-1536K9	282 W	350 W	Powered-Up
10	DS-X9334-K9	N/A	0 W	Powered-Dn
Xb1	DS-X9710-FAB3	91 W	150 W	Powered-Up
Xb2	DS-X9710-FAB3	94 W	150 W	Powered-Up
Xb3	DS-X9710-FAB3	96 W	150 W	Powered-Up
Xb4	DS-X9710-FAB3	93 W	150 W	Powered-Up
Xb5	DS-X9710-FAB3	90 W	150 W	Powered-Up
Xb6	DS-X9710-FAB3	93 W	150 W	Powered-Up
fan1	DS-C9710-FAN	40 W	600 W	Powered-Up
fan2	DS-C9710-FAN	40 W	600 W	Powered-Up
fan3	DS-C9710-FAN	45 W	600 W	Powered-Up

N/A - Per module power not available

Power Usage Summary:

Power Supply redundancy mode (configured)	Non-Redundant (combined)
Power Supply redundancy mode (operational)	Non-Redundant (combined)
Total Power Capacity (based on configured mode)	9000 W
Total Power of all Inputs (cumulative)	9000 W
Total Power Output (actual draw)	3693 W
Total Power Input (actual draw)	3892 W
Total Power Allocated (budget)	6660 W
Total Power Available for additional modules	2340 W

show environment

Clock:

Clock	Model	Hw	Status
A	Clock Module	--	NotSupported/None
B	Clock Module	--	NotSupported/None

Fan:

Fan	Model	Hw	Status
Fan1(sys_fan1)	DS-C9710-FAN	0.2	Ok
Fan2(sys_fan2)	DS-C9710-FAN	0.2	Ok
Fan3(sys_fan3)	DS-C9710-FAN	0.2	Ok
Fan_in_PS1	--	--	Absent
Fan_in_PS2	--	--	Absent
Fan_in_PS3	--	--	Absent
Fan_in_PS4	--	--	Absent
Fan_in_PS5	--	--	Ok
Fan_in_PS6	--	--	Ok
Fan_in_PS7	--	--	Ok
Fan_in_PS8	--	--	Absent

Fan Zone Speed % (Hex): Zone 1: 40.78 (0x68)

Temperature:

Module	Sensor	MajorThresh (Celsius)	MinorThres (Celsius)	CurTemp (Celsius)	Status
1	IOSlice0 (s1)	125	115	49	Ok
1	IOSlice1 (s2)	125	115	48	Ok
1	IOSlice2 (s3)	125	115	56	Ok
1	IOSlice3 (s4)	125	115	60	Ok
1	IOSlice4 (s5)	125	115	57	Ok
1	IOSlice5 (s6)	125	115	62	Ok
1	Crossbar0 (s7)	125	115	85	Ok
1	Crossbar1 (s8)	125	115	84	Ok
1	Arb1-mux (s9)	125	105	57	Ok
1	Arb2-mux (s10)	125	105	58	Ok
2	Crossbar1 (s1)	125	115	77	Ok
2	Crossbar2 (s2)	125	115	78	Ok
2	Arb-mux (s3)	125	105	50	Ok
2	L2L3Dev1 (s5)	125	110	54	Ok
2	L2L3Dev2 (s6)	125	110	38	Ok
2	L2L3Dev3 (s7)	125	110	47	Ok
2	L2L3Dev4 (s8)	125	110	58	Ok
2	L2L3Dev5 (s9)	125	110	39	Ok
2	L2L3Dev6 (s10)	125	110	54	Ok
2	L2L3Dev7 (s11)	125	110	62	Ok
2	L2L3Dev8 (s12)	125	110	40	Ok
2	L2L3Dev9 (s13)	125	110	56	Ok
2	L2L3Dev10 (s14)	125	110	56	Ok
2	L2L3Dev11 (s15)	125	110	44	Ok
2	L2L3Dev12 (s16)	125	110	61	Ok
3	Crossbar1 (s1)	125	115	66	Ok
3	Crossbar2 (s2)	125	115	70	Ok
3	Arb-mux (s3)	125	115	59	Ok
3	L2L3Dev1 (s5)	125	115	45	Ok
3	L2L3Dev2 (s6)	125	115	39	Ok
3	L2L3Dev3 (s7)	125	115	54	Ok
3	L2L3Dev4 (s8)	125	115	50	Ok
3	L2L3Dev5 (s9)	125	115	66	Ok

3	L2L3Dev6 (s10)	125	115	63	Ok
3	L2L3Dev7 (s11)	125	115	64	Ok
3	L2L3Dev8 (s12)	125	115	66	Ok
3	L2L3Dev9 (s13)	125	115	50	Ok
3	L2L3Dev10 (s14)	125	115	56	Ok
3	L2L3Dev11 (s15)	125	115	40	Ok
3	L2L3Dev12 (s16)	125	115	51	Ok
4	IOSlice0 (s1)	125	115	49	Ok
4	IOSlice1 (s2)	125	115	50	Ok
4	IOSlice2 (s3)	125	115	51	Ok
4	IOSlice3 (s4)	125	115	55	Ok
4	IOSlice4 (s5)	125	115	56	Ok
4	IOSlice5 (s6)	125	115	58	Ok
4	Crossbar0 (s7)	125	115	82	Ok
4	Crossbar1 (s8)	125	115	82	Ok
4	Arb1-mux (s9)	125	105	50	Ok
4	Arb2-mux (s10)	125	105	52	Ok
5	Inlet (s1)	60	42	18	Ok
5	CPU1CORE1 (s2)	114	94	34	Ok
5	CPU1CORE2 (s3)	104	94	34	Ok
5	CPU1CORE3 (s4)	104	94	34	Ok
5	CPU1CORE4 (s5)	104	94	34	Ok
5	CPU1CORE5 (s6)	104	94	34	Ok
5	CPU1CORE6 (s7)	104	94	34	Ok
5	CPU1CORE7 (s8)	104	94	34	Ok
5	CPU1CORE8 (s9)	104	94	34	Ok
5	DDR4DIMM1 (s10)	95	85	23	Ok
5	DDR4DIMM2 (s11)	95	85	23	Ok
5	DDR4DIMM3 (s12)	95	85	23	Ok
5	DDR4DIMM4 (s13)	95	85	23	Ok
5	L2L3Dev1 (s14)	125	115	37	Ok
5	L2L3Dev1 (s15)	125	115	40	Ok
5	L2L3Dev1 (s16)	125	115	43	Ok
6	Inlet (s1)	60	42	27	Ok
6	CPU1CORE1 (s2)	104	94	36	Ok
6	CPU1CORE2 (s3)	104	94	36	Ok
6	CPU1CORE3 (s4)	104	94	36	Ok
6	CPU1CORE4 (s5)	104	94	36	Ok
6	CPU1CORE5 (s6)	104	94	36	Ok
6	CPU1CORE6 (s7)	104	94	36	Ok
6	CPU1CORE7 (s8)	104	94	36	Ok
6	CPU1CORE8 (s9)	104	94	36	Ok
6	DDR4DIMM1 (s10)	95	85	32	Ok
6	DDR4DIMM2 (s11)	95	85	32	Ok
6	DDR4DIMM3 (s12)	95	85	32	Ok
6	DDR4DIMM4 (s13)	95	85	32	Ok
6	L2L3Dev1 (s14)	125	115	49	Ok
6	L2L3Dev1 (s15)	125	115	52	Ok
6	L2L3Dev1 (s16)	125	115	55	Ok
7	Crossbar0 (s1)	125	115	43	Ok
7	Crossbar1 (s2)	125	115	47	Ok
7	Arb-mux (s3)	125	105	50	Ok
7	CPU (s4)	125	105	47	Ok
7	PCISW (s5)	125	105	40	Ok
7	IOSlice0 (s6)	125	115	33	Ok
7	IOSlice1 (s7)	125	115	33	Ok
7	IOSlice2 (s8)	125	115	37	Ok
8	Crossbar0 (s1)	125	115	66	Ok
8	Crossbar1 (s2)	125	115	65	Ok
8	Arb-mux (s3)	125	115	43	Ok
8	CPU (s4)	125	115	52	Ok
8	L2L3Dev0 (s5)	125	115	43	Ok
8	IOSlice0 (s6)	125	115	42	Ok
8	IOSlice1 (s7)	125	115	40	Ok

show environment

```

8      IOSlice2 (s8) 125      115      41      Ok
8      FC-IP 0 (s9) 95       85       41      Ok
8      FC-IP 1 (s10) 95      85       46      Ok
9      Crossbar0 (s1) 125     115     44      Ok
9      Crossbar1 (s2) 125     115     45      Ok
9      Arb-mux (s3) 125     105     46      Ok
9      CPU (s4) 125     105     43      Ok
9      PCISW (s5) 125     105     39      Ok
9      IOSlice0 (s6) 125     115     32      Ok
9      IOSlice1 (s7) 125     115     33      Ok
9      IOSlice2 (s8) 125     115     33      Ok
xbar-1 Crossbar1 (s1) 125     115     45      Ok
xbar-1 Crossbar2 (s2) 125     115     42      Ok
xbar-2 Crossbar1 (s1) 125     115     48      Ok
xbar-2 Crossbar2 (s2) 125     115     43      Ok
xbar-3 Crossbar1 (s1) 125     115     52      Ok
xbar-3 Crossbar2 (s2) 125     115     46      Ok
xbar-4 Crossbar1 (s1) 125     115     52      Ok
xbar-4 Crossbar2 (s2) 125     115     45      Ok
xbar-5 Crossbar1 (s1) 125     115     45      Ok
xbar-5 Crossbar2 (s2) 125     115     40      Ok
xbar-6 Crossbar1 (s1) 125     115     41      Ok
xbar-6 Crossbar2 (s2) 125     115     40      Ok

```

The following example displays the status and alarm states of the clock, fan, power supply and temperature sensors on Cisco MDS fabric switches:

```

MDS9148T-switch# show environment
Power Supply:
Voltage: 12 Volts
-----
PS Model                Power      Power      Status
      (Watts)      (Amp)
-----
1  -----                0.00      0.00      NotSupported
2  DS-CAC-650W-E        649.92    54.16     Ok

Mod Model                Power      Power      Power      Power      Status
      Requested Requested Allocated Allocated
      (Watts)      (Amp)      (Watts)      (Amp)
-----
1  DS-C9148T-K9-SUP    349.92    29.16     349.92    29.16     Powered-Up

Power Usage Summary:
-----
Power Supply redundancy mode:      Redundant
Power Supply redundancy operational mode: Non-Redundant

Total Power Capacity                649.92 W

Total Power Allocated (budget)      349.92 W
-----
Total Power Available                300.00 W
-----

Clock:
-----
Clock      Model                Hw      Status
-----
A          Clock Module          --      Shutdown/None

```

Fan:

```

-----
Fan           Model           Hw      Status      Airflow direction      Fan
Speed[Fan0-Fan1] (rpm)
-----
ChassisFan1   FAN Module 1      --      Ok          Back to Front
6033 - 4470
ChassisFan2   FAN Module 2      --      Ok          Back to Front
6047 - 4541
ChassisFan3   FAN Module 3      --      Ok          Back to Front
5875 - 4530
ChassisFan4   FAN Module 4      --      Ok          Back to Front
6026 - 4518
Fan_in_PS1    --                --      Shutdown    NA
--
Fan_in_PS2    --                --      Ok          Back to Front
--
Fan Air Filter : NotSupported

```

Temperature:

```

-----
Module  Sensor           MajorThresh  MinorThres  CurTemp  Status
(Celsius) (Celsius)   (Celsius)
-----
1      Outlet1 (s1)      80           70          45       Ok
1      Outlet2 (s2)      80           70          41       Ok
1      Intake1 (s3)      70           60          31       Ok
1      Intake2 (s4)      70           60          29       Ok
1      AXE35 (s5)       125          105         53       Ok
1      IOSlice0 (s6)    125          115         42       Ok
1      IOSlice1 (s7)    125          115         53       Ok
1      IOSlice2 (s8)    125          115         47       Ok
1      CPU (s9)         85           80          41       Ok
1      Crossbar (s10)   125          115         48       Ok
1      Arbiter (s11)   125          115         32       Ok

```

Related Commands

Command	Description
show hardware	Displays all hardware components on a system.

show event manager environment

To display the name and value of Embedded Event Manager (EEM) environment variables, use the show event manager environment command.

```
show event manager environment variable-name | all
```

Syntax Description

variable-name	Displays information about the specified environment variable.
all	Displays information about all environment variables.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows all the EEM environment variables:

```
switch# show event manager environment all
switch#
```

Related Commands

Command	Description
event manager environment	Displays an EEM environment variable.

show event manager policy

To display the registered Embedded Event Manager (EEM) policies, use the show event manager policy command.

```
show event manager policy [detail] [policy-name | inactive]
```

Syntax Description	Option	Description
	detail	(Optional) Displays details of all policies.
	policy-name	(Optional) Specifies a policy-name policy to display.
	inactive	(Optional) Displays only those policies that are inactive.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.1(3)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display the EEM policies:

```
switch# show event manager policy
switch
```

Related Commands	Command	Description
	event manager applet	Displays an applet with the Emedded Event manager.

show fabric switch information vsan

To display the switch name, switch model, running version and memory details, use the show fabric switch information vsan command.

```
show fabric switch information [vsan vsan-id]
```

Syntax Description

vsan-id	(Optional) Specifies the VSAN range. The range is from 1 to 4093.
---------	---

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(9)	Added a note.
6.2(7)	This command was introduced.

Usage Guidelines

None.



Note In scenarios where the show fabric switch information command output has few missing parameters like switchname, model, version, etc. Please re-execute this command after few seconds.



Note Without the VSAN option this command will displays the information about switches in all the VSANs.



Note SUP memory is not displayed for switches that are running versions prior to 6.2(7) release.

Examples

The following example displays the switch name, switch model, running version and memory details of all switches in the fabric in the given VSAN:

```
switch# show fabric switch information vsan 320
VSAN 320:
-----
Switch Name Model Version Sup Memory
-----
sw3-gd99-9148s DS-C9148S48PK9 6.2(9) 4 GB
minishan-scale DS-C9148S48PK9 6.2(9) 4 GB
mdsng-sca DS-C9710 6.2(9) 8 GB

X
```

show fabric-binding

To display configured fabric binding information, use the show fabric-binding command in EXEC mode.

```
show fabric-binding database [active] [vsan vsan-id] | efmd statistics [vsan vsan-id] | statistics [vsan vsan-id] | status [vsan vsan-id] | violations [last number]
```

database	Displays configured database information.
active	Displays the active database configuration information.
vsan vsan-id	(Optional) Specifies the FICON-enabled VSAN ID. The range is 1 to 4093.
efmd statistics	Displays Exchange Fabric Membership Data (EFMD) statistics.
statistics	Displays fabric binding statistics.
status	Displays fabric binding status.
violations	Displays violations in the fabric binding configuration.
last number	(Optional) Specifies recent violations. The range is 1 to 100.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines None.

Examples The following example displays configured fabric binding database information:

```
switch# show fabric-binding database
-----
Vsan   Logging-in Switch WWN      Domain-id
-----
1      21:00:05:30:23:11:11:11    0x66 (102)
1      21:00:05:30:23:1a:11:03    0x19 (25)
1      20:00:00:05:30:00:2a:1e    0xea (234)
4      21:00:05:30:23:11:11:11    0x66 (102)
4      21:00:05:30:23:1a:11:03    0x19 (25)
61     21:00:05:30:23:1a:11:03    0x19 (25)
61     21:00:05:30:23:11:11:11    0x66 (102)
[Total 7 entries]
```

The following example displays active fabric binding information:

```
switch# show fabric-binding database active
-----
```

```

Vsan   Logging-in Switch WWN      Domain-id
-----
1      21:00:05:30:23:11:11:11      0x66(102)
1      21:00:05:30:23:1a:11:03      0x19(25)
1      20:00:00:05:30:00:2a:1e      0xea(234)
61     21:00:05:30:23:1a:11:03      0x19(25)
61     21:00:05:30:23:11:11:11      0x66(102)
61     20:00:00:05:30:00:2a:1e      0xef(239)

```

The following example displays active VSAN-specific fabric binding information:

```

switch# show fabric-binding database active vsan 61
-----
Vsan   Logging-in Switch WWN      Domain-id
-----
61     21:00:05:30:23:1a:11:03      0x19(25)
61     21:00:05:30:23:11:11:11      0x66(102)
61     20:00:00:05:30:00:2a:1e      0xef(239)
[Total 3 entries]

```

The following example displays configured VSAN-specific fabric binding information:

```

switch# show fabric-binding database vsan 4
-----
Vsan   Logging-in Switch WWN      Domain-id
-----
4      21:00:05:30:23:11:11:11      0x66(102)
4      21:00:05:30:23:1a:11:03      0x19(25)
[Total 2 entries]

```

The following example displays fabric binding statistics:

```

switch# show fabric-binding statistics
Statistics For VSAN: 1
-----
Number of sWWN permit: 0
Number of sWWN deny   : 0
Total Logins permitted : 0
Total Logins denied   : 0
Statistics For VSAN: 4
-----
Number of sWWN permit: 0
Number of sWWN deny   : 0
Total Logins permitted : 0
Total Logins denied   : 0
Statistics For VSAN: 61
-----
Number of sWWN permit: 0
Number of sWWN deny   : 0
Total Logins permitted : 0
Total Logins denied   : 0
Statistics For VSAN: 345
-----
Number of sWWN permit: 0
Number of sWWN deny   : 0
Total Logins permitted : 0
Total Logins denied   : 0
Statistics For VSAN: 346
-----
Number of sWWN permit: 0
Number of sWWN deny   : 0
Total Logins permitted : 0
Total Logins denied   : 0

```

```

Statistics For VSAN: 347
-----
Number of sWWN permit: 0
Number of sWWN deny  : 0
Total Logins permitted : 0
Total Logins denied   : 0
Statistics For VSAN: 348
-----
Number of sWWN permit: 0
Number of sWWN deny  : 0
Total Logins permitted : 0
Total Logins denied   : 0
Statistics For VSAN: 789
-----
Number of sWWN permit: 0
Number of sWWN deny  : 0
Total Logins permitted : 0
Total Logins denied   : 0
Statistics For VSAN: 790
-----
Number of sWWN permit: 0
Number of sWWN deny  : 0
Total Logins permitted : 0
Total Logins denied   : 0

```

The following example displays fabric binding status for each VSAN:

```

switch# show fabric-binding status
VSAN 1 :Activated database
VSAN 4 :No Active database
VSAN 61 :Activated database
VSAN 345 :No Active database
VSAN 346 :No Active database
VSAN 347 :No Active database
VSAN 348 :No Active database
VSAN 789 :No Active database
VSAN 790 :No Active database

```

The following example displays EFMD statistics:

```

switch# show fabric-binding efmd statistics
EFMD Protocol Statistics for VSAN 1
-----
Merge Requests -> Transmitted : 0 , Received : 0
Merge Accepts  -> Transmitted : 0 , Received : 0
Merge Rejects  -> Transmitted : 0 , Received : 0
Merge Busy     -> Transmitted : 0 , Received : 0
Merge Errors   -> Transmitted : 0 , Received : 0
EFMD Protocol Statistics for VSAN 4
-----
Merge Requests -> Transmitted : 0 , Received : 0
Merge Accepts  -> Transmitted : 0 , Received : 0
Merge Rejects  -> Transmitted : 0 , Received : 0
Merge Busy     -> Transmitted : 0 , Received : 0
Merge Errors   -> Transmitted : 0 , Received : 0
EFMD Protocol Statistics for VSAN 61
-----
Merge Requests -> Transmitted : 0 , Received : 0
Merge Accepts  -> Transmitted : 0 , Received : 0
Merge Rejects  -> Transmitted : 0 , Received : 0
Merge Busy     -> Transmitted : 0 , Received : 0
Merge Errors   -> Transmitted : 0 , Received : 0

```

The following example displays EFMD statistics for a specified VSAN:

```
switch# show fabric-binding efmd statistics vsan 4
EFMD Protocol Statistics for VSAN 4
-----
Merge Requests -> Transmitted : 0 , Received : 0
Merge Accepts  -> Transmitted : 0 , Received : 0
Merge Rejects  -> Transmitted : 0 , Received : 0
Merge Busy     -> Transmitted : 0 , Received : 0
Merge Errors   -> Transmitted : 0 , Received : 0
```

The following example displays fabric binding violations:

```
switch# show fabric-binding violations
-----
VSAN Switch WWN [domain] Last-Time [Repeat count] Reason
-----
3 20:00:00:05:30:00:4a:1e [*] Nov 25 05:44:58 2003 [2] sWWN not found
3 20:00:00:05:30:00:4a:1e [0xeb] Nov 25 05:46:14 2003 [2] Domain mismatch
4 20:00:00:05:30:00:4a:1e [*] Nov 25 05:46:25 2003 [1] Database mismatch
```

show fc2

To display FC2 information, use the show fc2 command.

```
show fc2 bind | classf | exchange | exchresp | flogi | nport | plogi | plogi_pwwn | port [brief] | socket | sockexch
| socknotify | socknport | vsan
```

Syntax Description

bind	Displays FC2 socket bindings.
classf	Displays FC2 classf sessions.
exchange	Displays FC2 active exchanges.
exchresp	Displays FC2 active responder exchanges.
flogi	Displays FC2 FLOGI table.
nport	Displays FC2 local N ports.
plogi	Displays FC2 PLOGI sessions.
plogi_pwwn	Displays FC2 PLOGI pWWN entries.
port brief	Displays FC2 physical port table.
socket	Displays FC2 active sockets.
sockexch	Displays FC2 active exchanges for each socket.
socknotify	Displays FC2 local N port PLOGI/LOGO notifications for each socket.
socknport	Displays FC2 local N ports per each socket.
vsan	Displays FC2 VSAN table.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays FC2 active socket information:

```
switch# show fc2 socket
SOCKET  REFCNT  PROTOCOL  PID  RCVBUF  RMEM_USED  QLEN  NOTSK
b2a64b20      2      0      1421  65535      0      0      0
```

```

b2a647e0      3      0      1418    262142      0      0      0
b2a644a0      3      0      1417     65535      0      0      0
b2a64160      3      0      1417    262142      0      0      0
b294b180      3      0      1411     65535      0      0      0
b294ae40      3      0      1411     65535      0      0      0
b294a7c0      3      0      1410     65535      0      0      0
b294a480      2      7      1410     65535      0      0      0
b294a140      3      0      1409    262142      0      0      0
b278bb20      3      0      1409    262142      0      0      0
b278b4a0      3      0      1407     65535      0      0      0
b278b160      3      0      1407    256000      0      0      0
b278ae20      3      0      1407     65535      0      0      0
b1435b00      3      0      1408     65535      0      0      0
b1434e00      3      0      1406     65535      0      0      0
b1434ac0      3      0      1406    131072      0      0      0
b1434780      3      0      1406     65535      0      0      0
b1434440      2      0      1405    131072      0      0      0
b1434100      3      0      1405    262142      0      0 b1434440
b22e2420      2      0      1372     65535      0      0      0
...

```

The following example displays FC2 socket binding information:

```

switch# show fc2 bind
SOCKET RULE      SINDE X  VSAN      D_ID      MASK TYPE  SUBTYPE M_VALUES
b23ba0c0  16  6081000      1      0      0      00:00:00 00:00:00:00:00:00:00:00
b2a647e0  7  ffffffff  65535  fffffd  ffffff  22 03:01:00 14:15:16:00:00:00:00:00
b294b180  7  ffffffff  65535  fffffd  ffffff  1 02:01:00 61:62:00:00:00:00:00:00
b294ae40  7  ffffffff  65535  fffc00  ffff00  22 01:01:00 1b:00:00:00:00:00:00:00
b294a7c0  7  ffffffff  65535  fffffd  ffffff  1 01:01:00 10:00:00:00:00:00:00:00
...

```

The following example displays FC2 local N port information:

```

switch# show fc2 nport
REF  VSAN  D_ID  MASK  FL  ST  IFINDEX  CF  TC  2-SO  IC  RC  RS  CS
EE 3-SO  IC  RC  RS  CS  EE
1  65535  fffffd  ffffff  3  0  ffffffff  c800 0128 8000 0000 0000 2112 0064 0
008 8000 0000 0000 2112 0064 0000
6  65535  fffc00  ffff00  18b  0  ffffffff  c800 0128 8000 0000 0000 2112 0064 0
008 8000 0000 0000 2112 0064 0000
2  65535  fffffa  ffffff  3  0  ffffffff  c800 0128 8000 0000 0000 2112 0064 0
008 8000 0000 0000 2112 0064 0000
1  65535  ffffc  ffffff  3  0  ffffffff  c800 0128 8000 0000 0000 2112 0064 0
008 8000 0000 0000 2112 0064 0000
...

```

The following example displays FC2 PLOGI session information:

```

switch# show fc2 plogi
HIX  ADDRESS  VSAN  S_ID  D_ID  IFINDEX  FL  STATE  CF  TC  2-SO  IC  RC
RS  CS  EE 3-SO  IC  RC  RS  CS  EE  EECNT  TCCNT  2CNT  3CNT  REFCNT
2157 af364064      1  fffc6c 123400  ffffffff 0000      0 0000 0001 8000 0000 2000
0256 0001 0001 8000 0000 2000 0256 0001 0000      0 0 0 0 1

```

The following example displays FC2 physical port information:

```

switch# show fc2 port
IX ST MODE EMUL  TXPKTS  TXDROP  TXERR  RXPKTS  RXDROP  R_A_TOV  E_D_TOV
F-SO RC  RS  CS  EE 2-SO  RS 3-SO  RS
0 D 1 0 0 0 0 0 0 0 0 0 10000 2000
8000 0000 2112 0001 0001 8000 0256 8000 0256

```



```

1 D 1 0 0 0 0 0 0 0 10000 2000
8000 0000 2112 0001 0001 8000 0256 8000 0256
2 D 1 0 0 0 0 0 0 0 10000 2000
8000 0000 2112 0001 0001 8000 0256 8000 0256
3 D 1 0 0 0 0 0 0 0 10000 2000
8000 0000 2112 0001 0001 8000 0256 8000 0256
4 D 1 0 0 0 0 0 0 0 10000 2000
8000 0000 2112 0001 0001 8000 0256 8000 0256
...

```

The following example displays FC2 local N port PLOGI notifications for each socket:

```

switch# show fc2 socknotify
SOCKET ADDRESS REF VSAN D_ID MASK FL ST IFINDEX
b2a64160 b27f01e4 6 65535 fffc00 ffff00 18b 0 ffffffff
b294a7c0 b27f01e4 6 65535 fffc00 ffff00 18b 0 ffffffff
af8a3a60 b27f01e4 6 65535 fffc00 ffff00 18b 0 ffffffff

```

The following example displays FC2 local N ports for each socket:

```

switch# show fc2 socknport
SOCKET ADDRESS REF VSAN D_ID MASK FL ST IFINDEX
b2a64160 b27f01e4 6 65535 fffc00 ffff00 18b 0 ffffffff
b294b180 b27f0294 1 65535 fffffd ffffffff 3 0 ffffffff
b294a7c0 b27f01e4 6 65535 fffc00 ffff00 18b 0 ffffffff
b278ae20 b27f0134 2 65535 fffffa ffffffff 3 0 ffffffff
b1434e00 b27f0134 2 65535 fffffa ffffffff 3 0 ffffffff
b1434780 b27f0084 1 65535 fffffc ffffffff 3 0 ffffffff
af8a3a60 b27f01e4 6 65535 fffc00 ffff00 18b 0 ffffffff

```

The following example displays FC2 VSAN table:

```

switch# show fc2 vsan
VSAN X_ID E_D_TOV R_A_TOV WWN
1 4 2000 10000 20:01:00:05:30:00:58:1f
2 1 2000 10000 20:02:00:05:30:00:58:1f
3 1 2000 10000 20:03:00:05:30:00:58:1f
4 1 2000 10000 20:04:00:05:30:00:58:1f
5 1 2000 10000 20:05:00:05:30:00:58:1f
6 1 2000 10000 20:06:00:05:30:00:58:1f
7 1 2000 10000 20:07:00:05:30:00:58:1f
8 1 2000 10000 20:08:00:05:30:00:58:1f
9 1 2000 10000 20:09:00:05:30:00:58:1f
10 1 2000 10000 20:0a:00:05:30:00:58:1f
11 1 2000 10000 20:0b:00:05:30:00:58:1f
12 1 2000 10000 20:0c:00:05:30:00:58:1f
13 1 2000 10000 20:0d:00:05:30:00:58:1f
14 1 2000 10000 20:0e:00:05:30:00:58:1f
15 1 2000 10000 20:0f:00:05:30:00:58:1f
16 1 2000 10000 20:10:00:05:30:00:58:1f
17 1 2000 10000 20:11:00:05:30:00:58:1f
18 1 2000 10000 20:12:00:05:30:00:58:1f
....

```

show fcalias

To display the member name information in a Fibre Channel alias (fcalias), use the show fcalias command.

```
show fcalias [name fcalias-name] [pending] [vsan vsan-id]
```

Syntax Description

name fcalias-name	(Optional) Displays fcalias information for a specific name. The maximum length is 64.
pending	(Optional) Displays pending fcalias information.
vsan vsan-id	(Optional) Displays fcalias information for a VSAN. The range is 1 to 4093.

Command Default

Displays a list of all global fcalias and all VSAN dependent fcalias.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
2.0(x)	Added the pending keyword.

Usage Guidelines

To make use of fcalias as device names instead of using the cryptic device name, add only one member per fcalias.

Examples

The following example displays fcalias configuration information:

```
switch# show fcalias vsan 1
fcalias name Alias2 vsan 1
fcalias name Alias1 vsan 1
  pwwn 21:00:00:20:37:6f:db:dd
  pwwn 21:00:00:20:37:9c:48:e5
```

Related Commands

Command	Description
fcalias name	Configures fcalias names.

show fcanalyzer

To display the list of hosts configured for a remote capture, use the show fcanalyzer command.

```
show fcanalyzer
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines The default keyword shown with the ActiveClient entry specifies that the default port is used to connect to the client.

Examples The following example displays configured hosts:

```
switch# show fcanalyzer

PassiveClient = 10.21.0.3
PassiveClient = 10.21.0.3
ActiveClient = 10.21.0.3, DEFAULT
```

show fcc

To view FCC settings, use the show fcc commands.

```
show fcc [statistics interface fc slot / port | fcip fcip-id | iscsi slot / port]
```

Syntax Description

statistics interface	(optional) Displays FCC statistics for a specified interface.
fc slot/port	(optional) Specifies a Fibre Channel interface.
fcip fcip-id	(optional) Specifies an FCIP interface. The range is 1 to 255.
iscsi slot/port	(optional) Specifies an iSCSI interface.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays FCC information:

```
switch# show fcc
fcc is disabled
fcc is applied to frames with priority up to 4
```

show fcdomain

To display the Fibre Channel domain (fcdomain) information, use the show fcdomain command.

```
show fcdomain [address-allocation [cache] | allowed | domain-list | fcid persistent [unused] | pending
[vsan vsan-id] | pending-diff [vsan vsan-id] | session-status [vsan vsan-id] | statistics [interface fc slot
/ port [vsan vsan-id] | fcip fcip-id [vsan vsan-id] | iscsi slot / port | port-channel [vsan vsan-id]] |
status | vsan vsan-id]
```



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs as follows: interface bay port | ext port }

Syntax Description

address-allocation	(Optional) Displays statistics for the FC ID allocation.
cache	(Optional) Reassigns the FC IDs for a device (disk or host) that exited and reentered the fabric for the principal switch. In the cache content, VSAN refers to the VSAN that contains the device, WWN refers to the device that owned the FC IDs, and mask refers to a single or entire area of FC IDs.
allowed	Displays a list of allowed domain IDs.
domain-list	Displays a list of domain IDs granted by the principal switch.
fcid persistent	Displays persistent FC IDs (across reboot).
unused pending	Displays the pending configuration.
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
pending-diff	Displays the difference between the running configuration and the pending configuration.
session-status	Displays the last action performed by FC domain.
statistics	Displays the statistics of FC domain.
interface	Specifies an interface.
fc slot/port	Specifies a Fibre Channel interface on a Cisco MDS 9000 Family Switch.
bay port | ext port	(Optional) Specifies a Fibre Channel interface on a Cisco MDS 9124 Fabric Switch, a Cisco Fabric Switch for HP c-Class BladeSystem, and a Cisco Fabric Switch for IBM BladeCenter.
fcip fcip-id	Specifies an FCIP interface. The range is 1 to 255.
iscsi slot/port	Specifies an iSCSI interface.
port-channel	Specifies a PortChannel interface. The range is 1 to 128.
status	Displays all VSAN-independent information in FC domain.

Command Default None.

Command Modes EXEC mode.

Release	Modification
6.2(3)	Added the Optimized mode: Disabled, in the command output.
1.0(2)	This command was introduced.
2.1(1a)	The domain-list display was modified to include a virtual IVR description.
3.0(1)	Added the pending, pending-diff, session-status, and status options.

Usage Guidelines Entering the show fcdomain with no arguments displays all VSANs. The VSANs should be active or you will get an error.

Examples The following example displays the fcdomain information for VSAN 1:

```
switch# show fcdomain vsan 1
The local switch is a Subordinated Switch.
Local switch run time information:
    State: Stable
    Local switch WWN:      20:01:00:05:30:00:51:1f
    Running fabric name:  10:00:00:60:69:22:32:91
    Running priority: 128
    Current domain ID: 0x64(100) β verify domain id
Local switch configuration information:
    State: Enabled
    Auto-reconfiguration: Disabled
    Contiguous-allocation: Disabled
    Configured fabric name: 41:6e:64:69:61:6d:6f:21
    Optimize Mode: Disabled
    Configured priority: 128
    Configured domain ID: 0x64(100) (preferred)
Principal switch run time information:
    Running priority: 2
Interface          Role          RCF-reject
-----
fc2/1              Downstream   Disabled
fc2/2              Downstream   Disabled
fc2/7              Upstream     Disabled
-----
```

The following example displays the fcdomain domain-list information for VSAN 76:

```
switch# show fcdomain domain-list vsan 76
Number of domains: 3
Domain ID          WWN
-----
0xc8(200)         20:01:00:05:30:00:47:df [Principal]
0x63(99)          20:01:00:0d:ec:08:60:c1 [Local]
0x61(97)          50:00:53:0f:ff:f0:10:06 [Virtual (IVR)]
```

[Table 6: show fcdomain Field Descriptions, on page 1423](#) describes the significant fields shown in the show fcdomain domain-list command output.

Table 6: show fcdomain Field Descriptions

Field	Description
Domain ID	Lists the domain IDs corresponding to the WWN.
WWN	Indicates the WWN of the switch (physical or virtual) that requested the corresponding domain ID.
Principal	Indicates which row of the display lists the WWN and domain ID of the principal switch in the VSAN.
Local	Indicates which row of the display lists the WWN and domain ID of the local switch (the switch where you entered the show fcdomain domain-list command).
Virtual (IVR)	Indicates which row of the display lists the WWN of the virtual switch used by the Inter-VSAN Routing (IVR) manager to obtain the domain ID.

The following example displays the allowed domain ID lists:

```
switch# show fcdomain
  allowed vsan 1
Assigned or unallowed domain IDs: 1-96,100,111-239.
[Interoperability Mode 1] allowed domain IDs: 97-127.
[User] configured allowed domain IDs: 50-110.
```

The following example shows the status of CFS distribution for allowed domain ID lists:

```
switch# show fcdomain status
CFS distribution is enabled
```

The following example displays pending configuration changes:

```
switch# show fcdomain pending vsan 10
Pending Configured Allowed Domains
-----
VSAN 10
Assigned or unallowed domain IDs: 1-9,24,100,231-239.
[User] configured allowed domain IDs: 10-230.
```

The following example displays the differences between the pending configuration and the current configuration:

```
switch# show fcdomain pending-diff vsan 10
Current Configured Allowed Domains
-----
VSAN 10
Assigned or unallowed domain IDs: 24,100.
[User] configured allowed domain IDs: 1-239.
Pending Configured Allowed Domains
-----
VSAN 10
Assigned or unallowed domain IDs: 1-9,24,100,231-239.
[User] configured allowed domain IDs: 10-230.
```

The following example displays the status of the distribution session:

```
switch# show fcdomain session-status vsan 1
```

Last Action: Distribution Enable
Result: Success

Related Commands

Command	Description
fcdomain	Configures the Fibre Channel domain feature.

show fcdroplateny

To display the configured Fibre Channel latency parameters, use the show fcdroplateny command.

```
show fcdroplateny [network | switch]
```

Syntax Description	
network	(Optional) Network latency in milliseconds.
switch	(Optional) Switch latency in milliseconds.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the configured Fibre Channel latency parameters:

```
switch# show
fcdroplateny
switch latency value:4000 milliseconds
network latency value:5000 milliseconds
```

show fcflow stats

To display the configured Fibre Channel flow (fcflow) information, use the show fcflow stats command.

```
show fcflow stats [aggregated | usage] module slot [index flow-index]
```

Syntax Description

aggregated	(optional) Displays aggregated fcflow statistics.
usage	(optional) Displays flow index usage.
module slot	Displays fcflow statistics for a module in the specified slot.
index flow-index	(optional) Specifies an fcflow index.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays aggregated fcflow details for the specified module:

```
switch# show fcflow stats aggregated module 2
```

```
Idx VSAN # frames # bytes ---- - 0000 4 387,653 674,235,875 0001 6 34,402
2,896,628
```

The following example displays fcflow details for the specified module:

```
switch# show fcflow stats module 2
```

```
Idx VSAN D ID S ID mask # frames # bytes ---- - 0000 4
032.001.002 007.081.012 ff.ff.ff 387,653 674,235,875 0001 6 004.002.001 019.002.004 ff.00.00
34,402 2,896,628
```

The following example displays fcflow index usage for the specified module:

```
switch# show fcflow stats usage module 2
2 flows configured
configured flow : 3,7
```

show fcfwd

To display the configured fcfwd tables and statistics, use the show fcfwd command.

```
show fcfwd idxmap [interface-toport | port-to-interface | statistics] | pemap [interface] | sfib [multicast |
statistics | unicast] | spanmap [rx | tx]
```

Syntax Description		
idxmap		Displays the FC forward index tables.
interface-to-port	(Optional)	Displays the interface index to port index table.
port-to-interface	(Optional)	Displays the port index to interface index table.
statistics	(Optional)	Displays index table statistics.
pemap		Displays the FC forward PortChannel table.
interface	(Optional)	Displays PortChannel tables for an interface.
sfib		Displays software forwarding tables.
multicast	(Optional)	Displays multicast software forwarding tables.
statistics	(Optional)	Displays software forwarding statistics.
unicast	(Optional)	Displays unicast software forwarding tables.
spanmap		Displays SPAN map tables.
rx	(Optional)	Displays SPAN map tables in the ingress -rx direction.
tx	(Optional)	Displays SPAN map tables in the egress -tx direction.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example displays fcfwd SPAN map receive information:

```
switch# show fcfwd spanmap rx
SPAN source information: size [c8]
dir source                vsan    bit    drop_thresh destination
```

show fcid-allocation

Use the show fcid allocation command to display the Fibre Channel area list of company IDs.

```
show fcid-allocation area company-id [company-id]
```

Syntax Description

area	Selects the auto area list of company IDs.
company-id	Selects company ID list.
company-id	(Optional) Selects the individual company ID (also known as Organizational Unit Identifier, or OUI) to display.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
2.0	New command

Examples

The following example shows the Fibre Channel area company list of company IDs:

```
switch# show fcid-allocation area company-id
Fcid area allocation company id info:
  00:50:2E
  00:50:8B
  00:60:B0
  00:A0:B8
  00:E0:69
  00:E0:8B
  00:32:23 +
Total company ids: 7
+ - Additional user configured company ids.
* - Explicitly deleted company ids from default list.
switch#
```

[Table 7: show fcid-allocation area company Field Descriptions, on page 1428](#) describes the significant fields shown in the display.

Table 7: show fcid-allocation area company Field Descriptions

Field	Description
+	Indicates a company ID added to the default list.
-	Indicates a company ID deleted from the default list.

show fcip

To display FCIP profile information, use the show fcip command.

```
show fcip host-map fcip-id | profile [profile-id | all] | summary | tape-session summary | tunnel tunnel-id
host-end | target-end | target-map fcip-id | wa-login-list tunnel-id
```

Syntax Description

host-map fcip-id	Displays the information for a specified map. The range is 1 to 255.
profile	Displays the information for a profile.
profile-id	(Optional) Specifies the profile ID. The range is 1 to 255.
all	(Optional) Specifies all profile IDs.
summary	Displays summary information.
tape-session	Displays tape session information.
tunnel tunnel-id	Displays information for a specified FCIP tunnel ID. The range is 1 to 255.
host-end	Displays information for the host end.
target-end	Displays information for the target end.
target-map fcip-id	Displays information for a specified target map. The range is 1 to 255.
wa-login-list tunnel-id	Displays the write acceleration login list for a specified FCIP tunnel ID. The range is 1 to 255.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(5)	Added the command output for FCIP Profiles for Cisco MDS 9250i Multiservice Fabric Switch.
1.1(1)	This command was introduced.
2.0(x)	Added the host-map , summary , and target-map keywords.
3.0(1)	Added the tape-session, tunnel, host-end, target-end, and wa-login-list keywords.

Usage Guidelines

None.

Examples

The following example displays FCIP Profiles for SSN-16/18+4

```
switch# show fcip profile
```

```
-----
ProfileId Ipaddr TcpPort
-----
1 10.10.100.150 3225
2 10.10.100.150 3226
40 40.1.1.2 3225
100 100.1.1.2 3225
200 200.1.1.2 3225
```

The following example displays FCIP Profiles for Cisco MDS 9250i Multiservice Fabric Switch:

```
switch# show fcip profile
-----
ProfileId Ipaddr TcpPort
-----
1 20.1.1.1 3225
2 20.1.1.1 2000
3 20.1.1.1 3000
4 20.1.1.1 4000
5 20.1.1.1 5000
6 20.1.1.1 6000
7 30.1.1.1 3225
8 31.1.1.1 3225
9 32.1.1.1 3225
10 33.1.1.1 3225
11 34.1.1.1 3225
12 35.1.1.1 3225
```

The following example displays all FCIP profiles:

```
switch# show fcip profile all
-----
ProfileId      Ipaddr      TcpPort
-----
1              41.1.1.2   3225
2              10.10.100.154 3225
3              43.1.1.2   3225
4              44.1.1.100 3225
6              46.1.1.2   3225
7              47.1.1.2   3225
```

The following example displays information for a specified FCIP profile for SSN-16/18+4:

```
switch# show fcip profile 7
FCIP Profile 7
  Internet Address is 47.1.1.2 (interface GigabitEthernet4/7)
  Listen Port is 3225
  TCP parameters
    SACK is disabled
    PMTU discovery is enabled, reset timeout is 3600 sec
    Keep alive is 60 sec
    Minimum retransmission timeout is 300 ms
    Maximum number of re-transmissions is 4
    Send buffer size is 0 KB
    Maximum allowed bandwidth is 1000000 kbps
    Minimum available bandwidth is 15000 kbps
    Estimated round trip time is 1000 usec
```

The following example displays information for the Specified FCIP Profile Information for Cisco MDS 9250i Multiservice Fabric Switch:

```
switch# show fcip profile 1
```

```

FCIP Profile 1
Internet Address is 20.1.1.1 (interface IPStorage1/1)
Tunnels Using this Profile: fcip1
Listen Port is 3225
TCP parameters
SACK is enabled
PMTU discovery is enabled, reset timeout is 3600 sec
Keep alive is 60 sec
Minimum retransmission timeout is 200 ms
Maximum number of re-transmissions is 4
Send buffer size is 16384 KB
Maximum allowed bandwidth is 5000000 kbps
Minimum available bandwidth is 4000000 kbps
Configured round trip time is 1000 usec
Congestion window monitoring is enabled, burst size is 50 KB
Auto jitter detection is enabled

```

The following example displays the FCIP Summary information (SSN-16/18+4):

```

switch# show fcip summary
-----
Tun prof Eth-if peer-ip Status T W T Enc Comp Bandwidth rtt
E A A max/min (us)
-----
10 91 GE4/1 3.3.3.2 UP N N N N N 1000M/1000M 2000
11 11 GE3/1.601 30.1.1.2 DOWN N N N N N 1000M/500M 1000
12 12 GE3/1.602 30.1.2.2 DOWN N N N N N 1000M/500M 1000
13 0 0.0.0.0 DOWN N N N N N
14 0 0.0.0.0 DOWN N N N N N
15 0 0.0.0.0 DOWN N N N N N
16 0 0.0.0.0 DOWN N N N N N
17 0 0.0.0.0 DOWN N N N N N
18 0 0.0.0.0 DOWN N N N N N
19 0 0.0.0.0 DOWN N N N N N
20 92 GE4/2 3.3.3.1 UP N N N N N 1000M/1000M 2000
21 21 GE3/2.601 30.1.1.1 DOWN N N N N N 1000M/500M 1000
22 22 GE3/2.602 30.1.2.1 DOWN N N N N N 1000M/500M 1000

```

The following example displays the FCIP Summary (Cisco MDS 9250i Multiservice Fabric Switch):

```

switch# show fcip summary
-----
Tun prof IPS-if peer-ip Status T W T Enc Comp Bandwidth rtt
E A A max/min (us)
-----
1 1 IPS1/1 20.1.1.2 TRNK Y N N N A 5000M/4000M 1000
2 2 IPS1/1 20.1.1.2 TRNK Y N N N A 1000M/800M 1000
3 3 IPS1/1 20.1.1.2 DOWN N N N N N 1000M/800M 1000
4 4 IPS1/1 20.1.1.2 DOWN N N N N N 1000M/800M 1000
5 5 IPS1/1 20.1.1.2 DOWN N N N N N 1000M/800M 1000
6 6 IPS1/1 20.1.1.2 DOWN N N N N N 1000M/800M 1000
7 7 IPS1/2.1 30.1.1.2 TRNK Y N N N M2 1000M/800M 1000
8 8 IPS1/2.2 31.1.1.2 TRNK Y N N N M2 1000M/800M 1000
9 9 IPS1/2.3 32.1.1.2 DOWN N N N N N 1000M/800M 1000
10 10 IPS1/2.4 33.1.1.2 DOWN N N N N N 1000M/800M 1000
11 11 IPS1/2.5 34.1.1.2 DOWN N N N N N 1000M/800M 1000
12 12 IPS1/2.6 35.1.1.2 DOWN N N N N N 1000M/800M 1000

```

[Table 8: show fcip summary Field Descriptions, on page 1432](#) describes the significant fields shown in the previous display.

Table 8: show fcip summary Field Descriptions

Field	Description
Tun	Tunnel number for the row. For example, a number 1 indicates tunnel fcip1 and a number 2 indicates fcip2.
prof	Tunnel profile.
Eth-if	Ethernet interface to which this tunnel is bound.
peer-ip	IP address of the tunnel peer port on the far end of the tunnel.
Status	State of the tunnel (UP or DOWN).
TE	Tunnel operating in TE mode (Yes or No).
WA	Write acceleration enabled (Yes or No).
TA	Tape acceleration enabled (Yes or No).
Enc	Encryption enabled (Yes or No).
Bandwidth max/min	Maximum and minimum bandwidth configured in the profile to which this tunnel is bound.
rtt (us)	Round trip time (RTT) in microseconds.

Related Commands

Command	Description
fcip enable	Configures FCIP parameters.

show fcip counters

To display FCIP tunnel statistics, use the `show fcip counters` command in privileged EXEC mode. This command also displays the statistics for all TCP connections present in an FCIP tunnel.

```
show fcip counters
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Release	Modification
1.1(1)	This command was introduced.
6.2(11c)	This command was modified to display statistics for all TCP connections in an FCIP tunnel.

Usage Guidelines None.

Examples The following example shows statistics for an FCIP tunnel with 4 data and 1 control TCP connections:

```
switch# show fcip counters
fcip5
  TCP Connection Information
    5 Active TCP connections
    30 Attempts for active connections, 1 close of connections
    Path MTU 2500 bytes
    Current retransmission timeout is 200 ms
    Current Send Buffer Size: 66648 KB, Requested Send Buffer Size: 65536 KB
    CWM Burst Size: 50 KB
    Measured RTT : 500000 us Min RTT: 7640 us Max RTT: 0 us
    Round trip time: Smoothed 8 ms, Variance: 4 Jitter: 150 us
CONN<0>
  Data connection: Local 10.10.9.1:65433, Remote 10.10.9.2:5000
  TCP Parameters
    Advertized window: Current: 1112 KB, Maximum: 24580 KB, Scale: 6
    Peer receive window: Current: 4095 KB, Maximum: 4095 KB, Scale: 6
    Congestion window: Current: 873 KB, Slow start threshold: 1840 KB
  TCP Connection Rate
    Input Bytes: 0.00 MB/sec, Output Bytes: 0.00 MB/sec
    Input Frames: 0/sec, Output Frames: 0/sec
CONN<1>
  Data connection: Local 10.10.9.1:65431, Remote 10.10.9.2:5000
  TCP Parameters
    Advertized window: Current: 1116 KB, Maximum: 24580 KB, Scale: 6
    Peer receive window: Current: 4095 KB, Maximum: 4095 KB, Scale: 6
    Congestion window: Current: 876 KB, Slow start threshold: 1842 KB
  TCP Connection Rate
    Input Bytes: 0.00 MB/sec, Output Bytes: 0.00 MB/sec
    Input Frames: 0/sec, Output Frames: 0/sec
CONN<2>
  Data connection: Local 10.10.9.1:65429, Remote 10.10.9.2:5000
```

```

TCP Parameters
  Advertized window: Current: 1117 KB, Maximum: 24580 KB, Scale: 6
  Peer receive window: Current: 4095 KB, Maximum: 4095 KB, Scale: 6
  Congestion window: Current: 877 KB, Slow start threshold: 1842 KB
TCP Connection Rate
  Input Bytes: 0.00 MB/sec, Output Bytes: 0.00 MB/sec
  Input Frames: 0/sec, Output Frames: 0/sec
CONN<3>
Data connection: Local 10.10.9.1:65427, Remote 10.10.9.2:5000
TCP Parameters
  Advertized window: Current: 1118 KB, Maximum: 24580 KB, Scale: 6
  Peer receive window: Current: 4095 KB, Maximum: 4095 KB, Scale: 6
  Congestion window: Current: 878 KB, Slow start threshold: 1843 KB
TCP Connection Rate
  Input Bytes: 0.00 MB/sec, Output Bytes: 0.00 MB/sec
  Input Frames: 0/sec, Output Frames: 0/sec
CONN<4>
Control connection: Local 10.10.9.1:65425, Remote 10.10.9.2:5000
TCP Parameters
  Advertized window: Current: 1107 KB, Maximum: 24580 KB, Scale: 6
  Peer receive window: Current: 4089 KB, Maximum: 4089 KB, Scale: 6
  Congestion window: Current: 50 KB, Slow start threshold: 2070 KB
TCP Connection Rate
  Input Bytes: 0.00 MB/sec, Output Bytes: 0.00 MB/sec
  Input Frames: 0/sec, Output Frames: 0/sec
  5 minutes input rate 120 bits/sec, 15 bytes/sec, 0 frames/sec
  5 minutes output rate 160 bits/sec, 20 bytes/sec, 0 frames/sec
  1060823 frames input, 2307076112 bytes
    4675 Class F frames input, 448880 bytes
    1056148 Class 2/3 frames input, 2306627232 bytes
    0 Reass frames
    0 Error frames timestamp error 0
  2788188 frames output, 6079611624 bytes
    4691 Class F frames output, 454176 bytes
    2783497 Class 2/3 frames output, 6079157448 bytes
0 Error frames

```

Related Commands

Command	Description
show fcip	Displays FCIP profile information.
show ips stats	Displays IP storage statistics.

show fc-management

To display the Fibre Channel Common Transport (FC-CT) management security information, use the show fc-management command.

```
show fc-management database | status
```

Syntax Description

database	Displays the FC-CT management security database.
status	Displays the management security information.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(9)	This command was introduced.

Usage Guidelines

None

Examples

The following example shows how to display the FC-CT management security database:

```
switch(config)# show fc-management database
Fc-Management Security Database
-----
VSAN          PWWN                FC-CT Permissions per FC services
-----
1      01:01:01:01:01:01:01:01  Zone (RW), Unzoned-NS (RW), FCS (RW), FDMI (RW)
-----
Total 1 entries
switch(config)#
```

The following example shows how to display the management security information:

```
switch(config)# show fc-management status
Mgmt Security Enabled
switch(config)#
```

Related Commands

Command	Description
fc-management database	Configures the FC-CT management security database.

show fcns database

To display the results of the discovery, or to display the name server database for a specified VSAN or for all VSANs, use the show fcns database command.

```
show fcns database detail [vsan vsan-id] | domain domain-id [detail] [vsan vsan-range] | fcid fcid-id
[detail] vsan vsan-range | local [detail] [vsan vsan-range] | vsan vsan-id
```

Syntax Description

detail	Displays all objects in each entry.
vsan vsan-id	(Optional) Displays entries for a specified VSAN ID. The range is 1 to 4093.
domain domain-id	Displays entries in a domain.
vsan vsan-range	Displays the VSAN range. The range is 1 to 4093.
fcid fcid-id	Displays entry for the given port.
local	Displays local entries.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 4.2(1)	Changed the command output for show fcns database and show fcns database detail. (Two attributes are added to the command output Connected Interface :fc3/4 Switch Name (IP address) :rbadri-vegas11 (10.64.66.50)
NX-OS 4.1(3)	Changed the command output for show fcns database detail.
1.2(2)	This command was introduced.

Usage Guidelines

The discovery can take several minutes to complete, especially if the fabric is large or if several devices are slow to respond.

Virtual enclosure ports can be viewed using the show fcns database command.

Examples

The following example displays the contents of the FCNS database:

```
switch# show fcns database
VSAN 1:
-----
FCID          TYPE  PWWN                               (VENDOR)          FC4-TYPE:FEATURE
-----
0x460100      N     10:00:00:00:c9:32:89:e6 (Emulex)          scsi-fcp:init
0x460200      N     21:00:00:e0:8b:09:4e:d3 (Qlogic)          scsi-fcp:init
0x460300      N     21:01:00:e0:8b:29:4e:d3 (Qlogic)          scsi-fcp:init
0x460423      NL    21:00:00:04:cf:cf:45:ba (Seagate)         scsi-fcp
```

Total number of entries = 4
 VSAN 2:

```
-----
FCID          TYPE  PWWN                               (VENDOR)          FC4-TYPE:FEATURE
-----
0x8e0000      N     21:01:00:e0:8b:2e:85:8a (Qlogic)          scsi-fcp:init
0x9509b5      N     50:00:53:00:00:6b:30:02 (Cisco)           scsi-fcp:init sdv
Total number of entries = 2
```

The following example displays the detailed contents of the FCNS database:

```
switch# show fcns database detail
-----
VSAN:1      FCID:0x460100
-----
port-wwn (vendor)          :10:00:00:00:c9:32:89:e6 (Emulex)
node-wwn                   :20:00:00:00:c9:32:89:e6
class                       :2,3
node-ip-addr                :0.0.0.0
ipa                         :ff ff ff ff ff ff ff ff
fc4-types:fc4_features     :scsi-fcp:init
symbolic-port-name         :
symbolic-node-name         :Emulex LP9002 FV3.90A7 DV8.0.16.34
port-type                   :N
port-ip-addr                :0.0.0.0
fabric-port-wwn            :20:85:00:05:30:00:4a:de
hard-addr                   :0x000000
permanent-port-wwn (vendor) :10:00:00:00:c9:32:89:e6 (Emulex)
Connected Interface        :fc3/5
Switch Name (IP address)   :rbadri-vegas11 (10.64.66.50)
-----
VSAN:1      FCID:0x460200
-----
port-wwn (vendor)          :21:00:00:e0:8b:09:4e:d3 (Qlogic)
node-wwn                   :20:00:00:e0:8b:09:4e:d3
class                       :3
node-ip-addr                :0.0.0.0
ipa                         :ff ff ff ff ff ff ff ff
fc4-types:fc4_features     :scsi-fcp:init
symbolic-port-name         :
symbolic-node-name         :
port-type                   :N
port-ip-addr                :0.0.0.0
fabric-port-wwn            :20:84:00:05:30:00:4a:de
hard-addr                   :0x000000
permanent-port-wwn (vendor) :21:00:00:e0:8b:09:4e:d3 (Qlogic)
Connected Interface        :fc3/4
Switch Name (IP address)   :rbadri-vegas11 (10.64.66.50)
-----
VSAN:1      FCID:0x460300
-----
port-wwn (vendor)          :21:01:00:e0:8b:29:4e:d3 (Qlogic)
node-wwn                   :20:01:00:e0:8b:29:4e:d3
class                       :3
node-ip-addr                :0.0.0.0
ipa                         :ff ff ff ff ff ff ff ff
fc4-types:fc4_features     :scsi-fcp:init
symbolic-port-name         :
symbolic-node-name         :
port-type                   :N
port-ip-addr                :0.0.0.0
fabric-port-wwn            :20:8d:00:05:30:00:4a:de
hard-addr                   :0x000000
permanent-port-wwn (vendor) :21:01:00:e0:8b:29:4e:d3 (Qlogic)
```

```

Connected Interface          :fc3/13
Switch Name (IP address)    :rbadri-vegas11 (10.64.66.50)
-----
VSAN:1      FCID:0x460423
-----
port-wwn (vendor)           :21:00:00:04:cf:cf:45:ba (Seagate)
node-wwn                    :20:00:00:04:cf:cf:45:ba
class                        :3
node-ip-addr                 :0.0.0.0
ipa                          :ff ff ff ff ff ff ff ff
fc4-types:fc4_features      :scsi-fcp
symbolic-port-name          :
symbolic-node-name          :
port-type                    :NL
port-ip-addr                 :0.0.0.0
fabric-port-wwn             :20:81:00:05:30:00:4a:de
hard-addr                    :0x000000
permanent-port-wwn (vendor) :00:00:00:00:00:00:00:00
Connected Interface          :fc3/1
Switch Name (IP address)    :rbadri-vegas11 (10.64.66.50)
Total number of entries = 4
=====

```

The following example shows how to display the output for the virtual devices.

```

-----
VSAN:2      FCID:0x9509b5
-----
port-wwn (vendor)           :50:00:53:00:00:6b:30:02 (Cisco)
node-wwn                    :50:00:53:00:00:6b:30:02
class                        :-
node-ip-addr                 :0.0.0.0
ipa                          :ff ff ff ff ff ff ff ff
fc4-types:fc4_features      :scsi-fcp:init sdv
symbolic-port-name          :
symbolic-node-name          :
port-type                    :N
port-ip-addr                 :0.0.0.0
fabric-port-wwn             :20:0e:00:0d:ec:25:ef:00
hard-addr                    :0x000000
permanent-port-wwn (vendor) :00:00:00:00:00:00:00:00
Connected Interface          :Virtual Device
Switch Name (IP address)    :Not Available
Total number of entries = 2

```

The following example shows how to display the output for a non-cisco switches:

```

switch# show fcns database detail
-----
VSAN:1      FCID:0x6600e2
-----
port-wwn (vendor)           :21:00:00:0c:50:02:c6:f7 (Seagate)
node-wwn                    :20:00:00:0c:50:02:c6:f7
class                        :3
node-ip-addr                 :0.0.0.0
ipa                          :ff ff ff ff ff ff ff ff
fc4-types:fc4_features      :scsi-fcp
symbolic-port-name          :
symbolic-node-name          :
port-type                    :NL
port-ip-addr                 :0.0.0.0
fabric-port-wwn             :20:02:00:0d:ec:11:d4:82
hard-addr                    :0x000000

```

```

permanent-port-wwn (vendor) :00:00:00:00:00:00:00:00
Connected to                  :fc1/2
Switch Name (IP address)     :rbadri-paradise1 (10.64.66.58)
-----
VSAN:1      FCID:0x6b0f23
-----
port-wwn (vendor)            :21:00:00:04:cf:cf:45:50 (Seagate)
node-wwn                     :20:00:00:04:cf:cf:45:50
class                        :3
node-ip-addr                  :0.0.0.0
ipa                           :ff ff ff ff ff ff ff ff
fc4-types:fc4_features       :scsi-fcp
symbolic-port-name           :SEAGATE ST336753FC      0005
symbolic-node-name           :
port-type                    :NL
port-ip-addr                  :0.0.0.0
fabric-port-wwn              :20:0f:00:60:69:80:62:4a
hard-addr                    :0x000000
permanent-port-wwn (vendor) :00:00:00:00:00:00:00:00
Connected to                  :Non-Cisco Switch
Switch Name (IP address)     :bs11 (10.64.66.57)

```

Related Commands

Command	Description
asm mgmt-vsana	Displays the CPP interface configuration for a specified interface.

show fcns statistics

To display the statistical information for a specified VSAN or for all VSANs, use the show fcns statistics command.

```
show fcns statistics [detail] [vsan vsan-id]
```

Syntax Description	Parameter	Description
	detail	(Optional) Displays detailed statistics.
	vsan vsan-id	(Optional) Displays statistics for the specified VSAN ID. The range is 1 to 4093.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example displays statistical information for a specified VSAN:

```
switch# show fcns statistics

registration requests received = 27
deregistration requests received = 0
queries received = 57
queries sent = 10
reject responses sent = 14
RSCNs received = 0
RSCNs sent = 0
switch#
```


show fc-redirect active-configs

To display all active configurations on a switch, use the show fc-redirect active-configs command.

```
show fc-redirect active-configs
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines This command is used to verify that there are no active configurations running on the switch during the following operations:

- Downgrading from 3.2.1 image (supporting FC-Redirect) to an older image where FC-Redirect is not supported.
- Decommissioning a local switch.



Note Active configuration implies configurations created by applications running on the current switch or applications created on remote switches for hosts or targets connected to the local switch.

Examples

The following example displays the active configurations running on the switch:

```
switch# show fc-redirect active-configs
Config#1
=====
Appl UUID          = 0x00D8 (ISAPI CFGD Service)
SSM Slot           = 2
SSM Switch WWN    = 20:00:00:05:30:00:90:9e (LOCAL)
Vt PWWN           = 2f:ea:00:05:30:00:71:64
Tgt PWWN          = 21:00:00:20:37:38:63:9e (LOCAL)
Local Host PWWN   = 21:00:00:e0:8B:0d:12:c6
Config#2
=====
Appl UUID          = 0x00D8 (ISAPI CFGD Service)
SSM Slot           = 2
SSM Switch WWN    = 20:00:00:05:30:00:90:9e (LOCAL)
Vt PWWN           = 2f:ea:00:05:30:00:71:65
Tgt PWWN          = 21:00:00:20:37:18:67:2c
Local Host PWWN   = 21:00:00:e0:8B:0d:12:c6
Config#3
=====
Appl UUID          = 0x00D8 (ISAPI CFGD Service)
SSM Slot           = 2
SSM Switch WWN    = 20:00:00:0d:EC:20:13:00 (REMOTE)
```

show fc-redirect active-configs

```
Vt PWWN          = 2f:ea:00:05:30:00:71:66
Tgt PWWN         = 21:00:00:20:37:18:64:92
Local Host PWWN = 21:00:00:e0:8B:0d:12:c6
```

Related Commands

Command	Description
clear fc-redirect config vt	Clears the active configurations on the local switch.

show fc-redirect configs

To display all the current configuration mode on a switch, use the show fc-redirect configs command.

```
show fc-redirect configs
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Command History	Release	Modification
	3.2(1)	This command was introduced.
	3.3(1a)	Added the configuration mode information to the command output.

Usage Guidelines None.

Examples The following example displays the current configuration mode on a switch :

```
switch# show fc-redirect configs
Configuration Mode    = MODE_V1
Config#1
=====
Appl UUID            = 0x00D8 (ISAPI CFGD Service)
SSM Slot              = 2
SSM Switch WWN       = 20:00:00:05:30:00:90:9e (LOCAL)
Vt PWWN              = 2f:ea:00:05:30:00:71:61
Tgt PWWN              = 21:00:00:20:37:38:89:86
Host 1: Host PWWN    = 21:00:00:e0:8b:0d:12:c6
                   VI PWWN = 2f:ec:00:05:30:00:71:61
Config#2
=====
Appl UUID            = 0x00D8 (ISAPI CFGD Service)
SSM Slot              = 2
SSM Switch WWN       = 20:00:00:05:30:00:90:9e (LOCAL)
Vt PWWN              = 2f:ea:00:05:30:00:71:62
Tgt PWWN              = 21:00:00:20:37:38:a9:0a
Host 1: Host PWWN    = 21:00:00:e0:8b:0d:12:c7
                   VI PWWN = 2f:ec:00:05:30:00:71:62
```

Related Commands	Command	Description
	show fc-redirect active-configs	Displays all active configurations on a switch.

show fc-redirect peer-switches

To display all the peer switches in the fabric running FC-Redirect, use the show fc-redirect peer-switches command.

```
show fc-redirect peer-switches
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Release	Modification
3.2(1)	This command was introduced.
3.3(1a)	Added the FC-Redirect version of the switch and configuration mode to the command output.

Usage Guidelines This command is used to verify the fabric state and is used for troubleshooting.



Note To find the switch IP address for the list of switch WWNs, use the show cfs peers command.

Examples

The following example displays the peer switches in the fabric running FC-Redirect:

```
switch# show fc-redirect peer-switches
-----
 num  Switch WWN                State  FCR-Ver  Cfg-Mode
-----
   1  20:00:00:0d:EC:20:13:00    UP     2        V2
```

[Table 9: Show FC-Redirect Peer Switch States, on page 1444](#) lists the output for the show fc-redirect peer-switches command states.

Table 9: Show FC-Redirect Peer Switch States

State	Description
Up	The peer switch is fully synchronized with the local switch.
Down	The communication with the peer switch is not available.
Syncing	The local switch is synchronizing its configuration with the peer switch.
Error	Connection with peer switch is not available.

Related Commands

Command	Description
show fc-redirect active-configs	Displays all active configurations on a switch.

show fcroute

To view specific information about existing Fibre Channel and FSPF configurations, Use the show fcroute command.

```
show fcroute distance | label [label] vsan vsan-id | multicast [fc-id vsan vsan-id | vsan vsan-id] |
summary [vsan vsan-id] | unicast [[host] fc-id fc-mask vsan vsan-id | vsan vsan-id]
```

Syntax Description

distance	Displays FC route preference.
label label	Displays label routes.
vsan vsan-id	Specifies the ID of the VSAN (from 1 to 4093).
multicast	Displays FC multicast routes.
fc-id	Specifies the Fibre Channel ID.
summary	Displays the FC routes summary.
unicast	Displays FC unicast routes.
vsan vsan-id	Specifies the ID of the VSAN (from 1 to 4093).

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

When the number of routes are displayed in the command output, both visible and hidden routes are included in the total number of routes.

Examples

The following example displays administrative distance:

```
switch# show fcroute distance
Route
UUID   Distance      Name
----   -
10     20             RIB
22     40             FCDOMAIN
39     80             RIB-CONFIG
12     100            FSPF
17     120            FLOGI
21     140            TLPM
```

```

14      180          MCAST
64      200          RIB-TEST

```

The following example displays multicast routing information:

```

switch# show fcroute multicast
VSAN FC ID # Interfaces
-----
1      0xffffffff 0
2      0xffffffff 1
3      0xffffffff 1
4      0xffffffff 0
5      0xffffffff 0
6      0xffffffff 0
7      0xffffffff 0
8      0xffffffff 0
9      0xffffffff 0
10     0xffffffff 0

```

The following example displays FCID information for a specified VSAN:

```

switch# show fcroute multicast vsan 3
VSAN FC ID # Interfaces
-----
3      0xffffffff 1

```

The following example displays FCID and interface information for a specified VSAN:

```

switch# show fcroute multicast 0xffffffff vsan 2
VSAN FC ID # Interfaces
-----
2      0xffffffff 1
      fc1/1

```

The following example displays unicast routing information:

```

switch# show fcroute unicast
D:direct R:remote P:permanent V:volatile A:active N:non-active
# Next
Protocol VSAN FC ID/Mask Rctl/Mask Flags Hops Cost
-----
static 1 0x010101 0xffffffff 0x00 0x00 D P A 1 10
static 2 0x111211 0xffffffff 0x00 0x00 R P A 1 10
fspf 2 0x730000 0xff0000 0x00 0x00 D P A 4 500
fspf 3 0x610000 0xff0000 0x00 0x00 D P A 4 500
static 4 0x040101 0xffffffff 0x00 0x00 R P A 1 103
static 4 0x040102 0xffffffff 0x00 0x00 R P A 1 103
static 4 0x040103 0xffffffff 0x00 0x00 R P A 1 103
static 4 0x040104 0xffffffff 0x00 0x00 R P A 1 103
static 4 0x111211 0xffffffff 0x00 0x00 D P A 1 10

```

The following example displays unicast routing information for a specified VSAN:

```

switch# show fcroute unicast vsan 4
D:direct R:remote P:permanent V:volatile A:active N:non-active
# Next
Protocol VSAN FC ID/Mask Rctl/Mask Flags Hops Cost
-----
static 4 0x040101 0xffffffff 0x00 0x00 R P A 1 103
static 4 0x040102 0xffffffff 0x00 0x00 R P A 1 103
static 4 0x040103 0xffffffff 0x00 0x00 R P A 1 103

```

```
static 4 0x040104 0xffffffff 0x00 0x00 R P A 1 103
static 4 0x111211 0xffffffff 0x00 0x00 D P A 1 10
```

The following example displays unicast routing information for a specified FCID:

```
switch# show fcroute unicast 0x040101 0xffffffff vsan 4
D:direct R:remote P:permanent V:volatile A:active N:non-active
# Next
Protocol VSAN FC ID/Mask RCtrl/Mask Flags Hops Cost
-----
static 4 0x040101 0xffffffff 0x00 0x00 R P A 1 103
fcl/2 Domain 0xa6(166)
```

The following example displays route database information:

```
switch# show fcroute summary
FC route database created Tue Oct 29 01:24:23 2002
VSAN Ucast Mcast Label Last Modified Time
----
1 2 1 0 Tue Oct 29 18:07:02 2002
2 3 1 0 Tue Oct 29 18:33:24 2002
3 2 1 0 Tue Oct 29 18:10:07 2002
4 6 1 0 Tue Oct 29 18:31:16 2002
5 1 1 0 Tue Oct 29 01:34:39 2002
6 1 1 0 Tue Oct 29 01:34:39 2002
7 1 1 0 Tue Oct 29 01:34:39 2002
8 1 1 0 Tue Oct 29 01:34:39 2002
9 1 1 0 Tue Oct 29 01:34:39 2002
10 1 1 0 Tue Oct 29 01:34:39 2002
Total 19 10 0
```

The following example displays route database information for a specified VSAN:

```
switch# show fcroute summary
vsan 4
FC route database created Tue Oct 29 01:24:23 2002
VSAN Ucast Mcast Label Last Modified Time
----
4 6 1 0 Tue Oct 29 18:31:16 2002
Total 6 1 0
```


show fcroute-map

To display the preferred path route map configuration and status, use the show fcroute-map command.

```
show fcroute-map [vsan vsan-id route-map-identifier]
```

Syntax Description	Parameter	Description
	vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
	route-map-identifier	Specifies the route map identifier. The range is 1 to 65535.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(3)	This command was introduced.

Usage Guidelines Use this command to display the preferred path route map configuration and status before and after activation.

Examples The following example displays the fcroute map output before preferred path route map activation.

```
switch# show fcroute-map
Fcroute Map: Vsan 2 Route ID: 12 [Status: Pending]
Match Criteria
=====
Source FCID Source FCID Mask Dest FCID Dest FCID Mask Status
-----
0x123456 0xffffffff 0x567890 0xffffffff Pending
Set Criteria
=====
Preference select strict: Yes (Operational: Yes)
Preference Level Interface IVR Nexthop Vsan Status
-----
1 fc8/1 -- Pending
5 fc8/2 3 Pending
```

The following example displays the fcroute map output after preferred path route map activation.

```
switch# show fcroute-map
Fcroute Map: Vsan 2 Route ID: 12 [Status: Active]
Match Criteria
=====
Source FCID Source FCID Mask Dest FCID Dest FCID Mask Status
-----
0x123456 0xffffffff 0x567890 0xffffffff Active
Set Criteria
=====
Preference select strict: Yes (Operational: Yes)
Preference Level Interface IVR Nexthop Vsan Status
-----
```

show fcroute-map

```
1          fc8/1 --          Active*
5          fc8/2 3          Active
```



Note The asterisk (*) indicates the currently active path.

show fcs

To display the status of the fabric configuration, Use the show fcs commands.

```
show fcroute-map [vsan vsan-id route-map-identifier]
```

Syntax Description

database	Displays local database of FCS.
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
ie	Displays Interconnect Element objects information.
nwwn wwn	(Optional) Specifies a node WWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh.
vsan vsan-id	(Optional) Specifies a VSAN ID. The range is 1 to 4093.
platform	Displays Platform Objects Information.
name string	(Optional) Specifies a platform name. Maximum length is 255 characters.
port	Displays Port Objects Information.
pwwn wwn	(Optional) Specifies a port WWN id. The format is hh:hh:hh:hh:hh:hh:hh:hh.
statistics	Displays statistics for FCS packets.
vsan	Displays list of all the VSANs and plat-check-mode for each.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays FCS database information:

```
switch# show fcs database
FCS Local Database in VSAN: 1
-----
Switch WWN                : 20:01:00:05:30:00:16:df
Switch Domain Id          : 0x7f(127)
Switch Mgmt-Addresses     : snmp://172.22.92.58/eth-ip
                          : http://172.22.92.58/eth-ip
Fabric-Name                : 20:01:00:05:30:00:16:df
```

```

Switch Logical-Name      : 172.22.92.58
Switch Information List  : [Cisco Systems*DS-C9509*0*20:00:00:05:30:00
Switch Ports:
-----
Interface  pWWN                      Type      Attached-pWWNs
-----
fc2/1      20:41:00:05:30:00:16:de  TE        20:01:00:05:30:00:20:de
fc2/2      20:42:00:05:30:00:16:de  Unknown   None
fc2/17     20:51:00:05:30:00:16:de  TE        20:0a:00:05:30:00:20:de
FCS Local Database in VSAN: 5
-----
Switch WWN              : 20:05:00:05:30:00:12:5f
Switch Domain Id       : 0xef(239)
Switch Mgmt-Addresses  : http://172.22.90.171/eth-ip
                       : snmp://172.22.90.171/eth-ip
                       : http://10.10.15.10/vsan-ip
                       : snmp://10.10.15.10/vsan-ip
Fabric-Name            : 20:05:00:05:30:00:12:5f
Switch Logical-Name    : 172.22.90.171
Switch Information List : [Cisco Systems*DS-C9509**20:00:00:05:30:00:12:5e]
Switch Ports:
-----
Interface  pWWN                      Type      Attached-pWWNs
-----
fc3/1      20:81:00:05:30:00:12:5e  TE        22:01:00:05:30:00:12:9e
fc3/2      20:82:00:05:30:00:12:5e  TE        22:02:00:05:30:00:12:9e
fc3/3      20:83:00:05:30:00:12:5e  TE        22:03:00:05:30:00:12:9e

```

The following example displays Interconnect Element object information for a specific VSAN:

```

switch# show fcs ie vsan 1
IE List for VSAN: 1
-----
IE-WWN              IE-Type                      Mgmt-Id
-----
20:01:00:05:30:00:16:df  Switch (Local)                0xfffc7f
20:01:00:05:30:00:20:df  Switch (Adjacent)             0xfffc64
[Total 2 IEs in Fabric]

```

This command displays Interconnect Element object information for a specific WWN:

```

switch# show fcs ie nwn 20:01:00:05:30:00:16:df vsan 1
IE Attributes
-----
Domain-Id = 0x7f(127)
Management-Id = 0xfffc7f
Fabric-Name = 20:01:00:05:30:00:16:df
Logical-Name = 172.22.92.58
Management Address List =
    snmp://172.22.92.58/eth-ip
    http://172.22.92.58/eth-ip
Information List:
    Vendor-Name = Cisco Systems
    Model Name/Number = DS-C9509
    Release-Code = 0

```

This command displays platform information:

```

switch# show fcs platform name SamplePlatform vsan 1
Platform Attributes
-----
Platform Node Names:
    11:22:33:44:55:66:77:88

```

```
Platform Type = Gateway
Platform Management Addresses:
    1.1.1.1
```

This command displays platform information within a specified VSAN:

```
switch# show fcs platform vsan 1
Platform List for VSAN: 1
Platform-Names
-----
SamplePlatform
[Total 1 Platforms in Fabric]
```

This command displays FCS port information within a specified VSAN:

```
switch# show fcs port vsan 24
Port List in VSAN: 24
    -- IE WWN: 20:18:00:05:30:00:16:df --
-----
Port-WWN                Type           Module-Type           Tx-Type
-----
20:41:00:05:30:00:16:de  TE_Port       SFP with Serial Id    Shortwave Laser
20:51:00:05:30:00:16:de  TE_Port       SFP with Serial Id    Shortwave Laser
[Total 2 switch-ports in IE]
    -- IE WWN: 20:18:00:05:30:00:20:df --
-----
Port-WWN                Type           Module-Type           Tx-Type
-----
20:01:00:05:30:00:20:de  TE_Port       SFP with Serial Id    Shortwave Laser
20:0a:00:05:30:00:20:de  TE_Port       SFP with Serial Id    Shortwave Laser
[Total 2 switch-ports in IE]
```

This command displays ports within a specified WWN:

```
switch# show fcs port pwnn 20:51:00:05:30:00:16:de vsan 24
Port Attributes
-----
Port Type = TE_Port
Port Number = 0x1090000
Attached-Port-WWNs:
    20:0a:00:05:30:00:20:de
Port State = Online
```

This command displays FCS statistics:

```
switch# show fcs statistics
FCS Statistics for VSAN: 1
-----
FCS Rx Get Reqs    :2
FCS Tx Get Reqs    :7
FCS Rx Reg Reqs    :0
FCS Tx Reg Reqs    :0
FCS Rx Dereg Reqs :0
FCS Tx Dereg Reqs :0
FCS Rx RSCNs       :0
FCS Tx RSCNs       :3
FCS Rx RJTs        :3
FCS Tx RJTs        :0
FCS Rx ACCs        :4
FCS Tx ACCs        :2
FCS No Response    :0
FCS Retransmit     :0
```

FCS Statistics for VSAN: 30

```
-----  
FCS Rx Get Reqs :2  
FCS Tx Get Reqs :2  
FCS Rx Reg Reqs :0  
FCS Tx Reg Reqs :0  
FCS Rx Dereg Reqs :0  
FCS Tx Dereg Reqs :0  
FCS Rx RSCNs :0  
FCS Tx RSCNs :0  
FCS Rx RJTs :0  
FCS Tx RJTs :0  
FCS Rx ACCs :2  
FCS Tx ACCs :2  
FCS No Response :0  
FCS Retransmit :0
```

show fcsp

To display the status of the Fibre Channel Security Protocol (FC-SP) configuration, use the show fcsp command.

```
show fcs p [asciiwnn ascii-wwn | dhchap [database] | interface fc slot/port [statistics | wwn] | fcip
interface-number [statistics | wwn]]
```

Syntax Description	
asciiwnn ascii-wwn	(Optional) Displays the ASCII representation of the WWN used with AAA server.
dhchap	(Optional) Displays the DHCHAP hash algorithm status.
database	(Optional) Displays the contents of the local DHCHAP database.
interface	(Optional) Displays the FC-SP settings for a FC or FCIP interface.
fc slot/port	(Optional) Displays the Fibre Channel interface in the specified slot and port.
statistics	(Optional) Displays the statistics for the specified interface.
wwn	(Optional) Displays the FC-SP identity of the other device.
fcip interface-number	(Optional) Displays the description of the specified FCIP interface. The range is 1 to 255.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines None.

Examples The following example displays DHCHAP configurations in FC interfaces:

```
switch# show fcsp interface fc1/9

fc1/9:
  fcsp authentication mode:SEC_MODE_ON
  Status: Successfully authenticated
```

The following example displays DHCHAP statistics for a FC interfaces:

```
switch# show fcsp interface fc1/9 statistics

fc1/9:
  fcsp authentication mode:SEC_MODE_ON
  Status: Successfully authenticated
  Statistics:
```

```

FC-SP Authentication Succeeded:5
FC-SP Authentication Failed:0
FC-SP Authentication Bypassed:0

```

The following example displays the FC-SP WWN of the device connected through a specified interface:

```

switch# show fcsp interface fc 2/1 wwn
fc2/1:
    fcsp authentication mode:SEC_MODE_ON
    Status: Successfully authenticated
    Other device's WWN:20:00:00:e0:8b:0a:5d:e7

```

The following example displays hash algorithm and DHCHAP groups configured for the local switch:

```

switch# show fcsp dhchap
Supported Hash algorithms (in order of preference):
DHCHAP_HASH_MD5
DHCHAP_HASH_SHA_1
Supported Diffie Hellman group ids (in order of preference):
DHCHAP_GROUP_NULL
DHCHAP_GROUP_1536
DHCHAP_GROUP_1024
DHCHAP_GROUP_1280
DHCHAP_GROUP_2048

```

The following example displays the DHCHAP local password database:

```

switch# show fcsp dhchap database
DHCHAP Local Password:
    Non-device specific password:*****
    Password for device with WWN:29:11:bb:cc:dd:33:11:22 is *****
    Password for device with WWN:30:11:bb:cc:dd:33:11:22 is *****
Other Devices' Passwords:
    Password for device with WWN:00:11:22:33:44:aa:bb:cc is *****

```

The following example displays the ASCII representation of the device WWN:

```

switch# show fcsp asciiwn 30:11:bb:cc:dd:33:11:22
Ascii representation of WWN to be used with AAA servers:0x_3011bbccdd331122

```

Related Commands

Command	Description
fcsp enable	Enables the FC-SP feature for this switch.

show fcsp interface

To display the FC-SP- related information for a specific interface, use the show fcsp interface command.

```
show fcsp interface fc slot/port | fcip slot/port
```

Syntax Description	fc slot/port	Specifies FC slot number and port number.
	fcip slot/port	Specifies FCIP slot number and port number.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display the FC-SP related information for a specific interface:

```
switch# show fcsp interface fc7/41
fc7/41:
fcsp authentication mode:SEC_MODE_OFF
ESP is enabled
configured mode is: GCM
programmed ingress SA: 300, 303
programmed egress SA: 300
Status:FC-SP protocol in progress
```

Related Commands	Command	Description
	fcsp enable	Enables FC-SP.

show fctimer

To view the Fibre Channel timers (fctimer), use the show fctimer command.

```
show fctimer [d_s_tov [vsan vsan-id] | distribution status | e_d_tov [vsan vsan-id] | f_s_tov [vsan vsan-id] | last action status | pending | pending-diff | r_a_tov [vsan vsan-id] | session-status | [vsan vsan-id]]
```

Syntax Description

d_s_tov	(Optional) Displays the distributed services time out value (D_S_TOV) in milliseconds.
vsan vsan-id	(Optional) Displays information for a VSAN. The range is 1 to 4093.
distribution status	(Optional) Displays Cisco Fabric Services (CFS) distribution status information.
e_d_tov	(Optional) Displays the error detection time out value (E_D_TOV) in milliseconds.
f_s_tov	(Optional) Displays the fabric stability time out value (F_S_TOV) in milliseconds.
last action status	(Optional) Displays the status of the last CFS commit or discard operation.
pending	(Optional) Displays the status of pending fctimer commands.
pending-diff	(Optional) Displays the difference between pending database and running config.
r_a_tov	(Optional) Displays the resource allocation time out value (R_A_TOV) in milliseconds.
session-status	(Optional) Displays the state of fctimer CFS session.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(1)	This command was introduced.
2.0(x)	Added the distribution status , last action status , pending , pending-diff , and session-status keywords.

Usage Guidelines

None.

Examples

The following example displays configured global TOVs:

```
switch# show fctimer
F_S_TOV   D_S_TOV   E_D_TOV   R_A_TOV
-----:
5000 ms   5000 ms   2000 ms   10000 ms
```

The following example displays configured TOVs for a specified VSAN:

```
switch# show fctimer vsan 10
vsan no.  F_S_TOV  D_S_TOV  E_D_TOV  R_A_TOV
-----
10        5000 ms  5000 ms  3000 ms  10000 ms
```

Related Commands

Command	Description
fctimer	Configures fctimer parameters.

show fc-tunnel

To display configured Fibre Channel tunnel information, use the show fc-tunnel command.

```
show fc-tunnel [explicit-path [name] | tunnel-id-map]
```

Syntax Description

explicit-path	(Optional) Displays all configured explicit paths.
name	(Optional) Specifies the explicit path name. The maximum length is 16 characters.
tunnel-id-map	(Optional) Displays the mapping information for the outgoing interface.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(5)	This command was deprecated.
1.2(1)	This command was introduced.

Usage Guidelines

Multiple tunnel IDs can terminate at the same interface.

Examples

The following example displays the FC tunnel status:

```
switch# show fc-tunnel
fc-tunnel is enabled
```

The following example displays the FC tunnel egress mapping information:

```
switch# show fc-tunnel tunnel-id-map
tunnel id egress interface
    150    fc3/1
    100    fc3/1
```

The following example displays explicit mapping information of the FC tunnel:

```
switch# show fc-tunnel explicit-path
Explicit path name: Alternatel
    10.20.1.2 loose
    10.20.1.3 strict
Explicit path name: User2
    10.20.50.1 strict
    10.20.50.4 loose
```

show fdmi

To display the Fabric-Device Management Interface (FDMI) database information, use the show fdmi command.

```
show fdmi database [detail [hba-id [hba-id vsan vsan-id | vsan vsan-id] | vsan vsan-id]]
```

Syntax Description	
database	Displays the FDMI database contents.
detail	(Optional) Specifies detailed FDMI information.
hba-id	(Optional) Displays detailed information for the specified HBA entry.
hba-id	(Optional) Displays detailed information for the specified HBA entry.
vsan vsan-id	(Optional) Specifies FDMI information for the specified VSAN. The range is 1 to 4093.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines None.

Examples The following example displays all HBA management servers:

```
switch# show fdmi database
Registered HBA List for VSAN 1
 10:00:00:00:c9:32:8d:77
 21:01:00:e0:8b:2a:f6:54
switch# show fdmi database detail
Registered HBA List for VSAN 1
-----
HBA-ID: 10:00:00:00:c9:32:8d:77
-----
Node Name           :20:00:00:00:c9:32:8d:77
Manufacturer        :Emulex Corporation
Serial Num          :0000c9328d77
Model               :LP9002
Model Description   :Emulex LightPulse LP9002 2 Gigabit PCI Fibre Channel Adapter
Hardware Ver        :2002606D
Driver Ver          :SLI-2 SW_DATE:Feb 27 2003, v5-2.20a12
ROM Ver             :3.11A0
Firmware Ver        :3.90A7
OS Name/Ver         :Window 2000
CT Payload Len      :1300000
  Port-id: 10:00:00:00:c9:32:8d:77
-----
HBA-ID: 21:01:00:e0:8b:2a:f6:54
```

```

-----
Node Name       :20:01:00:e0:8b:2a:f6:54
Manufacturer    :QLogic Corporation
Serial Num      :\74262
Model           :QLA2342
Model Description:QLogic QLA2342 PCI Fibre Channel Adapter
Hardware Ver    :FC5010409-10
Driver Ver      :8.2.3.10 Beta 2 Test 1 DBG (W2K VI)
ROM Ver         :1.24
Firmware Ver    :03.02.13.
OS Name/Ver     :500
CT Payload Len  :2040
Port-id: 21:01:00:e0:8b:2a:f6:54

```

The following example displays VSAN1-specific FDMI information:

```

switch# show fDMI database detail vsan 1
Registered HBA List for VSAN 1
-----
HBA-ID: 10:00:00:00:c9:32:8d:77
-----
Node Name       :20:00:00:00:c9:32:8d:77
Manufacturer    :Emulex Corporation
Serial Num      :0000c9328d77
Model           :LP9002
Model Description:Emulex LightPulse LP9002 2 Gigabit PCI Fibre Channel Adapter
Hardware Ver    :2002606D
Driver Ver      :SLI-2 SW_DATE:Feb 27 2003, v5-2.20a12
ROM Ver         :3.11A0
Firmware Ver    :3.90A7
OS Name/Ver     :Window 2000
CT Payload Len  :1300000
Port-id: 10:00:00:00:c9:32:8d:77
-----
HBA-ID: 21:01:00:e0:8b:2a:f6:54
-----
Node Name       :20:01:00:e0:8b:2a:f6:54
Manufacturer    :QLogic Corporation
Serial Num      :\74262
Model           :QLA2342
Model Description:QLogic QLA2342 PCI Fibre Channel Adapter
Hardware Ver    :FC5010409-10
Driver Ver      :8.2.3.10 Beta 2 Test 1 DBG (W2K VI)
ROM Ver         :1.24
Firmware Ver    :03.02.13.
OS Name/Ver     :500
CT Payload Len  :2040
Port-id: 21:01:00:e0:8b:2a:f6:54

```

The following example displays details for the specified HBA entry:

```

switch# show fDMI database detail Hba-id 21:01:00:e0:8b:2a:f6:54 vsan 1
Node Name       :20:01:00:e0:8b:2a:f6:54
Manufacturer    :QLogic Corporation
Serial Num      :\74262
Model           :QLA2342
Model Description:QLogic QLA2342 PCI Fibre Channel Adapter
Hardware Ver    :FC5010409-10
Driver Ver      :8.2.3.10 Beta 2 Test 1 DBG (W2K VI)
ROM Ver         :1.24
Firmware Ver    :03.02.13.
OS Name/Ver     :500

```

```
CT Payload Len      :2040
Port-id: 21:01:00:e0:8b:2a:f6:54
```

show ficon

To display configured FICON information, use the show ficon command.

```
show ficon [control-device sb3 [vsan vsan-id] | first-available port-number | port default-state |
port-numbers assign [slot | logical-port | slot slot] | interface | stat | vsan vsan-id [allegiance |
directory-history [key-counter value] | file all | name filename [portaddress port]] | interface fc slot /
port | fcip fcip-id | port-channel port | portaddress [port [counters] | portnumber [port-numbers | duplicate
| undefined] [brief] [installed]]]
```

Syntax Description

control-device sb3	(Optional) Displays FICON control device information.
vsan vsan-id	Specifies FICON information for the specified VSAN ranging from 1 to 4093.
first-available port-number	(Optional) Displays the available port numbers.
port default-state	(Optional) Displays the default FICON port prohibit state.
port-numbers	(Optional) Displays FICON port numbers.
assign slot	(Optional) Displays the FICON port numbers assigned to the specified slot, 1 through 6.
logical port	(Optional) Displays FICON port numbers assigned to logical interfaces.
slot slot	(Optional) Displays the FICON port numbers assigned to the specified slot, 1 through 6.
interface	(Optional) Displays FICON information for an interface.
stat	(Optional) Displays information about FICONSTAT.
allegiance	(Optional) Displays FICON device allegiance information.
directory-history	(Optional) Displays FICON directory history.
key-counter value	(Optional) Specifies a key counter.
file	(Optional) Displays FICON information for a file.
all	(Optional) Specifies all files.
name filename	(Optional) Specifies the name for a file.
portaddress port	(Optional) Specifies a port address for a file.
fc slot/port	Specifies a Fibre Channel interface.
fcip fcip-id	Specifies an FC IP interface.
port-channel port	Specifies a PortChannel interface.
counters	(Optional) Displays counter information for the port address.

portnumber port-numbers	(Optional) Displays FICON information for a port number in the specified range, 0 through 153 or 0x0 through 0x99.
duplicate	(Optional) Displays FICON interfaces with duplicate port numbers and port addresses.
undefined	(Optional) Displays FICON interfaces without port numbers and port addresses.
brief	(Optional) Displays brief FICON information for the port address.
installed	(Optional) Displays FICON information for the installed port address.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(1)	This command was introduced.
3.0(1)	<ul style="list-style-type: none"> Added the port-numbers and stat options. Added the portnumber keyword.
3.0(2)	Added the port default-state option.

Usage Guidelines

If FICON is not enabled on a VSAN, you will not be able to view FICON configuration information for that VSAN.

Examples

The following example displays configured FICON information:

```
switch# show ficon
Ficon information for VSAN 20
  Ficon is online
  VSAN is active
  Host port control is Enabled
  Host offline control is Enabled
  User alert mode is Enabled
  SNMP port control is Enabled
  Host set director timestamp is Enabled
  Active=Saved is Disabled
  Number of implemented ports are 240
  Key Counter is 73723
  FCID last byte is 0
  Date/Time is set by host to Sun Jun 26 00:04:06.991999 1904
  Device allegiance is locked by Host
  Codepage is us-canada
  Saved configuration files
    IPL
    _TSIRN00
```

The following example displays the default prohibit state:

```
switch# show ficon port default-state
Port default state is allow-all
```

The following example displays assigned FICON port numbers:

```
switch# show ficon port-numbers assign
ficon slot 1 assign port-numbers 0-31
ficon slot 2 assign port-numbers 32-63
ficon slot 3 assign port-numbers 64-95
ficon slot 4 assign port-numbers 96-127
ficon logical-port assign port-numbers 128-153
```

The following example displays port address information:

```
switch# show ficon vsan 2 portaddress
Port Address 1 is not installed in vsan 2
  Port number is 1, Interface is fc1/1
  Port name is
  Port is not admin blocked
  Prohibited port addresses are 0,241-253,255
Port Address 2 is not installed in vsan 2
  Port number is 2, Interface is fc1/2
  Port name is
  Port is not admin blocked
  Prohibited port addresses are 0,241-253,255
...
Port Address 239 is not installed in vsan 2
  Port name is
  Port is not admin blocked
  Prohibited port addresses are 0,241-253,255
Port Address 240 is not installed in vsan 2
  Port name is
  Port is not admin blocked
  Prohibited port addresses are 0,241-253,255
```

The following example displays port address information in a brief format:

```
switch# show ficon vsan 2 portaddress 50-55 brief
-----
Port   Port   Interface      Admin   Status   Oper   FCID
Address Number                                     Blocked                                     Mode
-----
50     50     fc2/18         on      fcotAbsent  --    --
51     51     fc2/19         off     fcotAbsent  --    --
52     52     fc2/20         off     fcotAbsent  --    --
53     53     fc2/21         off     fcotAbsent  --    --
54     54     fc2/22         off     notConnected --    --
55     55     fc2/23         off     up          FL    0xea0000
56  55     off           up      FL          0xea0000
```

The following example displays port address counter information:

```
switch# show ficon vsan 20 portaddress 8 counters
Port Address 8(0x8) is up in vsan 20
  Port number is 8(0x8), Interface is fc1/8
  Version presented 1, Counter size 32b
  242811 frames input, 9912794 words
    484 class-2 frames, 242302 class-3 frames
    0 link control frames, 0 multicast frames
    0 disparity errors inside frames
    0 disparity errors outside frames
```

```

    0 frames too big, 0 frames too small
    0 crc errors, 0 eof errors
    0 invalid ordered sets
    0 frames discarded c3
    0 address id errors
116620 frames output, 10609188 words
    0 frame pacing time
    0 link failures
    0 loss of sync
    0 loss of signal
    0 primitive seq prot errors
    0 invalid transmission words
    1 lrr input, 0 ols input, 5 ols output
    0 error summary

```

The following example displays the contents of the specified FICON configuration file:

```

switch# show ficon vsan 3 file IPL
FICON configuration file IPL      in vsan 3
  Port address 1
    Port name is
    Port is not blocked
    Prohibited port addresses are 0,81-253,255
  Port address 2
    Port name is
    Port is not blocked
    Prohibited port addresses are 0,81-253,255
  Port address 3
    Port name is
    Port is not blocked
    Prohibited port addresses are 0,81-253,255
  Port address 4
    Port name is
    Port is not blocked
    Prohibited port addresses are 0,81-253,255
  ...
  Port address 80
    Port name is
    Port is not blocked
    Prohibited port addresses are 0,81-253,255
  Port address 254
    Port name is
    Port is not blocked
    Prohibited port addresses are 0,81-253,255

```

The following example displays all FICON configuration files:

```

switch# show ficon vsan 2
Ficon information for VSAN 2
  Ficon is enabled
  VSAN is active
  Host control is Enabled
  Host offline control is Enabled
  Clock alert mode is Disabled
  User alert mode is Disabled
  SNMP control is Disabled
  Active=Saved is Disabled
  Number of implemented ports are 240
  Key Counter is 9
  FCID last byte is 0
  Date/Time is same as system time (Sun Dec 14 01:26:30.273402 1980)
  Device Allegiance not locked
  Codepage is us-canada

```

```

Saved configuration files
IPL
IPLFILE1

```

The following example displays the specified port addresses for a FICON configuration file:

```

switch# show ficon vsan 2 file iplfile1 portaddress 1-7
FICON configuration file IPLFILE1 in vsan 2
  Port address 1
    Port name is
    Port is not blocked
    Prohibited port addresses are 0,241-253,255
  Port address 2
    Port name is
    Port is not blocked
    Prohibited port addresses are 0,241-253,255
  Port address 3
    Port name is P3
    Port is not blocked
    Prohibited port addresses are 0,241-253,255
  ...
  Port address 7
    Port name is
    Port is not blocked
    Prohibited port addresses are 0,241-253,255

```

The following example displays the specified port address when FICON is enabled:

```

switch# show ficon vsan 2 portaddress 55
Port Address 55 is not installed in vsan 2
  Port number is 55, Interface is fc2/23
  Port name is
  Port is not admin blocked
  Prohibited port addresses are 0,241-253,255
  Admin port mode is FL
  Port mode is FL, FCID is 0xea0000

```

The following example displays two port addresses configured with different states:

```

switch# show ficon vsan 2 portaddress 2
Port Address 2(0x2) is not installed in vsan 2
  Port number is 2(0x2), Interface is fc1/2
  Port name is
  Port is not admin blocked
  Prohibited port addresses are 0,241-253,255(0,0xf1-0xfd,0xff)
  Admin port mode is auto
  Peer was type model manufactured by
switch# show ficon vsan 2 portaddress 1
Port Address 2(0x2) is not installed in vsan 2
  Port number is 2(0x2), Interface is fc1/2
  Port name is
  Port name is SampleName
  Port is admin blocked
  Prohibited port addresses are 0,241-253,255(0,0xf1-0xfd,0xff)
  Admin port mode is auto
  Peer was type model manufactured by

```

The following example displays control unit information:

```

switch# show ficon control-device sb3
Control Unit Image:0x80b9c2c

```

```

VSAN:20 CU:0x20fe00 CUI:0 CUD:0 CURLP:(nil)
ASYNC LP:(nil) MODE:1 STATE:1 CQ LEN:0 MAX:0
PRIMARY LP: VSAN:0 CH:0x0 CHI:0 CU:0x0 CUI:0
ALTERNATE LP: VSAN:0 CH:0x0 CHI:0 CU:0x0 CUI:0
Logical Path:0x80b9fb4
VSAN:20 CH:0x200600 CHI:15 CU:0x20fe00 CUI:0 STATE:1 FLAGS:0x1
LINK: OH:0x0 OC:0x0 IH:0x0 IC:0x0
DEV: OH:0x0 OC:0x0 IH:0x0 IC:0x0
SENSE: 00 00 00 00 00 00 00 46
        30 20 00 00 00 00 00 00
        00 00 00 00 00 00 00 00
        00 00 00 00 00 00 00 00
IUI:0x0 DHF:0x0 CCW:0x0 TOKEN:0x0 PCCW:0x0 FCCW:0x0 PTOKEN:0x0 FTOKEN:0x0
CMD:0x0 CCW_FLAGS:0x0 CCW_COUNT:0 CMD_FLAGS:0x0 PRIO:0x0 DATA_COUNT:0
STATUS:0x0 FLAGS:0x0 PARAM:0x0 QTP:0x0 DTP:0x0
CQ LEN:0 MAX:0 DESTATUS:0x0

```

The following example displays the history buffer for the specified VSAN:

```

switch# show ficon vsan 20 director-history
Director History Buffer for vsan 20
-----
Key Counter          Ports Address
                    Changed
-----
74556                43
74557                44
74558                45
74559                46
74560                47
74561                48
74562                49
74563                50
74564                51
74565                52
74566                53
74567                54
74568                55
74569                56
74570                57
74571                58
74572                59
74573                60
74574                61
74575                62
74576                63
74577                64
74578
74579
74580                1-3, 5, 10, 12, 14-16, 34-40, 43-45, 47-54, 56-57, 59-64
74581                3, 5
74582                64
74583
74584                1-3, 10, 12, 14-16, 34-40, 43-45, 47-54, 56-57, 59-64
74585                1
74586                2
74587                3

```

The following example displays the running configuration information:

```

switch# show running-config
...
ficon vsan 2

```

```
portaddress 1
block
name SampleName
prohibit portaddress 3
portaddress 3
prohibit portaddress 1
file IPL
```

The following example displays the available port numbers:

```
switch# show ficon first-available port-number
Port number 129(0x81) is available
```

show ficon vsan diagnostics

To display the FICON diagnostics status, use the show ficon vsan diagnostics command.

```
show ficon vsan ID diagnostics
```

Syntax Description	vsan ID	Specifies the VSAN ID. Range is 1–4093.
---------------------------	---------	---

Command Default	None.
------------------------	-------

Command Modes	Privileged EXEC (#)
----------------------	---------------------

Command History	Release	Modification
	8.4(2b)	This command was introduced.

Usage Guidelines The interval in the command output is the performance interval for gathering of performance and health information for all the FICON ports in a fabric. All switches must have FICON diagnostics enabled with a nonzero interval for the IBM z/OS to display useful data. The diagnostics interval is set by z/OS during CUP device initialization on any or all the switches in the fabric and then will be propagated to the other switches in the fabric as part of fabric services. For more information, see the appropriate IBM z/OS documentation.

Examples The following example displays how to enable FICON diagnostics on VSAN 10:

```
switch# show ficon vsan 10 diagnostics
Diagnostics: Enabled
  interval : 30
  version  : 1
  CFS      : Enabled
```

Related Commands	Command	Description
	ficon distribute	Enables Cisco Fabric Services (CFS) distribution on a FICON switch.
	ficon vsan diagnostics	Enables FICON diagnostics in a VSAN.

show file

To display the contents of a specified file in the file system, use the show file command.

```
show file filename [cksum | md5sum]
```

Syntax Description	
filename	Specifies a filename.
cksum	(Optional) Displays CRC checksum for a file.
md5sum	(Optional) Displays MD5 checksum for a file.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples

The following example displays the contents of the test file that resides in the slot0 directory:

```
switch# show file slot0:test
config t
Int fcl/1
no shut
end
show int
```

The following example displays the contents of a file residing in the current directory:

```
switch# show file myfile
```

The following example displays the CRC checksum for a file:

```
switch# show file bootflash:vboot-1 cksum
838096258
```

The following example displays the MD5 checksum for a file:

```
switch# show file bootflash:vboot-1 md5sum
3d8e05790155150734eb8639ce98a331
```


show flex-attach

To display the FlexAttach distribution status, use the show flex-attach command.

```
show flex-attach
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the FlexAttach distribution status:

```
switch# show flex-attach
Fabric distribution status
-----
fabric distribution enabled
Last Action Time Stamp   : Sun Mar  2 02:32:04 2008
Last Action               : Commit
Last Action Result       : Success
Last Action Failure Reason : none
```

Related Commands	Command	Description
	show flex-attach virtual-pwwn	Displays the current list of virtual pWWNs on a specified interface.

show flex-attach info

To display the FlexAttach information, use the show flex-attach info command.

```
show flex-attach info
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Exec mode

Release	Modification
3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the FlexAttach information:

```
switch# show flex-attach info
Global Auto Flag : TRUE
-----
                    Local Interface->vpwwn
-----
vsan          intf          vpwwn                      auto      intf-state
-----
all           fc1/1          20:00:00:05:30:01:71:ba    auto      DOWN
all           fc1/2          20:01:00:05:30:01:71:ba    auto      DOWN
all           fc1/3          20:02:00:05:30:01:71:ba    auto      DOWN
all           fc1/4          20:03:00:05:30:01:71:ba    auto      DOWN
all           fc1/20         20:13:00:05:30:01:71:ba    auto      DOWN
all           fc1/21         20:14:00:05:30:01:71:ba    auto      DOWN
all           fc1/22         20:15:00:05:30:01:71:ba    auto      DOWN
all           fc1/23         20:16:00:05:30:01:71:ba    auto      DOWN
all           fc1/24         20:17:00:05:30:01:71:ba    auto      DOWN
Number of local virtual pwwn entries = 24
-----
                    Remote Interface->vpwwn
-----
swwn          vsan          intf          vpwwn                      auto
-----
20:00:00:05:30:01:6e:1c  all          fc1/1          23:46:00:05:30:01:6e:1e    auto
20:00:00:05:30:01:6e:1c  all          fc1/2          23:47:00:05:30:01:6e:1e    auto
20:00:00:05:30:01:6e:1c  all          fc1/3          23:48:00:05:30:01:6e:1e    auto
20:00:00:05:30:01:6e:1c  all          fc1/4          23:49:00:05:30:01:6e:1e    auto
20:00:00:05:30:01:6e:1c  all          fc1/5          23:4a:00:05:30:01:6e:1e    auto
20:00:00:05:30:01:6e:1c  all          fc1/6          23:4b:00:05:30:01:6e:1e    auto
20:00:00:05:30:01:6e:1c  all          fc1/7          23:4c:00:05:30:01:6e:1e    auto
20:00:00:05:30:01:6e:1c  all          fc1/8          23:4d:00:05:30:01:6e:1e    auto
20:00:00:05:30:01:6e:1c  all          fc1/9          23:4e:00:05:30:01:6e:1e    auto
20:00:00:05:30:01:6e:1c  all          fc1/10         23:4f:00:05:30:01:6e:1e    auto
20:00:00:05:30:01:6e:1c  all          fc1/11         23:50:00:05:30:01:6e:1e    auto
20:00:00:05:30:01:6e:1c  all          fc1/12         23:51:00:05:30:01:6e:1e    auto
```

```

20:00:00:05:30:01:6e:1c  all    fc1/13  23:52:00:05:30:01:6e:1e  auto
20:00:00:05:30:01:6e:1c  all    fc1/14  23:53:00:05:30:01:6e:1e  auto
20:00:00:05:30:01:6e:1c  all    fc1/15  23:54:00:05:30:01:6e:1e  auto
20:00:00:05:30:01:6e:1c  all    fc1/23  23:5c:00:05:30:01:6e:1e  auto
20:00:00:05:30:01:6e:1c  all    fc1/24  23:5d:00:05:30:01:6e:1e  auto
Number of remote virtual pwwn entries = 24
-----
                PWWN -> VPWWN Mappings
-----
pwwn                vpwwn
-----
20:14:00:05:30:01:71:11  20:14:00:05:30:01:71:99
20:14:00:05:30:01:71:44  20:14:00:05:30:01:71:88
Number of real pwwn to virtual pwwn entries = 2
-----
                OXID INFO
-----
vsan      sid      did      oxid      els-cmd      phy-pwwn
      vpwwn
-----
Number of outstanding ELS frames = 0
-----
                srv fcid to srv ifindex map
-----
--
vsan      srvcid  srvif  pwwn                vpwwn                flogi?
-----
--
Number of logged-in devices = 0

```

Related Commands

Command	Description
show flex-attach	Displays the FlexAttach distribution status.
show flex-attach merger status	Displays the FlexAttach merger status.
show flex-attach virtual-pwwn	Displays the current list of virtual pWWN on a specified interface.

show flex-attach merge status

To display the FlexAttach merger status, use the show flex-attach merge status command.

```
show flex-attach merger status
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Exec mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the FlexAttach merge status:

```
switch# show flex-attach merge status
Flex-Attach merge status
-----
Status          : Success
Failure reason :
```

Related Commands	Command	Description
	show flex-attach	Displays the FlexAttach distribution status.
	show flex-attach virtual-pwwn	Displays the current list of virtual pWWN on a specified interface.

show flex-attach virtual-pwwn

To display the current list of virtual pWWN on a specified interface, use the show flex-attach virtual-pwwn command.

```
show flex-attach virtual-pwwn
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Exec mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples

The following example displays the current list of virtual pWWN on an interface:

```
switch# show flex-attach virtual-pwwn
Global auto virtual port WWN generation enabled
      VIRTUAL PORT WWNS ASSIGNED TO INTERFACES
-----
-----
VSAN      INTERFACE  VIRTUAL-PWWN                AUTO    LAST-CHANGE
-----
-----
all       fc1/1      20:00:00:05:30:01:71:ba     TRUE    Sat Mar  1 14:10:07 2008
all       fc1/2      20:01:00:05:30:01:71:ba     TRUE    Sat Mar  1 14:10:07 2008
all       fc1/19     20:12:00:05:30:01:71:ba     TRUE    Sat Mar  1 14:10:07 2008
all       fc1/20     20:13:00:05:30:01:71:ba     TRUE    Sat Mar  1 14:10:07 2008
all       fc1/21     20:14:00:05:30:01:71:ba     TRUE    Sat Mar  1 14:10:07 2008
all       fc1/22     20:15:00:05:30:01:71:ba     TRUE    Sat Mar  1 14:10:07 2008
all       fc1/23     20:16:00:05:30:01:71:ba     TRUE    Sat Mar  1 14:10:07 2008
all       fc1/24     20:17:00:05:30:01:71:ba     TRUE    Sat Mar  1 14:10:07 2008
Number of virtual pwwn assigned to local interfaces = 24
      VIRTUAL PORT WWNS ASSIGNED TO PHYSICAL PORT WWNS
-----
-----
PWWN                VIRTUAL-PWWN                LAST-CHANGE
-----
-----
20:14:00:05:30:01:71:11  20:14:00:05:30:01:71:99  Sat Mar  1 14:56:07 2008
20:14:00:05:30:01:71:44  20:14:00:05:30:01:71:88  Sat Mar  1 14:56:07 2008
Number of virtual pwwn assigned to real pwwns = 2
```

Related Commands	Command	Description
	flex-attach virtual-pwwn auto	Enables the FlexAttach virtual pWWN on a specific interface.

Command	Description
flex-attach virtual-pwwn interface	Sets the user-specified FlexAttach virtual pWWN.

show flogi

To list all the FLOGI sessions through all interfaces across all VSANs, use the show flogi command.

```
show flogi auto-area-list|database fcid fcid-id|interface fa slot/port|fc slot/port|fv module-number
|vsan vsan-id
```



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs as follows: `interface bay port | ext port }`

Syntax Description

auto-area-list	Displays the list of OUIs that are allocated areas.
database	Displays information about FLOGI sessions.
fcid fcid-id	Displays FLOGI database entries based on the FCID allocated. The format is 0xhhhhhh.
interface	Displays FLOGI database entries based on the logged in interface.
fa slot/port	Specifies the FA port interface to configure by slot and port number on all switches.
fc slot/port	(Optional) Specifies the Fibre Channel interface to configure by slot and port number on an MDS 9000 Family switch.
bay port | ext port	(Optional) Specifies the Fibre Channel interface by bay or by external port on a Cisco Fabric Switch for HP c-Class BladeSystem or on a Cisco Fabric Switch for IBM BladeCenter. The range is 0 to 48.
fv module-number	Specifies the Fibre Channel Virtualization interface by module on all switches.
vsan vsan-id	Displays FLOGI database entries based on the VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
3.1(2)	Added the interface bay | ext option.

Usage Guidelines

Output of this command is first sorted by interface and then by VSANs.

In a Fibre Channel fabric, each host or disk requires an FCID. Use the show flogi database command to verify if a storage device is displayed in the Fabric login (FLOGI) table as in the examples below. If the required device is displayed in the FLOGI table, the fabric login is successful. Examine the FLOGI database on a switch that is directly connected to the host HBA and connected ports.

Examples

The following example displays details on the FLOGI database:

```
switch# show flogi database
-----
INTERFACE  VSAN    FCID          PORT NAME          NODE NAME
-----
sup-fc0    2       0xb30100     10:00:00:05:30:00:49:63  20:00:00:05:30:00:49:5e
fc9/13    1       0xb200e2     21:00:00:04:cf:27:25:2c  20:00:00:04:cf:27:25:2c
fc9/13    1       0xb200e1     21:00:00:04:cf:4c:18:61  20:00:00:04:cf:4c:18:61
fc9/13    1       0xb200d1     21:00:00:04:cf:4c:18:64  20:00:00:04:cf:4c:18:64
fc9/13    1       0xb200ce     21:00:00:04:cf:4c:16:fb  20:00:00:04:cf:4c:16:fb
fc9/13    1       0xb200cd     21:00:00:04:cf:4c:18:f7  20:00:00:04:cf:4c:18:f7
Total number of flogi = 6.
```

The following example displays the FLOGI interface.

```
switch# show flogi database interface fc 1/11
-----
INTERFACE  VSAN    FCID          PORT NAME          NODE NAME
-----
fc9/13    1 0xa002ef 21:00:00:20:37:18:17:d2  20:00:00:20:37:18:17:d2
fc9/13    1 0xa002e8 21:00:00:20:37:38:a7:c1  20:00:00:20:37:38:a7:c1
fc9/13    1 0xa002e4 21:00:00:20:37:6b:d7:18  20:00:00:20:37:6b:d7:18
fc9/13    1 0xa002e2 21:00:00:20:37:18:d2:45  20:00:00:20:37:18:d2:45
fc9/13    1 0xa002e1 21:00:00:20:37:39:90:6a  20:00:00:20:37:39:90:6a
fc9/13    1 0xa002e0 21:00:00:20:37:36:0b:4d  20:00:00:20:37:36:0b:4d
fc9/13    1 0xa002dc 21:00:00:20:37:5a:5b:27  20:00:00:20:37:5a:5b:27
fc9/13    1 0xa002da 21:00:00:20:37:18:6f:90  20:00:00:20:37:18:6f:90
fc9/13    1 0xa002d9 21:00:00:20:37:5b:cf:b9  20:00:00:20:37:5b:cf:b9
fc9/13    1 0xa002d6 21:00:00:20:37:46:78:97  20:00:00:20:37:46:78:97
Total number of flogi = 10.
```

The following example displays the FLOGI VSAN:

```
switch# show flogi database vsan 1
-----
INTERFACE  VSAN    FCID          PORT NAME          NODE NAME
-----
fc9/13    1       0xef02ef     22:00:00:20:37:18:17:d2  20:00:00:20:37:18:17:d2
fc9/13    1       0xef02e8     22:00:00:20:37:38:a7:c1  20:00:00:20:37:38:a7:c1
fc9/13    1       0xef02e4     22:00:00:20:37:6b:d7:18  20:00:00:20:37:6b:d7:18
fc9/13    1       0xef02e2     22:00:00:20:37:18:d2:45  20:00:00:20:37:18:d2:45
fc9/13    1       0xef02e1     22:00:00:20:37:39:90:6a  20:00:00:20:37:39:90:6a
fc9/13    1       0xef02e0     22:00:00:20:37:36:0b:4d  20:00:00:20:37:36:0b:4d
fc9/13    1       0xef02dc     22:00:00:20:37:5a:5b:27  20:00:00:20:37:5a:5b:27
fc9/13    1       0xef02da     22:00:00:20:37:18:6f:90  20:00:00:20:37:18:6f:90
fc9/13    1       0xef02d9     22:00:00:20:37:5b:cf:b9  20:00:00:20:37:5b:cf:b9
fc9/13    1       0xef02d6     22:00:00:20:37:46:78:97  20:00:00:20:37:46:78:97
Total number of flogi = 10.
```

The following example displays the FLOGI FCID:

```
switch# show flogi database fcid 0xef02e2
-----
INTERFACE  VSAN    FCID          PORT NAME          NODE NAME
-----
fc9/13    1       0xef02e2     22:00:00:20:37:18:d2:45  20:00:00:20:37:18:d2:45
Total number of flogi = 1.
```


Related Commands

Command	Description
show fcns database	Displays all the local and remote name server entries.

show flogi database details

To display the Fibre Channel IDs (FCIDs) that are capable of using the Virtual Machine Identifier (VMID) feature, use the show flogi database details command.

```
show flogi database details
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes
User EXEC (#)
Privileged EXEC (#)

Command History	Release	Modification
	8.2(1)	This command was introduced.

Examples

This following example shows the FCIDs that are capable of using the VMID feature. The letters under the FLAGS field indicate the following:

- A: Indicates area FCID allocation.
- M: Indicates that the corresponding FCID is capable of using the VMID feature.
- P: Indicates that the allocation was performed based on the persistency table.
- V: Indicates FDISC.

```
switch# show flogi database details
-----
INTERFACE VSAN FCID      PORT NAME      NODE NAME      FLAGS
-----
fc1/7      1      0xef0000 20:07:8c:60:4f:10:0f:e0 20:01:8c:60:4f:10:0f:e1      P
fc1/7      1      0xef0001 20:19:8c:60:4f:19:bf:25 21:00:00:20:38:de:c3:9f      VPM
-----
Total number of flogi = 2.
```

Related Commands

Command	Description
show vmis database	Displays all the entries in the VMIS database.

show flogi database interface

To list all the FLOGI sessions through all of the interfaces, use the show flogi database interface command.

```
show flogi database interface fa slot/port|fc slot/port|fv module-number|port-channel port-channel
number details
```

Syntax Description		
	fa slot/port	Specifies the FA port interface to configure by slot and port number on all switches.
	fc slot/port	Specifies the Fibre Channel interface to configure by slot and port number on an MDS 9000 Family switch.
	fv module-number	Specifies the Fibre Channel virtualization interface by module on all switches.
	port-channel	Specifies the PortChannel interface.
	port-channel number	Specifies the PortChannel number. The range is from 1 to 256.
	details	Specifies FCID allocation details.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.1(3)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display the PortChannel FCID allocation details:

```
switch# show flogi database interface port-channel 1 details
No flogi sessions found.
switch#
```

Related Commands	Command	Description
	show fcns database	Displays all the local and remote name server entries.

show flow-control

To display the interface flow-control mode, use the show flow-control command.

```
show flow-control er_rdy | r_rdy [module number]
```

Syntax Description

er_rdy	Displays the interfaces that are in Extended Receiver Ready (ER_RDY) mode.
r_rdy	Displays the interfaces that are in Receiver Ready (R_RDY) mode.
module	Specifies a module.
number	Module number. Note If the module number is not specified in the command, the output for all the modules are displayed.

Command Default

None

Command Modes

Privilege EXEC (#)

Command History

Release	Modification
8.1(1)	This command was introduced.

Examples

The following example shows the interfaces that are in ER_RDY flow-control mode:

```
switch# show flow-control er_rdy
fc2/36
fc3/18
```

Related Commands

Command	Description
show system fc flow-control	Displays the Fibre Channel flow-control mode of a switch.
system fc flow-control	Enables or disables the system flow-control mode.

show fpm

To display Fabric Performance Monitor information, use the `show fpm` command.

```
show fpm congested-device database [exclude | local | remote | static] vsan id | dirl exclude
| fpin vsan id | ingress-rate-limit events | status interface fc slot/port | registration
congestion-signal | summary vsan id
```

Syntax Description

congested-device database	Displays congested device database.
exclude	Displays the list of devices that are explicitly excluded from congestion actions.
local	Displays the list of local devices.
remote	Displays the list of remote devices.
static	Displays the list of devices that are explicitly configured for congestion actions.
dirl exclude	Displays the list of interfaces that are explicitly excluded from DURL actions.
fpin	Displays Fabric Performance Impact Notifications (FPIN) information.
ingress-rate-limit	Displays ingress rate limit information.
events	Displays ingress rate limit events.
status	Displays the information about interface ingress-rate limit status.
interface fc slot/port	Specifies an interface.
registration	Displays information about the devices registered for congestion notifications.
congestion-signal	Displays information about the devices registered for congestion signal primitives.
summary	Displays a summary of the registered devices.
vsan id	Specifies a VSAN.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.5(1)	This command was introduced.

Examples

This example shows the number of devices registered for FPIN in each VSAN:

```
switch# show fpm fpin
C: Congestion Notification Descriptor
P: Peer Congestion Notification Descriptor
L: Link Integrity Notification Descriptor
```

show fpm

D: Delivery Notification Descriptor
 U: Priority Update Notification Descriptor
 A: Alarm Signal
 W: Warning Signal

VSAN: 1

```
-----
FCID          |          RDF          | FPIN sent | Last FPIN sent timestamp
PWWN          | Registered | Negotiated | count      |
              |          Timestamp   |           |           |
-----
0xdc06e0     | L              | L              | L:         0 | L: --
10:00:00:10:9b:95:41:22 | Tue Feb  2 03:38:13 2021 |           |           |
```

VSAN: 50

```
-----
FCID          |          RDF          | FPIN sent | Last FPIN sent timestamp
PWWN          | Registered | Negotiated | count      |
              |          Timestamp   |           |           |
-----
0x7d0000     | CPLD          | CPL           | L:         0 | L: --
21:00:f4:e9:d4:54:ac:f8 | Mon Feb  1 15:32:26 2021 | C:         0 | C: --
              |              |              | P:         0 | P: --

0x7d0020     | CPLD          | CPL           | L:         0 | L: --
21:00:f4:e9:d4:54:ac:f9 | Mon Feb  1 15:32:27 2021 | C:         0 | C: --
              |              |              | P:         0 | P: --
```

This example shows a summary of RDF and EDC registrations:

```
switch# show fpm registration summary
C: Congestion Notification Descriptor
P: Peer Congestion Notification Descriptor
L: Link Integrity Notification Descriptor
D: Delivery Notification Descriptor
U: Priority Update Notification Descriptor
A: Alarm Signal
W: Warning Signal
```

VSAN: 1

```
-----
FCID          | PWWN          | FPIN          | Congestion Signal
              |              | Registrations | Registrations
-----
0xdc06e0     | 10:00:00:10:9b:95:41:22 | L              | --
```

VSAN: 50

```
-----
FCID          | PWWN          | FPIN          | Congestion Signal
              |              | Registrations | Registrations
-----
0x7d0000     | 21:00:f4:e9:d4:54:ac:f8 | CPLD          | AW
0x7d0020     | 21:00:f4:e9:d4:54:ac:f9 | CPLD          | AW
```

This example shows EDC registration in detail:

```
switch# show fpm registration congestion-signal
A: Alarm
W: Warning
ms: milliseconds
```

```

VSAN: 1
-----
No registered devices found

VSAN: 50
-----
FCID          | PWWN                | Device Tx | Device Rx | Negotiated Tx
              |                    | Capa-    | Capa-    | Capa-    | Interval
              |                    | bility| (ms)    | bility| (ms)    | bility| (ms)
-----
0x7d0020 | 21:00:f4:e9:d4:54:ac:f9 | AW      | 10 | AW      | 10 | AW      | 1000
0x7d0000 | 21:00:f4:e9:d4:54:ac:f8 | AW      | 10 | AW      | 10 | AW      | 1000

```

This example shows the list of devices that were detected as congested devices by port monitor:

```

switch# show fpm congested-device database local
VSAN: 1
-----
No congested devices found

VSAN: 50
-----
PWWN                | FCID   | Event type | Detect type | Detect Time
-----
21:00:f4:e9:d4:54:ac:f8 | 0x7d0000 | credit-stall | local-pmon | Thu Jan 28 05:08:31 2021

```

This example shows a list of remote devices that are congested:

```

switch# show fpm congested-device database remote
VSAN: 1
-----
No congested devices found

VSAN: 50
-----
No congested devices found

VSAN: 70
-----
No congested devices found

VSAN: 80
-----
No congested devices found

VSAN: 1001
-----
PWWN                | FCID   | Event type | Detect type | Detect Time
-----
21:00:34:80:0d:6c:a7:63 | 0xec0000 | credit-stall | remote      | Thu Jan 28 05:12:00 2021

```

This example shows the list of devices that were manually included as congested devices:

```

switch# show fpm congested-device database static
VSAN: 1
-----
No congested devices found

```

```

VSAN: 50
-----
PWWN                | FCID      | Event type
-----
21:00:f4:e9:d4:54:ac:f8 | 0x7d0000 | credit-stall

```

This example shows the list of congested devices that are excluded:

```

switch# show fpm congested-device database exclude
VSAN: 1
-----
No congested devices found

VSAN: 50
-----
PWWN                | FCID
-----
21:00:f4:e9:d4:54:ac:f8 | 0x7d0000

```

This example shows the configured DURL reduction and recovery percentages:

```

switch# show fpm ingress-rate-limit status
durl reduction rate:50%
durl recovery rate:25%
-----
Interface  Current rate  Rate-limit-type  Previous action  Last update time
          limit(%)
-----
fc4/12    10.6435      dynamic          recovered        Wed Jan 27 20:23:34 2021
fc7/5     12.9567      dynamic          recovered        Wed Jan 27 20:23:34 2021

```

This example shows the configured DURL reduction and recovery percentages for the port fc4/12:

```

switch# show fpm ingress-rate-limit status interface fc4/12
durl reduction rate:50%
durl recovery rate:25%
-----
Interface  Current rate  Rate-limit-type  Previous action  Last update time
          limit(%)
-----
fc4/12    10.6435      dynamic          recovered        Wed Jan 27 20:23:34 2021

```

This example shows the list of interfaces that are excluded from DURL rate reduction:

```

switch# show fpm durl exclude
All target device connected interface are excluded from DURL
-----
Interface
-----
fc4/19
fc4/21
fc7/13

```


Related Commands

Command	Description
feature fpm	Enables Fabric Performance Monitor (FPM).

show fspf

To display global FSPF information, use the show fspf command.

```
show fspf [database vsan vsan-id [detail | domain domain-id detail] | interface | vsan vsan-id interface
[fc slot/port | port-channel port-channel]]
```



Note

On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs as follows: interface [bay port | ext port]

Syntax Description

database	(Optional) Displays the FSPF link state database.
vsan vsan-id	(Optional) Specifies the VSAN ID. The range is 1 to 4093.
detail	(Optional) Displays detailed FSPF information.
domain domain-id	(Optional) Specifies the domain of the database. The range is 0 to 255.
interface	(Optional) Specifies the FSPF interface.
fc slot/port	(Optional) Specifies the Fibre Channel interface to configure by slot and port number on an MDS 9000 Family switch.
bay port | ext port	(Optional) Specifies the Fibre Channel interface by bay or by external port on a Cisco Fabric Switch for HP c-Class BladeSystem or on a Cisco Fabric Switch for IBM BladeCenter. The range is 0 to 48.
port-channel port-channel	(Optional) Specifies the PortChannel interface. The range is 1 to 256.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

If no other parameters are given, all the LSRs in the database are displayed. If more specific information is required, then the domain number of the owner of the LSR may be given. Detail gives more detailed information on each LSR.

Examples

The following example displays FSPF interface information:

```
switch# show fspf interface vsan 1 fc1/1
FSPF interface fc1/1 in VSAN 1
FSPF routing administrative state is active
```

```

Interface cost is 500
Timer intervals configured, Hello 20 s, Dead 80 s, Retransmit 5 s
FSPF State is FULL
Neighbor Domain Id is 0x0c(12), Neighbor Interface index is 0x0f100000
Statistics counters :
  Number of packets received : LSU 8 LSA 8 Hello 118 Error packets 0
  Number of packets transmitted : LSU 8 LSA 8 Hello 119 Retransmitted LSU
  0
  Number of times inactivity timer expired for the interface = 0

```

The following example displays FSPF database information:

```

switch# show fspf database vsan 1
FSPF Link State Database for VSAN 1 Domain 0x0c(12)
LSR Type = 1
Advertising domain ID = 0x0c(12)
LSR Age = 1686
LSR Incarnation number = 0x80000024
LSR Checksum = 0x3caf
Number of links = 2
  NbrDomainId      IfIndex      NbrIfIndex      Link Type      Cost
-----
  0x65(101) 0x0000100e    0x00001081      1              500
  0x65(101) 0x0000100f    0x00001080      1              500
FSPF Link State Database for VSAN 1 Domain 0x65(101)
LSR Type = 1
Advertising domain ID = 0x65(101)
LSR Age = 1685
LSR Incarnation number = 0x80000028
LSR Checksum = 0x8443
Number of links = 6
  NbrDomainId      IfIndex      NbrIfIndex      Link Type      Cost
-----
  0xc3(195) 0x00001085    0x00001095      1              500
  0xc3(195) 0x00001086    0x00001096      1              500
  0xc3(195) 0x00001087    0x00001097      1              500
  0xc3(195) 0x00001084    0x00001094      1              500
  0x0c(12) 0x00001081    0x0000100e      1              500
  0x0c(12) 0x00001080    0x0000100f      1              500
FSPF Link State Database for VSAN 1 Domain 0xc3(195)
LSR Type = 1
Advertising domain ID = 0xc3(195)
LSR Age = 1686
LSR Incarnation number = 0x80000033
LSR Checksum = 0x6799
Number of links = 4
  NbrDomainId      IfIndex      NbrIfIndex      Link Type      Cost
-----
  0x65(101) 0x00001095    0x00001085      1              500
  0x65(101) 0x00001096    0x00001086      1              500
  0x65(101) 0x00001097    0x00001087      1              500
  0x65(101) 0x00001094    0x00001084      1              500

```

This command displays FSPF information for a specified VSAN:

```

switch# show fspf vsan 1
FSPF routing for VSAN 1
FSPF routing administration status is enabled
FSPF routing operational status is UP
It is an intra-domain router
Autonomous region is 0
SPF hold time is 0 msec
MinLsArrival = 1000 msec , MinLsInterval = 5000 msec

```

```
Local Domain is 0x65(101)
Number of LSRs = 3, Total Checksum = 0x0001288b
Protocol constants :
  LS_REFRESH_TIME = 1800 sec
  MAX_AGE          = 3600 sec
Statistics counters :
  Number of LSR that reached MaxAge = 0
  Number of SPF computations        = 7
  Number of Checksum Errors         = 0
  Number of Transmitted packets :  LSU 65 LSA 55 Hello 474 Retranmsitted LSU 0
  Number of received packets :  LSU 55 LSA 60 Hello 464 Error packets 10
```

show hardware

To display switch hardware inventory details, use the show hardware command.

```
show hardware [ipc-channel status]
```

Syntax Description	ipc-channel status	(Optional) Displays the status of the interprocess communication (IPC) channels.
---------------------------	--------------------	--

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.2(1)	This command was introduced.
	NX-OS 4.1(1b)	Changed the command output from SAN-OS to NX-OS.

Usage Guidelines None.

Examples

The following example displays the switch hardware inventory details:

```
switch# show hardware
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2008, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php
Software
  BIOS:      version 3.17.0
  loader:    version N/A
  kickstart: version 4.0(3) [gdb]
  system:    version 4.0(3) [gdb]
  BIOS compile time:      03/23/08
  kickstart image file is: bootflash:/n7000-s1-kickstart.4.0.3.gbin.S17
  kickstart compile time: 7/24/2008 12:00:00 [07/28/2008 03:28:06]
  system image file is:   bootflash:/n7000-s1-dk9.4.0.3.gbin.S17
  system compile time:    7/24/2008 12:00:00 [07/28/2008 04:10:26]
Hardware
  cisco Nexus7000 C7010 (10 Slot) Chassis ("Supervisor module-1X")
  Intel(R) Xeon(R) CPU C5528 @ 2.13GHz with 8167228 kB of memory.
  Processor Board ID JAB10380101
  Device name: switch
  bootflash:      1023120 kB
  slot0:          0 kB (expansion flash)
  bootflash:      251904 kB
```

```

slot0:          251904 kB

Kernel uptime is 0 day(s), 10 hour(s), 32 minute(s), 43 second
Last reset at 231551 usecs after Wed Jul 30 00:07:18 2008
Reason: Reset Requested by CLI command reload
System version: 4.0(3)
Service:
plugin
  Core Plugin, Ethernet Plugin
CMP (Module 6) no response
-----
Switch hardware ID information
-----
Switch is booted up
Switch type is : Nexus7000 C7010 (10 Slot) Chassis
Model number is MOSPORT10P
H/W version is 0.403
Part Number is 73-10900-04
Part Revision is 03
Manufacture Date is Year 11 Week 25
Serial number is TBM11256507
CLEI code is
-----
Chassis has 10 Module slots and 5 Fabric slots
-----
Module1 empty
Module2 ok
  Module type is : 10/100/1000 Mbps Ethernet Module
  1 submodules are present
  Model number is NURBURGRING
  H/W version is 0.407
  Part Number is 73-10098-04
  Part Revision is 13
  Manufacture Date is Year 10 Week 44
  Serial number is JAB104400P0
  CLEI code is
Module3 empty
Module4 empty
Module5 empty
Module6 ok
  Module type is : Supervisor module-1X
  0 submodules are present
  Model number is CATALUNYA
  H/W version is 0.311
  Part Number is 73-10877-03
  Part Revision is 09
  Manufacture Date is Year 10 Week 38
  Serial number is JAB10380101
  CLEI code is TBD
Module7 empty
Module8 empty
Module9 empty
Module10 empty
Xbar1 ok
  Module type is : Fabric card module
  0 submodules are present
  Model number is Estoril
  H/W version is 0.203
  Part Number is 73-10624-02
  Part Revision is 06
  Manufacture Date is Year 10 Week 43
  Serial number is JAB104300HM
  CLEI code is
Xbar2 empty

```

```
Xbar3 empty
Xbar4 empty
Xbar5 empty
-----
Chassis has 3 PowerSupply Slots
-----
PS1 ok
  Power supply type is: 0.00W 220v AC
  Model number is FIORANO
  H/W version is 0.103
  Part Number is 341-0230-01
  Part Revision is 03
  Manufacture Date is Year 11 Week 17
  Serial number is DTH1117T005
  CLEI code is
PS2 ok
  Power supply type is: 0.00W 220v AC
  Model number is FIORANO
  H/W version is 0.103
  Part Number is 341-0230-01
  Part Revision is 03
  Manufacture Date is Year 11 Week 17
  Serial number is DTH1117T009
  CLEI code is
PS3 absent
-----
Chassis has 4 Fan slots
-----
Fan1(sys_fan1) ok
  Model number is
  H/W version is 0.0
  Part Number is
  Part Revision is
  Manufacture Date is Year 0 Week 0
  Serial number is
  CLEI code is
Fan2(sys_fan2) ok
  Model number is
  H/W version is 0.0
  Part Number is
  Part Revision is
  Manufacture Date is Year 0 Week 0
  Serial number is
  CLEI code is
Fan3(fab_fan1) ok
  Model number is
  H/W version is 0.0
  Part Number is
  Part Revision is
  Manufacture Date is Year 0 Week 0
  Serial number is
  CLEI code is
switch#
```

The following example displays the status of the IPC channel:

```
switch# show hardware ipc-channel status
Active IPC-Channel:          A
switch#
```

show hardware capacity

To display the information about the hardware capabilities and current hardware utilization by the system, use the show hardware capacity command.

show hardware capacity [eobc | fabric-utilization | forwarding | interface | module | power]

Syntax Description

eobc	Displays the EOBC resources.
fabric-utilization	Displays the fabric utilization.
forwarding	Displays the L2 L3 forwarding resources.
interface	Displays the interface resources.
module	Displays the SUP, LC, Xbar.
power	Displays the power supply.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to display the information about the hardware capabilities and current hardware utilization by the system:

```
switch# show hardware capacity fabric-utilization
-----
Fabric Planes:
A -- Unicast fabric packets
B -- Multicast/Multidestination fabric packets
-----
Bandwidth is in Gbps and shared by both Fabric Planes (A+B)
-----PEAK FABRIC UTILIZATION-----
Mod Fab Fab Fab  ASIC Band Fab      Ingress      Egress
   Lnk Mod ASIC Port wth Pln Util%      Time          Util%      Time
-----
1   9   3   1   16   55   A   4 2009-06-26@21:06:04  4 2009-06-26@21:06:04
1   9   3   1   16   55   B   0   --                0   --
1  10   3   1   17   55   A   6 2009-06-26@21:06:04  6 2009-06-26@21:06:04
1  10   3   1   17   55   B   0   --                0   --
1  11   3   2    0   55   A   4 2009-06-26@21:06:19  4 2009-06-26@21:06:19
1  11   3   2    0   55   B   0   --                0   --
1  12   3   2   24   55   A   0   --                0   --
1  12   3   2   24   55   B   0   --                0   --
```



```

1 13 4 1 16 55 A 3 2009-06-26@21:06:04 3 2009-06-26@21:06:04
1 13 4 1 16 55 B 0 -- 0 --
1 14 4 1 17 55 A 3 2009-06-26@21:06:04 3 2009-06-26@21:06:04
1 14 4 1 17 55 B 0 -- 0 --
1 15 4 2 0 55 A 3 2009-06-26@21:06:19 3 2009-06-26@21:06:19
1 15 4 2 0 55 B 0 -- 0 --
1 16 4 2 24 55 A 0 -- 0 --
1 16 4 2 24 55 B 0 -- 0 --
1 17 5 1 16 55 A 3 2009-06-26@21:06:04 3 2009-06-26@21:06:04
1 17 5 1 16 55 B 0 -- 0 --
1 18 5 1 17 55 A 3 2009-06-26@21:06:04 3 2009-06-26@21:06:04
1 18 5 1 17 55 B 0 -- 0 --
1 19 5 2 0 55 A 3 2009-06-26@21:06:19 3 2009-06-26@21:06:19
1 19 5 2 0 55 B 0 -- 0 --
1 20 5 2 24 55 A 0 -- 0 --
--More--

```

```

switch(config)# show hardware capacity power
Power Resources Summary:
-----
Power Supply redundancy mode(administratively): PS-Redundant
Power Supply redundancy mode(operationally): PS-Redundant
Total Power Capacity 6000.00 W
Power reserved for SUP,Fabric,and Fan Module(s) 3230.00 W (
53.83 % )
Power currently used by Modules 650.00 W (
10.83 % )
Total Power Available 2120.00 W (
35.33 % )
Total Power Output (actual draw) 0.00 W
switch#

```

Related Commands

Commands	Description
debug sme	Debugs Cisco SME features.

show hardware fabric crc status

To display the status of the internal CRC detection and isolation functionality, use the show hardware fabric crc status command.

show hardware fabric crc status

This command has no arguments and keywords.

Command Default None.

Command Modes EXEC mode.

Release	Modification
8.5(1)	This command was introduced.

The following example displays how to verify the CRC status:

```
switch# show hardware fabric crc status
Hardware Fabric CRC Action : log-only
Hardware Fabric CRC Feature threshold per module stage : 3
Hardware Fabric CRC Feature sampling time in hours : 24
```

Related Commands

Command	Description
hardware fabric crc	Enables internal CRC detection and isolation function.

show hardware fabric-mode

To display fabric operation mode, use the show hardware fabric mode command.

```
show hardware fabric-mode
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

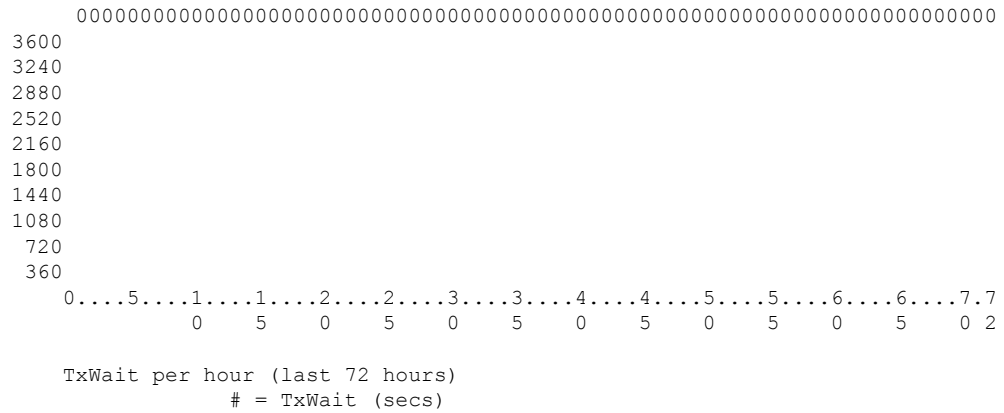
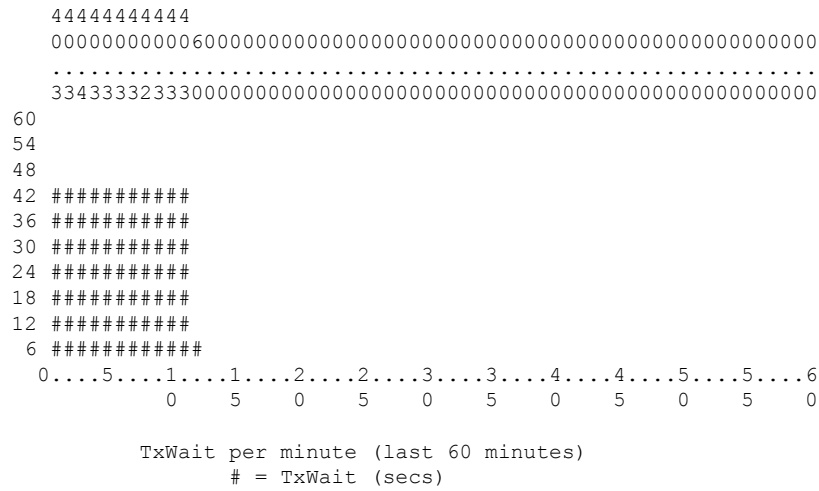
Command History	Release	Modification
	NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the fabric operation mode:

```
switch# show hardware fabric-mode
Fabric mode supports Gen3 and above linecards.
switch#
```

Related Commands	Command	Description
	show hardware	Displays brief information about the list of field replaceable units (FRUs) in the switch.



Command	Description
show hardware	Displays information of the physical device hardware.
show interface [interface-range] txwait-history	Displays the TxWait history graph for Fibre Channel and Ethernet interfaces.

show hosts

To display DNS host configuration details, use the show hosts command.

```
show hosts
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples

The following example displays the configures hosts including the default domain, domain list, and name servers:

```
switch# show hosts
Default domain is cisco.com
Domain list: ucsc.edu harvard.edu yale.edu stanford.edu
Name/address lookup uses domain service

Name servers are 15.1.0.1 15.2.0.0
```


show incompatibility system

To display the high availability compatibility status between the current system image on both supervisors and the new system image to be installed on both supervisors, use the show incompatibility system command.

```
show incompatibility system [bootflash: | slot0: | volatile: ] image-filename
```

Syntax Description	
bootflash:	(Optional) Source or destination location for internal bootflash memory.
slot0:	(Optional) Source or destination location for the CompactFlash memory or PCMCIA card.
volatile:	(Optional) Source or destination location for the volatile directory.
image-filename	Specifies the name of the system image.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.2(1)	This command was introduced.
	3.0(1)	Provided an example to show that the command output provides the commands needed to disable incompatible features.

Usage Guidelines If the high availability compatibility is strict then the upgrade to that image will be disruptive for both supervisors.

If the high availability compatibility is loose, the synchronization may happen without errors, but some resources may become unusable when a switchover happens.

Examples

The following example displays kernel core settings:

```
switch# show incompatibility system bootflash:old-image-y
The following configurations on active are incompatible with the system image
1) Feature Index : 67 , Capability : CAP_FEATURE_SPAN_FC_TUNNEL_CFG
Description : SPAN - Remote SPAN feature using fc-tunnels
Capability requirement : STRICT
2) Feature Index : 119 , Capability : CAP_FEATURE_FC_TUNNEL_CFG
Description : fc-tunnel is enabled
Capability requirement : STRICT
```

The following example shows commands needed to disable incompatible features:

```
switch# show incompatibility system bootflash:m9200-ek9-mz.1.3.4b.bin
The following configurations on active are incompatible with the system image:
1) Service : cfs , Capability : CAP_FEATURE_CFS_ENABLED_DEVICE_ALIAS
Description : CFS - Distribution is enabled for DEVICE-ALIAS
Capability requirement : STRICT
Disable command : no device-alias distribute
```

show in-order-guarantee

To display the present configured state of the in-order delivery feature, use the show in-order-guarantee command.

```
show in-order-guarantee
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(4)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the present configuration status of the in-order delivery feature:

```
switch# show in-order-guarantee
global in-order delivery configuration:guaranteed
VSAN specific settings
vsan 1 in-order delivery:guaranteed
vsan 101 in-order delivery:not guaranteed
vsan 1000 in-order delivery:guaranteed
vsan 1001 in-order delivery:guaranteed
vsan 1682 in-order delivery:guaranteed
vsan 2001 in-order delivery:guaranteed
vsan 2009 in-order delivery:guaranteed
vsan 2456 in-order delivery:guaranteed
vsan 3277 in-order delivery:guaranteed
vsan 3451 in-order delivery:guaranteed
vsan 3452 in-order delivery:guaranteed
vsan 3453 in-order delivery:guaranteed
```

show install all failure-reason

To identify the cause of a nondisruptive software upgrade failure, use the show install all failure-reason command when prompted by the system.

```
show install all failure-reason
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.1(1)	This command was introduced.

Usage Guidelines If an upgrade failure is due to some other cause, nothing is displayed when you enter the command. This command displays a valid output only if a service aborts an upgrade and a message instructing you to issue this command is returned to the CLI.

Examples

The following example displays the output during an unsuccessful nondisruptive software upgrade, and it shows the reason for the failure:

```
Do you want to continue with the installation (y/n)? [n] y

Install is in progress, please wait.

Notifying services about the upgrade.
[#          ] 0% -- FAIL. Return code 0x401E0066 (request timed out).

Please issue "show install all failure-reason" to find the cause of the failure.

Install has failed. Return code 0x401E0066 (request timed out).
Please identify the cause of the failure, and try 'install all' again.
switch# show install all failure-reason
Service: "cfs" failed to respond within the given time period.
switch#
```

Related Commands	Command	Description
	show install all status	Displays the status of an installation or ISSU.

show install all impact

To display the software compatibility matrix of a specific image, use the show install all impact command.

```
show install all impact [asm-sfn image-filename] [kickstart image-filename] [ssi image-filename]
[system image-filename]
```

Syntax Description

asm-sfn	(Optional) Specifies the ASM SFN boot variable.
image-filename	(Optional) Specifies the name of an image.
kickstart	(Optional) Specifies the kickstart boot variable.
ssi	(Optional) Specifies the SSI boot variable.
system	(Optional) Specifies the system boot variable.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

Use the show install all impact command to view the effect of updating the system from the running image to another specified image:

```
switch# show install all impact
Verifying image bootflash:/ilc1.bin
[#####] 100% -- SUCCESS
Verifying image bootflash:/vk73a
[#####] 100% -- SUCCESS
Verifying image bootflash:/vs73a
[#####] 100% -- SUCCESS
Extracting "slc" version from image bootflash:/vs73a.
[#####] 100% -- SUCCESS
Extracting "slc" version from image bootflash:/vs73a.
[#####] 100% -- SUCCESS
Extracting "system" version from image bootflash:/vs73a.
[#####] 100% -- SUCCESS
Extracting "kickstart" version from image bootflash:/vk73a.
[#####] 100% -- SUCCESS
Extracting "loader" version from image bootflash:/vk73a.
[#####] 100% -- SUCCESS
Extracting "slc" version from image bootflash:/vs73a.
[#####] 100% -- SUCCESS
Compatibility check is done:
Module bootable          Impact  Install-type  Reason
-----
-----
```

```

2      yes non-disruptive      none
4      yes non-disruptive      none
6      yes non-disruptive      none
9      yes non-disruptive      none
Images will be upgraded according to following table:
Module      Image      Running-Version      New-Version      Upg-Required
-----
2      slc      1.2(1)      1.2(1)      no
2      bios      v1.0.7(03/20/03)      v1.0.7(03/20/03)      no
4      slc      1.2(1)      1.2(1)      no
4      ilce      1.2(1)      1.2(1)      no
4      bios      v1.0.7(03/20/03)      v1.0.7(03/20/03)      no
6      system      1.2(1)      1.2(1)      no
6      kickstart      1.2(1)      1.2(1)      no
6      bios      v1.0.7(03/20/03)      v1.0.7(03/20/03)      no
6      loader      1.0(3a)      1.0(3a)      no
9      slc      1.2(1)      1.2(1)      no
9      bios      v1.0.7(03/20/03)      v1.0.7(03/20/03)      no

```

The following command displays the error message that is displayed if a wrong image is provided:

```

switch# show install all impact system bootflash:
Compatibility check failed. Return code 0x40930003 (Invalid bootvar specified in
the input).

```

show install all status

To display the on going install all command status or the log of the last installed install all command from a console, SSH, or Telnet session, use the show install all status command.

```
show install all status
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines This command only displays the status of an install all command that is issued from the CLI, not Fabric Manager.

The show install all status command also displays the status of nondisruptive software upgrades on the Cisco MDS 9124 Fabric Switch (after the switch has rebooted and comes up with the new image). Actions that occurred before the reboot are not displayed in the output. So, if you issue the install all command via a Telnet session, the Telnet session will be disconnected when the switch reboots. After you reconnect to the switch using Telnet, the upgrade may already be complete; in this case, the show install all status command will display the status of the upgrade.

Examples

Use the show install all status command to view the output of a install all command process.

```
switch# show
  install all status
There is an on-going installation... <----- in progress installation
Enter Ctrl-C to go back to the prompt.
Verifying image bootflash:/b-1.3.0.104
-- SUCCESS
Verifying image bootflash:/i-1.3.0.104
-- SUCCESS
Extracting "system" version from image bootflash:/i-1.3.0.104.
-- SUCCESS
Extracting "kickstart" version from image bootflash:/b-1.3.0.104.
-- SUCCESS
Extracting "loader" version from image bootflash:/b-1.3.0.104.
-- SUCCESS
switch# show install all status
This is the log of last installation.          <<<<<< log of last install
Verifying image bootflash:/b-1.3.0.104
-- SUCCESS
Verifying image bootflash:/i-1.3.0.104
-- SUCCESS
Extracting "system" version from image bootflash:/i-1.3.0.104.
-- SUCCESS
Extracting "kickstart" version from image bootflash:/b-1.3.0.104.
```

```
-- SUCCESS
Extracting "loader" version from image bootflash:/b-1.3.0.104.
-- SUCCESS
```

Use the `show install all status` command to view the output of a nondisruptive software upgrade process on the Cisco MDS 9124 Fabric Switch.

```
switch# show install all status
This is the log of last installation.
Continuing with installation process, please wait.
The login will be disabled until the installation is completed.
Status for linecard upgrade.
-- SUCCESS
Performing supervisor state verification.
-- SUCCESS
Install has been successful.
```

show interface

You can check the status of an interface, use the show interface command.

```
show interface [interface-range] [ aggregate-counters [brief] | bcredit | brief | capabilities | counters
[ brief [ module number ] | detailed [ all | snmp ] | errors snmp | snmp | storm-control | trunk ] |
debounce | description | fcoe | flowcontrol | mac-address | rxwait-history | standby | status | err-disabled
| err-vlans | switchport | transceiver [ calibrations | details | sprom ] | trunk vsan [vsan-id] | txwait-history
| vlan mapping ]
```

Syntax Description

interface-range	(Optional) Displays the type of interface.
aggregate-counters	(Optional) Displays interface aggregate counters for Fibre Channel interfaces.
bcredit	(Optional) Displays buffer-to-buffer credit information for Fibre Channel interfaces.
brief	(Optional) Displays brief information for Fibre Channel and Ethernet interfaces.
capabilities	(Optional) Displays hardware port capabilities for Fibre Channel and Ethernet interfaces.
counters	(Optional) Displays the interface counter information for Fibre Channel and Ethernet interfaces.
module number	(Optional) Displays interface counter information of a module for Ethernet interfaces.
detailed	(Optional) Displays detailed transceiver diagnostics information for Fibre Channel and Ethernet interface.
all	(Optional) Displays detailed information of all counters for Ethernet interfaces.
snmp	(Optional) Displays Simple Network Management Protocol (SNMP) MIB values for Ethernet interfaces.
storm-control	(Optional) Displays storm-control counter information for Ethernet interfaces.
debounce	(Optional) Displays debounce time information for Ethernet interfaces.
description	(Optional) Displays the interface description for Fibre Channel and Ethernet interfaces.
fcoe	(Optional) Displays Fibre Channel over Ethernet (FCoE) information for Ethernet interfaces.
flowcontrol	(Optional) Displays flow control information for Ethernet interfaces.
mac-address	(Optional) Displays Ethernet MAC address for Ethernet interfaces.
rxwait-history	(Optional) Displays the RxWait history graphs for Ethernet interfaces.
standby	(Optional) Displays the status of the standby supervisor's mgmt0 link when the command is issued from the active supervisor.
status	(Optional) Displays status for Ethernet interfaces.

err-disabled	(Optional) Displays error disabled status for Ethernet interfaces.
err-vlans	(Optional) Displays VLANs that have errors for Ethernet interfaces.
switchport	(Optional) Displays switch port information for Ethernet interfaces.
transceiver	(Optional) Displays the transceiver information for Fibre Channel and Ethernet interfaces.
calibrations	(Optional) Displays transceiver calibration information for Fibre Channel and Ethernet interfaces.
sprom	(Optional) Displays transceiver SPROM information for Ethernet interfaces.
trunk	(Optional) Displays the trunking status of all VSANs for Fibre Channel and Ethernet interfaces.
vsan vsan-id	(Optional) Displays the trunking status of the specified VSANs for Fibre Channel interfaces. The range is 1–4093.
txwait-history	(Optional) Displays the TxWait history graphs for Fibre Channel and Ethernet interfaces.
vlan mapping	(Optional) Displays VLAN-mapping information for Ethernet interfaces.

Command Default

Displays information for all interfaces on the switch.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
9.2(1)	Both Forward Error Correction (FEC) and Transmitter Training Signal (TTS) must be configured on Cisco MDS 48-Port 64-Gbps Fibre Channel Switching Module (DS-X9748-3072K9) to use FEC at 16-Gbps speed. A message is displayed in the show interface command output when only FEC is configured.
9.2(1)	Added the standby keyword for the mgmt interface option.

Release	Modification
8.4(2)	<p>The output of the show interface interface-range counters detailed command was completely restructured to provide an easier to understand and parse format.</p> <p>The following interface counters were added:</p> <ul style="list-style-type: none"> • Rx 5 min rate bit/sec • Tx 5 min rate bit/sec • Rx 5 min rate bytes/sec • Tx 5 min rate bytes/sec • Rx 5 min rate frames/sec • Tx 5 min rate frames/sec • Rx B2B credit remaining • Rx B2B credit remaining for VL 0 • Rx B2B credit remaining for VL 1 • Rx B2B credit remaining for VL 2 • Rx B2B credit remaining for VL 3 • Tx B2B credit remaining • Tx B2B credit remaining for VL 0 • Tx B2B credit remaining for VL 1 • Tx B2B credit remaining for VL 2 • Tx B2B credit remaining for VL 3 • Tx Low Priority B2B credit remaining • Last clearing of "show interface" counters
8.4(2)	<p>Added virtual link (VL) information for port-channels in the show interface interface-range counters detailed command output.</p>
8.4(2)	<p>The show interface fcip fcip-id command output was modified to support the RTT statistics for each TCP connection.</p>
8.4(1)	<p>This command was modified. The show hardware internal rxwait-history, show hardware internal txwait-history, and show process creditmon txwait-history module number port number commands are replaced by the show interface interface-range rxwait-history and show interface interface-range txwait-history commands.</p> <p>Added Buffer-to-Buffer State Change SOF (BB_SCs) and Buffer-to-Buffer State Change R_RDY (BB_SCr) counter information in the show interface counters detailed command.</p> <p>Added VL information in the show interface interface-range counters, show interface interface-range counters detailed, and show interface interface-range aggregate-counters command outputs.</p>

Release	Modification
8.3(1)	This command was modified. Changed the details keyword to detailed keyword for the counters option. Added beacon status in the command output.
6.2(7)	Added FEC-related command output.
6.2(5)	Added the Cisco MDS 9250i Multiservice Fabric Switch output to the show interface capabilities command.
6.2(5)	Added the command output for detailed FCIP Interface Standard Counter Information, FCIP Interface Summary of Counters for a Specified Interface, and brief FCIP Interface Counter Information for Cisco MDS 9250i Multiservice Fabric Switch.
6.2(3)	Deprecated the show interface counters performance command.
6.2(1)	Added the performance, module interval keywords to the syntax description.
4.1(1b)	Added the command output for BB_credit information for a switch port.
4.1(1b)	Added the command output for interface capabilities on a 48-port module.
3.1(2)	Added the bay | ext interface.
3.0(1)	Added the capabilities option for Fibre Channel interfaces.
1.3(1)	Added the bbcredit keyword and support for CPP and fv interfaces.
1.0(2)	This command was introduced.

Usage Guidelines

You can specify a range of interfaces by issuing a command with the following example format:

```
interface fc1/1 - 5 , fc2/5 - 7
```

The spaces are required before and after the dash (-) and before and after the comma (,).

The show interface slot/port transceiver command can only be issued on a switch in the Cisco MDS 9100 Series if the SFP is present.

The show interface mgmt number standby command displays the status of the standby supervisor mgmt0 interface. The following message is displayed when the management port on the standby supervisor is down:

```
Warning: Standby supervisor mgmt0 link is down. Proceeding with the install will cause the
standby supervisor to become active. This will result in loss of out of band management
access to the switch.
```

[Table 10: Interface Types for the Show Interface Command, on page 1516](#) lists the interface types that are supported by the show interface command.

In the show interface port/slot counters [detailed] command output, the Transmit B2B credit transitions to zero counter increments every time the transmit buffer-to-buffer credits goes to zero. When the ISLs are configured in the TX credit double-queue mode using the system default tx-credit double-queue command, some TX B2B credits are reserved for high-priority traffic and remaining credits are used for low-priority traffic from the total TX B2B credits configuration. Hence, when ISLs are in TX credit double-queue mode,

this counter does not increment though the low-priority credits go to zero because the high-priority credits are still available.

For interfaces in R_RDY mode, the BB_credits can all be in one queue (single-queue) or split into high-priority and low-priority queues (double-queue). This is configured via system default tx-credit double-queue command. The double-queue mode allocates 15 BB_credits to high-priority and the remaining 485 (default on E ports) to low-priority.

If a link is configured in the single-queue mode on one side of the link and the double-queue mode on the other side, the Rx credits on the single-queue side of the link do not display the exact number of Tx credits remaining on the double-queue mode side of the link. The reason is that in the double-queue mode, Tx credits are restricted to send 485 frames (low-priority) at a time even at line rate. In the steady state, 6 extra (proxy) Rx credits are available and this adds up to 491 Rx BB_credits available at all times. Hence, there will a minimum of 9 Rx BB_credits displayed on the switch in the single-queue mode in the show interface range bbcredit command output. Rx transitions to zero counter will not increment in this case.



Note The TxWait history output displays VL3 data for interfaces that are in ER_RDY mode for 32 Gbps switching modules and switches only.

Table 10: Interface Types for the Show Interface Command

Interface Type	Description
cpp slot/port	Displays information for a virtualization interface.
fc slot/port	Displays the Fibre Channel interface in the specified slot or port.
fc-tunnel tunnel-id	Displays description of the specified Fibre Channel tunnel 1–4095.
fcip interface-number	Specifies an FCIP interface. The range is 1–255.
fv slot/dpp-number/fv-port	Displays information for the virtual F port (FV port) interface in the specified slot along with the data path processor (DPP) number and the FV port number.
gigabitethernet slot/port	Displays information for a Gigabit Ethernet interface at the specified slot and port.
gigabitethernet slot/port. subinterface-number	Displays information for a Gigabit Ethernet subinterface at the specified slot and port followed by a dot (.) indicator and the subinterface number. The subinterface range is 1–4093.
iscsi slot/port	Displays the description of the iSCSI interface in the specified slot and port.
mgmt 0	Displays the description of the management interface.
port-channel port-channel-number	Displays the port-channel interface specified by the port-channel number. The range is 1–128.

Interface Type	Description
port-channel port-channel-number.subinterface-number	Displays the port-channel subinterface that is specified by the port-channel number followed by a dot (.) indicator and the subinterface number. The port channel number range is 1–128. The subinterface range is 1–4093 .
sup-fc 0	Displays the in-band interface details.
vsan vsan-id	Displays information for a VSAN. The range is 1–4093 .

The following table provides descriptions for interface counters:

Table 11: Descriptions of the Interface Counters

Interface Counters	Descriptions
Rx 5 min rate bit/sec	The number of received frames in bits per second as an average over 5 minutes.
Tx 5 min rate bit/sec	The number of transmitted frames in bits per second as an average over 5 minutes.
Rx 5 min rate bytes/sec	The number of received frames in bytes per second as an average over 5 minutes.
Tx 5 min rate bytes/sec	The number of transmitted frames in bytes per second as an average over 5 minutes.
Rx 5 min rate frames/sec	The number of received frames per second as an average over 5 minutes.
Tx 5 min rate frames/sec	The number of transmitted frames per second as an average over 5 minutes.
Rx total frames	The number of frames received.
Rx total bytes	The number of frames received, in bytes.
Rx class-2 frames	The number of class 2 frames received.
Rx class-2 bytes	The number of class 2 frames received, in bytes.
Rx class-2 frames discarded	The number of class 2 received frames discarded.
Rx class-2 port reject frames	The number of class 2 received frames rejected by port.
Rx class-3 frames	The number of class 3 frames received.
Rx class-3 bytes	The number of class 3 frames received, in bytes.
Rx class-f frames	The number of class f frames received.
Rx class-f bytes	The number of class f frames received, in bytes.
Rx total discards	The total number of received frames that were discarded.
Rx total errors	The total number of received frames that had errors.

Interface Counters	Descriptions
Tx total discards	The total number of transmitted frames that were discarded.
Tx total errors	The total number of transmitted frames that had errors.
Tx total frames	The number of frames transmitted.
Tx total bytes	The number of frames transmitted, in bytes.
Tx class-2 frames	The number of class 2 frames transmitted.
Tx class-2 bytes	The number of class 2 frames transmitted, in bytes.
Tx class-3 frames	The number of class 3 frames transmitted.
Tx class-3 bytes	The number of class 3 frames transmitted, in bytes.
Rx class-3 frames discarded	The number of class 3 received frames that were discarded.
Tx class-f frames	The number of class f frames transmitted.
Tx class-f bytes	The number of class f frames transmitted, in bytes.
Rx class-f frames discarded	The number of class f received frames that were discarded.
Rx total multicast	The total number of multicast frames received.
Tx total multicast	The total number of multicast frames transmitted.
Rx total broadcast	The total number of broadcast frames received.
Tx total broadcast	The total number of broadcast frames transmitted.
Rx total unicast	The total number of unicast frames received.
Tx total unicast	The total number of unicast frames transmitted.
Rx Link failures	The number of times a Fibre Channel link was down because of the received Offline Sequence (OLS) or Not Operational Sequence (NOS) errors.
Rx Sync losses	The number of times a Fibre Channel port experienced loss of synchronization in Rx.
Rx Signal losses	The number of times a Fibre Channel port experienced loss of laser signal.
Rx Invalid transmission words	The number of times invalid transmission words were received by a port.
Rx Invalid CRCs	The number of times frames with Internal Cyclic Redundancy Check (CRC) errors were received by a port.
Rx Delimiter errors	The number of times frames are received with delimiter (start-of-frame [So]) errors.

Interface Counters	Descriptions
Rx Link Reset(LR) while link is active	The number of times a Fibre Channel port received Link Reset (LR) primitive sequence when the port was active.
Tx Link Reset(LR) while link is active	The number of times a Fibre Channel port transmitted Link Reset (LR) primitive sequence when the port was active.
Rx Offline Sequences (OLS)	The number of times a Fibre Channel port received Offline State (OLS) primitive sequence.
Tx Offline Sequences (OLS)	The number of times a Fibre Channel port transmitted Offline State (OLS) primitive sequence.
Rx Runt frames	The number of times a Fibre Channel port receives frames that are shorter than the minimum allowable frame length regardless of the CRC/FCS error.
Rx Jabber frames	The number of times a Fibre Channel port receives frames that are longer than the maximum frame length and also have a CRC/FCS error.
Rx too long	The number of times long frames were received beyond the configured maximum Fibre Channel frame size.
Rx too short	The number of times short frames were received beyond the configured maximum Fibre Channel frame size.
Rx Link Reset Responses (LRR)	The number of times a Fibre Channel port received Link Reset Responses (LRR) primitive sequence when the port was active.
Tx Link Reset Responses (LRR)	The number of times a Fibre Channel port transmitted Link Reset Responses (LRR) primitive sequence when the port was active.
Rx Non-Operational Sequences (NOS)	The number of times a Fibre Channel link received Not Operational Sequence (NOS) primitive sequence.
Tx Non-Operational Sequences (NOS)	The number of times a Fibre Channel link transmitted Not Operational Sequence (NOS) primitive sequence.
Rx frames with EOF aborts	The number of times frames are received with end-of-frame [EOF]) errors.
Rx unknown class frames	The number of times unknown class frames were received.
Rx FEC corrected blocks	The number of received transmission block errors corrected by FEC.
Rx FEC uncorrected blocks	The number of received transmission block errors unable to be corrected by FEC.

Interface Counters	Descriptions
Rx F8 type LIP sequence errors	The number of times frames are received with F8 type LIP sequence errors.
Tx F8 type LIP sequence errors	The number of times frames are transmitted with F8 type LIP sequence errors.
Rx Non F8 type LIP sequence errors	The number of times frames are received with non-F8 type LIP sequence errors.
Tx Non F8 type LIP sequence errors	The number of times frames are transmitted with non-F8 type LIP sequence errors.
Zone drops	The number of frames that were dropped due to zoning not configured for a device on a port group.
FIB drops for ports 1–16	The number of frames that were dropped due to forwarding lookup miss on a port group.
XBAR errors for ports 1–16	The number of frames that were dropped due to fabric switching (crossbar) errors on a port group.
Other drop count	The number of frames that were dropped due to other errors on a port group.
Tx Timeout Discards	The number of times timeout discards were transmitted.
Tx Credit Loss	The number of times Credit Loss Recovery was initiated after 1 second (F or NP port) or 1.5 seconds (E port) of continuous zero Tx credits. This transmits a Link Reset to reset the credits on the link.
Tx B2B credit transitions to zero	The number of times the interface was at zero Tx BB_credits remaining and unable to transmit.
Rx B2B credit transitions to zero	The number of times the interface was at zero Rx BB_credits remaining.
TxWait 2.5us due to lack of transmit credits	The number of times an interface was at zero Tx credits for 2.5 microseconds and there were output frames to transmit.
Percentage TxWait not available for last 1s/1m/1h/72h	The percentage of TxWait as calculated in the last 1 second, 1 minute, 1 hour, and 72-hour intervals.
TxWait 2.5us due to lack of transmit credits for VL 0	The number of times an interface was at zero Tx credits for 2.5 microseconds on virtual link 0 and there were output frames to transmit.
TxWait 2.5us due to lack of transmit credits for VL 1	The number of times an interface was at zero Tx credits for 2.5 microseconds on virtual link 1 and there were output frames to transmit.
TxWait 2.5us due to lack of transmit credits for VL 2	The number of times an interface was at zero Tx credits for 2.5 microseconds on virtual link 2 and there were output frames to transmit.

Interface Counters	Descriptions
TxWait 2.5us due to lack of transmit credits for VL 3	The number of times an interface was at zero Tx credits for 2.5 microseconds on virtual link 3 and there were output frames to transmit.
Tx B2B credit transitions to zero for VL 0	The number of times the interface was at zero Tx BB_credits remaining and unable to transmit on virtual link 0.
Tx B2B credit transitions to zero for VL 1	The number of times the interface was at zero Tx BB_credits remaining and unable to transmit on virtual link 1.
Tx B2B credit transitions to zero for VL 2	The number of times the interface was at zero Tx BB_credits remaining and unable to transmit on virtual link 2.
Tx B2B credit transitions to zero for VL 3	The number of times the interface was at zero Tx BB_credits remaining and unable to transmit on virtual link 3.
Rx B2B credit transitions to zero for VL 0	The number of times the interface was at zero Rx BB_credits remaining for virtual link 0.
Rx B2B credit transitions to zero for VL 1	The number of times the interface was at zero Rx BB_credits remaining for virtual link 1.
Rx B2B credit transitions to zero for VL 2	The number of times the interface was at zero Rx BB_credits remaining for virtual link 2.
Rx B2B credit transitions to zero for VL 3	The number of times the interface was at zero Rx BB_credits remaining for virtual link 3.
BB_SCs credit resend actions	The number of times port detected lost frames(s) and corrected the peer credit accounting by resending extra credits (R_RDYs).
BB_SCr Tx credit increment actions	The number of times port detected lost R_RDY(s) and corrected the local credit accounting by incrementing TX B2B credit available status.
Rx B2B credit remaining	The number of receive BB_credits remaining.
Rx B2B credit remaining for VL 0	The number of receive BB_credits remaining in virtual link 0.
Rx B2B credit remaining for VL 1	The number of receive BB_credits remaining in virtual link 1.
Rx B2B credit remaining for VL 2	The number of receive BB_credits remaining in virtual link 2.
Rx B2B credit remaining for VL 3	The number of receive BB_credits remaining in virtual link 3.
Tx B2B credit remaining	The number of transmit BB_credits remaining.

Interface Counters	Descriptions
Tx B2B credit remaining for VL 0	The number of transmit BB_credits remaining in virtual link 0.
Tx B2B credit remaining for VL 1	The number of transmit BB_credits remaining in virtual link 1.
Tx B2B credit remaining for VL 2	The number of transmit BB_credits remaining in virtual link 2.
Tx B2B credit remaining for VL 3	The number of transmit BB_credits remaining in virtual link 3.
Tx Low Priority B2B credit remaining	The number of low-priority transmit BB_credits remaining.
Last clearing of "show interface" counters	The duration since the interface counters were last cleared.

Examples

The following example shows how to display information about a Fibre Channel interface:

```
switch# show interface fc1/15
fc1/15 is up
  Hardware is Fibre Channel, SFP is short wave laser w/o OFC (SN)
  Port WWN is 20:0f:00:2a:6a:fd:04:a0
  Peer port WWN is 20:0d:00:de:fb:74:df:20
  Admin port mode is auto, trunk mode is on
  snmp link state traps are enabled
  Port mode is TE
  Port vsan is 1
  Admin Speed is auto
  Operating Speed is 8 Gbps
  Rate mode is dedicated
  Port flow-control is R_RDY

  Transmit B2B Credit is 500
  Receive B2B Credit is 64
  B2B State Change: Admin(on), Oper(up), Negotiated Value(14)
  Receive data field Size is 2112
  Beacon is turned off
  Logical type is core
  Trunk vsans (admin allowed and active) (1-5)
  Trunk vsans (up) (2)
  Trunk vsans (isolated) (1,3-5)
  Trunk vsans (initializing) ()
  5 minutes input rate 2176 bits/sec,272 bytes/sec, 2 frames/sec
  5 minutes output rate 2080 bits/sec,260 bytes/sec, 2 frames/sec
    552 frames input,53500 bytes
      0 discards,0 errors
      0 invalid CRC/FCS,0 unknown class
      0 too long,0 too short
    552 frames output,50572 bytes
      0 discards,0 errors
      0 input OLS,0 LRR,0 NOS,0 loop inits
      1 output OLS,2 LRR, 0 NOS, 1 loop inits
  64 receive B2B credit remaining
  500 transmit B2B credit remaining
  485 low priority transmit B2B credit remaining
  Interface last changed at Mon Sep 27 05:01:55 2021
```

```

Last clearing of "show interface" counters: never
Transceiver Information:
  Serial number is FNS17502EKA
  Cisco pid is DS-SFP-FC8G-SW
  Temperature 28.84 C, Voltage 3.31 V, Current 6.85 mA, TxPower -3.22 dBm, RxPower -4.31
dBm

```

The following example shows how to display the status of the standby supervisor's mgmt0 link when the command is issued from the active supervisor:

```

switch# show interface mgmt 0 standby
mgmt0 is up
  Hardware address is 70:18:a7:7e:f8:94
  MTU 1500 bytes

```

The following example shows how to display detailed information for an interface:



Note This command output is applicable for Cisco MDS NX-OS Release 8.4(2) and later releases. The command output varies if you are using Cisco MDS NX-OS Release 8.4(1a) or earlier releases.

```

switch# show interface fc1/4 counters detailed
fc1/4
  Rx 5 min rate bit/sec:                0
  Tx 5 min rate bit/sec:                0
  Rx 5 min rate bytes/sec:              0
  Tx 5 min rate bytes/sec:              0
  Rx 5 min rate frames/sec:             0
  Tx 5 min rate frames/sec:             0

Total Stats:
  Rx total frames:                      9
  Tx total frames:                      21
  Rx total bytes:                       716
  Tx total bytes:                       1436
  Rx total multicast:                   0
  Tx total multicast:                   0
  Rx total broadcast:                   0
  Tx total broadcast:                   0
  Rx total unicast:                     9
  Tx total unicast:                     21
  Rx total discards:                    0
  Tx total discards:                    0
  Rx total errors:                      0
  Tx total errors:                      0
  Rx class-2 frames:                    0
  Tx class-2 frames:                    0
  Rx class-2 bytes:                     0
  Tx class-2 bytes:                     0
  Rx class-2 frames discards:            0
  Rx class-2 port reject frames:        0
  Rx class-3 frames:                    9
  Tx class-3 frames:                    21
  Rx class-3 bytes:                     716
  Tx class-3 bytes:                     1436
  Rx class-3 frames discards:            0
  Rx class-f frames:                    0
  Tx class-f frames:                    0

```

```

Rx class-f bytes: 0
Tx class-f bytes: 0
Rx class-f frames discards: 0

Link Stats:
Rx Link failures: 0
Rx Sync losses: 0
Rx Signal losses: 0
Rx Primitive sequence protocol errors: 0
Rx Invalid transmission words: 0
Rx Invalid CRCs: 0
Rx Delimiter errors: 0
Rx fragmented frames: 0
Rx frames with EOF aborts: 0
Rx unknown class frames: 0
Rx Runt frames: 0
Rx Jabber frames: 0
Rx too long: 0
Rx too short: 0
Rx FEC corrected blocks: 0
Rx FEC uncorrected blocks: 0
Rx Link Reset(LR) while link is active: 0
Tx Link Reset(LR) while link is active: 0
Rx Link Reset Responses(LRR): 0
Tx Link Reset Responses(LRR): 1
Rx Offline Sequences(OLS): 0
Tx Offline Sequences(OLS): 1
Rx Non-Operational Sequences(NOS): 0
Tx Non-Operational Sequences(NOS): 0

Congestion Stats:
Tx Timeout discards: 0
Tx Credit loss: 0
BB_SCs credit resend actions: 0
BB_SCr Tx credit increment actions: 0
TxWait 2.5us due to lack of transmit credits: 0
Percentage TxWait not available for last 1s/1m/1h/72h: 0%/0%/0%/0%
Rx B2B credit remaining: 32
Tx B2B credit remaining: 16
Tx Low Priority B2B credit remaining: 16
Rx B2B credit transitions to zero: 1
Tx B2B credit transitions to zero: 2

Other Stats:
Zone drops: 0
FIB drops for ports 1-16: 0
XBAR errors for ports 1-16: 0
Other drop count: 0

Last clearing of "show interface" counters : never

```

The following example shows how to display detailed counters information for all interfaces:


Note

This command output is applicable for Cisco MDS NX-OS Release 8.4(2) and later releases. The command output varies if you are using Cisco MDS NX-OS Release 8.4(1a) or earlier releases.

```

switch# show interface counters detailed
sw-9710-101# sh int cou detailed

```

```

fcl/1
  Rx 5 min rate bit/sec: 0
  Tx 5 min rate bit/sec: 0
  Rx 5 min rate bytes/sec: 0
  Tx 5 min rate bytes/sec: 0
  Rx 5 min rate frames/sec: 0
  Tx 5 min rate frames/sec: 0

Total Stats:
  Rx total frames: 0
  Tx total frames: 0
  Rx total bytes: 0
  Tx total bytes: 0
  Rx total multicast: 0
  Tx total multicast: 0
  Rx total broadcast: 0
  Tx total broadcast: 0
  Rx total unicast: 0
  Tx total unicast: 0
  Rx total discards: 0
  Tx total discards: 0
  Rx total errors: 0
  Tx total errors: 0
  Rx class-2 frames: 0
  Tx class-2 frames: 0
  Rx class-2 bytes: 0
  Tx class-2 bytes: 0
  Rx class-2 frames discards: 0
  Rx class-2 port reject frames: 0
  Rx class-3 frames: 0
  Tx class-3 frames: 0
  Rx class-3 bytes: 0
  Tx class-3 bytes: 0
  Rx class-3 frames discards: 0
  Rx class-f frames: 0
  Tx class-f frames: 0
  Rx class-f bytes: 0
  Tx class-f bytes: 0
  Rx class-f frames discards: 0

Link Stats:
  Rx Link failures: 0
  Rx Sync losses: 0
  Rx Signal losses: 0
  Rx Primitive sequence protocol errors: 0
  Rx Invalid transmission words: 0
  Rx Invalid CRCs: 0
  Rx Delimiter errors: 0
  Rx fragmented frames: 0
  Rx frames with EOF aborts: 0
  Rx unknown class frames: 0
  Rx Runt frames: 0
  Rx Jabber frames: 0
  Rx too long: 0
  Rx too short: 0
  Rx FEC corrected blocks: 0
  Rx FEC uncorrected blocks: 0
  Rx Link Reset(LR) while link is active: 0
  Tx Link Reset(LR) while link is active: 0
  Rx Link Reset Responses(LRR): 0
  Tx Link Reset Responses(LRR): 0
  Rx Offline Sequences(OLS): 0
  Tx Offline Sequences(OLS): 0
  Rx Non-Operational Sequences(NOS): 0

```

show interface

```

Tx Non-Operational Sequences (NOS) :                                0

Loop Stats:
Rx F8 type LIP sequence errors:                                    0
Tx F8 type LIP sequence errors:                                    0
Rx Non F8 type LIP sequence errors:                                0
Tx Non F8 type LIP sequence errors:                                0

Congestion Stats:
Tx Timeout discards:                                             0
Tx Credit loss:                                                  0
BB_SCs credit resend actions:                                     0
BB_SCr Tx credit increment actions:                               0
TxWait 2.5us due to lack of transmit credits:                    0
Percentage TxWait not available for last 1s/1m/1h/72h:           0%/0%/0%/0%
Rx B2B credit remaining:                                          1
Tx B2B credit remaining:                                          0
Tx Low Priority B2B credit remaining:                              0
Rx B2B credit transitions to zero:                                0
Tx B2B credit transitions to zero:                                0

Last clearing of "show interface" counters :                       3w 1d

fc1/2
Rx 5 min rate bit/sec:                                           0
Tx 5 min rate bit/sec:                                           0
Rx 5 min rate bytes/sec:                                          0
Tx 5 min rate bytes/sec:                                          0
Rx 5 min rate frames/sec:                                         0
Tx 5 min rate frames/sec:                                         0

Total Stats:
Rx total frames:                                                 0
Tx total frames:                                                 0
Rx total bytes:                                                  0
Tx total bytes:                                                  0
Rx total multicast:                                              0
Tx total multicast:                                              0
Rx total broadcast:                                              0
Tx total broadcast:                                              0
Rx total unicast:                                                0
Tx total unicast:                                                0
Rx total discards:                                               0
Tx total discards:                                               0
Rx total errors:                                                 0
Tx total errors:                                                 0
Rx class-2 frames:                                               0
Tx class-2 frames:                                               0
Rx class-2 bytes:                                                0
Tx class-2 bytes:                                                0
Rx class-2 frames discards:                                       0
Rx class-2 port reject frames:                                    0
Rx class-3 frames:                                               0
Tx class-3 frames:                                               0
Rx class-3 bytes:                                                0
Tx class-3 bytes:                                                0
Rx class-3 frames discards:                                       0
Rx class-f frames:                                               0
Tx class-f frames:                                               0
Rx class-f bytes:                                                0
Tx class-f bytes:                                                0
Rx class-f frames discards:                                       0

Link Stats:

```

```

Rx Link failures: 0
Rx Sync losses: 0
Rx Signal losses: 0
Rx Primitive sequence protocol errors: 0
Rx Invalid transmission words: 0
Rx Invalid CRCs: 0
Rx Delimiter errors: 0
Rx fragmented frames: 0
Rx frames with EOF aborts: 0
Rx unknown class frames: 0
Rx Runt frames: 0
Rx Jabber frames: 0
Rx too long: 0
Rx too short: 0
Rx FEC corrected blocks: 0
Rx FEC uncorrected blocks: 0
Rx Link Reset(LR) while link is active: 0
Tx Link Reset(LR) while link is active: 0
Rx Link Reset Responses(LRR): 0
Tx Link Reset Responses(LRR): 0
Rx Offline Sequences(OLS): 0
Tx Offline Sequences(OLS): 0
Rx Non-Operational Sequences(NOS): 0
Tx Non-Operational Sequences(NOS): 0

Loop Stats:
Rx F8 type LIP sequence errors: 0
Tx F8 type LIP sequence errors: 0
Rx Non F8 type LIP sequence errors: 0
Tx Non F8 type LIP sequence errors: 0

Congestion Stats:
Tx Timeout discards: 0
Tx Credit loss: 0
BB_SCs credit resend actions: 0
BB_SCr Tx credit increment actions: 0
TxWait 2.5us due to lack of transmit credits: 0
Percentage TxWait not available for last 1s/1m/1h/72h: 0%/0%/0%/0%
Rx B2B credit remaining: 1
Tx B2B credit remaining: 0
Tx Low Priority B2B credit remaining: 0
Rx B2B credit transitions to zero: 0
Tx B2B credit transitions to zero: 0

Last clearing of "show interface" counters : 3w 1d

fc1/3
Rx 5 min rate bit/sec: 0
Tx 5 min rate bit/sec: 0
Rx 5 min rate bytes/sec: 0
Tx 5 min rate bytes/sec: 0
Rx 5 min rate frames/sec: 0
Tx 5 min rate frames/sec: 0

Total Stats:
Rx total frames: 0
Tx total frames: 0
Rx total bytes: 0
Tx total bytes: 0
Rx total multicast: 0
Tx total multicast: 0
Rx total broadcast: 0
Tx total broadcast: 0
Rx total unicast: 0

```

```

Tx total unicast:                                0
Rx total discards:                              0
Tx total discards:                              0
Rx total errors:                                0
Tx total errors:                                0
Rx class-2 frames:                              0
Tx class-2 frames:                              0
Rx class-2 bytes:                               0
Tx class-2 bytes:                               0
Rx class-2 frames discards:                     0
Rx class-2 port reject frames:                  0
Rx class-3 frames:                              0
Tx class-3 frames:                              0
Rx class-3 bytes:                               0
Tx class-3 bytes:                               0
Rx class-3 frames discards:                     0
Rx class-f frames:                              0
Tx class-f frames:                              0
Rx class-f bytes:                               0
Tx class-f bytes:                               0
Rx class-f frames discards:                     0

Link Stats:
Rx Link failures:                              0
Rx Sync losses:                                0
Rx Signal losses:                              0
Rx Primitive sequence protocol errors:          0
Rx Invalid transmission words:                  0
Rx Invalid CRCs:                               0
Rx Delimiter errors:                           0
Rx fragmented frames:                           0
Rx frames with EOF aborts:                      0
Rx unknown class frames:                       0
Rx Runt frames:                                 0
Rx Jabber frames:                               0
Rx too long:                                    0
Rx too short:                                   0
Rx FEC corrected blocks:                        0
Rx FEC uncorrected blocks:                      0
Rx Link Reset(LR) while link is active:         0
Tx Link Reset(LR) while link is active:         0
Rx Link Reset Responses(LRR):                  0
Tx Link Reset Responses(LRR):                  0
Rx Offline Sequences(OLS):                      0
Tx Offline Sequences(OLS):                      0
Rx Non-Operational Sequences(NOS):              0
Tx Non-Operational Sequences(NOS):              0

Loop Stats:
Rx F8 type LIP sequence errors:                 0
Tx F8 type LIP sequence errors:                 0
Rx Non F8 type LIP sequence errors:             0
Tx Non F8 type LIP sequence errors:             0

Congestion Stats:
Tx Timeout discards:                            0
Tx Credit loss:                                 0
BB_SCs credit resend actions:                   0
BB_SCr Tx credit increment actions:             0
TxWait 2.5us due to lack of transmit credits:  0
Percentage TxWait not available for last 1s/1m/1h/72h: 0%/0%/0%/0%
Rx B2B credit remaining:                        1
Tx B2B credit remaining:                        0
Tx Low Priority B2B credit remaining:           0

```



```

Rx B2B credit transitions to zero:          0
Tx B2B credit transitions to zero:          0

Last clearing of "show interface" counters :    3w 1
.
.
.

```

The following example shows how to display detailed counters information for all interfaces where the links are operating in the Extended Receiver Ready (ER_RDY) or high-low (double-queue) mode:



Note This command output is applicable for Cisco MDS NX-OS Release 8.4(2) and later releases. The command output varies if you are using Cisco MDS NX-OS Release 8.4(1a) or earlier releases.

```

switch# show interface counters detailed
fc1/1
  Rx 5 min rate bit/sec:          192
  Tx 5 min rate bit/sec:          256
  Rx 5 min rate bytes/sec:         24
  Tx 5 min rate bytes/sec:         32
  Rx 5 min rate frames/sec:         0
  Tx 5 min rate frames/sec:         0

Total Stats:
  Rx total frames:                325
  Tx total frames:                328
  Rx total bytes:                 21304
  Tx total bytes:                 27008
  Rx total multicast:              0
  Tx total multicast:              0
  Rx total broadcast:              0
  Tx total broadcast:              0
  Rx total unicast:               325
  Tx total unicast:               328
  Rx total discards:               0
  Tx total discards:               0
  Rx total errors:                 0
  Tx total errors:                 0
  Rx class-2 frames:               0
  Tx class-2 frames:               0
  Rx class-2 bytes:                 0
  Tx class-2 bytes:                 0
  Rx class-2 frames discards:       0
  Rx class-2 port reject frames:    0
  Rx class-3 frames:               6
  Tx class-3 frames:               9
  Rx class-3 bytes:                384
  Tx class-3 bytes:                504
  Rx class-3 frames discards:       0
  Rx class-f frames:               319
  Tx class-f frames:               319
  Rx class-f bytes:                20920
  Tx class-f bytes:                26504
  Rx class-f frames discards:       0

Link Stats:

```

```

Rx Link failures:                                0
Rx Sync losses:                                  0
Rx Signal losses:                                0
Rx Primitive sequence protocol errors:          0
Rx Invalid transmission words:                  0
Rx Invalid CRCs:                                0
Rx Delimiter errors:                            0
Rx fragmented frames:                           0
Rx frames with EOF aborts:                       0
Rx unknown class frames:                        0
Rx Runt frames:                                  0
Rx Jabber frames:                                0
Rx too long:                                     0
Rx too short:                                    0
Rx FEC corrected blocks:                         0
Rx FEC uncorrected blocks:                       0
Rx Link Reset(LR) while link is active:         2
Tx Link Reset(LR) while link is active:         1
Rx Link Reset Responses(LRR):                    3
Tx Link Reset Responses(LRR):                    2
Rx Offline Sequences(OLS):                       2
Tx Offline Sequences(OLS):                       3
Rx Non-Operational Sequences(NOS):              0
Tx Non-Operational Sequences(NOS):              0

Loop Stats:
Rx F8 type LIP sequence errors:                  0
Tx F8 type LIP sequence errors:                  0
Rx Non F8 type LIP sequence errors:              5
Tx Non F8 type LIP sequence errors:              2

Congestion Stats:
Tx Timeout discards:                             0
Tx Credit loss:                                  0
BB_SCs credit resend actions:                    0
BB_SCr Tx credit increment actions:              0
TxWait 2.5us due to lack of transmit credits:   0
Percentage TxWait not available for last 1s/1m/1h/72h: 0%/0%/0%/0%
Rx B2B credit remaining for VL 0:                15
Rx B2B credit remaining for VL 1:                15
Rx B2B credit remaining for VL 2:                40
Rx B2B credit remaining for VL 3:                430
Tx B2B credit remaining for VL 0:                15
Tx B2B credit remaining for VL 1:                15
Tx B2B credit remaining for VL 2:                40
Tx B2B credit remaining for VL 3:                430
Rx B2B credit transitions to zero for VL 0:      6
Rx B2B credit transitions to zero for VL 1:      0
Rx B2B credit transitions to zero for VL 2:      0
Rx B2B credit transitions to zero for VL 3:      0
Tx B2B credit transitions to zero for VL 0:      8
Tx B2B credit transitions to zero for VL 1:      1
Tx B2B credit transitions to zero for VL 2:      1
Tx B2B credit transitions to zero for VL 3:      1

Last clearing of "show interface" counters :     never
.
.
.

```

The following example shows how to display detailed counters information for port-channel where the links are operating in R_RDY and ER_RDY modes:

**Note**

- 16-Gbps Switching Modules and Switches do not display per VL TxWait values even when the links are operating in ER_RDY mode.
- If the port-channel members include members from 16-Gbps Switching Modules or Switches and 32-Gbps Switching Modules or Switches and the links are operating in R_RDY and ER_RDY modes, the TxWait value is displayed as below:
 - TxWait value for links operating in R_RDY mode is displayed as an aggregate value of all the links, including the links operating in ER_RDY mode.
 - TxWait value for links operating in ER_RDY mode is displayed as an aggregate value of all the ER_RDY links per VL.
- Port-channel member interfaces should be uniformly in either R_RDY or ER_RDY mode. They should only be in both modes when the members are being reconfigured from one mode to the other.
- For links operating in ER_RDY mode, the VL data in the output displays the available BB_credits for VL0, VL1, VL2, and VL3 respectively.
- This command output is applicable for Cisco MDS NX-OS Release 8.4(1a) and earlier releases. The command output varies if you are using Cisco MDS NX-OS Release 8.4(2) or later releases.

```

switch# show interface port-channel 4 counters detailed
port-channel4
  39709968 frames, 85296973744 bytes received
  0 class-2 frames, 0 bytes received
  0 class-2 discards
  0 F_BSY frames, 0 F_RJT frames
    generated against class-2 frames
  0 port reject frames
  39709950 class-3 frames, 85296972600 bytes received
  18 class-f frames, 1144 bytes received
  0 discards, 0 errors received
  0 discards, 0 errors transmitted
  3061772 frames, 6576648708 bytes transmitted
  0 class-2 frames, 0 bytes transmitted
  3061754 class-3 frames, 6576647592 bytes transmitted
  0 class-3 frames discarded
  18 class-f frames, 1116 bytes transmitted
  0 class-f frames discarded
  0 multicast packets received, 0 transmitted
  0 broadcast packets received, 0 transmitted
  39709968 unicast packets received, 3061772 transmitted
  0 timeout discards, 0 credit loss
  0 link failures, 0 sync losses,      0 signal losses
  0 primitive sequence protocol errors
  0 invalid transmission words
  0 invalid CRCs, 0 Delimiter Errors
  0 address identifier errors
  0 link reset received while link is active
  0 link reset transmitted while link is active
  0 Offline Sequence errors received
  0 Offline Sequence errors transmitted
  0 frames received that are shorter than
    the minimum allowable frame length

```

```

    regardless of the CRC/FCS error
0 frames received that are longer than
  the maximum frame length and also have a
  CRC/FCS error
2.5us TxWait due to lack of transmit credits for VL 0-3: 0, 0, 0, 8470722
6582015 2.5us TxWait due to lack of transmit credits
0 frames received with length greater
  than what was agreed to in FLOGI/PLOGI
0 frames received with length less than
  the minimum indicated by the frame header
0 link reset responses received
0 link reset responses transmitted
0 non-operational sequences received
0 non-operational sequences transmitted
0 fragmented frames received
0 frames received with EOF aborts
0 unknown class frames received
0 8b10b disparity errors
0 frames discarded
0 Exchange Link Parameters switch fabric
  internal link service request failures
Transmit B2B credit transitions to zero for VL 0-3: 0, 0, 0, 643676
Receive B2B credit transitions to zero for VL 0-3: 0, 0, 0, 0
1297804 Transmit B2B credit transitions to zero
0 Receive B2B credit transitions to zero
0 Enhanced Inter Switch Link (EISL) frames
  discarded
0 framing errors
0 F8 type LIP sequence errors received
0 F8 type LIP sequence errors issued
0 Non F8 type LIP sequence errors received
0 Non F8 type LIP sequence errors issued
0 fec corrected blocks
0 fec uncorrected blocks
0 BB_SCs credit resend actions, 0 BB_SCr Tx credit increment actions
Percentage TxWait not available for last 1s/1m/1h/72h: 0%/16%/0%/0%

```

The following example shows how to display aggregate counters information for an interface:

```

switch# show interface fc1/3 aggregate-counters
fc1/3
 5 minutes input rate 192 bits/sec, 24 bytes/sec, 0 frames/sec
 5 minutes output rate 160 bits/sec, 20 bytes/sec, 0 frames/sec
40022 frames input, 2081144 bytes
 0 class-2 frames, 0 bytes
 40022 class-3 frames, 2081144 bytes
 0 class-f frames, 0 bytes
 0 discards, 0 errors, 0 CRC/FCS
 0 unknown class, 0 too long, 0 too short
40022 frames output, 1760968 bytes
 0 class-2 frames, 0 bytes
 40022 class-3 frames, 1760968 bytes
 0 class-f frames, 0 bytes
 0 discards, 0 errors
0 input OLS, 0 LRR, 0 NOS, 0 loop inits
0 output OLS, 0 LRR, 0 NOS, 0 loop inits
0 link failures, 0 sync losses, 0 signal losses
 0 transmit B2B credit transitions to zero
 0 receive B2B credit transitions to zero
 32 receive B2B credit remaining
 80 transmit B2B credit remaining
 80 low priority transmit B2B credit remaining

```


The following example shows how to display the BB_credit information for a switch port:

```
switch# show interface fcl/1 bbcredit
fcl/1 is up
  Transmit B2B Credit is 16
  Receive B2B Credit is 16
    17 receive B2B credit remaining
    16 transmit B2B credit remaining
```

The following example shows how to display information about the in-band interface:

```
switch# show interface sup-fc0
sup-fc0 is up
  Hardware is FastEthernet, address is 0000.0000.0000
  MTU 2596 bytes, BW 1000000 Kbit
  66 packets input, 7316 bytes
  Received 0 multicast frames, 0 compressed
  0 input errors, 0 frame, 0 overrun 0 fifo
  64 packets output, 28068 bytes, 0 underruns
  0 output errors, 0 collisions, 0 fifo
  0 carrier errors
```

The following example shows how to display information about a VSAN interface:

```
switch# show interface vsan 2
vsan2 is up, line protocol is up
  WWPN is 10:00:00:05:30:00:59:1f, FCID is 0xb90100
  Internet address is 10.1.1.1/24
  MTU 1500 bytes, BW 1000000 Kbit
  0 packets input, 0 bytes, 0 errors, 0 multicast
  0 packets output, 0 bytes, 0 errors, 0 dropped
```

The following example shows how to display description information for all interfaces:

```
switch# show interface description
fcl/1
  no description
fcl/2
  no description
fcl/15
fcAn1
sup-fc0 is up
mgmt0 is up
vsan1 - IPFC interface
port-channel 15
no description
port-channel 98
no description
```

The following example shows how to display the debounce time information for Ethernet interfaces:

```
switch# show interface ethernet1/3 debounce
```

Port	Debounce time	Value(ms)	Debounce(link-up)	Value(ms)
Eth1/3	enable	100		

The following example shows how to display the FCoE interface information:

```
switch# show interface ethernet1/3 fcoe
Ethernet1/3 is FCoE UP
vfcl/3 is bound
```

The following example shows how to display the flow control information for Ethernet interfaces:

```
switch# show interface ethernet1/3 flowcontrol
```

```
-----
Port          Send FlowControl  Receive FlowControl  RxPause  TxPause
              admin   oper    admin   oper
-----
Eth1/3       off    off     off     off      0       0
-----
```

The following example shows how to display the switch port information for Ethernet interfaces:

```
switch# show interface ethernet1/3 switchport
Name: Ethernet1/3
Switchport: Enabled
Switchport Monitor: Not enabled
Operational Mode: trunk
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Trunking VLANs Allowed: 1-4094
Administrative private-vlan primary host-association: none
Administrative private-vlan secondary host-association: none
Administrative private-vlan primary mapping: none
Administrative private-vlan secondary mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk private VLANs: none
Operational private-vlan: none
```

The following example shows how to display brief information for a range of interfaces:

```
switch# show interface fcl/1 - 16 brief
```

```
-----
Interface  Vsan  Admin  Admin  Status          Oper  Oper  Port-channel
           Mode  Mode  Trunk                 Mode  Speed  (Gbps)
-----
fcl/1      1     auto  on     down            --   --   --
fcl/2      1     auto  on     fcotAbsent      --   --   --
fcl/3      1     F     --     notConnected    --   --   --
fcl/4      1     auto  on     fcotAbsent      --   --   --
fcl/5      1     F     --     up              F    2    --
fcl/6      1     auto  on     fcotAbsent      --   --   --
fcl/7      1     auto  on     down            --   --   --
fcl/8      1     auto  on     fcotAbsent      --   --   --
fcl/9      1     auto  on     fcotAbsent      --   --   --
-----
```

```

fc1/10    1    auto  on    fcotAbsent    --    --    --
fc1/11    1    auto  on    down          --    --    --
fc1/12    1    auto  on    fcotAbsent    --    --    --
fc1/13    1    auto  on    down          --    --    --
fc1/14    1    auto  on    fcotAbsent    --    --    --
fc1/15    1    auto  on    down          --    --    --
fc1/16    1    auto  on    fcotAbsent    --    --    --
-----
Interface      Status  IP Address      Speed      MTU
-----
sup-fc0        up      --              1 Gbps     2596
-----
Interface      Status  IP Address      Speed      MTU
-----
mgmt0          up      173.95.112/24   100 Mbps   1500
-----
Interface      Status  IP Address      Speed      MTU
-----
vsan1          up      10.1.1.1/24     1 Gbps     1500

```

The following example shows how to display counter information for an FCIP interface:

```

switch# show interface fcip 3 counters
fcip3
  TCP Connection Information
    2 Active TCP connections
    Control connection: Local 43.1.1.2:3225, Remote 43.1.1.1:65532
    Data connection: Local 43.1.1.2:3225, Remote 43.1.1.1:65534
    30 Attempts for active connections, 0 close of connections
  TCP Parameters
    Path MTU 1500 bytes
    Current retransmission timeout is 300 ms
    Round trip time: Smoothed 10 ms, Variance: 5
    Advertised window: Current: 122 KB, Maximum: 122 KB, Scale: 1
    Peer receive window: Current: 114 KB, Maximum: 114 KB, Scale: 1
    Congestion window: Current: 2 KB, Slow start threshold: 1048560 KB
    5 minutes input rate 64 bits/sec, 8 bytes/sec, 0 frames/sec
    5 minutes output rate 64 bits/sec, 8 bytes/sec, 0 frames/sec
    910 frames input, 84652 bytes
      910 Class F frames input, 84652 bytes
      0 Class 2/3 frames input, 0 bytes
      0 Error frames timestamp error 0
    908 frames output, 84096 bytes
      908 Class F frames output, 84096 bytes
      0 Class 2/3 frames output, 0 bytes
      0 Error frames 0 reass frames

```

The following example displays Detailed FCIP Interface Standard Counter Information (Cisco MDS 9250i Multiservice Fabric Switch):

```

switch# show interface fcip 1 counters

fcip1
TCP Connection Information
5 Active TCP connections
23 Attempts for active connections, 5 close of connections
Path MTU 1500 bytes
Current retransmission timeout is 200 ms
Current Send Buffer Size: 149580 KB, Requested Send Buffer Size: 125000 KB
CWM Burst Size: 50 KB
CONN<0>

```

```
Data connection: Local 10.1.1.6:3225, Remote 10.1.1.12:65489
TCP Parameters
Advertized window: Current: 24580 KB, Maximum: 24580 KB, Scale: 7
Peer receive window: Current: 4095 KB, Maximum: 4095 KB, Scale: 6
Congestion window: Current: 3686 KB, Slow start threshold: 3998 KB
Measured RTT : 500000 us Min RTT: 500000 us Max RTT: 0 us
Round trip time: Smoothed 24 ms, Variance: 12 Jitter: 150 us
TCP Connection Rate
Input Bytes: 0.00 MB/sec, Output Bytes: 0.00 MB/sec
Input Frames: 0/sec, Output Frames: 0/sec
CONN<1>
Data connection: Local 10.1.1.6:3225, Remote 10.1.1.12:65487
TCP Parameters
Advertized window: Current: 24580 KB, Maximum: 24580 KB, Scale: 7
Peer receive window: Current: 487 KB, Maximum: 487 KB, Scale: 6
Congestion window: Current: 438 KB, Slow start threshold: 462 KB
Measured RTT : 500000 us Min RTT: 500000 us Max RTT: 0 us
Round trip time: Smoothed 24 ms, Variance: 12 Jitter: 150 us
TCP Connection Rate
Input Bytes: 0.00 MB/sec, Output Bytes: 0.00 MB/sec
Input Frames: 0/sec, Output Frames: 0/sec
CONN<2>
Data connection: Local 10.1.1.6:3225, Remote 10.1.1.12:65485
TCP Parameters
Advertized window: Current: 24580 KB, Maximum: 24580 KB, Scale: 7
Peer receive window: Current: 477 KB, Maximum: 477 KB, Scale: 6
Congestion window: Current: 429 KB, Slow start threshold: 453 KB
Measured RTT : 500000 us Min RTT: 500000 us Max RTT: 0 us
Round trip time: Smoothed 24 ms, Variance: 12 Jitter: 150 us
TCP Connection Rate
Input Bytes: 0.00 MB/sec, Output Bytes: 0.00 MB/sec
Input Frames: 0/sec, Output Frames: 0/sec
CONN<3>
Data connection: Local 10.1.1.6:3225, Remote 10.1.1.12:65483
TCP Parameters
Advertized window: Current: 24580 KB, Maximum: 24580 KB, Scale: 7
Peer receive window: Current: 488 KB, Maximum: 488 KB, Scale: 6
Congestion window: Current: 439 KB, Slow start threshold: 463 KB
Measured RTT : 500000 us Min RTT: 500000 us Max RTT: 0 us
Round trip time: Smoothed 24 ms, Variance: 12 Jitter: 150 us
TCP Connection Rate
Input Bytes: 0.00 MB/sec, Output Bytes: 0.00 MB/sec
Input Frames: 0/sec, Output Frames: 0/sec
CONN<4>
Control connection: Local 10.1.1.6:3225, Remote 10.1.1.12:65481
TCP Parameters
Advertized window: Current: 8121 KB, Maximum: 24580 KB, Scale: 7
Peer receive window: Current: 331 KB, Maximum: 332 KB, Scale: 6
Congestion window: Current: 50 KB, Slow start threshold: 373 KB
Measured RTT : 19 us Min RTT: 20 us Max RTT: 23 us
Round trip time: Smoothed 1 ms, Variance: 1 Jitter: 150 us
TCP Connection Rate
Input Bytes: 0.00 MB/sec, Output Bytes: 0.00 MB/sec
Input Frames: 0/sec, Output Frames: 0/sec
5 minutes input rate 288 bits/sec, 36 bytes/sec, 0 frames/sec
5 minutes output rate 224 bits/sec, 28 bytes/sec, 0 frames/sec
1158 frames input, 140560 bytes
1158 Class F frames input, 140560 bytes
0 Class 2/3 frames input, 0 bytes
0 Reass frames
0 Error frames timestamp error 0
1160 frames output, 121564 bytes
1160 Class F frames output, 121564 bytes
0 Class 2/3 frames output, 0 bytes
```

```

0 Error frames
IP compression statistics
101228 rxbytes
65375 rxbytes compressed, 1224 rxbytes non-compressed
1.52 rx compression ratio
84968 txbytes
57154 txbytes compressed, 0 txbytes non-compressed
1.49 tx compression ratio
IP compression flow control statistics
0 bytes queued for hw compression
0 queued for hardware compression
0 queued for hardware decompression
0 slowed tcp flow control
0 accelerated tcp flow control
0 side band flow control ON
0 side band flow control OFF
IP compression hung statistics
0 times compression engine hung detected
0 jobs replayed for hardware compression
0 jobs replayed for hardware decompression
0 compression jobs not processed during compression engine reset
0 compression response job not processed during compression engine reset
0 decompression jobs not processed during decompression engine reset
0 decompression response job not processed during decompression engine reset
    
```

The following example displays brief FCIP Interface Counter Information (Cisco MDS 9250i Multiservice Fabric Switch):

```

switch# show interface fcip 1-12 counters brief
-----
Interface Input (rate is 5 min avg)      Output (rate is 5 min avg)
-----
Rate Total          Rate Total
MB/s  Frames        MB/s  Frames
-----
fcip1  191 1155974124      225 1363537690
fcip2  173 1046686124      227 1372311228
fcip3   0 0              0 0
fcip4   0 0              0 0
fcip5   0 0              0 0
fcip6   0 0              0 0
fcip7  189 1143612956      221 1339130294
fcip8  194 1167499884      218 1317700800
fcip9   0 0              0 0
fcip10 0 0              0 0
    
```

The following example shows how to display counter information for all interfaces:

```

switch# show interface fc9/1-48 counters brief
-----
Interface          Input (rate is 5 min avg)      Output (rate is 5 min avg)
-----
Rate  Total          Rate  Total
MB/s  Frames            MB/s  Frames
-----
fc9/1             0    0              0    0
fc9/2             0    0              0    0
fc9/3             0    0              0    0
fc9/4             0    0              0    0
.
.
.
    
```

```

-----
Interface                Input (rate is 5 min avg)      Output (rate is 5 min avg)
-----
                        Rate      Total                          Rate      Total
                        MB/s     Frames                          MB/s     Frames
-----
iscsi4/1                  0         0                              0         0
iscsi4/2                  0         0                              0         0
iscsi4/3                  0         0                              0         0
iscsi4/4                  0         0                              0         0
.
.
.
vsan10 is up, line protocol is up
  WWPN is 10:00:00:05:30:00:07:23, FCID is 0xee0001
  Internet address is 10.1.1.5/24
  MTU 1500 bytes, BW 1000000 Kbit
  0 packets input, 0 bytes, 0 errors, 0 multicast
  0 packets output, 0 bytes, 0 errors, 0 dropped
-----
Interface                Input (rate is 5 min avg)      Output (rate is 5 min avg)
-----
                        Rate      Total                          Rate      Total
                        MB/s     Frames                          MB/s     Frames
-----
port-channel 100         0         0                              0         0
-----
Interface                Input (rate is 5 min avg)      Output (rate is 5 min avg)
-----
                        Rate      Total                          Rate      Total
                        Mbits/s  Frames                          Mbits/s  Frames
-----
fcip2                    0         0                              0         0
fcip3                    9         0                              9         0
fcip6                    8         0                              8         0
fcip7                    8         0                              8         0

```

The following example displays the FCIP interface counters for a specified interface (Cisco MDS 9250i Multiservice Fabric Switch):

```

switch# show interface fcip 1
fcip1 is trunking
Hardware is IPStorage
Port WWN is 20:2b:54:7f:ee:1c:2f:a0
Peer port WWN is 20:2b:00:2a:6a:1b:4f:90
Admin port mode is auto, trunk mode is on
snmp link state traps are enabled
Port mode is TE
Port vsan is 1
Speed is 5 Gbps
Trunk vsans (admin allowed and active) (1-2)
Trunk vsans (up) (1)
Trunk vsans (isolated) (2)
Trunk vsans (initializing) ()
Interface last changed at Fri Sep 15 05:23:27 2000
Using Profile id 1 (interface IPStorage1/1)
Peer Information
Peer Internet address is 20.1.1.2 and port is 3225
Write acceleration mode is configured off
Tape acceleration mode is configured off
Tape Accelerator flow control buffer size is automatic
FICON XRC Accelerator is configured off

```

```

Ficon Tape acceleration configured off for all vsans
IP Compression is enabled and set for auto
Maximum number of TCP connections is 4
QOS control code point is 0
QOS data code point is 0
TCP Connection Information
4 Active TCP connections
Local 20.1.1.1:3225, Remote 20.1.1.2:65461
0 host table full 0 target entries in use
9 Attempts for active connections, 1 close of connections
TCP Parameters
Path MTU 2500 bytes
Current retransmission timeout is 200 ms
Round trip time: Smoothed 2 ms, Variance: 3 Jitter: 157 us
Advertized window: Current: 21 KB, Maximum: 24580 KB, Scale: 5
Peer receive window: Current: 22 KB, Maximum: 23 KB, Scale: 5
Congestion window: Current: 50 KB, Slow start threshold: 1950 KB
Current Send Buffer Size: 16406 KB, Requested Send Buffer Size: 16384 KB
CWM Burst Size: 50 KB
Measured RTT : 14 us Min RTT: 14 us Max RTT: 118 us
5 minutes input rate 1606903776 bits/sec, 200862972 bytes/sec, 91958 frames/sec
5 minutes output rate 1895828792 bits/sec, 236978599 bytes/sec, 108506 frames/sec
1150774702 frames input, 2513619834588 bytes
5299 Class F frames input, 702192 bytes
1150769403 Class 2/3 frames input, 2513619132396 bytes
45778 Reass frames
0 Error frames timestamp error 0
1357408380 frames output, 2964570149576 bytes
4646 Class F frames output, 515904 bytes
1357403734 Class 2/3 frames output, 2964569633672 bytes
0 Error frames

```

The following example shows how to display information about a Gigabit Ethernet interface:

```

switch# show interface gigabitethernet 4/1
GigabitEthernet4/1 is up
  Hardware is GigabitEthernet, address is 0005.3000.2e12
  Internet address is 100.1.1.2/24
  MTU 1500 bytes, BW 1000000 Kbit
  Port mode is IPS
  Speed is 1 Gbps
  Beacon is turned off
  5 minutes input rate 32 bits/sec, 4 bytes/sec, 0 frames/sec
  5 minutes output rate 88 bits/sec, 11 bytes/sec, 0 frames/sec
  637 packets input, 49950 bytes
    0 multicast frames, 0 compressed
    0 input errors, 0 frame, 0 overrun 0 fifo
  659 packets output, 101474 bytes, 0 underruns
    0 output errors, 0 collisions, 0 fifo
    0 carrier errors

```

The following example shows how to display information about an iSCSI interface:

```

switch# show interface iscsi 2/1
iscsi2/1 is up
  Hardware is GigabitEthernet
  Port WWN is 20:41:00:05:30:00:50:de
  Admin port mode is ISCSI
  Port mode is ISCSI
  Speed is 1 Gbps
  iSCSI initiator is identified by name

```

```

Number of iSCSI session: 7, Number of TCP connection: 7
Configured TCP parameters
  Local Port is 3260
  PMTU discover is disabled
  Keepalive-timeout is 1 sec
  Minimum-retransmit-time is 300 ms
  Max-retransmissions 8
  Sack is disabled
  Minimum available bandwidth is 0 kbps
  Estimated round trip time is 0 usec
5 minutes input rate 265184 bits/sec, 33148 bytes/sec, 690 frames/sec
5 minutes output rate 375002168 bits/sec, 46875271 bytes/sec, 33833 frames/sec
iSCSI statistics
  6202235 packets input, 299732864 bytes
  Command 6189718 pdus, Data-out 1937 pdus, 1983488 bytes, 0 fragments
  146738794 packets output, 196613551108 bytes
  Response 6184282 pdus (with sense 4), R2T 547 pdus
  Data-in 140543388 pdus, 189570075420 bytes

```

The following example shows how to display transceiver information for a Fibre Channel interface:

```

switch# show interface fc2/5 transceiver
fc2/5 fcot is present
  name is CISCO-INFINEON
  part number is V23848-M305-C56C
  revision is A3
  serial number is 30000474
  fc-transmitter type is short wave laser
  cisco extended id is unknown (0x0)

```

The following example shows how to display information about a Fibre Channel tunnel interface:

```

switch# show interface fc-tunnel 200
fc-tunnel 200 is up
Dest IP Addr: 200.200.200.7 Tunnel ID: 200
Source IP Addr: 200.200.200.4 LSP ID: 1
Explicit Path Name:

```

The following example shows how to display hardware port information for a Fibre Channel interface:

```

switch(config-if)# show interface capabilities
fc1/1
Min Speed is 2 Gbps
Max Speed is 16 Gbps
FC-PH Version (high, low) (0,6)
Receive data field size (max/min) (2112/256) bytes
Transmit data field size (max/min) (2112/128) bytes
Classes of Service supported are Class 2, Class 3, Class F
Class 2 sequential delivery supported
Class 3 sequential delivery supported
Hold time (max/min) (100000/1) micro sec
BB state change notification supported
Maximum BB state change notifications 14
Rate Mode change not supported
Rate Mode Capabilities Dedicated
Receive BB Credit modification supported yes
FX mode Receive BB Credit (min/max/default) (1/64/64)
ISL mode Receive BB Credit (min/max/default) (2/64/64)
Performance buffer modification supported no
Out of Service capable yes

```



```
Beacon mode configurable          yes
Extended B2B credit capable      no
On demand port activation license supported  yes
.
.
.
```

show interface ioa

To display IOA interface, use the show interface ioa command.

```
show interface ioa slot/port brief|counters brief|description
```

Syntax Description

slot /port	Specifies an IOA slot or port number. The range is from 1 to 16 for the slot and for the port the range is from 1 to 4.
brief	Specifies brief information about the interface.
counters	Specifies the interface counters.
description	Specifies the interface description.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 6.2(5)	Added the show interface ioa 1/1 counters brief command to show the average for 5minutes , 12 hour and 24 hour respectively.
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to displayan IOA interface:

```
switch# show interface ioa 2/1
ioa2/1 is down (Not in any Cluster)
0 device packets in, 0 device packets out
0 device bytes in, 0 device bytes out
0 peer packets in, 0 peer packets out
0 peer bytes in, 0 peer bytes out
0 i-t create request, 0 i-t create destroy
0 i-t activate request, 0 i-t deactivate request
```

The following example shows how to display IOA interface counters:

```
switch# show interface ioa 2/1 counters
ioa1/1
4454232796 device packets in, 375748229 device packets out
8948409208760 device bytes in, 24047886946 device bytes out
526563297 peer packets in, 2471396408 peer packets out
45198770258 peer bytes in, 4697995629324 peer bytes out
8 i-t create request, 4 i-t create destroy
8 i-t activate request, 0 i-t deactivate request
```

The following example shows how to display IOA interface counters in brief:

```

switch# show int ioa 2/1 counters brief
-----
Interface To Device (rate is 5 min avg) To Peer (rate is 5 min avg)
-----
Rate Total Rate Total
MB/s Bytes MB/s Bytes
-----
ioa1/1 0.56 24049257618 109.66 4698262901274
sjc-sw2# show ioa int int ioa 2/1 summary
-----
FLOW HOST VSAN STATUS COMP ACC
TARGET
-----
1 10:00:00:00:00:00:03:00 200 ACTIVE YES WA
11:00:00:00:00:00:03:00
2 10:00:00:00:00:00:02:00 200 ACTIVE NO WA
11:00:00:00:00:00:02:00
3 10:00:00:00:00:00:01:00 100 ACTIVE YES TA
11:00:00:00:00:00:01:00
4 10:00:00:00:00:00:00:00 100 ACTIVE NO TA
11:00:00:00:00:00:00:00
switch(config-if)# show interface ioa 1/1 counters brief
-----
Interface          Rate          Rate          Rate          Total
                   MB/s          MB/s          MB/s          Bytes
                   (5min)        (12hr)        (24hr)        (MB)
-----
                   To Device (Average)
ioa1/1             0.00          0.00          0.00          0.02
                   To Peer (Average)
                   0.00          0.00          0.00          0.05

```

Related Commands

Command	Description
show ioa cluster summary	Displays the summary of all the IOA clusters.

show interface priority-flow-control

To display the RxPause, TxPause, RxWait, and TxWait values for Ethernet ports used for FCoE, use the `show interface priority-flow-control` command.

```
show interface priority-flow-control [module number | vl value]
```

Syntax Description

module number	Module number.
vl value	Virtual link value.

Command Default

Displays the priority-flow-control information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.4(1)	The command output was modified.
8.2(1)	This command was introduced.

Examples

The following example displays the RxPause, TxPause, RxWait, and TxWait values for Ethernet ports used for FCoE:

```
switch# show interface priority-flow-control
RxPause: No. of pause frames received
TxPause: No. of pause frames transmitted
TxWait: Time in 2.5uSec a link is not transmitting data[received pause]
RxWait: Time in 2.5uSec a link is not receiving data[transmitted pause]
=====
Interface      Admin Oper  (VL bmap) VL  RxPause   TxPause  RxWait-2.5us(sec)  TxWait-2.5us(sec)
=====
Epo540         Auto  NA    (8)      3  456200000  0         0 (0)              152866694355 (382166)
Eth2/1         Auto  On    (8)      3  4481929    0         0 (0)              5930346153 (14825)
...snip
Eth2/48        Auto  Off
Eth3/1         Auto  On    (8)      3  0           0         0 (0)              0 (0)
...snip
Eth3/6         Auto  Off
Eth3/7         Auto  On    (8)      3  0           0         0 (0)              0 (0)
```

The following example displays the RxPause, TxPause, RxWait, and TxWait values for Ethernet ports used for FCoE on virtual link 3:

```
switch# show interface priority-flow-control vl 3
RxPause: No. of pause frames received
TxPause: No. of pause frames transmitted
TxWait: Time in 2.5uSec a link is not transmitting data[received pause]
RxWait: Time in 2.5uSec a link is not receiving data[transmitted pause]
=====
Interface      Admin Oper  (VL bmap) VL  RxPause  TxPause  RxWait-2.5us(sec)  TxWait-2.5us(sec)
```

```

=====
Eth1/1          Auto Off
Eth1/2          Auto Off
Eth1/3          Auto On (8)      3 0      0      0 (0)      0 (0)
Eth1/4          Auto On (8)      3 0      0      0 (0)      0 (0)
Eth1/5          Auto Off
Eth1/6          Auto Off
Eth1/7          Auto Off
Eth1/8          Auto Off
Eth1/9          Auto Off
Eth1/10         Auto Off
Eth1/11         Auto Off
Eth1/12         Auto Off
Eth1/13         Auto Off
Eth1/14         Auto Off
Eth1/15         Auto On (8)      3 0      0      0 (0)      0 (0)
Eth1/16         Auto On (8)      3 0      0      0 (0)      0 (0)
Eth1/17         Auto Off
Eth1/18         Auto Off
Eth1/19         Auto Off
Eth1/20         Auto Off
Eth1/21         Auto Off
Eth1/22         Auto Off
Eth1/23         Auto Off
Eth1/24         Auto Off
Eth1/25         Auto Off
Eth1/26         Auto Off
Eth1/27         Auto Off
Eth1/28         Auto Off
Eth1/29         Auto Off
Eth1/30         Auto Off
Eth1/31         Auto Off
Eth1/32         Auto Off
Eth1/33         Auto Off
Eth1/34         Auto Off
Eth1/35         Auto Off
Eth1/36         Auto Off
Eth1/37         Auto Off
Eth1/38         Auto Off
Eth1/39         Auto Off
Eth1/40         Auto Off
Eth1/41         Auto Off
Eth1/42         Auto Off
Eth1/43         Auto Off
Eth1/44         Auto Off
Eth1/45         Auto Off
Eth1/46         Auto Off
Eth1/47         Auto Off
Eth1/48         Auto Off
Eth3/1          Auto Off
  
```

Related Commands

Command	Description
show interface	Displays status of an interface.

show interface sme

To display the information about Cisco SME interface, use the show interface sme command.

```
show interface sme slot/port brief | counters | description
```

Syntax Description

slot	Identifies the number of the MPS-18/4 module slot.
port	Identifies the number of the Cisco SME port.
brief	Displays the brief information about Cisco SME interface.
counters	Displays the interface counters.
description	Displays the description of the interface.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.2(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays the brief description of the Cisco SME interface:

```
switch# show interface sme 3/1 brief
-----
Interface          Status      Cluster
-----
sme3/1             up         c2
```

The following example displays the counters of the interface:

```
switch# show interface sme 3/1 description
sme3/1
 5 minutes input rate 0 bits/sec, 0 bytes/sec, 0.00 KB/sec
 5 minutes output rate 0 bits/sec, 0 bytes/sec, 0.00 KB/sec
SME statistics
  input 0 bytes, 5 second rate 0 bytes/sec, 0.00 KB/sec
   clear 0 bytes, encrypt 0 bytes, decrypt 0
   compress 0 bytes, decompress 0 bytes
  output 0 bytes, 5 second rate 0 bytes/sec, 0.00 KB/sec
   clear 0 bytes, encrypt 0 bytes, decrypt 0
   compress 0 bytes, decompress 0 bytes
   compression ratio 0:0
  flows 0 encrypt, 0 clear
  clear luns 0, encrypted luns 0
  errors
    0 CTH, 0 authentication
```

```
0 key generation, 0 incorrect read  
0 incompressible, 0 bad target responses
```

Related Commands

Command	Description
interface sme	Configures Cisco SME interface on the switch.

show interface transceiver

To display the SFP and X2 digital monitoring information for a transceiver, use the show interface transceiver details command.

```
show interface fc-id transceiver details
```

Syntax Description	Parameter	Description
	fc-id	Specifies the Fiber Channel interface ID.
	transceiver details	

Command Default None.

Command Modes Exec mode

Command History	Release	Modification
	3.0	This command was introduced.

Usage Guidelines



Note The output for the show interface transceiver command will vary based on the transceiver type, name, part number, revision, and link length of the device.

When the small form-factor pluggable (SFP) port is shut down and the laser is turned off, the value of the Current field in the output will be close to zero and the Tx power value will be at a minimum (close to -40 dBm).

When the SFP port is shutdown and the laser is not turned off, the Current and Tx power values in the output will stay at operational levels. The Rx power value will depend on the behavior of the remote side of the link and the interface status—the value can be at an operational level, at a minimum (close to -40 dBm), or N/A.

This command displays the attributes of a transceiver such as, the vendor, the kind of laser it emits and receives, compatible fiber-optic cable, distances supported, vendor's firmware revision, faults the unit experienced since the last insertion or since the last linecard boot (whichever is the latest) and the diagnostics information (if supported by the unit).

Examples

The following example displays the SFP digital monitoring information for a transceiver (DOM unsupported SFP):

```
switch#show interface fc4/1 transceiver details
fc4/1 sfp is present
  name is CISCO-FINISAR
  part number is FTRJ8519P1BNL-C1
  revision is A
  serial number is FNS0838B0CX
  fc-transmitter type is short wave laser w/o OFC (SN)
  fc-transmitter supports intermediate distance link length
```



```
media type is multi-mode, 62.5m (M6)
Supported speed is 200 MBytes/sec
Nominal bit rate is 2100 MBits/sec
Link length supported for 50/125mm fiber is 500 m(s)
Link length supported for 62.5/125mm fiber is 300 m(s)
cisco extended id is unknown (0x0)
no tx fault, rx loss, no sync exists, Diag mon type 136
Digital diagnostics feature not supported in SFP
```

The following example displays the X2 digital monitoring information for a transceiver:

```
switch# show interface fc1/1 transceiver details
fc1/1 sfp is present
name is CISCO
part number is FTLX8541E2-C1
revision is C
serial number is FNS11151B0V
FC Transceiver Type is X2 Medium
FC Connector Type is SC
Bit Encoding is NRZ
Protocol Type is 10GbE
Standards Compliance Codes :
10GbE Code Byte 0 : 10GBASE-SR
Fiber type Byte 0 : MM-Generic
Fiber type Byte 1 : Unspecified
Transmission Range is 30 (in 10m increments)
cisco extended id is Unknown (0x0)
no tx fault, rx loss, no sync exists, Diag mon type 193
SFP Detail Diagnostics Information
-----
                Alarms                Warnings
                High                    Low                    High                    Low
-----
Temperature  41.35 C                    74.00 C                    -4.00 C                    70.00 C                    0.00 C
Voltage      0.00 V                      0.00 V                      0.00 V                      0.00 V                      0.00 V
Current      8.10 mA                      12.00 mA                     4.00 mA                    11.00 mA                     5.00 mA
Tx Power     -2.58 dBm                             3.00 dBm                    -11.30 dBm                   -1.00 dBm                   -7.30 dBm
Rx Power     -28.54 dBm --                   3.00 dBm                    -13.90 dBm                   -1.00 dBm                   -9.90 dBm
Transmit Fault Count = 7
-----
Note: ++ high-alarm; + high-warning; -- low-alarm; - low-warning
```

Related Commands

Command	Description
show interface	Displays the status of an interface.

show interface vfc

To display the virtual Fibre Channel interface (VFC) information, use the show interface vfc command.

```
show interface vfc ID/slot [brief | counters [detailed] | description | trunk vsan ID]
```

Syntax Description

ID/slot	Virtual interface identifier or slot.
brief	(Optional) Displays brief information of the interface.
counters	(Optional) Displays information of the interface counters.
detailed	(Optional) Displays detailed information of the interface counters.
description	(Optional) Displays the description of the interface.
trunk	(Optional) Displays trunk information of the interface.
vsan ID	(Optional) Trunk VSAN ID.

Command Default

Displays VFC information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.4(1)	The command output was modified.
8.2(1)	This command was introduced.

Examples

The following example displays the detailed configuration and statistics of a specified virtual Fibre Channel interface:

```
switch# show interface vfc 9/11 counters detailed
vfc9/11
 3108091433 fcoe in packets
 6564116595616 fcoe in octets
 30676987 fcoe out packets
 2553913687 fcoe out octets
 0 2.5us TxWait due to pause frames (VL3)
 134795 2.5us RxWait due to pause frames (VL3)
 0 Tx frames with pause opcode (VL3)
 0 Rx frames with pause opcode (VL3)
 Percentage pause in TxWait per VL3 for last 1s/1m/1h/72h: 0%/0%/0%/0%
 Percentage pause in RxWait per VL3 for last 1s/1m/1h/72h: 0%/0%/0%/0%
```

The following example displays a brief information of a specified virtual Fibre Channel interface:

```
switch# show interface vfc 1/1 brief
```

```
-----  
Interface      Vsan    Admin   Admin   Status      Bind      Oper      Oper  
              Mode    Mode    Trunk    Info        Info      Mode      Speed  
              Mode    Mode    Mode    Mode        Mode      Mode      (Gbps)  
-----  
vfc1/1        10      E       on      errDisabled Ethernet1/1  --      --
```

Related Commands

Command	Description
show interface	Displays status of an interface.

show inventory

To display the system hardware inventory, use the show inventory command.

```
show inventory
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines This command displays information about the field replaceable units (FRUs) in the switch, including product IDs, serial numbers, and version IDs.

Examples The following example displays the system inventory information:

```
switch# show inventory
NAME: "Chassis",  DESCR: "MDS 9506 chassis"
PID: DS-C9506      ,  VID: 0.1,  SN: FOX0712S007
NAME: "Slot 1",  DESCR: "2x1GE IPS, 14x1/2Gbps FC Module"
PID: DS-X9302-14K9 ,  VID: 0.301, SN: JAB083100JY
NAME: "Slot 5",  DESCR: "Supervisor/Fabric-1"
PID: DS-X9530-SF1-K9 ,  VID: 0.0,  SN: JAB0747080H
NAME: "Slot 6",  DESCR: "Supervisor/Fabric-1"
PID: DS-X9530-SF1-K9 ,  VID: 4.0,  SN: JAB074004VE
NAME: "Slot 17", DESCR: "MDS 9506 Power Supply"
PID: DS-CAC-1900W   ,  VID: 1.0,  SN: DCA0702601V
NAME: "Slot 18", DESCR: "MDS 9506 Power Supply"
PID: DS-CAC-1900W   ,  VID: 1.0,  SN: DCA0702601U
NAME: "Slot 19", DESCR: "MDS 9506 Fan Module"
PID: DS-6SLOT-FAN   ,  VID: 0.1,  SN: FOX0638S150
```

show ioa cluster

To display detailed information of all the IOA clusters, use the show ioa cluster command.

```
show ioa cluster cluster name
```

Syntax Description	cluster name	Specifies IOA cluster name. The maximum size is 31 characters.
---------------------------	--------------	--

Command Default None.

Command Modes Cluster Configuration submode.

Command History	Release	Modification
	6.2(5)	Added the show ioa cluster tape_vault flows command output. (with and without delice alias).
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines None.

Examples

The following example shows how to display detailed information of all IOA clusters:

```
switch# show ioa cluster
IOA Cluster is tape_vault
Cluster ID is 0x213a000dec3ee782
Cluster status is online
Is between sites SJC and RTP
Total Nodes are 2
Cluster Infra Status : Operational
Cluster is Administratively Up
Cluster Config Version : 26
SSL for ICN : Not Configured
switch#
```

The following example shows how to display the interfaces in an IOA cluster:

```
switch# show ioa cluster tape_vault interface
Interface ioa2/1 belongs to 172.23.144.97(L) (M)
    Status is up
Interface ioa2/2 belongs to 172.23.144.97(L) (M)
    Status is up
Interface ioa2/1 belongs to 172.23.144.98
    Status is up
Interface ioa2/2 belongs to 172.23.144.98
    Status is up
switch#
```

The following example shows how to display the summary of interfaces in a IOA cluster:

```
switch# show ioa cluster tape_vault interface summary
```

```
-----
Switch                Interface        Status        Flows
-----
172.23.144.97(L)     ioa2/1          up            --
172.23.144.97(L)     ioa2/2          up            --
172.23.144.98        ioa2/1          up            --
```

```

172.23.144.98      ioa2/2          up          --
switch#
The following example shows how to display the N ports configuration:
switch# show ioa cluster tape_vault nports
-----
P-WWN Site Vsan
-----
10:00:00:00:00:00:01 SJC 100
11:00:00:00:00:00:01 RTP 100
10:00:00:00:00:00:02 SJC 100
10:00:00:00:00:00:02 RTP 100
The following example shows how to display an IOA cluster node:
sjc-sw1# show ioa cluster tape_vault node
Node 172.23.144.95 is local switch
  Node ID is 1
  Status is online
  Belongs to Site sjc
  Node is the master switch
Node 172.23.144.96 is remote switch
  Node ID is 2
  Status is offline
  Belongs to Site new_jersey
  Node is not master switch
switch#
The following example shows how to display an IOA cluster node summary:
switch# show ioa cluster tape_vault node summary
-----
Switch Site Status Master
-----
172.23.144.97(L) SJC online yes
172.23.144.98 RTP online no
The following example shows how to display the configured flow information without device
alias:
switch# show ioa cluster tape_vault flows
-----
Host WWN,          VSAN      WA  TA  Comp  Status  Switch,Interface
Target WWN
-----
10:00:00:00:00:00:01, 100      Y   Y   N   online  172.23.144.97, ioa2/1
11:00:00:00:00:00:01, 100                        172.23.144.98, ioa2/1
10:00:00:00:00:00:02, 100      Y   Y   Y   online  172.23.144.97, ioa2/2
11:00:00:00:00:00:02, 100                        172.23.144.98, ioa2/2
switch#
The following example shows how to display the configured flow information with device
alias:
sjc-sw2# show ioa cluster tape_vault flows
-----
Host WWN,          VSAN      WA  TA  Comp  Status  Switch,Interface
Target WWN
-----
host-1             , 100      Y   Y   N   online  172.23.144.97, ioa2/1
target-1           , 100                        172.23.144.98, ioa2/1
host-2             , 100      Y   Y   Y   online  172.23.144.97, ioa2/2
target-2           , 100                        172.23.144.98, ioa2/2
The following example shows how to display the detailed information of the flows that are
accelerated in the cluster:
switch# show ioa cluster tape_vault flows detail
Host 10:00:00:00:00:00:01, Target 11:00:00:00:00:00:01, VSAN 100
  Is online
  Belongs to flowgroup fg1
  Is enabled for WA, TA,
  Is assigned to
    Switch 172.23.144.97      Interface ioa2/1 (Host Site)
    Switch 172.23.144.98      Interface ioa2/1 (Target Site)

```

```
Host 10:00:00:00:00:00:02, Target 11:00:00:00:00:00:02, VSAN 100
  Is online
  Belongs to flowgroup fg1
  Is enabled for WA, TA, Compressi
  Is assigned to
    Switch 172.23.144.97   Interface ioa2/2 (Host Site)
    Switch 172.23.144.98   Interface ioa2/2 (Target Site)
```

Related Commands

Command	Description
interface ioa	Configures the IOA interface.

show ioa cluster summary

To display a summary of all the IOA clusters, use the show ioa cluster summary command.

```
show ioa cluster summary
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display IOA cluster summary information:

```
switch# show ioa cluster summary
-----
Cluster           Sites           Status    Master Switch
-----
tape_vault        SJC,           online    172.23.144.97
                  RTP
tape_vault_site2 SAC,           online    172.23.144.97
                  SJC
switch#
```

Related Commands	Command	Description
	interface ioa	Configures the IOA interface.

show ioa internal interface ioa

To display summary of all the IOA clusters, use the show ioa internal interface ioa command.

```
show ioa internal interface ioa slot number els-table | errors | init-pwwn pwwn targ-pwwn pwwn
vsan vsan-id counters brief | plogi-info | stats | summary | trace log | vit-table
```

Syntax Description

slot number	Specifies the IOA slot or port number. The range is from 1 to 16 for the slot and for the port the range is from 1 to 4.
els-table	Specifies the IOA ELS table.
errors	Specifies IOA errors.
init-pwwn pwwn	Specifies the initiator PWWN.
targ-pwwn pwwn	Specifies the target PWWN.
vsan vsan-id	Specifies the VSAN ID. The range is from 1 to 4093.
counters	Specifies interface counters.
brief	Specifies brief information about the interface.
plogi-info	Specifies PLOGI counters for IOA interface.
stats	Specifies the IOA statistics.
summary	Specifies the IOA host map table.
trace log	Specifies the IOA stats
vit-table	Specifies the IOA vit table.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to display an IOA host map table:

```
switch# show ioa int int ioa 2/1 summary
-----
FLOW HOST VSAN STATUS COMP ACC
TARGET
```

```

-----
1 10:00:00:00:00:00:03:00 200 ACTIVE YES WA
11:00:00:00:00:00:03:00
2 10:00:00:00:00:00:02:00 200 ACTIVE NO WA
11:00:00:00:00:00:02:00
3 10:00:00:00:00:00:01:00 100 ACTIVE YES TA
11:00:00:00:00:00:01:00
4 10:00:00:00:00:00:00:00 100 ACTIVE NO TA
11:00:00:00:00:00:00:00

```

The following example shows how to display IOA statistics:

```

switch# show ioa int int ioa 2/1 stats
Adapter Layer Stats
4457312829 device packets in, 376008035 device packets out
8954596919462 device bytes in, 24064514554 device bytes out
526927441 peer packets in, 2473105321 peer packets out
45230025550 peer bytes in, 4701244024682 peer bytes out
8 i-t create request, 4 i-t create destroy
8 i-t activate request, 0 i-t deactivate request
0 i-t create error, 0 i-t destroy error
0 i-t activate error, 0 i-t deactivate error
48 i-t-n not found, 0 i-t-n stale logo timer expiry
4 logo sent, 8 logo timer started
4 logo timer fired, 4 logo timer cancelled
4 plogi 4 plogi-acc 4 logo-acc 4 prli 4 prli-acc 0 els-q-err
to-device 214279940 orig pkts 12743547488 orig bytes
to-peer 8748538 orig pkts 682386268 orig bytes
0 queued 0 flushed 0 discarded
L RTP Stats
0 retransmitted pkts, 0 flow control
2464072014 app sent 2464072014 frags sent 0 tx wait
0 rexmt bulk attempts 0 rexmt bulk pkts 2 delayed acks
376008013 in-order 0 reass-order 0 reass-wait 0 dup-drop
376008013 app deliver 376008013 frags rcvd
150919428 pure acks rx 376008013 data pkts rx 0 old data pkts
0 remove reass node, 0 cleanup reass table
Tape Accelerator statistics
2 Host Tape Sessions
0 Target Tape Sessions
Host End statistics
Received 26275926 writes, 26275920 good status, 2 bad status
Sent 26275914 proxy status, 10 not proxied
Estimated Write buffer 4 writes 524288 bytes
Received 0 reads, 0 status
Sent 0 cached reads
Read buffer 0 reads, 0 bytes
Host End error recovery statistics
Sent REC 0, received 0 ACCs, 0 Rejects
Sent ABTS 0, received 0 ACCs
Received 0 RECs, sent 0 ACCs, 0 Rejects
Received 0 SRRs, sent 0 ACCs, 0 Rejects
Received 0 TMF commands
Target End statistics
Received 0 writes, 0 good status, 0 bad status
Write Buffer 0 writes, 0 bytes
Received 0 reads, 0 good status, 0 bad status
Sent 0 reads, received 0 good status, 0 bad status
Sent 0 rewinds, received 0 good status, 0 bad status
Estimated Read buffer 0 reads, 0 bytes
Target End error recovery statistics
Sent REC 0, received 0 ACCs, 0 Rejects
Sent SRR 0, received 0 ACCs
Sent ABTS 0, received 0 ACCs

```

```

Write Accelerator statistics
Received 726357548 frames, Sent 529605035 frames
0 frames dropped, 0 CRC errors
0 rejected due to table full, 0 scsi busy
0 ABTS sent, 0 ABTS received
0 tunnel synchronization errors
Host End statistics
Received 188004026 writes, 188004000 XFER_RDY
Sent 188004026 proxy XFER_RDY, 0 not proxied
Estimated Write buffer 1146880 bytes
Timed out 0 exchanges, 0 writes
Target End statistics
Received 0 writes, 0 XFER_RDY
Write buffer 0 bytes
TCP flow control 0 times, 0 bytes current
Timed out 0 exchanges, 0 writes
Compression Statistics
Pre Comp Batch size 131072
Post Comp Batch size 2048
4375494911078 input bytes, 50140348947 output compressed bytes
0 non-compressed bytes, 0 incompressible bytes
0 compression errors
0 Compression Ratio
De-Compression Statistics
0 input bytes, 0 output decompressed bytes
11883488326 non-compressed bytes
0 de-compression errors

```

The following example shows how to display the initiator PWWN:

```

switch# show ioa int int ioa 2/1 init-pwwn 10:00:00:00:00:00:03:00 targ-pwwn
11:00:00:00:00:00:03:00 vsan 200 counters
Adapter Layer Stats
1366529601 device packets in, 160768174 device packets out
2699458644986 device bytes in, 10289163140 device bytes out
160844041 peer packets in, 165188790 peer packets out
18652597246 peer bytes in, 47736122724 peer bytes out
0 i-t create request, 0 i-t create destroy
0 i-t activate request, 0 i-t deactivate request
0 i-t create error, 0 i-t destroy error
0 i-t activate error, 0 i-t deactivate error
0 i-t-n not found, 0 i-t-n stale logo timer expiry
1 logo sent, 2 logo timer started
1 logo timer fired, 1 logo timer cancelled
1 plogi 1 plogi-acc 1 logo-acc 1 prli 1 prli-acc 0 els-q-err
to-device 80384094 orig pkts 4662277452 orig bytes
to-peer 0 orig pkts 0 orig bytes
0 queued 0 flushed 0 discarded
LRTP Stats
0 retransmitted pkts, 0 flow control
160768190 app sent 160768190 frags sent 0 tx wait
0 rexmt bulk attempts 0 rexmt bulk pkts 1 delayed acks
160768162 in-order 0 reass-order 0 reass-wait 0 dup-drop
160768162 app deliver 160768162 frags rcvd
75879 pure acks rx 160768162 data pkts rx 0 old data pkts
0 remove reass node, 0 cleanup reass table
Write Accelerator statistics
Received 1607681842 frames, Sent 1527297774 frames
0 frames dropped, 0 CRC errors
0 rejected due to table full, 0 scsi busy
0 ABTS sent, 0 ABTS received
0 tunnel synchronization errors
Host End statistics
Received 80384094 writes, 80384082 XFER_RDY

```

```
Sent 80384094 proxy XFER_RDY, 0 not proxied
Estimated Write buffer 524288 bytes
Timed out 0 exchanges, 0 writes
Target End statistics
Received 0 writes, 0 XFER_RDY
Write buffer 0 bytes
TCP flow control 0 times, 0 bytes current
Timed out 0 exchanges, 0 writes
```

The following example shows how to display the initiator PWWN:

```
switch# show ioa int int ioa 2/1 init-pwwn 10:00:00:00:00:03:00 targ-pwwn
11:00:00:00:00:03:00 vsan 200 counters brief
-----
Interface Input (rate is 5 min avg) Output (rate is 5 min avg)
-----
Rate Total Rate Total
MB/s Frames MB/s Frames
-----
ioa1/1
Device 60 9573683 0 1126308
Peer 0 1126833 1 1157161
switch#
```

show ip access-list

To display the IP access control lists (IP-ACLs) currently active, use the show ip access-list command.

```
show ip access-list [list-number | usage]
```

Syntax Description	list-number	(Optional) Specifies the IP-ACL. The range is 1 to 256.
	usage	(Optional) Specifies the interface type.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example displays configured IP-ACLs:

```
switch# show ip access-list usage
Access List Name/Number      Filters IF   Status      Creation Time
-----
abc                          3          7    active     Tue Jun 24 17:51:40 2003
x1                            3          1    active     Tue Jun 24 18:32:25 2003
x3                            0          1    not-ready  Tue Jun 24 18:32:28 2003
```

The following example displays a summary of the specified IP-ACL:

```
switch# show ip access-list abc
ip access-list abc permit tcp any any (0 matches)
ip access-list abc permit udp any any (0 matches)
ip access-list abc permit icmp any any (0 matches)
ip access-list abc permit ip 10.1.1.0 0.0.0.255 (2 matches)
ip access-list abc permit ip 10.3.70.0 0.0.0.255 (7 matches)
```

show ip arp

To display IP neighbors for the system, use the show ip arp command.

```
show ip arp interface gigabitethernet slot / port
```

Syntax Description

interface	(Optional) Displays the IP neighbors for a specified interface.
cpp module-number	(Optional) Specifies the virtualization IP over Fibre Channel (IPFC) interface by control plane processor (CPP) module number. The range is 1 to 6.
gigabitethernet slot/port	(Optional) Specifies the Gigabit Ethernet interface by slot and port number. The range is 1 to 6.
mgmt	(Optional) Specifies the management interface.
vsan vsan-id	(Optional) Specifies the IPFC VSAN interface by VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays IP neighbor information:

```
switch# show ip arp
IP Address      Age (min)  Link-layer Addr      Type  Interface
209.165.200.226 0          0006.d623.4008      ARPA  GigabitEthernet1/1
209.165.200.227 5          0002.b3d9.ba6f      ARPA  GigabitEthernet1/1
209.165.200.228 11         0004.23bd.677b      ARPA  GigabitEthernet1/1
209.165.200.229 67         0000.0c07.ac01      ARPA  mgmt0
209.165.200.230 0          000e.d68f.c3fc      ARPA  mgmt0
209.165.200.231 0          000e.d68f.43fc      ARPA  mgmt0
209.165.200.232 1067       00e0.8152.7f8d      ARPA  mgmt0
```

Related Commands

Command	Description
show ip interface	Displays IP interface status and configuration information.
show ip traffic	Displays IP protocol statistics for the system.

show ip interface

To display IP interface status and configuration information, use the `show ip interface` command.

```
show ip interface [cpp module-number | gigabitethernet slot/port | mgmt | port-channel number | vsan vsan-id]
```

Syntax Description	
cpp module-number	(Optional) Specifies the virtualization IP over Fibre Channel (IPFC) interface by CPP module number. The range is 1 to 6.
gigabitethernet slot/port	(Optional) Specifies the Gigabit Ethernet interface by slot and port number. The range is 1 to 6.
mgmt	(Optional) Specifies the management interface.
port-channel number	(Optional) Specifies the PortChannel interface. The range is 1 to 256.
vsan vsan-id	(Optional) Specifies the IPFC VSAN interface by VSAN ID. The range is 1 to 4093.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None.

Examples The following example displays IP interface status and configuration information:

```
switch# show ip interface
GigabitEthernet1/1 is up
  Internet address is 10.10.10.1/24
  Broadcast address is 255.255.255.255
GigabitEthernet1/2 is up
  Internet address is 10.10.60.1/24
  Broadcast address is 255.255.255.255
GigabitEthernet2/2 is up
  Internet address is 10.10.20.1/24
  Broadcast address is 255.255.255.255
mgmt0 is up
  Internet address is 172.22.31.110/24
  Broadcast address is 255.255.255.255
```

Related Commands	Command	Description
	show ip arp	Displays IP neighbors for the system.

Command	Description
show ip traffic	Displays IP protocol statistics for the system.

show ip route

To display the currently active IP routes currently active, use the show ip route command.

```
show ip route [configured]
```

Syntax Description	configured (Optional) Displays configured IP routes.
---------------------------	--

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples

The following example displays active IP routes:

```
switch# show ip route
Codes: C - connected, S - static
Default gateway is 172.22.95.1
C 10.0.0.0/24 is directly connected, vsan1
C 172.22.95.0/24 is directly connected, mgmt0
```

The following example displays configured IP routes.

```
switch# show ip route configured
      default      172.22.31.1      0.0.0.0      0      mgmt0
10.10.11.0      10.10.11.1      255.255.255.0      0 GigabitEthernet1/1
10.10.50.0      10.10.50.1      255.255.255.0      0 GigabitEthernet1/2.1
10.10.51.0      10.10.51.1      255.255.255.0      0 GigabitEthernet1/2.2
10.10.60.0      10.10.60.1      255.255.255.0      0 GigabitEthernet1/2
172.22.31.0      172.22.31.110      255.255.255.0      0      mgmt0
```

show ip routing

To display the IP routing state, use the show ip routing command.

```
show ip routing
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example shows the IP routing state:

```
switch# show ip routing
ip routing is disabled
```

show ip traffic

To display IP protocol statistics for the system, use the show ip traffic command.

```
show ip traffic [interface gigabitethernet slot/port]
```

Syntax Description	interface	(Optional) Displays the IP neighbors for a specified interface.
	gigabitethernet slot/port	(Optional) Specifies the Gigabit Ethernet interface by slot and port number. The range is 1 to 6.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None.

Examples The following example displays IP protocol statistics for the Gigabit Ethernet interface:

```
switch# show ip traffic interface gigabitethernet 2/2
IP Statistics for GigabitEthernet2/2
  Rcvd:  0 total, 0 local destination
         0 errors, 0 unknown protocol, 0 dropped
  Sent:  30 total, 0 forwarded 0 dropped
  Frags: 0 reassembled, 0 timeouts, 0 couldn't reassemble
         0 fragmented, 0 fragments created, 0 couldn't fragment
ICMP Statistics:
  Rcvd:  0 total, 0 errors, 0 unreachable, 0 time exceeded
         0 echo, 0 echo reply, 0 mask requests, 0 mask replies
         0 redirects, 0 timestamp requests, 0 timestamp replies
  Sent:  0 total, 0 errors, 0 unreachable, 0 time exceeded
         0 echo, 0 echo reply, 0 mask requests, 0 mask replies
         0 redirects, 0 timestamp requests, 0 timestamp replies
```

Related Commands	Command	Description
	show ip arp	Displays IP neighbors for the system.
	show ip interface	Displays IP interface status and configuration information.

show ips arp

To display the IP storage ARP cache information, use the show ips arp command.

```
show ips arp interface gigabitethernet slot / port
```

Syntax Description	interface gigabitethernet slot/port	Specifies a Gigabit Ethernet interface by the slot and port.
---------------------------	-------------------------------------	--

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines Use the show ips arp interface gigabitethernet command to display the ARP cache on the Gigabit Ethernet interfaces. This command takes the main Ethernet interface and as a parameter and returns the ARP cache for that interface.

Examples The following example displays ARP caches in the specified interface:

```
switch# show ips arp interface gigabitethernet 4/1
Protocol      Address      Age (min)   Hardware Addr  Type   Interface
Protocol      Address      Age (min)   Hardware Addr  Type   Interface
Internet      172.22.91.1  2    -    00:00:0c:07:ac:01  ARPA   GigabitEthernet4/4
Internet      172.22.91.2  0    -    00:02:7e:6b:a8:08  ARPA   GigabitEthernet4/4
Internet      172.22.91.17 0    -    00:e0:81:20:45:f5  ARPA   GigabitEthernet4/4
Internet      172.22.91.18 0    -    00:e0:81:05:f7:64  ARPA   GigabitEthernet4/4
Internet      172.22.91.30 0    -    00:e0:18:2e:9d:19  ARPA   GigabitEthernet4/4
...
```

show ips ip route

To show the IP storage route table information, use the show ips ip route command.

```
show ips ip route interface gigabitethernet slot / port
```

Syntax Description	interface gigabitethernet slot/port	Specifies a Gigabit Ethernet interface by the slot and port.
---------------------------	-------------------------------------	--

Command Default	None.
------------------------	-------

Command Modes	EXEC mode.
----------------------	------------

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines	None.
-------------------------	-------

Examples

The following example displays the IP route table information for a Gigabit Ethernet interface:

```
switch# show ips ip route interface gigabitethernet 8/1
Codes: C - connected, S - static
No default gateway
C 10.1.3.0/24 is directly connected, GigabitEthernet8/1
```

show ips ipv6

To display an IPv6 storage routing table, use the show ips ipv6 command.

```
show ips ipv6 neighbors interface gigabitethernet slot/port | prefix-list interface gigabitethernet
slot/port | route interface gigabitethernet slot/port | routers interface gigabitethernet slot/port | traffic
interface gigabitethernet slot/port
```

Syntax Description

neighbors	Displays the IPv6 neighbors table.
interface	Displays the interface status and configuration.
gigabitethernet	Displays a Gigabit Ethernet interface.
slot/port	Specifies the slot and port number.
prefix-list	Displays the IPv6 prefix-list table.
route	Displays the IPv6 route table.
routers	Displays the IPv6 routers table.
traffic	Displays the IPv6 traffic table.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.1(0)	This command was introduced.

Usage Guidelines

You can use the show ips ipv6 command to display information about IPv6 routing.

Examples

The following example displays IPv6 neighbors information:

```
switch# show ips ipv6 neighbours interface gigabitethernet 1/1
IPv6 Address                               Age (min)  Link-layer Addr  State  Inter
face
fe80::206:d6ff:fe23:4008                    0          0006.d623.4008   S      GigabitEthernet1/1
```

The following example displays the IPv6 prefix-list information:

```
switch# show ips ipv6 prefix-list interface gigabitethernet 1/1
Prefix                               Prefix-len  Addr
Valid Preferred
2000::                                64         2000::205:30ff:fe01:a6be
      1000      1000
```

The following example displays the IPv6 routing table:

```
switch# show ips ipv6 route interface gigabitethernet 4/2
IPv6 Routing Table - 4 entries
Codes: C - Connected, L - Local, S - Static, G - Gateway, M - Multicast
C 3000:8::/64 is directly connected, GigabitEthernet4/2.250
C 3000:7::/64 is directly connected, GigabitEthernet4/2
C fe80::/64 is directly connected, GigabitEthernet4/2
C fe80::/64 is directly connected, GigabitEthernet4/2.250
M ff02::/32 is multicast, GigabitEthernet4/2
M ff02::/32 is multicast, GigabitEthernet4/2.250
```

The following example displays IPv6 routers information:

```
switch# show ips ipv6 routers interface gigabitethernet 1/1
Addr                               Lifetime  Expire
fe80::206:d6ff:fe23:4008           3600     3600
```

The following example displays IPv6 traffic statistics:

```
switch# show ips ipv6 traffic interface gigabitethernet 4/2
IPv6 statistics:
  Rcvd: 0 total
        0 bad header, 0 unknown option, 0 unknown protocol
        0 fragments, 0 total reassembled
        0 reassembly timeouts, 0 reassembly failures
  Sent: 20 generated
        0 fragmented into 0 fragments, 0 failed
        2 no route
ICMP statistics:
  Rcvd: 0 input, 0 checksum errors, 0 too short
        0 unknown info type, 0 unknown error type
  unreachable: 0 routing, 0 admin, 0 neighbor, 0 address, 0 port
  parameter: 0 error, 0 header, 0 option
        0 hopcount expired, 0 reassembly timeout, 0 too big
        0 echo request, 0 echo reply
        0 group query, 0 group report, 0 group reduce
        0 router solicit, 0 router advert, 0 redirects
        0 neighbor solicit, 0 neighbor advert
  Sent: 20 output, 0 rate-limited
  unreachable: 0 routing, 0 admin, 0 neighbor, 0 address, 0 port
  parameter: 0 error, 0 header, 0 option
        0 hopcount expired, 0 reassembly timeout, 0 too big
        0 echo request, 0 echo reply
        0 group query, 6 group report, 0 group reduce
        2 router solicit, 0 router advert, 0 redirects
        0 neighbor solicit, 12 neighbor advert
```

Related Commands

Command	Description
ipv6 enable	Enables IPv6 processing.
show ipv6 route	Displays IPv6 routes configured on the system.

show ips netsim

To display a summary of the IP Network Simulator interface status currently operating, use the show ips netsim command.

```
show ips netsim
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC.

Command History	Release	Modification
	3.1(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows the IP Network Simulator interfaces operating in network simulation mode:

```
switch# show ips netsim
Following ports operate in network simulator mode
GigabitEthernet2/3 and GigabitEthernet2/4
```

Related Commands	Command	Description
	ips netsim enable	Enables two Gigabit Ethernet interfaces to operate in network simulation mode.

show ips stats

To display IP storage statistics, use the show ips stats command.

```
show ips stats buffer | dma-bridge | icmp | ip | mac interface gigabitethernet slot / port
show ips stats hw-comp | tcp all | interface gigabitethernet slot / port
```

Syntax Description		
buffer		Displays IP storage buffer information.
dma-bridge		Displays the direct memory access (DMA) statistics.
icmp		Displays ICMP statistics.
ip		Displays IP statistics.
mac		Displays MAC statistics.
hw-comp		Displays hardware compression statistics.
tcp		Displays TCP statistics
all		Displays statistical information for all interfaces.
interface gigabitethernet slot/port		Specifies a Gigabit Ethernet interface by the slot and port.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines

Use the show ips stats icmp interface gigabitethernet command to obtain ICMP statistics for the selected interface.

Use the show ips stats ip interface gigabitethernet 2/1 command to obtain IP statistics for the selected interface.

Use the show ips stats mac interface gigabitethernet command to obtain Ethernet statistics for the selected interface.

Use the show ips stats tcp interface gigabitethernet command to obtain TCP statistics along with the connection list and TCP state or the selected interface.

Examples

The following example displays iSCSI buffer statistics:

```
switch# show ips stats buffer interface gigabitethernet 1/2
Buffer Statistics for port GigabitEthernet1/2
  Mbuf stats
    164248 total mbufs, 82119 free mbufs, 0 mbuf alloc failures
```

```

123186 mbuf high watermark, 20531 mbuf low watermark
0 free shared mbufs, 0 shared mbuf alloc failures
82124 total clusters, 77005 free clusters, 0 cluster alloc failures
86230 mbuf high watermark, 78017 mbuf low watermark
0 free shared clusters, 0 shared cluster alloc failures
Ether channel stats
0 tcp segments sent, 0 tcp segments received
0 xmit packets sent, 0 xmit packets received
0 config packets sent, 0 config packets received
0 MPQ packet send errors

```

The following example displays ICMP statistics:

```

switch# show ips stats icmp interface gigabitethernet 8/1
ICMP Statistics for port GigabitEthernet8/1
 2 ICMP messages received
 0 ICMP messages dropped due to errors
ICMP input histogram
 2 echo request
ICMP output histogram
 2 echo reply

```

The following example displays IP statistics:

```

switch# show ips stats ip interface gigabitethernet 8/1
Internet Protocol Statistics for port GigabitEthernet8/1
22511807 total received, 22509468 good, 2459 error
0 reassembly required, 0 reassembled ok, 0 dropped after timeout
27935633 packets sent, 0 outgoing dropped, 0 dropped no route
0 fragments created, 0 cannot fragment

```

The following example displays MAC statistics:

```

switch# show ips stats mac interface gigabitethernet 8/1
DPP HW GigabitEthernet8/1 statistics

dropped      : 0          octs, 0          pkts
oversize     : 0          pkts, 0          crcpkts
runt         : 0          pkts, 0          crcpkts
inband       : 88542331034 octs, 1193721449 pkts, 0      err
pci raw      : 0          pkts
fcs_align_err : 0          pkts

total        : 2642985114 octs, 1193721449 pkts

length of [pkts]:-
[64B]        : 226          [65B-127B]   : 1138408009
[128B-255B]  : 55292581    [256B-511B]  : 20497
[512B-1023B] : 90          [1024B-1518B]: 0
[1519B-MAX]  : 46

```

The following example displays TCP statistics:

```

switch# show ips stats tcp interface gigabitethernet 8/1
TCP Statistics for port GigabitEthernet8/1
Connection Stats
 0 active openings, 0 accepts
 0 failed attempts, 0 reset received, 0 established
Segment stats
23657893 received, 29361174 sent, 0 retransmitted
 0 bad segments received, 0 reset sent
TCP Active Connections

```

Local Address	Remote Address	State	Send-Q	Recv-Q
10.1.3.3:3260	10.1.3.106:51935	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.106:51936	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.106:51937	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.106:51938	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.106:51939	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.106:51940	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.106:51941	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.106:51942	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.106:51943	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.106:51944	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.115:1026	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.115:1027	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.115:1028	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.115:1029	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.115:1030	ESTABLISH	48	0
10.1.3.3:3260	10.1.3.115:1031	ESTABLISH	48	0
10.1.3.3:3260	10.1.3.115:1032	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.115:1033	ESTABLISH	0	0
10.1.3.3:3260	10.1.3.115:1034	ESTABLISH	0	0
0.0.0.0:3260	0.0.0.0:0	LISTEN	0	0

show ips stats fabric interface

To display the fabric-related statistics for the given iSCSI or FCIP interface on a Cisco MDS 9000 18/4-Port Multi Service Module IPS linecard, use the show ips stats fabric interface command.

```
show ips stats fabric interface [iscsi slot/port | fcip N]
```

Syntax Description	
iscsi slot/port	(Optional) Displays Data Path Processor (DPP) fabric statistics for the iSCSI interface.
fcip N	(Optional) Displays DPP fabric statistics for the fcip interface.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines This command also displays information on flow control specific to DPP.

Examples The following example shows the statistics for iSCSI on the specified interface:

```
switch# show ips stats fabric interface interface iscsi 1/1
DPP Fabric statistics for iscsi 1/1
  Software Egress Counters
    14049 good frames, 0 bad header cksum, 0 bad FIFO SOP
    0 parity error, 0 FC CRC error, 0 timestamp expired error
    0 unregistered port index, 0 unknown internal type
    0 RDL ok, 0 RDL drop (too big), 0 RDL ttl_1
    0 idle poll count, 0 loopback
    0 FCC PQ, 0 FCC EQ, 0 FCC generated
    Flow Control: 0 [0], 0 [1], 0 [2], 0 [3]
  Software Ingress Counters
    0 good frames, 0 header cksum error, 0 FC CRC error
    0 iSCSI CRC error, 0 descriptor SOP error, 0 parity error
    0 frames soft queued, 0 current Q, 0 max Q, 0 low memory
    0 out of memory drop, 0 queue full drop
    0 RDL ok, 0 RDL drop (too big)
    Flow Control: 0 [0], 0 [1], 0 [2], 0 [3]
```

The following example shows the statistics for FCIP on the specified interface:

```
switch# show ips stats fabric interface fcip 1
DPP Fabric statistics for fcip1
  Software Egress Counters
    14049 good frames, 0 bad header cksum, 0 bad FIFO SOP
    0 parity error, 0 FC CRC error, 0 timestamp expired error
    0 unregistered port index, 0 unknown internal type
    0 RDL ok, 0 RDL drop (too big), 0 RDL ttl_1
```

```
0 idle poll count, 0 loopback
0 FCC PQ, 0 FCC EQ, 0 FCC generated
Flow Control: 0 [0], 0 [1], 0 [2], 0 [3]
Software Ingress Counters
0 good frames, 0 header cksum error, 0 FC CRC error
0 iSCSI CRC error, 0 descriptor SOP error, 0 parity error
0 frames soft queued, 0 current Q, 0 max Q, 0 low memory
0 out of memory drop, 0 queue full drop
0 RDL ok, 0 RDL drop (too big)
Flow Control: 0 [0], 0 [1], 0 [2], 0 [3]
```

Related Commands

Command	Description
clear ips stats fabric interface	Clears the statistics for the given iSCSI or FCIP interface on a Cisco MDS 9000 18/4-Port Multi Service Module IPS linecard.

show ips stats netsim

To display IP Network Simulator interface statistics, use the show ips stats netsim command.

```
show ips stats netsim ingress gigabitethernet slot/port
```

Syntax Description

ingress	Specifies the ingress direction.
gigabitethernet slot/port	Specifies the the slot and port number of the Gigabit Ethernet interface.

Command Default

None.

Command Modes

EXEC.

Command History

Release	Modification
3.1(1)	This command was introduced.

Usage Guidelines

The parameters displayed by default are delay, bandwidth, queue size, and queue delay. The network statistics displayed are number of packets dropped, queue size, number of packets reordered, and average speed.

Examples

The following example shows the IP Network Simulator statistics for interface 2/3:

```
switch# show ips stats netsim ingress gigabitethernet 2/3
Network Simulator Configuration for Ingress on GigabitEthernet2/3
Delay : 50000 microseconds
Rate : 1000000 kbps
Max_q : 100000 bytes
Max_qdelay : 600000 clocks
Random Drop % : 1.00%
Network Simulator Statistics for Ingress on GigabitEthernet2/3
Dropped (tot) = 28
Dropped (netsim) = 14
Reordered (netsim) = 0
Max Qlen(pkt) = 7
Qlen (pkt) = 0
Max Qlen (byte) = 326
Qlen (byte) = 0
Mintxdel(poll) = 852
Mintxdel(ethtx) = 360
empty = 757
txdel = 8
late = 617
Average speed = 0 Kbps
```

Related Commands

Command	Description
ips netsim enable	Enables two Gigabit Ethernet interfaces to operate in the network simulation mode.

show ips status

To display the IP storage status, use the show ips status command.

```
show ips status [module slot]
```

Syntax Description

module slot	(Optional) Identifies the module in the specified slot.
-------------	---

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays the IP storage status for all modules on the switch:

```
switch# show ips status
Port 8/1 READY
Port 8/2 READY
Port 8/3 READY
Port 8/4 READY
Port 8/5 READY
Port 8/6 READY
Port 8/7 READY
Port 8/8 READY
```

The following example displays the IP storage status for the module in slot 9:

```
switch# show ips status module 9
Port 9/1 READY
Port 9/2 READY
Port 9/3 READY
Port 9/4 READY
Port 9/5 READY
Port 9/6 READY
Port 9/7 READY
Port 9/8 READY
```

show ipv6 access-list

To display a summary of IPv6 access control lists (ACLs), use the show ipv6 access-list command.

```
show ipv6 access-list [list-name]
```

Syntax Description

list-name	(Optional) Specifies the name of the ACL. The maximum size is 64.
-----------	---

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.1(0)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays an IPv6 access control list:

```
switch# show ipv6 access-list
Access List Name/Number      Filters IF   Status      Creation Time
-----
abc                          3          7    active    Tue Jun 24 17:51:40 2003
x1                            3          1    active    Tue Jun 24 18:32:25 2003
x3                            0          1    not-ready Tue Jun 24 18:32:28 2003
```

Related Commands

Command	Description
ipv6 access-list	Configures an IPv6-ACL.

show ipv6 interface

To display IPv6 interface status and configuration information, use the show ipv6 interface command.

```
show ipv6 interface [gigabitethernet slot/port | mgmt 0 | port-channel port-channel-number | vsan vsan-id]
```

Syntax Description	
gigabitethernet slot/port	(Optional) Displays a Gigabit Ethernet interface.
mgmt 0	(Optional) Displays the management interface.
port-channel	(Optional) Displays a PortChannel interface.
port-channel-number	(Optional) Specifies the PortChannel number. The range is 1 to 128.
vsan	(Optional) Displays an IPFC VSAN interface.
vsan-id	(Optional) Specifies the VSAN ID. The range is 1 to 4093.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.1(0)	This command was introduced.

Usage Guidelines None.

Examples The following example displays IPv6 interface information:

```
switch# show ipv6 interface
GigabitEthernet1/2 is up
  IPv6 is enabled
  Global address(es):
    5000::1/64
  Link-local address(es):
    fe80::205:30ff:fe01:a6bf
  ND DAD is disabled
  ND reachable time is 30000 milliseconds
  ND retransmission time is 1000 milliseconds
  Stateless autoconfig for addresses disabled
GigabitEthernet2/2 is up
  IPv6 is enabled
  Global address(es):
    6000::1/64
  Link-local address(es):
    fe80::205:30ff:fe00:a413
  ND DAD is disabled
  ND reachable time is 30000 milliseconds
  ND retransmission time is 1000 milliseconds
  Stateless autoconfig for addresses disabled
```

Related Commands

Command	Description
ipv6 address	Configures an IPv6 address.
ipv6 nd	Configures IPv6 neighbor discovery commands.
ipv6 route	Configures an IPv6 static route.
show ipv6 neighbors	Displays information about IPv6 neighbors for the system.
show ipv6 route	Displays the IPv6 routes configured on the system.

show ipv6 neighbours

To display IPv6 neighbors configuration information, use the show ipv6 neighbours command.

```
show ipv6 neighbours [interface gigabitethernet slot/port | mgmt 0 | vsan vsan-id]
```

Syntax Description		
interface	(Optional)	Displays the IP interface status and configuration.
gigabitethernet slot/port	(Optional)	Displays a Gigabit Ethernet interface slot and port number.
mgmt 0	(Optional)	Displays the management interface.
vsan vsan-id	(Optional)	Displays an IPFC VSAN interface and specifies the VSAN ID. The range is 1 to 4093

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.1(0)	This command was introduced.

Usage Guidelines None.

Examples The following example displays information about IPv6 neighbor discovery:

```
switch# show ipv6 neighbours gigabitethernet 2/1
IPv6 Address                               Age Link-layer Addr State Interface
2001:0DB8:0:4::2                           0 0003.a0d6.141e REACH Ethernet2
FE80::XXXX:A0FF:FED6:141E                  0 0003.a0d6.141e REACH Ethernet2
2001:0DB8:1::45a                           - 0002.7d1a.9472 REACH Ethernet2
```

Related Commands	Command	Description
	ipv6 nd	Configures IPv6 neighbor discovery commands.

show ipv6 route

To display the IPv6 routes configured on the system, use the show ipv6 route command.

```
show ipv6 route
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.1(0)	This command was introduced.

Usage Guidelines None.

Examples The following example displays information about an IPv6 route:

```
switch# show ipv6 route
IPv6 Routing Table
Codes: C - Connected, L - Local, S - Static G - Gateway
C    5000::/64
      via fe80::205:30ff:fe01:a6bf, GigabitEthernet1/2
C    6000::/64
      via fe80::205:30ff:fe00:a413, GigabitEthernet2/2
L    fe80::/10
      via ::
L    ff00::/8
      via ::
```

Related Commands	Command	Description
	ipv6 route	Configures an IPv6 route.

show ipv6 routing

To display IPv6 unicast routing information, use the show ipv6 routing command.

```
show ipv6 routing
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.1(0)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the ipv6 routing information:

```
switch# show ipv6 routing
ipv6 routing is enabled
```

Related Commands	Command	Description
	ipv6 routing	Enables IPv6 unicast routing.

show ipv6 traffic

To display IPv6 protocol statistics for the system, use the show ipv6 traffic command.

```
show ipv6 traffic [interface gigabitethernet slot/port | mgmt 0 | port-channel number | vsan vsan-id]
```

Syntax Description

interface	(Optional) Displays the IP interface status and configuration.
gigabitethernet slot/port	(Optional) Displays a Gigabit Ethernet interface slot and port number.
mgmt 0	(Optional) Displays the management interface.
port-channel number	(Optional) Displays the PortChannel interface. The range is 1 to 256.
vsan vsan-id	(Optional) Displays a IPFC VSAN interface and specifies the VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.1(0)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays IPv6 protocol statistics on the system:

```
switch# show ipv6 traffic
IPv6 Statistics:
  Rcvd: 1 total, 0 local destination
        0 errors, 0 truncated, 0 too big
        0 unknown protocol, 0 dropped
        0 fragments, 0 reassembled
        0 couldn't reassemble, 0 reassembly timeouts
  Sent: 0 generated, 0 forwarded 0 dropped
        0 fragmented, 0 fragments created, 0 couldn't fragment
ICMPv6 Statistics:
  Rcvd: 0 total, 0 errors, 0 unreachable, 0 time exceeded
        0 too big, 0 param probs, 0 admin prohibits
        0 echos, 0 echo reply, 0 redirects
        0 group query, 0 group report, 0 group reduce
        0 router solicit, 0 router advert
        0 neighbor solicit, 0 neighbor advert
  Sent: 74 total, 0 errors, 0 unreachable, 0 time exceeded
        0 too big, 0 param probs, 0 admin prohibits
        0 echos, 0 echo reply, 0 redirects
        0 group query, 53 group report, 0 group reduce
        0 router solicit, 0 router advert
        0 neighbor solicit, 21 neighbor advert
```

The following example displays IPv6 traffic on Gigabit Ethernet interface 2/2:

```
switch# show ipv6 traffic interface gigabitethernet 2/2
IPv6 Statistics for GigabitEthernet2/2
  Rcvd: 10 total, 0 local destination
        0 errors, 0 truncated, 0 too big
        0 unknown protocol, 0 dropped
        0 fragments, 0 reassembled
        0 couldn't reassemble, 0 reassembly timeouts
  Sent: 54 generated, 0 forwarded 0 dropped
        0 fragmented, 0 fragments created, 0 couldn't fragment
ICMPv6 Statistics for GigabitEthernet2/2
  Rcvd: 4 total, 0 errors, 0 unreachables, 0 time exceeded
        0 too big, 0 param probs, 0 admin prohibits
        0 echos, 0 echo reply, 0 redirects
        0 group query, 2 group report, 0 group reduce
        0 router solicit, 0 router advert
        0 neighbor solicit, 2 neighbor advert
  Sent: 21 total, 0 errors, 0 unreachables, 0 time exceeded
        0 too big, 0 param probs, 0 admin prohibits
        0 echos, 0 echo reply, 0 redirects
        0 group query, 6 group report, 3 group reduce
        2 router solicit, 0 router advert
        2 neighbor solicit, 8 neighbor advert
```

show isapi dpp

To obtain a list of ITLs for a specific Data Path Processor (DPP), use the show isapi dpp command.

```
show isapi dpp dpp-number
```

Syntax Description	dpp-number	Specifies the slot along with the DPP number.
---------------------------	------------	---

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines None.

Examples

The following example displays the ISAPI information for DPP number 7:

```
module-3# show isapi dpp 7 queue
I_T 0x837c9140 [vsan 42 host 0x8d0005 vt 8d0014/92:81:00:00:08:50:ca:d4]: 0 tasks, mtu 2048,
seqid 99, abts 0 BSY

Q 837cc380: LUN 3, status 0x22, R/W access 0x0/0x0, 0 tasks, 0 busy/TSF, 0 ho
Tasks:

Q 837cbd80: LUN 2, status 0x22, R/W access 0x0/0x0, 0 tasks, 0 busy/TSF, 0 ho
Tasks:

Q 837cb100: LUN 1, status 0x22, R/W access 0x0/0x0, 0 tasks, 0 busy/TSF, 0 ho
Tasks:

Q 837cb080: LUN 0, status 0x22, R/W access 0x0/0x0, 0 tasks, 0 busy/TSF, 0 ho
Tasks:
```

Related Commands	Command	Description
	show isapi dpp all queue	Displays ITLs for all DPPs on the SSM.

show isapi tech-support santap file

To display ISAPI information for troubleshooting, use the show isapi tech-support santap file command.

```
show isapi tech-support santap file [name]
```

Syntax Description

name	(Optional) Specifies the name of the file. The file is stored on modflash.
------	--

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 4.1(1b)	Added Usage Guidelines.

Usage Guidelines

SANTap tech support, collected through the above CLI, is stored in the line card modflash. It includes ISAPI tech support and the outputs of the show debug santap event-history and show santap tech-support command. These two outputs are not present in ISAPI tech support, and are not collected after a DPP crash.

The size of the modflash is limited, close to 60 MB in 4.1(1). If less space remains on modflash than the size of the output file, an unusable truncated file may get created. To ensure that the SANTap tech support file gets created in the modflash properly, enough space (at least 20 MB) should be made available before entering the command. Copy a tech support file after collecting the tech support, and delete it from the modflash.

ISAPI tech support collected through the show isapi tech-support file <filename> is stored in the line card log directory.

The size of the log directory also is limited to 180 MB. This is shared for some other purposes as well. Again, at least 20 MB should be made available in the log directory before collecting ISAPI tech support, and the file should be copied out and deleted from the log directory once done.

The following commands may be used for copying and deleting files from the modflash and log directories on the line card:

copy log:// module / file name target fs (entered on the supervisor module) will copies the isapi tech support file from /var/log/external.

copy modflash:// module -1/ file name target fs (entered on the supervisor module) copies the santap-isapi tech support file from the line card modflash.

clear debug-logfile filename (entered on the line card module) deletes logfiles in the line card log directory.

delete modflash://module-1/ filename (entered on the supervisor module) deletes logfiles in the line card modflash.

Examples

The following example shows how to display the ISAPI information for troubleshooting:

```
switch# attach module 13
Attaching to module 13 ...
To exit type 'exit', to abort type '$.'
```

show isapi tech-support santap file

```
Bad terminal type: "ansi". Will assume vt100.  
switch# show isapi tech-support santap file cisco  
Re-directing tech support information to file: cisco  
switch#
```

Related Commands

Command	Description
show isapi dpp all queue	Displays ITLs for all DPPs on the SSM.

show iscsi global

To display global iSCSI configured information, use the `show iscsi global` command.

```
show iscsi global
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines None.

Examples

The following example displays all configured iSCSI initiators:

```
switch# show iscsi global
iSCSI Global information
Authentication: CHAP, NONE
Import FC Target: Enabled
Initiator idle timeout: 300 seconds
Dynamic Initiator: iSLB
Number of target node: 1
Number of portals: 2
Number of session: 0
Failed session: 0, Last failed initiator name:
```

show iscsi initiator

To display information about all the iSCSI nodes that are remote to the switch, use the `show iscsi initiator` command.

```
show iscsi initiator [configured [initiator-name] | detail | fcp-session [detail] | iscsi-session [detail] |
summary [name]]
```

Syntax Description

configured	(Optional) Displays the configured information for the iSCSI initiator.
initiator-name	(Optional) Specifies the name of an initiator.
detail	(Optional) Displays detailed iSCSI initiator information.
fcp-session	(Optional) Displays the Fibre Channel session details.
iscsi-session	(Optional) Displays iSCSI session details.
summary	(Optional) Displays summary information.
name	(Optional) Displays initiator name information.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

If no parameter is provided the command lists all the active iSCSI initiators. If the iSCSI node name is provided then the command lists the details of that iSCSI initiator.

Examples

The following example displays all iSCSI initiators:

```
switch# show iscsi initiator

iSCSI Node name is iqn.1987-05.com.cisco.01.15cee6e7925087abc82ed96377653c8
  iSCSI alias name: iscsi7-lnx
  Node WWN is 23:10:00:05:30:00:7e:a0 (dynamic)
  Member of vsans: 1
  Number of Virtual n_ports: 1
  Virtual Port WWN is 23:12:00:05:30:00:7e:a0 (dynamic)
    Interface iSCSI 8/3, Portal group tag: 0x382
      VSAN ID 1, FCID 0xdc0100
iSCSI Node name is iqn.1987-05.com.cisco.02.91b0ee2e8aa1.iscsi16-w2k
  iSCSI alias name: ISCSI16-W2K
  Node WWN is 23:1f:00:05:30:00:7e:a0 (dynamic)
  Member of vsans: 1
  Number of Virtual n_ports: 1
  Virtual Port WWN is 23:28:00:05:30:00:7e:a0 (dynamic)
```

```

Interface iSCSI 8/3, Portal group tag: 0x382
  VSAN ID 1, FCID 0xdc0101
iSCSI Node name is iqn.1987-05.com.cisco.01.b6ca466f8b4d8e848ab17e92f24bf9cc
iSCSI alias name: iscsi6-lnx
Node WWN is 23:29:00:05:30:00:7e:a0 (dynamic)
Member of vsans: 1, 2, 3, 4
Number of Virtual n_ports: 1
Virtual Port WWN is 23:2a:00:05:30:00:7e:a0 (dynamic)
  Interface iSCSI 8/3, Portal group tag: 0x382
    VSAN ID 4, FCID 0xee0000
    VSAN ID 3, FCID 0xee0100
    VSAN ID 2, FCID 0xee0000
    VSAN ID 1, FCID 0xdc0102
...

```

The following example displays detailed information for all iSCSI initiators:

```

switch# show iscsi initiator
detail
iSCSI Node name is iqn.1987-05.com.cisco.01.15cee6e7925087abc82ed96377653c8
iSCSI alias name: iscsi7-lnx
Node WWN is 23:10:00:05:30:00:7e:a0 (dynamic)
Member of vsans: 1
Number of Virtual n_ports: 1
Virtual Port WWN is 23:10:00:05:30:00:7e:a0 (dynamic)
  Interface iSCSI 8/3, Portal group tag is 0x382
    VSAN ID 1, FCID 0xdc0100
    No. of FC sessions: 3
    No. of iSCSI sessions: 2
    iSCSI session details
      Target node: iqn.com.domainname.172.22.93.143.08-03.gw.22000020374b5247
      Statistics:
        PDU: Command: 0, Response: 0
        Bytes: TX: 0, RX: 0
        Number of connection: 1
      TCP parameters
        Connection Local 10.1.3.3:3260, Remote 10.1.3.107:34112
        Path MTU 1500 bytes
        Current retransmission timeout is 300 ms
        Round trip time: Smoothed 2 ms, Variance: 1
        Advertised window: Current: 6 KB, Maximum: 6 KB, Scale: 3
        Peer receive window: Current: 250 KB, Maximum: 250 KB, Scale: 2
        Congestion window: Current: 8 KB
      Target node: iqn.com.domainname.172.22.93.143.08-03.gw.22000020374b5247
      Statistics:
        PDU: Command: 0, Response: 0
        Bytes: TX: 0, RX: 0
        Number of connection: 1
      TCP parameters
        Connection Local 10.1.3.3:3260, Remote 10.1.3.107:34112
        Path MTU 1500 bytes
        Current retransmission timeout is 300 ms
        Round trip time: Smoothed 2 ms, Variance: 1
        Advertised window: Current: 6 KB, Maximum: 6 KB, Scale: 3
        Peer receive window: Current: 250 KB, Maximum: 250 KB, Scale: 2
        Congestion window: Current: 8 KB
...

```

show iscsi session

To display iSCSI session information, use the show iscsi session command.

```
show iscsi session [incoming] [initiator name] [outgoing] [target name] [detail]
```

Syntax Description

incoming	(Optional) Displays incoming iSCSI sessions.
initiator name	(Optional) Displays specific iSCSI initiator session information. Maximum length is 80 characters.
outgoing	(Optional) Displays outgoing iSCSI sessions
target name	(Optional) Displays specific iSCSI target session information. Maximum length is 80 characters.
detail	(Optional) Displays detailed iSCSI session information.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

All the parameters are optional in the show iscsi session commands. If no parameter is provided the command lists all the active iSCSI initiator or target sessions. If the IP address or iSCSI node name is provided, then the command lists details of all sessions from that initiator or to that target.

Examples

The following command displays the iSCSI session information:

```
switch# show iscsi session
Initiator iqn.1987-05.com.cisco.01.15cee6e7925087abc82ed96377653c8
  Session #1
    Target iqn.com.domainname.172.22.93.143.08-03.gw.22000020374b5247
    VSAN 1, ISID 000000000000, Status active, no reservation
  Session #2
    Target iqn.com.domainname.172.22.93.143.08-03.gw.220000203738e77d
    VSAN 1, ISID 000000000000, Status active, no reservation
Initiator iqn.1987-05.com.cisco:02.91b0ee2e8aa1.iscsi16-w2k
  Session #1
    Discovery session, ISID 00023d00022f, Status active
  Session #2
    Target iqn.com.domainname.172.22.93.143.08-03.gw.2200002037388bc2
    VSAN 1, ISID 00023d000230, Status active, no reservation
...
```

The following command displays the specified iSCSI target:

```
switch# show iscsi session target iqn.com.domainname.172.22.93.143.08-03.gw.220000203738e77d
```

```
Initiator iqn.1987-05.com.cisco.01.15cee6e7925087abc82ed96377653c8
Session #1
Target iqn.com.domainname.172.22.93.143.08-03.gw.220000203738e77d
VSAN 1, ISID 000000000000, Status active, no reservation
```



Note On the IPS module, you can verify what iSCSI initiator IQN has been assigned which pWWN when it logs in by using the show zone active vsan vsan-id command. switch# zone name iscsi_16_A vsan 16* fcid 0x7700d4 [pwwn 21:00:00:20:37:c5:2d:6d]* fcid 0x7700d5 [pwwn 21:00:00:20:37:c5:2e:2e]* fcid 0x770100 [symbolic-nodename iqn.1987-05.com.cisco.02.BC3FEEFC431B199F81F33E97E2809C14.NUYEAR]

The following command displays the specified iSCSI initiator:

```
switch# show iscsi session initiator iqn.1987-05.com.cisco:02.91b0ee2e8aa1.iscsi16-w2k
Initiator iqn.1987-05.com.cisco:02.91b0ee2e8aa1.iscsi16-w2k
Session #1
Discovery session, ISID 00023d00022f, Status active
Session #2
Target iqn.com.domainname.172.22.93.143.08-03.gw.2200002037388bc2
VSAN 1, ISID 00023d000230, Status active, no reservation
Session #3
Target iqn.com.domainname.172.22.93.143.08-03.gw.210000203739ad7f
VSAN 1, ISID 00023d000235, Status active, no reservation
Session #4
Target iqn.com.domainname.172.22.93.143.08-03.gw.210000203739aa3a
VSAN 1, ISID 00023d000236, Status active, no reservation
Session #5
Target iqn.com.domainname.172.22.93.143.08-03.gw.210000203739ada7
VSAN 1, ISID 00023d000237, Status active, no reservation
Session #6
Target iqn.com.domainname.172.22.93.143.08-03.gw.2200002037381ccb
VSAN 1, ISID 00023d000370, Status active, no reservation
Session #7
Target iqn.com.domainname.172.22.93.143.08-03.gw.2200002037388b54
VSAN 1, ISID 00023d000371, Status active, no reservation
Session #8
Target iqn.com.domainname.172.22.93.143.08-03.gw.220000203738a19a
VSAN 1, ISID 00023d000372, Status active, no reservation
Session #9
Target iqn.com.domainname.172.22.93.143.08-03.gw.2200002037360053
VSAN 1, ISID 00023d000373, Status active, no reservation
```

show iscsi stats

To display the iSCSI statistics information, use the show iscsi stats command.

```
show iscsi stats [iscsi slot / port] [clear | detail]
```

Syntax Description	
iscsi slot/port	(Optional) Displays statistics for the specified iSCSI interface.
clear	(Optional) Clears iSCSI statistics for the session or interface.
detail	(Optional) Displays detailed iSCSI statistics for the session or interface.

Command Default None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following command displays brief iSCSI statistics:

```
switch# show iscsi stats
iscsi8/1
  5 minutes input rate 23334800 bits/sec, 2916850 bytes/sec, 2841 frames/sec
  5 minutes output rate 45318424 bits/sec, 5664803 bytes/sec, 4170 frames/sec
  iSCSI statistics
    86382665 packets input, 2689441036 bytes
      3916933 Command pdus, 82463404 Data-out pdus, 2837976576 Data-out bytes,
0 fragments
    131109319 packets output, 2091677936 bytes
      3916876 Response pdus (with sense 0), 1289224 R2T pdus
    125900891 Data-in pdus, 93381152 Data-in bytes
iscsi8/2
  5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  iSCSI statistics
    0 packets input, 0 bytes
      0 Command pdus, 0 Data-out pdus, 0 Data-out bytes, 0 fragments
    0 packets output, 0 bytes
      0 Response pdus (with sense 0), 0 R2T pdus
    0 Data-in pdus, 0 Data-in bytes
iscsi8/3
  5 minutes input rate 272 bits/sec, 34 bytes/sec, 0 frames/sec
  5 minutes output rate 40 bits/sec, 5 bytes/sec, 0 frames/sec
  iSCSI statistics
    30 packets input, 10228 bytes
      0 Command pdus, 0 Data-out pdus, 0 Data-out bytes, 0 fragments
    30 packets output, 1744 bytes
```



```

    0 Response pdus (with sense 0), 0 R2T pdus
    0 Data-in pdus, 0 Data-in bytes
iscsi8/4
  5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  iSCSI statistics
    0 packets input, 0 bytes
    0 Command pdus, 0 Data-out pdus, 0 Data-out bytes, 0 fragments
    0 packets output, 0 bytes
    0 Response pdus (with sense 0), 0 R2T pdus
    0 Data-in pdus, 0 Data-in bytes
iscsi8/5
  5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  iSCSI statistics
    0 packets input, 0 bytes
    0 Command pdus, 0 Data-out pdus, 0 Data-out bytes, 0 fragments
    0 packets output, 0 bytes
    0 Response pdus (with sense 0), 0 R2T pdus
    0 Data-in pdus, 0 Data-in bytes
iscsi8/6
  5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  iSCSI statistics
    0 packets input, 0 bytes
    0 Command pdus, 0 Data-out pdus, 0 Data-out bytes, 0 fragments
    0 packets output, 0 bytes
    0 Response pdus (with sense 0), 0 R2T pdus
    0 Data-in pdus, 0 Data-in bytes
iscsi8/7
  5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  iSCSI statistics
    0 packets input, 0 bytes
    0 Command pdus, 0 Data-out pdus, 0 Data-out bytes, 0 fragments
    0 packets output, 0 bytes
    0 Response pdus (with sense 0), 0 R2T pdus
    0 Data-in pdus, 0 Data-in bytes
iscsi8/8
  5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  iSCSI statistics
    0 packets input, 0 bytes
    0 Command pdus, 0 Data-out pdus, 0 Data-out bytes, 0 fragments
    0 packets output, 0 bytes
    0 Response pdus (with sense 0), 0 R2T pdus
    0 Data-in pdus, 0 Data-in bytes

```

The following command displays detailed iSCSI statistics:

```

switch# show iscsi stats detail
iscsi8/1
  5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  iSCSI statistics
    0 packets input, 0 bytes
    0 Command pdus, 0 Data-out pdus, 0 Data-out bytes, 0 fragments
    0 packets output, 0 bytes
    0 Response pdus (with sense 0), 0 R2T pdus
    0 Data-in pdus, 0 Data-in bytes
  iSCSI Forward:
    Command: 0 PDUs (Received: 0)
    Data-Out (Write): 0 PDUs (Received 0), 0 fragments, 0 bytes
  FCP Forward:

```

```

Xfer_rdy: 0 (Received: 0)
Data-In: 0 (Received: 0), 0 bytes
Response: 0 (Received: 0), with sense 0
TMF Resp: 0
iSCSI Stats:
  Login: attempt: 0, succeed: 0, fail: 0, authen fail: 0
  Rcvd: NOP-Out: 0, Sent: NOP-In: 0
    NOP-In: 0, Sent: NOP-Out: 0
    TMF-REQ: 0, Sent: TMF-RESP: 0
    Text-REQ: 0, Sent: Text-RESP: 0
    SNACK: 0
    Unrecognized Opcode: 0, Bad header digest: 0
    Command in window but not next: 0, exceed wait queue limit: 0
    Received PDU in wrong phase: 0
FCP Stats:
  Total: Sent: 0
    Received: 0 (Error: 0, Unknown: 0)
  Sent: PLOGI: 0, Rcvd: PLOGI_ACC: 0, PLOGI_RJT: 0
    PRLI: 0, Rcvd: PRLI_ACC: 0, PRLI_RJT: 0, Error resp: 0
    LOGO: 0, Rcvd: LOGO_ACC: 0, LOGO_RJT: 0
    ABTS: 0, Rcvd: ABTS_ACC: 0
    TMF REQ: 0
    Self orig command: 0, Rcvd: data: 0, resp: 0
  Rcvd: PLOGI: 0, Sent: PLOGI_ACC: 0
    LOGO: 0, Sent: LOGO_ACC: 0
    PRLI: 0, Sent: PRLI_ACC: 0
    ABTS: 0
iSCSI Drop:
  Command: Target down 0, Task in progress 0, LUN map fail 0
    CmdSeqNo not in window 0, No Exchange ID 0, Reject 0
    Persistent Resv 0    Data-Out: 0, TMF-Req: 0
FCP Drop:
  Xfer_rdy: 0, Data-In: 0, Response: 0
Buffer Stats:
  Buffer less than header size: 0, Partial: 0, Split: 0
  Pullup give new buf: 0, Out of contiguous buf: 0, Unaligned m_data: 0
iscsi8/2
  5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  iSCSI statistics
    0 packets input, 0 bytes
    0 Command pdus, 0 Data-out pdus, 0 Data-out bytes, 0 fragments
    0 packets output, 0 bytes
    0 Response pdus (with sense 0), 0 R2T pdus
    0 Data-in pdus, 0 Data-in bytes
  iSCSI Forward:
    Command: 0 PDUs (Received: 0)
    Data-Out (Write): 0 PDUs (Received 0), 0 fragments, 0 bytes
  FCP Forward:
    Xfer_rdy: 0 (Received: 0)
    Data-In: 0 (Received: 0), 0 bytes
    Response: 0 (Received: 0), with sense 0
  ...

```

The following command displays detailed statistics for the specified iSCSI interface:

```

switch# show iscsi stats iscsi 8/1
iscsi8/1
  5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
  iSCSI statistics
    0 packets input, 0 bytes
    0 Command pdus, 0 Data-out pdus, 0 Data-out bytes, 0 fragments
    0 packets output, 0 bytes

```

```
0 Response pdus (with sense 0), 0 R2T pdus  
0 Data-in pdus, 0 Data-in bytes
```

show iscsi virtual-target

To display all the iSCSI nodes that are local to the switch, use the show iscsi virtual-target command.

```
show iscsi virtual-target [configured] [name]
```

Syntax Description	
configured	(optional) Displays the information for all iSCSI ports.
name	(Optional) Displays iSCSI information for the specified virtual-target.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines If no parameter is provided the command lists all the active iSCSI virtual targets. If the iSCSI node name is provided then the command lists the details of that iSCSI virtual target.

Examples

The following example displays information on all the iSCSI virtual targets:

```
switch# show iscsi virtual-target
target: abc1
  Port WWN 21:00:00:20:37:a6:b0:bf
  Configured node
target: iqn.com.domainname.172.22.93.143.08-03.gw.22000020374b5247
  Port WWN 22:00:00:20:37:4b:52:47 , VSAN 1
  Auto-created node
...
target: iqn.com.domainname.172.22.93.143.08-03.gw.210000203739aa39
  Port WWN 21:00:00:20:37:39:aa:39 , VSAN 1
  Auto-created node
```

The following example displays a specified iSCSI virtual target:

```
switch# show iscsi virtual-target iqn.com.domainname.172.22.93.143.08-03.gw.210000203739a95b
target: iqn.com.domainname.172.22.93.143.08-03.gw.210000203739a95b
  Port WWN 21:00:00:20:37:39:a9:5b , VSAN 1
  Auto-created node
```

The following example displays the trespass status for a virtual target:

```
switch# show iscsi virtual-target iqn.abc
target: abc
  Port WWN 00:00:00:00:00:00:00:00
  Configured node
  all initiator permit is disabled
  trespass support is enabled S
```

show islb cfs-session status

To display iSCSI server load balancing (iSLB) Cisco Fabric Services information, use the show islb cfs-session status command.

```
show islb cfs-session status
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None.

Examples The following example displays iSLB session informations.

```
ips-hac2# show islb cfs-session status
last action          : fabric distribute disable
last action result   : success
last action failure cause : success
```

Related Commands	Command	Description
	show islb initiator	Displays iSLB initiator information.
	show islb merge status	Displays iSLB merge status information.
	show islb pending	Displays iSLB pending configurations.
	show islb pending-diff	Displays iSLB pending configuration differences.
	show islb session	Displays iSLB session information.
	show islb status	Displays iSLB CFS status information.
	show islb virtual-target	Displays iSLB virtual target information.
	show islb vrrp	Displays iSLB VRRP load balancing information.

show islb initiator

To display iSCSI server load balancing (iSLB) Cisco Fabric Services information, use the show islb initiator command.

show islb initiator [name node-name [detail | fcp-session [detail] | iscsi-session [detail]] | configured [name initiator-name] | detail | fcp-session [detail] | iscsi-session [detail] | summary [name]]

Syntax Description

name node-name	Displays the initiator node name. The maximum size is 80.
detail	Displays more detailed information.
fcp-session	Displays Fibre Channel session details.
iscsi-session	Displays iSLB session details.
configured	Displays iSLB initiator configured information.
name initiator-name	Displays the configured initiator name. The maximum size is 223.
summary	Displays iSLB initiator summary information.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows iSLB initiator configuration information:

```
switch# show islb initiator configured
iSCSI Node name is 1.1.1.1
  No. of PWWN: 2
    Port WWN is 23:01:00:0c:85:90:3e:82
    Port WWN is 23:02:00:0c:85:90:3e:82
  Load Balance Metric: 1000
  Number of Initiator Targets: 0
iSCSI Node name is 2.2.2.2
  Load Balance Metric: 1000
  Number of Initiator Targets: 0
```

Related Commands

Command	Description
show islb cfs-session status	Displays iSLB session status and status information.

Command	Description
show islb merge status	Displays iSLB merge status information.
show islb pending	Displays iSLB pending configurations.
show islb pending-diff	Displays iSLB pending configuration differences.
show islb session	Displays iSLB session information.
show islb status	Displays iSLB CFS status information.
show islb virtual-target	Displays iSLB virtual target information.
show islb vrrp	Displays iSLB VRRP load balancing information.

show islb merge status

To display iSCSI server load balancing (iSLB) merge status information, use the show islb merge status command.

```
show islb merge status
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows iSLB merge status information:

```
switch# show islb merge status
Merge Status: SUCCESS
```

Related Commands	Command	Description
	show islb cfs-session status	Displays iSLB session information.
	show islb initiator	Displays iSLB initiator information.
	show islb pending	Displays iSLB pending configurations.
	show islb pending-diff	Displays iSLB pending configuration differences.
	show islb session	Displays iSLB session information.
	show islb status	Displays iSLB CFS status information.
	show islb virtual-target	Displays iSLB virtual target information.
	show islb vrrp	Displays iSLB VRRP load balancing information.

show islb pending

To display iSCSI server load balancing (iSLB) pending configurations, use the show islb pending command.

```
show islb pending
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None.

Examples

The following example shows iSLB pending configuration information:

```
switch# show islb pending
iscsi initiator idle-timeout 10

islb initiator ip-address 10.1.1.1static pWWN 23:01:00:0c:85:90:3e:82static pWWN
23:06:00:0c:85:90:3e:82username test1

islb initiator ip-address 10.1.1.2static nWWN 23:02:00:0c:85:90:3e:82
```

Related Commands	Command	Description
	show islb initiator	Displays iSLB initiator information.
	show islb cfs-session status	Displays iSLB session information.
	show islb merge status	Displays iSLB merge status information.
	show islb pending-diff	Displays iSLB pending configuration differences.
	show islb session	Displays iSLB session information.
	show islb status	Displays iSLB CFS status information.
	show islb virtual-target	Displays iSLB virtual target information.
	show islb vrrp	Displays iSLB VRRP load balancing information.

show islb pending-diff

To display iSCSI server load balancing (iSLB) pending configuration differences, use the show islb pending-diff command.

```
show islb pending-diff
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows iSLB pending configuration differences:

```
switch# show islb pending-diff
+iscsi initiator idle-timeout 10islb initiator ip-address 10.1.1.1+ static pWWN
23:06:00:0c:85:90:3e:82+islb initiator ip-address 10.1.1.2+ static nWWN
23:02:00:0c:85:90:3e:82
```

Related Commands	Command	Description
	show islb cfs-session status	Displays iSLB session information.
	show islb initiator	Displays iSLB initiator information.
	show islb merge status	Displays iSLB merge status information.
	show islb pending	Displays iSLB pending configurations.
	show islb session	Displays iSLB session information.
	show islb status	Displays iSLB CFS status information.
	show islb virtual-target	Displays iSLB virtual target information.
	show islb vrrp	Displays iSLB VRRP load balancing information.

show islb session

To display iSLB session information, use the show islb session command.

```
show islb session [detail | incoming | initiator initiator-node-name | iscsi slot-number | outgoing | target
target-node-name]
```

Syntax Description		
	detail	(Optional) Displays detailed iSLB session information.
	incoming	(Optional) Displays incoming iSLB sessions.
	initiator initiator-node-name	(Optional) Displays session information for a specific iSLB initiator. The maximum size for the initiator node name is 80.
	iscsi slot-port	(Optional) Specifies the iSCSI interface.
	outgoing	(Optional) Displays outgoing iSLB sessions.
	target	(Optional) Displays session information for a specific iSLB target. The maximum size for the target node name is 80.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows iSLB session information:

```
switch# show islb session
Initiator iqn.1987-05.com.cisco.01.15cee6e7925087abc82ed96377653c8
  Session #1
    Target iqn.com.domainname.172.22.93.143.08-03.gw.22000020374b5247
    VSAN 1, ISID 000000000000, Status active, no reservation

  Session #2
    Target iqn.com.domainname.172.22.93.143.08-03.gw.220000203738e77d
    VSAN 1, ISID 000000000000, Status active, no reservation
Initiator iqn.1987-05.com.cisco:02.91b0ee2e8aa1.iscsi16-w2k
  Session #1
    Discovery session, ISID 00023d00022f, Status active

  Session #2
    Target iqn.com.domainname.172.22.93.143.08-03.gw.2200002037388bc2
    VSAN 1, ISID 00023d000230, Status active, no reservation
```

Related Commands

Command	Description
show islb cfs-session status	Displays iSLB session information.
show islb initiator	Displays iSLB initiator information.
show islb merge status	Displays iSLB merge status information.
show islb pending	Displays iSLB pending configurations.
show islb pending-diff	Displays iSLB CFS pending configuration differences.
show islb status	Displays iSLB CFS status information.
show islb virtual-target	Displays iSLB virtual target information.
show islb vrrp	Displays iSLB VRRP load-balancing information.

show islb status

To display iSCSI server load balancing (iSLB) Cisco Fabric Services status, use the show islb status command.

```
show islb status
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows iSLB CFS status:

```
switch# show islb status
iSLB Distribute is enabled
iSLB CFS Session does not exist
```

Related Commands	Command	Description
	show islb cfs-session status	Displays iSLB session information.
	show islb initiator	Displays iSLB initiator information.
	show islb merge status	Displays iSLB merge status information.
	show islb pending	Displays iSLB pending configurations.
	show islb pending-diff	Displays iSLB CFS pending configuration differences.
	show islb session	Displays iSLB session information.
	show islb virtual-target	Displays iSLB virtual target information.
	show islb vrrp	Displays iSLB VRRP load balancing information.

show islb virtual-target

To display information about iSLB virtual targets, use the show islb virtual-target command.

```
show islb virtual-target [name | configured name]
```

Syntax Description

name	(Optional) Specifies the iSLB virtual target name. The range is 16 bytes to 223 bytes.
configured	(Optional) Displays information about configured iSLB virtual targets.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows an iSLB target:

```
switch# show islb virtual-target newtarget0987654321
target: newtarget0987654321
  Configured node (iSLB)
  No. of initiators permitted: 1
    initiator frontarget1234567890 is permitted
  All initiator permit is enabled
  Trespass support is disabled
  Revert to primary support is disabled
```

The following example shows all configured iSLB virtual targets:

```
switch# show islb virtual-target configured
target: testtarget1234567
  Configured node (iSLB)
  No. of initiators permitted: 1
    initiator trespass is permitted
  All initiator permit is disabled
  Trespass support is disabled
  Revert to primary support is disabled
target: testertarget987654321
  Port WWN 10:20:30:40:50:60:70:80
  Configured node (iSLB)
  No. of initiators permitted: 1
    initiator mytargetdevice is permitted
  All initiator permit is disabled
  Trespass support is disabled
  Revert to primary support is disabled
target: newtarget0987654321
  Configured node (iSLB)
  No. of initiators permitted: 1
```

```

    initiator fromtarget1234567890 is permitted
    All initiator permit is enabled
    Trespass support is disabled
    Revert to primary support is disabled
target: mytargetdevice123
    Configured node (iSLB)
    All initiator permit is disabled
    Trespass support is enabled
    Revert to primary support is disabled

```

Related Commands

Command	Description
show islb cfs-session status	Displays iSLB session information.
show islb initiator	Displays iSLB initiator information.
show islb merge status	Displays iSLB merge status information.
show islb pending	Displays iSLB pending configurations.
show islb pending-diff	Displays iSLB CFS pending configuration differences.
show islb session	Displays iSLB session information.
show islb status	Displays iSLB CFS status information.
show islb vrrp	Displays iSLB VRRP load-balancing information.

show islb vrrp

To display iSLB VRRP load balancing information, use the show islb vrrp command.

```
show islb vrrp [assignment [initiator node-name [vr group-number] | vr group-number] | interface
[switch WWN [vr group-number] | vr group-number] | summary [vr group-number] | vr group-number]
```

Syntax Description

assignment	(Optional) Displays iSLB VRRP initiator to interface assignment.
initiator node-name	(Optional) Displays a specific iSLB initiator's interface assignment. The maximum is 80.
vr group-number	(Optional) Displays information for a specific VR group. The range is 1 to 255.
interface	(Optional) Displays iSLB VRRP interface information.
switch WWN	(Optional) Displays a interface information for a specific switch. The format of WWN is hh:hh:hh:hh:hh:hh:hh:hh .
summary	(Optional) Displays iSLB VRRP load-balancing summary information.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows iSLB VRRP interface information:

```
switch# show islb vrrp interface vr 41
-- Interfaces For Load Balance --
  Interface GigabitEthernet1/1.441
    Switch wwn: 20:00:00:0d:ec:02:cb:00
    VRRP group id: 41, VRRP IP address: 209.165.200.226
    Interface VRRP state: backup
    Interface load: 3000
    Interface redirection: enabled
    Group redirection: enabled
    Number of physical IP address: 1
      (1) 209.165.200.226
    Port vsan: 1
    Forwarding mode: store-and-forward
    Proxy initiator mode: disabled
    iSCSI authentication: CHAP or None
  Interface GigabitEthernet1/2.441
    Switch wwn: 20:00:00:0d:ec:02:cb:00
    VRRP group id: 41, VRRP IP address: 209.165.200.226
```



```

Interface VRRP state: backup
Interface load: 2000
Interface redirection: enabled
Group redirection: enabled
Number of physical IP address: 1
(1) 10.10.122.114
Port vsan: 1
Forwarding mode: store-and-forward
Proxy initiator mode: disabled
iSCSI authentication: CHAP or None
Interface GigabitEthernet2/1.441
Switch wwn: 20:00:00:0d:ec:0c:6b:c0
VRRP group id: 41, VRRP IP address: 209.165.200.226
Interface VRRP state: backup
Interface load: 2000
Interface redirection: enabled
Group redirection: enabled
Number of physical IP address: 1
(1) 10.10.122.111
Port vsan: 1
Forwarding mode: store-and-forward
Proxy initiator mode: disabled
iSCSI authentication: CHAP or None
Interface GigabitEthernet2/2.441
Switch wwn: 20:00:00:0d:ec:0c:6b:c0
VRRP group id: 41, VRRP IP address: 209.165.200.226
Interface VRRP state: master
Interface load: 1000
Interface redirection: enabled
Group redirection: enabled
Number of physical IP address: 1
(1) 10.10.122.112
Port vsan: 1
Forwarding mode: store-and-forward
Proxy initiator mode: disabled
iSCSI authentication: CHAP or None
Interface GigabitEthernet2/3.441
Switch wwn: 20:00:00:0d:ec:0c:6b:c0
VRRP group id: 41, VRRP IP address: 209.165.200.226
Interface VRRP state: backup
Interface load: 2000
Interface redirection: enabled
Group redirection: enabled
Number of physical IP address: 1
(1) 10.10.122.113
Port vsan: 1
Forwarding mode: store-and-forward
Proxy initiator mode: disabled
iSCSI authentication: CHAP or None

```

The following example shows iSLB VRRP summary information:

```

switch# show islb vrrp summary
-- Groups For Load Balance --
-----
VR Id          VRRP Address Type      Configured Status
-----
41             IPv4                    Enabled
42             IPv4                    Enabled
-- Interfaces For Load Balance --
-----
VR Id          VRRP IP                Switch WWN              Ifindex    Load
-----
41    10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/1.441 3000

```

show islb vrrp

```

    41 10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/2.441 2000
    41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/1.441 2000
M   41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/2.441 1000
    41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/3.441 2000
M   42 10.10.142.111 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/1.442 2000
    42 10.10.142.111 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/2.442 1000
    42 10.10.142.111 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/3.442 2000

```

-- Initiator To Interface Assignment --

```

-----
Initiator VR Id          VRRP IP                Switch WWN              Ifindex
-----
iqn.1987-05.com.cisco:01.09ea2e99c97
    41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/1.441
iqn.1987-05.com.cisco:01.5ef81885f8d
    41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/3.441
iqn.1987-05.com.cisco:01.8f8db3fdf8
    41 10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/1.441
iqn.1987-05.com.cisco:01.99eddd9b134
    41 10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/1.441
iqn.1987-05.com.cisco:01.a1398a8c6bc6
    41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/3.441
iqn.1987-05.com.cisco:01.e15c63d09d18
    41 10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/2.441
iqn.1987-05.com.cisco:01.e9aab57a51e0
    41 10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/1.441
iqn.1987-05.com.cisco:01.ecc2b77b6086
    41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/2.441
iqn.1987-05.com.cisco:01.f047da798a44
    41 10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/2.441
iqn.1987-05.com.cisco:01.f686f5cd11f
    41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/1.441

```

The following example shows iSLB VRRP summary information for vr 41:

```

switch# show islb vrrp summary vr 41
      -- Groups For Load Balance --
-----
          VR Id          VRRP Address Type      Configured Status
-----
          41              IPv4                      Enabled
      -- Interfaces For Load Balance --
-----
VR Id      VRRP IP                Switch WWN              Ifindex      Load
-----
    41 10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/1.441 3000
    41 10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/2.441 2000
    41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/1.441 2000
M   41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/2.441 1000
    41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/3.441 2000
      -- Initiator To Interface Assignment --
-----
Initiator VR Id          VRRP IP                Switch WWN              Ifindex
-----
iqn.1987-05.com.cisco:01.09ea2e99c97
    41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/1.441
iqn.1987-05.com.cisco:01.5ef81885f8d
    41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/3.441
iqn.1987-05.com.cisco:01.8f8db3fdf8
    41 10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/1.441
iqn.1987-05.com.cisco:01.99eddd9b134
    41 10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/1.441
iqn.1987-05.com.cisco:01.a1398a8c6bc6
    41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/3.441
iqn.1987-05.com.cisco:01.e15c63d09d18

```

```

        41 10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/2.441
iqn.1987-05.com.cisco:01.e9aab57a51e0
        41 10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/1.441
iqn.1987-05.com.cisco:01.ecc2b77b6086
        41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/2.441
iqn.1987-05.com.cisco:01.f047da798a44
        41 10.10.122.112 20:00:00:0d:ec:02:cb:00 GigabitEthernet1/2.441
iqn.1987-05.com.cisco:01.f686f5cd11f
        41 10.10.122.112 20:00:00:0d:ec:0c:6b:c0 GigabitEthernet2/1.441

```

The following example shows complete iSLB VRRP load balancing information.

```

switch# show islb vrrp

-- Groups For Load Balance --
  VRRP group id 41
    Address type: IPv4
    Configured status: Enabled
  VRRP group id 42
    Address type: IPv4
    Configured status: Enabled
-- Interfaces For Load Balance --
  Interface GigabitEthernet1/1.441
    Switch wwn: 20:00:00:0d:ec:02:cb:00
    VRRP group id: 41, VRRP IP address: 209.165.200.226
    Interface VRRP state: backup
    Interface load: 3000
    Interface redirection: enabled
    Group redirection: enabled
    Number of physical IP address: 1
      (1) 10.10.122.115
    Port vsan: 1
    Forwarding mode: store-and-forward
    Proxy initiator mode: disabled
    iSCSI authentication: CHAP or None
  Interface GigabitEthernet1/2.441
    Switch wwn: 20:00:00:0d:ec:02:cb:00
    VRRP group id: 41, VRRP IP address: 209.165.200.226
    Interface VRRP state: backup
    Interface load: 2000
    Interface redirection: enabled
    Group redirection: enabled
    Number of physical IP address: 1
      (1) 10.10.122.114
    Port vsan: 1
    Forwarding mode: store-and-forward
    Proxy initiator mode: disabled
    iSCSI authentication: CHAP or None
  Interface GigabitEthernet2/1.441
    Switch wwn: 20:00:00:0d:ec:0c:6b:c0
    VRRP group id: 41, VRRP IP address: 209.165.200.226
    Interface VRRP state: backup
    Interface load: 2000
    Interface redirection: enabled
    Group redirection: enabled
    Number of physical IP address: 1
      (1) 10.10.122.111
    Port vsan: 1
    Forwarding mode: store-and-forward
    Proxy initiator mode: disabled
    iSCSI authentication: CHAP or None
  Interface GigabitEthernet2/2.441
    Switch wwn: 20:00:00:0d:ec:0c:6b:c0
    VRRP group id: 41, VRRP IP address: 209.165.200.226

```

```

        Interface VRRP state: master
        Interface load: 1000
        Interface redirection: enabled
        Group redirection: enabled
        Number of physical IP address: 1
          (1) 10.10.122.112
        Port vsan: 1
        Forwarding mode: store-and-forward
        Proxy initiator mode: disabled
        iSCSI authentication: CHAP or None
Interface GigabitEthernet2/3.441
        Switch wwn: 20:00:00:0d:ec:0c:6b:c0
        VRRP group id: 41, VRRP IP address: 209.165.200.226
          Interface VRRP state: backup
          Interface load: 2000
          Interface redirection: enabled
          Group redirection: enabled
        Number of physical IP address: 1
          (1) 10.10.122.113
        Port vsan: 1
        Forwarding mode: store-and-forward
        Proxy initiator mode: disabled
        iSCSI authentication: CHAP or None
Interface GigabitEthernet2/1.442
        Switch wwn: 20:00:00:0d:ec:0c:6b:c0
        VRRP group id: 42, VRRP IP address: 209.165.200.226
          Interface VRRP state: master
          Interface load: 2000
          Interface redirection: enabled
          Group redirection: enabled
        Number of physical IP address: 1
          (1) 10.10.142.111
        Port vsan: 1
        Forwarding mode: store-and-forward
        Proxy initiator mode: disabled
        iSCSI authentication: CHAP or None
Interface GigabitEthernet2/2.442
        Switch wwn: 20:00:00:0d:ec:0c:6b:c0
        VRRP group id: 42, VRRP IP address: 209.165.200.226
          Interface VRRP state: backup
          Interface load: 1000
          Interface redirection: enabled
          Group redirection: enabled
        Number of physical IP address: 1
          (1) 10.10.142.112
        Port vsan: 1
        Forwarding mode: store-and-forward
        Proxy initiator mode: disabled
        iSCSI authentication: CHAP or None
Interface GigabitEthernet2/3.442
        Switch wwn: 20:00:00:0d:ec:0c:6b:c0
        VRRP group id: 42, VRRP IP address: 209.165.200.226
          Interface VRRP state: backup
          Interface load: 2000
          Interface redirection: enabled
          Group redirection: enabled
        Number of physical IP address: 1
          (1) 10.10.142.113
        Port vsan: 1
        Forwarding mode: store-and-forward
        Proxy initiator mode: disabled
        iSCSI authentication: CHAP or None
-- Initiator To Interface Assignment --
        Initiator iqn.1987-05.com.cisco:01.09ea2e99c97

```

```
VRRP group id: 41, VRRP IP address: 209.165.200.226
Assigned to switch wwn: 20:00:00:0d:ec:0c:6b:c0
  ifindex: GigabitEthernet2/1.441
Waiting for the redirected session request: False
Initiator weighted load: 1000
Initiator iqn.1987-05.com.cisco:01.5ef81885f8d
VRRP group id: 41, VRRP IP address: 209.165.200.226
Assigned to switch wwn: 20:00:00:0d:ec:0c:6b:c0
  ifindex: GigabitEthernet2/3.441
Waiting for the redirected session request: False
Initiator weighted load: 1000
Initiator iqn.1987-05.com.cisco:01.8fbdb3fdf8
VRRP group id: 41, VRRP IP address: 209.165.200.226
Assigned to switch wwn: 20:00:00:0d:ec:02:cb:00
  ifindex: GigabitEthernet1/1.441
Waiting for the redirected session request: False
Initiator weighted load: 1000
Initiator iqn.1987-05.com.cisco:01.99eddd9b134
VRRP group id: 41, VRRP IP address: 209.165.200.226
Assigned to switch wwn: 20:00:00:0d:ec:02:cb:00
  ifindex: GigabitEthernet1/1.441
Waiting for the redirected session request: False
Initiator weighted load: 1000
Initiator iqn.1987-05.com.cisco:01.a1398a8c6bc6
VRRP group id: 41, VRRP IP address: 209.165.200.226
Assigned to switch wwn: 20:00:00:0d:ec:0c:6b:c0
  ifindex: GigabitEthernet2/3.441
Waiting for the redirected session request: False
Initiator weighted load: 1000
Initiator iqn.1987-05.com.cisco:01.e15c63d09d18
VRRP group id: 41, VRRP IP address: 209.165.200.226
Assigned to switch wwn: 20:00:00:0d:ec:02:cb:00
  ifindex: GigabitEthernet1/2.441
Waiting for the redirected session request: False
Initiator weighted load: 1000
Initiator iqn.1987-05.com.cisco:01.e9aab57a51e0
VRRP group id: 41, VRRP IP address: 209.165.200.226
Assigned to switch wwn: 20:00:00:0d:ec:02:cb:00
  ifindex: GigabitEthernet1/1.441
Waiting for the redirected session request: False
Initiator weighted load: 1000
Initiator iqn.1987-05.com.cisco:01.ecc2b77b6086
VRRP group id: 41, VRRP IP address: 209.165.200.226
Assigned to switch wwn: 20:00:00:0d:ec:0c:6b:c0
  ifindex: GigabitEthernet2/2.441
Waiting for the redirected session request: False
Initiator weighted load: 1000
Initiator iqn.1987-05.com.cisco:01.f047da798a44
VRRP group id: 41, VRRP IP address: 209.165.200.226
Assigned to switch wwn: 20:00:00:0d:ec:02:cb:00
  ifindex: GigabitEthernet1/2.441
Waiting for the redirected session request: False
Initiator weighted load: 1000
Initiator iqn.1987-05.com.cisco:01.f686f5cd11f
VRRP group id: 41, VRRP IP address: 209.165.200.226
Assigned to switch wwn: 20:00:00:0d:ec:0c:6b:c0
  ifindex: GigabitEthernet2/1.441
Waiting for the redirected session request: False
Initiator weighted load: 1000
```

Related Commands

Command	Description
show islb cfs-session status	Displays iSLB session information.
show islb initiator	Displays iSLB initiator information.
show islb merge status	Displays iSLB merge status information.
show islb pending	Displays iSLB pending configurations.
show islb pending-diff	Displays iSLB CFS pending configuration differences.
show islb session	Displays iSLB session information.
show islb status	Displays iSLB CFS status information.
show islb virtual-target	Displays iSLB virtual target information.

show isns

To display Internet Storage Name Service (iSNS) information, use the show isns command.

```
show isns config | database [full | virtual-targets [local | switch switch-wwn]] | entity [all [detail] | id
entity-id] | iscsi global config [all | switch switch-wwn] | node [all [detail] | configured | detail | name
node-name | virtual [switch switch-wwn [detail]]] | portal [all [detail] | detail | ipaddress ip-address port
tcp-port | virtual [switch switch-wwn [detail]]] | profile [profile-name [counters] | counters] | query
profile-name gigabitethernet slot / port | port-channel port | stats
```

Syntax Description

config	Displays iSNS server configuration.
database	Displays the iSNS database contents.
full	(Optional) Specifies all virtual targets or registered nodes in database.
virtual-targets	(Optional) Specifies just virtual targets.
local	(Optional) Specifies only local virtual targets.
switch switch-wwn	(Optional) Specifies a specific switch WWN. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
entity	Displays entity attributes.
all	(Optional) Specifies all information.
detail	(Optional) Specifies detailed information.
id entity-id	(Optional) Specifies an entity ID. Maximum length is 255.
iscsi global config	Displays iSCSI global configuration for import of Fibre Channel targets.
node	Displays node attributes.
configured	Specifies configured nodes with detailed information.
name node-name	(Optional) Specifies the node name. Maximum length is 255.
virtual	Specifies virtual targets.
portal	Displays portal attributes.
ipaddress ip-address	Specifies the IP address for the portal.
port tcp-port	(Optional) Specifies the TCP port for the portal. The range is 1 to 66535.
profile	(Optional) Displays iSNS profile information.
profile-name	Specifies a profile name. Maximum length is 64 characters.
counters	(Optional) Specifies statistics for the interfaces.
query profile-name	Specifies a query to send to the iSNS server.

gigabitethernet slot/port	Specifies a Gigabit Ethernet interface.
port-channel port	Specifies a PortChannel interface. The range is 1 to 128.
stats	Displays iSNS server statistics.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(1)	This command was introduced.
2.0(x)	Added config, database, entity, iscsi, node, portal, and stats options.

Usage Guidelines

To access all but the profile and query options for this command, you must perform the `isns-server enable` command.

Examples

The following example shows how to display the iSNS configuration:

```
switch# show isns config
Server Name: ips-hacl(Cisco Systems) Up since: Mon Apr 27 06:59:49 1981
  Index: 1      Version: 1      TCP Port: 3205
  fabric distribute (remote sync): ON
  ESI
    Non Response Threshold: 5 Interval(seconds): 60
  Database contents
    Number of Entities: 1
    Number of Portals: 0
    Number of ISCSI devices: 2
    Number of Portal Groups: 0
```

The following example displays a specified iSNS profile:

```
switch# show isns profile ABC
iSNS profile name ABC
tagged interface GigabitEthernet2/3
iSNS Server 10.10.100.204
```

The following example displays all iSNS profiles.

```
switch# show isns profile
iSNS profile name ABC
tagged interface GigabitEthernet2/3
iSNS Server 10.10.100.204
iSNS profile name NBV
tagged interface GigabitEthernet2/5
iSNS Server 10.10.100.201
```

The following example displays iSNS PDU statistics for a specified iSNS profile:

```
switch# show isns profile ABC counters
iSNS profile name ABC
```



```

tagged interface GigabitEthernet2/3
iSNS statistics
  Input 54 pdus (registration/deregistration pdus only)
    Reg pdus 37, Dereg pdus 17
  Output 54 pdus (registration/deregistration pdus only)
    Reg pdus 37, Dereg pdus 17
iSNS Server 10.10.100.204

```

The following example displays iSNS PDU statistics for all iSNS profiles:

```

switch# show isns profile counters
iSNS profile name ABC
tagged interface GigabitEthernet2/3
iSNS statistics
  Input 54 pdus (registration/deregistration pdus only)
    Reg pdus 37, Dereg pdus 17
  Output 54 pdus (registration/deregistration pdus only)
    Reg pdus 37, Dereg pdus 17
iSNS Server 10.10.100.204
iSNS profile name NBV
tagged interface GigabitEthernet2/5
iSNS statistics
  Input 54 pdus (registration/deregistration pdus only)
    Reg pdus 37, Dereg pdus 17
  Output 54 pdus (registration/deregistration pdus only)
    Reg pdus 37, Dereg pdus 17
iSNS Server 10.10.100.201

```

Related Commands

Command	Description
isns-server enable	Enables the iSNS server.

show ivr

To display various Inter-VSAN Routing (IVR) configurations, use the show ivr command.

```
show ivr [pending | pending-diff | session status | virtual-domains [vsan vsan-id] |
virtual-fcdomain-add-status | vsan-topology [active | configured] | zone [active | name name [active]] |
zoneset [active | brief | fabric | name name | status]]
```

Syntax Description

pending	(Optional) Displays the IVR pending configuration.
pending-diff	(Optional) Displays the IVR pending configuration differences with the active configuration.
session	(Optional) Displays the IVR session status.
status	(Optional) Displays the status of the configured IVR session.
virtual-domains	(Optional) Displays IVR virtual domains for all local VSANs.
vsan vsan-id	(Optional) Specifies a VSAN ID. The range is 1 to 4093.
virtual-fcdomain-add-status	(Optional) Displays IVR virtual fcdomain status.
vsan-topology	(Optional) Displays the IVR VSAN topology
active	(Optional) Displays the active IVR facilities.
configured	(Optional) Displays the configured IVR facilities
zone	(Optional) Displays the Inter-VSA Zone (IVZ) configurations.
name name	(Optional) Specifies the name as configured in the database.
zoneset	(Optional) Displays the Inter-VSA Zone Set (IVZS) configurations.
brief	(Optional) Displays configured information in brief format.
fabric	(Optional) Displays the status of active zone set in the fabric.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(1)	This command was introduced.
2.0(1b)	Added the pending and pending-diff keywords.

Usage Guidelines

To access this command, you must perform the ivr enable command.

Examples

The following example displays the status of the IVR virtual domain configuration:

```
switch# show ivr virtual-fcdomain-add-status
IVR virtual domains are added to fcdomain list in VSANS: 1
(As well as to VSANS in interoperability mode 2 or 3)
```

The following example displays IVR-enabled switches for a specified VSAN:

```
switch# show ivr enabled-switches vsan 2
AFID    VSAN    DOMAIN          CAPABILITY    SWITCH WWN
-----
1       2       0x62( 98)      00000001     20:00:00:05:30:01:1b:c2 *
Total:  1 ivr-enabled VSAN-Domain pair>
```

The following example displays the status of the IVR session:

```
switch# show ivr session status
Last Action           : None
Last Action Result    : None
Last Action Failure Reason : None
```

The following example displays the configured IVR VSAN topology:

```
switch# show ivr vsan-topology
AFID  SWITCH WWN          Active  Cfg. VSANS
-----
1    20:00:00:05:30:00:3c:5e  yes    yes  3,2000
1    20:00:00:05:30:00:58:de  yes    yes  2,2000
1    20:00:00:05:30:01:1b:c2 * yes    yes  1-2
1    20:02:00:44:22:00:4a:05  yes    yes  1-2,6
1    20:02:00:44:22:00:4a:07  yes    yes  2-5
Total:  5 entries in active and configured IVR VSAN-Topology
Current Status: Inter-VSAN topology is ACTIVE
Last activation time: Sat Mar 22 21:46:15 1980
```

The following example displays the active IVR VSAN topology:

```
switch# show ivr vsan-topology active
AFID  SWITCH WWN          Active  Cfg. VSANS
-----
1    20:00:00:05:30:00:3c:5e  yes    yes  3,2000
1    20:00:00:05:30:00:58:de  yes    yes  2,2000
1    20:00:00:05:30:01:1b:c2 * yes    yes  1-2
1    20:02:00:44:22:00:4a:05  yes    yes  1-2,6
1    20:02:00:44:22:00:4a:07  yes    yes  2-5
Total:  5 entries in active IVR VSAN-Topology
Current Status: Inter-VSAN topology is ACTIVE
Last activation time: Sat Mar 22 21:46:15
```

The following example displays the configured IVR VSAN topology:

```
switch# show ivr vsan-topology configured
AFID  SWITCH WWN          Active  Cfg. VSANS
-----
1    20:00:00:05:30:00:3c:5e  yes    yes  3,2000
1    20:00:00:05:30:00:58:de  yes    yes  2,2000
1    20:00:00:05:30:01:1b:c2 * yes    yes  1-2
1    20:02:00:44:22:00:4a:05  yes    yes  1-2,6
1    20:02:00:44:22:00:4a:07  yes    yes  2-5
Total:  5 entries in configured IVR VSAN-Topology
```

The following example displays the combined user-defined and the automatically discovered IVR VSAN topology database:

```
switch(config)# show ivr vsan-topology
AFID SWITCH WWN Active Cfg. VSANS
-----
 1 20:00:00:0d:ec:04:99:00 yes no 1-4
 1 20:00:00:0d:ec:0e:9c:80 * yes no 2,6-7,9
 1 20:00:00:0d:ec:0e:b0:40 yes no 1-3,5,8
 1 20:00:00:0d:ec:04:99:00 no yes 1-4
 1 20:00:00:0d:ec:0e:9c:80 * no yes 2,6-7,9
 1 20:00:00:0d:ec:0e:b0:40 no yes 1-3,5,8
Total: 6 entries in active and configured IVR VSAN-Topology
```

[Table 12: show ivr vsan-topology Field Descriptions, on page 1628](#) describes the significant fields shown in the show ivr vsan-topology display.

Table 12: show ivr vsan-topology Field Descriptions

Field	Description
AFID	Autonomous fabric ID (AFID)
Switch WWN	Switch world wide number
Active	Automatically discovered
Cfg.	Manually configured
VSANS	VSANs configured

The following example displays the IVZ configuration:

```
switch# show ivr zone
zone name Ivz_vsan2-3
  pwn 21:00:00:e0:8b:02:ca:4a vsan 3
  pwn 21:00:00:20:37:c8:5c:6b vsan 2
zone name ivr_qa_z_all
  pwn 21:00:00:e0:8b:06:d9:1d vsan 1
  pwn 21:01:00:e0:8b:2e:80:93 vsan 4
  pwn 10:00:00:00:c9:2d:5a:dd vsan 1
  pwn 10:00:00:00:c9:2d:5a:de vsan 2
  pwn 21:00:00:20:37:5b:ce:af vsan 6
  pwn 21:00:00:20:37:39:6b:dd vsan 6
  pwn 22:00:00:20:37:39:6b:dd vsan 3
  pwn 22:00:00:20:37:5b:ce:af vsan 3
  pwn 50:06:04:82:bc:01:c3:84 vsan 5
```

The following example displays the active IVZS configuration:

```
switch# show ivr zoneset active
zoneset name IVR_ZoneSet1
  zone name Ivz_vsan2-3
    pwn 21:00:00:e0:8b:02:ca:4a vsan 3
    pwn 21:00:00:20:37:c8:5c:6b vsan 2
```

The following example displays information for a specified IVZ:

```
switch# show ivr zone name Ivz_vsan2-3
```

```
zone name Ivz_vsan2-3
  pwn 21:00:00:e0:8b:02:ca:4a vsan 3
  pwn 21:00:00:20:37:c8:5c:6b vsan 2
```

The following example displays the specified zone in the active IVZS:

```
switch# show ivr zone name Ivz_vsan2-3 active
zone name Ivz_vsan2-3
  pwn 21:00:00:e0:8b:02:ca:4a vsan 3
  pwn 21:00:00:20:37:c8:5c:6b vsan 2
```

The following example displays the IVZS configuration:

```
switch# show ivr zoneset
zoneset name ivr_qa_zs_all
  zone name ivr_qa_z_all
    pwn 21:00:00:e0:8b:06:d9:1d vsan 1
    pwn 21:01:00:e0:8b:2e:80:93 vsan 4
    pwn 10:00:00:00:c9:2d:5a:dd vsan 1
    pwn 10:00:00:00:c9:2d:5a:de vsan 2
    pwn 21:00:00:20:37:5b:ce:af vsan 6
    pwn 21:00:00:20:37:39:6b:dd vsan 6
    pwn 22:00:00:20:37:39:6b:dd vsan 3
    pwn 22:00:00:20:37:5b:ce:af vsan 3
    pwn 50:06:04:82:bc:01:c3:84 vsan 5
  zoneset name IVR_ZoneSet1
    zone name Ivz_vsan2-3
      pwn 21:00:00:e0:8b:02:ca:4a vsan 3
      pwn 21:00:00:20:37:c8:5c:6b vsan 2
```

The following example displays brief information for an IVR VSAN topology:

```
switch# show ivr vsan-topology configured
AFID SWITCH WNN Active Cfg. VSANS
-----
  1 20:00:00:05:30:00:3c:5e yes yes 3,2000
  1 20:00:00:05:30:00:58:de yes yes 2,2000
  1 20:00:00:05:30:01:1b:c2 * yes yes 1-2
  1 20:02:00:44:22:00:4a:05 yes yes 1-2,6
  1 20:02:00:44:22:00:4a:07 yes yes 2-5
Total: 5 entries in configured IVR VSAN-Topology
```

The following example displays brief information for the active IVZS:

```
switch# show ivr zoneset brief Active
zoneset name IVR_ZoneSet1
  zone name Ivz_vsan2-3
```

The following example displays the status information for the IVZ:

```
switch# show ivr zoneset brief status
Zoneset Status
-----
name          : IVR_ZoneSet1
state         : activation success
last activate time : Sat Mar 22 21:38:46 1980
force option   : off
status per vsan:
-----
vsan          status
-----
2             active
```

The following example displays the specified zone set:

```
switch# show ivr zoneset name IVR_ZoneSet1
zoneset name IVR_ZoneSet1
  zone name Ivz_vsan2-3
    pwnn 21:00:00:e0:8b:02:ca:4a vsan 3
    pwnn 21:00:00:20:37:c8:5c:6b vsan 2
```

Related Commands

Command	Description
ivr distribute	Enables IVR CFS distribution.
ivr enable	Enables IVR.

show ivr aam

To display IVR AAM status, use the show ivr aam command.

```
show ivr aam
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display IVR AAM status:

```
switch(config)# show ivr aam
AAM mode status
-----
AAM is disabled
switch(config)#
```

Related Commands	Command	Description
	show fc-redirect-active configs	Displays all active configurations on a switch.

show ivr aam pre-deregister-check

To display IVR pre de-register check status, use the show ivr amm pre-deregister-check command.

```
show ivr aam pre-deregister-check
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display IVR de-register with check entries:

```
switch(config)# show ivr aam pre-deregister-check
AAM pre-deregister check status
-----
FAILURE
There are merged entries or AAM has not been enabled with the following switches:
switch swwn 20:00:00:05:30:00:15:de
User has two options:
1. User can go ahead to issue ivr commit, but the above switches in the fabric may fail to
deregister.
2. User may also run "ivr abort", then resolve above switches and re-issue the ivr aam
deregister.
Warning: IVR AAM pre-deregister-check status may not be up-to-date. Please issue the command
"ivr aam pre-deregi
ster-check" to get updated status.
switch(config)#
```

The following example shows how to display IVR deregister without check status entries:

```
switch(config)# ivr aam pre-deregister-check
switch(config)# show ivr aam pre-deregister-check
AAM pre-deregister check status
-----
SUCCESS
Warning: IVR AAM pre-deregister-check status may not be up-to-date. Please issue the command
"ivr aam pre-deregister
-check" to get updated status.
switch(config)#
```

Related Commands	Command	Description
	ivr enable	Enables the inter-VSAN Routing (IVR) feature.

show ivr diagnostics

To run a diagnostic analysis of the state of the InterVSAN Routing (IVR) feature, use the `show ivr diagnostics` command.

```
show ivr diagnostics
```

Command Default None

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	9.2(2)	Check progress, flags, and VSAN information was added.
	1.1(1)	This command was introduced.

Usage Guidelines This command checks the state of virtual domains and devices in IVR. It displays any errors detected for each.

Examples The following example displays how to execute IVR diagnostics:

```
switch# show ivr diagnostics
Performing IVR Diagnostics...
Checking Zoneset...
Checking Vsan Topology...
Checking PV...
Device 50:06:01:61:49:e4:5c:b0 - Unexpected PV global flags: ARVS complete=0 FICON_CHECK
inprogress=1 all=0x00e
Device 50:06:01:61:49:e4:5c:b0 Vsan: 7 - Unexpected per-VSAN PV flags: RW_VSAN sync=0 NS_REG
done=0 REWR done=0 RSCN_OFFLINE pending=1 DEVICE followup=1 all=0x052
Device 50:06:01:61:49:e4:5c:b1 - Unexpected PV global flags: ARVS complete=0 FICON_CHECK
inprogress=1 all=0x00e
Device 50:06:01:61:49:e4:5c:b1 Vsan: 7 - Unexpected per-VSAN PV flags: RW_VSAN sync=0 NS_REG
done=0 REWR done=0 RSCN_OFFLINE pending=1 DEVICE followup=1 all=0x052
Performing Mock Refresh...
Checking PVM...
AFID:1 Vsan:7 Virtual domain:201 - Unexpected global flags: ROUTE added=0 all=0x000
AFID:1 Vsan:7 Virtual domain:201 - Unexpected Adv Switch flags: DBASE synced=0 DOM_NS
synced=0 all=0x002
AFID:1 Vsan:7 Virtual domain:201 Pwnn: 50:06:01:61:49:e4:5c:b0 - Unexpected flags: INITIAL
sync=0 RSCN_OFFLINE pending=1 all=0x006
AFID:1 Vsan:7 Virtual domain:201 Pwnn: 50:06:01:61:49:e4:5c:b1 - Unexpected flags: INITIAL
sync=0 RSCN_OFFLINE pending=1 all=0x006
Checking DEP...
Checking VDRI...
Checking FCNS database consistency results...
Done
```

Related Commands	Command	Description
	feature ivr	Enables the IVR feature.

show ivr fcdomain database

To display the IVR fcdomain database that contains the persistent FC ID mapping, use the show ivr fcdomain database command.

```
show ivr fcdomain database [autonomous-fabric-num afid-num vsan vsan-id]
```

Syntax Description	
autonomous-fabric-num afid-num	(Optional) Specifies the AFID. The range is 1 to 64.
vsan vsan-id	(Optional) Specifies the VSAN ID. The range is 1 to 4093.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	2.1(2)	This command was introduced.

Usage Guidelines None.

Examples

The following example displays all IVR fcdomain database entries:

```
switch# show ivr fcdomain database
-----
  AFID  Vsan  Native-AFID  Native-Vsan  Virtual-domain
-----
    1    2      10           11           0xc(12)
   21   22      20           11           0xc(12)
Number of Virtual-domain entries: 2
-----
  AFID  Vsan      Pwnn      Virtual-fcid
-----
   21   22  11:22:33:44:55:66:77:88  0x114466
   21   22  21:22:33:44:55:66:77:88  0x0c4466
   21   22  21:22:33:44:55:66:78:88  0x0c4466
Number of Virtual-fcid entries: 3
```

The following example displays the IVR fcdomain database entries for a specific AFID and VSAN:

```
switch# show ivr fcdomain database autonomous-fabric-num 21 vsan 22
-----
  AFID  Vsan  Native-AFID  Native-Vsan  Virtual-domain
-----
    21   22      20           11           0xc(12)
Number of Virtual-domain entries: 1
-----
  AFID  Vsan      Pwnn      Virtual-fcid
-----
   21   22  11:22:33:44:55:66:77:88  0x114466
   21   22  21:22:33:44:55:66:77:88  0x0c4466
```

```
    21    22  21:22:33:44:55:66:78:88  0x0c4466  
Number of Virtual-fcid entries: 3
```

Related Commands

Command	Description
ivr fcdomain database autonomous-fabric-num	Creates IVR persistent FC IDs.

show ivr service-group

To display an inter-VSAN routing (IVR) service groups, use the show ivr service-group command.

```
show ivr service-group [active | configured]
```

Syntax Description	active	(Optional) Displays active IVR service groups.
	configured	(Optional) Displays configured IVR service groups.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines You can configure a maximum of 16 IVR service groups.

Examples The following example displays IIVR service groups:

```
switch# show ivr service-group
IVR CONFIGURED Service Group
=====
SG-ID SG-NAME AFID VSANS
-----
1 sg-100 1 200-201,250,270
2 sg-200 1 100-101,150,170
Total: 2 entries in configured service group table
IVR ACTIVE Service Group
=====
SG-ID SG-NAME AFID VSANS
-----
1 sg-100 1 200-201,250,270
2 sg-200 1 100-101,150,170
Total: 2 entries in active service group table
```

Related Commands	Command	Description
	clear ivr service-group database	Clears an IVR service group database.
	ivr service-group name	Configures an IVR service group.

show ivr virtual-fcdomain-add-status2

To display the Request Domain ID (RDI) mode in a specific AFID and VSAN for all IVR-enabled switches, use the show ivr virtual-fcdomain-add-status2 command.

```
show ivr virtual-fcdomain-add-status2
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Exec mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the RDI mode in the local switch:

```
switch# show ivr virtual-fcdomain-add-status2
IVR virtual domains are added to fcdomain list in VSANS: 2 for afid 1
```

Related Commands	Command	Description
	ivr virtual-fcdomain-add2	Configures the RDI mode in a specific AFID and VSAN for all IVR-enabled switches.

show ivr virtual-switch-wwn

To display an inter-VSAN routing (IVR) virtual switch WWN, use the show ivr virtual-switch-wwn command.

```
show ivr virtual-switch-wwn native-switch-wwn switch-wwn native-vsan vsan-id
```

Syntax Description		
	native-switch-wwn switch-wwn	Specifies the sWWN of the native switch. The format is in dotted hex.
	native-vsan vsan-id	Specifies the ID of the native VSAN. The range is 1 to 4093.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines The sWWN of the virtual switch must be present in the fabric binding database of all the VSANs where the virtual switch is in use. If the sWWN is not in the database, you must add it before attempting to implement FICON over IVR.

Examples The following example displays an IVR virtual sWNN:

```
switch# show ivr virtual-switch-wwn native-switch-wwn
20:00:00:0d:ec:00:8c:c0 native-vsan 1
virtual switch wwn : 20:01:00:0d:ec:00:8c:c1
```

Related Commands	Command	Description
	show ivr	Displays IVR information.

show kernel core

To display kernel core configuration information, use the show kernel core command.

```
show kernel core limit | module slot | target
```

Syntax Description		
limit		Displays the configured line card limit.
module slot		Displays the kernel core configuration for a module in the specified slot.
target		Displays the configured target IP address.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines None.

Examples The following examples display kernel core settings:

```
switch# show kernel core limit
2
switch# show kernel core target
10.50.5.5
switch# show kernel core module 5
module 5 core is enabled
         level is header
         dst_ip is 10.50.5.5
         src_port is 6671
         dst_port is 6666
         dump_dev_name is eth1
         dst_mac_addr is 00:00:0C:07:AC:01
```

show ldap-search-map

To display LDAP configuration information, use the show ldap-search-map command.

```
show ldap-search-map
```

Syntax Description This command has no argument or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples

The following example shows how to display LDAP configuration information:

```
switch# show ldap-search-map
total number of search maps : 0
switch#
```

Related Commands	Command	Description
	ldap-server host	Displays LDAP server Ip address.

show ldap-server

To display the configured parameters for all the LDAP servers, use the show ldap-server command.

```
show ldap-server
```

Syntax Description This command has no argument or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples

The following example shows how to display the configured parameters for all the LDAP servers:

```
switch# show ldap-server
timeout : 3
    port : 65534
    deadtime : 5
total number of servers : 2
following LDAP servers are configured:
  a:
      idle time:0
      test user:test
      test password:*****
      timeout: 3   port: 1   rootDN:
      enable-ssl: true
  ipaddress:
      idle time:0
      test user:test
      test password:*****
      timeout: 3   port: 65534   rootDN:
      enable-ssl: false
switch#
```

Related Commands	Command	Description
	ldap-server host	Displays LDAP server Ip address.

show ldap-server groups

To display the configured parameter for all the LDAP server groups, use the show ldap-server groups command.

```
show ldap-server groups
```

Syntax Description This command has no argument or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples

```
The following example shows how to display the configured parameters for all the LDAP server
groups:
switch# show ldap-server groups
total number of groups: 3
following LDAP server groups are configured:
  group ldap:
    Authentication: Search and Bind
      Authentication Mech: Default (PLAIN)
  group a:
    Authentication: Bind and Search
      CERT-DN match enabled
      Group validation enabled
      Authentication Mech: PLAIN
  group name:
    Authentication: Search and Bind
      Authentication Mech: Default (PLAIN)
switch#
```

Related Commands	Command	Description
	ldap-server host	Displays LDAP server Ip address.

show license

To display license information, use the show license command.

```
show license [brief | default | file filename | host-id license-name | usage]
```

Syntax Description		
brief	(Optional)	Displays a list of license files installed on a switch.
default	(Optional)	Displays services using a default license.
file filename	(Optional)	Displays information for a specific license file.
host-id license-name	(Optional)	Displays host ID used to request node-locked license.
usage	(Optional)	Displays information about the current license usage.
	Note	On the Cisco MDS 9132T switches, the show license usage command does not display any license associated to the LEM module, if present, and is intentional. All ports on the LEM module are licensed and usable and the licensing information can be verified using the show port-license command.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(2)	This command was introduced.
	3.1(2)	Added the default keyword.

Usage Guidelines None.

Examples The following example displays a specific license installed on a switch:

```
switch# show license file fcports.lic
fcports.lic:
SERVER this_host ANY
VENDOR cisco
FEATURE fcports cisco 1.000 permanent 30 HOSTID=VDH=4C0AF664 \
SIGN=24B2B68AA676 <----- fcport license
```

The following example displays a list of license files installed on a switch:

```
switch# show license brief
fcports.lic
ficon.lic
```

The following example displays all licenses installed on a switch:

```
switch# show license
fcports.lic:
SERVER this_host ANY
VENDOR cisco
FEATURE fcports cisco 1.000 permanent 30 HOSTID=VDH=4C0AF664 \
SIGN=24B2B68AA676 <-----fcport license
ficon.lic:
FEATURE ficon cisco 1.000 permanent uncounted HOSTID=VDH=4C0AF664 \
SIGN=CB7872B23700 <-----ficon license
```

The following example displays the host IDs, required to request node locked license:

```
switch# show license host-id
License hostid:VDH=4C0AF664
```

The following example displays information about current license usage:

```
switch# show license usage
Feature                Installed  License Status  ExpiryDate  Comments
Count
-----
FM_SERVER_PKG         Yes      -      Unused  never      license missing
MAINFRAME_PKG         No       -      Unused
ENTERPRISE_PKG        Yes      -      InUse   never      -
SAN_EXTN_OVER_IP      No       0      Unused
SAN_EXTN_OVER_IP_IPS4 No       0      Unused
```

The following example displays information about current license usage on a Cisco MDS 9132T switch:

```
switch# show license usage
Feature                Ins  Lic  Status Expiry Date  Comments
Count
-----
FM_SERVER_PKG         No  -   Unused
ENTERPRISE_PKG        No  -   Unused
PORT_ACTIV_9132U_PKG  No  8   In use never
```

The following example displays services using a default license:

```
switch# show license default
Feature                Default License Count
-----
FM_SERVER_PKG         -
ENTERPRISE_PKG        -
PORT_ACTIVATION_PKG   12
10G_PORT_ACTIVATION_PKG 0
```

show line

To configure a virtual terminal line, use the show line command.

```
show line [com1 [user-input-string] | console [connected | user-input-string]]
```

Syntax Description

com1	(Optional) Displays auxiliary line configuration.
user-input-string	(Optional) Displays the user-input initial string.
console	(Optional) Displays console line configuration.
connected	(Optional) Displays the physical connection status.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.2(1)	This command was introduced.
3.0(1)	Modified examples for Supervisor-1 and Supervisor-2 modules.

Usage Guidelines

None.

Examples

The following example displays output from an MDS switch with a Supervisor-1 module:

```
switch# show line console
line Console:
Speed: 9600 bauds
Databits: 8 bits per byte
Stopbits: 1 bit(s)
Parity: none
Modem In: Enable
Modem Init-String -
default : ATE0Q1&D2&C1S0=1\015
Statistics: tx:12842 rx:366 Register Bits:RTS|CTS|DTR|DSR|CD|RI
```

The following example displays output from an MDS switch with a Supervisor-2 module:

```
switch# show line console
line Console:
Speed: 9600 bauds
Databits: 8 bits per byte
Stopbits: 1 bit(s)
Parity: none
Modem In: Enable
Modem Init-String -
default :
ATE0Q0V1&D0&C0S0=1\015
Statistics: tx:12842 rx:366 Register Bits:RTS|CTS|DTR|DSR|CD|RI
```

The following example displays output from an MDS switch with a Supervisor-1 module:

```
switch# show line com1
line Aux:
Speed: 9600 bauds
Databits: 8 bits per byte
Stopbits: 1 bit(s)
Parity: none
Modem In: Enable
Modem Init-String -
default : ATE0Q1&D2&C1S0=1\015
Statistics: tx:17 rx:0 Register Bits:RTS|DTR
```

The following example displays output from an MDS switch with a Supervisor-2 module:

```
switch# show line com1
line Aux:
Speed: 9600 bauds
Databits: 8 bits per byte
Stopbits: 1 bit(s)
Parity: none
Modem In: Enable
Modem Init-String -
default :
ATE0Q0V1&D0&C0S0=1\015
Statistics: tx:17 rx:0 Register Bits:RTS|DTR
```

Related Commands

Command	Description
clear line	Deleted configured line sessions.
line aux	Configures the auxiliary COM 1 port.
line console	Configures primary terminal line.

show loadbalancing hash-type

To display the selected egress link of the load balancing calculation for a specific hash type, use the show loadbalancing hash-type command.

```
show loadbalancing hash-type type vsan id source-fcid destination-fcid [exchange-id]
```

Syntax Description

hash-type type	Specifies the hashing method. The following are the different types of hashing methods: 1a - ECMP hashing method a. 1b - ECMP hashing method b. 2a - Port channel hashing method a. 2b - Port channel hashing method b.
vsan id	Specifies the VSAN ID. Range is 1–4093.
source-fcid	Specifies the source FCID. Range is 0x0—0xffffffff.
destination-fcid	Specifies the destination FCID. Range is 0x0—0xffffffff.
exchange-id	(Optional) Specifies the exchange ID. Range is 0x0— 0xffff. Note This option is not used when source FCID/destination FCID load balancing is configured for the specified VSAN.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.5(1)	This command was introduced.

Usage Guidelines

Use this command to verify the port channel load balancing method used by the switches on each end of a port channel. When they are the same, then exchanges or source/destination pair traffic (depending on the VSAN load balancing method) will be load balanced to the same link.

This command can be used for any source and destination FCIDs, whether or not they are online.

The link number displayed is the nth link in the list of the port channel members in the show port-channel database command for a port channel egress port or of the lowest cost link in the show fspf database command for an ECMP egress port.

Examples

The following example displays that link 3 will be chosen among the 4 links for hash type 2a for source FCID 0x830001 and destination FCID 0x790000 in VSAN 1000:

```
switch# show loadbalancing hash-type 2a vsan 1000 0x830001 0x790000 4
```

show loadbalancing hash-type

Link : 3 will be chosen among 4 links for this hash method

```
switch# show fspf database vsan 1000 domain 0x7a
```

FSPF Link State Database for VSAN 1000 Domain 0x7a(122)

```
LSR Type           = 1
Advertising domain ID = 0x7a(122)
LSR Age            = 251
LSR Incarnation number = 0x80000a0d
LSR Checksum       = 0xf977
Number of links    = 4
```

NbrDomainId	IfIndex	NbrIfIndex	Link Type	Cost
0x79(121)	0x00040063(	port-channel100)	0x00040063	1 1
0x83(131)	0x00040078(	port-channel121)	0x00040078	1 15
0x7e(126)	0x00040069(	port-channel106)	0x00040069	1 7
0x7f(127)	0x0004006c(	port-channel109)	0x0004006c	1 7

Related Commands

Command	Description
show port-channel database	Displays the available paths to a destination.
show vsan	Displays the configured load balancing scheme.
vsan hash-method	Configures the VSAN hash method.
vsan loadbalancing	Configures the VSAN load balancing scheme.

show loadbalancing module

To display the egress link that will be selected by the load balancing feature for a specific unicast flow, use the show loadbalancing module command.

```
show loadbalancing module number vsan id source-fcid destination-fcid [exchange-id] links
```

Syntax Description	Parameter	Description
	module number	Specifies the ingress module number. Range is platform dependent.
	vsan id	Specifies the VSAN ID. Range is 1–4093.
	source-fcid	Specifies the source FCID. Range is 0x0—0xfffff.
	destination-fcid	Specifies the destination FCID. Range is 0x0—0xfffff.
	exchange-id	(Optional) Specifies the exchange ID. Range is 0x0—0xffff. Note This option is not used when flow based load balancing is configured for the specified VSAN.
	links	Specifies the number of links.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
4.1(1i)	This command was introduced.

Usage Guidelines

The source and destination FCIDs specified must both be logged in to the fabric. Further, any traffic between the source and destination must traverse the switch where the command is executed.

Examples

The following example displays that interface fc1/30 is the egress link used for traffic with source FCID 0x010200 ingressing on module 1 in VSAN 1 to destination FCID 0x090000:

```
switch# show loadbalancing module 1 vsan 1 0x010200 0x090000
Interface fc1/30 is used
```

Related Commands

Command	Description
show vsan	Displays the configured load balancing scheme.
vsan hash-method	Configures the VSAN hash method.
vsan loadbalancing	Configures the VSAN load balancing scheme.

show locator-led status

To show the status of locator LEDs on the system, use the show locator-led status command.

```
show locator-led status
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes Any command mode

```
network-adminnetwork-operatorvdc-adminvdc-operator
```

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

The following example shows the locator LED status for the system:

```
switch# show locator-led status
```

Component	Locator LED Status
Chassis	off
Module 1	off
Module 2	off
Module 3	off
Module 4	off
Module 5	off
Module 6	off

Xbar 2	off
Xbar 3	off
Xbar 5	off
Xbar 6	off
PowerSupply 1	off
PowerSupply 2	off
PowerSupply 3	off
Fan 1	off
Fan 2	off
Fan 3	off

Related Commands

Command	Description
locator-led	Blinks an LED on the system.

show logging

To display the current message logging configuration, use the show logging command .

```
show logging [console | info | last lines | level facility | logfile | module | monitor | nvram [last lines] |
onboard information | pending | pending-diff | server | status]
```

Syntax Description

console	(Optional) Displays console logging configuration.
info	(Optional) Displays logging configuration.
last lines	(Optional) Displays last few lines of the log file. The range is 1 to 9999.
level facility	(Optional) Displays facility logging configuration. Facility values include aaa, acl, auth, authpriv, bootvar, callhome, cdp, cfs, cimserver, cron, daemon, device-alias, dstats, ethport, fc2d, fcc, fcd, fcdomain, fcns, fcsp-mgr, fdmi, ficon, flogi, fspf, ftp, ike, ipacl, ipconf, ipfc, ips, ipsec, isns, kernel, license, localn, lpr, mail, mcast, module, news, platform, port, port-security, pmon, qos, radius, rdl, rib, rlir, rscn, scsi-target, security, syslog, sysmgr, systemhealth, tacacs, tlport, user, uucp, vni, vrrp-cfg, vsan, vshd, wwm, xbar, and zone.
logfile	(Optional) Displays contents of the log file.
module	(Optional) Displays module linecard logging configuration.
monitor	Displays monitor logging configuration.
nvram	Displays NVRAM log.
onboard information	(Optional) Displays onboard failure logging (OBFL) information. The types of information include boot-uptime, cpu-hog, device-version, endtime, environmental-history, error-stats, exception-log, interrupt-stats, mem-leak, miscellaneous-error, module, obfl-history, obfl-logs, register-log, stack-trace, starttime, status, and system-health.
pending	(Optional) Displays the server address pending configuration.
pending-diff	(Optional) Displays the server address pending configuration differences with the active configuration.
server	(Optional) Displays server logging configuration.
status	(Optional) Displays the status of the last operation.

Command Default

None.

Command Modes

EXEC mode.

Release	Modification
8.4(1)	Added the pmon keyword to the list of supported facilities.
5.2(1)	Added a new comment.
1.3(1)	This command was introduced.
2.0(x)	Added the pending, pending-diff, and status keywords.
3.0(1)	Added the onboard keyword.

Usage Guidelines None.

Examples

The following example displays module linecard logging configuration:

```
switch# show logging module
Logging linecard:          enabled (Severity: notifications)
switch#
```

The following example displays level for module linecard manager logging configuration:

```
switch# show logging level module
Facility          Default Severity      Current Session Severity
-----
module            5                      1
0(emergencies)    1(alerts)              2(critical)
3(errors)         4(warnings)            5(notifications)
6(information)    7(debugging)
switch#
```

The following example displays current system message logging:

```
switch# show logging

Logging console:          enabled (Severity: notifications)
Logging monitor:         enabled (Severity: information)
Logging linecard:        enabled (Severity: debugging)
Logging server:          enabled
{172.22.0.0}
  server severity:       debugging
  server facility:       local7
{172.22.0.0}
  server severity:       debugging
  server facility:       local7
Logging logfile:         enabled
Name - external/sampleLogFile: Severity - notifications Size - 3000000
syslog_get_levels :: Error(-1) querying severity values for fcmpls at SAP 30
syslog_get_levels :: Error(-1) querying severity values for fcfwd at SAP 38
Facility          Default Severity      Current Session Severity
-----
kern              6                      4
user              3                      3
mail              3                      3
daemon           7                      7
auth              0                      0
syslog            3                      3
lpr               3                      3
```

```

news                3                3
uucp                3                3
cron                3                3
authpriv            3                3
ftp                 3                3
local0              3                3
local1              3                3
local2              3                3
local3              3                3
local4              3                3
local5              3                3
local6              3                3
local7              3                3
fspf                3                3
fcdomain            2                2
module              5                5
zone                2                2
vni                 2                2
ipconf              2                2
ipfc                2                2
xbar                3                3
fcns                2                2
fcs                 2                2
acl                 2                2
tlport             2                2
port                5                5
port_channel        5                5
fcmpls              0                0
wwn                 3                3
fcc                 2                2
qos                 3                3
vrrp_cfg            2                2
fcfwd               0                0
ntp                 2                2
platform            5                5
vrrp_eng            2                2
callhome            2                2
mcast               2                2
rscn                2                2
securityd           2                2
vhbad               2                2
rib                 2                2
vshd                5                5
0(emergencies)      1(alerts)        2(critical)
3(errors)            4(warnings)      5(notifications)
6(information)      7(debugging)
Nov  8 16:48:04 excal-113 %LOG_VSHD-5-VSHD_SYSLOG_CONFIG_I: Configuring console
from pts/1 (171.71.58.56)
Nov  8 17:44:09 excal-113 %LOG_VSHD-5-VSHD_SYSLOG_CONFIG_I: Configuring console
from pts/0 (171.71.58.72)

```

The following example displays the port monitor logging status:

```

switch(config)# show logging level pmon
Facility          Default Severity    Current Session Severity
-----
PMon              2                    4

```

The following example displays console logging status:

```

switch# show logging
console

```

Logging console: enabled (Severity: notifications)

The following example displays logging facility status:

```
switch# show logging
  facility
syslog_get_levels :: Error(-1) querying severity values for fcmpls at SAP 30
syslog_get_levels :: Error(-1) querying severity values for fcfwd at SAP 38
Facility           Default Severity      Current Session Severity
-----
kern                6                      4
user                3                      3
mail                3                      3
daemon              7                      7
auth                0                      0
syslog              3                      3
lpr                 3                      3
news                3                      3
uucp                3                      3
cron                3                      3
authpriv            3                      3
ftp                 3                      3
local0              3                      3
local1              3                      3
local2              3                      3
local3              3                      3
local4              3                      3
local5              3                      3
local6              3                      3
local7              3                      3
fspf                3                      3
fcdomain            2                      2
module              5                      5
zone                2                      2
vni                 2                      2
ipconf              2                      2
ipfc                2                      2
xbar                3                      3
fcns                2                      2
fcs                 2                      2
acl                 2                      2
tlport              2                      2
port                5                      5
port_channel        5                      5
fcmpls              0                      0
wnn                 3                      3
fcc                 2                      2
qos                 3                      3
vrrp_cfg            2                      2
fcfwd               0                      0
ntp                 2                      2
platform            5                      5
vrrp_eng            2                      2
callhome            2                      2
mcast               2                      2
rscn                 2                      2
securityd           2                      2
vhbad               2                      2
rib                 2                      2
vshd                5                      5
0(emergencies)     1(alerts)              2(critical)
3(errors)           4(warnings)            5(notifications)
6(information)     7(debugging)
```

The following example displays logging information:

```
switch# show logging
info

Logging console:          enabled (Severity: notifications)
Logging monitor:         enabled (Severity: information)
Logging linecard:        enabled (Severity: debugging)
Logging server:          enabled
{172.22.95.167}
    server severity:      debugging
    server facility:      local7
{172.22.92.58}
    server severity:      debugging
    server facility:      local7
Logging logfile:         enabled
    Name - external/sampleLogFile: Severity - notifications Size - 3000000
syslog_get_levels :: Error(-1) querying severity values for fcmps at SAP 30
syslog_get_levels :: Error(-1) querying severity values for fcfwd at SAP 38
Facility                Default Severity      Current Session Severity
-----                -
kern                    6                      4
user                    3                      3
mail                    3                      3
daemon                  7                      7
auth                    0                      0
syslog                  3                      3
lpr                     3                      3
news                    3                      3
uucp                    3                      3
cron                    3                      3
authpriv                3                      3
ftp                     3                      3
local0                   3                      3
local1                   3                      3
local2                   3                      3
local3                   3                      3
local4                   3                      3
local5                   3                      3
local6                   3                      3
local7                   3                      3
fspf                    3                      3
fcdomain                2                      2
module                  5                      5
zone                    2                      2
vni                     2                      2
ipconf                  2                      2
ipfc                    2                      2
xbar                    3                      3
fcns                    2                      2
fcs                     2                      2
acl                     2                      2
tlport                  2                      2
port                    5                      5
port_channel            5                      5
fcmps                   0                      0
wwn                     3                      3
fcc                     2                      2
qos                     3                      3
vrrp_cfg                2                      2
fcfwd                   0                      0
ntp                     2                      2
platform                5                      5
```



```

vrrp_eng          2          2
callhome          2          2
mcast             2          2
rscn              2          2
securityd        2          2
vhbad            2          2
rib               2          2
vshd             5          5
0(emergencies)   1(alerts)    2(critical)
3(errors)        4(warnings)  5(notifications)
6(information)   7(debugging)

```

The following example displays last few lines of a log file:

```

switch# show logging
last 2
Nov  8 16:48:04 excal-113 %LOG_VSHD-5-VSHD_SYSLOG_CONFIG_I: Configuring console
from pts/1 (171.71.58.56)
Nov  8 17:44:09 excal-113 %LOG_VSHD-5-VSHD_SYSLOG_CONFIG_I: Configuring console
from pts/0 (171.71.58.72)

```

The following example displays monitor logging status.

```

switch# show logging
monitor

Logging monitor:          enabled (Severity: information)

```

The following example displays server information:

```

switch# show logging
server

Logging server:          enabled
{172.22.95.167}
server severity:        debugging
server facility:        local7
{172.22.92.58}
server severity:        debugging
server facility:        local7

```

The following example shows onboard failure logging for boot-up time for module 2:

```

switch# show logging onboard module 2 boot-up time
-----
Module: 2
-----

Wed Nov  9 12:05:56 2005:  Boot Record
-----
Boot Time.....:  Wed Nov  9 12:05:56 2005
Slot Number.....:  2
Serial Number....:  JAB0912026U
Bios Version.....:  v0.0.8(08/18/05)
Alt Bios Version...:  v0.0.8(08/18/05)
Firmware Version...:  3.0(1) [build 3.0(0.276)]

Wed Nov  9 11:58:04 2005:  Card Uptime Record
-----
Uptime: 273, 0 days 0 hour(s) 4 minute(s) 33 second(s)

```

```
Reset Reason: Reset Requested by CLI command reload (9)
Card Mode.....: Runtime
```

```
Wed Nov 9 12:05:56 2005: Card Uptime Record
```

```
-----
Uptime: 32, 0 days 0 hour(s) 0 minute(s) 32 second(s)
Reset Reason: Unknown (0)
Card Mode.....: Runtime
```

The following example shows onboard failure logging for boot-uptime:

```
switch# show logging onboard boot-uptime
```

```
-----
Module: 2
-----
```

```
Wed Nov 9 12:05:56 2005: Boot Record
```

```
-----
Boot Time.....: Wed Nov 9 12:05:56 2005
Slot Number.....: 2
Serial Number.....: JAB0912026U
Bios Version.....: v0.0.8(08/18/05)
Alt Bios Version...: v0.0.8(08/18/05)
Firmware Version...: 3.0(1) [build 3.0(0.276)]
```

```
Wed Nov 9 11:58:04 2005: Card Uptime Record
```

```
-----
Uptime: 273, 0 days 0 hour(s) 4 minute(s) 33 second(s)
Reset Reason: Reset Requested by CLI command reload (9)
Card Mode.....: Runtime
```

```
Wed Nov 9 12:05:56 2005: Card Uptime Record
```

```
-----
Uptime: 32, 0 days 0 hour(s) 0 minute(s) 32 second(s)
Reset Reason: Unknown (0)
Card Mode.....: Runtime
```

```
-----
Module: 5
-----
```

```
Wed Nov 9 12:05:05 2005: Boot Record
```

```
-----
Boot Time.....: Wed Nov 9 12:05:05 2005
Slot Number.....: 5
Serial Number.....: JAB091100TS
Bios Version.....: 00.01.01 (Oct 25 2005 - 15:48:45)
Alt Bios Version...: 00.01.01 (Oct 25 2005 - 15:48:45)
Firmware Version...: 3.0(1) [build 3.0(0.274)]
```

```
Wed Nov 9 11:58:04 2005: Card Uptime Record
```

```
Uptime: 503255, 5 days 19 hour(s) 47 minute(s) 35 second(s)
Reset Reason: Reset reason: Reset Requested by CLI command reload (9)
Card Mode.....: Runtime
```

```
Wed Nov 9 12:05:05 2005: Card Uptime Record
```

```
-----
Uptime: 172, 0 days 0 hour(s) 2 minute(s) 52 second(s)
Reset Reason: Reset reason: Unknown (0)
Card Mode.....: Runtime
```

The following example shows onboard failure logging for device-version:

```
switch# show logging onboard device-version
```

```
-----
Module: 2
-----
```

```
Device Version Record
```

```
-----
```

Timestamp	Device Name	Instance Num	Hardware Version	Software Version
Wed Nov 9 12:05:56 2005	Stratosphere	0	1	1
Wed Nov 9 12:05:56 2005	Stratosphere	1	1	1
Wed Nov 9 12:05:56 2005	Skyline-asic	0	1	1
Wed Nov 9 12:05:56 2005	Tuscany-asic	0	1	0
Wed Nov 9 12:05:56 2005	X-Bus IO	0	6	0
Wed Nov 9 12:05:56 2005	Power Mngmnt Epl	0	6	0

```
-----
```

```
Module: 5
-----
```

```
Device Version Record
```

```
-----
```

Timestamp	Device Name	Instance Num	Hardware Version	Software Version
Wed Nov 9 12:05:05 2005	Power Mngmnt Epl	0	7	0
Wed Nov 9 12:05:05 2005	IO FPGA Molakini	0	8	0
Wed Nov 9 12:05:05 2005	bellagio2	0	1	0
Wed Nov 9 12:05:05 2005	BabyCaesar	0	1	0

```
-----
```

The following example show onboard failure logging for system health:

```
switch# show logging onboard system-health
```

```
Feature supported only on active-sup
```

```
-----
Module: 5
-----
```

```
Wed Nov 9 12:04:58 2005@345463 (5/31/0x0): System health started with pid 2607
Wed Nov 9 12:05:05 2005@943388 (5/31/0xb): Module Supervisor 5, swid 31 came online
Wed Nov 9 12:05:05 2005@944275 (5/31/0xb): LC config removed for module 7
Wed Nov 9 12:05:05 2005@944454 (5/31/0xb): LC config removed for module 8
Wed Nov 9 12:05:05 2005@944592 (5/31/0xb): LC config removed for module 9
Wed Nov 9 12:05:05 2005@944717 (5/31/0xb): LC config removed for module 10
Wed Nov 9 12:05:05 2005@944846 (5/31/0xb): LC config removed for module 11
Wed Nov 9 12:05:05 2005@944969 (5/31/0xb): LC config removed for module 12
Wed Nov 9 12:05:05 2005@945094 (5/31/0xb): LC config removed for module 13
Wed Nov 9 12:05:05 2005@945222 (5/31/0xb): LC config removed for module 14
```

```

Wed Nov 9 12:05:05 2005@945343 (5/31/0xb): LC config removed for module 15
Wed Nov 9 12:05:05 2005@945470 (5/31/0xb): LC config removed for module 16
Wed Nov 9 12:05:50 2005@814217 (2/29/0x0): System health started with pid 397
Wed Nov 9 12:05:56 2005@904068 (5/31/0xb): LC inserted for module 2
Wed Nov 9 12:05:59 2005@167373 (5/31/0xb): Module Linecard 2, swid 29 came online
switch# show logging onboard
boot-uptime          exception-log         obfl-logs
cpu-hog              interrupt-stats      register-log
device-version       mem-leak             stack-trace
endtime              miscellaneous-error  starttime
environmental-history module                status
error-stats          obfl-history         system-health

```

The following example show onboard failure logging for obfl-logs:

```

switch# show logging onboard obfl-logs
Module: 1 not online.

```

OBFL: Status:

```

Module: 2 OBFL Log:                Enabled
cpu-hog                            Enabled
environmental-history              Enabled
error-stats                        Enabled
exception-log                      Enabled
interrupt-stats                    Enabled
mem-leak                           Enabled
miscellaneous-error                Enabled
obfl-log (boot-uptime/device-version/obfl-history) Enabled
register-log                        Enabled
stack-trace                        Enabled

```

OBFL: Memory Leak:

```

-----
Module: 2
-----

```

OBFL: Stack Trace:

```

-----
Module: 2
-----

```

OBFL: Environment History:

```

-----
Module: 2
-----

```

=====
===== Sensor Temperature History Log =====

```

Wed Nov 9 12:05:50 2005 sensor 0 temperature 31
Wed Nov 9 12:05:50 2005 sensor 1 temperature 31
Wed Nov 9 12:05:50 2005 sensor 2 temperature 29
Wed Nov 9 12:06:20 2005 sensor 0 temperature 33
Wed Nov 9 12:06:20 2005 sensor 1 temperature 34
Wed Nov 9 12:06:50 2005 sensor 0 temperature 35
Wed Nov 9 12:06:50 2005 sensor 1 temperature 36
Wed Nov 9 12:07:20 2005 sensor 1 temperature 38
Wed Nov 9 12:08:50 2005 sensor 0 temperature 37
Wed Nov 9 12:08:50 2005 sensor 1 temperature 40

```

=====
===== Sensor Temperature Error Log =====

```
Wed Nov 9 12:05:50 2005 Start of Service: sensor 0 initial temperature 31
Wed Nov 9 12:05:50 2005 Start of Service: sensor 1 initial temperature 31
Wed Nov 9 12:05:50 2005 Start of Service: sensor 2 initial temperature 29
```

OBFL: Interrupt Statistics:

```
-----
Module: 2
-----
```

INTERRUPT COUNTS INFORMATION FOR DEVICE ID 63 DEVICE: Stratosphere

Interrupt Counter Name	Count	Thresh	Time Stamp	In|Port
			MM/DD/YY HH:MM:SS	st|Rang
				Id|e
FCP_LAF_MISC_INT_DT_IN_OBUF	7	0	11/09/05 12:06:00	00|1
FCP_MAC_SR1_LR_DETECTED	1	0	11/09/05 12:06:00	00|1
FCP_MAC_SR1_LRR_DETECTED	1	0	11/09/05 12:06:00	00|1
FCP_MAC_SR1_OLS_DETECTED	1	0	11/09/05 12:06:00	00|1
FCP_MAC_SR2_LRR_IDLE_RECEIVED	1	0	11/09/05 12:06:00	00|1
FCP_MAC_SR2_AL_NON_F8_LIP_RECEIVED	2	0	11/09/05 12:06:00	00|1
FCP_MAC_SR2_AL_LIP_RECEIVED	1	0	11/09/05 12:06:00	00|1
FCP_MAC_SR2_AL_ARB_F0_RECEIVED	1	0	11/09/05 12:06:00	00|1
FCP_LAF_MISC_INT_DT_IN_OBUF	2	0	11/09/05 12:06:00	00|2
FCP_MAC_SR1_OLS_DETECTED	1	0	11/09/05 12:06:00	00|2
FCP_MAC_SR2_AL_NON_F8_LIP_RECEIVED	2	0	11/09/05 12:06:00	00|2
FCP_MAC_SR2_AL_LIP_RECEIVED	3	0	11/09/05 12:06:00	00|2
FCP_LAF_MISC_INT_DT_IN_OBUF	b	0	11/09/05 12:06:00	00|3
FCP_MAC_SR1_LR_DETECTED	3	0	11/09/05 12:06:00	00|3
FCP_MAC_SR1_LRR_DETECTED	2	0	11/09/05 12:06:00	00|3
FCP_MAC_SR1_OLS_DETECTED	2	0	11/09/05 12:06:00	00|3
FCP_MAC_SR2_LR_IDLE_RECEIVED	1	0	11/09/05 12:06:00	00|3
FCP_MAC_SR2_LRR_IDLE_RECEIVED	2	0	11/09/05 12:06:00	00|3
FCP_MAC_SR2_AL_NON_F8_LIP_RECEIVED	3	0	11/09/05 12:06:00	00|3
FCP_MAC_SR2_AL_LIP_RECEIVED	1	0	11/09/05 12:06:00	00|3
FCP_MAC_SR2_AL_ARB_F0_RECEIVED	2	0	11/09/05 12:06:00	00|3
FCP_LAF_MISC_INT_DT_IN_OBUF	2	0	11/09/05 12:06:00	00|4
FCP_MAC_SR1_LRR_DETECTED	1	0	11/09/05 12:06:00	00|4
FCP_MAC_SR1_OLS_DETECTED	3	0	11/09/05 12:06:00	00|4
FCP_MAC_SR2_LRR_IDLE_RECEIVED	1	0	11/09/05 12:06:00	00|4
FCP_MAC_SR2_AL_NON_F8_LIP_RECEIVED	3	0	11/09/05 12:06:00	00|4
FCP_MAC_SR2_AL_LIP_RECEIVED	3	0	11/09/05 12:06:00	00|4
FCP_LAF_MISC_INT_DT_IN_OBUF	d	0	11/09/05 12:06:05	00|1
FCP_MAC_SR1_LRR_DETECTED	2	0	11/09/05 12:06:05	00|1
FCP_MAC_SR1_OLS_DETECTED	2	0	11/09/05 12:06:05	00|1
FCP_MAC_SR2_LRR_IDLE_RECEIVED	2	0	11/09/05 12:06:05	00|1
FCP_MAC_SR2_AL_LIP_RECEIVED	2	0	11/09/05 12:06:05	00|1
FCP_MAC_SR2_AL_ARB_F0_RECEIVED	2	0	11/09/05 12:06:05	00|1
FCP_LAF_MISC_INT_DT_IN_OBUF	3	0	11/09/05 12:06:05	00|2
FCP_MAC_SR1_LR_DETECTED	1	0	11/09/05 12:06:05	00|2
FCP_MAC_SR1_OLS_DETECTED	3	0	11/09/05 12:06:05	00|2
FCP_MAC_SR2_LR_IDLE_RECEIVED	1	0	11/09/05 12:06:05	00|2
FCP_MAC_SR2_AL_NON_F8_LIP_RECEIVED	4	0	11/09/05 12:06:05	00|2

OBFL: Error Statistics:

```
-----
Module: 2
-----
```

OBFL: System Bootup Record:

 Module: 2

Wed Nov 9 12:05:56 2005: Boot Record

 Boot Time.....: Wed Nov 9 12:05:56 2005
 Slot Number.....: 2
 Serial Number.....: JAB0912026U
 Bios Version.....: v0.0.8(08/18/05)
 Alt Bios Version...: v0.0.8(08/18/05)
 Firmware Version...: 3.0(1) [build 3.0(0.276)]

Wed Nov 9 12:05:56 2005: Card Uptime Record

 Uptime: 32, 0 days 0 hour(s) 0 minute(s) 32 second(s)
 Reset Reason: Unknown (0)
 Card Mode.....: Runtime

OBFL: Device Versions in Switch:

 Module: 2

Device Version Record

Timestamp	Device Name	Instance Num	Hardware Version	Software Version
Wed Nov 9 12:05:56 2005	Stratosphere	0	1	1
Wed Nov 9 12:05:56 2005	Stratosphere	1	1	1
Wed Nov 9 12:05:56 2005	Skyline-asic	0	1	1
Wed Nov 9 12:05:56 2005	Tuscany-asic	0	1	0
Wed Nov 9 12:05:56 2005	X-Bus IO	0	6	0
Wed Nov 9 12:05:56 2005	Power Mngmnt Epl	0	6	0

OBFL: Exception Log:

 Module: 2

OBFL: Register Log:

 Module: 2

OBFL: Miscellaneous Error Logs:

 Module: 2

LC Config Record: Wed Nov 9 12:05:40 2005@471600
 lc_copy_from_sup_to_lc() failure for sdwrap: 121

OBFL: Status:

```

Module: 5 OBFL Log: Enabled
error-stats Enabled
exception-log Enabled
miscellaneous-error Enabled
obfl-log (boot-uptime/device-version/obfl-history) Enabled
system-health Enabled
stack-trace Enabled

```

OBFL: Memory Leak:

```

-----
Module: 5
-----
mem-leak: This option not supported on SUP.

```

OBFL: Stack Trace:

```

-----
Module: 5
-----
stack-trace: This option not supported on SUP.

```

OBFL: Environment History:

```

-----
Module: 5
-----

```

===== Sensor Temperature History Log =====

```

-----
Wed Nov 9 12:05:06 2005 sensor 0 temperature 36
Wed Nov 9 12:05:06 2005 sensor 1 temperature 35
Wed Nov 9 12:05:06 2005 sensor 2 temperature 31

```

OBFL: Interrupt Statistics:

```

-----
Module: 5
-----
interrupt-stats: This option not supported on SUP.

```

OBFL: Error Statistics:

```

-----
Module: 5
-----

```

```

-----
Date (mm/dd/yy)=11/09/05 Time (hs:mn:sec): 12:10:05
Baby Ceaser data

```

```

-----
Date (mm/dd/yy)=11/09/05 Time (hs:mn:sec): 12:10:05
Arbiter Bellagio2 data
GROUP:4
bkt_tx_perr_drop_cnt 0
bkr_rx_req_fifo_drop_cnt 0
bkr_rx_req_fifo_perr_drop_cnt 0
bkr_rx_di_lut_perr_drop_cnt 0
fil_drop_cnt 0
crm_gid_drop_cnt 0
ser_rxs_perr_cnt 0

```

show logging

```

top_ddr_rx_perr_cnt          0
Bucket Counters
  Bkt Cos  Gresend          Grant          Request  Rresend
-----
    0  0      0              0              0          0
    0  1      0              0              0          0
    0  2      0              0              0          0
    0  3      0             1127             1127         0
   64  0      0              0              0          0
   64  1      0              0              0          0
   64  2      0              0              0          0
   64  3      0              0              0          0
  128  0      0              0              0          0
  128  1      0              0              0          0
  128  2      0              0              0          0
  128  3      0              0              0          0
  192  0      0              0              0          0
  192  1      0              0              0          0
  192  2      0              0              0          0
  192  3      0             73              73          0
  256  0      0              0              0          0
  256  1      0              0              0          0
  256  2      0              0              0          0
  256  3      0              0              0          0
  320  0      0              0              0          0
  320  1      0              0              0          0
  320  2      0              0              0          0
  320  3      0              0              0          0
  384  0      0              0              0          0
  384  1      0              0              0          0
  384  2      0              0              0          0
  384  3      0              0              0          0
  448  0      0              0              0          0
  448  1      0              0              0          0
  448  2      0              0              0          0
  448  3      0              0              0          0
  512  0      0              0              0          0
  512  1      0              0              0          0
  512  2      0              0              0          0
  512  3      0              0              0          0
  576  0      0              0              0          0
  576  1      0              0              0          0
  576  2      0              0              0          0
  576  3      0              0              0          0
  640  0      0              0              0          0
  640  1      0              0              0          0
  640  2      0              0              0          0
  640  3      0              0              0          0
  704  0      0              0              0          0
  704  1      0              0              0          0
  704  2      0              0              0          0
  704  3      0              0              0          0
  768  0      0              0              0          0
  768  1      0              0              0          0
  768  2      0              0              0          0
  768  3      0              0              0          0
  832  0      0              0              0          0
  832  1      0              0              0          0
  832  2      0              0              0          0
  832  3      0              0              0          0
  896  0      0              0              0          0
  896  1      0              0              0          0
  896  2      0              0              0          0
  896  3      0              0              0          0

```



```

960 0 0 0 0 0
960 1 0 0 0 0
960 2 0 0 0 0
960 3 0 0 0 0

```

LDI Counters

```

LDI COS OUT_REQ CREDIT CREDITNA
-----

```

```

0 0 0 14164 63
0 1 0 41874 63
0 2 0 41874 63
0 3 0 41905 63
1 0 0 14164 63
1 1 0 41874 63
1 2 0 41874 63
1 3 0 41904 63
2 0 0 14164 63
2 1 0 41874 63
2 2 0 41874 63
2 3 0 41902 63
3 0 0 14164 63
3 1 0 41874 63
3 2 0 41874 63
3 3 0 41903 63
4 0 0 14164 63
4 1 0 41873 63
4 2 0 41873 63
4 3 0 41903 63
5 0 0 14164 63
5 1 0 41873 63
5 2 0 41873 63
5 3 0 41903 63
6 0 0 14164 63
6 1 0 41872 63
6 2 0 41872 63
6 3 0 41903 63
7 0 0 14164 63
7 1 0 41872 63
7 2 0 41872 63
7 3 0 41903 63
8 0 0 14163 63
8 1 0 41871 63
8 2 0 41871 63
8 3 0 41902 63
9 0 0 14163 63
9 1 0 41871 63
9 2 0 41871 63
9 3 0 41902 63
10 0 0 14163 63
10 1 0 41871 63
10 2 0 41871 63
10 3 0 41901 63
11 0 0 14163 63
11 1 0 41871 63
11 2 0 41871 63
11 3 0 41901 63
12 0 0 14163 63
12 1 0 41870 63
12 2 0 41870 63
12 3 0 41901 63
13 0 0 14163 63
13 1 0 41870 63
13 2 0 41870 63
13 3 0 41900 63
14 0 0 14163 63

```

show logging

14	1	0	41869	63
14	2	0	41869	63
14	3	0	41900	63
15	0	0	14163	63
15	1	0	41869	63
15	2	0	41869	63
15	3	0	41900	63
16	0	0	14163	63
16	1	0	41869	63
16	2	0	41869	63
16	3	0	41900	63
17	0	0	14162	63
17	1	0	41868	63
17	2	0	41868	63
17	3	0	41899	63
18	0	0	14162	63
18	1	0	41868	63
18	2	0	41868	63
18	3	0	41898	63
19	0	0	14162	63
19	1	0	41868	63
19	2	0	41868	63
19	3	0	41898	63
20	0	0	14162	63
20	1	0	41868	63
20	2	0	41868	63
20	3	0	41898	63
21	0	0	14162	63
21	1	0	41867	63
21	2	0	41867	63
21	3	0	41898	63
22	0	0	14162	63
22	1	0	41867	63
22	2	0	41867	63
22	3	0	41897	63
23	0	0	14162	63
23	1	0	41866	63
23	2	0	41866	63
23	3	0	41897	63
24	0	0	0	0
24	1	0	0	0
24	2	0	0	0
24	3	0	0	0
25	0	0	0	0
25	1	0	0	0
25	2	0	0	0
25	3	0	0	0
26	0	0	0	0
26	1	0	0	0
26	2	0	0	0
26	3	0	0	0
27	0	0	0	0
27	1	0	0	0
27	2	0	0	0
27	3	0	0	0
28	0	0	0	0
28	1	0	0	0
28	2	0	0	0
28	3	0	0	0
29	0	0	0	0
29	1	0	0	0
29	2	0	0	0
29	3	0	0	0
30	0	0	0	0

30	1	0	0	0
30	2	0	0	0
30	3	0	0	0
31	0	0	0	0
31	1	0	0	0
31	2	0	0	0
31	3	0	0	0
32	0	0	0	0
32	1	0	0	0
32	2	0	0	0
32	3	0	0	0
33	0	0	0	0
33	1	0	0	0
33	2	0	0	0
33	3	0	0	0
34	0	0	0	0
34	1	0	0	0
34	2	0	0	0
34	3	0	0	0
35	0	0	0	0
35	1	0	0	0
35	2	0	0	0
35	3	0	0	0
36	0	0	0	0
36	1	0	0	0
36	2	0	0	0
36	3	0	0	0
37	0	0	0	0
37	1	0	0	0
37	2	0	0	0
37	3	0	0	0
38	0	0	0	0
38	1	0	0	0
38	2	0	0	0
38	3	0	0	0
39	0	0	0	0
39	1	0	0	0
39	2	0	0	0
39	3	0	0	0
40	0	0	0	0
40	1	0	0	0
40	2	0	0	0
40	3	0	0	0
41	0	0	0	0
41	1	0	0	0
41	2	0	0	0
41	3	0	0	0
42	0	0	0	0
42	1	0	0	0
42	2	0	0	0
42	3	0	0	0
43	0	0	0	0
43	1	0	0	0
43	2	0	0	0
43	3	0	0	0
44	0	0	0	0
44	1	0	0	0
44	2	0	0	0
44	3	0	0	0
45	0	0	0	0
45	1	0	0	0
45	2	0	0	0
45	3	0	0	0
46	0	0	0	0

show logging

46	1	0	0	0
46	2	0	0	0
46	3	0	0	0
47	0	0	0	0
47	1	0	0	0
47	2	0	0	0
47	3	0	0	0
48	0	0	0	0
48	1	0	0	0
48	2	0	0	0
48	3	0	0	0
49	0	0	0	0
49	1	0	0	0
49	2	0	0	0
49	3	0	0	0
50	0	0	0	0
50	1	0	0	0
50	2	0	0	0
50	3	0	0	0
51	0	0	0	0
51	1	0	0	0
51	2	0	0	0
51	3	0	0	0
52	0	0	0	0
52	1	0	0	0
52	2	0	0	0
52	3	0	0	0
53	0	0	0	0
53	1	0	0	0
53	2	0	0	0
53	3	0	0	0
54	0	0	0	0
54	1	0	0	0
54	2	0	0	0
54	3	0	0	0
55	0	0	0	0
55	1	0	0	0
55	2	0	0	0
55	3	0	0	0
56	0	0	0	0
56	1	0	0	0
56	2	0	0	0
56	3	0	0	0
57	0	0	0	0
57	1	0	0	0
57	2	0	0	0
57	3	0	0	0
58	0	0	0	0
58	1	0	0	0
58	2	0	0	0
58	3	0	0	0
59	0	0	0	0
59	1	0	0	0
59	2	0	0	0
59	3	0	0	0
60	0	0	0	0
60	1	0	0	0
60	2	0	0	0
60	3	0	0	0
61	0	0	0	0
61	1	0	0	0
61	2	0	0	0
61	3	0	0	0
62	0	0	0	0

```

62 1 0 0 0
62 2 0 0 0
62 3 0 0 0
63 0 0 0 0
63 1 0 0 0
63 2 0 0 0
63 3 0 0 0

```

Date (mm/dd/yy)=11/09/05 Time (hs:mn:sec): 12:10:05

Arbiter Bellagio2 data

GROUP:10

```

bkt_tx_perr_drop_cnt 0
bkr_rx_req_fifo_drop_cnt 0
bkr_rx_req_fifo_perr_drop_cnt 0
bkr_rx_di_lut_perr_drop_cnt 0
fil_drop_cnt 0
crm_gid_drop_cnt 0
ser_rxs_perr_cnt 0
top_ddr_rx_perr_cnt 0

```

Bucket Counters

Bkt	Cos	Gresend	Grant	Request	Resend
0	0	0	0	0	0
0	1	0	0	0	0
0	2	0	0	0	0
0	3	0	73	73	0
64	0	0	0	0	0
64	1	0	0	0	0
64	2	0	0	0	0
64	3	0	0	0	0
128	0	0	0	0	0
128	1	0	0	0	0
128	2	0	0	0	0
128	3	0	0	0	0
192	0	0	0	0	0
192	1	0	0	0	0
192	2	0	0	0	0
192	3	0	59	59	0
256	0	0	0	0	0
256	1	0	0	0	0
256	2	0	0	0	0
256	3	0	0	0	0
320	0	0	0	0	0
320	1	0	0	0	0
320	2	0	0	0	0
320	3	0	0	0	0
384	0	0	0	0	0
384	1	0	0	0	0
384	2	0	0	0	0
384	3	0	0	0	0
448	0	0	0	0	0
448	1	0	0	0	0
448	2	0	0	0	0
448	3	0	0	0	0
512	0	0	0	0	0
512	1	0	0	0	0
512	2	0	0	0	0
512	3	0	0	0	0
576	0	0	0	0	0
576	1	0	0	0	0
576	2	0	0	0	0
576	3	0	0	0	0
640	0	0	0	0	0

show logging

```

640 1 0 0 0 0
640 2 0 0 0 0
640 3 0 0 0 0
704 0 0 0 0 0
704 1 0 0 0 0
704 2 0 0 0 0
704 3 0 0 0 0
768 0 0 0 0 0
768 1 0 0 0 0
768 2 0 0 0 0
768 3 0 0 0 0
832 0 0 0 0 0
832 1 0 0 0 0
832 2 0 0 0 0
832 3 0 0 0 0
896 0 0 0 0 0
896 1 0 0 0 0
896 2 0 0 0 0
896 3 0 0 0 0
960 0 0 0 0 0
960 1 0 0 0 0
960 2 0 0 0 0
960 3 0 0 0 0

```

LDI Counters

```
LDI COS OUT_REQ CREDIT CREDITNA
```

```

-----
0 0 0 9471 63
0 1 0 0 0
0 2 0 0 0
0 3 0 9548 63
1 0 0 9471 63
1 1 0 0 0
1 2 0 0 0
1 3 0 9487 63
2 0 0 0 0
2 1 0 0 0
2 2 0 0 0
2 3 0 0 0
3 0 0 0 0
3 1 0 0 0
3 2 0 0 0
3 3 0 0 0
4 0 0 0 0
4 1 0 0 0
4 2 0 0 0
4 3 0 0 0
5 0 0 0 0
5 1 0 0 0
5 2 0 0 0
5 3 0 0 0
6 0 0 0 0
6 1 0 0 0
6 2 0 0 0
6 3 0 0 0
7 0 0 0 0
7 1 0 0 0
7 2 0 0 0
7 3 0 0 0
8 0 0 0 0
8 1 0 0 0
8 2 0 0 0
8 3 0 0 0
9 0 0 0 0
9 1 0 0 0

```

9	2	0	0	0
9	3	0	0	0
10	0	0	0	0
10	1	0	0	0
10	2	0	0	0
10	3	0	0	0
11	0	0	0	0
11	1	0	0	0
11	2	0	0	0
11	3	0	0	0
12	0	0	0	0
12	1	0	0	0
12	2	0	0	0
12	3	0	0	0
13	0	0	0	0
13	1	0	0	0
13	2	0	0	0
13	3	0	0	0
14	0	0	0	0
14	1	0	0	0
14	2	0	0	0
14	3	0	0	0
15	0	0	0	0
15	1	0	0	0
15	2	0	0	0
15	3	0	0	0
16	0	0	0	0
16	1	0	0	0
16	2	0	0	0
16	3	0	0	0
17	0	0	0	0
17	1	0	0	0
17	2	0	0	0
17	3	0	0	0
18	0	0	0	0
18	1	0	0	0
18	2	0	0	0
18	3	0	0	0
19	0	0	0	0
19	1	0	0	0
19	2	0	0	0
19	3	0	0	0
20	0	0	0	0
20	1	0	0	0
20	2	0	0	0
20	3	0	0	0
21	0	0	0	0
21	1	0	0	0
21	2	0	0	0
21	3	0	0	0
22	0	0	0	0
22	1	0	0	0
22	2	0	0	0
22	3	0	0	0
23	0	0	0	0
23	1	0	0	0
23	2	0	0	0
23	3	0	0	0
24	0	0	0	0
24	1	0	0	0
24	2	0	0	0
24	3	0	0	0
25	0	0	0	0
25	1	0	0	0

show logging

25	2	0	0	0
25	3	0	0	0
26	0	0	0	0
26	1	0	0	0
26	2	0	0	0
26	3	0	0	0
27	0	0	0	0
27	1	0	0	0
27	2	0	0	0
27	3	0	0	0
28	0	0	0	0
28	1	0	0	0
28	2	0	0	0
28	3	0	0	0
29	0	0	0	0
29	1	0	0	0
29	2	0	0	0
29	3	0	0	0
30	0	0	0	0
30	1	0	0	0
30	2	0	0	0
30	3	0	0	0
31	0	0	0	0
31	1	0	0	0
31	2	0	0	0
31	3	0	0	0
32	0	0	0	0
32	1	0	0	0
32	2	0	0	0
32	3	0	0	0
33	0	0	0	0
33	1	0	0	0
33	2	0	0	0
33	3	0	0	0
34	0	0	0	0
34	1	0	0	0
34	2	0	0	0
34	3	0	0	0
35	0	0	0	0
35	1	0	0	0
35	2	0	0	0
35	3	0	0	0
36	0	0	0	0
36	1	0	0	0
36	2	0	0	0
36	3	0	0	0
37	0	0	0	0
37	1	0	0	0
37	2	0	0	0
37	3	0	0	0
38	0	0	0	0
38	1	0	0	0
38	2	0	0	0
38	3	0	0	0
39	0	0	0	0
39	1	0	0	0
39	2	0	0	0
39	3	0	0	0
40	0	0	0	0
40	1	0	0	0
40	2	0	0	0
40	3	0	0	0
41	0	0	0	0
41	1	0	0	0

41	2	0	0	0
41	3	0	0	0
42	0	0	0	0
42	1	0	0	0
42	2	0	0	0
42	3	0	0	0
43	0	0	0	0
43	1	0	0	0
43	2	0	0	0
43	3	0	0	0
44	0	0	0	0
44	1	0	0	0
44	2	0	0	0
44	3	0	0	0
45	0	0	0	0
45	1	0	0	0
45	2	0	0	0
45	3	0	0	0
46	0	0	0	0
46	1	0	0	0
46	2	0	0	0
46	3	0	0	0
47	0	0	0	0
47	1	0	0	0
47	2	0	0	0
47	3	0	0	0
48	0	0	0	0
48	1	0	0	0
48	2	0	0	0
48	3	0	0	0
49	0	0	0	0
49	1	0	0	0
49	2	0	0	0
49	3	0	0	0
50	0	0	0	0
50	1	0	0	0
50	2	0	0	0
50	3	0	0	0
51	0	0	0	0
51	1	0	0	0
51	2	0	0	0
51	3	0	0	0
52	0	0	0	0
52	1	0	0	0
52	2	0	0	0
52	3	0	0	0
53	0	0	0	0
53	1	0	0	0
53	2	0	0	0
53	3	0	0	0
54	0	0	0	0
54	1	0	0	0
54	2	0	0	0
54	3	0	0	0
55	0	0	0	0
55	1	0	0	0
55	2	0	0	0
55	3	0	0	0
56	0	0	0	0
56	1	0	0	0
56	2	0	0	0
56	3	0	0	0
57	0	0	0	0
57	1	0	0	0

show logging

```

57 2      0      0      0
57 3      0      0      0
58 0      0      0      0
58 1      0      0      0
58 2      0      0      0
58 3      0      0      0
59 0      0      0      0
59 1      0      0      0
59 2      0      0      0
59 3      0      0      0
60 0      0      0      0
60 1      0      0      0
60 2      0      0      0
60 3      0      0      0
61 0      0      0      0
61 1      0      0      0
61 2      0      0      0
61 3      0      0      0
62 0      0      0      0
62 1      0      0      0
62 2      0      0      0
62 3      0      0      0
63 0      0      0      0
63 1      0      0      0
63 2      0      0      0
63 3      0      0      0

```

OBFL: System Bootup Record:

```

-----
Module: 5
-----

```

OBFL: Device Versions in Switch:

```

-----
Module: 5
-----

```

OBFL: Exception Log:

```

-----
Module: 5
-----

```

OBFL: Register Log:

```

-----
Module: 5
-----

```

register-log: This option not supported on SUP.

OBFL: Miscellaneous Error Logs:

```

-----
Module: 5
-----

```

Related Commands

Command	Description
logging	Configures logging parameters.

show logging onboard flow-control request-timeout

To display the Onboard Failure Logging (OBFL) request timeout for a source-destination pair per module with the timestamp information, use the show logging onboard flow-control request-timeout command.

```
show logging onboard flow-control request-timeout
```

Command Default

Displays the OBFL request timeout for a source-destination pair, per module, with the timestamp information.

Command Modes

EXEC mode.

Command History

Release	Modification
5.0(1a)	This command was introduced.

Examples

This example shows how to display the request timeout for a source-destination pair per module with the timestamp information for the supervisor CLI:

```
switch# show logging onboard flow-control request-timeout
-----
Module: 1
-----
-----
Module: 2
-----
-----
| Dest | Source | Events | Timestamp | Timestamp |
| Intf | Intf   | Count  | Earliest  | Latest     |
-----
|sup-fc0|fc2/48,| 24|Wed Oct 31 14:31:35 2012|Wed Oct 31 14:31:36 2012|
-----
|sup-fc0|fc2/9, | 7158|Mon Feb 7 10:49:20 2011|Mon Feb 7 10:52:59 2011|
|      |fc2/23,|      |      |      |
|      |fc2/24,|      |      |      |
-----
|sup-fc0|fc2/9, | 7907|Mon Feb 7 10:45:17 2011|Mon Feb 7 10:49:20 2011|
|      |fc2/23,|      |      |      |
-----
|sup-fc0|fc2/23,| 2|Mon Feb 7 10:45:17 2011|Mon Feb 7 10:45:17 2011|
-----
```

Related Commands

Command	Description
logging	Configures logging parameters.

show mcast

To display multicast information, use the show mcast command.

```
show mcast [vsan vsan-id]
```

Syntax Description	vsan vsan-id	(Optional) Specifies the number of the VSAN. The range is 1 to 4093.
---------------------------	-----------------	--

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example displays multicast information:

```
switch# show mcast

Multicast root for VSAN 1
    Configured root mode : Principal switch
    Operational root mode : Principal switch
    Root Domain ID : 0x15(21)
Multicast root for VSAN 73
    Configured root mode : Principal switch
    Operational root mode : Principal switch
    Root Domain ID : 0x65(101)
Multicast root for VSAN 99
    Configured root mode : Principal switch
    Operational root mode : Principal switch
    Root Domain ID : 0xe4(228)
Multicast root for VSAN 4001
    Configured root mode : Principal switch
    Operational root mode : Principal switch
    Root Domain ID : 0xe9(233)
Multicast root for VSAN 4002
    Configured root mode : Principal switch
    Operational root mode : Principal switch
    Root Domain ID : 0x78(120)
Multicast root for VSAN 4003
    Configured root mode : Principal switch
    Operational root mode : Principal switch
    Root Domain ID : 0xe0(224)
Multicast root for VSAN 4004
    Configured root mode : Principal switch
    Operational root mode : Lowest domain switch
    Root Domain ID : 0x01(1)
```

Related Commands

Command	Description
mcast root	Configures the multicast root VSAN.

show module

To display the status of a module, use the show module command.

```
show module [ slot | uptime | xbar number ]
```

Syntax Description

slot	(Optional) Specifies the slot number for the switching module.
uptime	(Optional) Displays the length of time since the control processor on each module has been reset. This is independent of the running time of the module forwarding hardware.
xbar number	(Optional) Displays information about the specified crossbar. number is an integer 1 to 6.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(4)	This command was introduced.
3.0(1)	Added the recovery-steps and xbar options.
4.1(1b)	Support added for 12 and 24 port modules.
8.1(1)	Removed diag, recover-steps and resources keywords.

Usage Guidelines

Each module goes through a testing and an initializing stage before displaying an 'ok' status.

This table describes the module states listed in the show module command output.

Table 13: Module States

Module Status Output	Description
powered up	The module is receiving electrical power. Once the module is powered up, the software begins booting.
testing	The module has established connection with the supervisor module and is performing bootup diagnostics.
initializing	The diagnostics have completed successfully and the configuration is being downloaded.
failure	The module has failed to initialize successfully after three attempts. This may be due to a software or hardware issue.

Module Status Output	Description
ok	The module is online and ready for use.
power-dn	The module is powered off in the configuration.
power-denied	There is insufficient power for the module to power up.
active	This module is the active supervisor module and the switch is ready to be configured.
ha-standby	The standby supervisor is synchronised with the active supervisor and ready to take over in the event of failure of the active supervisor.
standby	The warm switchover mechanism is enabled on the standby supervisor module.

The uptime option displays the time that the control processor of a module has been running. This is reset each time the processor reloads including for nondisruptive reloads due to ISSU/D or CLI command. The forwarding hardware is not included in this uptime. It is only reset when the module is power cycled. Fabric modules do not have a control processor onboard and so are not displayed with this option.

Examples

The following example displays information about all modules on the switch:

```
switch# show module
Mod  Ports  Module-Type                Model                Status
---  ---
2    32     Advanced Services Module  DS-X9032-SMV        powered-dn
4    32     Advanced Services Module  DS-X9032-SMV        powered-dn
5    0      Supervisor/Fabric-1       DS-X9530-SF1-K9     active *
6    0      Supervisor/Fabric-1       DS-X9530-SF1-K9     ha-standby
8    32     1/2 Gbps FC Module        DS-X9032             ok

Mod  Sw          Hw          World-Wide-Name(s) (WWN)
---  ---
5    1.2(2)      0.610      --
6    1.2(2)      0.610      --
8    1.2(2)      0.3        21:c1:00:0b:46:79:f1:40 to 21:e0:00:0b:46:79:f1:40

Mod  MAC-Address(es)                Serial-Num
---  ---
5    00-d0-97-38-b4-01 to 00-d0-97-38-b4-05  JAB06350B0H
6    00-d0-97-38-b3-f9 to 00-d0-97-38-b3-fd  JAB06350B1R
8    00-05-30-00-2b-e2 to 00-05-30-00-2b-e6  jab062407x4
* this terminal session
```

The following example displays uptime information for all modules in the switch:

```
switch# show module uptime
----- Module 1 -----
Module Start Time:  Wed Apr 14 18:12:48 2004
Up Time:             16 days, 5 hours, 59 minutes, 41 seconds
----- Module 6 -----
Module Start Time:  Wed Apr 14 18:11:57 2004
Up Time:             16 days, 6 hours, 0 minutes, 32 second
```

The following example displays information about all fabric modules in the switch:

```
switch# show module xbar
Xbar Ports  Module-Type                Model                Status
-----
1    0      Fabric Module 1                DS-13SLT-FAB1       ok
2    0      Fabric Module 2                DS-13SLT-FAB2       ok

Xbar Sw      Hw      World-Wide-Name(s) (WWN)
-----
1    NA      0.0      --
2    NA      0.111    --

Xbar MAC-Address(es)                Serial-Num
-----
1    NA                        JAF1207ARRS
2    NA                        JAE1212BPRO

* this terminal session
```

Related Commands

Command	Description
poweroff module	Configures electrical power for a module.
out-of-service	Configures electrical power for a supervisor.

show monitor session

To display specific information about a SPAN session, use the show monitor session command.

```
show monitor session [session-id | all | range session-id]
```

Syntax Description	
session-id	(Optional) Specifies the SPAN session ID. The range is 1 to 48.
all	(Optional) Displays the SPAN session configuration for all sessions.
range	(Optional) Displays the SPAN session configuration for a range of sessions.

Command Default None.

Command Modes Any mode

Command History	Release	Modification
	6.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example displays local span session for all created sessions:

```
switch(config-monitor)# show monitor session all
  session 1
-----
mode                : extended
ssn direction       : both
state               : up
source intf         :
  rx                 : fc1/38
  tx                 : fc1/38
  both               : fc1/38
source VLANs        :
  rx                 :
  tx                 :
  both               :
source exception    :
filter VLANs        : filter not specified
destination ports   : fc1/1
Feature             Enabled  Value  Modules Supported  Modules Not-Supported
-----
rate-limiter        Yes     100%   5                  -
MTU-Trunc           No
Sampling            No
Legend:
  MCBE = Multicast Best Effort
  L3-TX = L3 Multicast Egress SPAN
  Ex-SP = Module(s) with Exception SPAN source allocated in the session
```

The following example displays local span session in the both mode (bi-directional):

```

switch(config-monitor)# show monitor session 1
  session 1
-----
mode                : extended
ssn direction       : both
state               : up
source intf         :
  rx                : fc1/38
  tx                : fc1/38
  both              : fc1/38
source VLANs        :
  rx                :
  tx                :
  both              :
source exception    :
filter VLANs        : filter not specified
destination ports   : fc1/1
Feature             Enabled  Value  Modules Supported  Modules Not-Supported
-----
rate-limiter        Yes     100%   5                  -
MTU-Trunc           No
Sampling            No
Legend:
  MCBE = Multicast Best Effort
  L3-TX = L3 Multicast Egress SPAN
  Ex-SP = Module(s) with Exception SPAN source allocated in the session

```

The following example displays local span session in rx mode(uni-directional):

```

switch(config-monitor)# show monitor session 1
  session 1
-----
ssn direction       : rx
state               : up
source intf         :
  rx                : fc1/38
  tx                :
  both              :
source VLANs        :
  rx                :
  tx                :
  both              :
source exception    :
filter VLANs        : filter not specified
destination ports   : fc1/1
Feature             Enabled  Value  Modules Supported  Modules Not-Supported
-----
rate-limiter        Yes     100%   5                  -
MTU-Trunc           No
Sampling            No
Legend:
  MCBE = Multicast Best Effort
  L3-TX = L3 Multicast Egress SPAN
  Ex-SP = Module(s) with Exception SPAN source allocated in the session

```

The following example displays local span session in tx mode(uni-directional):

```

switch(config)# monitor session 1 tx
switch(config-monitor)# source interface fc1/38 tx
switch(config-monitor)# destination interface fc1/1
switch(config-monitor)# no shut
switch(config-monitor)# show monitor session 1

```

```

    session 1
-----
ssn direction      : tx
state              : up
source intf       :
    rx             :
    tx             : fc1/38
    both          :
source VLANs      :
    rx             :
    tx             :
    both          :
source exception  :
filter VLANs      : filter not specified
destination ports : fc1/1
Feature           Enabled  Value  Modules Supported  Modules Not-Supported
-----
rate-limiter     Yes     100%   5                  -
MTU-Trunc        No
Sampling         No
Legend:
    MCBE = Multicast Best Effort
    L3-TX = L3 Multicast Egress SPAN
    Ex-SP = Module(s) with Exception SPAN source allocated in the session

```

The following example displays the rspan session in both direction or both mode:

```

switch(config-monitor)# show monitor session 1
    session 1
-----
mode              : extended
ssn direction     : both
state             : up
source intf       :
    rx            : fc1/38
    tx            : fc1/38
    both          : fc1/38
source VLANs      :
    rx            :
    tx            :
    both          :
source exception  :
filter VLANs      : filter not specified
destination ports : fc1/1
Feature           Enabled  Value  Modules Supported  Modules Not-Supported
-----
rate-limiter     Yes     100%   5                  -
MTU-Trunc        No
Sampling         No
Legend:
    MCBE = Multicast Best Effort
    L3-TX = L3 Multicast Egress SPAN
    Ex-SP = Module(s) with Exception SPAN source allocated in the session

```

The following example displays the remote rspan session in tx direction or tx mode(uni-directional):

```

switch(config)# monitor session 1 tx
switch(config-monitor)# source interface fc1/38
switch(config-monitor)# destination interface fc1/1
switch(config-monitor)# no shut
switch(config-monitor)# show monitor session 1
    session 1
-----

```

show monitor session

```

ssn direction      : tx
state              : up
source intf        :
  rx               :
  tx               : fc1/38
  both            :
source VLANs       :
  rx               :
  tx               :
  both            :
source exception    :
filter VLANs       : filter not specified
destination ports  : fc1/1
Feature            Enabled  Value  Modules Supported  Modules Not-Supported
-----
rate-limiter       Yes     100%   5                  -
MTU-Trunc          No
Sampling           No
Legend:
  MCBE = Multicast Best Effort
  L3-TX = L3 Multicast Egress SPAN
  Ex-SP = Module(s) with Exception SPAN source allocated in the session

```

The following example displays the local span session with port-channel as source in rx mode:

```

switch(config)# monitor session 1 rx
switch(config-monitor)# source interface port-channel 1
switch(config-monitor)# destination
description destination
switch(config-monitor)# destination interface fc1/1
switch(config-monitor)# no shut
switch(config-monitor)# show monitor session 1
  session 1
-----
mode                : extended
ssn direction       : both
state               : up
source intf         :
  rx                : Po1
  tx                : Po1
  both              : Po1
source VLANs        :
  rx                :
  tx                :
  both              :
source exception     :
filter VLANs        : filter not specified
destination ports   : fc1/1
Feature            Enabled  Value  Modules Supported  Modules Not-Supported
-----
rate-limiter       Yes     100%   5                  -
MTU-Trunc          No
Sampling           No
Legend:
  MCBE = Multicast Best Effort
  L3-TX = L3 Multicast Egress SPAN
  Ex-SP = Module(s) with Exception SPAN source allocated in the session

```

The following example displays the local span session with port-channel as source in rx mode:

```

switch(config)# monitor session 1 rx
switch(config-monitor)# source interface port-channel 1
switch(config-monitor)# destination

```

```

switch(config-monitor)# destination interface fc1/1
switch(config-monitor)# no shut
switch(config-monitor)# show monitor session 1
  session 1
  -----
ssn direction      : rx
state              : up
source intf        :
  rx               : Pol
  tx               :
  both             :
source VLANs       :
  rx               :
  tx               :
  both             :
source exception   :
filter VLANs       : filter not specified
destination ports  : fc1/1
Feature            Enabled  Value  Modules Supported  Modules Not-Supported
-----
rate-limiter      Yes     100%   5                  -
MTU-Trunc         No
Sampling          No
Legend:
  MCBE = Multicast Best Effort
  L3-TX = L3 Multicast Egress SPAN
  Ex-SP = Module(s) with Exception SPAN source allocated in the session
The following example displays the local span session with port-channel as source in tx
mode:
switch(config)# monitor session 1 tx
switch(config-monitor)# source interface port-channel 1
switch(config-monitor)# destination interface fc1/1
switch(config-monitor)# no shut
switch(config-monitor)# show monitor session 1
  session 1
  -----
ssn direction      : tx
state              : up
source intf        :
  rx               :
  tx               : Pol
  both             :
source VLANs       :
  rx               :
  tx               :
  both             :
source exception   :
filter VLANs       : filter not specified
destination ports  : fc1/1
Feature            Enabled  Value  Modules Supported  Modules Not-Supported
-----
rate-limiter      Yes     100%   5                  -
MTU-Trunc         No
Sampling          No
Legend:
  MCBE = Multicast Best Effort
  L3-TX = L3 Multicast Egress SPAN
  Ex-SP = Module(s) with Exception SPAN source allocated in the session
The following example displays the local span session with VSAN as source:
switch(config)# monitor session 1
switch(config-monitor)# source vsan 1
switch(config-monitor)# destination interface fc1/1
switch(config-monitor)# no shut
switch(config-monitor)#

```

```

sw-luke(config-monitor)# show monitor session 1
  session 1
-----
mode                : extended
ssn direction       : both
state               : up
source intf         :
  rx                 :
  tx                 :
  both               :
source VLANs        :
  rx                 :
  tx                 :
  both               :
source VSANs        :
  rx                 : 1
source exception    :
filter VLANs        : filter not specified
destination ports   : fc1/1
Feature             Enabled  Value  Modules Supported  Modules Not-Supported
-----
rate-limiter        Yes     100%   5                  -
MTU-Trunc           No
Sampling            No
Legend:
  MCBE = Multicast Best Effort
  L3-TX = L3 Multicast Egress SPAN
  Ex-SP = Module(s) with Exception SPAN source allocated in the session

```

The following example displays the local span session with VSAN as source with VSAN filter option:

```

switch(config)# monitor session 1
switch(config-monitor)# source vsan 1
switch(config-monitor)# destination interface fc1/1
switch(config-monitor)# source filter vsan 1
switch(config-monitor)# no shut
sw-luke(config-monitor)# show monitor session 1
  session 1
-----
mode                : extended
ssn direction       : both
state               : up
source intf         :
  rx                 :
  tx                 :
  both               :
source VLANs        :
  rx                 :
  tx                 :
  both               :
source VSANs        :
  rx                 : 1
source exception    :
filter VLANs        : filter not specified
  VSANs             : 1
destination ports   : fc1/1
Feature             Enabled  Value  Modules Supported  Modules Not-Supported
-----
rate-limiter        Yes     100%   5                  -
MTU-Trunc           No
Sampling            No
Legend:
  MCBE = Multicast Best Effort

```

L3-TX = L3 Multicast Egress SPAN
Ex-SP = Module(s) with Exception SPAN source allocated in the session

Related Commands

Command	Description
monitor session source interface	Configures the SPAN traffic in both ingress (rx) and egress (tx) directions.

show npv flogi-table

To display the information about N Port Virtualization (NPV) FLOGI session, use the show npv flogi-table command.

```
show npv flogi-table
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the information on NPV FLOGI session:

```
switch# show npv flogi-table
-----
SERVER EXTERNAL
INTERFACE VSAN FCID PORT NAME NODE NAME INTERFACE
-----
fc1/13 1 0x330100 2f:ff:00:06:2b:10:c1:14 2f:ff:00:06:2b:10:c1:14 fc1/4
fc1/13 1 0x333500 2f:bf:00:06:2b:10:c1:14 2f:bf:00:06:2b:10:c1:14 fc1/4
fc1/13 1 0x333600 2f:9f:00:06:2b:10:c1:14 2f:9f:00:06:2b:10:c1:14 fc1/3
fc1/13 1 0x333800 2f:7f:00:06:2b:10:c1:14 2f:7f:00:06:2b:10:c1:14 fc1/2
fc1/13 1 0x333e00 2f:3f:00:06:2b:10:c1:14 2f:3f:00:06:2b:10:c1:14 fc1/4
fc1/13 1 0x334a00 2e:bf:00:06:2b:10:c1:14 2e:bf:00:06:2b:10:c1:14 fc1/3
fc1/13 1 0x335400 2e:7f:00:06:2b:10:c1:14 2e:7f:00:06:2b:10:c1:14 fc1/4
fc1/13 1 0x336200 2d:ff:00:06:2b:10:c1:14 2d:ff:00:06:2b:10:c1:14 fc1/1
fc1/13 1 0x336f00 2d:9f:00:06:2b:10:c1:14 2d:9f:00:06:2b:10:c1:14 fc1/2
fc1/13 1 0x337300 2d:5f:00:06:2b:10:c1:14 2d:5f:00:06:2b:10:c1:14 fc1/2
fc1/13 1 0x337900 2c:ff:00:06:2b:10:c1:14 2c:ff:00:06:2b:10:c1:14 fc1/1
fc1/13 1 0x338500 2c:bf:00:06:2b:10:c1:14 2c:bf:00:06:2b:10:c1:14 fc1/2
fc1/13 1 0x338a00 2c:9f:00:06:2b:10:c1:14 2c:9f:00:06:2b:10:c1:14 fc1/1
```

Related Commands	Command	Description
	show npv status	Displays the NPV current status.

show npv internal info

To display internal N Port Virtualization (NPV) information, use the show npv internal info command.

```
show npv internal info
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the NPV internal information:

```
switch# show npv internal info
NPV Globals:
=====
NPV mode: ENABLED
Switch-Name: 209.165.200.226
Switch Mgmt IP Address: 209.165.200.226
proxy logo Retries: 1
Internal FLOGI max timeout Retries: -1
NS Registration max timeout Retries: 5
timer group handle: 0x30038fe0
Number of Active External Interfaces: 0
External Interface Info:
=====
Interface Information:
  ifindex: fc1/1, VSAN: 1, internal FLOGI fcid: 0x1e0000
  FSM current state: NPIVP_EXT_IF_ST_FLOGI_FAILED
  Internal FLOGI Fail Reason: Mismatch in VSAN for this upstream port
  fabric pwnn: 20:05:00:05:30:00:ca:16, fabric nwnn: 20:0a:00:05:30:00:ca:17
  my pwnn: 20:01:00:05:30:01:71:b8, my nwnn: 20:01:00:05:30:01:71:b9
Port Parameters:
  Rx B2B Credits: 16, Multiplier: 0, Buff Size: 2112
  Tx B2B Credits: 16, Multiplier: 0, Buff Size: 2112, bbscn: 0
  bbscn_capable: TRUE bbscn_max: 14, port_bbscn: 0
Timer & Retry Information:
  Busy Timer (1), id: 21045, active: FALSE time remaining: 0
  Fail Retry Timer (7), id: 4209, active: TRUE time remaining: 1
  FDISC Response Timer (2), id: 00, active: FALSE time remaining: 0
  Error Clear Timer (6), id: 71, active: TRUE time remaining: 433
Statistics:
  flogi retry count : 113
  ns registration retry count : 0
  number of flogis accepted: 0
  login failures out of ids: 0
  other login failures : 0
```

show npv internal info

```

    timed out login_failures : 0
    pending queue size       : 0
FLOGIs on this interface :
Interface Information:
    ifindex: fc1/5, VSAN: 1, internal FLOGI fcid: 0x000000
    FSM current state: NPIVP_EXT_IF_ST_PREINIT_DONE
    fabric pwwn: 00:00:00:00:00:00:00:00, fabric nwwn: 00:00:00:00:00:00:00:00
    my pwwn: 00:00:00:00:00:00:00:00, my nwwn: 00:00:00:00:00:00:00:00
Port Parameters:
    Rx B2B Credits: 0, Multiplier: 0, Buff Size: 0
    Tx B2B Credits: 0, Multiplier: 0, Buff Size: 0, bbscn: 0
    bbscn_capable: FALSE bbscn_max: 0, port_bbscn: 0
Timer & Retry Information:
    Busy Timer                (1), id: 00, active: FALSE time remaining: 0
    Fail Retry Timer          (7), id: 00, active: FALSE time remaining: 0
    FDISC Response Timer     (2), id: 00, active: FALSE time remaining: 0
    Error Clear Timer        (6), id: 71, active: TRUE time remaining: 433
Statistics:
    flogi retry count         : 0
    ns registration retry count : 0
    number of flogis accepted: 0
    login failures out of ids: 0
    other login failures      : 0
    timed out login_failures : 0
    pending queue size       : 0
FLOGIs on this interface :
Server Interface Info:
=====
Interface Information:
    ifindex: fc1/4, VSAN: 1, NPIV enable: FALSE, lcp init done: FALSE
    Selected External Interface:
    FSM current state: NPIVP_SVR_IF_ST_WAITING_EXTERNAL_INTERFACE
Port Parameters:
    rxbbcredit: 0 rxbufsize: 0
    txbbcredit: 0 txbufsize: 0 txbbbscn: 0
    bbscn_capable: FALSE bbscn_max: 0, port_bbscn: 0
Statistics:
    number of FLOGIs: 0

```

Related Commands

Command	Description
debug npv	Enables debugging NPV configurations.
show debug npv	Displays the NPV debug commands configured on the switch.

show npv internal info traffic-map

To display internal N port virtualization (NPV) information about a traffic map, use the show npv internal info traffic-map command.

```
show npv internal info traffic-map
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Command History	Release	Modification
	4.1(1b)	Command output has been changed.
	3. 3(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example displays NPV internal information:

```
switch# show npv internal info traffic-map
NPV Traffic Map Information:
-----
Server-If          Last Change Time          External-If(s)
-----
fc1/10             2147469648.265604868      fc1/9,fc1/13
fc1/20             2147469648.265604868      fc1/9,fc1/13
-----
switch#
```

Related Commands	Command	Description
	show npv traffic-map	Displays NPV traffic map.

show npv status

To display the N Port Virtualization (NPV) current status, use the show npv status command.

```
show npv status
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the current status of NPV:

```
switch# show npv status
External Interfaces:
=====
Number of External Interfaces: 6
Interface: fc1/1, FCID: 0x330037, State: Up
Interface: fc1/2, FCID: 0x330038, State: Up
Interface: fc1/3, FCID: 0x330039, State: Up
Interface: fc1/4, FCID: 0x33003a, State: Up
Interface: fc1/23, FCID: 0x7d0007, State: Up
Interface: fc1/24, FCID: 0x7d0006, State: Up
Server Interfaces:
=====
Number of Server Interfaces: 4
Interface: fc1/13, NPIV: Yes, State: Up
Interface: fc1/14, NPIV: Yes, State: Up
Interface: fc1/15, NPIV: Yes, State: Up
```

Related Commands	Command	Description
	show npv flogi-table	Displays the information about NPV FLOGI session.

show npv traffic-map

To display an N Port Virtualization (NPV) traffic map, use the show npv traffic-map command.

```
show npv traffic-map
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the NPV traffic map information:

```
switch# show npv traffic-map
NPV Traffic Map Information:
-----
Server-If          External-If(s)
-----
fc1/10             fc1/9, fc1/13
fc1/20             fc1/9, fc1/13
-----
switch#
```

Related Commands	Command	Description
	show npv flogi-table	Displays information about NPV FLOGI sessions.
	show npv internal info traffic-map	Displays internal information about the traffic map.

show npv traffic-map proposed

To display a proposed remapping of server interfaces to external interfaces based on recent external interface loads, use the show npv traffic-map proposed command.

```
show npv traffic-map proposed
```

Command Default None.

Command Modes Privileged EXEC (#)

Release	Modification
8.5(1)	This command was introduced.

Usage Guidelines The proposed server to external interface map is based on the load of the server link over the previous sample period. This is calculated as (transmit bytes + receive bytes) / 2. The load values are updated at the end of each sampling period.

The first two columns show the interface the server is connected to and its current load. The 3rd and 4th columns show which external interface the server is mapped to and the total load on that uplink. The 5th and 6th columns show the proposed external interface to map the server interface to and the expected total load on that interface after all the proposed remapping is done. The 7th column shows the total external interface link speed to give an idea of the available capacity on it.

This command can only be used on switches in Cisco NPV mode.

Examples

The following example displays a proposed remapping of server interfaces to external interfaces:

```
switch# show npv traffic-map proposed

Proposed server-uplink mapping.
Statistics collected every 5 mins.
Load values may be rounded off during display.
'*' indicates change from the currently applied traffic map.
-----
Server Interface----- External Interface-----
      Load   Current Mapping   Load   Proposed Mapping   Load   Speed
Name (Gbps)      Name      (Gbps)      Name      (Gbps) (Gbps)
-----
fc1/6    2.8   port-channel122  2.8   port-channel122   5.6   32
fc1/3    2.6    fc1/33         5.3   fc1/33            2.6    8
*fc1/4   1.4    fc1/33         5.3   port-channel122   5.6   32
*fc1/5   1.3    fc1/33         5.3   port-channel122   5.6   32
```

Related Commands

Command	Description
npv traffic-map analysis clear	Resets the load values that were collected for NPV external interface load balancing.
npv traffic-map load-balancing disruptive	Configures automatic rebalancing of external interfaces.
npv traffic-map server-interface	Configures NPV traffic map server interface.

show ntp authentication-keys

To display a list of configured Network Time Protocol (NTP) authentication keys, use the `show ntp authentication-keys` command.

```
show ntp authentication-keys
```

Command Default Displays NTP authentication keys.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	5.0(1a)	This command was introduced.

Usage Guidelines No NTP keys are configured by default. Authentication keys are always stored in the switch configuration in an encrypted format. If a user configures a key as clear text, the key will automatically be converted before installation into the configuration.

Examples The following example displays NTP authentication keys in encrypted format:

```
switch# show ntp authentication-keys
-----
Auth key          MD5 String
                  (Encrypted)
-----
      42          nac1_12
      43          nac1_13
```

Related Commands	Command	Description
	<code>ntp authentication-key</code>	Configures an NTP authentication key for a device to synchronize to a time source after enabling NTP authentication.
	<code>show scheduler schedule</code>	Displays scheduler schedule.
	<code>ntp trusted-key</code>	Configures one or more keys that a time source must provide in its packets for the device to synchronize to it.
	<code>show ntp trusted-keys</code>	Display the NTP trusted keys.

show ntp authentication-status

To display the status of NTP message authentication, use the `show ntp authentication-status` command.

```
show ntp authentication-status
```

Command Default Displays the NTP message authentication status.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	5.0(1a)	This command was introduced.

Usage Guidelines Use the `show logging level pmon` command to verify the configured port monitor severity level.

Examples The following example displays that NTP message authentication is enabled:

```
status# show ntp authentication-status
Authentication enabled.
```

Related Commands	Command	Description
	ntp authenticate	Configure authentication for NTP exchanges to prevent the system from synchronizing with unauthenticated, unconfigured NTP peers.

show ntp logging-status

To display the status of NTP event logging to syslog, use the show ntp logging-status command.

```
show ntp logging-status
```

Command Default Displays the NTP event logging to syslog status.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	5.0(1a)	This command was introduced.

Examples The following example displays that NTP event logging to syslog is enabled:

```
switch# show ntp logging-status
NTP logging enabled.
```

Related Commands	Command	Description
	ntp logging	Enables NTP syslogs.

show ntp peers

To display all the configured NTP peers, use the show ntp peers command.

```
show ntp peers
```

Command Default Displays all NTP peers.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	2.0(x)	This command was introduced.

Examples

The following example displays all the configured NTP peers:

```
switch# show ntp peers
-----
Peer IP Address          Serv/Peer
-----
190.0.1.1                Peer (configured)
190.0.2.1                Peer (configured)
```

Related Commands	Command	Description
	ntp peer	Configures a device as an NTP peer.

show ntp peer-status

To display the status of all the configured NTP servers and peers, use the show ntp peer-status command.

```
show ntp peer-status
```

Command Default Displays the status of all NTP servers and peers.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines This command is useful for debugging connectivity of the switch with other NTP devices. Information about each peer is displayed in the table, one peer per line. The first character of each line is a status flag. A legend above the table shows the meaning of this flag. NTP servers and peers that are in synchronization and used for local time updates have an equal (=) flag. There must be at least one device with this flag for the time on the local switch to be updated. Passive peers are peers that are currently unsynchronized. This means the local switch will not use time updates from these peers. The remote column shows the source IP address of the peer. The accuracy of the peer's source clock, or stratum, is shown in the st column. The higher the stratum value, the lower the accuracy of the peer's clock source, 16 being the lowest accuracy. The polling interval, in seconds, is shown in the poll column. The reachability field in the reach column is a circular bit map of the last 8 transactions with that peer, 1 indicating success and 0 indicating failure, the most recent transaction in the lowest significant bit. The round-trip time between the local switch and peer, in seconds, is shown in the delay column.

Examples

The following example displays the status of all the configured NTP servers and peers:

```
switch# show ntp peer-status
Total peers : 2
* - selected for sync, + - peer mode(active),
- - peer mode(passive), = - polled in client mode
  remote      local      st   poll   reach delay
+190.0.1.1    0.0.0.0    16  16     0   0.00000
=190.0.2.1    0.0.0.0    16  16     0   0.00000
```

Related Commands

Command	Description
ntp peer	Configures a device as an NTP peer.
ntp server	Configures a device as an NTP server.

show ntp pending-diff

To display the differences between the pending NTP configuration changes and the active NTP configuration, use the `show ntp pending-diff` command.

```
show ntp pending-diff
```

Command Default Displays the differences between the pending NTP configuration changes and active NTP configuration.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines This command displays any differences between the active configuration and the NTP CFS configuration session. Each line is prepended by a + or - flag where + indicates that the line will be added to the active configuration when the NTP CFS session is committed and - indicates that the line will be removed.

Examples The following example displays the differences between the pending NTP configuration changes and active NTP configuration:

```
switch# show ntp pending-diff
-ntp peer 192.168.56.78
```

Related Commands	Command	Description
	ntp peer	Configures a device as an NTP peer.
	ntp server	Configures a device as an NTP server.

show ntp pending peers

To display the uncommitted (pending) NTP configuration for the current NTP CFS session, use the show ntp pending peers command.

```
show ntp pending peers
```

Command Default Displays the pending NTP configuration for the current session.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	2.0(x)	This command was introduced.

Examples

The following example displays the pending NTP configuration for the current session:

```
switch# show ntp pending peers
ntp server 192.168.12.34
ntp peer 192.168.56.78
```

Related Commands	Command	Description
	ntp peer	Configures a device as an NTP peer.
	ntp server	Configures a device as an NTP server.

show ntp rts-update

To display status of the RTS internal time synchronization between modules, use the `show ntp rts-update` command.

```
show ntp rts-update
```

Command Default Displays the RTS update status.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines The method of keeping the clocks synchronized between modules varies by platform. This is an internal mechanism which cannot be modified by the user.

Examples The following example displays that RTS update status is enabled:

```
switch# show ntp rts-update
RTS update is enabled
```

show ntp session status

To display the NTP CFS session status, use the show ntp session status command.

```
show ntp session status
```

Command Default

Displays the NTP CFS session status.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
2.0(x)	This command was introduced.

The information displayed by this command is as follows:

Last Action Time Stamp: The timestamp of the reported action.

Last Action:

Status	Explanation
Distribution Enable	Specifies that the CFS distribution for NTP was enabled.
Distribution Disable	Specifies that the CFS distribution for NTP was disabled.
Commit	Specifies that the pending NTP configuration to an NTP CFS enabled peer was applied and the CFS lock was released.
Abort	Specifies that the NTP CFS distribution session was aborted and the CFS lock was released.
Clear	Specifies that the NTP information was cleared.

Last Action Result:

Status	Explanation
Success	Specifies that the NTP configuration changes were successfully committed.
Fail	Specifies that the NTP configuration changes were not committed.
In Progress	Specifies that the NTP configuration changes are in progress of being committed.
Partial Success	Specifies that the only some NTP configuration changes were successfully committed.

Last Action Failure Reason: A text message with further details about the last failure.

Examples

The following example displays the NTP CFS session status:

```
switch# show ntp session status
Last Action Time Stamp      : Thu Mar 19 13:42:24 2020
```



```
Last Action           : Commit
Last Action Result    : Success
Last Action Failure Reason : none
```

Related Commands

Command	Description
clear ntp session	Aborts the current NTP CFS session and removes any pending configuration.
ntp commit	Applies pending NTP configuration to an NTP CFS enabled peers in a fabric.
ntp distribute	Enables CFS distribution of NTP configuration.

show ntp source-interface

To display information about the configured NTP source interface, use the show ntp source-interface command.

```
show ntp source-interface
```

Command Default Displays information about the configured NTP source interface.

Command Modes Privileged EXEC (#)

Release	Modification
4.1(3)	This command was introduced.

Examples The following example displays that management 0 is configured as the NTP source interface:

```
switch# show ntp source-interface
Source interface mgmt0
```

Command	Description
ntp source-interface	Overrides the default source address of NTP packets sent from a switch.

show ntp statistics

To display NTP statistics, use the `show ntp statistics` command.

```
show ntp statistics io | local | memory | peer ipaddr ip-address | name name
```

Syntax Description

io	Displays NTP packet handling statistics.
local	Displays NTP packet type statistics.
memory	Displays NTP memory statistics.
peer	Displays NTP peer statistics..
ipaddr ip-address	Specifies peer IP address.
name name	Specifies peer name.

Command Default

Displays NTP statistics.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

This command is useful for debugging the NTP process on the switch. The following tables provide definitions for the fields displayed in the `show ntp statistics` command outputs:

Table 14: Table 1: Field Descriptions for show ntp statistics io Command

Field	Description
Time since reset	Time in seconds since the NTP process was started.
Receive buffers	Total number of UDP client-receive buffers.
Free receive buffers	Number of available client-receive buffers.
Used receive buffers	Number of unavailable client-receive buffers.
Low water refills	Total number of times buffers were added, which also indicates the number of times there were low memory resources during buffer creation.
Dropped packets	Total number of NTP packets dropped by the system.
Ignored packets	Total number of NTP packets ignored by the system.
Received packets	Total number of NTP packets received by the system.
Packets sent	Total number of NTP packets transmitted by the system.

Packets not sent	Total number of NTP packets not sent by the system due to an error.
Interrupts handled	Total number of NTP timer interrupts handled by the system.
Received by int	Total number of pulses received that triggered an interrupt.

Table 15: Table 2: Field Descriptions for show ntp statistics local Command

Field	Description
System uptime	Length of time that the system has been running.
Time since reset	Time in hours since the system was last rebooted.
Old version packets	Number of packets that match the previous NTP version.
New version packets	Number of packets that match the current NTP version.
Unknown version number	Number of packets with an unknown NTP version.
Bad packet format	Number of NTP packets that were received and dropped by the system due to an invalid packet format.
Packets processed	Number of NTP packets received and processed by the system.
Bad authentication	Number of packets not verified as authentic.

Table 16: Table 3: Field Descriptions for show ntp statistics memory Command

Field	Description
Time since reset	Time in hours since the system was last rebooted.
Total peer memory	Total peer memory available for the allocation of memory to peer structures.
Free peer memory	Existing peer memory.
Calls to findpeer	The number of calls to the findpeer() subroutine. This subroutine looks for matching peer structures in the peer list.
New peer allocations	Number of allocations from the free peer memory.
Peer demobilizations	Number of structures returned to the free peer memory.
Hash table counts	The count of peers in each hash table.

Examples

The following example displays the NTP packet handling statistics:

```
switch# show ntp statistics io
time since reset:      11152
receive buffers:       9
free receive buffers: 9
used receive buffers: 9
low water refills:    0
dropped packets:      0
ignored packets:      0
```

```

received packets:    3
packets sent:       2
packets not sent:   0
interrupts handled: 3
received by int:    3

```

The following example displays the NTP packet type statistics:

```

switch# show ntp statistics local
system uptime:      11166
time since reset:   11166
bad stratum in packet: 0
old version packets: 4
new version packets: 0
unknown version number: 0
bad packet format: 0
packets processed: 0
bad authentication: 0

```

The following example displays the NTP memory statistics:

```

switch# show ntp statistics memory
time since reset:    11475
total peer memory:  15
free peer memory:   15
calls to findpeer:  0
new peer allocations: 0
peer demobilizations: 0
hash table counts:  0 0 0 0 0 0 0 0
                   0 0 0 0 0 0 0 0
                   0 0 0 0 0 0 0 0
                   0 0 0 0 0 0 0 0

```

Related Commands

Command	Description
clear ntp	Clears NTP information.
debug ntp	Debugging for the NTP feature.
ntp peer	Configures a device as an NTP peer.
ntp server	Configures a device as an NTP server.

show ntp status

To display NTP CFS status, use the show ntp status command.

```
show ntp status
```

Command Default Displays NTP CFS status.

Command Modes Privileged EXEC (#)

Release	Modification
2.0(x)	This command was introduced.

Examples The following example displays the NTP CFS status:

```
switch# show ntp status
Distribution : Disabled
Last operational state: No session
```

Command	Description
ntp distribute	Enables CFS distribution of NTP configuration.

show ntp trusted-keys

To display NTP trusted keys, use the **show ntp trusted-keys** command.

```
show ntp trusted-keys
```

Command Default Displays NTP trusted keys.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	5.0(1a)	This command was introduced.

Examples

The following example displays the NTP trusted keys:

```
switch# show ntp trusted-keys
Trusted Keys:
42
```

Related Commands	Command	Description
	ntp authentication-key	Configures an NTP authentication key for a device to synchronize to a time source after enabling NTP authentication.
	ntp trusted-key	Configures one or more keys that a time source must provide in its NTP packets for the device to synchronize to it.

show nxapi

To display the status of NX-API and its elements, use the show nxapi command.

```
show nxapi
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	7.3(0)D1(1)	This command was introduced.

Example

The following example shows how to display the status of NX-API and its elements.

```
switch# show nxapi
```

```
NX-API:      Enabled      Sandbox:     Enabled
HTTP Port:   8080          HTTPS Port:  Disabled
```

Related Commands

Command	Description
feature nxapi	Enables the NX-API feature.
nxapi sandbox	Enables the NX-API Developer Sandbox.
nxapi http port port-number	Configures an HTTP port to access the NX-API Developer Sandbox.
nxapi https port port-number	Configures an HTTPS port to access the NX-API Developer Sandbox.

show port index-allocation

To display port index allocation information, use the show port index-allocation command.

```
show port index-allocation startup | naming
```

Syntax Description	index-allocation	Displays port index allocation information.
	startup	Displays port index allocation information at startup.
	naming	Displays port naming information.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.
	3.1(2)	Added the naming keyword.

Usage Guidelines All software releases prior to Cisco SAN-OS Release 3.0(1) support Generation 1 hardware. Cisco SAN-OS Release 3.0(1) and later support Generation 2 hardware. You can combine Generation 1 and Generation 2 switching modules, with either Supervisor-1 modules or Supervisor-2 modules. However, combining switching modules and supervisor modules has the following limitations:

- Supervisor-1 modules only support a maximum of 256 port indexes, regardless of type of switching modules.
- Supervisor-2 modules support a maximum of 1024 port indexes when all switching modules in the chassis are Generation 2.
- Supervisor-2 modules only support a maximum of 256 port indexes when both Generation 1 and Generation 2 switching modules are installed in the chassis.



Note The Cisco MDS 9124 switch does not support the show port index-allocation startup command; however, it does support the show port index-allocation command.



Note On a switch where the maximum number of port indexes is 256, any module that exceeds that limit does not power up.

Examples

The following example displays port index allocation information at startup on a Cisco MDS switch with only Generation 1 switching modules installed:

```
switch# show port index-allocation startup
Startup module index distribution:
-----+
Slot | Allowed |      Alloted indices info      |
      | range  | Total |      Index values      |
-----+-----+-----+-----+
  1  |  0- 31 |   32 |  0-31                  |
  2  | 32- 63 |   32 | 32-63                  |
  3  | 64- 95 |   32 | 64-95                  |
SUP  | ----- |    3 | 253-255                |
```

The following example displays current port index allocation on a Cisco MDS switch with only Generation 1 switching modules installed:

```
switch# show port index-allocation
Module index distribution:
-----+
Slot | Allowed |      Alloted indices info      |
      | range  | Total |      Index values      |
-----+-----+-----+-----+
  1  |  0- 31 |   32 |  0-31                  |
  2  | 32- 63 |   32 | 32-63                  |
  3  | 64- 95 |   32 | 64-95                  |
  4  | 96-127 |    - | (None)                 |
SUP  | ----- |    3 | 253-255                |
```

The following example displays port index allocation information at startup on a Cisco MDS switch with Generation 1 and Generation 2 switching modules installed:

```
switch# show port index-allocation startup
Startup module index distribution:
-----+
Slot | Allowed |      Alloted indices info      |
      | range  | Total |      Index values      |
-----+-----+-----+-----+
  4  |  0- 255 |   32 |  0-31                  |
  5  |  0- 255 |   32 | 32-63                  |
  6  |  0- 255 |   32 | 96-127                 |
  9  |  0- 255 |   24 | 64-87                  |
SUP  | ----- |    3 | 253-255                |
```

The following example shows the current port index allocation on a Cisco MDS switch with Generation 1 and Generation 2 switching modules installed:

```
switch# show port index-allocation
Module index distribution:
-----+
Slot | Allowed |      Alloted indices info      |
      | range  | Total |      Index values      |
-----+-----+-----+-----+
  1  |  0- 255 |    - | (None)                 |
  2  |  0- 255 |    - | (None)                 |
  3  |  0- 255 |    - | (None)                 |
  4  |  0- 255 |   32 |  0-31                  |
  5  |  0- 255 |   32 | 32-63                  |
  6  |  0- 255 |   32 | 96-127                 |
  9  |  0- 255 |   24 | 64-87                  |
 10  |  0- 255 |    - | (None)                 |
 11  |  0- 255 |    - | (None)                 |
 12  |  0- 255 |    - | (None)                 |
 13  |  0- 255 |    - | (None)                 |
```

show port-channel

Use the show port-channel command to view information about existing PortChannel configurations.

```
show port-channel compatibility-parameters | consistency [detail] | database [interface port-channel
port-channel-number] | summary | usage
```

Syntax Description		
compatibility-parameters		Displays compatibility parameters.
consistency		Displays the database consistency information of all modules.
detail		Displays detailed database consistency information.
database		Displays PortChannel database information.
interface port-channel port-channel-number		Specifies the PortChannel number. The range is 1 to 256.
summary		Displays PortChannel summary.
usage		Displays PortChannel number usage.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.
	3.0(1)	<ul style="list-style-type: none"> Increased the interface port-channel range to 256. Modified the output of the compatibility-parameters option.

Usage Guidelines None.

Examples The following example displays the PortChannel summary:

```
switch# show port-channel summary
NEW
```

The following example displays the PortChannel compatibility parameters:

```
switch# show port-channel compatibility-parameters
Parameters that have to be consistent across all members in a port-channel.
1. physical port layer
Members must have the same interface type, such as fibre channel, ethernet
or fcip.
2. port mode
Members must have the same port mode configured, either E or AUTO. If they
are configured in AUTO port mode, they have to negotiate E mode when they
```

come up. If a member negotiates a different mode, it will be suspended.

3. trunk mode

Members must have the same trunk mode configured. If they are configured in AUTO trunking mode, they have to negotiate the same trunking mode when they come up. If a member negotiates a different mode, it will be suspended.

4. speed

Members must have the same speed configured. If they are configured in AUTO speed, they have to negotiate the same speed when they come up. If a member negotiates a different speed, it will be suspended.

5. MTU

Members have to have the same MTU configured. This only applies to ethernet port-channel.

6. ethernet port index

This only applies to ethernet port-channel. Each ethernet port-channel could only have two ethernet ports. They must be in the same slot, their port indices must be adjacent and the lower number must be odd. Example: Gigabitethernet 8/5 - 6.

7. rate mode

Members must have the same rate mode configured. Rate Mode applies only to isola FC ports

8. Maximum Speed Mismatch

Members must be configured to auto-negotiate to the same maximum speed.

9. Resources Unavailable

Members must be able to acquire resources required to maintain compatibility. Check shared resources like speed, rate-mode and port mode.

10. Out of Service

Members must be in-service.

11. port VSAN

Members must have the same port VSAN.

12. port allowed VSAN list

Members must have the same port allowed VSAN list.

13. IP address

Members must not have IP address configured. This only applies to ethernet port-channel.

14. IPv6 configuration

Members must not have any IPv6 configuration. This only applies to ethernet port-channel.

15. port-security active bindings

Members must all be permitted by the activated port-security bindings and fabric-bindings in all the allowed VSANs.

16. FC receive buffer size

Members must have the same fc receive buffer size. If the configured receive buffer size is not compatible with the port capability then the port will be error disabled

17. IP ACLs

Members must not have IP ACLs configured individually on them. This only applies to ethernet port-channel.

18. sub interfaces

Members must not have sub-interfaces.

19. Access VLAN

Members must have same Access VLAN configured.

20. Native VLAN

Members must have same Native VLAN configured.

21. Duplex Mode

Members must have same Duplex Mode configured.

22. Ethernet Layer

Members must have same Ethernet Layer (switchport/no-switchport) configured.

23. Span Port

Members cannot be SPAN ports.

The following example displays the PortChannel database:

```
switch# show port-channel database
port-channel 2
```

```

Administrative channel mode is on
Operational channel mode is on
Last membership update succeeded
First operational port is fc2/2
1 port in total, 1 port up
Ports:   fc2/2   [up]

```

The show port-channel consistency command has two options: without details and with details.

Command without details:

```

switch# show port-channel consistency
Database is consistentswitch#

```

Command with details:

```

switch# show port-channel consistency detail
Authoritative port-channel database:
=====
totally 1 port-channels
port-channel 2:
    1 ports, first operational port is fc2/2
    fc2/2   [up]
=====
database 1: from module 5
=====
totally 1 port-channels
port-channel 2:
    1 ports, first operational port is fc2/2
    fc2/2   [up]
=====
database 2: from module 2
=====
totally 1 port-channels
port-channel 2:
    1 ports, first operational port is fc2/2
    fc2/2   [up]
=====

```

The show port-channel usage command displays details of the used and unused PortChannel numbers.

```

switch# show port-channel usage
Totally 2 port-channel numbers used=====Used :   3, 9Unused:
    1-2, 4-8, 10-256

```

show port-channel compatibility-parameters

To display the PortChannel compatibility parameters, use the show port-channel compatibility-parameters command.

```
show port-channel compatibility-parameters
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.1(3)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display the PortChannel compatibility parameters:

```
switch# show port-channel compatibility-parameters
Parameters that have to be consistent across all members in a port-channel.
1. physical port layer
Members must have the same interface type, such as fibre channel, ethernet
or fcip.
2. port mode
Members must have the same port mode configured, either E or AUTO. If they
are configured in AUTO port mode, they have to negotiate E mode when they
come up. If a member negotiates a different mode, it will be suspended.
3. trunk mode
Members must have the same trunk mode configured. If they are configured in
AUTO trunking mode, they have to negotiate the same trunking mode when they
come up. If a member negotiates a different mode, it will be suspended.
4. speed
Members must have the same speed configured. If they are configured in AUTO
speed, they have to negotiate the same speed when they come up. If a member
negotiates a different speed, it will be suspended.
5. MTU
Members have to have the same MTU configured. This only applies to ethernet
port-channel.
6. ethernet port index
This only applies to ethernet port-channel. Each ethernet port-channel
could only have two ethernet ports. They must be in the same slot, their
port indexes must be adjacent and the lower number must be odd. Example:
Gigabitethernet 8/5 - 6.
7. rate mode
Members must have the same rate mode configured. Rate Mode applies only to
isala FC ports
8. Maximum Speed Mismatch
Members must be configured to auto-negotiate to the same maximum speed.
9. Resources Unavailable
Members must be able to acquire resources required to maintain
compatibility. Check shared resources like speed, rate-mode and port mode.
```

10. Out of Service
Members must be in-service.

11. MEDIUM
Members have to have the same medium type configured. This only applies to ethernet port-channel.

12. Span mode
Members must have the same span mode.

13. admin channel mode
Port Channel admin channel mode must be active.

14. port VSAN
Members must have the same port VSAN.

15. port allowed VSAN list
Members must have the same port allowed VSAN list.

16. IP address
Members must not have IP address configured. This only applies to ethernet port-channel.

17. IPv6 configuration
Members must not have any IPv6 configuration. This only applies to ethernet port-channel.

18. port-security active bindings
Members must all be permitted by the activated port-security bindings and fabric-bindings in all the allowed VSANs.

19. FC receive buffer size
Members must have the same fc receive buffer size. If the configured receive buffer size is not compatible with the port capability then the port will be error disabled

20. IP ACLs
Members must not have IP ACLs configured individually on them. This only applies to ethernet port-channel.

21. sub interfaces
Members must not have sub-interfaces.

22. Duplex Mode
Members must have same Duplex Mode configured.

23. Ethernet Layer
Members must have same Ethernet Layer (switchport/no-switchport) configured.

24. Span Port
Members cannot be SPAN ports.

25. Storm Control
Members must have same storm-control configured.

26. Flow Control
Members must have same flowctrl configured.

27. Capabilities
Members must have common capabilities.

28. port
Members port VLAN info.

29. port
Members port does not exist.

30. switching port
Members must be switching port, Layer 2.

31. port access VLAN
Members must have the same port access VLAN.

--More--

Related Commands

Command	Description
show port-channel summary	Displays PortChannel summary.

show port-channel consistency

To display the PortChannel distributed database consistency, use the show port-channel consistency command.

```
show port-channel consistency detail
```

Syntax Description

detail	Specifies the PortChannel distributed database in all modules.
--------	--

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to display the Port Channel distributed database consistency:

```
switch# show port-channel consistency detail
Authoritative port-channel database:
=====
total 1 port-channels
port-channel 1:
    1 ports, first operational port is none
    fc1/1    [down]
=====
database 1: from module 1
=====
total 1 port-channels
port-channel 1:
    1 ports, first operational port is none
    fc1/1    [down]
=====
switch#
```

Related Commands

Command	Description
show port-channel compatibility-parameters	Displays PortChannel compatibility parameters.

show port-channel database

To display the PortChannel database, use the show port-channel database command.

```
show port-channel database [ detail ] [ interface | port-channel number ]
```

Syntax Description	Parameter	Description
	detail	Specifies to display the detailed information of the PortChannels.
	interface	Specifies the PortChannel interface.
	port-channel number	Specifies the PortChannel number. The range is from 1 to 256.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	8.4(2)	Added the detail keyword. The command output is modified to display the administrative status of the PortChannel mode for each member of the PortChannel.
	4.1(2)	This command was introduced.

Examples

The following example shows how to display the PortChannel database:



Note This command output is applicable for Cisco MDS NX-OS Release 8.4(2) and later releases. The command output varies if you are using Cisco MDS NX-OS Release 8.4(1a) or earlier releases.

```
switch# show port-channel database

port-channel1
Administrative channel mode is active
Last membership update succeeded
First operational port is fcip3
2 ports in total, 2 ports up
Ports:  fcip1    [up]
        fcip3    [up] *

port-channel2
Administrative channel mode is active
Last membership update succeeded
First operational port is fcip5
6 ports in total, 5 ports up
Ports:  fcip5    [up] *
        fcip6    [up]
        fcip7    [up]
        fcip11   [up]
```

show port-channel database

```

        fcip12  [down]
        fcip13  [up]

port-channel3
  Administrative channel mode is active
  Last membership update succeeded
  First operational port is fcip9
  3 ports in total, 3 ports up
  Ports:  fcip8  [up]
         fcip9  [up] *
         fcip10 [up]

```

The following example shows how to display the detailed information of the PortChannels:

```

switch# show port-channel database detail
port-channel1
  Administrative channel mode is active
  Ports:

```

Interface	Channel	Port	Port	Local WWN	Peer WWN
Port Up Time	mode	Status	Mode		
(oper)					
* fcip1	active	up	E	22:5a:84:78:ac:09:35:00	58:c6:04:f3:24:3b:d8:b5
2020-04-27T10:57:59+05:30					
fcip3	active	up	E	22:76:84:78:ac:09:35:00	58:c6:04:f3:24:3b:d8:99
2020-04-27T10:58:02+05:30					

```

port-channel2
  Administrative channel mode is active
  Ports:

```

Interface	Channel	Port	Port	Local WWN	Peer WWN
Port Up Time	mode	Status	Mode		
(oper)					
fcip5	active	up	E	22:6e:84:78:ac:09:35:00	58:c6:04:f3:24:3b:d8:31
2020-04-27T10:47:36+05:30					
fcip6	active	up	E	22:6f:84:78:ac:09:35:00	58:c6:04:f3:24:3b:d8:32
2020-04-27T10:47:38+05:30					
fcip7	active	up	E	20:1a:84:78:ac:09:35:00	58:c6:04:f3:24:3b:d8:19
2020-04-27T10:47:38+05:30					
fcip11	active	up	E	20:1b:84:78:ac:09:35:00	58:c6:04:f3:24:3b:d8:1a
2020-04-27T10:47:36+05:30					
fcip12	--	down	--	00:00:00:00:00:00:00:00	00:00:00:00:00:00:00:00
--					
* fcip13	active	up	E	20:a2:84:78:ac:09:35:00	23:62:8c:60:4f:32:43:80
2020-04-27T10:37:28+05:30					

```

port-channel3
  Administrative channel mode is active
  Ports:

```

Interface	Channel	Port	Port	Local WWN	Peer WWN
Port Up Time	mode	Status	Mode		
(oper)					
fcip8	active	up	E	20:aa:84:78:ac:09:35:00	23:6a:8c:60:4f:32:43:80

```
2020-04-27T10:37:24+05:30
* fcip9 active up E 20:b6:84:78:ac:09:35:00 23:72:8c:60:4f:32:43:80
2020-04-27T10:37:24+05:30
fcip10 active up E 20:b7:84:78:ac:09:35:00 23:73:8c:60:4f:32:43:80
2020-04-27T10:37:55+05:30
```

Related Commands

Command	Description
show port-channel consistency	Displays PortChannel distributed database consistency.

show port-channel internal

To display the PortChannel internal status, use the show port-channel internal command.

```
show port-channel internal event-history all | debugs | errors | interface fa | fc | gigabitethernet slot
number port-channel port-channel number | lock | msgs | pcp info all | interface mem-stats detail
```

Syntax Description

event-history	Specifies a PortChannel.
all	Specifies interface event transition for all interfaces.
debugs	Specifies debug logs for a PortChannel.
errors	Specifies error logs for a PortChannel.
interface	Specifies interface event transitions.
fa	Specifies the FA port interface.
fc	Specifies the Fiber Channel interface.
gigabitethernet	Specifies the Ethernet interface.
slot number	Specifies the slot number.
port-channel	Specifies the PortChannel interface.
port-channel number	Specifies the PortChannel number. The range is from 1 to 256.
lock	Specifies lock log of the PortChannel.
msgs	Specifies message logs of the PortChannel.
pcp	Specifies interface PCP event transition.
info	Specifies internal information.
all	Specifies PortChannel global information.
interface	Specifies PortChannel interface information.
mem-stats	Specifies memory allocation statistics of the PortChannel.
detail	Specifies detail memory statistics for the PortChannel.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 4.1(3)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the error logs for the PortChannel:

```
switch# show port-channel internal event-history errors
1) Event:E_DEBUG, length:99, at 268834 usecs after Thu Nov  6 12:44:17 2008
   [102] pcm_port_ac_add_eval(1420): pc: port-channel 2 last port 1000000 for t
his msg. send hw_config
2) Event:E_DEBUG, length:158, at 268821 usecs after Thu Nov  6 12:44:17 2008
   [102] pcm_port_ac_add_eval(1384): Added pc: port-channel 2 pinfo->nports=0x1
,port 1000000 for this msg. pinfo->bundle=0x1,mbr->bundle=0xffffe,ports_to_add=0x
1
3) Event:E_DEBUG, length:99, at 444720 usecs after Thu Nov  6 12:24:11 2008
   [102] pcm_port_ac_rem_eval(1655): pc: port-channel 1 last port 1000000 for t
his msg. send hw_config
4) Event:E_DEBUG, length:143, at 444702 usecs after Thu Nov  6 12:24:11 2008
   [102] pcm_port_ac_rem_eval(1645): removed pc: port-channel 1 pinfo->nports=0
x1,port 1000000 for this msg. pinfo->bundle=0x0,mbr->bundle=0xffffe
5) Event:E_DEBUG, length:72, at 462673 usecs after Thu Nov  6 12:23:59 2008
   [102] abort_members(1235): port-channel 2: reverting newly changed ports
6) Event:E_DEBUG, length:86, at 462660 usecs after Thu Nov  6 12:23:59 2008
   [102] split_members(1319): port-channel 2: fc1/1 is already in another port-
channel [1]
7) Event:E_DEBUG, length:68, at 293493 usecs after Thu Nov  6 12:19:05 2008
   [102] pcm_pc_ac_get_wnn(244): wnn request setting pinfo->bundle=0x1f
8) Event:E_DEBUG, length:65, at 292875 usecs after Thu Nov  6 12:19:05 2008
   [102] pcm_alloc_pc(494): pcallopc setting pinfo->bundle to 0xFFFF
9) Event:E_DEBUG, length:73, at 535797 usecs after Thu Nov  6 12:02:03 2008
   [102] abort_members(1235): port-channel 20: reverting newly changed ports
10) Event:E_DEBUG, length:87, at 535784 usecs after Thu Nov  6 12:02:03 2008
   [102] split_members(1319): port-channel 20: fc1/1 is already in another port
-channel [1]
11) Event:E_DEBUG, length:68, at 533069 usecs after Thu Nov  6 12:02:03 2008
   [102] pcm_pc_ac_get_wnn(244): wnn request setting pinfo->bundle=0x13
12) Event:E_DEBUG, length:65, at 532434 usecs after Thu Nov  6 12:02:03 2008
   [102] pcm_alloc_pc(494): pcallopc setting pinfo->bundle to 0xFFFF
13) Event:E_DEBUG, length:72, at 425969 usecs after Thu Nov  6 12:01:33 2008
   [102] abort_members(1235): port-channel 5: reverting newly changed ports
14) Event:E_DEBUG, length:86, at 425955 usecs after Thu Nov  6 12:01:33 2008
   [102] split_members(1319): port-channel 5: fc1/1 is already in another port-
channel [1]
15) Event:E_DEBUG, length:67, at 423106 usecs after Thu Nov  6 12:01:33 2008
   [102] pcm_pc_ac_get_wnn(244): wnn request setting pinfo->bundle=0x4
16) Event:E_DEBUG, length:65, at 422473 usecs after Thu Nov  6 12:01:33 2008
   [102] pcm_alloc_pc(494): pcallopc setting pinfo->bundle to 0xFFFF
17) Event:E_DEBUG, length:72, at 612546 usecs after Thu Nov  6 12:01:22 2008
   [102] abort_members(1235): port-channel 2: reverting newly changed ports
18) Event:E_DEBUG, length:86, at 612534 usecs after Thu Nov  6 12:01:22 2008
   [102] split_members(1319): port-channel 2: fc1/1 is already in another port-
channel [1]
19) Event:E_DEBUG, length:67, at 56546 usecs after Thu Nov  6 12:00:16 2008
   [102] pcm_pc_ac_get_wnn(244): wnn request setting pinfo->bundle=0x1
20) Event:E_DEBUG, length:65, at 55927 usecs after Thu Nov  6 12:00:16 2008
   [102] pcm_alloc_pc(494): pcallopc setting pinfo->bundle to 0xFFFF
21) Event:E_DEBUG, length:72, at 65985 usecs after Thu Nov  6 11:53:31 2008
   [102] abort_members(1235): port-channel 2: reverting newly changed ports
```

show port-channel internal

```

22) Event:E_DEBUG, length:86, at 65972 usecs after Thu Nov  6 11:53:31 2008
    [102] split_members(1319): port-channel 2: fcl/1 is already in another port-
channel [1]
23) Event:E_DEBUG, length:67, at 63276 usecs after Thu Nov  6 11:53:31 2008
    [102] pcm_pc_ac_get_wwn(244): wwn request setting pinfo->bundle=0x1
24) Event:E_DEBUG, length:65, at 62639 usecs after Thu Nov  6 11:53:31 2008
    [102] pcm_alloc_pc(494): pcallocpc setting pinfo->bundle to 0xFFFF
25) Event:E_DEBUG, length:90, at 942691 usecs after Thu Nov  6 11:48:04 2008
    [102] pcm_pc_create(923): port-channel interface <250> out of existing suppo
rted range 129
26) Event:E_DEBUG, length:40, at 942678 usecs after Thu Nov  6 11:48:04 2008
    [102] pcm_search_pc(733): invalid id 249

27) Event:E_DEBUG, length:40, at 175505 usecs after Mon Nov  3 13:25:07 2008
    [102] pcm_search_pc(733): invalid id 249
28) Event:E_DEBUG, length:40, at 346351 usecs after Mon Nov  3 13:23:58 2008
    [102] pcm_search_pc(733): invalid id 255
29) Event:E_DEBUG, length:40, at 634271 usecs after Mon Nov  3 13:17:10 2008
    [102] pcm_search_pc(733): invalid id 249
30) Event:E_DEBUG, length:73, at 1815 usecs after Thu Oct 30 17:16:05 2008
    [102] abort_members(1235): port-channel 20: reverting newly changed ports
31) Event:E_DEBUG, length:87, at 1802 usecs after Thu Oct 30 17:16:05 2008
    [102] split_members(1319): port-channel 20: fcl/1 is already in another port
-channel [1]
32) Event:E_DEBUG, length:68, at 999046 usecs after Thu Oct 30 17:16:04 2008
    [102] pcm_pc_ac_get_wwn(244): wwn request setting pinfo->bundle=0x13
33) Event:E_DEBUG, length:65, at 998412 usecs after Thu Oct 30 17:16:04 2008
    [102] pcm_alloc_pc(494): pcallocpc setting pinfo->bundle to 0xFFFF
34) Event:E_DEBUG, length:73, at 841236 usecs after Thu Oct 30 17:15:58 2008
    [102] abort_members(1235): port-channel 20: reverting newly changed ports

```

The following example shows how to display interface event transition for all interfaces:

```

switch# show port-channel internal event-history all
Low Priority Pending queue: len(0), max len(1) [Fri Nov  7 16:53:01 2008]
High Priority Pending queue: len(0), max len(14) [Fri Nov  7 16:53:01 2008]
PCM Control Block info:
pcm_max_channels      : 128
pcm_max_channel_in_use : 32
pcm_max_eports       : 256
pcm_max_eports_inuse  : 0
bsup_dit_address     : 0, rc=0x802b003e
has Generation-1 Line Card
Total of 1 Generation-1 Line cards
PCM total vlans info: 0x0
g_pcm_cb.path.num_ports: 0
=====
PORT CHANNELS:
port-channel 1
channel      : 1
bundle      : 0
ifindex     : 0x4000000
pcport mode : NONE
admin mode  : on
oper mode   : on
nports     : 0
--More--

```

The following example shows how to display PortChannel global information:

```

switch# show port-channel internal info all
Low Priority Pending queue: len(0), max len(1) [Sun Nov  9 10:03:32 2008]
High Priority Pending queue: len(0), max len(14) [Sun Nov  9 10:03:32 2008]

```

```

PCM Control Block info:
pcm_max_channels      : 128
pcm_max_channel_in_use : 32
pcm_max_eports       : 256
pcm_max_eports_inuse  : 0
bsup_dit_address     : 0, rc=0x802b003e
has Generation-1 Line Card
Total of 1 Generation-1 Line cards
PCM total_vlans info: 0x0
g_pcm_cb.path.num_ports: 0
=====
PORT CHANNELS:
port-channel 1
channel      : 1
bundle      : 0
ifindex     : 0x4000000
pcport mode : NONE
admin mode  : on
oper mode   : on
nports     : 0
    
```

The following example shows how to display detail memstats for the PortChannel:

```

switch# show port-channel internal mem-stats detail
Private Mem stats for UUID : Malloc track Library(103) Max types: 5
-----
TYPE NAME                                ALLOCS                                BYTES
                                CURR      MAX      CURR      MAX
  0 MT_MEM_other                        0         0         0         0
  1 MT_MEM_mtrack_default                0         0         0         0
  2 MT_MEM_mtrack_hdl                    30        31      13848     15484
  3 MT_MEM_mtrack_info                   390       518      6240     8288
  4 MT_MEM_mtrack_lib_name                585       713     20466    24956
-----
Total bytes: 40554 (39k)
-----
Private Mem stats for UUID : Non mtrack users(0) Max types: 67
-----
TYPE NAME                                ALLOCS                                BYTES
                                CURR      MAX      CURR      MAX
  0 [r-xp]/isan/bin/pcm                  0         0         0         0
  1 [r-xp]/isan/lib/convert/libsysstr.so  0         0         0         0
  2 [r-xp]/isan/lib/convert/libvdb.so    0         0         0         0
  3 [r-xp]/isan/lib/libaccounting.so.0.0.0 0         1         0         65
  4 [r-xp]/isan/lib/libacfg.so.0.0.0     0         8         0     51684
--More--
    
```

Related Commands

Command	Description
show port-channel database	Displays PortChannel database.

show port-channel summary

To display the PortChannel summary, use the show port-channel summary command.

```
show port-channel summary
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.1(3)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display the PortChannel summary:

```
switch# show port-channel summary
-----
Interface                Total Ports    Oper Ports    First Oper Port
-----
port-channel 1            1              0             --
switch#
```

Related Commands	Command	Description
	show port-channel internal	Displays the PortChannel internal status.

show port-channel usage

To display the PortChannel usage, use the show port-channel usage command.

```
show port-channel usage
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.1(3)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display the PortChannel usage:

```
switch# show port-channel usage
Totally 1 port-channel number used
=====
Used   :    1
Unused:   2 - 256
switch#
```

Related Commands	Command	Description
	show port-channel summary	Displays the PortChannel usage.

show port-group-monitor

To display the details about the Port Group Monitor (PGM) policy specified by [NAME] along with the counters information, use the show port-group-monitor command.

```
show port-group-monitor name
```

Syntax Description

name	Displays a policy name.
------	-------------------------

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to display Port Group Monitor policy name:

```
switch# show port-group-monitor pgmon
Policy Name : pgmon
Admin status : Not Active
Oper status : Not Active
Port type : All Port Groups
-----Counter
  Threshold Interval %ge Rising Threshold %ge Falling Threshold In Use-----
-----RX Performance Delta 60 80 20
YesTX Performance Delta 60 80 20
Yes-----switch#
```

The following example shows how to display Port Group Monitor:

```
switch# show port-group-monitor
-----
Port Group Monitor : enabled
-----
Policy Name : pgm1
Admin status : Not Active
Oper status : Not Active
Port type : All Port Groups
-----
Counter Threshold Interval %ge Rising Threshold %ge Falling Threshold In Use
-----
RX Performance Delta 60 50 10 Yes
TX Performance Delta 60 50 10 Yes
-----
Policy Name : pgm2
Admin status : Not Active
Oper status : Not Active
```

Port type : All Port Groups

 Counter Threshold Interval %ge Rising Threshold %ge Falling Threshold In Use

RX Performance Delta 60 80 10 Yes

TX Performance Delta 60 80 10 Yes

 Policy Name : default

Admin status : Not Active

Oper status : Not Active

Port type : All Port Groups

 Counter Threshold Interval %ge Rising Threshold %ge Falling Threshold In Use

RX Performance Delta 60 80 20 Yes

TX Performance Delta 60 80 20 Yes

Related Commands

Command	Description
show port-group-monitor status	Displays Port Group Monitor status.

show port-group-monitor active

To display Port Group Monitor active policies along with the counters information, use the show port-group-monitor active command.

```
show port-group-monitor active
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display Port Group Monitor active policies:

```
Policy Name : pgmon
Admin status : Active
Oper status : Active
Port type : All Port Groups
-----Counter
Threshold Interval %ge Rising Threshold %ge Falling Threshold In Use-----
-----RX Performance Delta 60 80 20
YesTX Performance Delta 60 80 20
Yes-----
```

Related Commands	Command	Description
	show port-group-monitor status	Displays Port Group Monitor status.

show port-group-monitor status

To display Port Group Monitor (PGM) status, use the show port-group-monitor status command.

```
show port-group-monitor status
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.2(1)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display Port Group Monitor status:

```
switch# show port-group-monitor status
Port Group Monitor : EnabledActive Policies : pgmonLast 10 logs
switch#
```

Related Commands	Command	Description
	show port-group-monitor	Displays Port Group Monitor information.

show port-license

To display the licensing usage on a Cisco MDS 9124, use the show port-license command.

```
show port-license
```

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.1(1)	This command was introduced.

Usage Guidelines None.

Examples

The following example displays the default port activation license configuration for the Cisco MDS 9124 switch:

```
switch# show port-license
Available port activation licenses are 0
-----
Interface      Port Activation License
-----
fc1/1          acquire
fc1/2          acquire
fc1/3          acquire
fc1/4          acquire
fc1/5          acquire
fc1/6          acquire
fc1/7          acquire
fc1/8          acquire
fc1/9          eligible
fc1/10         eligible
fc1/11         eligible
...
fc1/24         eligible
```

Related Commands	Command	Description
	port-license	Makes a port eligible or ineligible to receive a license. Also used to acquire a license for a port.

show port-monitor

To configure the counter details of the policy, use the show port-monitor command.

```
show port-monitor [name]
```

Syntax Description	name	Displays a policy name.
--------------------	------	-------------------------

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	4.1(1b)	This command was introduced.

Usage Guidelines The show port-monitor command can also take a string name of policy and displays the details of that policy only.

Examples

The following example shows how to display the counter details of the policy:

```
switch# show port-monitor
-----
Port Monitor : enabled
-----
Policy Name   : pgmon
Admin status  : Active
Oper status   : Active
Port type     : All Access Ports
-----
Counter              Threshold  Interval  Rising  Threshold  event  Falling  Thre
shold  event  Portguard
-----
Link Loss           Delta        60        5              4        1
   4      Not enabled
Sync Loss           Delta        60        5              4        1
   4      Not enabled
ASIC Error Pkt from Port Delta        300       5              4        0
   4      Not enabled
ASIC Error Pkt to xbar Delta        60        3              4        0
   4      Not enabled
ASIC Error Pkt from xbar Delta        300       5              4        0
--More--
switch#
```

Related Commands

Command	Description
show port-monitor	Shows port monitor policies.

show port-monitor active

To display the details of all operationally active policies, use the show port-monitor active command.

```
show port-monitor active
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	4.2.6	Changed the command output.
	NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines Policies can be either operationally active or administratively active as shown by the show port-monitor active command. An administratively active policy is not active on the line card and can be activated operationally by enabling the port monitor.

Examples The following example shows how to display the details of all operationally active policies:

```
switch(config)# show port-monitor active
Policy Name : pgmon
Admin status : Active
Oper status : Active
Port type : All Access Ports
-----
Counter          Threshold  Interval  Rising  Threshold  event  Falling  Thre
shold  event  Portguard
-----
Link Loss
  4      Not enabled  Delta    60      5          4      1
Sync Loss
  4      Not enabled  Delta    60      5          4      1
ASIC Error Pkt from Port Delta    300     5          4      0
  4      Not enabled
ASIC Error Pkt to xbar  Delta    60      3          4      0
  4      Not enabled
ASIC Error Pkt from xbar Delta    300     5          4      0
  4      Not enabled
-----
--More--
switch(config)#
```

Related Commands

Command	Description
show port-monitor status	Shows the current status of the port monitor.

show port-monitor status

To display the current status of the port monitor feature along with the last 10 alarms or logs generated by port monitor, use the show port-monitor status command.

```
show port-monitor status
```

Syntax Description This command has no argument or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example shows the current status of the port monitor feature:

```
switch# show port-monitor status
Port Monitor      : Enabled
Active Policies  : pgm2
Last 10 logs     :
switch#
```

Related Commands	Command	Description
	show call home	Displays configured Call Home information.

show port-resources module

To display information about port resources in a Generation 2 module, use the show port-resources command.

```
show port-resources module slot
```

Syntax Description	slot Specifies the module number. The range is 1 to 6.
---------------------------	--

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None.

Examples

The following example displays the Generation 2 module shared resources configuration:

```
switch(config-if)# show port-resources module 1
Module 1
  Available dedicated buffers for global buffer #0 [port-group 1] are 2150
  Available dedicated buffers for global buffer #1 [port-group 2] are 2150
  Available dedicated buffers for global buffer #2 [port-group 3] are 2150
  Available dedicated buffers for global buffer #3 [port-group 4] are 2148
  Available dedicated buffers for global buffer #4 [port-group 5] are 2150
  Available dedicated buffers for global buffer #5 [port-group 6] are 2150
  Available dedicated buffers for global buffer #6 [port-group 7] are 2150
  Available dedicated buffers for global buffer #7 [port-group 8] are 650
  Available dedicated buffers for global buffer #8 [port-group 9] are 2150
  Available dedicated buffers for global buffer #9 [port-group 10] are 2150
  Available dedicated buffers for global buffer #10 [port-group 11] are 2150
  Available dedicated buffers for global buffer #11 [port-group 12] are 2150

Port-Group 1
  Total bandwidth is 64.0 Gbps
  Allocated dedicated bandwidth is 64.0 Gbps
-----
  Interfaces in the Port-Group      B2B Credit  Bandwidth  Rate Mode
                                   Buffers      (Gbps)
-----
  fc1/1                             500         16.0      dedicated
  fc1/2                             500         16.0      dedicated
  fc1/3                             500         16.0      dedicated
  fc1/4                             500         16.0      dedicated

Port-Group 6
  Total bandwidth is 64.0 Gbps
  Allocated dedicated bandwidth is 64.0 Gbps
-----
  Interfaces in the Port-Group      B2B Credit  Bandwidth  Rate Mode
                                   Buffers      (Gbps)
-----
```

```
-----
fc4/21                    4090      16.0  dedicated
fc4/22                    10        16.0  dedicated
fc4/23                    10        16.0  dedicated
fc4/24                    10        16.0  dedicated
-----
```

switch# **show port-resources module 2**

```
Module 2
Available dedicated buffers are 5164
Port-Group 1
Total bandwidth is 12.8 Gbps
Total shared bandwidth is 4.8 Gbps
Allocated dedicated bandwidth is 8.0 Gbps
-----
```

Interfaces in the Port-Group B2B Credit Bandwidth Rate Mode
Buffers (Gbps)

```
-----
fc2/1                    16        4.0  shared
fc2/2                    16        4.0  shared
fc2/3                    16        4.0  shared
fc2/4                    16        4.0  shared
fc2/5                    16        4.0  dedicated
fc2/6                    16        4.0  dedicated
-----
```

```
Port-Group 2
Total bandwidth is 12.8 Gbps
Total shared bandwidth is 4.8 Gbps
Allocated dedicated bandwidth is 8.0 Gbps
-----
```

Interfaces in the Port-Group B2B Credit Bandwidth Rate Mode
Buffers (Gbps)

```
-----
fc2/7                    16        4.0  shared
fc2/8                    16        4.0  shared
fc2/9                    16        4.0  shared
fc2/10                   16        4.0  shared
fc2/11                   16        4.0  dedicated
fc2/12                   16        4.0  dedicated
-----
```

```
Port-Group 3
Total bandwidth is 12.8 Gbps
Total shared bandwidth is 4.8 Gbps
Allocated dedicated bandwidth is 8.0 Gbps
-----
```

Interfaces in the Port-Group B2B Credit Bandwidth Rate Mode
Buffers (Gbps)

```
-----
fc2/13                   16        4.0  shared
fc2/14                   16        4.0  shared
fc2/15                   16        4.0  shared
fc2/16                   250       4.0  dedicated
fc2/17                   16        2.0  dedicated
fc2/18                   16        2.0  dedicated
-----
```

```
Port-Group 4
Total bandwidth is 12.8 Gbps
Total shared bandwidth is 0.8 Gbps
Allocated dedicated bandwidth is 12.0 Gbps
-----
```

Interfaces in the Port-Group B2B Credit Bandwidth Rate Mode
Buffers (Gbps)

```
-----
fc2/19                   16        1.0  shared
fc2/20                   16        1.0  shared
fc2/21                   16        1.0  shared
fc2/22                   16        4.0  dedicated
-----
```

show port-resources module

```
fc2/23          16      4.0 dedicated
fc2/24          16      4.0 dedicated
```

Related Commands

Command	Description
show module	Verifies the status of a module.

show port-security

To display configured port security feature information, use the show port-security database command.

```
show port-security database [active [vsan vsan-id]] | fwwn fwwn-id vsan vsan-id | interface fc slot/port
| port-channel port vsan vsan-id | vsan vsan-id | pending [vsan vsan-id] | pending-diff [vsan vsan-id] |
statistics [vsan vsan-id] | status [vsan vsan-id] | violations [last count | vsan vsan-id]
```

Syntax Description

database	Displays database-related port security information.
active	(Optional) Displays the activated database information.
vsan vsan-id	(Optional) Displays information for the specified database.
fwwn fwwn-id	(Optional) Displays information for the specified fabric WWN.
interface	(Optional) Displays information for an interface.
fc slot/port	Displays information for the specified Fibre Channel interface.
port-channel port	Displays information for the specified PortChannel interface. The range is 1 to 128.
pending	Displays the server address pending configuration.
pending-diff	Displays the server address pending configuration differences with the active configuration.
statistics	Displays port security statistics.
status	Displays the port security status on a per VSAN basis.
violations	Displays violations in the port security database.
last count	(Optional) Displays the last number of lines in the database. The range is 1 to 100.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.2(1)	This command was introduced.
2.0(x)	Added the pending and pending-diff keywords.

Usage Guidelines

The access information for each port can be individually displayed. If you specify the FWWN or interface options, all devices that are paired in the active database (at that point) with the given FWWN or the interface are displayed.

The show port-security command issued with the last number option displays only the specified number of entries that appear first.

Examples

The following example displays the contents of the port security database:

```
switch# show port-security database
-----
VSAN   Logging-in Entity                Logging-in Point  (      Interface)
-----
1      21:00:00:e0:8b:06:d9:1d(pwn)    20:0d:00:05:30:00:95:de(fc1/13)
1      50:06:04:82:bc:01:c3:84(pwn)    20:0c:00:05:30:00:95:de(fc1/12)
2      20:00:00:05:30:00:95:df(swn)    20:0c:00:05:30:00:95:de(port-channel 128)
3      20:00:00:05:30:00:95:de(swn)    20:01:00:05:30:00:95:de(fc1/1)
[Total 4 entries]
```

The following example displays the output of the active port security database in VSAN 1:

```
switch# show port-security database vsan 1
-----
Vsan   Logging-in Entity                Logging-in Point  (Interface)
-----
1      *                                20:85:00:44:22:00:4a:9e(fc3/5)
1      20:11:00:33:11:00:2a:4a(pwn)    20:81:00:44:22:00:4a:9e(fc3/1)
[Total 2 entries]
```

The following example displays the active database.

```
switch# show port-security database active
-----
VSAN   Logging-in Entity                Logging-in Point  (      Interface)  Learnt
-----
1      21:00:00:e0:8b:06:d9:1d(pwn)    20:0d:00:05:30:00:95:de(fc1/13)                Yes
1      50:06:04:82:bc:01:c3:84(pwn)    20:0c:00:05:30:00:95:de(fc1/12)                Yes
2      20:00:00:05:30:00:95:df(swn)    20:0c:00:05:30:00:95:de(port-channel 128)
      Yes
3      20:00:00:05:30:00:95:de(swn)    20:01:00:05:30:00:95:de(fc1/1)
[Total 4 entries]
```

The following example displays the wildcard fwn port security in VSAN 1:

```
switch# show port-security database fwn 20:85:00:44:22:00:4a:9e vsan 1
Any port can login thru' this fwn
```

The following example displays the configured FWWN port security in VSAN 1:

```
switch# show port-security database fwn 20:01:00:05:30:00:95:de vsan 1
20:00:00:0c:88:00:4a:e2(swn)
```

The following example displays the interface port information in VSAN 2:

```
switch# show port-security database interface fc 1/1 vsan 2
20:00:00:0c:88:00:4a:e2(swn)
```

The following example displays the port security statistics:

```
switch# show port-security statistics
Statistics For VSAN: 1
-----
Number of pWWN permit: 2
```



```

Number of nWWN permit: 2
Number of sWWN permit: 2
Number of pWWN deny : 0
Number of nWWN deny : 0
Number of sWWN deny : 0
Total Logins permitted : 4
Total Logins denied : 0
Statistics For VSAN: 2
-----
Number of pWWN permit: 0
Number of nWWN permit: 0
Number of sWWN permit: 2
Number of pWWN deny : 0
Number of nWWN deny : 0
Number of sWWN deny : 0
...

```

The following example displays the status of the active database and the autolearn configuration:

```

switch# show port-security status
VSAN 1 :Activated database, auto-learning is enabled
VSAN 2 :No Active database, auto-learning is disabled
...

```

The following example displays the previous 100 violations:

```

switch# show port-security violations
-----
VSAN  Interface      Logging-in Entity      Last-Time      [Repeat count]
-----
1  fc1/13      21:00:00:e0:8b:06:d9:1d (pwwn)      Jul  9 08:32:20 2003      [20]
    20:00:00:e0:8b:06:d9:1d (nwwn)
1  fc1/12      50:06:04:82:bc:01:c3:84 (pwwn)      Jul  9 08:32:20 2003      [1]
    50:06:04:82:bc:01:c3:84 (nwwn)
2  port-channel 1  20:00:00:05:30:00:95:de (swwn)      Jul  9 08:32:40 2003      [1]
[Total 2 entries]

```

Related Commands

Command	Description
port-security	Configures port security parameters.

show process creditmon credit-loss-event-history

To display the credit loss event history, use the show processes creditmon credit-loss-event-history command.

```
show process creditmon credit-loss-event-history module module-number
```

Syntax Description

module	Displays credit loss event history for a module.
module-number	Displays the module number.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(1)	This command is not supported for new MDS NG products but no changes made for the old MDS.
NX-OS 5.x	This command was introduced.

Usage Guidelines

None.

Examples

The following examples displays the credit loss event history for a module:

```
switch# show process creditmon credit-loss-event-history module 1
switch#
```

The following examples displays the credit loss event history:

```
switch# show process creditmon credit-loss-event-history
Module: 01
Module: 02
Module: 03
Module: 04
CLI is not supported on module 5
Module: 06
Module: 07
```

Related Commands

Command	Description
show process creditmon credit-loss-events	Displays the credit loss information.

show process creditmon credit-loss-events

To display the credit loss events information, use the show processes creditmon credit-loss-events command.

```
show process creditmon credit-loss-events module module-number
```

Syntax Description

module	Displays credit loss events information for a module.
module-number	Displays the module number.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(9)	This command is supported in MDS NG products but no changes made for the old MDS.
6.2(1)	This command is not supported for new MDS NG products but no changes made for the old MDS.
NX-OS 5.x	This command was introduced.

Usage Guidelines

In Cisco MDS 9710, 9706, 9250i and 9148S Series Switches, this command can be executed from configuration terminal mode itself. There are no changes in the old MDS, attach the module and execute the command.

Examples

The following examples displays the credit loss events information for a module:

```
switch# show process creditmon credit-loss-events module 9
Module: 09      Credit Loss Events: NO
switch#
```

The following examples displays the credit loss events information for a module:

Related Commands

Command	Description
show process creditmon credit-loss-event-history	Displays the credit monitor event history information.

show process creditmon event-history

To display the credit monitor event history information, use the show processes creditmon event-history command.

```
show process creditmon event-history
```

Syntax Description This command has no argument or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	6.2(9)	This command is supported for new MDS NG products but no changes made for the old MDS.
	6.2(1)	This command is not supported for new MDS NG products but no changes made for the old MDS.
	NX-OS 5.x	This command was introduced.

Usage Guidelines None.

Examples The following examples displays the credit monitor event history information:

```
switch# attach module 2
```

```
switch# show process creditmon credit event-history
1) Event:CREDITMON_EVENT_MONITOR_OFF, length:4, at 10202 usec
s after Tue Apr 16 00:06:05 2013
interface =
2) Event:CREDITMON_EVENT_MONITOR_OFF, length:4, at 10199 usec
s after Tue Apr 16 00:06:05 2013
interface =
3) Event:CREDITMON_EVENT_MONITOR_OFF, length:4, at 10197 usec
s after Tue Apr 16 00:06:05 2013
interface =
4) Event:CREDITMON_EVENT_MONITOR_OFF, length:4, at 10194 usec
s after Tue Apr 16 00:06:05 2013
interface =
Module: 09          Credit Loss Events: NO
switch#
```

Related Commands	Command	Description
	show process creditmon credit-loss-events	Displays the credit loss event information.

show process creditmon slowport-monitor-events

To display the credit monitor slow port statistics information, use the show process creditmon slowport-monitor-events command.

```
show process creditmon slowport-monitor-events module module-number
```

Syntax Description	module	Displays slowport monitor events for a module.
	module-number	Displays the module number.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	6.2(9)	This command was introduced.

Usage Guidelines None.

Examples

The following examples displays the creditmon slowport monitor statistics information for platform MDS 9710, 9706, 9250i and MDS 9148S:

```
switch# show process creditmon slowport-monitor-events
Module: 01 Slowport Detected: YES
=====
Interface = fc1/37
-----
| admin | slowport | oper | Timestamp |
| delay | detection | delay | |
| (ms) | count | (ms) | |
-----
| 1 | 2 | 4 | 1. Mon Jun 30 16:19:06.068 2014 |
-----
Interface = fc1/39
-----
| admin | slowport | oper | Timestamp |
| delay | detection | delay | |
| (ms) | count | (ms) | |
-----
| 1 | 2 | 4 | 1. Thu Jul 3 11:26:15.876 2014 |
-----
Interface = fc1/40
-----
| admin | slowport | oper | Timestamp |
| delay | detection | delay | |
| (ms) | count | (ms) | |
-----
```

```
| 1 | 2 | 2 | 1. Thu Jul 3 11:26:15.537 2014 |
```

Related Commands

Command	Description
system timeout slowport-monitor	Configures the system timeout values for the hardware slow port monitoring.

show processes

To display general information about all the processes, use the show processes command.

```
show processes [cpu | log [details | pid process-id] | memory]
```

Syntax Description	Option	Description
	cpu	(Optional) Displays processes CPU information.
	log	(Optional) Displays information about process logs.
	details	(Optional) Displays detailed process log information.
	pid process-id	(Optional) Displays process information about a specific process ID. The range is 0 to 2147483647.
	memory	(Optional) Displays processes memory information.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following examples display general information about system processes:

```
switch# show process
PID      State  PC          Start_cnt  TTY  Process
-----  -----  -----  -----  ---  -----
  868     S    2ae4f33e         1     -   snmpd
  869     S    2acee33e         1     -   rscn
  870     S    2ac36c24         1     -   qos
  871     S    2ac44c24         1     -   port-channel
  872     S    2ac7a33e         1     -   ntp
    -     ER           -         1     -   mdog
    -     NR           -         0     -   vbuilder

PID: process ID.
State: process state
      D  uninterruptible sleep (usually IO)
      R  runnable (on run queue)
      S  sleeping
      T  traced or stopped
      Z  a defunct ("zombie") process
NR  not-running
ER  should be running but currently not-running
PC: Current program counter in hex format
Start_cnt: how many times a process has been started.
TTY: Terminal that controls the process. A "-" usually means a daemon not
      running on any particular tty.
```

Process: name of the process.

```
=====
2. show processes cpu (new output)
Description: show cpu utilization information about the processes.
switch# show processes cpu
PID      Runtime(ms)  Invoked    uSecs  lSec  Process
-----
   842      3807      137001     27    0.0  sysmgr
  1112      1220      67974     17    0.0  syslogd
  1269       220      13568     16    0.0  fcfwd
  1276      2901      15419     188   0.0  zone
  1277       738      21010     35    0.0  xbar_client
  1278      1159      6789     170   0.0  wwn
  1279       515      67617      7    0.0  vsan
Runtime(ms): cpu time the process has used, expressed in milliseconds
Invoked: Number of times the process has been invoked.
uSecs: Microseconds of CPU time in average for each process invocation.
lSec: CPU utilization in percentage for the last 1 second.
=====
```

```
3. show processes mem
Description: show memory information about the processes.
PID      MemAlloc  StackBase/Ptr  Process
-----
  1277    120632  7ffffcd0/7ffffefe4  xbar_client
  1278     56800  7ffffce0/7ffffb5c  wwn
  1279   1210220  7ffffce0/7ffffbac  vsan
  1293    386144  7ffffcf0/7ffffebd4  span
  1294   1396892  7ffffce0/7ffffdf4  snmpd
  1295    214528  7ffffcf0/7ffff904  rscn
  1296     42064  7ffffce0/7ffffb5c  qos
MemAlloc: total memory allocated by the process.
StackBase/Ptr: process stack base and current stack pointer in hex format
=====
```

```
3. show processes log
Description: list all the process logs
switch# show processes log
Process      PID      Normal-exit  Stack-trace  Core      Log-create-time
-----
 fspf        1339          N             Y           N  Jan  5 04:25
 lichen      1559          N             Y           Y  N Jan  2 04:49
 rib         1741          N             Y           N  Jan  1 06:05
Normal-exit: whether or not the process exited normally.
Stack-trace: whether or not there is a stack trace in the log.
Core: whether or not there exists a core file.
Log-create-time: when the log file got generated.
```

The following example displays the detail log information about a particular process:

```
switch# show processes log pid 1339
Service: fspf
Description: FSPF Routing Protocol Application
Started at Sat Jan  5 03:23:44 1980 (545631 us)
Stopped at Sat Jan  5 04:25:57 1980 (819598 us)
Uptime: 1 hours 2 minutes 2 seconds
Start type: SRV_OPTION_RESTART_STATELESS (23)
Death reason: SYSMGR_DEATH_REASON_FAILURE_SIGNAL (2)
Exit code: signal 9 (no core)
CWD: /var/sysmgr/work
Virtual Memory:
  CODE      08048000 - 0809A100
  DATA     0809B100 - 0809B65C
  BRK       0809D988 - 080CD000
  STACK     7FFFFFFD20
```

```
TOTAL      23764 KB
Register Set:
  EBX 00000005      ECX 7FFFF8CC      EDX 00000000
  ESI 00000000      EDI 7FFFF6CC      EBP 7FFFF95C
  EAX FFFFFFFD     XDS 8010002B      XES 0000002B
  EAX 0000008E (orig) EIP 2ACE133E      XCS 00000023
  EFL 00000207      ESP 7FFFF654      XSS 0000002B
Stack: 1740 bytes. ESP 7FFFF654, TOP 7FFFFD20
0x7FFFF654: 00000000 00000008 00000003 08051E95 .....
0x7FFFF664: 00000005 7FFFF8CC 00000000 00000000 .....
0x7FFFF674: 7FFFF6CC 00000001 7FFFF95C 080522CD .....\"..
0x7FFFF684: 7FFFF9A4 00000008 7FFFFC34 2AC1F18C .....4.....*
```

show qos

To display the current QoS settings along with a the number of frames marked high priority, use the show qos command.

```
show qos class-map [name class-name] | dwrr | policy-map [name policy-name] | service policy [interface
fc slot / port | vsan vsan-id] | statistics
```

Syntax Description

class-map	Displays QoS class maps.
name class-name	(Optional) Specifies a class map name. The maximum length is 63 alphanumeric characters.
dwrr	Displays deficit weighted round robin queue weights.
policy-map	Displays QoS policy-maps.
name policy-name	(Optional) Specifies a policy map name. The maximum length is 63 alphanumeric characters.
service policy	Displays QoS service policy associations.
interface fc slot/port	(Optional) Specifies a Fibre Channel interface.
vsan vsan-id	(Optional) Specifies a VSAN ID. The range is 1 to 4093.
statistics	Displays QoS related statistics.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

To access all but the statistics option for this command, you must perform the qos enable command.

Examples

The following example displays the contents of all class maps:

```
switch# show qos class-map
qos class-map MyClass match-any
  match dest-wwn 20:01:00:05:30:00:28:df
  match src-wwn 23:15:00:05:30:00:2a:1f
  match src-intf fc2/1
qos class-map Class2 match-all
  match src-intf fc2/14
qos class-map Class3 match-all
  match src-wwn 20:01:00:05:30:00:2a:1f
```

The following example displays the contents of a specified class map:

```
switch# show qos class-map name MyClass
qos class-map MyClass match-any
  match dest-wwn 20:01:00:05:30:00:28:df
  match src-wwn 23:15:00:05:30:00:2a:1f
  match src-intf fc2/1
```

The following example displays all configured policy maps:

```
switch# show qos policy-map
qos policy-map MyPolicy
  class MyClass
  priority medium
qos policy-map Policy1
  class Class2
  priority low
```

The following example displays a specified policy map:

```
switch# show qos policy-map name MyPolicy
qos policy-map MyPolicy
  class MyClass
  priority medium
```

The following example displays scheduled DWRR configurations:

```
switch# show qos dwrr
qos dwrr-q high weight 50
qos dwrr-q medium weight 30
qos dwrr-q low weight 20
```

The following example displays all applied policy maps:

```
switch# show qos service policy
qos service policy MyPolicy vsan 1
qos service policy Policy1 vsan 4
```

The following example displays QoS statistics:

```
switch# show qos statistics
Total number of FC frames transmitted from the Supervisor= 301431
Number of highest-priority FC frames transmitted          = 137679
Current priority of FC control frames = 7      (0 = lowest; 7 = highest)
```

show radius

To display the RADIUS Cisco Fabric Services (CFS) distribution status and other details, use the show radius command.

show radius distribution status | pending | pending-diff

Syntax Description

distribution status	Displays the status of the RADIUS CFS distribution.
pending	Displays the pending configuration that is not yet applied.
pending-diff	Displays the difference between the active configuration and the pending configuration.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays the RADIUS distribution status:

```
switch# show radius distribution status
session ongoing: no
session db: does not exist
merge protocol status: merge activation done
last operation: none
last operation status: none
```

Related Commands

Command	Description
radius distribute	Enables RADIUS CFS distribution.

show radius-server

To display all configured RADIUS server parameters, use the show radius-server command.

```
show radius-server [server-nameipv4-addressipv6-address] [directed-request | groups | sorted | statistics]
```

Syntax Description	
server-name	(Optional) Specifies the RADIUS server DNS name. The maximum character size is 256.
ipv4-address	(Optional) Specifies the RADIUS server IP address in the format A.B.C.D .
ipv6-address	(Optional) Specifies the RADIUS server IP address in the format X:X::X .
directed-request	(Optional) Displays an enabled directed request RADIUS server configuration.
groups	(Optional) Displays configured RADIUS server group information.
sorted	(Optional) Displays RADIUS server information sorted by name.
statistics	(Optional) Displays RADIUS statistics for the specified RADIUS server.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	3.0(1)	<ul style="list-style-type: none"> Added the server-name , ipv4-address , and ipv6-address arguments. Added the directed-request and statistics options.

Usage Guidelines Only administrators can view the RADIUS preshared key.

Examples The following example shows the output of the show radius-server command:

```
switch# show radius-server

Global RADIUS shared secret:Myxgqc
retransmission count:5
timeout value:10
following RADIUS servers are configured:
  myradius.cisco.users.com:
    available for authentication on port:1812
    available for accounting on port:1813
  172.22.91.37:
    available for authentication on port:1812
    available for accounting on port:1813
    RADIUS shared secret:23MHcUnD
  10.10.0.0:
    available for authentication on port:1812
```

```
available for accounting on port:1813  
RADIUS shared secret:hostkey----> for administrators only
```


show rdp

To display RDP details of a device like port speed, link error status, SFP diagnostics parameters, port congestion, use the show rdp command. This information is retrieved from the device specified and represents information from the perspective of that device.

```
show rdp fcid fcid_id vsan vsan_id [cs class_number ]
```

Syntax Description

fcid fcid_id Specifies the FCID of a device. The range is 0x0 to 0xfffff.

vsan vsan_id Specifies the VSAN ID. The range is 1 to 4093.

cs class_number Specifies the class of the frame. The supported value is 2.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release Modification

8.4(1) The command output was modified to add the Port Congestion information.

8.3(1) This command was modified to include the following keywords and arguments:

- cs
- class_number

This command is available in NX-API.

8.2(1) This command was introduced.

Examples

The following example displays the RDP frame details for a specified FCID and VSAN:



Note

This output was taken with Emulex LPe32002-M2 FV12.8.266.8 DV12.8.266.6 HBA that was running on Linux OS.

```
switch# show rdp fcid 0xaa0260 vsan 1
-----
                        RDP frame details
-----
Link Service Request Info:
-----

Port Speed Descriptor Info:
-----
Port speed capabilities : 16G 8G 4G
Port Oper speed         : Unknown Oper speed

Link Error Status:
```

```

-----
VN PHY port type          : FC
Link failure count       : 0
Loss of sync count      : 0
Loss of signal count    : 0
Primitive sequence proto error : 0
Invalid Transmission word : 0
Invalid CRC count       : 0

```

Port Name Descriptor:

```

-----
Node WWN          : 20:00:8c:60:4f:54:54:00
Port WWN          : 21:01:8c:60:4f:54:54:00
Attached Node WWN : 50:08:01:60:00:89:07:51
Attached Port WWN : 50:08:01:60:00:89:08:51

```

SFP Diag params:

```

-----
SFP flags      : SFP+ Optical
SFP Tx Type    : Short Wave

```

FEC Status:

```

-----
Corrected blocks : 0
Uncorrected blocks : 0

```

Buffer Credit Descriptor:

```

-----
Rx B2B credit   : 1
Tx B2B credit   : 16
Port RTT        : 0 ns

```

Optical Product Data:

```

-----
Vendor Name     : CISCO-AVAGO
Model No.       : AFBR-57F5PZ-CS1
Serial No.      : AVA1602J0FY
Revision        : B2
Date            : 120112

```

Port Congestion:

```

-----
Tx Zero Credit Count : 3
Rx Zero Credit Count : 0
Tx Delay Count       : 0
Delay Interval       : 2500
Tx Discard Count     : 0
Tx Discard Interval  : 500
Active State Tx LR Count : 0
Active State Rx LR Count : 0

```

```

-----
Current          Alarms          Warnings
Measurement      High           Low           High           Low
-----
Temperature      26.89 C       75.00 C       -5.00 C       70.00 C       0.00 C
Voltage          3.28 V        3.63 V        2.97 V        3.46 V        3.13 V
Current          7.37 mA      10.50 mA      2.50 mA      10.50 mA      2.50 mA
Tx Power         -2.49 dBm     1.70 dBm     -13.01 dBm   -1.30 dBm     -9.00 dBm
Rx Power         -23.87 dBm    3.00 dBm     -15.92 dBm   0.00 dBm     -11.90 dBm
-----

```

Note: ++ high-alarm; + high-warning; -- low-alarm; - low-warning

Related Commands

Command	Description
show tech-support	Displays technical information that is useful while troubleshooting.
show cores	Displays information about all cores available for uploading from the active supervisor

show rlir

To display the information about Registered Link Incident Report (RLIR), Link Incident Record Registration (LIRR), and Distribute Registered Link Incident Record (DRLIR) frames, use the show rlir command.

```
show rlir erl [vsan vsan-id] | history | recent [interface fc slot/port | portnumber port-number] | statistics [vsan vsan-id]
```



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs as follows: interface bay port | ext port }

Syntax Description

erl	Displays Established Registration List (ERL) information.
vsan vsan-id	(Optional) Specifies a VSAN ID. The range is 1 to 4093.
history	Displays link incident history.
recent	Displays recent link incident.
interface	(Optional) Specifies an interface.
fc slot/port	(Optional) Specifies a Fibre Channel interface on a Cisco MDS 9000 Family Switch.
bay port | ext port }	Specifies a Fibre Channel interface on a Cisco MDS 9124 Fabric Switch, a Cisco Fabric Switch for HP c-Class BladeSystem, and a Cisco Fabric Switch for IBM BladeCenter.
portnumber port-number	(Optional) Specifies a port number for the link incidents. The range is 1 to 224.
statistics	Displays RLIR statistics.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(2)	This command was introduced.
3.0(3)	Modified the show rlir erl command.
3.1(2)	Added the bay port | ext port keywords and arguments.

Usage Guidelines

If available, the host timestamp (marked by the *) is printed along with the switch timestamp. If the host timestamp is not available, only the switch timestamp is printed.

Examples

The following example displays the RLIR statistics for all VSANs:

```
switch# show rlir statistics
Statistics for VSAN: 1
-----
Number of LIRR received      = 0
Number of LIRR ACC sent     = 0
Number of LIRR RJT sent     = 0
Number of RLIR sent         = 0
Number of RLIR ACC received = 0
Number of RLIR RJT received = 0
Number of DRLIR received   = 0
Number of DRLIR ACC sent   = 0
Number of DRLIR RJT sent   = 0
Number of DRLIR sent       = 0
Number of DRLIR ACC received = 0
Number of DRLIR RJT received = 0
Statistics for VSAN: 4
-----
Number of LIRR received      = 0
Number of LIRR ACC sent     = 0
Number of LIRR RJT sent     = 0
Number of RLIR sent         = 0
Number of RLIR ACC received = 0
Number of RLIR RJT received = 0
Number of DRLIR received   = 0
Number of DRLIR ACC sent   = 0
Number of DRLIR RJT sent   = 0
Number of DRLIR sent       = 0
Number of DRLIR ACC received = 0
Number of DRLIR RJT received = 0
Statistics for VSAN: 61
-----
Number of LIRR received      = 0
Number of LIRR ACC sent     = 0
Number of LIRR RJT sent     = 0
Number of RLIR sent         = 0
Number of RLIR ACC received = 0
Number of RLIR RJT received = 0
Number of DRLIR received   = 0
Number of DRLIR ACC sent   = 0
Number of DRLIR RJT sent   = 0
Number of DRLIR sent       = 0
Number of DRLIR ACC received = 0
Number of DRLIR RJT received = 0
```

The following example displays the RLIR statistics for a specified VSAN:

```
switch# show rlir statistics vsan 4
Statistics for VSAN: 4
-----
Number of LIRR received      = 0
Number of LIRR ACC sent     = 0
Number of LIRR RJT sent     = 0
Number of RLIR sent         = 0
Number of RLIR ACC received = 0
Number of RLIR RJT received = 0
Number of DRLIR received   = 0
Number of DRLIR ACC sent   = 0
Number of DRLIR RJT sent   = 0
Number of DRLIR sent       = 0
```

Number of DRLIR ACC received = 0
 Number of DRLIR RJT received = 0

The following example displays the RLIR statistics for all ERLs:

```
switch# show rlr erl
Established Registration List for VSAN: 2
-----
FC-ID          LIRR FORMAT    REGISTERED FOR
-----
0x0b0200      0x18           always receive
Total number of entries = 1
Established Registration List for VSAN: 100
-----
FC-ID          LIRR FORMAT    REGISTERED FOR
-----
0x0b0500      0x18           conditional receive
0x0b0600      0x18           conditional receive
Total number of entries = 2
```

The following example displays the ERLs for the specified VSAN:

```
switch# show rlr erl vsan 100
Established Registration List for VSAN: 100
-----
FC-ID          LIRR FORMAT    REGISTERED FOR
-----
0x0b0500      0x18           conditional receive
0x0b0600      0x18           conditional receive
Total number of entries = 2
```

The following example displays the RLIR preferred host configuration:

```
switch# show rlr erl
Established Registration List for VSAN: 5
-----
FC-ID          LIRR FORMAT    REGISTERED FOR
-----
0x772c00      0x18           conditional receive (*)
0x779600      0x18           conditional receive
0x779700      0x18           conditional receive
0x779800      0x18           conditional receive
Total number of entries = 4
(*) - Denotes the preferred host
```

The following example displays the RLIR history.

```
switch# show rlr history
Link incident history
-----
Host Time Stamp          Switch Time Stamp      VSAN  Domain  Port  Intf  Link
Incident Loc/Rem
-----
Sep 20 12:42:44 2006    Sep 20 12:42:44 2006    ****  ****   0x0b  fc1/12  Loss
of sig/sync LOC
Reported Successfully to: [0x640001] [0x640201]
Sep 20 12:42:48 2006    Sep 20 12:42:48 2006    ****  ****   0x0b  fc1/12  Loss
of sig/sync LOC
Reported Successfully to: [0x640001] [0x640201]
*** ** **:*.** ** **   Sep 20 12:42:51 2006    1001  230    0x12  ****   Loss
of sig/sync REM
Reported Successfully to: [0x640001] [0x640201]
```

```

Sep 20 12:42:55 2006      Sep 20 12:42:55 2006      ****      ****      0x0b      fc1/12      Loss
of sig/sync LOC
Reported Successfully to: None [No Registrations]
*** ** **:**:** ****      Sep 20 12:45:56 2006      1001      230      0x12      ****      Loss
of sig/sync REM
Reported Successfully to: None [No Registrations]
*** ** **:**:** ****      Sep 20 12:45:56 2006      1001      230      0x12      ****      Loss
of sig/sync REM
Reported Successfully to: None [No Registrations]
Sep 20 12:52:45 2006      Sep 20 12:52:45 2006      ****      ****      0x0b      fc1/12      Loss
of sig/sync LOC
Reported Successfully to: None [No Registrations]
**** - Info not required/unavailable
    
```

The following example displays recent RLIRs for a specified interface:

```

switch# show rlr recent interface fc1/1-4
Recent link incident records
-----
Host Time Stamp          Switch Time Stamp          Port Intf  Link Incident
-----
Thu Dec 4 05:02:29 2003   Wed Dec 3 21:02:56 2003   2   fc1/2   Implicit Incident
Thu Dec 4 05:02:54 2003   Wed Dec 3 21:03:21 2003   4   fc1/4   Implicit Incident
    
```

The following example displays the recent RLIRs for a specified port number.

```

switch# show rlr recent portnumber 1-4
Recent link incident records
-----
Host Time Stamp          Switch Time Stamp          Port Intf  Link Incident
-----
Thu Dec 4 05:02:29 2003   Wed Dec 3 21:02:56 2003   2   fc1/2   Implicit Incident
Thu Dec 4 05:02:54 2003   Wed Dec 3 21:03:21 2003   4   fc1/4   Implicit Incident
    
```

show rmon

To display the remote monitoring (RMON) configuration or onboard log, use the show rmon command.

show rmon alarms | events | hcalarms | logs

Syntax Description

alarms	Displays the configured 32-bit RMON alarms.
events	Displays the configured RMON events.
hcalarms	Displays the configured 64-bit high-capacity (HC) RMON alarms.
logs	Displays the RMON event logs.

Command Default

None.

Command Modes

EXEC mode

Command History

Release	Modification
2.0(x)	This command was introduced.
2.1(2)	Added the logs option.
3.0(1)	Added the hcalarms option.

Usage Guidelines

None.

Examples

The following example displays the configured RMON alarms:

```
switch# show rmon alarms
Alarm 20 is active, owned by test
Monitors 1.3.6.1.2.1.2.2.1.16.30 every 30 second(s)
Taking delta samples, last value was 17
Rising threshold is 15, assigned to event 1
Falling threshold is 0, assigned to event 0
On startup enable rising or falling alarm
```

The following example displays the configured RMON events:

```
switch# show rmon events
Event 4 is active, owned by administrator@london_op_center
Description is WARNING(4)
Event firing causes log and trap to community public, last fired 03:32:43
```

The following example displays the configured high-capacity RMON alarms:

```
switch# show rmon hcalarms
High Capacity Alarm 1 is active, owned by cseSysCPUUtilization.0@test
Monitors 1.3.6.1.4.1.9.9.305.1.1.1.0 every 10 second(s)
Taking absolute samples, last value was 0
```



```

Rising threshold is 60, assigned to event 4
Falling threshold is 59, assigned to event 4
On startup enable rising alarm
Number of Failed Attempts is 0
The following example displays the RMON event log located on the switch:
switch# show rmon logs
Event 4
  1 WARNING(4)Falling alarm 1, fired at 0 days 0:02:23 uptime
    iso.3.6.1.4.1.9.9.305.1.1.1.0=17 <= 59
Event 5
  1 INFORMATION(5)Startup Falling alarm 1, fired at 0 days 0:02:23 uptime
    iso.3.6.1.4.1.9.9.305.1.1.1.0=17 <= 59
  2 INFORMATION(5)Falling alarm 1, fired at 0 days 0:02:33 uptime
    iso.3.6.1.4.1.9.9.305.1.1.1.0=17 <= 59

```

Related Commands

Command	Description
rmon alarm	Configures the 32-bit RMON alarm.
rmon event	Configures an RMON event.
rmon hcalarm	Configures the 64-bit RMON alarm.
show snmp host	Displays the SNMP trap destination information.

show rmon status

To display the count of currently configured and maximum RMON alarm and hcalarm, use the show rmon status command.

```
show rmon status
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the count of currently configured and maximum RMON alarms and hcalarms:

```
switch# show rmon status
Maximum allowed 32 bit or 64 bit alarms : 512
Number of 32 bit alarms configured : 0
Number of 64 bit hcalarms configured : 0
```

Related Commands	Command	Description
	show rmon alarms	Displays the RMON alarm table.
	show rmon hcalarms	Displays the RMON hcalarm table.
	show rmon events	Displays the RMON event table.
	show rmon logs	Displays the RMON event log table.

show role

To display the description about the various Cisco SME role configurations, use the show role command.

```
show role
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.3(1a)	This command was introduced.
	NX-OS 4.1(1c)	Changed the command output.

Usage Guidelines Execute the setup sme command to set up the Cisco SME administrator and Cisco SME recovery roles and then use the show role command to display the role details.

Examples The following example displays the Cisco SME role configurations:

```
switch# setup sme
Set up four roles necessary for SME, sme-admin, sme-stg-admin, sme-kmc-admin and
sme-rec-officer? (yes/no) [no] yes
SME setup done

switch# show role

Role: sme-admin
Description: new role
Vsan policy: permit (default)
-----
Rule    Type    Command-type  Feature
-----
1       permit  show          sme
2       permit  config        sme
3       permit  debug         sme

Role: sme-storage
Description: new role
Vsan policy: permit (default)
-----
Rule    Type    Command-type  Feature
-----
1       permit  show          sme-stg-admin
2       permit  config        sme-stg-admin
3       permit  debug         sme-stg-admin

Role: sme-kmc
Description: new role
Vsan policy: permit (default)
```

```

-----
Rule      Type      Command-type  Feature
-----
1         permit   show          sme-kmc-admin
2         permit   config        sme-kmc-admin
3         permit   debug         sme-kmc-admin

```

```

Role: sme-recovery
Description: new role
Vsan policy: permit (default)

```

```

-----
Rule      Type      Command-type  Feature
-----

```

```

1 permit config sme-recovery-officer

```

Related Commands

Command	Description
setup sme	Sets up the Cisco SME administrator and Cisco SME recovery roles.

show role

To display roles (and their associated rules) configured on the switch, including those roles that have not yet been committed to persistent storage, use the show role command.

```
show role [name string | pending | pending-diff | session status | status]
```

Syntax Description	
name string	(Optional) Specifies a name of the role.
pending	(Optional) Displays uncommitted role configuration for fabric distribution.
pending-diff	(Optional) Displays the differences between the pending configuration and the active configuration.
session status	(Optional) Displays the session status for a role.
status	(Optional) Displays the status of the latest Cisco Fabric Services (CFS) operation.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.
	2.0(x)	Added the pending, pending-diff, session, and status options.

Usage Guidelines The rules are displayed by rule number and are based on each role. All roles are displayed even if role name is not specified.

Only network-admin role can access this command.

Examples

The following example shows how to display information for all roles:

```
switch# show role

Role: network-admin
Description: Predefined Network Admin group. This role cannot be modified
Access to all the switch commands
Role: network-operator
Description: Predefined Network Operator group. This role cannot be modified
Access to Show commands and selected Exec commands
Role: svc-admin
Description: Predefined SVC Admin group. This role cannot be modified
Access to all SAN Volume Controller commands
Role: svc-operator
Description: Predefined SVC Operator group. This role cannot be modified
Access to selected SAN Volume Controller commands
Role: default-role
Description: This is a system defined role and applies to all users
```

```

vsan policy: permit (default)
-----
Rule      Type      Command-type      Feature
-----
  1.  permit      show              system
  2.  permit      show              snmp
  3.  permit      show              module
  4.  permit      show              hardware
  5.  permit      show              environment
Role: sangroup
Description: SAN management group
-----
Rule      Type      Command-type      Feature
-----
  1.  permit      config           *
  2.  deny        config           fspf
  3.  permit      debug           zone
  4.  permit      exec            fcping

```

The following example displays the role session status:

```

switch# show role session status
Last Action           : None
Last Action Result    : None
Last Action Failure Reason : None

```

Related Commands

Command	Description
role abort	Enables authorization role CFS distribution.
role commit	Enables authorization role CFS distribution.
role distribute	Enables authorization role CFS distribution.
role name	Configures authorization roles.

show rscn

To display Registered State Change Notification (RSCN) information, use the show rscn command.

```
show rscn event-tov vsan vsan-id | pending vsan vsan-id | pending-diff vsan vsan-id | scr-table [vsan
vsan-id] | statistics [vsan vsan-id]
```

Syntax Description	event-tov	Displays the event timeout value.
	vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
	pending	Displays the pending configuration.
	pending-diff	Displays the difference between the active and the pending configuration.
	scr-table	Displays the State Change Registration table.
	statistics	Displays RSCN statistics.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.
	3.0(1)	Added the event-tov, pending, and pending-diff options.

Usage Guidelines The SCR table cannot be configured. It is only populated if one or more Nx ports send SCR frames to register for RSCN information. If the show rscn scr-table command does not return any entries, no Nx port is interested in receiving RSCN information.

Examples The following example displays RSCN information:

```
switch# show rscn scr-table vsan 1
SCR table for VSAN: 1
-----
FC-ID          REGISTERED FOR
-----
0x1b0300      fabric detected rscns
Total number of entries = 1
```

The following example displays RSCN statistics.

```
switch# show rscn statistics vsan 1
Statistics for VSAN: 1
-----
Number of SCR received          = 0
```

```
Number of SCR ACC sent      = 0
Number of SCR RJT sent      = 0
Number of RSCN received    = 0
Number of RSCN sent        = 0
Number of RSCN ACC received = 0
Number of RSCN ACC sent    = 0
Number of RSCN RJT received = 0
Number of RSCN RJT sent    = 0
Number of SW-RSCN received  = 0
Number of SW-RSCN sent     = 0
Number of SW-RSCN ACC received = 0
Number of SW-RSCN ACC sent = 0
Number of SW-RSCN RJT received = 0
Number of SW-RSCN RJT sent = 0
```

The following example shows the RSCN event timeout value configured on VSAN 1:

```
switch# show rscn event-tov vsan 1
Event TOV : 2000 ms
switch#
```

The following example shows the difference between the active RSCN configuration and the pending RSCN configuration on VSAN 1:

```
switch# show rscn pending-diff vsan 1
- rscn event-tov 2000
+ rscn event-tov 20
switch#
```


show running radius

To display the RADIUS configuration, use the show running radius command.

```
show running radius all
```

Syntax Description

all	Displays running config with defaults.
-----	--

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 4.1(3)	Changed the command output.
2.0(x)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to display the RADIUS configuration:

```
switch# show running radius
version 4.1(3)
radius distribute
radius-server key 7 "fewhg"
radius-server timeout 1
radius-server retransmit 0
radius-server deadtime 1
radius-server host 10.10.1.1 authentication accounting
radius commit
aaa group server radius radius
switch#
The following example shows how to display the running config with defaults:
switch# show running radius all
version 4.1(3)
radius distribute
radius-server key 7 "fewhg"
radius-server timeout 1
radius-server retransmit 0
radius-server deadtime 1
radius-server host 10.10.1.1 auth-port 1812 acct-port 1813 authentication accounting
radius-server host 10.10.1.1 test username test password test idle-time 0
radius commit
aaa group server radius radius
    server 10.10.1.1
    deadtime 0
switch#
```

Related Commands

Command	Description
radius distribute	Enables RADIUS CFS distribution.

show running-config

To display the running configuration file, use the show running-config command.

```
show running-config [diff] interface [cpp | fc | fc slot/port | fc-tunnel tunnel-id | fcip fcip-number |
gigabitethernet slot/port | iscsi slot/port | mgmt 0 | port-channel | svc | vsan vsan-id] | vsan vsan-id
```



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs as follows: interface bay port | ext port }

Syntax Description

diff	(Optional) Displays the difference between the running and startup configurations.
interface	(Optional) Displays running configuration information for a range of interfaces.
cpp	(Optional) Displays the virtualization interface.
fc slot/port	(Optional) Specifies a Fibre Channel interface on a Cisco MDS 9000 Family Switch.
bay port | ext port	Specifies a Fibre Channel interface on a Cisco MDS 9124 Fabric Switch, a Cisco Fabric Switch for HP c-Class BladeSystem, and a Cisco Fabric Switch for IBM BladeCenter.
fc-tunnel tunnel-id	(Optional) Displays description of the specified FC tunnel from 1 to 4095.
fcip fcip-number	Displays the description of the specified FCIP interface from 1 to 255.
gigabitethernet slot/port	Displays the description of the Gigabit Ethernet interface in the specified slot and port.
iscsi slot/port	Displays the description of the iSCSI interface in the specified slot and port.
mgmt 0	Displays the description of the management interface.
port-channel	Displays the description of the PortChannel interface.
sup-fc	Displays the inband interface details.
svc	Displays the virtualization interface specific to the CSM module.
vsan vsan-id	Displays VSAN-specific information. The ID ranges from 1 to 4093.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

If the running configuration is different from the startup configuration, issue the show startup-config diff command to view the differences.

Examples

The following example displays the configuration currently running on the switch:

```
switch# show running-config

Building Configuration ...
  interface fc1/1
  interface fc1/2
  interface fc1/3
  interface fc1/4
  interface mgmt0
ip address 209.165.200.226 209.165.200.227
no shutdown
vsan database
boot system bootflash:isan-237; sup-1
boot kickstart bootflash:boot-237 sup-1
callhome
ip default-gateway 209.165.200.226
switchname switch
trunk protocol enable
username admin password 5 /AFDAMD4B2xK2 role network-admin
```

The following example displays the difference between the running configuration and the startup configuration:

```
switch# show running-config
diff
Building Configuration ...
*** Startup-config
--- Running-config
***** 1,16 ****
  fcip enable
  ip default-gateway 209.165.200.226
  iscsi authentication none
  iscsi enable
! iscsi import target fc
  iscsi virtual-target name vt
    pWWN 21:00:00:04:cf:4c:52:c1
  all-initiator-permit
--- 1,20 ----
  fcip enable
+ aaa accounting logsize 500
+
+
+
  ip default-gateway 209.165.200.226
  iscsi authentication none
  iscsi enable
! iscsi initiator name junk
  iscsi virtual-target name vt
    pWWN 21:00:00:04:cf:4c:52:c1
  all-initiator-permit
```

The following example displays running configuration information for a span destination interface—in this case, the management interface:

```
switch(config)# show running-config interface fc1/16
!Time: Tue Mar 26 22:52:27 2013
```

```
version 6.2(1)
interface fc1/1
  switchport speed 4000
  switchport mode SD
  no shutdown
switch(config)#
```

The following example displays running configuration information for a specified feature—in this case, VSANS:

```
switch# show running-config
feature vsan
vsan database
vsan 2 suspend
vsan 3
vsan 4
vsan database
vsan 3 interface fc1/1
```

show running-config callhome

To display the Call Home configuration, use the show running-config callhome command.

```
show running-config callhome
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display the Call Home configuration:

```
switch# show running-config callhome
version 5.0(1a)
callhome
transport email from isola-77@cisco.com
transport email reply-to someone@cisco.com
transport email smtp-server 72.163.129.201 port 1
transport email mail-server 10.64.74.94 port 25 priority 4
transport email mail-server 192.168.1.10 port 25 priority 50
transport email mail-server mail-server-1.cisco.com port 25 priority 100
switch#
```

Related Commands	Command	Description
	callhome	Configures the Call Home function.

show running-config telemetry

To display the existing telemetry configuration, use the show running-config telemetry command.

```
show running-config telemetry
```

Syntax Description This command has no arguments or keywords.

Command Default Displays telemetry running configuration.

Command Modes Privileged EXEC (#)

Command History

Release	Modification
8.3(1)	This command was introduced.

Examples

This example shows how to display running telemetry configuration:

```
switch# show running-config telemetry

!Command: show running-config telemetry
!Running configuration last done at: Thu Jun 14 08:14:24 2018
!Time: Thu Jun 14 08:14:40 2018

version 8.3(1)
feature telemetry

telemetry
  destination-group 1
    ipv6 address 1:2::3:4 port 50008
    ipv6 address 1:1::1:1 port 50009
  destination-group 100
    ip address 1.2.3.4 port 50003
    ip address 1.2.3.4 port 50004
```

Related Commands

Command	Description
destination-group	Creates a destination group and enters destination group configuration mode.
feature telemetry	Enables the SAN Telemetry Streaming feature.
ip (destination-group)	Configures an IPv4 or IPv6 destination address for a destination group.
sensor-group	Creates a sensor group and enters sensor group configuration.
show telemetry	Displays telemetry configuration.
telemetry	Enters SAN Telemetry Streaming configuration mode.

show san-ext-tuner

To display SAN extension tuner information, use the show san-ext-tuner command.

```
show san-ext-tuner interface gigabitethernet slot / port [nport pwwn pwwn-id vsan vsan-id counters]
| nports
```

Syntax	Description
interface	Displays SAN extension tuner information for a specific Gigabit Ethernet interface.
gigabitethernet slot/port	Specifies a Gigabit Ethernet interface.
nport	(Optional) Specifies an N port.
pwwn pwwn-id	(Optional) Specifies a pWWN ID. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal number.
vsan vsan-id	(Optional) Specifies a VSAN ID. The range is 1 to 4093.
counters	(Optional) Specifies SAN extension tuner counters.
nports	Displays SAN extension tuner information for all nports.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display SAN extension tuner N port information:

```
switch# show san-ext-tuner nports
```

Related Commands	Command	Description
	san-ext-tuner	Enters SAN extension tuner configuration mode.

show santap module

To display the SANTap configuration on the Storage Services Module (SSM), use the show santap module command in EXEC mode.

```
show santap module slot avt [name | brief] | avtlun | cvt [cvt-id | brief] | dvt [name | brief] | dvtlun | rvt
[name | brief] | rvtlun | session [session-id | brief] | tech-support
```

Syntax Description

slot	Displays SANTap configuration for a module in the specified slot.
avt	Displays the appliance virtual target (AVT) configuration.
name	(Optional) Specifies the user name.
brief	(Optional) Displays a brief format version of the display.
avtlun	Displays the appliance AVT LUN configuration.
cvt	Displays the control virtual target (CVT) configuration.
cvt-id	(Optional) Specifies a user configured CVT ID. The range is 1 to 65536.
dvt	Displays the data virtual target (DVT) configuration.
dvtlun	Displays the DVT LUN configuration.
rvt	Displays the remote virtual target (AVT) configuration.
rvtlun	Displays the RVT LUN configuration.
session	Displays the SANTap session information.
session-id	(Optional) Specifies a user configured session ID. The range is 1 to 65536.
tech-support	Displays information for technical support.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
2.1(1a)	This command was introduced.
3.1(2)	Added the tech-support option.

Usage Guidelines

None.

Examples

The following example displays the SANTap AVT configuration:

```
switch# show santap module 2 avt
AVT Information :
  avt pwwn      = 2a:4b:00:05:30:00:22:25
  avt nwwn      = 2a:60:00:05:30:00:22:25
  avt id        = 12
  avt vsan      = 4
  avt if_index  = 0x1080000
  hi pwwn      = 21:00:00:e0:8b:07:61:aa
  tgt pwwn      = 22:00:00:20:37:88:20:ef
  tgt vsan      = 1
```

The following example displays the SANTap AVT LUN configuration:

```
switch# show santap module 2 avtlun
AVT LUN Information :
  avt pwwn      = 2a:4b:00:05:30:00:22:25
  avt lun        = 0x0
  xmap id       = 16
  avt id        = 12
  tgt lun        = 0x0
```

The following example displays the SANTap CVT configuration:

```
switch# show santap module 2 cvt
CVT Information :
  cvt pwwn      = 25:3c:00:05:30:00:22:25
  cvt nwwn      = 25:3d:00:05:30:00:22:25
  cvt id        = 1
  cvt xmap_id   = 2
  cvt vsan      = 10
```

The following example displays the SANTap DVT configuration:

```
switch# show santap module 2 dvt
DVT Information :
  dvt pwwn      = 22:00:00:20:37:88:20:ef
  dvt nwwn      = 20:00:00:20:37:88:20:ef
  dvt id        = 3
  dvt mode      = 3
  dvt vsan      = 3
  dvt fp_port   = 0
  dvt if_index  = 0x1080000
  dvt name      = MYDVT
```

The following example displays the SANTap DVT LUN configuration:

```
switch# show santap module 2 dvtlun
DVT LUN Information :
  dvt pwwn      = 22:00:00:20:37:88:20:ef
  dvt lun        = 0x0
  xmap id       = 8
  dvt id        = 3
  dvt mode      = 0
  dvt vsan      = 3
  tgt pwwn      = 22:00:00:20:37:88:20:ef
  tgt lun        = 0x0
  tgt vsan      = 1
```

The following example displays the SANTap configuration session:

```
switch# show santap module 2 session
Session Information :
  session id      = 1
  host pwwn      = 21:00:00:e0:8b:07:61:aa
  dvt pwwn       = 22:00:00:20:37:88:20:ef
  dvt lun        = 0x0
  tgt pwwn       = 00:00:00:00:00:00:00:00
  tgt lun        = 0x0
  adt pwwn       = 77:77:77:77:77:77:77:77
  adt lun        = 0x0
  num ranges     = 0
  dvt id         = 0
  vdisk id       = 0
  session state  = 0
  mrl requested  = 1
  pwl requested  = 1
  iol requested  = 0
```

The following example displays the SANTap RVT configuration:

```
switch# show santap module 2 rvt
RVT Information :
  rvt pwwn       = 2a:61:00:05:30:00:22:25
  rvt nwwn       = 2a:62:00:05:30:00:22:25
  rvt id         = 17
  rvt vsan       = 4
  rvt if_index   = 0x1080000
```

The following example displays the SANTap RVT LUN configuration:

```
switch# show santap module 2 rvtlun
RVT LUN Information :
  rvt pwwn       = 2a:61:00:05:30:00:22:25
  rvt lun        = 0x0
  xmap id        = 22
  rvt id         = 17
  app pwwn       = 22:00:00:20:37:39:b1:00
  app lun        = 0x0
  app vsan       = 1
```

The following example displays information for technical support:

```
switch# show santap module 4 tech-support
DVT Information :
  dvt pwwn       = 22:00:00:20:37:39:b1:00
  dvt nwwn       = 20:00:00:20:37:39:b1:00
  dvt id         = 0x83fe924
  dvt mode       = 3
  dvt vsan       = 1
  dvt if_index   = 0x1180000
  dvt fp_port    = 1
  dvt name       = MYDVT3
  dvt tgt-vsan   = 2
  dvt io timeout = 10 secs
  dvt lun size handling = 1
  dvt app iofail behaviour = 0
  dvt quiesce behavior = 0
  dvt tgt iofail behavior = 0
  dvt appio failover time = 0 secs
  dvt inq data behavior = 0
DVT Information :
  dvt pwwn       = 22:00:00:20:37:88:20:ef
```

```

dvt nwwn      = 20:00:00:20:37:88:20:ef
dvt id        = 0x8405bbc
dvt mode      = 3
dvt vsan      = 1
dvt if_index  = 0x1186000
dvt fp_port   = 7
dvt name      = MYDVT3
dvt tgt-vsan  = 2
dvt io timeout      = 10 secs
dvt lun size handling = 1
dvt app iofail behaviour = 0
dvt quiesce behavior = 0
dvt tgt iofail behavior = 0
dvt appio failover time = 0 secs
dvt inq data behavior = 0
DVT Information :
dvt pwwn      = 22:00:00:20:37:39:87:70
dvt nwwn      = 20:00:00:20:37:39:87:70
dvt id        = 0x8405b2c
dvt mode      = 3
dvt vsan      = 3
dvt if_index  = 0x118c000
dvt fp_port   = 13
dvt name      = MYDVT3
dvt tgt-vsan  = 2
dvt io timeout      = 10 secs
dvt lun size handling = 1
dvt app iofail behaviour = 0
dvt quiesce behavior = 0
dvt tgt iofail behavior = 0
dvt appio failover time = 0 secs
dvt inq data behavior = 0
CVT Information :
cvt pwwn      = 29:5d:33:33:33:33:33:36
cvt nwwn      = 29:5e:33:33:33:33:33:36
cvt id        = 0x83b11e4
cvt xmap_id   = 0x83b1204
cvt vsan      = 2
cvt name      =

```

```
-----
VSAN                USAGE COUNT
-----
```

```
2                    4
switch#
```

[Table 17: show santap Field Descriptions, on page 1789](#) describes the significant fields shown in the previous displays.

Table 17: show santap Field Descriptions

Field	Description
app lun	Displays the appliance LUN.
app pwwn	Displays the appliance port world wide name.
app vsan	Displays the appliance VSAN number.
avt id	Displays the AVT ID number.
avt if_index	Displays the AVT interface index number.

Field	Description
avt lun	Displays the AVT LUN.
avt nwwn	Displays the AVT Node port world wide name.
avt pwwn	Displays the AVT port world wide name.
avt vsan	Displays the AVT VSAN number.
cvt id	Displays the CVT ID number.
cvt nwwn	Displays the CVT Node port world wide name.
cvt pwwn	Displays the CVT port world wide name.
cvt vsan	Displays the CVT VSAN number.
cvt xmap_id	Displays the CVT Xmap ID number.
dvt fp_port	Displays the DVT fabric port number.
dvt id	Displays the DVT.
dvt if_index	Displays the DVT interface index number.
dvt lun	Displays the DVT LUN.
dvt mode	Displays the DVT mode.
dvt name	Displays the DVT name.
dvt nwwn	Displays the DVT Node port world wide name.
dvt pwwn	Displays the DVT port world wide name.
dvt vsan	Displays the DVT VSAN number.
hi pwwn	Displays the <TBD> port world-wide name.
host pwwn	Displays the host port world wide name.
iol requested	Displays the <TBD> requested.
mrl requested	Displays the <TBD> requested.
num ranges	Displays the number ranges.
pwl requested	Displays the <TBD> requested.
rvt id	Displays the RVT ID number.
rvt if_index	Displays the RVT interface index.
rvt lun	Displays the RVT LUN.
rvt nwwn	Displays the RVT Node port world wide name.

Field	Description
rvt pwwn	Displays the RVT port world wide name.
rvt vsan	Displays the RVT VSAN number.
session id	Displays the session ID number.
session state	Displays the session state.
tgt lun	Displays the target LUN.
tgt pwwn	Displays the target port world wide name.
tgt vsan	Displays the target VSAN number.
vdisk id	Displays the virtual disk ID number.
xmap id	Displays the Xmap ID number.

Related Commands

Command	Description
santap module	Configures the mapping between the SSM and the VSAN where the appliance is configured.

show santap module dvt

To display the SANTap DVT configuration on the Storage Service Module (SSM), use the show santap module dvt command in the EXEC mode.

```
show santap module slot dvt name | brief
```

Syntax Description

slot	Specifies the module number. The range is from 1 to 9.
name	Specifies the user name for DVT.
brief	Displays SANTap DVT configuration in a brief format.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays the SANTap DVT configuration:

```
switch# show santap module 2 dvt
DVT Information :
  dvt pwwn      = 22:00:00:20:37:88:20:ef
  dvt nwwn      = 20:00:00:20:37:88:20:ef
  dvt id        = 3
  dvt mode      = 3
  dvt vsan      = 3
  dvt fp_port   = 0
  dvt if_index  = 0x1080000
  dvt name      = MYDVT
```

Related Commands

Command	Description
show santap vttbl	Displays the SANTap VTTBL configuration.

show santap module dvt brief

To display the SANTap Data Virtual Target (DVT) configuration in a brief format on the Storage Service Module (SSM), use the show santap module dvt brief command in the EXEC mode.

```
show santap module dvt brief slot
```

Syntax Description	slot	Displays SANTap configuration for a module in the specified slot.
---------------------------	------	---

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines None.

Examples

The following example displays the SANTap module DVT brief information for slot 13:

```
switch# show santap module 13 dvt brief
-----
DVT WWN                DVT ID                MD  DVT VSAN  DVTIFIDX
-----
50:06:0e:80:00:c3:e0:46 139639316            3   30        0x1604000
switch# attach module 13
Attaching to module 13 ...
To exit type 'exit', to abort type '$.'
Bad terminal type: "xterm". Will assume vt100.
```

The following example displays the SANTap VTTBL DVT configuration:

```
switch# attach module 2
module-3# show santap vttbl dvt 50:00:1f:e1:50:0c:3b:09
DVT Entry :
  Activated          : FALSE
  Number LUNs       : 16
  Possible Hosts    :
    hi_pwwn = 10:00:00:00:c9:3f:90:21 : 4 LUNs
    hi_pwwn = 10:00:00:00:c9:4c:c0:e5 : 2 LUNs
    hi_pwwn = 21:00:00:e0:8b:0c:7d:21 : 2 LUNs
    hi_pwwn = 10:00:00:00:c9:56:ed:f2 : 2 LUNs
    hi_pwwn = 50:06:0b:00:00:60:2a:a0 : 4 LUNs
    hi_pwwn = 21:00:00:e0:8b:92:62:92 : 2 LUNs
```

The following example displays the SANTap vttbl DVT host configuration:

```
switch# show santap vttbl dvt 50:00:1f:e1:50:0c:3b:09 host 10:00:00:00:c9:3f:90:21
HI-LIST Entry :
  State              : PRLI
  UA Power On       : 1
```

show santap module dvt brief

```

FIT Created          : 1
NVP Index           : 0x10000000c93f9021

HI-LUNS Entry  :
Number of LUNs   : 4
DVT ID          : 0x83f978c
HI Index        : 0
LUNs Installed  : TRUE
Target Lun, DVT Lun pairs :

(0, 0) (1, 1) (2, 2) (3, 3)

```

Related Commands

Command	Description
show santap vttbl	Displays the SANTap VTTBL configuration.

show santap module dvtlun

To display the SANTap DVT LUN configuration on the Storage Service Module (SSM), use the show santap module dvt lun command in the EXEC mode.

```
show santap module slot dvtlun brief | dvt-pwwn
```

Syntax Description	slot	Specifies the module number. The range is from 1 to 9.
	brief	Displays SANTap DVT LUN configuration in a brief format.
	dvt-pwwn	Displays the DVT port world wide name (pWWN).

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the SANTap DVT LUN configuration:

```
switch# show santap module 2 dvtlun
DVT LUN Information :
  dvt pwwn      = 22:00:00:20:37:88:20:ef
  dvt lun       = 0x0
  xmap id       = 8
  dvt id        = 3
  dvt mode      = 0
  dvt vsan      = 3
  tgt pwwn      = 22:00:00:20:37:88:20:ef
  tgt lun       = 0x0
  tgt vsan      = 1
```

Related Commands	Command	Description
	show santap vttbl	Displays the SANTap VTTBL configuration.

show santap vttbl dvt

To display the SANTap VTTBL DVT configuration on the Storage Service Module (SSM), use the show santap vttbl dvt command in the EXEC mode.

```
show santap vttbl dvt dvt-pwwn
```

Syntax Description	Command	Description
	vttbl	Displays SANTap VTTBL configuration.
	dvt	Displays SANTap DVT configuration.
	dvt-pwwn	Displays the DVT port world wide name (pWWN).

Command Default None.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays the SANTap VTTBL DVT configuration:

```
switch# show santap vttbl dvt 50:00:1f:e1:50:0c:3b:09
DVT Entry :
  Activated      : FALSE
  Number LUNs   : 16
  Possible Hosts :
    hi_pwwn = 10:00:00:00:c9:3f:90:21 : 4 LUNs
    hi_pwwn = 10:00:00:00:c9:4c:c0:e5 : 2 LUNs
    hi_pwwn = 21:00:00:e0:8b:0c:7d:21 : 2 LUNs
    hi_pwwn = 10:00:00:00:c9:56:ed:f2 : 2 LUNs
    hi_pwwn = 50:06:0b:00:00:60:2a:a0 : 4 LUNs
    hi_pwwn = 21:00:00:e0:8b:92:62:92 : 2 LUNs
```

Related Commands

Command	Description
show santap vttbl	Displays the SANTap VTTVL configuration.

show santap vttbl dvt host

To display the SANTap VTTBL DVT host configuration on the Storage Service Module (SSM), use the show santap vttbl dvt host command in the EXEC mode.

```
show santap vttbl dvt dvt-pwwn host host-pwwn
```

Syntax Description	Parameter	Description
	dvt-pwwn	Displays the DVT port world wide name (pWWN).
	host pwwn	Displays the host pWWN.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the SANTap VTTBL DVT host configuration:

```
switch# show santap vttbl dvt 50:00:1f:e1:50:0c:3b:09 host 10:00:00:00:c9:3f:90:21
HI-LIST Entry :
  State                : PRLI
  UA Power On          : 1
  FIT Created           : 1
  NVP Index             : 0x10000000c93f9021

  HI-LUNS Entry :
  Number of LUNs       : 4
  DVT ID                : 0x83f978c
  HI Index              : 0
  LUNs Installed        : TRUE
  Target Lun, DVT Lun pairs :

  (0, 0) (1, 1) (2, 2) (3, 3)
```

Related Commands	Command	Description
	show santap vttbl	Displays the SANTap VTTBL configuration.

show scheduler

To display command scheduler information, use the show scheduler command.

```
show scheduler config | job [name jobname] | logfile | schedule [name schedulename]
```

Syntax Description

config	Displays command scheduler configuration information.
job	Displays job information.
name jobname	(Optional) Restricts the output to a specific job name. Maximum length is 31 characters.
logfile	Displays the log file.
schedule	Displays schedule information.
name schedulename	(Optional) Restricts the output to a specific schedule name. Maximum length is 31 characters.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, the command scheduler must be enabled using the scheduler enable command.

Examples

The following example shows how to configure the e-mail transport:

```
switch# config t
  Enter configuration commands, one per line. End with CNTL/Z.
  switch(config)# scheduler transport email from sw2@sjtac.cisco.com
  switch(config)# scheduler transport email reply-to sw2@sjtac.cisco.com
  switch(config)# scheduler transport email smtp-server 13.7.3.2
```

The following example shows how to display the job information:

```
switch# show scheduler job name test_1
Job Name: test_1
-----
config t
.81@ptEFACadmiQSAP8config t c=====
=====
switch#
```

The following example displays the command scheduler configuration information:

```
switch# show scheduler config
config terminal
```

```
scheduler enable
end
```

The following example displays the command scheduler schedule information:

```
switch# show scheduler schedule configureVsan99
Schedule Name : configureVsan99
-----
User Name : admin
Schedule Type : Run once on Tue Aug 10 09:48:00 2004
Last Execution Time: Tue Aug 10 09:48:00 2004
-----
Job Name      Status
-----
addMemVsan99  Success (0)
```

The following example displays the command scheduler log file information:

```
switch# show scheduler logfile
Job Name : addMemVsan99 Job Status: Success (0)
Schedule Name : configureVsan99 User Name : admin
Completion time: Tue Aug 10 09:48:00 2004
----- Job Output -----
'config terminal'
'vsan database'
'vsan 99 interface fcl/1'
'vsan 99 interface fcl/2'
'vsan 99 interface fcl/3'
'vsan 99 interface fcl/4'
```

The following example displays the command scheduler configuration information:

```
switch# show scheduler config
config terminal
  feature scheduler
  scheduler logfile size 16
  scheduler transport email from sw2@sjtac.cisco.com
  scheduler transport email reply-to sw2@sjtac.cisco.com
  scheduler transport email smtp-server 13.7.3.2
end
config terminal
  scheduler job name backup_config
copy running-config startup-config
  show interface mgmt0
  copy startup-config tftp://13.7.3.2/

end
config terminal
  scheduler schedule name test
  time daily 11:23
  job name backup_config
  email-addr zawoo@cisco.com
end
config terminal
  scheduler schedule name te
end
```

Related Commands

Command	Description
scheduler enable	Enables the command scheduler.

Command	Description
scheduler job name	Configures command scheduler jobs.
scheduler schedule name	Configures command schedules.

show scsi-flow

To display SCSI flow information, use the show scsi-flow command.

```
show scsi-flow [flow-id flow-id] | statistics [flow-id flow-id lun lun-number]
```

Syntax Description	flow-id flow-id	(Optional) Displays a specific SCSI flow index.
	statistics	Displays the statistics for the SCSI flow.
	lun lun-number	(Optional) Displays statics for a specific LUN number.

Command Default None

Command Modes EXEC mode.

Command History	Release	Modification
	2.0(2)	This command was introduced.

Examples

The following example displays SCSI flow services configuration for all SCSI flow identifiers:

```
switch# show scsi-flow
Flow Id: 3
  Initiator VSAN: 101
  Initiator WWN: 21:00:00:e0:8b:05:76:28
  Target VSAN: 102
  Target WWN: 21:00:00:20:37:38:7f:7d
  Target LUN: ALL LUNs
  Flow Verification Status:
  -----
    Initiator Verification Status: success
    Target Verification Status: success
    Initiator Linecard Status: success
    Target Linecard Status: success
  Feature Status:
  -----
    Write-Acceleration enabled
    Write-Acceleration Buffers: 1024
    Configuration Status: success
    Statistics enabled
    Configuration Status: success
Flow Id: 4
  Initiator VSAN: 101
  Initiator WWN: 21:00:00:e0:8b:05:76:28
  Target VSAN: 102
  Target WWN: 21:00:00:20:37:38:a7:89
  Target LUN: ALL LUNs
  Flow Verification Status:
  -----
    Initiator Verification Status: success
```

```

Target Verification Status:      success
Initiator Linecard Status:      success
Target Linecard Status:         success
Feature Status:
-----
Write-Acceleration enabled
Write-Acceleration Buffers: 1024
Configuration Status: success

```

[Table 18: show scsi-flow Field Descriptions, on page 1802](#) describes the significant fields shown in the show scsi-flow command output.

Table 18: show scsi-flow Field Descriptions

Field	Description
Initiator Verification Status	Verifies that the name server, FLOGI server, and zone server information for the initiator on the local switch are correct.
Target Verification Status	Verifies that the names sever and zone server information for the target on the local switch are correct.
Initiator Linecard Status	Verifies that the initiator is connected to an SSM and if DPP provisioning is enabled for the module.
Target Linecard Status	Verifies in the following order: 1. The target switch sees the proper name server and zone server information for the initiator. 2. The target switch sees the proper name server, FLOGI server and zone server information for the target. 3. The target is connected to an SSM and if DPP provisioning is enabled for that module.

The following example displays SCSI flow services configuration for a specific SCSI flow identifier:

```

switch# show scsi-flow flow-id 3
Flow Id: 3
Initiator VSAN: 101
Initiator WWN: 21:00:00:e0:8b:05:76:28
Target VSAN: 102
Target WWN: 21:00:00:20:37:38:7f:7d
Target LUN: ALL LUNs
Flow Verification Status:
-----
Initiator Verification Status:  success
Target Verification Status:    success
Initiator Linecard Status:     success
Target Linecard Status:       success
Feature Status:
-----
Write-Acceleration enabled
Write-Acceleration Buffers: 1024
Configuration Status: success
Statistics enabled
Configuration Status: success

```

The following example displays SCSI flow services statistics for all SCSI flow identifiers:

```

switch# show scsi-flow statistics
Stats for flow-id 4 LUN=0x0000
-----

```

```

Read Stats
I/O Total count=2
I/O Timeout count=0
I/O Total block count=4
I/O Max block count=2
I/O Min response time=5247 usec
I/O Max response time=10160 usec
I/O Active Count=0
Write Stats
I/O Total count=199935
I/O Timeout count=0
I/O Total block count=12795840
I/O Max block count=64
I/O Min response time=492 usec
I/O Max response time=10056529 usec
I/O Active Count=16
Non Read-Write Stats
Test Unit Ready=4
Report LUN=38
Inquiry=50
Read Capacity=3
Mode Sense=0
Request Sense=0
Total Stats
Rx Frame Count=3792063
Rx Frame Byte Count=6549984752
Tx Frame Count=3792063
Tx Frame Byte Count=6549984752
Error Stats
SCSI Status Busy=0
SCSI Status Reservation Conflict=0
SCSI Status Task Set Full=0
SCSI Status ACA Active=0
Sense Key Not Ready=0
Sense Key Medium Error=0
Sense Key Hardware Error=0
Sense Key Illegal Request=0
Sense Key Unit Attention=28
Sense Key Data Protect=0
Sense Key Blank Check=0
Sense Key Copy Aborted=0
Sense Key Aborted Command=0
Sense Key Volume Overflow=0
Sense Key Miscompare=0

```

The following example displays SCSI flow services statistics for a specific SCSI flow identifier:

```

switch# show scsi-flow statistics flow-id 4
Stats for flow-id 4 LUN=0x0000
-----
Read Stats
I/O Total count=2
I/O Timeout count=0
I/O Total block count=4
I/O Max block count=2
I/O Min response time=5247 usec
I/O Max response time=10160 usec
I/O Active Count=0
Write Stats
I/O Total count=199935
I/O Timeout count=0
I/O Total block count=12795840
I/O Max block count=64
I/O Min response time=492 usec

```

```
I/O Max response time=10056529 usec  
I/O Active Count=16
```

show_scsi-target

To display information about existing SCSI target configurations, use the show scsi-target command.

```
show scsi-target auto-poll|custom-list|devices [vsan vsan-id] [fcid fcid-id]|disk [vsan vsan-id] [fcid fcid-id]|lun [vsan vsan-id] [fcid fcid-id] [os [aix|all|hpux|linux|solaris|windows]]|pwwn|status|tape [vsan vsan-id] [fcid fcid-id]]
```

Syntax	Description
auto-poll	Displays SCSI target auto polling information.
custom-list	Displays customized discovered targets.
devices	Displays discovered scsi-target devices information.
vsan vsan-range	(Optional) Specifies the VSAN ID or VSAN range. The ID range is 1 to 4093.
fcid fcid-id	(Optional) Specifies the FCID of the SCSI target to display.
disk	Displays discovered disk information.
lun	Displays discovered SCSI target LUN information.
os	Discovers the specified operating system.
aix	(Optional) Specifies the AIX operating system.
all	(Optional) Specifies all operating systems.
hpux	(Optional) Specifies the HPUNIX operating system.
linux	(Optional) Specifies the Linux operating system.
solaris	(Optional) Specifies the Solaris operating system.
windows	(Optional) Specifies the Windows operating system.
status	Displays SCSI target discovery status.
pwwn	Displays discover pWWN information for each OS.
tape	Displays discovered tape information.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(4)	This command was introduced.

Usage Guidelines

Use the show scsi-target auto-poll command to verify automatic discovery of online SCSI targets.

Examples

The following example displays the status of a SCSI discovery:

```
switch# show scsi-target status
discovery completed
```

The following example displays a customized discovered targets:

```
switch# show scsi-target custom-list-----
VSAN DOMAIN-----1 56
```

The following example displays discovered disk information:

```
switch# show scsi-target disk
-----
VSAN      FCID      PWWN      VENDOR      MODEL      REV
-----
1         0x9c03d6  21:00:00:20:37:46:78:97  Company 4  ST318203FC  0004
1         0x9c03d9  21:00:00:20:37:5b:cf:b9  Company 4  ST318203FC  0004
1         0x9c03da  21:00:00:20:37:18:6f:90  Company 4  ST318203FC  0004
1         0x9c03dc  21:00:00:20:37:5a:5b:27  Company 4  ST318203FC  0004
1         0x9c03e0  21:00:00:20:37:36:0b:4d  Company 4  ST318203FC  0004
1         0x9c03e1  21:00:00:20:37:39:90:6a  Company 4  ST318203 CLAR18  3844
1         0x9c03e2  21:00:00:20:37:18:d2:45  Company 4  ST318203 CLAR18  3844
1         0x9c03e4  21:00:00:20:37:6b:d7:18  Company 4  ST318203 CLAR18  3844
1         0x9c03e8  21:00:00:20:37:38:a7:c1  Company 4  ST318203FC  0004
1         0x9c03ef  21:00:00:20:37:18:17:d2  Company 4  ST318203FC  0004
```

The following example displays the discovered LUNs for all OSs:

```
switch# show scsi-target lun os all
ST336607FC from SEAGATE (Rev 0006)
FCID is 0xed0001 in VSAN 7, PWWN is 21:00:00:04:cf:fb:42:f8
-----
OS  LUN      Capacity Status  Serial Number  Device-Id
      (MB)
-----
WIN 0x0    36704   Online  3JA1B9QA00007338 C:1 A:0 T:3 20:00:00:04:cf:fb:42:f8
AIX 0x0    36704   Online  3JA1B9QA00007338 C:1 A:0 T:3 20:00:00:04:cf:fb:42:f8
SOL 0x0    36704   Online  3JA1B9QA00007338 C:1 A:0 T:3 20:00:00:04:cf:fb:42:f8
LIN 0x0    36704   Online  3JA1B9QA00007338 C:1 A:0 T:3 20:00:00:04:cf:fb:42:f8
HP  0x0     36704   Online  3JA1B9QA00007338 C:1 A:0 T:3 20:00:00:04:cf:fb:42:f8
```

The following example displays the discovered LUNs for the Solaris OS:

```
switch# show scsi-target lun os solaris
ST336607FC from SEAGATE (Rev 0006)
FCID is 0xed0001 in VSAN 7, PWWN is 21:00:00:04:cf:fb:42:f8
-----
OS  LUN      Capacity Status  Serial Number  Device-Id
      (MB)
-----
SOL 0x0    36704   Online  3JA1B9QA00007338 C:1 A:0 T:3 20:00:00:04:cf:fb:42:f8
```

The following example displays auto-polling information. Each user is indicated by the internal UUID number, which indicates that a CSM or an IPS module is in the chassis:

```
switch# show scsi-target auto-poll
```

```
auto-polling is enabled, poll_start:0 poll_count:1 poll_type:0
USERS OF AUTO POLLING
-----
uuid:54
```

The following example displays the port WWN that is assigned to each OS (Windows, AIX, Solaris, Linux, or HPUX):

```
switch# show scsi-target pwn
-----
OS      PWWN
-----
WIN     24:91:00:05:30:00:2a:1e
AIX     24:92:00:05:30:00:2a:1e
SOL     24:93:00:05:30:00:2a:1e
LIN     24:94:00:05:30:00:2a:1e
HP      24:95:00:05:30:00:2a:1e
```

show sdv

To display information about SAN device virtualization (SDV), use the show sdv command in EXEC mode.

```
show sdv database [pending vsan vsan-id | vsan vsan-id] | merge status vsan vsan-id | pending-diff
vsan vsan-id | session status vsan vsan-id | statistics vsan vsan-id | virtual-device name device-name
vsan vsan-id | zone [active vsan vsan-id | vsan vsan-id]
```

Syntax Description

database	Displays the SDV database.
pending	(Optional) Displays the pending SDV database.
vsan vsan-id	(Optional) Specifies the number of the VSAN. The range is 1 to 4093.
merge status	Displays the SDV merge status.
pending-diff	Displays the SDV pending differences.
session	Displays the SDV session status.
statistics	Displays the SDV statistics.
virtual-device	Displays the SDV virtual devices.
name device-name	Specifies the name of the virtual target. The maximum size is 32.
zone	Specifies the zone.
active	(Optional) Specifies the active VSAN.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.1(2)	This command was introduced.
NX-OS 4.1(1b)	Changed the command output.

Usage Guidelines

None.

Examples

The following example shows how to display SDV database information:

```
switch# show sdv database vsan 1
[ WWN:50:00:53:00:00:1a:30:01 FCID:0xcd01a3 Real-FCID:0x7f000e ]
 *pwn 20:0e:0d:00:00:01:12:10 primary
  pwn 20:0e:0d:00:00:01:12:11
```

The following example displays merge status:


```
switch# show sdv merge status vsan 1
Merge Status for VSAN      : 1
-----
Last Merge Time Stamp      : None
Last Merge State           : None
Last Merge Result          : SUCCESS
Last Merge Failure Reason: None [cfs_status: 0]
```

Related Commands

Command	Description
sdv enable	Enables the SAN device virtualization feature.
sdv virtual-device	Specifies the virtual target.

show secure-erase algorithm

To display the list of all Secure Erase algorithms, use the show secure-erase algorithm command.

```
show secure-erase module module-id algorithm algorithm name
```

Syntax Description	module module-id	Displays the slot number of the SSM on which Secure Erase is provisioned.
	algorithm name	Displays the algorithm name.

Command Default None.

Command Modes Exec mode

Command History	Release	Modification
	6.2(1)	This command was deprecated.
	3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the list of Secure Erase algorithms:

```
switch# show secure-erase module 4 algorithm name 1
switch# Algorithm : 1
Step 0:
faa8bd6c1e838b6b9b0818f30d48f5eccc7e7f572d9d8ac50a9a78b73bf128eb7a71ff40a7c07f55dda1d31f875bca26b170d6b3c0735
55e06d6229f6a5dedeaa0583f0d1e8e28fca8a7cac936d6f0a453af4174fbcbca29f711047cb48e984a3c097519138a628bc6e662bd3d28237d09
1f68a8df05f50effc55390a12ee2c6
Step 1:
05574293e17c749464f7e70cf2b70a11338180a8d262753af5658748c40ed714858e00bf583f80aa225e2ce078a435d94e8f294c3f8ca
aa1f929dd6095a212155fa7c0f2e141d70357583536c9290f5bac50be8b044345d608eeefb834b7167b5c3f68ae6ec759d7439199d42c2d7dc82f6
e0975720fa0af1003aac6f5ed11d39
Step 2:
1234567898765435678909876545671234567898765435678909876545671234567898765435678909876545671234567898765435678
909876545671234567898765435678909876545671234567898765435678909876545671234567898765435678909876545671234567898765435
678909876545671234567898765435
```

The following example displays all available Secure Erase algorithms on a module:

```
switch# show secure-erase module 4 algorithm
```

Related Commands	Command	Description
	show secure-erase job	Displays the contents of a particular Secure Erase job.

show secure-erase job

To display the contents of a particular job, use the show secure-erase job command.

```
show secure-erase module module-id job job-id
```

Syntax Description	Parameter	Description
	module module-id	Displays the slot number of the SSM on which Secure Erase is provisioned.
	job-id	Displays the unique number to identify a Secure Erase job.

Command Default None.

Command Modes Exec mode

Command History	Release	Modification
	6.2(1)	This command was deprecated.
	3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the contents of a particular Secure Erase job:

```
switch# show secure-erase module 4 job 2
```

The following example displays the contents of all Secure Erase jobs configured on a module:

```
switch# show secure-erase module 16 job
```

Related Commands	Command	Description
	show secure-erase algorithm	Displays the list of Secure Erase algorithms.

show secure-erase job detail

To display the contents of a particular job in detail, use the show secure-erase job detail command.

```
show secure-erase module module-id job job-id detail
```

Syntax Description	Parameter	Description
	module module-id	Displays the slot number of the SSM on which Secure Erase is provisioned.
	job-id	Displays the unique number to identify a Secure Erase job.

Command Default None.

Command Modes Exec mode

Command History	Release	Modification
	6.2(1)	This command was deprecated.
	3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the contents of a Secure Erase job in a brief form:

```
switch# show secure-erase module 4 job 2 detail
```

Related Commands	Command	Description
	show secure-erase job	Displays the contents of a Secure Erase job.

show secure-erase vsan

To display a list of all VIs in the VSAN, use the show secure-erase vsan command.

```
show secure-erase module module-id vsan vsan-id
```

Syntax Description	Parameter	Description
	module module-id	Displays the slot number of the SSM on which Secure Erase is provisioned.
	vsan-id	Displays the VSAN ID of the target.

Command Default None.

Command Modes Exec mode

Command History	Release	Modification
	6.2(1)	This command was deprecated.
	3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the list of all VIs in the VSAN:

```
switch# show secure-erase module 4 vsan 1
```

Related Commands	Command	Description
	show secure-erase algorithm	Displays the list of Secure Erase algorithms.
	show secure-erase job	Displays the contents of a particular Secure Erase job.

show sme cluster

To display the information about the Cisco SME cluster, use the show sme cluster command.

```
show sme cluster cluster name detail | interface detail | node A.B.C.D | X:X::X | DNS name sme
slot/port | sme slot/port | summary | it-nexus | key database detail | guid guid name detail | summary |
summary | load-balancing | lun crypto-status | node A.B.C.D | X:X::X | DNS name | summary | recovery
officer index | detail index | summary index | summary | tape detail | summary | tape-bkgrp tape group
name volgrp volume group name | detail | summary
```

Syntax Description

cluster cluster name	Displays Cisco SME cluster information. The maximum length is 32 characters.
detail	Displays Cisco SME cluster details.
interface	Displays information about Cisco SME cluster interface.
node	Display information about Cisco SME cluster remote interface.
A.B.C.D	Specifies the IP address of the remote switch in IPv4 format.
X:X::X	Specifies the IP address of the remote switch in IPv6 format.
DNS name	Specifies the name of the remote database.
sme	Specifies the Cisco SME interface.
slot	Identifies the MPS-18/4 module slot.
port	Identifies the Cisco SME port.
interface summary	Displays Cisco SME cluster interface summary.
it-nexus	Displays the initiator to target connections (IT-nexus) in the Cisco SME cluster.
key database	Shows the Cisco SME cluster key database.
detail	Shows the Cisco SME cluster key database details.
guid guid name	Displays Cisco SME cluster key database guid. The maximum length is 64.
summary	Displays Cisco SME cluster key database summary.
load-balancing	Displays the load balancing status of the cluster.
lun	Displays the logical unit numbers (LUNs) in a cluster.
crypto-status	Displays the crypto status of the LUNs.
node summary	Displays Cisco SME cluster node summary.
recovery officer detail	Displays Cisco SME cluster recovery officer detail.
recovery officer summary	Displays Cisco SME cluster recovery officer summary.

index	Specifies recovery officer index. The range is 1 to 8.
detail index	Specifies recovery officer detail index. The range is 1 to 8.
summary index	Specifies recovery officer summary index. The range is 1 to 8.
tape detail	Displays Cisco SME tape detail
tape summary	Displays the tape summary
tape-bkgrp tape group name	Displays the crypto tape backup group name. The maximum length is 32 characters.
volgrp volume group name	Displays tape volume group name. The maximum length is 32 characters.
detail	Displays Cisco SME cluster details.
summary	Shows Cisco SME cluster summary.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.2(2)	This command was introduced.
NX-OS 4.1(1c)	Added the syntax description.

Usage Guidelines

None.

Examples

The following example displays the configuration details about a cluster:

```
switch# show sme cluster c1
Cluster ID is 0x2b2a0005300035e1
Cluster status is online
Security mode is advanced
Total Nodes are 1
Recovery Scheme is 2 out of 5
Fabric[0] is Fabric_name-excal10
KMC server 10.21.113.117:8800 is provisioned, connection state is initializing
Master Key GUID is 10af119cfd79c17f-ee568878c049f94d, Version: 0
Shared Key Mode is Not Enabled
Auto Vol Group is Not Enabled
Tape Compression is Not Enabled
Tape Key Recycle Policy is Not Enabled
Key On Tape is Not Enabled
Cluster Infra Status : Operational
Cluster is Administratively Up
Cluster Config Version : 24
```

The following example displays the cluster interface information:

```
switch# show sme cluster clusternam1 interface it-nexus
```

```

-----
      Host WWN                VSAN    Status    Switch    Interface
      Target WWN
-----
10:00:00:00:c9:4e:19:ed,
2f:ff:00:06:2b:10:c2:e2    4093    online    switch    sme4/1

```

The following example displays the specific recovery officer of a cluster:

```

switch# show sme cluster clusternam1 recovery officer

Recovery Officer 1 is set
  Master Key Version is 0
  Recovery Share Version is 0
  Recovery Share Index is 1
  Recovery Scheme is 1 out of 1
  Recovery Officer Label is
  Recovery share protected by a password
Key Type is master key share
  Cluster is clusternam1, Master Key Version is 0
  Recovery Share Version is 0, Share Index is 1

```

Related Commands

Command	Description
clear sme	Clears Cisco SME configuration.
show sme cluster	Displays information about Cisco SME cluster.

show sme transport

To display the Cisco SME cluster transport information, use the show sme transport command.

```
show sme transport ssl trustpoint
```

Syntax Description

ssl	Displays transport Secure Sockets Layer (SSL) information.
trustpoint	Displays transport SSL trustpoint information.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.2(2c)	This command was introduced.
NX-OS 4.1(1c)	Added the syntax of the command.

Usage Guidelines

None.

Examples

The following example displays the internal cluster errors:

```
switch# show sme transport ssl trustpoint
SME Transport SSL trustpoint is trustpoint-label
```

Related Commands

Command	Description
clear sme	Clears Cisco SME configuration.
show sme cluster	Displays information about Cisco SME cluster.

show snmp

To display SNMP status and setting information, use the show snmp command.

```
show snmp [community | engineID | group | host | sessions | trap | user [user-name] [engineID engine-id]]
```

Syntax Description

community	(Optional) Displays SNMP community strings.
engineID	(Optional) Displays SNMP engine IDs.
group	(Optional) Displays SNMP groups.
host	(Optional) Displays SNMP hosts.
sessions	(Optional) Displays SNMP sessions.
trap	(Optional) Displays SNMP traps.
user	(Optional) Displays SNMPv3 users.
user-name	(Optional) Specifies the user name. The maximum is 32.
engineID	(Optional) Displays the engine ID.
engine-id	(Optional) Specifies the engine ID. The maximum is 128.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
2.0(x)	Added the engineid, group, and sessions keywords.
3.1(2)	Added the trap keyword.

Usage Guidelines

You can view the show snmp community output, only when the user role is assigned as network-admin.

Examples

The following example shows how to display SNMP traps:

```
switch# show snmp trap
-----
Trap type                                     Enabled
-----
entity          : entity_mib_change           Yes
entity          : entity_module_status_change  Yes
entity          : entity_power_status_change   Yes
entity          : entity_module_inserted       Yes
```

```

entity          : entity_module_removed          Yes
entity          : entity_unrecognised_module     Yes
entity          : entity_fan_status_change       Yes
entity          : entity_power_out_change        Yes
link            : delayed-link-state-change      Yes
link            : iflink-up                     Yes
link            : iflink-down                   Yes
callhome        : event-notify                  No
callhome        : smtp-send-fail                No
cfs             : state-change-notif            No
cfs             : merge-failure                 No
rf              : redundancy_framework          Yes
aaa             : server-state-change           No
license         : notify-license-expiry         Yes
license         : notify-no-license-for-feature  Yes
license         : notify-licensefile-missing    Yes
--More--

```

The following example displays SNMP information:

```

switch# show snmp
sys contact:
sys location:
1631 SNMP packets input
    0 Bad SNMP versions
    0 Unknown community name
    0 Illegal operation for community name supplied
    0 Encoding errors
    64294 Number of requested variables
    1 Number of altered variables
    1628 Get-request PDUs
    0 Get-next PDUs
    1 Set-request PDUs
152725 SNMP packets output
    0 Too big errors
    1 No such name errors
    0 Bad values errors
    0 General errors

Community          Access
-----
public             rw
User               Group          Auth   Priv
-----
admin              network-admin md5    no

```

The following example displays SNMP user details.

```

switch# show snmp user
User               Group          Auth   Priv
-----
steve              network-admin md5    des
sadmin             network-admin md5    des
stever             network-operator md5    des

```

The following example displays SNMP community information:

```

switch# show snmp community

Community          Access
-----
private            rw
public             ro
v93RACqPNH        ro

```

The following example displays SNMP host information:

```
switch# show snmp host
Host                               Port Version  Level  Type  SecName
-----
171.16.126.34                       2162 v2c      noauth trap  public
171.16.75.106                       2162 v2c      noauth trap  public
171.31.124.81                       2162 v2c      noauth trap  public
171.31.157.193                      2162 v2c      noauth trap  public
171.31.157.98                       2162 v2c      noauth trap  public
171.31.49.25                        2162 v2c      noauth trap  public
171.31.49.32                        2188 v2c      noauth trap  public
171.31.49.49                        2162 v2c      noauth trap  public
171.31.49.49                        3514 v2c      noauth trap  public
171.31.49.54                        2162 v2c      noauth trap  public
171.31.58.54                        2162 v2c      noauth trap  public
171.31.58.81                        2162 v2c      noauth trap  public
171.31.58.97                        1635 v2c      noauth trap  public
171.31.58.97                        2162 v2c      auth   trap   public
171.31.58.97                        3545 v2c      auth   trap   public
172.22.00.43                        2162 v2c      noauth trap  public
172.22.00.65                        2162 v2c      noauth trap  public
172.22.05.234                      2162 v2c      noauth trap  public
172.22.05.98                       1050 v2c      noauth trap  public
```

The following example displays SNMP engine ID information:

```
switch# show snmp engineID
Local SNMP engineID:[Dec] 128:000:000:009:003:000:013:236:008:040:192
switch#
```

The following example displays SNMP group information:

```
switch# show snmp group
groupname: network-admin
security model: any
security level: noAuthNoPriv
readview: network-admin-rd
writeview: network-admin-wr
notifyview: network-admin-rd
storage-type: permanent
row status: active
groupname: network-admin
security model: any
security level: authNoPriv
readview: network-admin-rd
writeview: network-admin-wr
notifyview: network-admin-rd
storage-type: permanent
row status: active
groupname: network-operator
security model: any
security level: noAuthNoPriv
readview: network-operator-rd
writeview: network-operator-wr
notifyview: network-operator-rd
storage-type: permanent
row status: active
groupname: network-operator
security model: any
security level: authNoPriv
readview: network-operator-rd
```

```
writeview: network-operator-wr  
notifyview: network-operator-rd  
storage-type: permanent  
row status: active
```

show span drop-counters

To display the SPAN drop counters, use the show span drop-counters command.

```
show span drop-counters
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines This command is supported only on a ISOLA platform.

Examples The following example shows how to configure the SPAN drop counters:

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# span drop-counters
SPAN Drop-Counters for module 3 is: 0x0
SPAN Drop-Counters for module 7 is: 0x0
```

Related Commands	Command	Description
	show span max-queued-packets	Displays the SPAN max-queued packets.

show span max-queued-packets

To display the SPAN max-queued packets, use the show span max-queued-packets command.

```
show span max-queued-packets
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Command History	Release	Modification
	6.2(1)	This command was deprecated.
	3.3(1a)	This command was introduced.

Usage Guidelines This command is supported only on a ISOLA platform.

Examples The following example displays the SPAN max-queued packets:

```
switch# show span max-queued-packets
max-queued-packets for SPAN sessions: 1
```

Related Commands	Command	Description
	span max-queued-packets	Configures the SPAN max-queued packets.

show sprom

To display vendor ID, product component attributes and serial number information that can be used to track field replaceable units, use the show sprom command.

```
show sprom backplane backplane-index | clock clock-module-index | fan | mgmt-module | module
module-number sprom-index | powersupply powersupply-index | sup
```

Syntax Description

backplane backplane-index	Displays attributes that can be used to uniquely identify a switch. The range is 1 to 2.
clock clock-module-index	Displays attributes of the clock module. There are two clock modules in a switch. This module is absent in MDS9216 type switch. The range is 1 to 2.
fan	Displays attributes that uniquely identified fan.
mgmt-module	Displays attributes of management module. This module is only present in MDS9216 type switch.
module module-number sprom-index	Displays vendor ID, product's component attributes for the given switching module. There can be up to 4 sub components in a module. Each of them will have a SPROM associated with it.
powersupply powersupply-index	Displays attributes of the first or the second power supply. This contains information about the power supply capacity in watts when it is used in 110 Volts and 220 Volts. This information is used for power-budget allocation. The range is 1 to 2.
sup	Displays vendor ID, product's component attributes for the current supervisor module.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

Use the show sprom command to get unique information about a specific module, supervisor module, switch, power supply module, or a fan module. If you need to report a problem with a module, supervisor module, switch, power supply module, or a fan module and do not have access to the management station, then you can extract the serial number information from show sprom.

Examples

The following example displays management module information. This module and command are specific to the Cisco MDS 9216 switch:


```
switch# show sprom mgmt-module
DISPLAY SAM sprom contents:
Common block:
Block Signature :0xabab
Block Version   :2
Block Length    :156
Block Checksum  :0x1295
EEPROM Size     :0
Block Count     :2
FRU Major Type  :0x0
FRU Minor Type  :0x0
OEM String      :Cisco Systems Inc
Product Number  :SAM SMITH
Serial Number    :12345678901
Part Number     :SAM-SMITH-06
Part Revision   :A0
Mfg Deviation   :
H/W Version     :1.0
Mfg Bits        :1
Engineer Use    :0
snmpOID         :0.0.0.0.0.0.0.0
Power Consump   :-200
RMA Code        :0-0-0-0
Linecard Module specific block:
Block Signature :0x6003
Block Version   :2
Block Length    :103
Block Checksum  :0x3c7
Feature Bits    :0x0
HW Changes Bits :0x0
Card Index      :9009
MAC Addresses   :00-12-34-56-78-90
Number of MACs  :4
Number of EOBC links :4
Number of EPLD  :0
Port Type-Num   :200-16
SRAM size       :0
Sensor #1       :0,0
Sensor #2       :0,0
Sensor #3       :0,0
Sensor #4       :0,0
Sensor #5       :0,0
Sensor #6       :0,0
Sensor #7       :0,0
Sensor #8       :0,0
```

The following command displays supervisor module information:

```
switch# show sprom sup
DISPLAY supervisor sprom contents:
Common block:
Block Signature : 0xabab
Block Version   : 2
Block Length    : 156
Block Checksum  : 0x10a8
EEPROM Size     : 512
Block Count     : 2
FRU Major Type  : 0x6002
FRU Minor Type  : 0x7d0
OEM String      : Cisco Systems
Product Number  : DS-X9530-SF1-K9
Serial Number    : abcdefgh
Part Number     : 73-7523-06
```

show sprom

```

Part Revision      : 0.0
Mfg Deviation     : 0.0
H/W Version       : 0.0
Mfg Bits          : 0
Engineer Use      : 0
snmpOID           : 9.5.1.3.1.1.2.2000
Power Consump     : -524
RMA Code          : 0-0-0-0
Supervisor Module specific block:
Block Signature   : 0x6002
Block Version     : 2
Block Length      : 103
Block Checksum    : 0x927
Feature Bits      : 0x0
HW Changes Bits   : 0x0
Card Index        : 9003
MAC Addresses     : 00-05-30-00-18-be
Number of MACs    : 4
Number of EPLD    : 1
EPLD A           : 0x0
Sensor #1         : 75,60
Sensor #2         : 60,55
Sensor #3         : -127,-127
Sensor #4         : -127,-127
Sensor #5         : -128,-128
Sensor #6         : -128,-128
Sensor #7         : -128,-128
Sensor #8         : -128,-128

```

Related Commands

Command	Description
show hardware	Displays brief information about the list of field replacable units in the switch.

show ssh

To display Secure Shell information (SSH), use the show ssh command.

```
show ssh key [dsa | rsa | rsa1] | server
```

Syntax Description

key	Displays SSH keys.
dsa	(Optional) Displays DSA SSH keys.
rsa	(Optional) Displays RSA SSH keys.
rsa1	(Optional) Displays RSA1 SSH keys.
server	Displays the SSH server status.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

To display the host key pair details for the specified key or for all keys, if no key is specified, use the show ssh key command. To display the status of the SSH protocol (enabled or disabled) and the versions that are enabled for that switch, use the show ssh server command.

Examples

The following example displays SSH server status:

```
switch# show ssh server
ssh is enabled
version 1 enabled
version 2 enabled
```

The following example displays host key pair details:

```
switch# show ssh key

rsa1 Keys generated:Sun Jan 13 07:16:26 1980
1024 35
fingerprint:
1024 67:76:02:bd:3e:8d:f5:ad:59:5a:1e:c4:5e:44:03:07
could not retrieve rsa key information
dsa Keys generated:Sun Jan 13 07:40:08 1980
ssh-dss AAAAB3NzaC1kc3MAAABBAJTCRQOydNRel2v7uiO6Fix+OTn8eGdnnDVxw5eJs50cOEXOyjaW
cMMYsEgxc9ada1NElp8Wy7GPMWGOQYj9CU0AAAAMCcWhNN18zFNOIPo7cU3t7d0iEbAAAAQbdQ8UAO
i/Cti84qFb3kTqXlS9mEhdQUo0lHcH5bw5PKfj2Y/dLR437zCBKXetPj4p7mhQ6Fq5os8RZtJEyOsNsA
AABAA0oxZbPyWeR5NHATXiyXdPI7j9i8fgyn9FNipMkOF2Mn75Mi/lqQ4NIq0gQNVQ0x27uCeQlRts/Q
wI4q68/eaw==
```

```
fingerprint:  
512 f7:cc:90:3d:f5:8a:a9:ca:48:76:9f:f8:6e:71:d4:ae
```

show ssl info

To display the Secure Socket Layer (SSL) protocol version, use the show ssl info command.

```
show ssl info
```

Syntax Description	This command has no other arguments or keywords.
---------------------------	--

Command Default	None.
------------------------	-------

Command Modes	EXEC mode.
----------------------	------------

Command History	Release	Modification
	8.4(2)	This command was introduced.

Usage Guidelines	None.
-------------------------	-------

The following example displays SSL version details:

```
switch# show ssl info
```

```
SSL version: CiscoSSL 1.0.2o.6.2.238-fips
```

show ssm provisioning

To display the attributes of the Storage Services Module (SSM) installed, use the show ssm provisioning command.

```
show ssm provisioning
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	2.0(2)	This command was introduced.
	2.1(1a)	Added Provisioning Status column to the display.

Usage Guidelines None.

Examples The following example provisions the SSM installed in the switch:

```
switch# show ssm provisioning
Module   Ports      Application      Provisioning Status
-----
         4         1-32            scsi-flow        success
```

[Table 19: show ssm provisioning Field Descriptions, on page 1830](#) describes the significant fields shown in the show ssm provisioning command output.

Table 19: show ssm provisioning Field Descriptions

Field	Description
Module	Slot where SSM is installed.
Ports	Ports available on the SSM.
Application	Feature configured on the SSM.
Provisioning Status	Displays the status of the SSM attributes.

Related Commands	Command	Description
	ssm enable feature	Enables the SCSI flow feature on the SSM.

show startup-config

To display the startup configuration file, use the show startup-config command

```
show startup-config [log]
```

Syntax Description	log (Optional) Displays execution log of last used ASCII startup configuration.
---------------------------	---

Command Default	None.
------------------------	-------

Command Modes	EXEC mode.
----------------------	------------

Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>1.0(2)</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	1.0(2)	This command was introduced.
Release	Modification				
1.0(2)	This command was introduced.				

Usage Guidelines	None.
-------------------------	-------

Examples

The following example displays the switch configuration at startup:

```
switch# show startup-config
vsan database
vsan 2
vsan 3
vsan 4
vsan 5
vsan 31
vsan 32 suspend
vsan 100
vsan 300
  interface port-channel 1
  switchport mode E
  switchport trunk mode off
  interface port-channel 2
  fspf cost 100 vsan 2
  switchport mode E
  no switchport trunk allowed vsan all
  switchport trunk allowed vsan add 1-99
  switchport trunk allowed vsan add 101-4093
  interface port-channel 3
  switchport mode E
  switchport trunk mode off
  interface port-channel 4
  switchport mode E
  no switchport trunk allowed vsan all
  switchport trunk allowed vsan add 1-99
  switchport trunk allowed vsan add 101-4093
  interface port-channel 5
  switchport mode E
  no switchport trunk allowed vsan all
  switchport trunk allowed vsan add 1-10interface port-channel 5
  switchport mode E
  no switchport trunk allowed vsan all
```

```

switchport trunk allowed vsan add 1-10
interface port-channel 8
switchport mode E
  interface vsan1
no shutdown
snmp-server community public rw
snmp-server user admin network-admin auth md5 0xe84b06201ae3bfb726a2eab9f485eb57
  localizedkey
snmp-server host 171.69.126.34 traps version 2c public udp-port 2162
snmp-server host 171.69.75.106 traps version 2c public udp-port 2162
vsan database
vsan 3 interface fc2/9
vsan 3 interface fc2/14
vsan 5 interface fc9/11
vsan 2 interface fc9/12
vsan 3 interface port-channel 3
vsan 3 interface port-channel 4
vsan 100 interface port-channel 8
boot system bootflash:/isan-8b-u sup-1
boot kickstart bootflash:/boot-3b sup-1
boot system bootflash:/isan-8b-u sup-2
boot kickstart bootflash:/boot-3b sup-2
ip default-gateway 172.22.90.1
power redundancy-mode combined force
username admin password 5 HyLyYqb4.q74Y role network-admin
zone name Z1 vsan 1
  member pwnn 10:00:00:00:77:99:60:2c
  member pwnn 21:00:00:20:37:a6:be:14
zone default-zone permit vsan 1
zoneset distribute full vsan 51-58
zoneset name ZS1 vsan 1
  member Z1
zoneset activate name ZS1 vsan 1
  interface fc2/1
switchport mode E
switchport trunk mode off
no shutdown
  interface fc2/2
  interface fc2/3
channel-group 1 force
no shutdown
interface fc2/6
channel-group 2 force
no shutdown
  interface fc2/7
switchport mode E
no shutdown
no switchport trunk allowed vsan all
switchport trunk allowed vsan add 1-25
interface fc2/9
switchport mode E
switchport trunk mode off
no shutdown
  interface fc2/10
channel-group 3 force
no shutdown
  interface fc2/12
channel-group 4 force
no shutdown
  interface fc2/14
switchport mode E
no shutdown
no switchport trunk allowed vsan all
switchport trunk allowed vsan add 1-99

```



```
switchport trunk allowed vsan add 101-4093
  interface fc2/15
channel-group 6 force
no shutdown
  interface fc2/16
channel-group 6 force
no shutdown
.
.
.
interface fc9/10
switchport mode F
no shutdown
  interface fc9/11
switchport trunk mode off
no shutdown
  interface fc9/12
switchport mode E
switchport speed 1000
switchport trunk mode off
no shutdown
  interface fc9/15
no shutdown
no switchport trunk allowed vsan all
switchport trunk allowed vsan add 1-99
switchport trunk allowed vsan add 101-4093
  interface fc9/16
switchport mode FL
no shutdown
  interface mgmt0
ip address 209.165.200.226 209.165.200.227
no shutdown
```

show switchname

To display the switch network name, use the show switchname command.

```
show switchname [serialnum]
```

Syntax Description	serialnum (Optional) Displays switch serial number.
---------------------------	---

Command Default	None.
------------------------	-------

Command Modes	EXEC mode.
----------------------	------------

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines	None.
-------------------------	-------

Examples The following example displays the name of the switch:

```
switch# show switchname
switch-123
```

The following example displays the switch name and serial number:

```
switch# show switchname
switch-123
Serial Number #1 : FOX0712S007
Serial Number #2 :
```

show system

To display the system information, use the show system command.

```
show system cores | default switchport | zone | directory information | error-id hex-id | list | exception-info
| pss shrink status [details] | redundancy status | reset-reason [module slot] | resources | standby
manual-boot | uptime
```

Syntax Description

cores	Displays core transfer option.
default	Displays system default values.
switchport	Displays default values for switch port attributes.
zone	Displays default values for a zone.
directory information	Displays information of the system manager.
error-id	Displays description about errors.
hex-id	Specifies the error ID in hexadecimal format. The range is 0x0 to 0xffffffff.
list	Specifies all error IDs.
exception-info	Displays last exception log information.
pss shrink status	Displays the last PSS shrink status.
details	(Optional) Displays detailed information on the last PSS shrink status.
redundancy status	Displays Redundancy status.
reset-reason	Displays the last four reset reason codes.
module slot	(Optional) Specifies the module number to display the reset-reason codes.
resources	Displays the CPU and memory statistics.
standby manual-boot	Displays the standby manual boot option.
uptime	Displays how long the system has been up and running.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 4.1(3)	Changed the command output.
1.0(2)	This command was introduced.

Release	Modification
3.0(1)	Added the zone option.
3.0(1)	Added the standby manual-boot keyword.

Usage Guidelines

Use the show system redundancy status command to ensure that the system is ready to accept a switchover.

Examples

The following example shows how to display the system uptime:

```
switch# show system uptime
System start time:      Fri Dec 19 02:26:05 2008
System uptime:         18 days, 6 hours, 14 minutes, 19 seconds
Kernel uptime:        18 days, 4 hours, 48 minutes, 28 seconds
switch#
```

The following example shows how to display the system redundancy status:

```
switch# show system redundancy status
Redundancy mode
-----
      administrative:  HA
      operational:    None
This supervisor (sup-2)
-----
      Redundancy state: Active
      Supervisor state: Active
      Internal state:  Active with no standby
Other supervisor (sup-1)
-----
      Redundancy state: Not present
```

The following example displays port states after the system default switchport mode f command is executed:

```
switch# show system default switchport
System default port state is down
System default trunk mode is on
System default port mode is F
```

The following example displays error information for a specified ID:

```
switch# show system error-id 0x401D0019
Error Facility: module
Error Description: Failed to stop Linecard Async Notification.
```

The following example displays the system health information:

```
switch# show system health
Current health information for module 2.
Test                Frequency      Status        Action
-----
Bootflash           10 Sec        Enabled       Enabled
EOBC                 5 Sec         Enabled       Enabled
Loopback            5 Sec         Enabled       Enabled
CF checksum         7 Sec         Enabled       Enabled
CF re-flash        30 Sec         Enabled       Enabled
-----
```

```

Current health information for module 3.
Test                Frequency      Status      Action
-----
Bootflash           10 Sec        Enabled     Enabled
EOBC                 5 Sec         Enabled     Enabled
Loopback            5 Sec         Enabled     Enabled
-----
Current health information for module 5.
Test                Frequency      Status      Action
-----
InBand              5 Sec         Enabled     Enabled
Bootflash           10 Sec        Enabled     Enabled
EOBC                 5 Sec         Enabled     Enabled
Management Port     5 Sec         Enabled     Enabled
CF checksum          7 Sec         Halted      Enabled
CF re-flash         30 Sec        Halted      Enabled
-----

```

The following example displays the system reset information:

```

switch# show system reset reason
----- reset reason for module 6 -----
1) At 520267 usecs after Tue Aug  5 16:06:24 1980
   Reason: Reset Requested by CLI command reload
   Service:
   Version: 1.2(0.73a)
2) At 653268 usecs after Tue Aug  5 15:35:24 1980
   Reason: Reset Requested by CLI command reload
   Service:
   Version: 1.2(0.45c)
3) No time
   Reason: Unknown
   Service:
   Version: 1.2(0.45c)
4) At 415855 usecs after Sat Aug  2 22:42:43 1980
   Reason: Power down triggered due to major temperature alarm
   Service:
   Version: 1.2(0.45c)

```

The following example displays system-related CPU and memory statistics:

```

switch# show system resources
Load average:  1 minute: 0.43   5 minutes: 0.17   15 minutes: 0.11
Processes   :  100 total, 2 running
CPU states  :  0.0% user,   0.0% kernel, 100.0% idle
Memory usage: 1027628K total,   313424K used,   714204K free
              3620K buffers,   22278K cache

```

Use the show system cores command to display the currently configured scheme for copying cores:

```

switch# show system cores
Transfer of cores is enabled

```

Use the show system default zone command to display the default values for a zone:

```

switch# show system default zone
system default zone default-zone permit
system default zone distribute active only

```

show system default zone

To verify the configured default zone values, use the show system default zone command.

```
show system default zone
```

Syntax Description

This command has no other arguments or keywords.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
3.0(1)	This command was introduced.
3.2(1)	Added the basic default zoning mode option.

Usage Guidelines

None.

Examples

The following example shows the default values for default-zone as deny, distribute as active only, and zone mode as basic:

```
switch# show system default zone
system default zone default-zone deny
system default zone distribute active only
system default zone mode basic
```

The following example shows the default values for default-zone as permit, distribute as full, and zone mode as enhanced.

```
switch# show system default zone
system default zone default-zone permit
system default zone distribute active full
system default zone mode enhanced
```

Related Commands

Command	Description
no system default zone mode enhanced	Configures the default value of zone mode as basic.
no system default zone distribute full	Configures the default value of distribute as active only.
no system default zone default-zone permit	Configures the default value of default zone as deny.
system default zone distribute full	Configures the default value of distribute as full.
system default zone mode enhanced	Configures the default value of zone mode as enhanced.

show system fc flow-control

To display the flow-control mode of a switch, use the show system fc flow-control command.

```
show system fc flow-control
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes Privilege EXEC (#)

Release	Modification
8.1(1)	This command was introduced.

Examples

The following example shows the system flow-control mode of a switch in Extended Receiver Ready (ER_RDY) flow-control mode:

```
switch# show system fc flow-control
System flow control is ER_RDY
```

Command	Description
show flow-control	Displays the interface flow-control mode.
system fc flow-control	Enables or disables the system flow-control mode.

show system health

To display configured Online Health Management System (OHMS) information, use the show system health command.

```
show system health [loopback frame-length | module slot | statistics loopback [interface fc slot/port | module slot timelog | timelog]]
```



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs from interface fc slot/port as follows: interface bay port | ext port }

Syntax Description

loopback	(Optional) Displays the OHMS loopback test statistics.
frame-length	(Optional) Displays the loopback frame length.
module slot	(Optional) Displays module information.
statistics	(Optional) Displays OHMS statistics.
interface	(Optional) Specifies the required interface.
fc slot/port	Specifies a Fibre Channel interface on a Cisco MDS 9000 Family Switch.
bay port | ext port	Specifies a Fibre Channel interface on a Cisco MDS 9124 Fabric Switch, a Cisco Fabric Switch for HP c-Class BladeSystem, and a Cisco Fabric Switch for IBM BladeCenter.
iscsi slot/port	(Optional) Specifies the iSCSI interface at the specified slot and port.
timelog	(Optional) Displays the loopback round-trip times.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(4)	This command was introduced.
3.1(2)	Added the bay port | ext port keywords and arguments.

Usage Guidelines

None.

Examples

The following example displays the current health of all modules in the switch:

```
switch# show system health
Current health information for module 1.
```



```

Test                Frequency      Status      Action
-----
Bootflash           10 Sec        Running     Enabled
EOBC                 5 Sec         Running     Enabled
Loopback             5 Sec         Running     Enabled
CF checksum          7 Days        Halted      Enabled
CF re-flash         30 Days       Halted      Enabled
-----
Current health information for module 2.
Test                Frequency      Status      Action
-----
Bootflash           10 Sec        Running     Enabled
EOBC                 5 Sec         Running     Enabled
Loopback             5 Sec         Running     Enabled
-----
Current health information for module 5.
Test                Frequency      Status      Action
-----
Bootflash           10 Sec        Running     Enabled
EOBC                 5 Sec         Running     Enabled
Loopback             5 Sec         Running     Enabled
-----
Current health information for module 6.
Test                Frequency      Status      Action
-----
Bootflash           10 Sec        Running     Enabled
EOBC                 5 Sec         Running     Enabled
Loopback             5 Sec         Running     Enabled
CF checksum          7 Days        Halted      Enabled
CF re-flash         30 Days       Halted      Enabled
-----
Current health information for module 7.
Test                Frequency      Status      Action
-----
InBand              5 Sec         Running     Enabled
Bootflash           10 Sec        Running     Enabled
EOBC                 5 Sec         Running     Enabled
Management Port     5 Sec         Running     Enabled
-----
Current health information for module 8.
Test                Frequency      Status      Action
-----
InBand              5 Sec         Running     Enabled
Bootflash           10 Sec        Running     Enabled
EOBC                 5 Sec         Running     Enabled
-----
Current health information for module 10.
Test                Frequency      Status      Action
-----
Bootflash           10 Sec        Running     Enabled
EOBC                 5 Sec         Running     Enabled
Loopback             5 Sec         Running     Enabled
-----
Current health information for module 11.
Test                Frequency      Status      Action
-----
Bootflash           10 Sec        Running     Enabled
EOBC                 5 Sec         Running     Enabled
Loopback             5 Sec         Running     Enabled
CF checksum          7 Days        Halted      Enabled
CF re-flash         30 Days       Halted      Enabled
-----
Current health information for module 12.
Test                Frequency      Status      Action

```

show system health

```

-----
Bootflash          10 Sec          Running          Enabled
EOBC               5 Sec           Running          Enabled
Loopback          5 Sec           Running          Enabled
-----
Current health information for module 13.
Test               Frequency       Status           Action
-----
Bootflash          10 Sec         Running          Enabled
EOBC               5 Sec          Running          Enabled
-----

```

The following example displays the health statistics for all modules:

```

switch# show system health statistics
Test statistics for module # 1
-----
Test Name          State           Freq(s)         Run             Pass            Fail CFail Errs
-----
Bootflash          Running         5s              12900           12900           0 0 0
EOBC               Running         5s              12900           12900           0 0 0
Loopback           Running         5s              12900           12900           0 0 0
-----
Test statistics for module # 3
-----
Test Name          State           Freq(s)         Run             Pass            Fail CFail Errs
-----
Bootflash          Running         5s              12890           12890           0 0 0
EOBC               Running         5s              12890           12890           0 0 0
Loopback           Running         5s              12892           12892           0 0 0
-----
Test statistics for module # 5
-----
Test Name          State           Freq(s)         Run             Pass            Fail CFail Errs
-----
InBand             Running         5s              12911           12911           0 0 0
Bootflash          Running         5s              12911           12911           0 0 0
EOBC               Running         5s              12911           12911           0 0 0
Management Port    Running         5s              12911           12911           0 0 0
-----
Test statistics for module # 6
-----
Test Name          State           Freq(s)         Run             Pass            Fail CFail Errs
-----
InBand             Running         5s              12907           12907           0 0 0
Bootflash          Running         5s              12907           12907           0 0 0
EOBC               Running         5s              12907           12907           0 0 0
-----
Test statistics for module # 8
-----
Test Name          State           Freq(s)         Run             Pass            Fail CFail Errs
-----
Bootflash          Running         5s              12895           12895           0 0 0
EOBC               Running         5s              12895           12895           0 0 0
Loopback           Running         5s              12896           12896           0 0 0
-----

```

The following example displays the statistics for a module:

```

switch# show system health statistics module 3
Test statistics for module # 3
-----
Test Name          State           Freq(s)         Run             Pass            Fail CFail Errs
-----

```

```

-----
Bootflash           Running           5s    12932  12932    0    0    0
EOBC                Running          5s    12932  12932    0    0    0
Loopback           Running          5s    12934  12934    0    0    0
-----

```

The following example displays the loopback test statistics for the entire switch:

```

switch# show system health statistics loopback
-----
Mod Port Status           Run    Pass    Fail    CFail Errs
  1  16 Running          12953  12953    0      0    0
  3  32 Running          12945  12945    0      0    0
  8   8 Running          12949  12949    0      0    0
-----

```

The following example displays the loopback test statistics for a specified interface:

```

switch# show system health statistics loopback interface fc 3/1
-----
Mod Port Status           Run    Pass    Fail    CFail Errs
  3   1 Running            0      0      0      0    0
-----

```

The following table describes the status value for each module

Table 20: Shows the Status Value for Each Module

Status	Description
Running	OHMS test is running and there are no errors detected.
Failing	OHMS test has started to fail or in the process of failing.
Failed	OHMS test failed.
Stopped	OHMS test stopped. This is a transient state (for example, during upgrades and downgrades).
Exited	OHMS test process or thread exited while running the test.
Not Configured	OHMS test configured to not run on the module.
Int Failed	OHMS test failed because of internal failure.
Diag Failed	OHMS test failed in performing diagnostics.
Suspended	OHMS test suspended because of too many error conditions. OHMS cannot complete the test to determine the hardware status.
Halted	OHMS test is halted because the test is not intended to run on the module. (for example, a specific hardware of which a test is operating is not found on the module).
Enabled	OHMS is disabled by the user but not the test.
Disabled	OHMS test is disabled by the user.



Note Interface-specific counters will remain at zero unless the module-specific loopback test reports errors or failures.

The following example displays the loopback test time log for all modules:

```
switch# show system health statistics loopback timelog
-----
Mod      Samples      Min (usecs)    Max (usecs)    Ave (usecs)
  1         1872          149            364            222
  3         1862          415            743            549
  8         1865          134            455            349
-----
```

The following example displays the loopback test statistics for a specified module:

```
switch# show system health statistics loopback module 8 timelog
-----
Mod      Samples      Min (usecs)    Max (usecs)    Ave (usecs)
  8         1867          134            455            349
-----
```

The following example displays the loopback test statistics for an interface on a Cisco Fabric Switch for HP c-Class BladeSystem:

```
switch# show system health statistics loopback interface bay1
-----
Mod Port Status          Run    Pass    Fail    CFail Errs
  1  16 Running              0      0      0      0      0
-----
```

The following example displays the frequency and status of the CRC checksum test and a flash update on a single module:

```
switch# show system health module 5
Current health information for module 5.
Test          Frequency      Status      Action
-----
Bootflash     10 Sec        Running     Enabled
EOBC          5 Sec         Running     Enabled
Loopback      5 Sec         Running     Enabled
CF checksum   7 Days        Running     Enabled
CF re-flash   30 Days       Running     Enabled
-----
```

The following example displays the CRC checksum test and the flash update statistics on all modules:

```
switch# show system health statistics
Test statistics for module 2
-----
Test Name      State          Frequency    Run    Pass    Fail    CFail    Errs
-----
Bootflash      Running        10s         1130   1130    0        0        0
EOBC           Running        5s          2268   2268    0        0        0
Loopback       Running        5s          2279   2279    0        0        0
CF checksum    Failed         20s         11      0       23       12       0
CF re-flash    Suspended      30s         12      0        0        0       12
-----
```

Test statistics for module 3

```
-----
Test Name          State          Frequency  Run    Pass    Fail  CFail  Errs
-----
Bootflash          Running        10s       1295   1295    0     0     0
EOBC               Running        5s        2591   2591    0     0     0
-----
```

Test statistics for module 4

```
-----
Test Name          State          Frequency  Run    Pass    Fail  CFail  Errs
-----
Bootflash          Running        10s       1299   1299    0     0     0
EOBC               Running        5s        2598   2598    0     0     0
Loopback           Running        5s        2598   2598    0     0     0
CF checksum        Running        7s        2275   2274    0     0     0
CF re-flash        Running        30s       434    434     0     0     0
-----
```

Test statistics for module 5

```
-----
Test Name          State          Frequency  Run    Pass    Fail  CFail  Errs
-----
InBand             Running        5s        2615   2615    0     0     0
Bootflash          Running        10s       1307   1307    0     0     0
EOBC               Running        5s        2615   2615    0     0     0
Management Port    Running        5s        2615   2615    0     0     0
CF checksum        Running        7s        2289   2289    0     0     0
CF re-flash        Running        30s       437    436     0     0     0
-----
```

Related Commands

Command	Description
system health module	Configures Online Health Management System (OHMS) features.

show system health isl result interface

To display the results of a Single Hop or Multihop Traffic Test, use the show system health isl result interface command.

```
show system health isl result interface interface id
```

Syntax Description	interface id Specifies the slot and port of an interface.
Command Default	None
Command Modes	Privileged EXEC mode
Command History	Release Modification
	8.3(1) This command was introduced.

This example shows the results of a Multihop Hop Traffic Test:

```
switch# show system health isl result interface fc 1/18
-----
Multi hop Traffic test Result for port:   fc1/7
Packets Transmitted:                      3065550
Packets Recieved:                         3065550
ISL traffic Efficiency (percent):         100.0000
-----
```

show system internal snmp lc

To display the active policies of the line card, use the show system internal snmp lc command.

```
show system internal snmp lc module-id | counters
```

Syntax Description	Parameter	Description
	module-id	Specifies the module ID number.
	counters	Displays the port monitor line card information for module counters.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 4.1(1b)	This command was introduced.

Usage Guidelines None.

Examples The following example shows the port monitor line card information:

```
switch# show system internal snmp lc 4
-----
No. of ports monitored: 0
-----
Ports:
Time since activation: 23:51:52 UTC Jun 30 2000
-----
-----
Counter          Threshold  Interval  Rising Threshold  event  Falling Threshold
event In Use
-----
Link Loss        Delta      60         5                  4      1                  4
  Yes
Sync Loss        Delta      60         5                  4      1                  4
--More--
switch#
```

The following example shows the port monitor line card information for the module counter:

```
switch# show system internal snmp lc counters
switch#
```

Related Commands

Command	Description
show port monitor active	Shows port monitor active policies.

show system timestamp format

To display the logging timestamp format, use the show system timestamp format command.

```
show system timestamp format
```

Command Default Display the logging timestamp format.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	8.4(1)	This command was introduced.

Examples

The following example displays that the logging timestamp format is set to RFC 5424 compliant:

```
switch# configure terminal
switch(config)# show system timestamp format
System timestamp format: rfc5424
```

The following example displays that the logging timestamp format is set to multiple formats:

```
switch# configure terminal
switch(config)# show system timestamp format
System timestamp format: mixed
```

Related Commands	Command	Description
	system timestamp format	Configures the RFC 5424 compliant timestamp format.

show tacacs+

To display the TACACS+ Cisco Fabric Services (CFS) distribution status and other details, use the show tacacs+ command.

show tacacs+ distribution status | pending | pending-diff

Syntax Description

distribution status	Displays the status of the TACACS+ CFS distribution.
pending	Displays the pending configuration that is not yet applied.
pending-diff	Displays the difference between the active configuration and the pending configuration.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, TACACS+ must be enabled using the tacacs+ enable command.

Examples

The following example shows how to display the TACACS+ distribution status:

```
switch# show tacacs+ distribution status
session ongoing: no
session db: does not exist
merge protocol status: merge activation done
last operation: none
last operation status: none
```

Related Commands

Command	Description
tacacs+ distribute	Initiates TACACS+ configuration distribution.
tacacs+ enable	Enables TACACS+.

show tacacs-server

To display all configured TACACS+ server parameters, use the show tacacs-server command.

show tacacs-server [server-name|ipv4-address|ipv6-address] [directed-request | groups | sorted | statistics]

Syntax Description	
server-name	(Optional) Specifies the TACACS+ server DNS name. The maximum is 256.
ipv4-address	(Optional) Specifies the TACACS+ server IP address in the format A.B.C.D .
ipv6-address	(Optional) Specifies the TACACS+ server IP address in the format X:X::X .
directed-request	(Optional) Displays an enabled directed request TACACS+ server configuration.
groups	(Optional) Displays configured TACACS+ server group information.
sorted	(Optional) Displays TACACS+ server information sorted by name.
statistics	(Optional) Displays TACACS+ statistics for the specified TACACS+ server.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	3.0(1)	<ul style="list-style-type: none"> Added the server-name , ipv4-address , and ipv6-address arguments. Added the directed-request and statistics options.

Usage Guidelines None.

Examples The following command displays the configured TACACS+ server information:

```
switch# show tacacs-server
Global TACACS+ shared secret:tacacsPword
timeout value:30
total number of servers:3
following TACACS+ servers are configured:
  171.71.58.91:
    available on port:2
  cisco.com:
    available on port:49
  171.71.22.95:
    available on port:49
    TACACS+ shared secret:MyKey
```

The following command displays the configured TACACS+ server groups:

```
switch# show tacacs-server groups
total number of groups:1
following TACACS+ server groups are configured:
  group TacServer:
    server 171.71.58.91 on port 2
```

show tech-support

To display information useful to technical support when reporting a problem, use the show tech-support command in EXEC mode.

```
show tech-support [aaa | aam | acl [details] [commands] | all binary bootflash: | logflash: | slot0: |
amm module number | analytics | assoc_mgr | biosd | bloggerd | bloggerd-all | bootvar | brief | callhome
| cdp | cert-enroll | cfs [name application-name] [commands] | cli | clis [brief] | clock_manager | commands
| debx | details [include-time | commands] | device-alias | dftm module number | dhcp | eem | eltm [lc
vdc-once | vdc-specific [detail] | sup-only] | epp | eth-qos [server-only] [all] [snmp] | ethpm | ethport |
fc-management | fc-redirect | fc2 [commands] | fcdomain [commands] | fcns vsan id_range | fcoe [commands]
| fcoe_mgr | fcs | fib module number | fib-all | flogi | forwarding l2 | l3 | nve | otvmulticast [detail] | fspf
[commands] | gold | gpixm | ha [standby] [commands] | ilc_helper | im | inband | include-time | interface |
l2fm [binary bootflash: | logflash: | slot0: | [clients | l2dbg] [module number] | [detail]] | l2pt [detail] |
lacp [all] | license | lim | link-diag [commands] | lldp | logging | module number | all | monitor | monitorc
| monitorc-all | npacl [brief] | ntp | page [time-optimized] | pds [brief] | pfstat | pixm | pixm-all | pixmc |
pixmc-all | pktmgr [brief] | plsm | pltfm-config | pnp | port | port-channel | port-security [vsan id_range] |
qos | radius | rib | rlir [vsan id_range] | rscn [vsan id_range] | security | session-mgr | slowdrain [commands]
| snm | snmp | stats_client | stp | sup-filesys | sysmgr [commands] | tacacs+ | telemetry | time-optimized
[include-time] | vlan | vntagc-all | vrrp | vsan id_range [commands] | vshd | xml | zone vsan id_range
[commands]]
```



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs from interface fc slot/port as follows: interface {bay port | ext port }

Syntax Description

aaa	(Optional) Displays information for authentication, authorization, and accounting (AAA) troubleshooting.
aam	(Optional) Displays information for Abstract ACL Manager troubleshooting.
acl	(Optional) Displays information for ACL troubleshooting.
all	(Optional) Collects detailed information of all applications for troubleshooting.
amm module number	(Optional) Collects detailed information for Advanced Management Module (AMM) troubleshooting.
analytics	(Optional) Collects detailed information for analytics troubleshooting.
assoc_mgr	(Optional) Collects detailed information for assoc_mgr troubleshooting.
binary	Collects detailed information of all applications in binary format for troubleshooting.
biosd	(Optional) Collects BIOS install log for troubleshooting.
bloggerd	(Optional) Collects detailed information for bloggerd troubleshooting.
bloggerd-all	(Optional) Collects detailed information from all modules for bloggerd troubleshooting.

bootflash:	Bootflash directory.
bootvar	(Optional) Displays information for bootvar troubleshooting.
brief	(Optional) Displays a summary of the information for a component.
callhome	(Optional) Displays callhome troubleshooting information.
cdp	(Optional) Collect information for Cisco Discovery Protocol (CDP) troubleshooting.
cert-enroll	(Optional) Displays certificates information.
cfs	(Optional) Displays information for Cisco Fabric Services (CFS) troubleshooting.
cli	(Optional) Collects information for parser troubleshooting.
clients module number	(Optional) Displays information of the L2FM troubleshooting.
clis	(Optional) Collects information for CLI server troubleshooting.
clock_manager	(Optional) Collects information for clock manager troubleshooting.
commands	(Optional) Show commands that are executed as part of show tech-support commands.
dcbx	(Optional) Collects information for Data Center Bridging Exchange (DCBX) component.
details	(Optional) Displays detailed information for each show command.
device-alias	(Optional) Displays device alias information.
dftm module number	(Optional) Collects information for DFTM troubleshooting.
dhcp	(Optional) Collects information for DHCP troubleshooting.
eem	(Optional) Displays Embedded Event Manager (EEM) information for troubleshooting.
eltn	(Optional) Collects information for ELTM troubleshooting.
epp	(Optional) Collects information for exchange peer parameters (EPP) troubleshooting.
ethpm	(Optional) Collects information for Ethernet port manager (ethpm) troubleshooting.
ethport	(Optional) Collects information for Ethernet port (ethport) troubleshooting.
eth-qos	(Optional) Displays IP QoS manager information for troubleshooting.
fc2	(Optional) Displays fc2 information for troubleshooting.
fcdomain	(Optional) Displays information for Fibre Channel domain troubleshooting.
fc-management	(Optional) Displays Fibre Channel Common Transport (FC-CT) Management Security information for troubleshooting.

fcns	(Optional) Displays information for Fibre Channel Naming Server (FCNS) troubleshooting.
fcoe	(Optional) Collects information for Fibre Channel over Ethernet (FCoE) troubleshooting.
fcoe_mgr	(Optional) Collects information for Fibre Channel over Ethernet (FCoE) Manager troubleshooting.
fc-redirect	(Optional) Displays information for Fibre Channel redirect information troubleshooting.
fcs	(Optional) Collects information for Fabric Configuration Server (FCS) troubleshooting.
fib module number	(Optional) Collects information for Fibre Channel and FCoE FIB troubleshooting.
fib-all	(Optional) Collects information from all modules for Fibre Channel and FCoE FIB troubleshooting.
flogi	(Optional) Collects information for fabric login (FLOGI) troubleshooting.
forwarding	(Optional) Forwarding debug information.
fspf	(Optional) Displays information for FSPF troubleshooting.
gold	(Optional) Displays information for Generic Online Diagnostics (GOLD) troubleshooting.
gpixm	(Optional) Collects information for global PIXM troubleshooting.
ha	(Optional) Collects information for high availability (HA) troubleshooting.
ilc_helper	(Optional) Collects information for intelligent line card (ILC) helper troubleshooting.
im	(Optional) Collects information for IM troubleshooting.
inband	(Optional) Displays information for in-band management troubleshooting.
include-time	(Optional) Collects the tech-support information and captures the time taken to execute each command.
interface	(Optional) Collects information for interface level troubleshooting.
l2	Layer 2 debugging information.
l2dbg module number	(Optional) Captures additional information of the L2FM clients running on modules for troubleshooting.
l2fm	(Optional) Displays information for L2FM troubleshooting.
l2pt	(Optional) Displays information for L2PT troubleshooting.
l3	Layer 3 debugging information.

lACP	(Optional) Displays information for Link Aggregation Control Protocol (LACP) troubleshooting.
lc	(Optional) Collects information for modules troubleshooting only.
license	(Optional) Displays licensing information.
lim	(Optional) Collects information for LIM troubleshooting.
link-diaG	(Optional) Collects information for link diagnostics troubleshooting.
lldp	(Optional) Collects information for Link Layer Discovery Protocol (LLDP) troubleshooting.
logflash:	Logflash directory.
logging	(Optional) Displays information for logging troubleshooting.
monitor	(Optional) Displays information for monitor troubleshooting.
monitore	(Optional) Displays information for monitore troubleshooting.
monitore-all	(Optional) Displays information for module monitore troubleshooting.
multicast	Multicast debugging information.
name application-name	(Optional) Specifies an application that uses the CFS infrastructure. Maximum length is 64 characters.
npaCl	(Optional) Displays information for npaCl troubleshooting.
ntp	(Optional) Displays information for Network Time Protocol (NTP) troubleshooting.
nve	Network Virtualization Edge (NVE) debugging information.
otv	Overlay Transport Virtualization (OTV) debugging information.
page	(Optional) Displays tech-support information page wise.
pds	(Optional) Displays PDS information for troubleshooting.
pfstat	(Optional) Collects information for pfstat troubleshooting.
pixm	(Optional) Collects information for local VDC PIXM troubleshooting.
pixm-all	(Optional) Collects information for PIXM troubleshooting.
pixmc	(Optional) Collects information for PIXMC troubleshooting.
pixmc-all	(Optional) Collects information for module PIXMC troubleshooting.
pktmgr	(Optional) Displays packet manager information for troubleshooting.
plsm	(Optional) Displays information for PLSM troubleshooting.
pltfm-config	(Optional) Collects information for platform configuration troubleshooting.

pnp	(Optional) Displays plug and play information for troubleshooting.
port	(Optional) Displays information for port manager troubleshooting.
port-channel	(Optional) Displays information for PortChannel troubleshooting.
port-security	(Optional) Displays information for port security troubleshooting.
qos	(Optional) Displays information for QoS troubleshooting.
radius	(Optional) Displays information for radius troubleshooting.
rib	(Optional) Collects information for routing information base (RIB) troubleshooting.
rlir	(Optional) Displays information for Registered Link Incident Report (RLIR) troubleshooting.
rscn	(Optional) Displays information for Registered State Change Notification (RSCN) troubleshooting.
security	(Optional) Displays information for security troubleshooting.
server-only	(Optional) Displays only IP QoS manager server information for troubleshooting.
session-mgr	(Optional) Collects information for session manager troubleshooting.
slot0:	External storage directory.
slowdrain	(Optional) Collects information for slowdrain troubleshooting.
snm	(Optional) Displays information for SNM troubleshooting.
snmp	(Optional) Displays information for SNMP troubleshooting.
standby	(Optional) Collects information from standby supervisor for high availability (HA) troubleshooting.
stats_client	(Optional) Displays information for status client troubleshooting.
stp	(Optional) Displays information for Spanning Tree Protocol (STP) troubleshooting.
sup-filesys	(Optional) Displays information for system file troubleshooting.
sup-only	(Optional) Collects only supervisor specific information for troubleshooting.
sysmgr	(Optional) Displays information for system management troubleshooting.
tacacs+	(Optional) Displays information for Terminal Access Controller Access Control device Plus (TACACS+) troubleshooting.
telemetry	(Optional) Displays information for telemetry troubleshooting.
time-optimized	(Optional) Collects tech-support information faster, but requires more memory and disk space.
vdc-once	Collects information for all modules.

vdc-specific	Collects only virtual device context (VDC) specific information.
vlan	(Optional) Collects information for VLAN troubleshooting.
vntagc-all	(Optional) Collects information for module VNTAGC troubleshooting.
vrrp	(Optional) Displays information for Virtual Router Redundancy Protocol (VRRP) troubleshooting.
vsan vsan-id	Displays information for VSAN troubleshooting. Specifies a VSAN ID. The range is 1 to 4093.
vshd	(Optional) Displays information for VSHD troubleshooting.
xml	(Optional) Collects information for XML troubleshooting.
zone	Displays information for zone server troubleshooting.

Command Default

The default output of the show tech-support command includes the output of the following show commands:

- show version
- show environment
- show module
- show hardware
- show running-config
- show interface
- show accounting log
- show process
- show process log
- show processes log details
- show flash

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(4)	This command was introduced.
3.0(1)	Added the fcdomain, port-channel, and zone options.
3.0(3)	Added the cfs, fcip, fspf, fta, ip, license, prefpath, and vrrp options.
3.1(1)	Added the device-alias keyword.
3.1(2)	Added the bay port | ext port keywords and arguments.

Usage Guidelines

The show tech-support command is useful when collecting a large amount of information about your switch for troubleshooting purposes. The output of this command can be provided to technical support representatives when reporting a problem.

The show tech-support command displays the output of several show commands at once. The output from this command varies depending on your configuration. Use the show tech-support command in EXEC mode to display general information about the switch when reporting a problem.

You can choose to have detailed information for each command or even specify the output for a particular interface, module, or VSAN.

Examples

The following example displays technical support information for a specific module:

```
switch# show tech-support module 1
'terminal length 0'
'show module '
Mod  Ports  Module-Type                Model                Status
---  ---
1    16     1/2 Gbps FC/Supervisor    DS-X9216-K9-SUP     active *
2    32     1/2 Gbps FC Module       DS-X9032             ok
Mod  Sw      Hw      World-Wide-Name(s) (WWN)
---  ---
1    1.0(0.271)  0.0    20:01:00:05:30:00:21:9e to 20:10:00:05:30:00:21:9e
2    1.0(0.271)  0.0    20:41:00:05:30:00:21:9e to 20:60:00:05:30:00:21:9e
Mod  MAC-Address(es)          Serial-Num
---  ---
1    00-05-30-00-40-b6 to 00-05-30-00-40-ba
2    00-05-30-00-11-22 to 00-05-30-00-11-26
* this terminal session
'show environment'
Clock:
-----
Clock      Model                Hw      Status
-----
A          Clock Module        --      ok/active
B          Clock Module        --      ok/standby
Fan:
-----
Fan        Model                Hw      Status
-----
Chassis    DS-2SLOT-FAN        0.0     ok
PS-1       --                   --      ok
PS-2       --                   --      absent
Temperature:
-----
Module    Sensor  MajorThresh  MinorThres  CurTemp  Status
          (Celsius) (Celsius)    (Celsius)
-----
1         1       75           60          30       ok
1         2       65           50          28       ok
1         3       -127         -127        40       ok
1         4       -127         -127        36       ok
2         1       75           60          32       ok
2         2       65           50          26       ok
2         3       -127         -127        41       ok
2         4       -127         -127        31       ok
```

The show tech-support brief command provides a summary of the current running state of the switch.

```
switch# show tech-support brief
Switch Name      : vegas01
```

```

Switch Type           : DS-X9216-K9-SUP
Kickstart Image       : 1.3(2a) bootflash:///m9200-ek9-kickstart-mz.1.3.1.10.bin
System Image          : 1.3(2a) bootflash:///m9200-ek9-mz.1.3.1.10.bin
IP Address/Mask       : 10.76.100.164/24
Switch WWN            : 20:00:00:05:30:00:84:9e
No of VSANs          : 9
Configured VSANs     : 1-6,4091-4093
VSAN 1:               name:VSAN0001, state:active, interop mode:default
                      domain id:0x6d(109), WWN:20:01:00:05:30:00:84:9f [Principal]
                      active-zone:VR, default-zone:deny
VSAN 2:               name:VSAN0002, state:active, interop mode:default
                      domain id:0x7d(125), WWN:20:02:00:05:30:00:84:9f [Principal]
                      active-zone:<NONE>, default-zone:deny
VSAN 3:               name:VSAN0003, state:active, interop mode:default
                      domain id:0xbe(190), WWN:20:03:00:05:30:00:84:9f [Principal]
                      active-zone:<NONE>, default-zone:deny
VSAN 4:               name:VSAN0004, state:active, interop mode:default
                      domain id:0x5a(90), WWN:20:04:00:05:30:00:84:9f [Principal]
                      active-zone:<NONE>, default-zone:deny
VSAN 5:               name:VSAN0005, state:active, interop mode:default
                      domain id:0x13(19), WWN:20:05:00:05:30:00:84:9f [Principal]
                      active-zone:<NONE>, default-zone:deny
VSAN 6:               name:VSAN0006, state:active, interop mode:default
                      domain id:0x1f(31), WWN:20:06:00:05:30:00:84:9f [Principal]
                      active-zone:<NONE>, default-zone:deny
VSAN 4091:            name:VSAN4091, state:active, interop mode:default
                      domain id:0x08(8), WWN:2f:fb:00:05:30:00:84:9f [Principal]
                      active-zone:<NONE>, default-zone:deny
VSAN 4092:            name:VSAN4092, state:active, interop mode:default
                      domain id:0x78(120), WWN:2f:fc:00:05:30:00:84:9f [Principal]
                      active-zone:<NONE>, default-zone:deny
VSAN 4093:            name:VSAN4093, state:active, interop mode:default
                      domain id:0x77(119), WWN:2f:fd:00:05:30:00:84:9f [Principal]
                      active-zone:<NONE>, default-zone:deny

```

```

-----
Interface  Vsan   Admin  Admin  Status          FCOT  Oper  Oper  Port
          Mode   Trunk  Mode
          Mode
-----
fc1/1      1       auto   on     fcotAbsent      --    --    --    --
fc1/2      1       auto   on     fcotAbsent      --    --    --    --
fc1/3      1       auto   on     fcotAbsent      --    --    --    --
fc1/4      1       auto   on     fcotAbsent      --    --    --    --
fc1/5      1       auto   on     notConnected    swl   --    --    --
fc1/6      1       auto   on     fcotAbsent      --    --    --    --
fc1/7      1       auto   on     fcotAbsent      --    --    --    --
fc1/8      1       auto   on     fcotAbsent      --    --    --    --
fc1/9      1       auto   on     fcotAbsent      --    --    --    --
fc1/10     1       auto   on     fcotAbsent      --    --    --    --
fc1/11     1       auto   on     fcotAbsent      --    --    --    --
fc1/12     1       auto   on     fcotAbsent      --    --    --    --
fc1/13     1       auto   on     fcotAbsent      --    --    --    --
fc1/14     1       auto   on     fcotAbsent      --    --    --    --
fc1/15     1       auto   on     fcotAbsent      --    --    --    --
fc1/16     1       auto   on     fcotAbsent      --    --    --    --

```

```

-----
Interface          Status          Speed
                  (Gbps)
-----
sup-fc0            up              1

```

```

-----
Interface          Status  IP Address  Speed  MTU
-----
mgmt0              up      10.76.100.164/24  100 Mbps  1500

```

```
Power Supply:
-----
PS  Model                Power      Power      Status
   (Watts)    (Amp @42V)
-----
1   WS-CAC-950W          919.38    21.89     ok
2   --                  --         --         absent
Mod Model                Power      Power      Power      Power      Status
   (Watts)    (Amp @42V) (Watts)    (Amp @42V)
-----
1   DS-X9216-K9-SUP     220.08    5.24      220.08    5.24      powered-up
2   DS-X9032            199.92    4.76      199.92    4.76      powered-up
Power Usage Summary:
-----
Power Supply redundancy mode:          redundant
Total Power Capacity                  919.38   W
Power reserved for Supervisor(s) [-]  220.08   W
Power reserved for Fan Module(s) [-]  47.88    W
Power currently used by Modules [-]    199.92   W
-----
Total Power Available                  451.50
```

The following example displays zone server information for VSAN 1:

```
switch# show tech-support zone vsan 1
`show zone status vsan 1`
VSAN: 1 default-zone: permit distribute: active only Interop: default
      mode: basic merge-control: allow session: none
      hard-zoning: enabled
Default zone:
      qos: disabled broadcast: disabled ronly: disabled
Full Zoning Database :
      Zonesets:0 Zones:0 Aliases: 0
Active Zoning Database :
      Name: vhost-zone Zonesets:1 Zones:9
Status: Activation failed [Error: Unknown error Dom 21]:
      at 23:36:44 UTC Dec 19 2005
```

The following example displays a partial listing of output from the show tech-support device-alias command:

```
switch# show tech-support device-alias
`show device-alias database`
device-alias name dev2 pwnn 10:00:00:00:c9:2e:31:37
device-alias name sdv1 pwnn 50:00:53:00:00:85:c0:01
device-alias name svcl pwnn 20:0f:00:05:30:00:eb:48
device-alias name sdv-1 pwnn 50:00:53:00:00:e9:7f:a1
device-alias name sdv-2 pwnn 50:00:53:00:01:4e:af:a1
device-alias name sdv-3 pwnn 50:00:53:00:01:da:2f:a1
device-alias name sdv-4 pwnn 50:00:53:00:01:cb:af:a1
device-alias name qloGics pwnn 21:00:00:e0:8b:06:61:d4
device-alias name sdv-501 pwnn 50:00:53:00:00:85:c1:f5
device-alias name sym-hba1 pwnn 50:06:04:82:ca:e1:26:83
device-alias name fred-hba1 pwnn 22:00:00:20:37:d2:03:ed
device-alias name fred-hba2 pwnn 22:00:00:20:37:d2:10:f9
device-alias name sdv1-4001 pwnn 50:00:53:00:01:0f:0f:a1
device-alias name sdv2-4001 pwnn 50:00:53:00:00:66:4f:a1
device-alias name HDS33074-C pwnn 50:06:0e:80:03:81:32:06
device-alias name clarion2345 pwnn 50:06:01:61:10:60:14:f5
device-alias name iscsi-alias pwnn 27:09:00:08:00:ad:00:03
device-alias name seaGate0306 pwnn 22:00:00:20:37:d2:03:d6
Total number of entries = 18
```

show tech-support fc-management

To display the Fibre Channel Common Transport (FC-CT) management security technical support information, use the show tech-support fc-management command.

```
show tech-support fc-management
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode

Command History	Release	Modification
	6.2(9)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display the FC-CT management security technical support information:

```
switch(config)# show tech-support fc-management
`show fc-management status`
Mgmt Security Enabled
`show fc-management database`
Fc-Management Security Database
-----
VSAN          PWWN                FC-CT Permissions per FC services
-----
1      01:01:01:01:01:01:01:01  Zone (RW), Unzoned-NS (RW), FCS (RW), FDMI (RW)
-----
Total 1 entries
`show fc-management shared-db`
Empty Database
switch(config)#
```

Related Commands	Command	Description
	show fc-management	Displays the FC-CT management security information.

show tech-support sme

To display the information for Cisco SME technical support, use the show tech-support sme command.

```
show tech-support sme compressed bootflash: | tftp:
```

Syntax Description	compressed	Saves the compressed Cisco SME .
	bootflash:	Specifies the filename that need to be stored.
	tftp:	Specifies the filename that need to be stored.

Command Default None.

Command Modes EXEC mode

Command History	Release	Modification
	3.3(1c)	This command was introduced.
	NX-OS 4.1(1c)	Added the Command output.

Usage Guidelines None.

Examples The following example displays the information for SME technical support:

```
sw-sme-n1# show tech-support sme
'show startup-config'
version 4.1(1)
username admin password 5 $1$jC/GIid6$PuNDstXwdAnwGaxxjdx150 role network-admin
no password strength-check
feature telnet
ntp server 10.81.254.131
kernel core target 0.0.0.0
kernel core limit 1
aaa group server radius
snmp-server user admin network-admin auth md5 0x7eedfdadb219506ca61b0e2957cc7ef5
priv 0x7eedfdadb219506ca61b0e2957cc7ef5 localizedkey
snmp-server host 171.71.49.157 informs version 2c public udp-port 2162
snmp-server enable traps license
snmp-server enable traps entity fru
device-alias database
  device-alias name sme-host-171-hba0 pwn 21:01:00:e0:8b:39:d7:57
  device-alias name sme-host-171-hba1 pwn 21:00:00:e0:8b:19:d7:57
  device-alias name sme-host-172-hba0 pwn 21:01:00:e0:8b:39:c2:58
  device-alias name sme-host-172-hba1 pwn 21:00:00:e0:8b:19:c2:58
  device-alias name sme-sanblaze-port0-tgt0 pwn 2f:ff:00:06:2b:0d:39:08
  device-alias name sme-sanblaze-port0-tgt1 pwn 2f:df:00:06:2b:0d:39:08
--More--
```

show telemetry

To display the telemetry configuration, use the show telemetry command.

```
show telemetry control database [destination-groups | destinations | sensor-groups | sensor-paths |
subscriptions] | stats | data collector brief | details | pipeline stats | transport session_id [errors | stats]
```

Syntax Description

control database	Telemetry database information.
control stats	Telemetry statistics information.
destination-groups	Telemetry database information of destination groups.
destinations	Telemetry database information of destination IP addresses.
sensor-groups	Telemetry database information of sensor groups.
sensor-paths	Telemetry database information of sensor paths.
subscriptions	Telemetry database information of subscriptions.
data collector	Telemetry data collector information.
brief	Brief information of the telemetry data collector.
details	Detailed information of telemetry data collector.
pipeline stats	Telemetry pipeline statistics.
transport session_id	Detailed session information for a specific transport session.
errors	Telemetry transport session errors.
stats	Telemetry transport session statistics.

Command Default

Displays telemetry configuration information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.3(1)	This command was introduced.

Examples

This example displays the internal databases that reflect the configuration of STS:

```
switch# show telemetry control database ?
  <CR>
  >          Redirect it to a file
  >>        Redirect it to a file in append mode
```



```

destination-groups Show destination-groups
destinations       Show destinations
sensor-groups      Show sensor-groups
sensor-paths       Show sensor-paths
subscriptions      Show subscriptions
|                  Pipe command output to filter
    
```

switch# **show telemetry control database**

Subscription Database size = 1

```

-----
Subscription ID      Data Collector Type
-----
100                  SDB
    
```

Sensor Group Database size = 1

```

-----
Row ID Sensor Group ID Sensor Group type Sampling interval(ms) Linked subscriptions SubID
-----
1          100           Timer /SDB          30000 /Running          1          100
    
```

```

Collection Time in ms (Cur/Min/Max): 53/9/81
Encoding Time in ms (Cur/Min/Max): 21/6/33
Transport Time in ms (Cur/Min/Max): 10470/1349/11036
Streaming Time in ms (Cur/Min/Max): 10546/9/11112
    
```

```

Collection Statistics:
  collection_id_dropped = 0
  last_collection_id_dropped = 0
  drop_count = 0
    
```

Sensor Path Database size = 4

```

-----
Row ID  Subscribed Linked  Sec  Retrieve  Path  Query:  Filter
          Groups  Groups level  (GroupId):
-----
1      No          1      0      Self      analytics:inititl(100): NA :  NA
GPB Encoded Data size in bytes (Cur/Min/Max): 162310/162014/162320
JSON Encoded Data size in bytes (Cur/Min/Max): 0/0/0
    
```

```

2      No          1      0      Self      show_stats_fc1/3(100): NA :  NA
GPB Encoded Data size in bytes (Cur/Min/Max): 2390/2390/2390
JSON Encoded Data size in bytes (Cur/Min/Max): 0/0/0
    
```

```

3      No          1      0      Self      analytics:initit(100): NA :  NA
GPB Encoded Data size in bytes (Cur/Min/Max): 158070/157444/158082
JSON Encoded Data size in bytes (Cur/Min/Max): 0/0/0
    
```

```

4      No          1      0      Self      analytics:init(100): NA :  NA
GPB Encoded Data size in bytes (Cur/Min/Max): 159200/158905/159212
JSON Encoded Data size in bytes (Cur/Min/Max): 0/0/0
    
```

Destination Group Database size = 1

> use-vrf : default

```

-----
Destination Group ID Refcount
-----
100                  1
    
```

Destination Database size = 3

```

-----
Dst IP Addr      Dst Port  Encoding  Transport  Count
-----
    
```

```
-----
10.30.217.80    50009    GPB      gRPC     1
2001:420:301:2005:3::11
                60003    GPB      gRPC     1
2001:420:54ff:a4::230:e5
                50013    GPB      gRPC     1
-----
```

```
switch(conf-tm-dest)# show telemetry control database sensor-groups
Sensor Group Database size = 1
-----
```

Row ID	Sensor Group ID	Sensor Group type	Sampling interval(ms)	Linked subscriptions
SubID				

```
-----
1          100          Timer  /SDB     30000   /Running  1
  100
```

```
Collection Time in ms (Cur/Min/Max): 53/9/81
Encoding Time in ms (Cur/Min/Max): 21/21/33
Transport Time in ms (Cur/Min/Max): 10304/461/15643
Streaming Time in ms (Cur/Min/Max): 10380/9/15720
```

```
Collection Statistics:
  collection_id_dropped      = 0
  last_collection_id_dropped = 0
  drop_count                 = 0
```

This example displays the statistic regarding the internal databases configuration of STS:

```
switch# show telemetry control stats
show telemetry control stats entered
```

```
-----
Error Description                                     Error Count
-----
Chunk allocation failures                             0
Sensor path Database chunk creation failures         0
Sensor Group Database chunk creation failures        0
Destination Database chunk creation failures         0
Destination Group Database chunk creation failures   0
Subscription Database chunk creation failures        0
Sensor path Database creation failures               0
Sensor Group Database creation failures              0
Destination Database creation failures               0
Destination Group Database creation failures         0
Subscription Database creation failures              0
Sensor path Database insert failures                 0
Sensor Group Database insert failures                0
Destination Database insert failures                 0
Destination Group Database insert failures           0
Subscription insert to Subscription Database failures 0
Sensor path Database delete failures                0
Sensor Group Database delete failures                0
Destination Database delete failures                0
Destination Group Database delete failures           0
Delete Subscription from Subscription Database failures 0
Sensor path delete in use                           0
Sensor Group delete in use                           0
Destination delete in use                            0
Destination Group delete in use                     0
Delete destination(in use) failure count             0
Sensor path Sensor Group list creation failures     0
Sensor path prop list creation failures             0
Sensor path sec Sensor path list creation failures  0
Sensor path sec Sensor Group list creation failures 0
-----
```

```

Sensor Group Sensor path list creation failures      0
Sensor Group Sensor subs list creation failures     0
Destination Group subs list creation failures       0
Destination Group Destinations list creation failures 0
Destination Destination Groups list creation failures 0
Subscription Sensor Group list creation failures   0
Subscription Destination Groups list creation failures 0
Sensor Group Sensor path list delete failures       0
Sensor Group Subscriptions list delete failures     0
Sensor Group Subscriptions unsupported data-source failures 0
Destination Group Subscriptions list delete failures 0
Destination Group Destinations list delete failures 0
Subscription Sensor Groups list delete failures    0
Subscription Destination Groups list delete failures 0
Destination Destination Groups list delete failures 0
Failed to delete Destination from Destination Group 0
Failed to delete Destination Group from Subscription 0
Failed to delete Sensor Group from Subscription     0
Failed to delete Sensor path from Sensor Group     0
Failed to get encode callback                       0
Failed to get transport callback                    0
    
```

This example displays the brief statistic regarding the data collection:

```

switch# show telemetry data collector brief
-----
Row ID      Collector Type      Successful      Failed          Skipped
-----
1           NX-API              0               0               0
2           SDB                 1513            902             0
    
```

This example displays detailed statistics regarding the data collection that includes breakdown of all sensor paths:

```

switch# show telemetry data collector details
-----
Row ID      Successful      Failed          Skipped          Sensor Path(GroupId)
-----
1           496             305            0               analytics:inititl(100)
2           16              0              0               show_stats_fc1/3(100)
3           507             294            0               analytics:initit(100)
4           498             303            0               analytics:init(100)
    
```

This example displays the statistics for the STS pipeline:

```

switch# show telemetry pipeline stats
Main Statistics:
  Timers:
    Errors:
      Start Fail      =      0

  Data Collector:
    Errors:
      Node Create Fail =      0

  Event Collector:
    Errors:
      Node Create Fail =      0   Node Add Fail   =      0
      Invalid Data    =      0
    
```

```

Memory:
  Allowed Memory Limit      = 838860800 bytes
  Occupied Memory          = 53399552 bytes

Queue Statistics:
Request Queue:
  High Priority Queue:
  Info:
    Actual Size      = 50   Current Size      = 0
    Max Size         = 0   Full Count       = 0

  Errors:
    Enqueue Error   = 0   Dequeue Error    = 0

  Low Priority Queue:
  Info:
    Actual Size      = 50   Current Size      = 0
    Max Size         = 0   Full Count       = 0

  Errors:
    Enqueue Error   = 0   Dequeue Error    = 0

Data Queue:
  High Priority Queue:
  Info:
    Actual Size      = 160000  Current Size      = 0
    Max Size         = 0   Full Count       = 0

  Errors:
    Enqueue Error   = 0   Dequeue Error    = 0

  Low Priority Queue:
  Info:
    Actual Size      = 2   Current Size      = 0
    Max Size         = 0   Full Count       = 0

  Errors:
    Enqueue Error   = 0   Dequeue Error    = 0

```

This example displays all configured transport sessions:

```

switch# show telemetry transport
-----
Session Id      IP Address      Port      Encoding  Transport  Status
-----
2               10.30.217.80   50009     GPB       gRPC       Connected
0               2001:420:301:2005:3::11
                60003         GPB       gRPC       Connected
1               2001:420:54ff:a4::230:e5
                50013         GPB       gRPC       Transmit Error
-----

Retry buffer Size:          10485760
Event Retry Messages (Bytes): 0
Timer Retry Messages (Bytes): 10272300
Total Retries sent:        0
Total Retries Dropped:     5377

```

This example displays detailed session information for a specific transport session:

```
switch# show telemetry transport 0
```

```

Session Id:          2
IP Address:Port     10.30.217.80:50009
Transport:          GRPC
Status:             Connected
Last Connected:     Fri Jun 22 07:07:12.735 UTC
Last Disconnected: Never
Tx Error Count:     0
Last Tx Error:      None
Event Retry Queue Bytes: 0
Event Retry Queue Size: 0
Timer Retry Queue Bytes: 0
Timer Retry Queue Size: 0
Sent Retry Messages: 0
Dropped Retry Messages: 0

```

This example displays details of a specific transport session:

```

switch# show telemetry transport 2 stats
Session Id:          2
Connection Stats
  Connection Count   2
  Last Connected:   Fri Jun 22 07:07:12.735 UTC
  Disconnect Count   0
  Last Disconnected: Never
Transmission Stats
  Compression:       disabled
  Source Interface:  not set()
  Transmit Count:    44
  Last TX time:      Fri Jun 22 07:14:16.533 UTC
  Min Tx Time:       227 ms
  Max Tx Time:       3511 ms
  Avg Tx Time:       1664 ms
  Cur Tx Time:       227 ms

```

This example displays detailed error statistics for a specific transport session:

```

switch# show telemetry transport 2 errors
Session Id:          1
Connection Errors
  Connection Error Count: 0
Transmission Errors
  Tx Error Count:       1746
  Last Tx Error:        Fri Jun 22 07:15:07.970 UTC
  Last Tx Return Code:  UNAVAILABLE

```



Note The following return codes can be seen in the show telemetry transport errors output:

- OK—There were no errors detected.
- UNAVAILABLE—The configured IP address or port is not reachable. Check the configuration to verify if you have configured the correct IP address or port.
- DEADLINE_EXCEEDED—Receiver has not responded for more 30 seconds or there are network delays.

Related Commands

Command	Description
destination-group	Creates a destination group and enters destination group configuration mode.
feature telemetry	Enables the SAN Telemetry Streaming feature.
sensor-group	Creates a sensor group and enters sensor group configuration.
show running-config telemetry	Displays the existing telemetry configuration.
subscription	Creates a subscription node and enters subscription node configuration mode.
telemetry	Enters SAN Telemetry Streaming configuration mode.

show telnet server

To display the state of the Telnet access configuration, use the show telnet server command.

```
show telnet server
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the status of the Telnet server:

```
switch# show telnet server
telnet service enabled
```

show terminal

To display the terminal information, use the show terminal command

```
show terminal
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example displays terminal information:

```
switch# show terminal
TTY: Type: "vt100"
Length: 25 lines, Width: 80 columns
Session Timeout: 30 minutes
```


show time-stamp running-config last-changed

To display the time stamp on when the running configuration was last changed, use the show time-stamp running-config last-changed command.

```
show time-stamp running-config last-changed
```

Syntax Description This command has no arguments or keywords.

Command Default Displays only the configured information.

Command Modes Privileged EXEC (#)

Release	Modification
8.3(1)	This command was introduced.

Examples

This example displays the output after a normal reload when there is no change made in running configuration:

```
switch# show time-stamp running-config last-changed
No configuration change since last restart
```

This example displays the output of the time stamp after making changes in running configuration:

```
switch# show time-stamp running-config last-changed
Running configuration last done at: Mon Jul 16 10:17:17 2018
```

This example displays the output of the show running-configuration command that shows information about the last changed configuration:

```
switch# show running-config

!Command: show running-config
!Running configuration last done at: Mon Jul 16 10:17:17 2018
!Time: Tue Jul 17 08:11:46 2018

version 8.3(1)
power redundancy-mode redundant

feature telemetry
feature nxapi
feature analytics
```

Related Commands	Command	Description
	show running-config	Displays the running configuration.

Command	Description
show running-config diff	Displays the differences between the running configuration and the startup configuration.
show startup-config	Displays the startup configuration.

show tlport

To display configured TL port information, use the show tlport command

```
show tlport alpa-cache | discapp fcid fcid-id [vsan vsan-id] [verbose] | interface fc slot / port all |
private | proxied | topology | unsupported | list [vsan vsan-id]
```

Syntax Description	
alpa-cache	Displays the contents of the ALPA cache.
discapp	Displays private N port parameters.
fcid fcid-id	Specifies the FCID of the N port.
vsan vsan-id	(Optional) Specifies the N port VSAN ID. The range is 1 to 4093.
verbose	(Optional) Specifies the verbose mode.
interface	Displays TL ports in the selected interface.
fc slot/port	Specifies the Fiber Channel interface at the specified slot and port.
all	Displays all proxied and private devices on this TL port.
private	Displays all private devices on this TL port.
proxied	Displays all proxied devices on this TL port.
topology	Displays loop topology for this TL port.
unsupported	Displays all unsupported devices on this TL port.
list	Displays TL ports in all VSANs.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 5.0 and later releases	This command was deprecated.
	1.0(2)	This command was introduced.

Usage Guidelines The show tlport command displays the TL port interface configurations. This command provides a list of all TL ports configured on a box and displays the associated VSAN, the FCID for the port (only domain and area are valid), and the current operational state of the TL port (up or initializing).

Examples The following example displays the TL ports in all VSANs:

```
switch# show tlport list
-----
Interface Vsan FC-ID   State
-----
fc1/16    1    0x420000 Init
fc2/26    1    0x150000 Up
```

The following example displays the detailed information for a specific TL port:

```
switch# show tlport interface fc1/16 all
fc1/16 is up, vsan 1, FCID 0x420000
-----
alpha pWWN
-----
nWWN                SCSI Type Device FC-ID
-----
20:10:00:05:30:00:4a:de 20:00:00:05:30:00:4a:de Initiator Proxied 0xfffc42 0x73 0x01
22:00:00:20:37:39:ae:54 20:00:00:20:37:39:ae:54 Target   Private 0x420073 0xef
20:10:00:05:30:00:4a:de 20:00:00:05:30:00:4a:de Initiator Switch 0x0000ef
```

The following example displays TL port information for private devices:

```
switch# show tlport int fc1/16 pri
fc1/16 is up, vsan 1, FCID 0x420000
-----
alpha pWWN                nWWN                SCSI Type FC-ID
-----
0x73 22:00:00:20:37:39:ae:54 20:00:00:20:37:39:ae:54 Target   0x420073
0x74 22:00:00:20:37:38:d3:de 20:00:00:20:37:38:d3:de Target   0x420074
```

The following example displays TL port information for proxied devices:

```
switch# show tlport int fc1/16 prox
fc1/16 is up, vsan 1, FCID 0x420000
-----
alpha pWWN                nWWN                SCSI Type FC-ID
-----
0x01 20:10:00:05:30:00:4a:de 20:00:00:05:30:00:4a:de Initiator 0xfffc42
0x02 21:00:00:e0:8b:01:95:e7 20:00:00:e0:8b:01:95:e7 Initiator 0x420100
```

The following example displays the contents of the alpa-cache:

```
switch# show tlport alpa-cache
-----
alpha                pWWN                Interface
-----
0x02 22:00:00:20:37:46:09:bd    fc1/2
0x04 23:00:00:20:37:46:09:bd    fc1/2
```

show topology

To display topology information for connected switches, use the show topology command.

```
show topology [vsan vsan-id]
```

Syntax Description

vsan vsan-id	(Optional) Displays information for a VSAN. The range is 1 to 4093.
-----------------	---

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(9)	Added a note.
2.0(x)	This command was introduced.

Usage Guidelines

None.



Note

In scenarios where the show topology command output has few missing parameters like switchname, IP address etc. Please re-execute this command after few seconds.

Examples

The following example displays topology information:

```
switch# show topology

FC Topology for VSAN 1 :
-----
Interface Peer Domain Peer Interface Peer IP Address(Switch Name)
-----
fc4/15 0xef(239) fc1/4 10.126.74.188(sw1-gd99)

FC Topology for VSAN 2 :
-----
Interface Peer Domain Peer Interface Peer IP Address(Switch Name)
-----
fc4/15 0x6e(110) fc1/4 10.126.74.188(sw1-gd99)

FC Topology for VSAN 17 :
-----
Interface Peer Domain Peer Interface Peer IP Address(Switch Name)
-----
fc4/15 0x0c(12) fc1/4 10.126.74.188(sw1-gd99)

FC Topology for VSAN 27 :
-----
Interface Peer Domain Peer Interface Peer IP Address(Switch Name)
```

show topology

```

-----
fc4/1 0x62(98)      Port 10 10.126.74.183(Brocade4100_110)
fc4/10 0x41(65)     fc1/3 10.126.74.188(sw1-gd99)
fc4/12 0x62(98)     Port 7 10.126.74.183(Brocade4100_110)
fc4/13 0x62(98)     Port 13 10.126.74.183(Brocade4100_110)
fc4/15 0x41(65)     fc1/4 10.126.74.188(sw1-gd99)

```

FC Topology for VSAN 72 :

```

-----
Interface Peer Domain Peer Interface Peer IP Address(Switch Name)
-----
fc4/15 0x9d(157) fc1/4 10.126.74.188(sw1-gd99)

```

FC Topology for VSAN 99 :

```

-----
Interface Peer Domain Peer Interface Peer IP Address(Switch Name)
-----
fc4/15 0xd3(211) fc1/4 10.126.74.188(sw1-gd99)

```

FC Topology for VSAN 311 :

```

-----
Interface Peer Domain Peer Interface Peer IP Address(Switch Name)
-----
fc4/15 0x0c(12) fc1/4 10.126.74.188(sw1-gd99)

```

FC Topology for VSAN 312 :

```

-----
Interface Peer Domain Peer Interface Peer IP Address(Switch Name)
-----
fc4/15 0x66(102) fc1/4 10.126.74.188(sw1-gd99)

```

show topology isl

To display ISL topology information for connected switches, use the show topology isl command.

show topology isl detail | port-channel port-channel number detail | vsan vsan-id

Syntax Description

isl	Displays ISL topology information.
detail	Displays the detailed ISL topology information.
port-channel	Displays the port channel topology information.
port-channel number	Displays the port channel number. The range is from 1 to 256.
vsan	Displays information for a VSAN.
vsan-id	Displays VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays the ISL topology information:

```
switch1-12345# show topology isl
```

_____ Local _____	_____
PC	Domain

-	0x01
-	0x01

2	0x01
2	0x01
4	0x01
4	0x01
5	0x01
5	0x01
6	0x01
6	0x01
7	0x01
7	0x01

switch1-12345#

The following example displays the detailed ISL topology information:

switch1-12345# **show topology isl detail**

_____ Local _____
PC

-
-
2

2
4
4
5
5
6
6
7
7

switch1-12345#

The following example displays ISL port channel topology information:

switch1-12345# **show topology isl port-channel 4**

_____ Local _____	
PC	Do

4	0x
4	0x
4	0x
4	0x
4	0x

4	0x01
4	0x01
4	0x01

switch1-12345#

The following example displays detailed ISL port channel topology information:

switch1-12345# **show topology isl port-channel 4 detail**

_____ Local _____
PC

4
4
4
4
4
4
4
4

switch1-12345#

The following example displays the VSAN ID topology information:

switch1-12345# **show topology isl vsan 100**

Local	
PC	Domain

-	0x01
-	0x01
2	0x01
2	0x01
4	0x01
4	0x01
5	0x01
5	0x01
6	0x01
6	0x01
7	0x01
7	0x01

switch1-12345#

The following example displays the detailed VSAN ID topology information:

switch1-12345# **show topology isl vsan 100 detail**

show topology isl

_____ Local _____
PC

-
-
2
2
4
4
5
5
6
6
7
7

switch1-12345#

show trunk protocol

To display trunk protocol status, use the show trunk protocol command.

```
show trunk protocol
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example displays trunk protocol status:

```
switch# show trunk protocol
Trunk protocol is enabled
```

show user-account

To display configured information about user accounts, use the show user-account command.

```
show user-account [user-name | iscsi]
```

Syntax Description

user-name	(Optional) Specifies the user name.
iscsi	(Optional) Displays the iSCSI user account information.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays information for a specified user:

```
switch# show user-account user1
user:user1
    this user account has no expiry date
    roles:network-operator
no password set. Local login not allowed
Remote login through RADIUS is possible
```

The following example displays information for all users:

```
switch# show user-account
show user-account
user:admin
    this user account has no expiry date
    roles:network-admin
user:usam
    expires on Sat May 31 00:00:00 2003
    roles:network-admin network-operator
user:msam
    this user account has no expiry date
    roles:network-operator
user:user1
    this user account has no expiry date
    roles:network-operator
no password set. local login not allowed
Remote login through RADIUS is possible
```

show username

To display username information (print the public key part of user keypair information), use the show username command.

show username username keypair

Syntax Description	username	Specifies name of the user.
	keypair	Specifies SSH keypairs.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display username information:

```
switch# show username admin keypair
*****
rsa Keys generated:Tue Sep  1 01:27:38 2009
ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAIEA5KCbN1Yc5X8HbFZybBNa+sXMzBHGOj1jbuZGXJ3VKH3m
LTz4b9ceyP4FyeHR7QHxBPBr3jJ3zG9rioATOwaG7944F/cadU3THDkQXN0JCVnKrqtD0o5uiIeRe2Mu
MEPfIvnM7MkJGJC2mPHRQKH1F+R3UtJaeAWuiRdKLaKS8Y0=
bitcount:1024
fingerprint:
3f:a6:31:9c:e3:1f:12:e4:49:c9:20:3c:69:6f:d1:67
*****
dsa Keys generated:Tue Sep  1 01:38:12 2009
ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAIEA5KCbN1Yc5X8HbFZybBNa+sXMzBHGOj1jbuZGXJ3VKH3m
LTz4b9ceyP4FyeHR7QHxBPBr3jJ3zG9rioATOwaG7944F/cadU3THDkQXN0JCVnKrqtD0o5uiIeRe2Mu
MEPfIvnM7MkJGJC2mPHRQKH1F+R3UtJaeAWuiRdKLaKS8Y0=
bitcount:1024
fingerprint:
3f:a6:31:9c:e3:1f:12:e4:49:c9:20:3c:69:6f:d1:67
*****
switch#
```

Related Commands	Command	Description
	role	Configures user roles.
	show username	Displays username information.

show users

To display all CLI users currently accessing the switch, use the show users command.

```
show users
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example displays all users:

```
switch# show users
admin pts/7 Jan 12 20:56 (10.77.202.149)
admin pts/9 Jan 12 23:29 (modena.cisco.com)
admin pts/10 Jan 13 03:05 (dhcp-171-71-58-120.cisco.com)
admin pts/11 Jan 13 01:53 (dhcp-171-71-49-49.cisco.com)
```


show version

To display the version of system software that is currently running on the switch, use the show version command.

```
show version [clock-module epld | epld url | image bootflash: | slot0: | volatile: image-filename | module slot [epld]]
```

Syntax Description

clock-module	(Optional) Displays all current EPLD versions on the clock module.
epld	(Optional) Displays all current versions of EPLDs on a specified module.
epld url	(Optional) Displays all EPLD versions that are available at the specified URL (bootflash:, ftp:, scp:, sftp:, slot0:, tftp:, or volatile:)
image	(Optional) Displays the software version of a given image.
bootflash:	(Optional) Specifies internal bootflash memory.
slot0:	(Optional) Specifies CompactFlash memory or PCMCIA card.
volatile:	(Optional) Specifies the volatile directory.
image-filename	(Optional) Specifies the name of the system or kickstart image.
module slot	(Optional) Displays the software version of a module in the specified slot.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
1.0(3)	Command was modified.
3.0(1)	Added the clock-module option.
NX-OS 4.1(1b)	Changed the command output from SAN-OS to NX-OS.

Usage Guidelines

Use the show version image command to verify the integrity of the image before loading the images. This command can be used for both the system and kickstart images.

Use the show version command to verify the version on the active and standby supervisor modules before and after an upgrade.

Examples

The following examples display the versions of the system, kickstart, and failed images:

```

switch(boot)# show version image bootflash:system_image
<-----
system image
  image name: m9500-sflek9-mz.1.0.3.bin
  system:     version 1.0(3)
  compiled:   10/25/2010 12:00:00
switch(boot)# show version image bootflash:kickstart_image
<-----
kickstart image
  image name: m9500-sflek9-kickstart-mz.1.0.3.upg.bin
  kickstart: version 1.0(3)
  loader:    version 1.0(3)
  compiled:  10/25/2010 12:00:00
switch# show version image bootflash:bad_image
<-----
failure case
Md5 Verification Failed
Image integrity check failed

```

The following example displays current EPLD versions for a specified module.

```

switch# show version module 2 epld
Module Number          2
EPLD Device            Version
-----
Power Manager          0x06
XBUS IO                0x07
UD chip Fix            0x05
Sahara                 0x05

```

The following example displays available EPLD versions.

```

switch# show version epld bootflash:m9000-epld-2.0.1b.img
MDS series EPLD image, built on Mon Sep 20 16:39:36 2004
Module Type            EPLD Device            Version
-----
MDS 9500 Supervisor 1  XBUS 1 IO              0x09
                      XBUS 2 IO              0x0c
                      UD Flow Control        0x05
                      PCI ASIC I/F          0x04
1/2 Gbps FC Module (16 Port)  XBUS IO                0x07
                      UD Flow Control        0x05
                      PCI ASIC I/F          0x05
1/2 Gbps FC Module (32 Port)  XBUS IO                0x07
                      UD Flow Control        0x05
                      PCI ASIC I/F          0x05
Advanced Services Module  XBUS IO                0x07
                      UD Flow Control        0x05
                      PCI ASIC I/F          0x05
                      PCI Bridge            0x05
IP Storage Services Module (8 Port)  Power Manager          0x07
                      XBUS IO                0x03
                      UD Flow Control        0x05
                      PCI ASIC I/F          0x05
                      Service Module I/F      0x0a
                      IPS DB I/F            0x1a
IP Storage Services Module (4 Port)  Power Manager          0x07
                      XBUS IO                0x03
                      UD Flow Control        0x05
                      PCI ASIC I/F          0x05
                      Service Module I/F      0x1a
Caching Services Module Power  Manager                0x08

```

	XBUS IO	0x03
	UD Flow Control	0x05
	PCI ASIC I/F	0x05
	Service Module I/F	0x72
	Memory Decoder 0	0x02
	Memory Decoder 1	0x02
MDS 9100 Series Fabric Switch	XBUS IO	0x03
	PCI ASIC I/F	0x40000003
2x1GE IPS, 14x1/2Gbps FC Module	Power Manager	0x07
	XBUS IO	0x05
	UD Flow Control	0x05
	PCI ASIC I/F	0x07
	IPS DB I/F	0x1a

The following example displays the entire output for the show version command:

```
switch# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2008, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
other third parties and are used and distributed under license.
Some parts of this software are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.
Software
  BIOS:          version 1.1.0
  loader:        version 1.2(2)
  kickstart:     version 4.1(1) [build 4.1(0.155)] [gdb]
  system:        version 4.1(1) [build 4.1(0.155)] [gdb]
  BIOS compile time: 10/24/03
  kickstart image file is: bootflash:///m9200-ek9-kickstart-mzg.4.1.0.155.bin
  kickstart compile time: 10/12/2020 25:00:00 [07/23/2008 10:00:56]
  system image file is:  bootflash:///m9200-ek9-mzg.4.1.0.155.bin
  system compile time:  12/25/2010 12:00:00 [07/23/2008 10:53:42]
Hardware
  cisco MDS 9216i (2 Slot) Chassis ("2x1GE IPS, 14x1/2Gbps FC/Supervisor")
  Intel(R) Pentium(R) III CPU with 965712 kB of memory.
  Processor Board ID JAB1007017G
  Device name: 10.64.66.22
  bootflash: 1001448 kB
  slot0: 0 kB (expansion flash)
Kernel uptime is 1 day(s), 2 hour(s), 22 minute(s), 40 second(s)
Last reset at 800175 usecs after Tue Jul 29 11:07:38 2008
  Reason: Reset Requested by CLI command reload
  System version: 4.1(0.151)
  Service:
switch#
```

The following examples display a before and after comparison scenario after the loader version is updated:

```
switch# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2008, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
other third parties and are used and distributed under license.
Some parts of this software are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.
Software
  BIOS:          version 1.1.0
```

```

loader:    version 1.2(2)<-----existing version
kickstart: version 4.1(1) [build 4.1(0.155)] [gdb]
system:    version 4.1(1) [build 4.1(0.155)] [gdb]
BIOS compile time:    10/24/03
kickstart image file is: bootflash:///m9200-ek9-kickstart-mzg.4.1.0.155.bin
kickstart compile time: 10/12/2020 25:00:00 [07/23/2008 10:00:56]
system image file is:   bootflash:///m9200-ek9-mzg.4.1.0.155.bin
system compile time:    12/25/2010 12:00:00 [07/23/2008 10:53:42]
switch# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2008, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
other third parties and are used and distributed under license.
Some parts of this software are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.
Software
  BIOS:    version 1.1.0
  loader:  version 4.1(0)<-----new version

```

The following example displays the version details for a specified module:

```

switch# show ver mod 4
Mod No  Mod Type      SW Version      SW Interim Version
 4       LC              1.0(3)          1.0(3)

```

show vmis database

To display all the entries in the Virtual Machine Identification Server (VMIS) database, use the show vmis database command.

```
show vmis database [domain id | fcid id | global-vmid id | interface fa slot/port | fc slot/port | fv
module_number/DPP_number/port | port-channel number | vfc slot | vfc-port-channel id | local | vem [id
fcid id] | vmotion] [vsan id]
```

Syntax Description

domain id	Specifies entries based on a domain ID. The range is from 1 to 239.
fcid id	Specifies entries based on a Fibre Channel ID (FCID). The FCID is in the form 0x0 to 0xfffff.
global-vmid id	Specifies entries based on a Global Virtual Machine Identifier (VMID). The Global VMID is in the form hhhhhhhh-hhhh-hhhh-hhhh-hhhhhhhhhhhh, where h is a hexadecimal number.
interface	Specifies a port.
fa slot/port	Specifies an FA port.
fc slot/port	Specifies a Fibre Channel port.
fv module_number/DPP_number/port	Specifies a Fibre Channel virtualization port.
port-channel number	Specifies a port channel.
vfc slot	Specifies a virtual Fibre Channel interface.
vfc-port-channel id	Specifies entries based on a virtual Fibre Channel port channel interface. The range is from 513 to 4096.
local	Indicates the local entries corresponding to a local domain in a VMIS database.
vem id	Specifies ID of a VEM in a fabric. The VEM ID is in the form hhhhhhhh-hhhh-hhhh-hhhh-hhhhhhhhhhhh, where h is a hexadecimal number.
vmotion	Specifies virtual machines that have migrated between hypervisors.
vsan id	Specifies entries based on a VSAN ID. The range is from 1 to 4093.

Command Default

Displays all entries in the database.

Command Modes

User EXEC (#)
Privileged EXEC (#)

Command History

Release	Modification
8.2(1)	This command was introduced.

This example displays all the entries in the VMIS database. This is the database of all IDs in a SAN fabric. Locally connected IDs show the connecting interface; remotely connected IDs show the interface name as "--" in the output.

```
switch# show vmis database
Total 17 entries
-----
INTERFACE VSAN   FCID   LOCAL VEID  GLOBAL VEID
-----
fc1/7          1 0xef000a 0x01  9a07686b-0405-0607-0809-0a0b0c0d0e0f
fc1/7          1 0xef000a 0x02  66fb6a4e-0405-0607-0809-0a0b0c0d0e0f
fc1/7          1 0xef000a 0x03  325de425-0405-0607-0809-0a0b0c0d0e0f
fc1/7          1 0xef000a 0x04  0d509b51-0405-0607-0809-0a0b0c0d0e0f
fc1/7          1 0xef000a 0x05  b7d71b43-0405-0607-0809-0a0b0c0d0e0f
fc1/7          1 0xef000a 0x32  1b231602-0405-0607-0809-0a0b0c0d0e0f
fc1/7          1 0xef000b 0x01  e8e9161f-0405-0607-0809-0a0b0c0d0e0f
fc1/7          1 0xef000b 0x02  e7cd9011-0405-0607-0809-0a0b0c0d0e0f
fc1/7          1 0xef000b 0x03  8d43ef66-0405-0607-0809-0a0b0c0d0e0f
fc1/7          1 0xef000b 0x04  760f0e14-0405-0607-0809-0a0b0c0d0e0f
fc1/7          1 0xef000b 0x05  5a255233-0405-0607-0809-0a0b0c0d0e0f
fc1/7          1 0xef000b 0x1e  1b231602-0405-0607-0809-0a0b0c0d0e0f
--            10 0x4c0020 0x1e  ba581b3d-0405-0607-0809-0a0b0c0d0e0f
--            10 0x4c0020 0x1f  abd77e50-0405-0607-0809-0a0b0c0d0e0f
--            10 0x4c0020 0x20  f241b12e-0405-0607-0809-0a0b0c0d0e0f
--            10 0x4c0020 0x21  fb1eb741-0405-0607-0809-0a0b0c0d0e0f
--            10 0x4c0020 0x22  e3a9e279-0405-0607-0809-0a0b0c0d0e0f
```

This example shows the entries in a VSAN filtered by the hosting domain:

```
switch# show vmis database domain 0xef vsan 1
Total 12 entries
-----
INTERFACE VSAN FCID   LOCAL VEID  GLOBAL VEID
-----
fc1/7     1 0xef000a 0x01  9a07686b-0405-0607-0809-0a0b0c0d0e0f
fc1/7     1 0xef000a 0x02  66fb6a4e-0405-0607-0809-0a0b0c0d0e0f
fc1/7     1 0xef000a 0x03  325de425-0405-0607-0809-0a0b0c0d0e0f
fc1/7     1 0xef000a 0x04  0d509b51-0405-0607-0809-0a0b0c0d0e0f
fc1/7     1 0xef000a 0x05  b7d71b43-0405-0607-0809-0a0b0c0d0e0f
fc1/7     1 0xef000a 0x32  1b231602-0405-0607-0809-0a0b0c0d0e0f
fc1/7     1 0xef000b 0x01  e8e9161f-0405-0607-0809-0a0b0c0d0e0f
fc1/7     1 0xef000b 0x02  e7cd9011-0405-0607-0809-0a0b0c0d0e0f
fc1/7     1 0xef000b 0x03  8d43ef66-0405-0607-0809-0a0b0c0d0e0f
fc1/7     1 0xef000b 0x04  760f0e14-0405-0607-0809-0a0b0c0d0e0f
fc1/7     1 0xef000b 0x05  5a255233-0405-0607-0809-0a0b0c0d0e0f
fc1/7     1 0xef000b 0x1e  1b231602-0405-0607-0809-0a0b0c0d0e0f
```

This example shows the entries filtered by FCID. This example is filtered by a remote hypervisor N_Port FCID.

```
switch# show vmis database fcid 0x4c0020 vsan 10
Total 5 entries
-----
INTERFACE VSAN FCID   LOCAL VEID  GLOBAL VEID
```

```

-----
-- 10 0x4c0020 0x1e ba581b3d-0405-0607-0809-0a0b0c0d0e0f
-- 10 0x4c0020 0x1f abd77e50-0405-0607-0809-0a0b0c0d0e0f
-- 10 0x4c0020 0x20 f241b12e-0405-0607-0809-0a0b0c0d0e0f
-- 10 0x4c0020 0x21 fb1eb741-0405-0607-0809-0a0b0c0d0e0f
-- 10 0x4c0020 0x22 e3a9e279-0405-0607-0809-0a0b0c0d0e0f

```

This example shows the VMIS entries filtered by Global VM ID and VSAN:

```

switch# show vmis database global-vmid e8e9161f-0405-0607-0809-0a0b0c0d0e0f vsan 1
Total 1 entries
-----
INTERFACE VSAN FCID LOCAL VEID GLOBAL VEID
-----
fc1/7 1 0xef000b 0x01 e8e9161f-0405-0607-0809-0a0b0c0d0e0f

```

This example shows the entries in a VSAN filtered by an interface:

```

switch# show vmis database interface fc1/7 vsan 1
Total 12 entries
-----
INTERFACE VSAN FCID LOCAL VEID GLOBAL VEID
-----
fc1/7 1 0xef000a 0x01 9a07686b-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000a 0x02 66fb6a4e-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000a 0x03 325de425-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000a 0x04 0d509b51-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000a 0x05 b7d71b43-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000a 0x32 1b231602-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000b 0x01 e8e9161f-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000b 0x02 e7cd9011-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000b 0x03 8d43ef66-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000b 0x04 760f0e14-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000b 0x05 5a255233-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000b 0x1e 1b231602-0405-0607-0809-0a0b0c0d0e0f

```

This example shows the VMIS database entries of a specified local VSAN domain:

```

switch# show vmis database local vsan 1
Total 12 entries
-----
INTERFACE VSAN FCID LOCAL VEID GLOBAL VEID
-----
fc1/7 1 0xef000a 0x01 9a07686b-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000a 0x02 66fb6a4e-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000a 0x03 325de425-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000a 0x04 0d509b51-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000a 0x05 b7d71b43-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000a 0x32 1b231602-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000b 0x01 e8e9161f-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000b 0x02 e7cd9011-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000b 0x03 8d43ef66-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000b 0x04 760f0e14-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000b 0x05 5a255233-0405-0607-0809-0a0b0c0d0e0f
fc1/7 1 0xef000b 0x1e 1b231602-0405-0607-0809-0a0b0c0d0e0f

```

This example shows the VEM IDs registered in a VSAN:

```
switch# show vmis database vem vsan 1
Total 2 entries
-----
INTERFACE VSAN      FCID                VEM ID
-----
fc1/7      1      0xef000a           11223344-5566-7788-99aa-bbccddeeffaa
fc1/7      1      0xef000b           00010203-0405-0607-0809-0a0b0cef000b
```

This example shows VM entries that have migrated between VEMs:

```
switch# show vmis database vmotion vsan 1
Total 2 entries
-----
INTERFACE VSAN      FCID      LOCAL VEID          GLOBAL VEID
-----
fc1/7      1      0xef000b   0x1e               1b231602-0405-0607-0809-0a0b0c0d0e0f
fc1/7      1      0xef000a   0x32               1b231602-0405-0607-0809-0a0b0c0d0e0f
```

This example shows the entries in a VSAN:

```
switch# show vmis database vsan 10
Total 5 entries
-----
INTERFACE VSAN      FCID      LOCAL VEID          GLOBAL VEID
-----
--        10      0x4c0020   0x1e               ba581b3d-0405-0607-0809-0a0b0c0d0e0f
--        10      0x4c0020   0x1f               abd77e50-0405-0607-0809-0a0b0c0d0e0f
--        10      0x4c0020   0x20               f241b12e-0405-0607-0809-0a0b0c0d0e0f
--        10      0x4c0020   0x21               fb1eb741-0405-0607-0809-0a0b0c0d0e0f
--        10      0x4c0020   0x22               e3a9e279-0405-0607-0809-0a0b0c0d0e0f
```

Related Commands

Command	Description
feature vmis	Enables the VMID feature.
show flogi database details	Displays VMID capable FLOGIs.
show vmis statistics	Displays VMIS statistics.

show vmis range

To display the virtual entity ID (VE ID) range that is configured for each VSAN, use the show vmis range command.

```
show vmis range
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes
User EXEC (#)
Privileged EXEC (#)

Command History	Release	Modification
	8.2(1)	This command was introduced.

Examples

This example shows the VE ID range that is configured for each VSAN:

```
switch# show vmis range
VSAN      VEID Range
-----
1         1-255
10        1-255
20        1-255
30        1-255
```

Related Commands	Command	Description
	feature vmis	Enables the VMID feature.
	vmis range	Configure the range of VE IDs to be assigned to a hypervisor.

show vmis statistics

To display the statistics of local switch Virtual Machine Identification Server (VMIS) exchanges with locally attached hypervisor HBA driver clients (host side) and with other VMIS agents on other switches in the fabric (switch side) by VSAN, use the show vmis statistics command.

```
show vmis statistics
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes
User EXEC (#)
Privileged EXEC (#)

Command History	Release	Modification
	8.2(1)	This command was introduced.

Examples

This example shows how to display the VMIS exchange statistics:

```
switch# show vmis statistics
VSAN : 1
-----Host Side-----
qfpa/qfpa_rsp/qfpa_rjt : 1/1/0
uvem/uvem_rsp/uvem_rjt : 1/1/0
ggvid/ggvid_rsp/ggvid_rjt : 0/0/0
gfvid/gfvid_rsp/gfvid_rjt : 0/0/0
gvemid/gvemid_rsp/gvemid_rjt : 0/0/0
gvem/gvem_rsp/gvem_rjt : 0/0/0
-----Switch Side-----
gvemd_tx/gvemd_rsp_tx/gvemd_rjt_tx : 0/0/0
gvemd_rx/gvemd_rsp_rx/gvemd_rjt_rx : 0/0/0
uvemd_tx/uvemd_rsp_tx/uvemd_rjt_tx : 0/0/0
uvemd_rx/uvemd_rsp_rx/uvemd_rjt_rx : 0/0/0
```

Related Commands	Command	Description
	feature vmis	Enables the Virtual Machine Identifier (VMID) feature.

show vrrp

To display the VRRP configuration information, use the show vrrp command.

```
show vrrp [ipv6 vr group-id [interface gigabitethernet slot/port configuration | statistics | status | mgmt
0 configuration | statistics | status | port-channel port-channel configuration | statistics | status | vsan vsan-id
configuration | statistics | status]] | statistics | vr group-id [interface gigabitethernet slot/port configuration
| statistics | status | mgmt 0 configuration | statistics | status | port-channel port-channel configuration |
statistics | status | vsan vsan-id configuration | or statistics | status]
```

Syntax Description

ipv6	(Optional) Displays IPv6 virtual router information.
vr	(Optional) Displays the virtual router information.
group-id	(Optional) Specifies the group ID. The range is 1 to 255.
interface	(Optional) Displays the interface type.
gigabitethernet	(Optional) Displays the Gigabit Ethernet interface.
slot/port	(Optional) Specifies the slot and port.
configuration	(Optional) Displays the VRRP configuration.
statistics	(Optional) Displays cumulative VRRP statistics.
status	(Optional) Displays VRRP operational status.
mgmt 0	(Optional) Displays the mgmt0 interface.
port-channel	(Optional) Displays the PortChannel interface.
port-channel	Specifies the Port Channel.
vsan	(Optional) Displays the VSAN interface.
vsan-id	(Optional) Specifies the VSAN ID.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
3.0(1)	Added the IPv6 option.

Usage Guidelines

None.

Examples

The following example displays VRRP configured information:

```
switch# show vrrp vr 7 interface vsan 2 configuration
vr id 7 configuration
admin state down
priority 100
no authentication
advertisement-Interval 1
preempt yes
tracking interface vsan1 priority 2
protocol IP
```

The following example displays VRRP status information:

```
switch# show vrrp vr 7 interface vsan 2 status
vr id 7 status
MAC address 00:00:5e:00:01:07
Operational state: init
```

The following example displays VRRP statistics:

```
switch# show vrrp vr 7 interface vsan 2 statistics

vr id 7 statistics
Become master 0
Advertisement 0
Advertisement Interval Error 0
Authentication Failure 0
TTL Error 0
Priority 0 Received 0
Priority 0 Sent 0
Invalid Type 0
Mismatch Address List 0
Invalid Authentication Type 0
Mismatch Authentication 0
Invalid Packet Length 0
```

The following example displays VRRP cumulative statistics:

```
switch# show vrrp statistics

Invalid checksum 0
Invalid version 0
Invalid VR ID 0
```

The following example displays VRRP IPv6 configuration information:

```
switch# show vrrp ipv6 vr 1 interface gigabitethernet 4/8 configuration

IPv6 vr id 1 configuration
admin state up
priority 100
associated ip: 2550:1::3:408:1 accept
advertisement-interval 100
preempt no
protocol IPv6
```

The following example displays VRRP IPv6 statistics information:

```
switch# show vrrp ipv6 vr 1 interface gigabitethernet 4/8 statistics
```

```
IPv6 vr id 1 statistics
Become master 1
Advertisement 0
Advertisement Interval Error 0
TTL Error 0
Priority 0 Received 0
Priority 0 Sent 0
Invalid Type 0
Mismatch Address List 0
Invalid Packet Length 0
```

The following example displays VRRP IPv6 status information:

```
switch# show vrrp ipv6 vr 1 interface gigabitethernet 4/8 status

IPv6 vr id 1 status
MAC address 00:00:5e:00:02:01
Operational state: master
Up time 17 hour(s), 21 min, 43 sec
Master IP address: fe80::20c:30ff:fe0c:f6c7
```

show vsan

To display information about configured VSAN, use the show vsan command.

```
show vsan [vsan-id [membership] | membership interface fc slot / port | fcip fcip-id | fv slot /
dpp-number / fv-port | iscsi slot / port | portchannel portchannel-number . subinterface-number] |
[usage]
```



Note On a Cisco Fabric Switch for HP c-Class BladeSystem and on a Cisco Fabric Switch for IBM BladeCenter, the syntax differs as follows: interface bay port | ext port }

Syntax Description

vsan vsan-id	(Optional) Displays information for the specified VSAN ID. The range is 1 to 4093.
membership	(Optional) Displays membership information.
interface	(Optional) Specifies the interface type.
fc slot/port	(Optional) Specifies a Fibre Channel interface on a Cisco MDS 9000 Family Switch.
bay | ext port	Specifies a Fibre Channel interface on a Cisco MDS 9124 Fabric Switch, a Cisco Fabric Switch for HP c-Class BladeSystem, and a Cisco Fabric Switch for IBM BladeCenter.
fcip fcip-id	(Optional) Specifies a FC IP interface ID. The range is 1 to 255.
fv slot/dpp-number/fv-port	(Optional) Specifies a virtual F port (FV port) interface in the specified slot along with the data path processor (DPP) number and the FV port number.
iscsi slot/port	(Optional) Specifies the iSCSI interface in the specified slot/port on a Cisco MDS 9000 Family switch.
port-channel portchannel-number. subinterface-number	(Optional) Specifies a PortChannel interface specified by the PortChannel number followed by a dot (.) indicator and the subinterface number.
usage	(Optional) Displays VSAN usage in the system.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.2(2)	This command was modified.

Release	Modification
3.1(2)	Added the bay | ext interface.

Usage Guidelines

For the show vsan membership interface command, interface information is not displayed if interfaces are not configured on this VSAN.

The interface range must be in ascending order and non-overlapping. You can specify a range using a hyphen and several interfaces using commas:

- The interface range format for an FC interface range is fcslot/port - port , fcslot/port , fcslot/port (For example, show int fc1/1 - 3 , fc1/5 , fc2/5)
- The interface range format for an FV interface range is fvslot/dpp/fvport - fvport , fvslot/dpp/port , fvslot/dpp/port (For example, show int fv2/1/1 - 3 , fv2/1/5 , fv2/2/5)
- The format for a PortChannel is port-channel portchannel-number.subinterface-number (For example, show int port-channel 5.1)

Examples

The following examples display configured VSAN information:

```
switch# show vsan 1
vsan 1 information
    name:VSAN0001 state:active
    interoperability mode:yes & verify mode
    loadbalancing:src-id/dst-id/oxid
    operational state:up
switch# show vsan usage
4 vsan configured
configured vsans:1-4
vsans available for configuration:5-4093
switch # show vsan 1 membership
vsan 1 interfaces:
    fc1/1 fc1/2 fc1/3 fc1/4 fc1/5 fc1/6 fc1/7 fc1/9
    fc1/10 fc1/11 fc1/12 fc1/13 fc1/14 fc1/15 fc1/16 port-channel 99
```

The following example displays membership information for all VSANs.

```
switch # show vsan membership
vsan 1 interfaces:
    fc2/16 fc2/15 fc2/14 fc2/13 fc2/12 fc2/11 fc2/10 fc2/9
    fc2/8 fc2/7 fc2/6 fc2/5 fc2/4 fc2/3 fc2/2 fc2/1
    fc1/16 fc1/15 fc1/14 fc1/13 fc1/12 fc1/11 fc1/10 fc1/9
    fc1/7 fc1/6 fc1/5 fc1/4 fc1/3 fc1/2 fc1/1
vsan 2 interfaces:
vsan 7 interfaces:
    fc1/8
vsan 100 interfaces:
vsan 4094(isolated vsan) interfaces:
```

The following example displays membership information for a specified interface:

```
switch # show vsan membership interface fc1/1
fc1/1
    vsan:1
    allowed list:1-4093
switch# show vsan
vsan 1 information
```

```

        name:VSAN0001 state:active
        interoperability mode:default
        loadbalancing:src-id/dst-id/oxid
        operational state:up
vsan 2 information
        name:VmVSAN state:active
        interoperability mode:default
        loadbalancing:src-id/dst-id/oxid
        operational state:up
vsan 3 information
        name:Disk_A state:active
        interoperability mode:default
        loadbalancing:src-id/dst-id/oxid
        operational state:up
vsan 4 information
        name:Host_B state:active
        interoperability mode:default
        loadbalancing:src-id/dst-id/oxid
        operational state:up
vsan 4094:isolated_vsan
switch# show vsan membership interface fv 2/1/3 , fv2/1/5 - 7
fv2/1/3
        vsan:2
        allowed list:1-4093
fv2/1/5
        vsan:3
        allowed list:1-4093
fv2/1/6
        vsan:4
        allowed list:1-4093
fv2/1/7
        vsan:4
        allowed list:1-409
switch# sh vsan membership interface bay 12
bay12
        vsan:1
        allowed list:1-4093

```


show wwn

To display the status of the WWN configuration, use the show wwn command.

```
show wwn status | block-id | number | switch | vsan-wwn
```

Syntax Description

status block-id number	Displays WWN usage and alarm status for a block ID. The range is 34 to 1793.
switch	Displays switch WWN.
vsan-wwn	Displays all user-configured VSAN WWNs.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
3.0(1)	Added the vsan-wwn keyword.
7.3(0)D1(1)	The oui keyword was added.

Usage Guidelines

None.

Examples

The following example displays the WWN of the switch:

```
switch# show wwn switch
Switch WWN is 20:01:ac:16:5e:52:00:01
```

The following example displays a user-configured VSAN WWN:

```
switch# show wwn vsan-wwn
vsan wwn configured by user
-----
100 20:64:08:00:88:0d:5f:81
```

show zone

To display zone information, use the show zone command.

```
show zone [active [vsan vsan-id] | analysis active vsan vsan-id | pending active vsan vsan-id | vsan
vsan-id | zoneset string vsan vsan-id | vsan vsan-id | zoneset string vsan vsan-id | ess [vsan vsan-id] |
member device-alias string [active [vsan vsan-id] | lun 0xhhhh [active [vsan vsan-id] | vsan vsan-id]
| vsan vsan-id] | fcalias string [active [vsan vsan-id] | vsan vsan-id] | fcid 0xhhhhhh [active [vsan
vsan-id] | lun 0xhhhh [active [vsan vsan-id] | vsan vsan-id] | vsan vsan-id] | pwwn
hh:hh:hh:hh:hh:hh:hh:hh [active [vsan vsan-id] | lun 0xhhhh [active [vsan vsan-id] | vsan vsan-id]
| vsan vsan-id] | name string [active [vsan vsan-id] | pending [active [vsan vsan-id] | vsan vsan-id]] |
vsan vsan-id] | [pending [active [vsan vsan-id] | vsan vsan-id] | pending-diff [vsan vsan-id] | policy
[pending [vsan vsan-id] | vsan vsan-id] | smart-zoning auto-conv log errors | status vsan vsan-id |
statistics [lun-zoning [vsan vsan-id] | read-only-zoning [vsan vsan-id] | vsan vsan-id] | status [global
vsan vsan-id] | vsan vsan-id]
```

Syntax Description

active	(Optional) Displays zones which are part of an active zone set.
analysis	Displays a summary of zone database information.
device-alias string	Specifies a device name.
ess	Displays ESS information.
fcalias string	Specifies an fcalias name.
fcid 0xhhhhhh	Specifies an FCID. The format is 0xhhhhhh, where h is a hexadecimal digit.
global	Displays global zone service parameters.
log errors	Displays the error logs.
lun 0xhhhh	Specifies a LUN ID. The format is 0xhhhh, where h is a hexadecimal digit.
lun-zoning	This option is deprecated in this release.
member	Displays all zones in which the given member is part of.
name string	Specifies a zone name.
pending	Displays what zoning will be after all pending changes are applied.
pending-diff	Displays individual pending zone changes.
policy	Displays zone policies.
pwwn hh:hh:hh:hh:hh:hh:hh:hh	Specifies a port world wide name. The format is hh:hh:hh:hh:hh:hh:hh:hh, where h is a hexadecimal digit.
read-only-zoning	This option is deprecated in this release.
smart-zoning auto-conv	Displays the previous auto convert status.

statistics	Displays zone server request and response statistics.
status	Displays the current status of the zone server.
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
zoneset string	Specifies a zoneset name.

Command Default None.

Command Modes EXEC mode.

Release	Modification
8.4(2)	The show zone status vsan id command output was modified to display the status of the Single Session feature.
6.2(9)	Added the combined zone database size for the show zone status command.
5.2(1)	Deprecated the lun-zoning and read-only-zoning options.
2.1(1a)	Modified the show zone status display.
1.3(4)	This command was introduced.

Usage Guidelines None.

Examples The following example displays configured zone information:

```
switch# show zone
zone name Zone3 vsan 1
  pwnn 21:00:00:20:37:6f:db:dd
  pwnn 21:00:00:20:37:9c:48:e5
zone name Zone2 vsan 2
  fwnn 20:41:00:05:30:00:2a:1e
  fwnn 20:42:00:05:30:00:2a:1e
  fwnn 20:43:00:05:30:00:2a:1e
zone name Zone1 vsan 1
  pwnn 21:00:00:20:37:6f:db:dd
  pwnn 21:00:00:20:37:a6:be:2f
  pwnn 21:00:00:20:37:9c:48:e5
  fcalias Alias1
zone name Techdocs vsan 3
  ip-address 10.15.0.0 255.255.255.0
```

The following example displays zone information for a specific VSAN:

```
switch# show zone vsan 1
zone name Zone3 vsan 1
  pwnn 21:00:00:20:37:6f:db:dd
  pwnn 21:00:00:20:37:9c:48:e5
zone name Zone2 vsan 1
  fwnn 20:41:00:05:30:00:2a:1e
  fwnn 20:42:00:05:30:00:2a:1e
```

```

fwwn 20:43:00:05:30:00:2a:1e
fwwn 20:44:00:05:30:00:2a:1e
fwwn 20:45:00:05:30:00:2a:1e
fwwn 20:46:00:05:30:00:2a:1e
fwwn 20:47:00:05:30:00:2a:1e
fwwn 20:48:00:05:30:00:2a:1e
fwwn 20:49:00:05:30:00:2a:1e
fwwn 20:4a:00:05:30:00:2a:1e
fwwn 20:4b:00:05:30:00:2a:1e
fwwn 20:4c:00:05:30:00:2a:1e
fwwn 20:4d:00:05:30:00:2a:1e
fwwn 20:4e:00:05:30:00:2a:1e
fwwn 20:4f:00:05:30:00:2a:1e
fwwn 20:50:00:05:30:00:2a:1e
fwwn 20:51:00:05:30:00:2a:1e
fwwn 20:52:00:05:30:00:2a:1e
fwwn 20:53:00:05:30:00:2a:1e
fwwn 20:54:00:05:30:00:2a:1e
fwwn 20:55:00:05:30:00:2a:1e
fwwn 20:56:00:05:30:00:2a:1e
fwwn 20:57:00:05:30:00:2a:1e
fwwn 20:58:00:05:30:00:2a:1e
fwwn 20:59:00:05:30:00:2a:1e
fwwn 20:5a:00:05:30:00:2a:1e
fwwn 20:5b:00:05:30:00:2a:1e
fwwn 20:5c:00:05:30:00:2a:1e
fwwn 20:5d:00:05:30:00:2a:1e
fwwn 20:5e:00:05:30:00:2a:1e
fwwn 20:5f:00:05:30:00:2a:1e
fwwn 20:60:00:05:30:00:2a:1e
zone name Zone1 vsan 1
  pwnn 21:00:00:20:37:6f:db:dd
  pwnn 21:00:00:20:37:a6:be:2f
  pwnn 21:00:00:20:37:9c:48:e5
  fcalias Alias1

```

The following example displays members of a specific zone:

```

switch# show zone name Zone1
zone name Zone1 vsan 1
  pwnn 21:00:00:20:37:6f:db:dd
  pwnn 21:00:00:20:37:a6:be:2f
  pwnn 21:00:00:20:37:9c:48:e5
  fcalias Alias1

```

The following example displays all zones to which a member belongs using the FCID:

```

switch# show zone member pwnn 21:00:00:20:37:9c:48:e5
      VSAN: 1
zone Zone3
zone Zone1
fcalias Alias1

```

The following example displays the number of control frames exchanged with other switches:

```

switch# show zone statistics
Statistics For VSAN: 1
*****
Number of Merge Requests Sent: 24
Number of Merge Requests Recvd: 25
Number of Merge Accepts Sent: 25
Number of Merge Accepts Recvd: 25
Number of Merge Rejects Sent: 0

```

```

Number of Merge Rejects Recvd: 0
Number of Change Requests Sent: 0
Number of Change Requests Recvd: 0
Number of Change Rejects Sent: 0
Number of Change Rejects Recvd: 0
Number of GS Requests Recvd: 0
Number of GS Requests Rejected: 0
Statistics For VSAN: 2
*****
Number of Merge Requests Sent: 4
.
.
.
Number of GS Requests Rejected: 0

```

The following example displays the status of the Single Session feature on VSAN 1:

```

switch# show zone status vsan 1
VSAN: 1 default-zone: deny distribute: active only Interop: default
mode: basic merge-control: allow
session: cli [root] on pts/0 from 64.104.148.227 at 2019-01-09T06:19:40.55504Z
single-session: enabled
hard-zoning: enabled broadcast: unsupported
smart-zoning: disabled
rscn-format: fabric-address
activation overwrite control: disabled
Default zone:
  qos: none broadcast: unsupported ronly: unsupported
Full Zoning Database :
  DB size: 360 bytes
  Zonesets: 2 Zones: 3 Aliases: 0 Attribute-groups: 1
Active Zoning Database :
  Database Not Available
Current Total Zone DB Usage: 360 / 4000000 bytes (0 % used)
Pending (Session) DB size:
  Full DB Copy size: 396 bytes
  Active DB Copy size: 0 bytes
SFC size: 396 / 4000000 bytes (0 % used)
Status:

```

The following example displays LUN-zoning details:

```

switch# show zone statistics lun-zoning
LUN zoning statistics for VSAN: 1
*****
S-ID: 0x123456, D-ID: 0x22222, LUN: 00:00:00:00:00:00:00:00
-----
Number of Inquiry commands received: 10
Number of Inquiry data No LU sent: 5
Number of Report LUNs commands received: 10
Number of Request Sense commands received: 1
Number of Other commands received: 0
Number of Illegal Request Check Condition sent: 0
S-ID: 0x123456, D-ID: 0x22222, LUN: 00:00:00:00:00:00:00:00
-----
Number of Inquiry commands received: 1
Number of Inquiry data No LU sent: 1
Number of Request Sense commands received: 1
Number of Other commands received: 0
Number of Illegal Request Check Condition sent: 0

```

The following example displays read-only zone details:

```

switch# show zone statistics read-only-zoning
Read-only zoning statistics for VSAN: 2
*****
S-ID: 0x333333, D-ID: 0x111111, LUN: 00:00:00:00:00:00:64
-----
Number of Data Protect Check Condition Sent: 12
switch(config)# show zone status
VSAN: 1 default-zone: deny distribute: active only Interop: default
mode: basic merge-control: allow
session: none
hard-zoning: enabled broadcast: disabled
smart-zoning: disabled
rscn-format: fabric-address
Default zone:
qos: none broadcast: disabled ronly: disabled
Full Zoning Database :
DB size: 4 bytes
Zonesets:0 Zones:0 Aliases: 0
Active Zoning Database :
Database Not Available
Current Total Zone DB Usage: 4 / 2097152 bytes (0 % used)
Pending (Session) DB size:
Full DB Copy size: n/a
Active DB Copy size: n/a
SFC size: 4 / 2097152 bytes (0 % used)
Status:
VSAN: 8 default-zone: deny distribute: full Interop: default
mode: basic merge-control: allow
session: none
hard-zoning: enabled broadcast: disabled
smart-zoning: disabled
rscn-format: fabric-address
Default zone:
qos: none broadcast: disabled ronly: disabled
Full Zoning Database :
DB size: 1946498 bytes
Zonesets:6 Zones:8024 Aliases: 0
Active Zoning Database :
DB size: 150499 bytes
Name: zoneset-1000 Zonesets:1 Zones:731
Current Total Zone DB Usage: 2096997 / 2097152 bytes (99 % used)
Pending (Session) DB size:
Full DB Copy size: n/a
Active DB Copy size: n/a
SFC size: 2096997 / 2097152 bytes (99 % used)
Status: Zoneset distribution failed [Error: Fabric changing Dom 33]:
at 17:05:06 UTC Jun 16 2014
VSAN: 9 default-zone: deny distribute: full Interop: default
mode: enhanced merge-control: allow
session: none
hard-zoning: enabled broadcast: enabled
smart-zoning: disabled
rscn-format: fabric-address
Default zone:
qos: none broadcast: disabled ronly: disabled
Full Zoning Database :
DB size: 2002584 bytes
Zonesets:4 Zones:7004 Aliases: 0 Attribute-groups: 1
Active Zoning Database :
DB size: 94340 bytes
Name: zoneset-hac13-200 Zonesets:1 Zones:176
Current Total Zone DB Usage: 2096924 / 2097152 b
Pending (Session) DB size:

```

```

Full DB Copy size: 0 bytes
Active DB Copy size: 0 bytes
SFC size: 0 / 2097152 bytes (0 % used)
Status: Activation completed at 17:28:04 UTC Jun 16 2014
VSAN: 12 default-zone: deny distribute: full Interop: default
mode: enhanced merge-control: allow
session: none
hard-zoning: enabled broadcast: enabled
smart-zoning: disabled
rscn-format: fabric-address
Default zone:
qos: none broadcast: disabled ronly: disabled
Full Zoning Database :
DB size: 84 bytes
Zonesets:0 Zones:1 Aliases: 0 Attribute-groups: 1
Active Zoning Database :
DB size: 144 bytes
Name: zsl Zonesets:1 Zones:2
Current Total Zone DB Usage: 228 / 2097152 bytes (0 % used)
Pending (Session) DB size:
Full DB Copy size: 0 bytes
Active DB Copy size: 0 bytes
SFC size: 0 / 2097152 bytes (0 % used)
Status: Commit completed at 14:39:33 UTC Jun 27 201
switch(config)#

```

The following example checks the status of the zoneset distribute vsanid command and displays the default zone attributes of a specific VSAN or all active VSANs:

```

switch# show zone status vsan 1
VSAN:1 default-zone:deny distribute:active only Interop:default
mode:basic merge-control:allow
session:none
single-session: enabled
hard-zoning:enabled
Default zone:
qos:low broadcast:disabled ronly:disabled
Full Zoning Database :
Zonesets:0 Zones:0 Aliases:0
Active Zoning Database :
Database Not Available
Status:

```

[Table 21: show zone status Field Descriptions, on page 1911](#) describes the significant fields shown in the show zone status vsan display.

Table 21: show zone status Field Descriptions

Field	Description
VSAN:	VSAN number displayed.
default-zone:	Default-zone policy either permit or deny.
Default zone:	The Default zone field displays the attributes for the specified VSAN. The attributes include: Qos level, broadcast zoning enabled/disabled, and read-only zoning enabled/disabled.
distribute:	Distribute full-zone set (full) or active-zone set (active only).
Interop:	Display s interop mode. 100 = default, 1 = standard, 2 and 3 = Non-Cisco vendors.

Field	Description
mode:	Displays zoning mode either basic or enhanced.
merge control:	Displays merge policy either allow or restrict.
Hard zoning is enabled	If hardware resources (TCAM) becomes full, hard zoning is automatically disabled.
Full Zoning Database:	Displays values of zone database. Its zones filed displays the total number of zones present, which include those that does not belongs to any zonesets.
Active Zoning Database:	Displays values of active zone database.
Status:	Displays status of last zone distribution.

show zone analysis

To display detailed analysis and statistical information about the zoning database, use the show zone analysis command.

```
show zone analysis [pending] active member-ratio [detail] vsan id | vsan id | vsan id
| zoneset name vsan id
```

Syntax Description

active	Displays analysis information for the active zone set.
member-ratio [detail]	Displays the zone member ratio information for a VSAN. This is only valid when the <code>_zone_member_ratio</code> system policy has been overridden and the zone member ratio is configured.
vsan id	Displays analysis information for the specified VSAN ID. The range is 1 to 4093.
zoneset name	Displays zone set analysis information for the specified zone set.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
8.5(1)	The show zone analysis active vsan id command output was modified to display the number of devices exceeding the zone member ratio limit. Added the member-ratio[detail] vsan id option.
3.0(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays detailed statistics and analysis of the active zoning database:

```
switch(config-zone)# show zone analysis active vsan 1
Zoning database analysis vsan 1
  Active zoneset: qoscfg
    Activated at: 14:40:55 UTC Mar 21 2014
    Activated by: Local [ CLI ]
    Default zone policy: Deny
    Number of devices zoned in vsan: 8/8 (Unzoned: 0)
    Number of zone members resolved: 10/18 (Unresolved: 8)
    Num zones: 4
    Number of IVR zones: 0
    Number of IPS zones: 0
    Number of devices exceeding zone member ratio threshold (1:20): 5
    Formatted size: 328 bytes / 4096 Kb
switch(config-zone)#
```

Table 22: show zone analysis Field Descriptions for the Active Zoning Database, on page 1914 describes the fields displayed in the output of a show zone analysis command for the active zoning database.

Table 22: show zone analysis Field Descriptions for the Active Zoning Database

Field	Description
Active zoneset	Displays the active zone set name. If a zone set has changed in the full zoning database, an asterisk (*) appears after the zone set name. If the active zone set is not present in the full zoning database, a minus sign (-) appears after the zone set name.
Activated at	Displays the time the zone set was activated.
Activated from	<p>Displays the agent that most recently modified the active zoning database. The agent can be one of the following three types:</p> <ul style="list-style-type: none"> • Local: indicates that the active database was last modified locally through a configuration change from one of the following applications: <ul style="list-style-type: none"> • CLI: The active zoning database was modified by the user from the Command Line Interface. • SNMP: The active zoning database was modified by the user through the Simple Network Management Protocol (SNMP). • GS: The active zoning database was modified from the Generic Services (GS) client. • CIM: The active zoning database was modified by the applications using the Common Information Model (CIM). • INTERNAL: The active zoning database was modified as a result of an internal activation either from Inter-VSAN Routing (IVR) or from the IP Storage services manager. • Merge: indicates that the active database was last modified by the Merge protocol. The interface on which the merge occurred is also displayed. • Remote: indicates that the active database was last modified by the Change protocol, initiated by a remote switch. The domain, IP address, and switch name of the switch initiating the change are also displayed. <p>Note The switch name is displayed on the next line, aligned with the domain, only if the switch name is set. The default switch name switch and the ip-address are not displayed.</p>
Default zoning policy: permit/deny	Displays the status of the default zoning policy for this VSAN.

Field	Description
Number of devices zoned in vsan: a/b (Unzoned: c | Default-zone: d)	<p>Displays the number of devices that are present in the zoning configuration.</p> <ul style="list-style-type: none"> • a = The number of unique resolved members in the active database. • b = The number of devices logged in, which is the same as the number of entries in the Fibre Channel name server (FCNS) database. • c = The number of devices logged in, but not zoned in the zoning configuration. • d = The number of devices in the default zone. d is displayed only if the default zoning policy is permit.
Number of zone members resolved: a/b (Unresolved: c)	<p>Displays the number of members that are resolved in this VSAN in the form: a out of b members in the zone set are resolved.</p> <p>The number of resolved members is not necessarily unique. For example, if a pWWN member and a fWWN member resolve to the same FC ID, then that member is counted as two resolved members out of two members present.</p> <ul style="list-style-type: none"> • a = The number of members resolved. • b = The total number of members present. • c = The total number of members unresolved.
Num zones	Displays the total number of zones that are present in the active zone set.
Number of IVR zones	Displays the number of zones added and activated by IVR.
Number of IPS zones	Displays the number of zones added and activated by the IP Storage services manager (IPS-MGR).
Number of devices exceeding zone member ratio threshold	Displays the number of devices exceeding the zone member ratio limit as configured by overriding the __zone_member_ratio system policy.
Formatted database size	<p>Displays the total size of the active database when formatted to be sent over the wire.</p> <p>The formatted database size is displayed in kilobytes (KB) in this format: < X KB / Y KB, as in the following example. Formatted database size: < 1 KB/2000 KB</p> <p>In this example, the formatted database size is less than 1 KB out of the maximum size of 2000 KB.</p>

The following example displays the list of devices exceeding the zone member ration in VSAN 1:

```
switch# show zone analysis active member-ratio vsan 1
VSAN 1
  Active zoneset: ZS1
  Total number of devices exceeding zone member ratio of 1:20 is 4
                                     FC4      Zoned
```

Zone Member	Member Type	Features	Count
zone123	device-alias	init	22
fc1/2 swwn 20:00:8c:60:4f:cf:78:81	interface	unknown	22
zone456	sym-nodename	unknown	22
20:00:00:00:00:00:00:02	pwwn	init	22

The following example displays in detail the list of devices exceeding the zone member ratio in VSAN 1:

```
switch# show zone analysis active member-ratio detail vsan 1
VSAN 1
Active zoneset: ZS1
Total number of devices exceeding zone member ratio of 1:20 is 4

Zone Member: device-alias host123
FC4 Features: init
Zoned Member count: 18
Zoned With
```

Member Type	FC4 Features
pwwn	unknown
pwwn	both
pwwn	unknown
pwwn	init
fcid	target
fcid	unknown
fcid	unknown
fcid	target
fwwn	unknown
fwwn	unknown
sym-nodename	unknown
sym-nodename	unknown
interface	unknown
interface	unknown
interface	unknown
domain-interface	unknown
domain-interface	unknown
device-alias	unknown

```

Zone Member: interface fc1/2 swwn 20:00:8c:60:4f:cf:78:81
FC4 Features: unknown
Zoned Member count: 18
Zoned With
```

Member Type	FC4 Features
pwwn	unknown
pwwn	both
pwwn	unknown
pwwn	init
fcid	target
fcid	unknown
fcid	unknown
fcid	target
fwwn	unknown
fwwn	unknown
sym-nodename	unknown
sym-nodename	unknown
interface	unknown
interface	unknown
domain-interface	unknown
domain-interface	unknown
device-alias	unknown
device-alias	init

```

Zone Member: sym-nodename host456
FC4 Features: unknown
Zoned Member count: 18
Zoned With
-----
10:00:00:00:00:00:00:01      pwnn      unknown
20:00:00:00:00:00:00:01      pwnn      both
10:00:00:00:00:00:00:02      pwnn      unknown
20:00:00:00:00:00:00:02      pwnn      init
0xec0001                     fcid      target
0xec0002                     fcid      unknown
0xec0003                     fcid      unknown
0xec0004                     fcid      target
80:00:00:00:00:00:00:01      fwnn      unknown
80:00:00:00:00:00:00:02      fwnn      unknown
host456                       sym-nodename unknown
fcl/2 swrn 20:00:8c:60:4f:cf:78:81 interface unknown
port-channel 19 swrn 20:00:8c:60:4f:cf:78:81 interface unknown
fcl/4 swrn 20:00:8c:60:4f:cf:78:82 interface unknown
port-channel 1 domain-id 65    domain-interface unknown
fcl/2 domain-id 80             domain-interface unknown
host122                       device-alias unknown
host123                       device-alias init

Zone Member: pwnn 20:00:00:00:00:00:00:02
FC4 Features: init
Zoned Member count: 18
Zoned With
-----
10:00:00:00:00:00:00:01      pwnn      unknown
20:00:00:00:00:00:00:01      pwnn      both
10:00:00:00:00:00:00:02      pwnn      unknown
0xec0001                     fcid      target
0xec0002                     fcid      unknown
0xec0003                     fcid      unknown
0xec0004                     fcid      target
80:00:00:00:00:00:00:01      fwnn      unknown
80:00:00:00:00:00:00:02      fwnn      unknown
host456                       sym-nodename unknown
host457                       sym-nodename unknown
fcl/2 swrn 20:00:8c:60:4f:cf:78:81 interface unknown
port-channel 19 swrn 20:00:8c:60:4f:cf:78:81 interface unknown
fcl/4 swrn 20:00:8c:60:4f:cf:78:82 interface unknown
port-channel 1 domain-id 65    domain-interface unknown
fcl/2 domain-id 80             domain-interface unknown
host122                       device-alias unknown
host123                       device-alias init

```

The following example displays detailed statistics and analysis of the full zoning database:

```

switch# sh zone analysis vsan 1
Zoning database analysis vsan 1
Full zoning database
Last updated at: 14:36:56 UTC Oct 04 2005
Last updated by: Local [CLI / SNMP / GS / CIM / INTERNAL] or
Merge [interface] or
Remote [Domain, IP-Address]
[Switch name]

Num zonesets: 1
Num zones: 1
Num aliases: 0
Num attribute groups: 0

```

```
Formatted database size: < 1 Kb / 2000 kb ( < 1% usage)
```

```
Unassigned zones:
zone name z1 vsan 1
```

[Table 23: show zone analysis Field Descriptions for the Full Zoning Database, on page 1918](#) describes the fields displayed in the output of a show zone analysis command for the full zoning database.

Table 23: show zone analysis Field Descriptions for the Full Zoning Database

Field	Description
Last updated at	Displays a time stamp showing when the full zoning database was last updated.
Last Updated by	<p>Displays the agent that most recently modified the full zoning database. The agent can be one of the following three types:</p> <ul style="list-style-type: none"> • Local: indicates that the full database was last modified locally through a configuration change from one of the following applications: <ul style="list-style-type: none"> • CLI: The full zoning database was modified by the user from the Command Line Interface. • SNMP: The full zoning database was modified by the user through the Simple Network Management Protocol (SNMP). • GS: The full zoning database was modified from the Generic Services (GS) client. • CIM: The full zoning database was modified by the applications using the Common Information Model (CIM). • INTERNAL: The full zoning database was modified as a result of an internal activation either from Inter-VSAN Routing (IVR) or from the IP Storage services manager. • Merge: indicates that the full database was last modified by the Merge protocol. In this case, the interface on which the merge occurred is also displayed. • Remote: indicates that the full database was last modified by the Change protocol, initiated by a remote switch, when the full zone set distribution was enabled. The domain, IP address, and switch name of the switch initiating the change are also displayed. <p>Note The switch name is displayed on the next line, aligned with the domain, only if the switch name is set. The default switch name switch and the ip-address are not displayed.</p>
Num zonesets	Displays the total number of zone sets in the database.
Num zones	Displays the total number of zones in the database, including unassigned zones.
Num aliases	Displays the total number of aliases in the database, including unassigned FC aliases.
Num attribute groups	Displays the total number of attribute groups in the database. This field applies only when enhanced zoning is used.

Field	Description
Formatted database size	Displays the total size of the full database when formatted to be sent over the wire. The formatted database size is displayed in kilobytes in this format: < X KB / Y KB, as in the following example. Formatted database size: < 1 KB/2000 KB In this example, the formatted database size is less than 1 KB out of the maximum size of 2000 KB.
Unassigned zones	Displays all the unassigned zones in the VSAN. Only the names of the zones are displayed. The details about the members of the zone are not displayed in this section.

The following example displays zone set analysis information. See [Table 23: show zone analysis Field Descriptions for the Full Zoning Database, on page 1918](#) for a description of the fields in this example:

```
switch# show zone analysis zoneset zsl vsan 1
Zoning database analysis vsan 1
  Zoneset analysis: zsl
    Num zonesets: 1
    Num zones: 0
    Num aliases: 0
    Num attribute groups: 0
    Formatted size: 20 bytes / 2048 Kb
```

Related Commands

Command	Description
zone compact database	Compacts a zone database in a VSAN.

show zone internal global-info

To display the zone global information, use the show zone internal global-info command.

```
show zone internal global-info
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Release	Modification
5.2(6)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the zone server internal state for a VSAN:

```
switch# show zone internal global-info
Global Default Zone Max-Limit :
  Global Default Zone Max-Limit: 16000
  Global Default Zone Member Max-Limit: 32000
  Global Default Zoneset Max-Limit: 1000
  Global Default Zone database size Max-Limit: 4000000 bytes
Global Full Database Counters :
  Zonesets: 0 Zones: 0 Huge id zones: 0
  Read-only Zones: 0 QoS Zones: 0
  Broadcast Zones: 0 Smart-zoning Zones: 0
  Aliases: 0 Attribute-groups: 0
  Members: 0 LUN Members: 0 DDAS Members: 0 Smart-zoning members: 0
  Adv Zoning3 Members(IPv4 + dom-If): 0 IPv6 Members: 0
Global Session Database Counters (diff) :
  Zonesets: 0 Zones: 0 Smart-zoning Zones: 0
  Aliases: 0 Attribute-groups: 0
  Members: 0 LUN Members: 0 DDAS Members: 0 Smart-zoning members: 0
Global Active Database Counters :
  Zonesets: 1 Zones: 5 Huge id zones: 0
  Read-only Zones: 0 QoS Zones: 0
  Broadcast Zones: 0 Smart-zoning Zones: 0
  Members: 6 LUN Members: 0 DDAS Members: 0 Smart-zoning members: 0
  Adv Zoning3 Members(IPv4 + dom-If): 0 IPv6 Members: 0
Global Session Active Database Counters (diff) :
  Zones: 0 Smart-zoning Zones: 0
  Members: 0 LUN Members: 0 DDAS Members: 0 Smart-zoning members: 0
Global ISSU Info:
  fs_upgrade = 0 system_upg = 0 lc_upgrade = 0
Global RSCN Generation Info: Enabled
Global Smart-zoning vsan counter: 1
Global port-address RSCN counter: 0
Global Zone EEM Limit :
  Global Zone EEM Limit: 16000
  Global Zone Member EEM Limit: 32000
```



```
Global Zoneset EEM Limit: 1000
Global Zone database size EEM Limit: 4000000 bytes
switch#
```

show zone internal vsan

To display the zone server internal state for a VSA, use the show zone internal vsan command.

```
show zone internal vsan vsan-id
```

Syntax Description

vsan-id	Specifies the VSAN ID. The range is from 1 to 4093.
---------	---

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
5.2(6)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays the zone server internal state for a VSAN:

```
switch# show zone internal vsan 1
VSAN: 1 default-zone: deny(rw) distribute: active only
      E_D_TOV: 2000 R_A_TOV: 10000 D_S_TOV: 5000 F_S_TOV: 5000 F_D_TOV: 2000
      Interop: default IOD: disable bcast: unsupported dflt-bcast: unsupported dfl
t-qos: 0
      Smart-zoning: disabled Inc Tmp SZ mode: 0 Tmp Smart-zoning: 0
      DBLock:-(F count:0) Ifindex Table Size: 5 Transit Frame Index: 0
      Total Transit Frame Count: 0 Transit Discard Count: 0
Full Database Counters :
      Zonesets: 0 Zones: 0 Huge id zones: 0
      Read-only Zones: 0 QoS Zones: 0
      Broadcast Zones: 0 Smart-zoning Zones: 0
      Aliases: 0 Attribute-groups: 0
      Members: 0 LUN Members: 0 DDAS Members: 0 Smart-zoning members: 0
      Adv Zoning3 Members(IPv4 + dom-If): 0 IPv6 Members: 0
switch#
```

show zone policy

To display the zone policies, use the show zone policy command.

```
show zone policy
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	5.2(6)	This command was introduced.

Usage Guidelines None.

Examples The following example displays the zone policies:

```
switch# show zone policy
Vsan: 1
  Default-zone: deny
  Distribute: active only
  Broadcast: unsupported
  Merge control: allow
  Generic Service: read-write
  Smart-zone: disabled
switch#
```

show zone smart-zoning auto-conv

To display the previous auto convert status, use the show zone smart-zoning auto-conv command.

```
show zone smart-zoning auto-conv log errors | status vsan vsan-id
```

Syntax Description

log	Displays the logged messages.
errors	Displays the error logs for smart zoning auto convert.
status	Displays the previous auto convert status.
vsan	Displays the zones belonging to the specified VSAN.
vsan-id	VSAN ID. The range is from 1 to 4093.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
5.2(6)	This command was introduced.

Usage Guidelines

None.

Examples

The following example displays the previous auto convert status for a VSAN:

```
switch# show zone smart-zoning auto-conv status vsan 1
switch#
```

show zone-attribute-group

To display the device name information, use the show zone-attribute-group command.

```
show zone-attribute-group [name group-name] |[pending] |[vsan vsan-id]
```

Syntax Description	name group-name	Displays the entire device name database.
	pending	Displays the pending device name database information.
	vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to display the contents of pending zone attribute groups.

```
switch# show zone-autoboot-group pending
zone-attribute-group name $default_zone_attr_group$ vsan 4061
zone-attribute-group name admin-group vsan 4061
  broadcast
```

Related Commands	Command	Description
	zone-attribute-group name	Configures zone attribute groups.

show zoneset

To display the configured zone sets, use the show zoneset command.

```
show zoneset [[active [vsan vsan-id]]|[brief [active [vsan vsan-id]|vsan vsan-id]]|[name zoneset-name
[active vsan vsan-id]]|[brief [active vsan vsan-id|vsan vsan-id]]|[pending [active vsan vsan-id|brief
[active vsan vsan-id|vsan vsan-id]|vsan vsan-id]]|[vsan vsan-id]]|[pending [active vsan vsan-id]|
[brief [active vsan vsan-id|vsan vsan-id]]|[vsan vsan-id]]|[vsan vsan-id]]
```

Syntax Description

active	Displays only active zone sets.
vsan	Displays the VSAN.
vsan-id	Specifies the ID of the VSAN. The range is 1 to 4093
brief	Displays zone set members in a brief list.
name	Displays members of a specified zone set.
zoneset-name	Specifies the zone set name. The maximum is 64.
pending	Displays zone sets members that are in session.

Command Default

None.

Command Modes

EXEC mode

Command History

Release	Modification
1.2(2)	This command was modified.

Usage Guidelines

None.

Examples

The following example displays configured zone set information.

```
switch(config)# show zoneset vsan 1
zoneset name qoscfg vsan 1
  zone name qos1 vsan 1
    zone-attribute-group name qos1-attr-group vsan 1
      pwnn 50:08:01:60:01:5d:51:11
      pwnn 50:08:01:60:01:5d:51:10
      pwnn 50:08:01:60:01:5d:51:13

  zone name qos3 vsan 1
    zone-attribute-group name qos3-attr-group vsan 1
      pwnn 50:08:01:60:01:5d:51:11
      pwnn 50:08:01:60:01:5d:51:12
      pwnn 50:08:01:60:01:5d:51:13

  zone name sb1 vsan 1
    pwnn 20:0e:00:11:0d:10:dc:00
```

```
pwwn 20:0d:00:11:0d:10:da:00
pwwn 20:13:00:11:0d:15:75:00
pwwn 20:0d:00:11:0d:10:db:00
```

The following example displays configured zone set information for a specific VSAN.

```
switch# show zoneset vsan 2-3
zoneset name ZoneSet2 vsan 1
  zone name Zone2 vsan 1
    fwwn 20:52:00:05:30:00:2a:1e
    fwwn 20:53:00:05:30:00:2a:1e
    fwwn 20:54:00:05:30:00:2a:1e
    fwwn 20:55:00:05:30:00:2a:1e
    fwwn 20:56:00:05:30:00:2a:1e
  zone name Zone1 vsan 1
    pwwn 21:00:00:20:37:6f:db:dd
    pwwn 21:00:00:20:37:a6:be:2f
    pwwn 21:00:00:20:37:9c:48:e5
    fcalias Alias1
zoneset name ZoneSet1 vsan 1
  zone name Zone1 vsan 1
    pwwn 21:00:00:20:37:6f:db:dd
    pwwn 21:00:00:20:37:a6:be:2f
    pwwn 21:00:00:20:37:9c:48:e5
    fcalias Alias1
```

ShowAnalytics

To display the SAN analytics information in a tabular format, use the ShowAnalytics command.



Note For information on view types, see the [Cisco MDS 9000 Series NX-OS SAN Analytics and Telemetry Configuration Guide](#).

ShowAnalytics

Syntax Description

--errors	Displays error metrics for all ITLs.
--errorsonly	Displays only the error metrics for all ITLs.
--evaluate-npload	Displays per port network processing unit (NPU) load.
-h, --help	(Optional) Provides information about the list of available keywords and arguments.
--info	Displays information specific to a view type.
--minmax	Displays minimum, maximum, and peak values for ITLs.
--outstanding-io	Displays outstanding IO per ITL for an interface.
--top	Displays the top ITLs based on key. The default key is I/O operations per second (IOPS).
--version	(Optional) Displays the SAN analytics version.
--vsan-thput	(Optional) Displays per VSAN SCSI throughput for interface.
--initiator-itl	Displays the SAN analytics information of an initiator-target-LUN (ITL) flow.
--target-itl	Displays the SAN analytics information of a target ITL flow.
--alias	(Optional) Displays device-alias information for initiators and targets.
--initiator id	(Optional) Displays the SAN analytics information for an initiator.
--interface slot/port	(Optional) Displays the SAN analytics information for an interface.
--key [iops | thput | ect]	(Optional) Specifies the key value for the --top option. The default key is IOPS.
--limit	(Optional) Specifies the maximum number of ITL records to display. The range is 1-20000. The default limit value is 20000.
--lun id	(Optional) Displays the SAN analytics information for a logical unit number (LUN).
--module	(Optional) Specifies the modules to be used in the --evaluate-npload option.

--progress	(Optional) Specifies progress for the --top option. This option must not be used on a console.
--refresh	(Optional) Specifies to refresh output of the --outstanding-io option.
--target id	(Optional) Displays the SAN analytics information for a target.
--vsan id	(Optional) Displays the SAN analytics information for a VSAN. The VSAN ID range is from 1 to 4093.

Command Default

None.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
8.4(1a)	Added the --alias argument for the --top option.
8.4(1)	Added the --errorsonly, --evaluate-npload, --minmax, --outstanding-io, --top, --vsan-thput, --alias, --limit, --key, --limit, --module, --progress, and --refresh options.
8.2(1)	This command was introduced.

Usage Guidelines

To display the SAN analytics information, you must enable the SAN Analytics feature on the switch and its interfaces. The ShowAnalytics command is different from a regular Cisco MDS NX-OS show command. Hence, the ShowAnalytics command does not support the command completion feature. The ShowAnalytics command uses python script to extract and display metrics in a tabular format. A future Cisco MDS NX-OS Release will allow you to modify the python script to customize the ShowAnalytics command output. The ShowAnalytics command is aliased to the source sys/analytics.py path.

The ShowAnalytics overlay CLI displays accumulative data of Exchange Completion Time (ECT) for the --initiator-itl and --target-itl options under the --info option. However, it displays instantaneous data for rate and bandwidth metrics.

If the active ITL count exceeds the documented limit, the ShowAnalytics overlay command displays a warning and exits. For information on the ITL count limit, see the [Cisco MDS NX-OS Configuration Limits, Release 8.x](#).

If you configure a push query with the clear keyword as recommended by Virtual Instruments or DCNM, minimum and maximum flow metrics will not have accurate values.

This example shows how to get information about using the overlay CLI:

```
switch# ShowAnalytics --help

ShowAnalytics --errors <options> | --errorsonly <options> | --evaluate-npload <options> | --help | --info <options> | --minmax <options> | --outstanding-io <options> | --top
<options> | --version | --vsan-thput <options>

OPTIONS :
-----
--errors          Provides error metrics for all ITLs
                  ShowAnalytics --errors [--initiator-itl <args> | --target-itl <args>]

--initiator-itl  Provides errors metrics for initiator ITLs
                  Args : [--interface <interface>] [--initiator <initiator_fcid>] [--target <target_fcid>] [--lun <lun_id>] [--alias] [--limit <itl_limit>]
--target-itl     Provides errors metrics for target ITLs
                  Args : [--interface <interface>] [--initiator <initiator_fcid>] [--target <target_fcid>] [--lun <lun_id>] [--alias] [--limit <itl_limit>]

--errorsonly     Provides error metrics for ITLs. Only display ITLs with non-zero errors.
                  ShowAnalytics --errorsonly [--initiator-itl <args> | --target-itl <args>]
```

ShowAnalytics

```

--initiator-itl      Provides errors metrics for initiator ITLs
                    Args : [--interface <interface>] [--initiator <initiator_fcid>] [--target <target_fcid>] [--lun <lun_id>] [--alias]
--target-itl        Provides errors metrics for target ITLs
                    Args : [--interface <interface>] [--initiator <initiator_fcid>] [--target <target_fcid>] [--lun <lun_id>] [--alias]

--evaluate-npload   Provides per port NPU load
                    This option must be run without analytics interface configurations
                    Args : [--module <mod1,mod2> | --interface <int1,int2>]
                    Provides system wide data if --module and --interface arguments are not present

--help              Provides help about this utility

--info              Provide information about ITLs
                    ShowAnalytics --info [--initiator-itl <args> | --target-itl <args>]

--initiator-itl     Provides ITL view for initiators ITLs
                    Args : [--interface <interface>] [--initiator <initiator_fcid>] [--target <target_fcid>] [--lun <lun_id>] [--alias] [--limit <itl_limit>]
--target-itl        Provides ITL view for target ITLs
                    Args : [--interface <interface>] [--initiator <initiator_fcid>] [--target <target_fcid>] [--lun <lun_id>] [--alias] [--limit <itl_limit>]

--minmax            Provide Min/Max/Peak values of ITLs
                    ShowAnalytics --minmax [--initiator-itl <args> | --target-itl <args>]

--initiator-itl     Provides ITL view for initiators ITLs
                    Args : [--interface <interface>] [--initiator <initiator_fcid>] [--target <target_fcid>] [--lun <lun_id>] [--alias] [--limit <itl_limit>]
--target-itl        Provides ITL view for target ITLs
                    Args : [--interface <interface>] [--initiator <initiator_fcid>] [--target <target_fcid>] [--lun <lun_id>] [--alias] [--limit <itl_limit>]

--outstanding-io    Provides Outstanding io per ITL for an interface
                    Args : [--interface <interface>] [--initiator <initiator_fcid>] [--target <target_fcid>] [--lun <lun_id>] [--limit] [--refresh]

--top               Provides top ITLs based on key. Default key is IOPS
                    Args : [--interface <interface>] [--initiator <initiator_fcid>] [--target <target_fcid>] [--lun <lun_id>] [--limit] [--key <IOPS|THPUT|ECT>] [--progress]
[--alias]

--version           Provides version details of this utility

--vsan-thput        Provides per vsan scsi traffic rate for interface.
                    Args : [--interface <interface>]

```

ARGUMENTS:

```

--alias             Prints device-alias for initiator and target. Terminal Emulator should support 511 width size.
--initiator         <initiator_fcid> Specifies initiator FCID in the format 0xDDAAAPP
--interface         <interface> Specifies Interface in format module/port
--key               <iops|thput|ect> Defines the key value for the --top option
--limit            <itl_limit> Maximum number of ITL records to display. Valid range 1-20000. Default = 20000
--lun               <lun_id> Specifies LUN ID in the format XXXX-XXXX-XXXX-XXXX
--module            <mod1,mod2> Specifies module list for --evaluate-npload option example 1,2
--progress          Provides progress for --top option. Should not be used on console
--refresh           Refreshes output of --outstanding-io
--target            <target_fcid> Specifies target FCID in the format 0xDDAAAPP
--vsan              <vsan_number> Specifies vsan number

```

Note: --interface can take range of interfaces in case of --evaluate-npload and port-channel only in case of --vsan-thput

**Note**

- All ShowAnalytics options support only the SCSI analytics type except the --evaluate-npload option that supports both SCSI and NVMe analytics types.
- Run the --evaluate-npload option before configuring the analytics type on interfaces. The --evaluate-npload option does not work on a module even if one of the interface on the module is configured with an analytic type.
- The --outstanding-io option works only on F ports.

This example shows how to display the overlay CLI version:

```

switch# ShowAnalytics --version
ShowAnalytics 2.1

```

This example shows how to display the flow metrics of an initiator ITL:

```

switch# ShowAnalytics --info --initiator-itl
2019-04-08 11:26:23.074904

Interface fc3/33
+-----+-----+-----+-----+
|          VSAN|Initiator|Target|LUN          | Avg IOPS | Avg Throughput | Avg ECT |
+-----+-----+-----+-----+

```

```

|      |      |      |      |      |      |      |      | | |
|      |      |      |      |      |      |      |      |
| 10|0x1c03e0|0xd601a0|0000-0000-0000-0000 | 0 | 24 | 0 | 12.1 KB/s| 0 | 2.2 ms |
| 10|0x1c03e1|0xd601a1|0000-0000-0000-0000 | 0 | 21 | 0 | 10.8 KB/s| 0 | 2.2 ms |
+-----+-----+-----+-----+-----+-----+-----+-----+
Interface fc3/34
+-----+-----+-----+-----+-----+-----+-----+-----+
|      |      |      |      |      |      |      |      | | |
|      |      |      |      |      |      |      |      |
| 10|0x1c0200|0xd60000|0000-0000-0000-0000 | 0 | 17 | 0 | 8.6 KB/s| 0 | 2.2 ms |
| 10|0x1c0201|0xd60001|0000-0000-0000-0000 | 0 | 17 | 0 | 8.8 KB/s| 0 | 2.2 ms |
+-----+-----+-----+-----+-----+-----+-----+-----+
Interface fc3/35
+-----+-----+-----+-----+-----+-----+-----+-----+
|      |      |      |      |      |      |      |      | | |
|      |      |      |      |      |      |      |      |
| 10|0x1c0220|0xd60020|0000-0000-0000-0000 | 0 | 33 | 0 | 16.8 KB/s| 0 | 2.2 ms |
| 10|0x1c0221|0xd60021|0000-0000-0000-0000 | 0 | 28 | 0 | 14.2 KB/s| 0 | 2.2 ms |
+-----+-----+-----+-----+-----+-----+-----+-----+

```

This example shows how to display the flow metrics of a target ITL:

```

switch# ShowAnalytics --info --target-itl
2019-04-09 11:11:17.974991

Interface fc8/15
+-----+-----+-----+-----+-----+-----+-----+-----+
|      |      |      |      |      |      |      |      | | |
|      |      |      |      |      |      |      |      |
| 3300|0x040001|0x030033|0000-0000-0000-0000 | 0 | 4047 | 0 | 15.8 MB/s| 0 | 84.0 us |
| 3300|0x040003|0x030035|0000-0000-0000-0000 | 0 | 4045 | 0 | 15.8 MB/s| 0 | 85.0 us |
| 3300|0x040005|0x030037|0000-0000-0000-0000 | 0 | 4033 | 0 | 15.8 MB/s| 0 | 85.0 us |
| 3300|0x040007|0x030039|0000-0000-0000-0000 | 0 | 4041 | 0 | 15.8 MB/s| 0 | 86.0 us |
| 3300|0x040009|0x03003b|0000-0000-0000-0000 | 0 | 4048 | 0 | 15.8 MB/s| 0 | 86.0 us |
| 3300|0x04000b|0x03003d|0000-0000-0000-0000 | 0 | 4040 | 0 | 15.8 MB/s| 0 | 86.0 us |
| 3300|0x04000d|0x03003f|0000-0000-0000-0000 | 0 | 4055 | 0 | 15.8 MB/s| 0 | 86.0 us |
| 3300|0x04000f|0x030041|0000-0000-0000-0000 | 0 | 4052 | 0 | 15.8 MB/s| 0 | 86.0 us |
| 3300|0x040011|0x030043|0000-0000-0000-0000 | 0 | 4055 | 0 | 15.8 MB/s| 0 | 86.0 us |
| 3300|0x040013|0x030045|0000-0000-0000-0000 | 0 | 4056 | 0 | 15.8 MB/s| 0 | 86.0 us |
+-----+-----+-----+-----+-----+-----+-----+-----+

Interface fc8/17
+-----+-----+-----+-----+-----+-----+-----+-----+
|      |      |      |      |      |      |      |      | | |
|      |      |      |      |      |      |      |      |
| 5|0xed0500|0xef0720|0001-0000-0000-0000 | 31 | 0 | 31.5 KB/s| 0 | 23.9 ms | 0 |
| 5|0xed0500|0xef0720|0002-0000-0000-0000 | 31 | 0 | 31.2 KB/s| 0 | 23.9 ms | 0 |
| 5|0xed0500|0xef0720|0003-0000-0000-0000 | 31 | 0 | 31.0 KB/s| 0 | 23.9 ms | 0 |
| 5|0xed0500|0xef0720|0004-0000-0000-0000 | 31 | 0 | 31.5 KB/s| 0 | 23.9 ms | 0 |
| 5|0xed0500|0xef0720|0005-0000-0000-0000 | 31 | 0 | 31.8 KB/s| 0 | 23.9 ms | 0 |
| 5|0xed0500|0xef0720|0006-0000-0000-0000 | 31 | 0 | 31.5 KB/s| 0 | 23.9 ms | 0 |
| 5|0xed0500|0xef0720|0007-0000-0000-0000 | 31 | 0 | 31.8 KB/s| 0 | 23.9 ms | 0 |
| 5|0xed0500|0xef0720|0008-0000-0000-0000 | 31 | 0 | 31.2 KB/s| 0 | 23.9 ms | 0 |
| 5|0xed0500|0xef0720|0009-0000-0000-0000 | 31 | 0 | 31.2 KB/s| 0 | 23.9 ms | 0 |
| 5|0xed0500|0xef0720|000a-0000-0000-0000 | 31 | 0 | 31.5 KB/s| 0 | 24.0 ms | 0 |
+-----+-----+-----+-----+-----+-----+-----+-----+

```

This example shows how to display all initiator ITLs and limit the output to 10 random records:

```

switch# ShowAnalytics --info --target-itl --interface fc8/15 --limit 10
2019-04-09 11:11:24.652190

Interface fc8/15
+-----+-----+-----+-----+-----+-----+-----+-----+
|      |      |      |      |      |      |      |      | | |
|      |      |      |      |      |      |      |      |
| 3300|0x040001|0x030033|0000-0000-0000-0000 | 0 | 4047 | 0 | 15.8 MB/s| 0 | 84.0 us |
| 3300|0x040003|0x030035|0000-0000-0000-0000 | 0 | 4045 | 0 | 15.8 MB/s| 0 | 85.0 us |
| 3300|0x040005|0x030037|0000-0000-0000-0000 | 0 | 4033 | 0 | 15.8 MB/s| 0 | 85.0 us |
| 3300|0x040007|0x030039|0000-0000-0000-0000 | 0 | 4041 | 0 | 15.8 MB/s| 0 | 86.0 us |
| 3300|0x040009|0x03003b|0000-0000-0000-0000 | 0 | 4048 | 0 | 15.8 MB/s| 0 | 86.0 us |
| 3300|0x04000b|0x03003d|0000-0000-0000-0000 | 0 | 4040 | 0 | 15.8 MB/s| 0 | 86.0 us |
| 3300|0x04000d|0x03003f|0000-0000-0000-0000 | 0 | 4055 | 0 | 15.8 MB/s| 0 | 86.0 us |
| 3300|0x04000f|0x030041|0000-0000-0000-0000 | 0 | 4052 | 0 | 15.8 MB/s| 0 | 86.0 us |
| 3300|0x040011|0x030043|0000-0000-0000-0000 | 0 | 4055 | 0 | 15.8 MB/s| 0 | 86.0 us |
| 3300|0x040013|0x030045|0000-0000-0000-0000 | 0 | 4056 | 0 | 15.8 MB/s| 0 | 86.0 us |
+-----+-----+-----+-----+-----+-----+-----+-----+

```

This example shows how to display the flow metrics of VSAN 10 of an initiator ITL:

```

switch# ShowAnalytics --info --initiator-itl --vsan 10
2019-04-08 11:26:23.074904

```

```

Interface fc3/33
-----
VSAN|Initiator|Target|LUN      | Avg IOPS      | Avg Throughput  | Avg ECT
-----|-----|-----|-----|-----|-----|-----|-----
      | Read | Write | Read | Write | Read | Write |
-----|-----|-----|-----|-----|-----|-----|-----
10|0x1c03e0|0xd601a0|0000-0000-0000-0000 | 0 | 24 | 0 | 12.1 KB/s | 0 | 2.2 ms|
10|0x1c03e1|0xd601a1|0000-0000-0000-0000 | 0 | 21 | 0 | 10.8 KB/s | 0 | 2.2 ms|
-----

Interface fc3/34
-----
VSAN|Initiator|Target|LUN      | Avg IOPS      | Avg Throughput  | Avg ECT
-----|-----|-----|-----|-----|-----|-----
      | Read | Write | Read | Write | Read | Write |
-----|-----|-----|-----|-----|-----|-----
10|0x1c0200|0xd60000|0000-0000-0000-0000 | 0 | 17 | 0 | 8.6 KB/s  | 0 | 2.2 ms|
10|0x1c0201|0xd60001|0000-0000-0000-0000 | 0 | 17 | 0 | 8.8 KB/s  | 0 | 2.2 ms|
-----

```

This example shows how to display the flow metrics of interface fc8/15 of a target ITL:

```

switch# ShowAnalytics --info --target-itl --interface fc8/15
2019-04-09 11:11:17.974991

Interface fc8/15
-----
VSAN|Initiator|Target|LUN      | Avg IOPS      | Avg Throughput  | Avg ECT
-----|-----|-----|-----|-----|-----
      | Read | Write | Read | Write | Read | Write |
-----|-----|-----|-----|-----|-----|-----
3300|0x040001|0x030033|0000-0000-0000-0000 | 0 | 4047 | 0 | 15.8 MB/s | 0 | 84.0 us|
3300|0x040003|0x030035|0000-0000-0000-0000 | 0 | 4045 | 0 | 15.8 MB/s | 0 | 85.0 us|
3300|0x040005|0x030037|0000-0000-0000-0000 | 0 | 4033 | 0 | 15.8 MB/s | 0 | 85.0 us|
3300|0x040007|0x030039|0000-0000-0000-0000 | 0 | 4041 | 0 | 15.8 MB/s | 0 | 86.0 us|
3300|0x040009|0x03003b|0000-0000-0000-0000 | 0 | 4048 | 0 | 15.8 MB/s | 0 | 86.0 us|
3300|0x04000b|0x03003d|0000-0000-0000-0000 | 0 | 4040 | 0 | 15.8 MB/s | 0 | 86.0 us|
3300|0x04000d|0x03003f|0000-0000-0000-0000 | 0 | 4055 | 0 | 15.8 MB/s | 0 | 86.0 us|
3300|0x04000f|0x030041|0000-0000-0000-0000 | 0 | 4052 | 0 | 15.8 MB/s | 0 | 86.0 us|
3300|0x040011|0x030043|0000-0000-0000-0000 | 0 | 4055 | 0 | 15.8 MB/s | 0 | 86.0 us|
3300|0x040013|0x030045|0000-0000-0000-0000 | 0 | 4056 | 0 | 15.8 MB/s | 0 | 86.0 us|
-----

```

This example shows how to display the flow metrics and device alias information of interface fc1/28 of a target ITL and limit the output to 10 random records:

```

switch# ShowAnalytics --info --target-itl --alias --interface fc1/28 --limit 10
2019-04-09 12:04:07.032501

Interface fc1/28
-----
VSAN|Initiator|Target|LUN      | Avg IOPS      | Avg Throughput  | Avg ECT | Initiator Device alias|Target Device alias|
-----|-----|-----|-----|-----|-----|-----|-----|-----|
      | Read| Write| Read | Write | Read | Write |
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
108|0xbc09e9|0x500009|0001-0000-0000-0000 | 0 | 0 | 0 | 0 | 0 | 0 | SB_112_port_T_8_9 | SB_112_port_T_8_9 |
108|0xbc09e9|0x500049|0000-0000-0000-0000 | 0 | 0 | 0 | 0 | 0 | 0 | SB_112_port_T_10_9 | SB_112_port_T_10_9 |
108|0xbc09e1|0xea0701|0001-0000-0000-0000 | 0 | 0 | 0 | 0 | 0 | 0 | SB_112_port_T_12_1 | SB_112_port_T_12_1 |
108|0xbc0915|0xea0701|0002-0000-0000-0000 | 12 | 10 | 408.0 KB/s | 320.0 KB/s | 1370.0 us|687.0 us| SB_112_port_I_1_1 | SB_112_port_T_12_1 |
108|0xbc0917|0xea0703|0000-0000-0000-0000 | 56 | 52 | 1.8 MB/s | 1.6 MB/s | 137.0 us|554.0 us| SB_112_port_I_1_3 | SB_112_port_T_12_3 |
108|0xbc09e5|0x500005|0004-0000-0000-0000 | 0 | 0 | 0 | 0 | 0 | 0 | SB_112_port_T_8_5 | SB_112_port_T_8_5 |
108|0xbc09e5|0x500045|0003-0000-0000-0000 | 0 | 0 | 0 | 0 | 0 | 0 | SB_112_port_T_10_5 | SB_112_port_T_10_5 |
108|0xbc09e7|0x500007|0002-0000-0000-0000 | 0 | 0 | 0 | 0 | 0 | 0 | SB_112_port_T_8_7 | SB_112_port_T_8_7 |
108|0xbc0919|0x500045|0004-0000-0000-0000 | 22 | 18 | 704.0 KB/s | 584.0 KB/s | 123.0 us|403.0 us| SB_112_port_I_1_5 | SB_112_port_T_10_5 |
108|0xbc09e7|0x500047|0001-0000-0000-0000 | 0 | 0 | 0 | 0 | 0 | 0 | SB_112_port_T_10_7 | SB_112_port_T_10_7 |
-----

```

This example shows how to display the flow metrics of target ID 0xef0720 of a target ITL:

```

switch# ShowAnalytics --info --target-itl --target 0xef0720
2019-04-09 11:16:26.246741

Interface fc8/17
-----
VSAN|Initiator|Target|LUN      | Avg IOPS      | Avg Throughput  | Avg ECT
-----|-----|-----|-----|-----|-----
      | Read|Write| Read | Write | Read | Write |
-----|-----|-----|-----|-----|-----|-----
5|0xed0500|0xef0720|0001-0000-0000-0000 | 40 | 0 | 40.2 KB/s| 0 | 23.8 ms| 0 |
5|0xed0500|0xef0720|0002-0000-0000-0000 | 40 | 0 | 40.0 KB/s| 0 | 23.9 ms| 0 |
5|0xed0500|0xef0720|0003-0000-0000-0000 | 40 | 0 | 40.2 KB/s| 0 | 23.9 ms| 0 |
5|0xed0500|0xef0720|0005-0000-0000-0000 | 40 | 0 | 40.0 KB/s| 0 | 23.9 ms| 0 |
5|0xed0500|0xef0720|0004-0000-0000-0000 | 40 | 0 | 40.5 KB/s| 0 | 23.9 ms| 0 |
5|0xed0500|0xef0720|0006-0000-0000-0000 | 40 | 0 | 40.2 KB/s| 0 | 23.9 ms| 0 |
5|0xed0500|0xef0720|0007-0000-0000-0000 | 40 | 0 | 40.2 KB/s| 0 | 23.9 ms| 0 |
5|0xed0500|0xef0720|0008-0000-0000-0000 | 39 | 0 | 39.8 KB/s| 0 | 23.9 ms| 0 |
5|0xed0500|0xef0720|0009-0000-0000-0000 | 40 | 0 | 40.2 KB/s| 0 | 23.9 ms| 0 |
5|0xed0500|0xef0720|000a-0000-0000-0000 | 40 | 0 | 40.2 KB/s| 0 | 23.9 ms| 0 |
5|0xed0500|0xef0720|000b-0000-0000-0000 | 40 | 0 | 40.0 KB/s| 0 | 24.0 ms| 0 |
5|0xed0500|0xef0720|000c-0000-0000-0000 | 40 | 0 | 40.5 KB/s| 0 | 24.0 ms| 0 |
5|0xed0500|0xef0720|000d-0000-0000-0000 | 40 | 0 | 40.2 KB/s| 0 | 24.0 ms| 0 |
5|0xed0500|0xef0720|000e-0000-0000-0000 | 40 | 0 | 40.0 KB/s| 0 | 24.0 ms| 0 |
-----

```

```

| 5|0xed0500|0xef0720|000f-0000-0000-0000 | 40 | 0 | 40.2 KB/s| 0 | 24.0 ms| 0 |
| 5|0xed0500|0xef0720|0010-0000-0000-0000 | 40 | 0 | 40.2 KB/s| 0 | 24.0 ms| 0 |
| 5|0xed0500|0xef0720|0011-0000-0000-0000 | 40 | 0 | 40.0 KB/s| 0 | 24.0 ms| 0 |
| 5|0xed0500|0xef0720|0012-0000-0000-0000 | 40 | 0 | 40.2 KB/s| 0 | 24.0 ms| 0 |
| 5|0xed0500|0xef0720|0013-0000-0000-0000 | 40 | 0 | 40.5 KB/s| 0 | 24.0 ms| 0 |
| 5|0xed0500|0xef0720|0014-0000-0000-0000 | 39 | 0 | 39.8 KB/s| 0 | 24.0 ms| 0 |
+-----+-----+-----+-----+-----+-----+

```

This example shows how to display the flow metrics of initiator ID 0xed0500, target ID 0xef0720, and LUN ID 0001-0000-0000-0000 of a target ITL:

```

switch# ShowAnalytics --info --target-itl --initiator 0xed0500 --target 0xef0720 --lun 0001-0000-0000-0000
2019-04-09 11:17:24.643292

B: Bytes, s: Seconds, Avg: Average, Acc: Accumulative,
ns: Nano Seconds, ms: Milli Seconds, us: Micro Seconds,
GB: Giga Bytes, MB: Mega Bytes, KB: Killo Bytes,
ECT: Exchange Completion Time, DAL: Data Access Latency

```

```

Interface : fc8/17
+-----+-----+-----+-----+
| Metric | Min | Max | Avg |
+-----+-----+-----+-----+
| Read IOPS (4sec Avg) | NA | NA | 39 |
| Write IOPS (4sec Avg) | NA | NA | 0 |
| Read Throughput (4sec Avg) | NA | NA | 39.8 KB/s |
| Write Throughput (4sec Avg) | NA | NA | 0 |
| Read Size (Acc Avg) | 1024 B | 1024 B | 1024 B |
| Write Size (Acc Avg) | 0 | 0 | 0 |
| Read DAL (Acc Avg) | 28.0 us | 30.0 ms | 23.8 ms |
| Write DAL (Acc Avg) | 0 | 0 | 0 |
| Read ECT (Acc Avg) | 28.0 us | 30.0 ms | 23.8 ms |
| Write ECT (Acc Avg) | 0 | 0 | 0 |
| Read Inter-IO-Gap (Acc Avg) | 73.2 us | 2.0 s | 25.0 ms |
| Write Inter-IO-Gap (Acc Avg) | 0 | 0 | 0 |
+-----+-----+-----+-----+

```

For information on flow metrics, see the "Flow Metrics" section in the [Cisco MDS 9000 Series SAN Analytics and SAN Telemetry Streaming Configuration Guide, Release 8.x](#).

This example shows how to display the flow metrics of initiator ID 0xed0500 and LUN ID 0001-0000-0000-0000 of a target ITL:

```

switch# ShowAnalytics --info --target-itl --initiator 0xed0500 --lun 0001-0000-0000-0000
2019-04-09 11:18:40.132828

Interface fc8/17
+-----+-----+-----+-----+
| VSAN|Initiator|Target|LUN | Avg IOPS | Avg Throughput | Avg ECT |
+-----+-----+-----+-----+
| | Read | Write | Read | Write | Read | Write |
+-----+-----+-----+-----+
| 5|0xed0500|0xef0720|0001-0000-0000-0000 | 39 | 0 | 39.8 KB/s| 0 | 23.8 ms | 0 |
+-----+-----+-----+-----+

```

This example shows how to display the top ITLs for IOPS:

```

switch# ShowAnalytics --top
2019-06-13 10:56:49.099069

+-----+-----+-----+-----+
| PORT | VSAN|Initiator|Target|LUN | Avg IOPS |
+-----+-----+-----+-----+
| | Read | Write |
+-----+-----+-----+-----+
| fc8/10 | 5|0xed04b2|0xef0680|0001-0000-0000-0000 | 118 | 0 |
| fc8/10 | 5|0xed04b2|0xef0680|0003-0000-0000-0000 | 118 | 0 |
| fc8/10 | 5|0xed04b2|0xef0680|0002-0000-0000-0000 | 118 | 0 |
| fc8/10 | 5|0xed04b2|0xef0680|0005-0000-0000-0000 | 118 | 0 |
| fc8/10 | 5|0xed04b2|0xef0680|0006-0000-0000-0000 | 118 | 0 |
| fc8/10 | 5|0xed04b2|0xef0680|0007-0000-0000-0000 | 118 | 0 |
| fc8/10 | 5|0xed04b2|0xef0680|0008-0000-0000-0000 | 118 | 0 |
| fc8/10 | 5|0xed04b2|0xef0680|0009-0000-0000-0000 | 118 | 0 |
| fc8/10 | 5|0xed04b2|0xef0680|000a-0000-0000-0000 | 118 | 0 |
| fc8/10 | 5|0xed04b2|0xef0680|000b-0000-0000-0000 | 118 | 0 |
+-----+-----+-----+-----+

```

This example shows how to display the top ITLs for throughput progressively:

```

switch# ShowAnalytics --top --key thput --progress
2019-06-13 10:58:16.015546

+-----+-----+-----+-----+
| PORT | VSAN|Initiator|Target|LUN | Avg THROUGHPUT |
+-----+-----+-----+-----+

```

				Read	Write	
fc8/10	5	0x0ed04b2	0xef0680	000f-0000-0000-0000	133.8 KB/s	0
fc8/10	5	0x0ed04b3	0xef0681	000a-0000-0000-0000	133.8 KB/s	0
fc8/10	5	0x0ed04b3	0xef0681	0014-0000-0000-0000	133.8 KB/s	0
fc8/10	5	0x0ed04b4	0xef0682	000f-0000-0000-0000	133.8 KB/s	0
fc8/10	5	0x0ed04b5	0xef0683	000a-0000-0000-0000	133.8 KB/s	0
fc8/10	5	0x0ed04b5	0xef0683	000f-0000-0000-0000	133.8 KB/s	0
fc8/10	5	0x0ed04b5	0xef0683	0013-0000-0000-0000	133.8 KB/s	0
fc8/10	5	0x0ed04b6	0xef0684	0013-0000-0000-0000	133.8 KB/s	0
fc8/10	5	0x0ed04b2	0xef0680	0004-0000-0000-0000	133.5 KB/s	0
fc8/10	5	0x0ed04b3	0xef0681	0009-0000-0000-0000	133.5 KB/s	0

This example shows how to display the ITLs with the highest I/O operations per second (IOPS). The `--alias` option causes initiator and target device alias information to be displayed.

```
switch# ShowAnalytics --top --alias
2019-11-12 15:21:45.260304
```

PORT		VSAN|Initiator|Target|LUN			Avg IOPS		Initiator Device alias		Target Device alias	
					Read	Write				
fc8/20	5	0x0ed05de	0xef080c	0001-0000-0000-0000	45	0	analytics-initiator-port16-45	analytics-target-port16-45		
fc8/20	5	0x0ed05cb	0xef07f9	0002-0000-0000-0000	45	0	analytics-initiator-port16-26	analytics-target-port16-26		
fc8/20	5	0x0ed05b7	0xef07e5	0008-0000-0000-0000	44	0	analytics-initiator-port16-6	analytics-target-port16-6		
fc8/20	5	0x0ed05be	0xef07ec	000b-0000-0000-0000	43	0	analytics-initiator-port16-13	analytics-target-port16-13		
fc8/20	5	0x0ed05ca	0xef07f8	0013-0000-0000-0000	42	0	analytics-initiator-port16-25	analytics-target-port16-25		
fc8/20	5	0x0ed05d1	0xef07ff	0006-0000-0000-0000	41	0	analytics-initiator-port16-32	analytics-target-port16-32		
fc8/20	5	0x0ed05b9	0xef07e7	0014-0000-0000-0000	41	0	analytics-initiator-port16-8	analytics-target-port16-8		
fc8/20	5	0x0ed05d7	0xef0805	0002-0000-0000-0000	40	0	analytics-initiator-port16-38	analytics-target-port16-38		
fc8/20	5	0x0ed05d9	0xef0807	0003-0000-0000-0000	40	0	analytics-initiator-port16-40	analytics-target-port16-40		
fc8/20	5	0x0ed05d4	0xef0802	0013-0000-0000-0000	40	0	analytics-initiator-port16-35	analytics-target-port16-35		

This example shows how to display the errors for all target ITLs and limit the output to 10 random records:

```
switch# ShowAnalytics --errors --target-itl --limit 10
2019-05-23 11:28:34.926267
```

Interface fc8/7

VSAN|Initiator|Target|LUN		Total SCSI Failures		Total FC Aborts	
		Read	Write	Read	Write
5	0x0ed0332|0xef0592|000f-0000-0000-0000	0	0	0	0
5	0x0ed0342|0xef05a2|000a-0000-0000-0000	0	0	0	0
5	0x0ed0332|0xef0592|0008-0000-0000-0000	0	0	0	0
5	0x0ed0340|0xef05a0|0010-0000-0000-0000	0	0	0	0
5	0x0ed0322|0xef0582|0008-0000-0000-0000	0	0	0	0
5	0x0ed032c|0xef058c|0014-0000-0000-0000	0	0	0	0
5	0x0ed033a|0xef059a|000d-0000-0000-0000	0	0	0	0
5	0x0ed034a|0xef05aa|0005-0000-0000-0000	0	0	0	0
5	0x0ed033a|0xef059a|0007-0000-0000-0000	0	0	0	0
5	0x0ed034a|0xef05aa|0013-0000-0000-0000	0	0	0	0

This example shows how to display the errors of an initiator ITL:

```
switch# ShowAnalytics --erroronly --initiator-itl
2019-04-09 11:27:42.496294
```

Interface fc8/27

VSAN|Initiator|Target|LUN		Total SCSI Failures		Total FC Aborts	
		Read	Write	Read	Write
311	0x900000|0xc90000|0000-0000-0000-0000	0	42	0	0

This example shows how to display the device alias information and errors of an initiator ITL and limit the output to 10 random records:

```
switch# ShowAnalytics --erroronly --initiator-itl --alias --limit 10
2019-04-09 12:06:19.847350
```

Interface fc1/26

VSAN|Initiator|Target|LUN		Total SCSI Failures		Total FC Aborts		Initiator Device alias		Target Device alias	
		Read	Write	Read	Write				
108	0xee0467|0x70039b|0001-0000-0000-0000	0	1	0	0			SB_112_port_T_18_7|	
108	0xee0401|0xbc092b|0002-0000-0000-0000	10	16	0	0			SB_112_port_T_0_1|	

```

| 108|0xee0441|0xbc092b|0003-0000-0000-0000 |      3 | 13 |      0 | 0 |      SB_112_port_I_7_1 | SB_112_port_T_0_1 |
| 108|0xee0401|0xbc0996|0001-0000-0000-0000 |      3 |  0 |      0 | 0 |      |      |
| 108|0xee0441|0xbc0996|0002-0000-0000-0000 |      0 |  3 |      0 | 0 |      SB_112_port_I_7_1 |      |
| 108|0xee0481|0xbc0996|0004-0000-0000-0000 |      0 |  4 |      0 | 0 |      |      |
| 108|0xee0403|0xbc092d|0000-0000-0000-0000 |     12 |  8 |      0 | 0 |      |      SB_112_port_T_0_3 |
| 108|0xee0443|0xbc092d|0001-0000-0000-0000 |      3 | 12 |      0 | 0 |      SB_112_port_I_7_3 | SB_112_port_T_0_3 |
| 108|0xee0443|0xbc0998|0000-0000-0000-0000 |      1 |  0 |      0 | 0 |      SB_112_port_I_7_3 |      |
  
```

This example shows how to display the minimum, maximum, and peak flow metrics of target ID 0xef0720 of a target ITL:

```

switch# ShowAnalytics --minmax --target-itl --target 0xef0720
2019-04-09 11:22:08.652598

Interface fc8/17
-----
| VSAN|Initiator|Target|LUN | Peak IOPS* | Peak Throughput* | Read ECT* | Write ECT* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Read | Write | Read | Write | Min | Max | Min | Max |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 5|0xed0500|0xef0720|0001-0000-0000-0000 | 11106 | 0 | 10.8 MB/s | 0 | 28.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|0002-0000-0000-0000 | 9232 | 0 | 9.0 MB/s | 0 | 28.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|0003-0000-0000-0000 | 7421 | 0 | 7.2 MB/s | 0 | 28.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|0004-0000-0000-0000 | 5152 | 0 | 5.0 MB/s | 0 | 29.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|0005-0000-0000-0000 | 5163 | 0 | 5.0 MB/s | 0 | 30.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|0006-0000-0000-0000 | 5154 | 0 | 5.0 MB/s | 0 | 30.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|0007-0000-0000-0000 | 4801 | 0 | 4.7 MB/s | 0 | 29.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|0008-0000-0000-0000 | 3838 | 0 | 3.7 MB/s | 0 | 64.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|0009-0000-0000-0000 | 3053 | 0 | 3.0 MB/s | 0 | 40.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|000a-0000-0000-0000 | 3061 | 0 | 3.0 MB/s | 0 | 33.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|000b-0000-0000-0000 | 3053 | 0 | 3.0 MB/s | 0 | 30.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|000c-0000-0000-0000 | 3058 | 0 | 3.0 MB/s | 0 | 37.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|000d-0000-0000-0000 | 3058 | 0 | 3.0 MB/s | 0 | 29.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|000e-0000-0000-0000 | 2517 | 0 | 2.5 MB/s | 0 | 29.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|000f-0000-0000-0000 | 2405 | 0 | 2.3 MB/s | 0 | 29.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|0010-0000-0000-0000 | 2410 | 0 | 2.4 MB/s | 0 | 36.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|0011-0000-0000-0000 | 2405 | 0 | 2.3 MB/s | 0 | 33.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|0012-0000-0000-0000 | 2411 | 0 | 2.4 MB/s | 0 | 30.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|0013-0000-0000-0000 | 2408 | 0 | 2.4 MB/s | 0 | 37.0 us | 30.0 ms | 0 | 0 |
| 5|0xed0500|0xef0720|0014-0000-0000-0000 | 2284 | 0 | 2.2 MB/s | 0 | 29.0 us | 30.0 ms | 0 | 0 |
  
```

*These values are calculated since the metrics were last cleared.

This example shows how to display the device alias information, minimum, maximum, and peak flow metrics of interface fc1/28 of a target ITL and limit the output to 10 random records:

```

switch# ShowAnalytics --minmax --target-itl --alias --interface fc1/28 --limit 10
2019-04-09 12:01:40.609197

Interface fc1/28
-----
| VSAN|Initiator|Target|LUN | Peak IOPS* | Peak Throughput* | Read ECT* | Write ECT* | Initiator Device alias | Target Device alias | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Read | Write | Read | Write | Min | Max | Min | Max | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 108|0xbc09e9|0x500009|0001-0000-0000-0000 | 110 | 116 | 1.6 MB/s | 4.3 MB/s | 10.0 us | 23.3 ms | 30.0 us | 120.5 ms | | SB_112_port_T_8_9 |
| 108|0xbc09e9|0x500049|0000-0000-0000-0000 | 113 | 107 | 1.8 MB/s | 4.1 MB/s | 12.0 us | 28.2 ms | 27.0 us | 119.2 ms | | SB_112_port_T_10_9 |
| 108|0xbc09e1|0xea0701|0001-0000-0000-0000 | 107 | 117 | 1.6 MB/s | 4.0 MB/s | 11.0 us | 26.1 ms | 33.0 us | 120.7 ms | | SB_112_port_T_12_1 |
| 108|0xbc0915|0xea0701|0002-0000-0000-0000 | 342 | 340 | 2.5 MB/s | 3.7 MB/s | 9.0 us | 23.2 ms | 32.0 us | 110.3 ms | SB_112_port_I_1_1 | SB_112_port_T_12_1 |
| 108|0xbc0917|0xea0703|0000-0000-0000-0000 | 337 | 338 | 2.6 MB/s | 4.3 MB/s | 18.0 us | 21.3 ms | 34.0 us | 150.8 ms | SB_112_port_I_1_3 | SB_112_port_T_12_3 |
| 108|0xbc09e5|0x500005|0004-0000-0000-0000 | 99 | 98 | 1.6 MB/s | 2.6 MB/s | 7.0 us | 22.1 ms | 37.0 us | 172.7 ms | | SB_112_port_T_8_5 |
| 108|0xbc09e5|0x500045|0003-0000-0000-0000 | 96 | 90 | 1.2 MB/s | 3.2 MB/s | 18.0 us | 22.5 ms | 39.0 us | 148.9 ms | | SB_112_port_T_10_5 |
| 108|0xbc09e7|0x500007|0002-0000-0000-0000 | 100 | 99 | 1.2 MB/s | 2.8 MB/s | 19.0 us | 172.1 ms | 4.0 us | 26.4 ms | | SB_112_port_T_8_7 |
| 108|0xbc0919|0x500045|0004-0000-0000-0000 | 346 | 329 | 2.5 MB/s | 4.1 MB/s | 11.0 us | 26.3 ms | 1.0 us | 10.0 ms | SB_112_port_I_1_5 | SB_112_port_T_10_5 |
| 108|0xbc09e7|0x500047|0001-0000-0000-0000 | 87 | 95 | 1.3 MB/s | 3.0 MB/s | 18.0 us | 25.5 ms | 34.0 us | 25.6 ms | | SB_112_port_T_10_7 |
  
```

*These values are calculated since the metrics were last cleared.

This example shows how to display the NPU load for a range of interfaces:

```

switch# ShowAnalytics --eval --interface fc8/7-8
2019-05-09 10:56:54.021234
There are 2 interfaces to be evaluated. Expected time is 2 minutes 0 seconds
Do you want to continue [Yes/No]? [n]y

| Interface | SCS | ITL/N Count | NPU Load % | Analysis | Analysis | | | |
|---|---|---|---|---|---|---|---|---|
| | SCS | NVMe | Total | SCS | NVMe | Total | Start Time | End Time |
|-----|-----|-----|-----|-----|-----|
| fc8/7 | 1000 | 0 | 1000 | 8.1 | 0.0 | 8.1 | 10:57:20 | 10:57:52 |
| fc8/8 | 1000 | 0 | 1000 | 8.1 | 0.0 | 8.1 | 10:58:20 | 10:58:51 |
| *Total | 2000 | 0 | 2000 | 16.2 | 0.0 | 16.2 | | |
  
```

* This total is an indicative reference based on evaluated ports



Note Evaluating NPU load takes some time. If the connection to the switch is lost during the evaluation process, the process continues to run in the background until completion and the output is saved in a file. A syslog message is generated after the process is complete with the file name and the location of the file where the output is saved.

This example shows how to display the VSAN throughput information:

```
switch# ShowAnalytics --vsan-thput
2019-05-09 14:02:07.940600

Interface fc8/17
+-----+
| VSAN | Throughput (4s avg) | |
| Read | Write | Total |
| (Mbps) | (Mbps) | (Mbps) |
+-----+
| 5 | 0.0 | 0.0 | 0.0 |
+-----+

Interface fc8/18
+-----+
| VSAN | Throughput (4s avg) | |
| Read | Write | Total |
| (Mbps) | (Mbps) | (Mbps) |
+-----+
| 5 | 0.0 | 0.0 | 0.0 |
+-----+

Interface fc8/19
+-----+
| VSAN | Throughput (4s avg) | |
| Read | Write | Total |
| (Mbps) | (Mbps) | (Mbps) |
+-----+
| 5 | 0.0 | 0.0 | 0.0 |
+-----+

Interface fc8/20
+-----+
| VSAN | Throughput (4s avg) | |
| Read | Write | Total |
| (Mbps) | (Mbps) | (Mbps) |
+-----+
| 5 | 0.0 | 0.0 | 0.0 |
+-----+

Interface fc8/21
+-----+
| VSAN | Throughput (4s avg) | |
| Read | Write | Total |
| (Mbps) | (Mbps) | (Mbps) |
+-----+
| 3500 | 301.9 | 302.8 | 604.7 |
+-----+

Interface fc8/22
+-----+
| VSAN | Throughput (4s avg) | |
| Read | Write | Total |
| (Mbps) | (Mbps) | (Mbps) |
+-----+
| 3500 | 302.7 | 304.8 | 607.5 |
+-----+

Note: This data is only for SCSI
```

This example shows how to display the VSAN throughput information for a port channel:

```
switch# ShowAnalytics --vsan-thput --interface port-channel108
2019-05-09 15:01:32.538121

Interface port-channel108
+-----+
| VSAN | Throughput (4s avg) | |
| Read | Write | Total |
| (Mbps) | (Mbps) | (Mbps) |
+-----+
| 1 | 0.0 | 0.0 | 0.0 |
| 5 | 145.9 | 0.0 | 145.9 |
| 3500 | 561.9 | 558.6 | 1120.5 |
+-----+

Note: This data is only for SCSI
```

This example shows how to display the outstanding IO per ITL for an interface:

```
switch# ShowAnalytics --outstanding-io --interface fc8/7
```



```

2019-05-20 11:59:48.306396
Interface : fc8/7  VSAN : 5  FCNS_type : Target
+-----+
| Initiator|Target|LUN | Outstanding IO |
+-----+
|          |      |   | Read | Write |
+-----+
| 0xed0320|0xef0580|0001-0000-0000-0000 | 2 | 0 |
| 0xed0320|0xef0580|0002-0000-0000-0000 | 1 | 0 |
| 0xed0320|0xef0580|0003-0000-0000-0000 | 1 | 0 |
| 0xed0320|0xef0580|0004-0000-0000-0000 | 1 | 0 |
| 0xed0320|0xef0580|0005-0000-0000-0000 | 1 | 0 |
| 0xed0320|0xef0580|0006-0000-0000-0000 | 1 | 0 |
| 0xed0320|0xef0580|0007-0000-0000-0000 | 1 | 0 |
| 0xed0320|0xef0580|0008-0000-0000-0000 | 1 | 0 |
| 0xed0320|0xef0580|0009-0000-0000-0000 | 1 | 0 |
| 0xed0320|0xef0580|000a-0000-0000-0000 | 1 | 0 |
+-----+
Instantaneous Qdepth : 11

```



Note The Instantaneous Qdepth value in the output represents the number of IOs that are currently active in the specified interface.

This example shows how to display the outstanding IO per ITL for an interface, limit the output to 10 records, and refresh the data periodically:

```

switch# ShowAnalytics --outstanding-io --interface fc8/7 --limit 10 --refresh
2019-05-20 12:00:21.028228
Interface : fc8/7  VSAN : 5  FCNS_type : Target
+-----+
| Initiator|Target|LUN | Outstanding IO |
+-----+
|          |      |   | Read | Write |
+-----+
| 0xed0320|0xef0580|0001-0000-0000-0000 | 0 | 0 |
| 0xed0320|0xef0580|0002-0000-0000-0000 | 1 | 0 |
| 0xed0320|0xef0580|0003-0000-0000-0000 | 1 | 0 |
| 0xed0320|0xef0580|0004-0000-0000-0000 | 1 | 0 |
| 0xed0320|0xef0580|0005-0000-0000-0000 | 0 | 0 |
| 0xed0320|0xef0580|0006-0000-0000-0000 | 0 | 0 |
| 0xed0320|0xef0580|0007-0000-0000-0000 | 1 | 0 |
| 0xed0320|0xef0580|0008-0000-0000-0000 | 0 | 0 |
| 0xed0320|0xef0580|0009-0000-0000-0000 | 1 | 0 |
| 0xed0320|0xef0580|000a-0000-0000-0000 | 1 | 0 |
+-----+
Estimated Qdepth : 6

```

Related Commands

Command	Description
analytics port-sampling	Enables port sampling on a module.
analytics query	Installs a push analytics query.
clear analytics	Resets all flow metrics for a view instance.
feature analytics	Enables the SAN Analytics feature on a switch.
purge analytics	Deletes a view instance and its associated flow metrics.
show analytics flow	Displays the SAN analytics type.
show analytics port-sampling	Displays the SAN analytics port sampling information.
show analytics query	Displays the SAN analytics query information.

ShowAnalyticsConsistency

To identify inconsistencies in SAN analytics components such as NPU, modules, queries, database, analytics ACL entries, and so on, use the ShowAnalyticsConsistency command.

ShowAnalyticsConsistency

Command Default

None.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
9.2(1)	This command was deprecated.
8.5(1)	This command was introduced.

Usage Guidelines

This command is a troubleshooting tool that helps to identify inconsistencies in SAN analytics components such as NPU, modules, queries, database, port-sampling configuration and so on. Such inconsistencies are abnormal and may lead to issues on the switch. Programmatic checking by this command assures accuracy of checks and reduces the time to identify such inconsistencies.

This command should be used as part of troubleshooting when SAN analytics issues are suspected. The specified consistency check is done at the time the command is issued and the results are displayed. Detailed information about the detected inconsistencies is displayed to direct further detailed debugging.

The following example displays how to display the inconsistencies in SAN analytics:

```
switch# ShowAnalyticsConsistency

Analytics Consistency Checker:
Checking for Analytics related consistency checks for the SUP:
Checking for queries consistency... - Skipped (Queries not configured) Checking for global database consistency... - Passed Checking for query_id consistency... - Passed
Checking for Analytics related consistencies for the Line Cards:
Module 1 :

Checking for ifindex consistency... - Passed Checking for ACL consistency...
Running config: SCSI+NVME both for interface fcl/3 Running config: SCSI+NVME both for interface fcl/4 ACL TCAM: SCSI+NVME both for interface fcl/3 ACL TCAM: SCSI+NVME both for
interface fcl/4 Running config and ACL TCAM entries are consistent for all interfaces Checking for extra entries in ACL. Please wait...
No extra analytics entry found for non-analytics interfaces. Consistency check successful.
Checking for bcm status...
BCM Status passed successfully.
Checking for Port-Sampling Config Consistency.....
=====>>>>>>>>>> Skipped (Not Configured on SUP and Linecard)

No EIOA drops seen
No MPP drops seen
XGMAC9 Port Link => UP!!!

Both XFI links are UP!
Traps observed in ncpmgr: 0
```

Related Commands

Command	Description
show consistency-checker	Verifies the consistency between various internal system tables.



T Commands

- [tacacs+ abort](#), on page 1943
- [tacacs+ commit](#), on page 1944
- [tacacs+ distribute](#), on page 1945
- [tacacs+ enable](#), on page 1946
- [tacacs-server deadtime](#), on page 1947
- [tacacs-server directed-request](#), on page 1948
- [tacacs-server host](#), on page 1949
- [tacacs-server key](#), on page 1951
- [tacacs-server test](#), on page 1952
- [tacacs-server timeout](#), on page 1954
- [tag](#), on page 1955
- [tail](#), on page 1957
- [tape compression](#), on page 1958
- [tape-bkgrp](#), on page 1959
- [tape-device](#), on page 1960
- [tape-keyrecycle](#), on page 1961
- [tape-read command-id](#), on page 1962
- [tape-volgrp](#), on page 1964
- [tape-write command-id](#), on page 1965
- [target \(iSLB initiator configuration\)](#), on page 1967
- [tclquit](#), on page 1970
- [tcp cwm](#), on page 1971
- [tcp keepalive-timeout](#), on page 1973
- [tcp maximum-bandwidth-kbps](#), on page 1974
- [tcp maximum-bandwidth-mbps](#), on page 1977
- [tcp max-jitter](#), on page 1980
- [tcp max-retransmissions](#), on page 1982
- [tcp min-retransmit-time](#), on page 1983
- [tcp pmtu-enable](#), on page 1984
- [tcp sack-enable](#), on page 1986
- [tcp send-buffer-size](#), on page 1987
- [tcp-connections](#), on page 1988
- [telemetry](#), on page 1990

- telnet, on page 1991
- telnet server enable, on page 1992
- terminal alias, on page 1993
- terminal ask-on-term, on page 1995
- terminal color, on page 1996
- terminal deep-help, on page 1997
- terminal dont-ask, on page 1998
- terminal edit-mode vi, on page 1999
- terminal event-manager bypass, on page 2001
- terminal exec prompt timestamp, on page 2002
- terminal history no-exec-in-config, on page 2003
- terminal home, on page 2004
- terminal length, on page 2005
- terminal monitor, on page 2006
- terminal output xml, on page 2007
- terminal password, on page 2008
- terminal redirection-mode, on page 2009
- terminal session-timeout, on page 2010
- terminal sticky-mode, on page 2011
- terminal terminal-type, on page 2012
- terminal time, on page 2014
- terminal verify-only, on page 2015
- terminal width, on page 2016
- test aaa authorization, on page 2017
- test pfm snmp test-trap fan, on page 2018
- test pfm snmp test-trap powersupply, on page 2020
- test pfm snmp test-trap temp_sensor, on page 2022
- time, on page 2023
- time-stamp, on page 2025
- tlport alpa-cache, on page 2026
- traceroute, on page 2027
- transceiver-frequency, on page 2028
- transfer-ready-size, on page 2029
- transport email, on page 2030
- transport email mail-server, on page 2032
- transport http proxy enable, on page 2033
- transport http proxy server, on page 2034
- trunk protocol enable, on page 2035
- trustedcert, on page 2036
- tune, on page 2037
- tune-timer, on page 2040

tacacs+ abort

To discard a TACACS+ Cisco Fabric Services (CFS) distribution session in progress, use the `tacacs+ abort` command in configuration mode.

```
tacacs+ abort
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, TACACS+ must be enabled using the `tacacs+ enable` command.

Examples The following example shows how to discard a TACACS+ CFS distribution session in progress:

```
switch# config terminal
switch(config)# tacacs+ abort
```

Related Commands	Command	Description
	<code>show tacacs+</code>	Displays TACACS+ CFS distribution status and other details.
	<code>tacacs+ distribute</code>	Enables CFS distribution for TACACS+.
	<code>tacacs+ enable</code>	Enables TACACS+.

tacacs+ commit

To apply the pending configuration pertaining to the TACACS+ Cisco Fabric Services (CFS) distribution session in progress in the fabric, use the `tacacs+ commit` command in configuration mode.

```
tacacs+ commit
```

Syntax Description This command has no other arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, TACACS+ must be enabled using the `tacacs+ enable` command.

Examples The following example shows how to apply a TACACS+ configuration to the switches in the fabric:

```
switch# config terminal
switch(config)# tacacs+ commit
```

Related Commands	Command	Description
	<code>show tacacs+</code>	Displays TACACS+ CFS distribution status and other details.
	<code>tacacs+ enable</code>	Enables TACACS+.
	<code>tacacs+ distribute</code>	Enables CFS distribution for TACACS+.

tacacs+ distribute

To enable Cisco Fabric Services (CFS) distribution for TACACS+, use the `tacacs+ distribute` command. To disable this feature, use the `no` form of the command.

```
tacacs+ distribute
no tacacs+ distribute
```

Syntax Description This command has no other arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines To use this command, TACACS+ must be enabled using the `tacacs+ enable` command.

Examples The following example shows how to enable TACACS+ fabric distribution:

```
switch# config terminal
switch(config)# tacacs+ distribute
```

Related Commands	Command	Description
	<code>show tacacs+</code>	Displays TACACS+ CFS distribution status and other details.
	<code>tacacs+ commit</code>	Commits TACACS+ database changes to the fabric.
	<code>tacacs+ enable</code>	Enables TACACS+.

tacacs+ enable

To enable TACACS+ in a switch, use the `tacacs+ enable` command in configuration mode. To disable this feature, use the `no` form of the command.

```
tacacs+ enable
no tacacs+ enable
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	NX-OS 4.1(1b)	This command was deprecated.

Usage Guidelines Additional TACACS+ commands are only available when the TACACS+ feature is enabled. Using SHA-1 as the hash algorithm may prevent RADIUS or TACACS+ usage.

Examples The following example shows how to enable TACACS+ in a switch:

```
switch# config terminal
switch(config)# tacacs+ enable
```

Related Commands	Command	Description
	show tacacs+	Displays TACACS+ server information.

tacacs-server deadtime

To set a periodic time interval where a nonreachable (nonresponsive) TACACS+ server is monitored for responsiveness, use the `tacacs-server deadtime` command. To disable the monitoring of the nonresponsive TACACS+ server, use the `no` form of the command.

```
tacacs-server deadtime time
no tacacs-server deadtime time
```

Syntax Description	<code>time</code> Specifies the time interval in minutes. The range is 1 to 1440.
---------------------------	---

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines Setting the time interval to zero disables the timer. If the dead time interval for an individual TACACS+ server is greater than zero (0), that value takes precedence over the value set for the server group.

When the dead time interval is 0 minutes, TACACS+ server monitoring is not performed unless the TACACS+ server is part of a server group and the dead time interval for the group is greater than 0 minutes.

Examples

The following example shows how to set a duration of 10 minutes:

```
switch# config terminal
switch(config)# tacacs
-server deadtime 10
```

Related Commands	Command	Description
	<code>deadtime</code>	Sets a time interval for monitoring a nonresponsive TACACS+ server.
	<code>show tacacs-server</code>	Displays all configured TACACS+ server parameters.

tacacs-server directed-request

To specify a TACACS+ server to send authentication requests to when logging in, use the `tacacs-server directed-request` command. To revert to sending the authentication request to the configured group, use the `no` form of the command.

```
tacacs-server directed-request
no tacacs-server directed-request
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Configuration mode.

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines The user can specify the `username@servername` during login. The user name is sent to the server name for authentication.

Examples The following example shows how to specify a TACACS+ server to send authentication requests when logging in:

```
switch# config terminal
switch(config)# tacacs
-server
directed-request
```

Command	Description
<code>show tacacs-server</code>	Displays all configured TACACS+ server parameters.
<code>show tacacs-server directed request</code>	Displays a directed request TACACS+ server configuration.

tacacs-server host

To configure TACACS+ server options on a switch, use the `tacacs-server host` command in configuration mode. Use the `no` form of the command to revert to factory defaults.

```
tacacs-server host server-nameipv4-addressipv6-address [key [0|7] shared-secret] [port port-number]
[test idle-time time|password password|username name] [timeout seconds]
no tacacs-server host server-nameipv4-addressipv6-address [key [0|7] shared-secret] [port port-number]
[test idle-time time|password password|username name] [timeout seconds]
```

Syntax Description

server-name	Specifies the TACACS+ server DNS name. The maximum character size is 253.
ipv4-address	Specifies the TACACS+ server IP address. in the format A.B.C.D .
ipv6-address	Specifies the TACACS+ server IP address in the format X:X::X .
key	(Optional) Configures the TACACS+ server's shared secret key.
0	(Optional) Configures a preshared key specified in clear text (indicated by 0) to authenticate communication between the TACACS+ client and server. This is the default.
7	(Optional) Configures a preshared key specified in encrypted text (indicated by 7) to authenticate communication between the TACACS+ client and server.
shared secret	(Optional) Configures a preshared key to authenticate communication between the TACACS+ client and server.
port port-number	(Optional) Configures a TACACS+ server port for authentication. The range is 1 to 65535.
test	(Optional) Configures parameters to send test packets to the TACACS+ server.
idle-timetime	(Optional) Specifies the time interval (in minutes) for monitoring the server. The time range is 1 to 1440 minutes.
passwordpassword	(Optional) Specifies a user password in the test packets. The maximum size is 32.
usernameusername	(Optional) Specifies a user name in the test packets. The maximum size is 32.
timeout	(Optional) Configures a TACACS+ server timeout period.
seconds	(Optional) Specifies the timeout (in seconds) between retransmissions to the TACACS+ server. The range is 1 to 60 seconds.

Command Default

Idle-time is not set. Server monitoring is turned off.Timeout is 1 second.Username is test.Password is test.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(1)	This command was introduced.
3.0(1)	Added the ipv6-address argument and the test option.

Usage Guidelines

This command is only available when the TACACS+ feature is enabled using the tacacs+ enable command. When the idle time interval is 0 minutes, periodic TACACS+ server monitoring is not performed.

Examples

The following example configures TACACS+ authentication:

```
switch# config terminal
switch(config)# tacacs-server host 10.10.2.3 key HostKey
switch(config)# tacacs-server host tacacs2 key 0 abcd
switch(config)# tacacs-server host tacacs3 key 7 1234
switch(config)# tacacs-server host 10.10.2.3 test idle-time 10
switch(config)# tacacs-server host 10.10.2.3 test username tester
switch(config)# tacacs-server host 10.10.2.3 test password 2B9ka5
```

Related Commands

Command	Description
show tacacs-server	Displays TACACS+ server information.
tacacs+ enable	Enables TACACS+.

tacacs-server key

To configure a global TACACS+ shared secret, use the `tacacs-server key` command. Use the `no` form of this command to removed a configured shared secret.

```
tacacs-server key [0 | 7] shared-secret
no tacacs-server key [0 | 7] shared-secret
```

Syntax Description	key	Specifies a global TACACS+ shared secret.
	0	(Optional) Configures a preshared key specified in clear text (indicated by 0) to authenticate communication between the TACACS+ client and server. This is the default.
	7	(Optional) Configures a preshared key specified in encrypted text (indicated by 7) to authenticate communication between the TACACS+ client and server.
	shared-secret	Configures a preshared key to authenticate communication between the TACACS+ client and server.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines You need to configure the TACACS+ preshared key to authenticate the switch to the TACACS+ server. The length of the key is restricted to 65 characters and can include any printable ASCII characters (white spaces are not allowed). You can configure a global key to be used for all TACACS+ server configurations on the switch. You can override this global key assignment by explicitly using the `key` option in the `tacacs-server host` command.

This command is only available when the TACACS+ feature is enabled using the `tacacs+ enable` command.

Examples The following example configures TACACS+ server shared keys:

```
switch# config terminal
switch(config)# tacacs-server key AnyWord
switch(config)# tacacs-server key 0 AnyWord
switch(config)# tacacs-server key 7 public
```

Related Commands	Command	Description
	<code>show tacacs-server</code>	Displays TACACS+ server information.
	<code>tacacs+ enable</code>	Enable TACACS+.

tacacs-server test

To configure a parameter to send test packets, use the tacacs-server test command. To disable this feature, use the no form of the command.

```
tacacs-server test username username |[password password [idle-time time]] |
[idle-time time] | password password [idle-time time] | idle-time time
```

```
no tacacs-server test username username |[password password [idle-time time]] |
[idle-time time] | password password [idle-time time] | idle-time time
```

Syntax Description

username	Specifies the username in test packets.
username	Specifies user name. The maximum size is 32 characters.
password	(Optional) Specifies the user password in test packets.
password	Specifies the user password. The maximum size is 32 characters.
idle-time	(Optional) Specifies the time interval for monitoring the server.
time period	Specifies the time period in minutes. The range is from 1 to 4440.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

Defaults will be used for anything not provided by CLI. Also doing a "no" of any parameters will revert it back to default.

Examples

The following example shows how to display the username in test packets:

```
switch# config t
switch(config)# tacacs-server test username test idle-time 0
switch(config)# tacacs-server test username test password test idle-time 1
switch(config)#
```

The following example shows how to display the time interval for monitoring the server:

```
switch(config)# tacacs-server test idle-time 0
switch(config)#
```

The following example shows how to display the user password in test packets:


```
switch(config)# tacacs-server test password test idle-time 0  
switch(config)#
```

Related Commands

Command	Description
show tacacs-server	Displays TACACS+ server information.
tacacs+ enable	Enable TACACS+.

tacacs-server timeout

To specify the time between retransmissions to the TACACS+ servers, use the `tacacs-server timeout` command. You can revert the retransmission time to its default by using the `no` form of the command.

```
tacacs-server timeout seconds
no tacacs-server timeout seconds
```

Syntax Description

seconds	Specifies the time (in seconds) between retransmissions to the RADIUS server. The default is one (1) second and the valid range is 1 to 60 seconds.
---------	---

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(2)	This command was introduced.

Usage Guidelines

This command is only available when the TACACS+ feature is enabled using the `tacacs+ enable` command.

Examples

The following example configures the TACACS+ server timeout value:

```
switch# config terminal
switch(config)# tacacs-server timeout 30
```

Related Commands

Command	Description
<code>show tacacs-server</code>	Displays TACACS+ server information.
<code>tacacs+ enable</code>	Enable TACACS+.

tag

To correlate multiple events in an event manager applet, use the `tag` command. To remove the correlation, use the `no` form of the command.

```
tag tagname1 and | andnot | or tagname2 [ and | andnot | or tagname3 [ and | andnot | or
tagname4 ] ] happens occurs in seconds
no tag tagname1 and | andnot | or tagname2 [ and | andnot | or tagname3 [ and | andnot |
or tagname4 ] ] happens occurs in seconds
```

Syntax Description

tagname	The tag name of a tagged event. A maximum of 4 tag names may be specified. A tag name may comprise of any alphanumeric character (a-z, 0-9). The maximum length is 29 characters.
and	(Optional) Specifies to evaluate tagged events using boolean and logic.
andnot	(Optional) Specifies to evaluate tagged events using boolean andnot logic.
or	(Optional) Specifies to evaluate tagged events using boolean or logic.
happens	Specifies the number of occurrences of the tag combination that must occur before executing the applet actions.
occurs	Numbers of times the event combination occurs. The range is from 1 to 4294967295.
in	Specifies the number of occurrences that must occur within the given time period.
seconds	Maximum amount of time, in seconds, within which the complete event combination occurs. The range is from 0 to 4294967295 seconds.

Command Default

None

Command Modes

config-applet

Command History

Release	Modification
5.2(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Tag names have scope only within the policy they are defined in. Tag names must be already configured in `event` commands before they can be used in a `tag` command. The evaluation of tag logic operators is from left to right since all operators are of equal precedence, that is:

```
((tagA operation1 tagB) operation2 tagC) operation3 tagD
```

When a `cli match` event is tagged, the behavior changes compared to untagged `cli match` events. Commands matching a tagged `cli match` event are executed immediately. If this were not the case, there may be a delay while waiting for other tagged events to match before an `event-default` command in the applet action block is executed.

Examples

The following example shows how to use the tag command. The goal in this example is to save the latest core dump to bootflash (it could also be sent to an SFTP server etc). The first policy is triggered when a process crash is about to generate a core file. It sleeps for 60 seconds while the core file is generated and then increments a counter. The second policy monitors the counter as well as system switchover events. If the counter is greater than 0 and no switchovers have occurred in the last 60 seconds then the latest core file is copied to bootflash and the counter reset to 0. No `exit-op` is specified for the counter so that the second policy can be triggered multiple times at once.

```
switch# configure terminal
switch(config)# event manager applet coreDump
switch(config-applet)# event syslog pattern "SERVICE_CRASHED.*core will be saved"
switch(config-applet)# action 10 cli local sleep 60
switch(config-applet)# action 20 counter name cores value 1 op inc
switch(config-applet)# event manager applet saveCore
switch(config-applet)# exit
switch(config)# event manager applet saveCore
switch(config-applet)# event counter tag coreDumped name cores entry-val 0 entry-op gt
switch(config-applet)# event syslog tag swDone pattern "SWITCHOVER_OVER"
switch(config-applet)# tag coreDumped andnot swDone happens 1 in 60
switch(config-applet)# action 10 cli local sh core | last 1 | sed 's/ \+/ /g' | sed
's_\([0-9]\+\) \([0-9]\+\) .* \([0-9]\+\) .*_copy core://1/\3/\2 bootflash:_' | vsh
switch(config-applet)# action 20 counter name cores value 0 op set
switch(config-applet)# exit
```

Command	Description
action	Configures a command to be executed when an Embedded Event Manager (EEM) applet is triggered.
event	Configures a detectable condition for an EEM applet.
event manager applet	Registers an EEM applet with the EEM.

tail

To display the last lines (tail end) of a specified file, use the tail command in EXEC mode.

```
tail filename [number-of-lines]
```

Syntax Description	filename	The name of the file for which you want to view the last lines.
	number-of-lines	(Optional) The number of lines you want to view. The range is 0 to 80 lines.

Command Default Displays the last 10 lines.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines You need two separate CLI terminals to use this command. In one terminal, execute the run-script or any other desired command. In the other, enter the tail command for the mylog file. On the second terminal session, you will see the last lines of the mylog file (as it grows) that is being saved in response to the command issued in the first terminal.

If you specify a long file and would like to exit in the middle, press Ctrl-C to exit this command.

Examples

The following example displays the last lines (tail end) of a specified file:

```
switch# run-script slot0:test mylog
```

In another terminal, enter the tail command for the mylog file:

```
switch# tail mylog
config terminal
```

In the second CLI terminal, you see the last lines of the mylog file (as it grows) that is being saved in response to the command entered in the first terminal.

tape compression

To configure tape compression, use the `tape-compression` command. To disable this feature, use the `no` form of the command.

```
tape-compression
no tape-compression
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Cisco SME cluster configuration submode.

Command History	Release	Modification
	3.2(2)	This command was introduced.

Usage Guidelines Use this command to compress encrypted data.

Examples The following example enables tape compression:

```
switch#config t
switch(config)#sme cluster c1
switch(config-sme-cl)#tape-compression
```

The following example disables tape compression:

```
switch#config t
switch(config)#sme cluster c1
switch(config-sme-cl)#no tape-compression
```

Related Commands	Command	Description
	<code>clear sme</code>	Clears Cisco SME configuration.
	<code>show sme cluster</code>	Displays information about the Cisco SME cluster.
	<code>show sme cluster tape</code>	Displays information about all tape volume groups or a specific group.

tape-bkgrp

To configure a crypto tape backup group, use the `tape-bkgrp` command. Use the `no` form of this command to disable this feature.

```
tape-bkgrp groupname
no tape-bkgrp groupname
```

Syntax Description	groupname	Specifies the backup tape group.
---------------------------	-----------	----------------------------------

Command Default None.

Command Modes Cisco SME cluster configuration mode submenu.

Command History	Release	Modification
	3.2(2)	This command was introduced.

Usage Guidelines A tape volume group is a group of tapes that are categorized by function. For example, HR1 could be designated tape volume group for all Human Resources backup tapes.

Adding tape groups allows you to select VSANs, hosts, storage devices, and paths that Cisco SME will use for encrypted data. For example, adding a tape group for HR data sets the mapping for Cisco SME to transfer data from the HR hosts to the dedicated HR backup tapes.

Examples The following example adds a backup tape group:

```
switch# config t
switch(config)# sme cluster cl
switch(config-sme-cl)# tape-bkgrp group1
switch(config-sme-cl-tape-bkgrp)#
```

The following example removes a backup tape group:

```
switch# config t
switch(config)# sme cluster cl
switch(config-sme-cl)# no tape-bkgrp group1
switch(config-sme-cl-tape-bkgrp)#
```

Related Commands	Command	Description
	clear sme	Clears Cisco SME configuration.
	show sme cluster	Displays information about the Cisco SME cluster

tape-device

To configure a crypto tape device, use the `tape-device` command. To disable this feature, use the `no` form of the command.

```
tape-device device name
no tape-device device name
```

Syntax Description

device name	Specifies the name of the tape device.
-------------	--

Command Default

None.

Command Modes

Cisco SME tape volume configuration submode.

Command History

Release	Modification
3.2(2)	This command was introduced.

Usage Guidelines

The tape device commands are available in the `(config-sme-cl-tape-bkgrp-tapedevice)` submode.

Examples

The following example configures a crypto tape device:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# tape-bkgrp group1
switch(config-sme-cl-tape-bkgrp)# tape-device devicename1
switch(config-sme-cl-tape-bkgrp-tapedevice)#
```

The following example removes a crypto tape device:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# tape-bkgrp group1
switch(config-sme-cl-tape-bkgrp)# no tape-device devicename1
switch(config-sme-cl-tape-bkgrp-tapedevice)#
```

Related Commands

Command	Description
<code>clear sme</code>	Clears Cisco SME configuration.
<code>show sme cluster</code>	Displays information about the Cisco SME cluster
<code>show sme cluster tape</code>	Displays information about all tape volume groups or a specific group

tape-keyrecycle

To configure tape key recycle policy, use the `tape-keyrecycle` command. To disable this feature, use the `no` form of the command.

```
tape-keyrecycle
no tape-keyrecycle
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Cisco SME cluster configuration submenu.

Command History	Release	Modification
	3.2(2)	This command was introduced.

Usage Guidelines Cisco SME allows you to recycle the tape keys. If you enable tape key recycling, all the previous instances of the tape key will be deleted. If you do not enable tape key recycle, all the previous instances and the current instance of the tape key is maintained, and the current instance is incremented by 1.

Examples The following example enables tape key recycling:

```
switch# config t
switch(config)#sme cluster c1
switch(config-sme-cl)#tape-keyrecycle
```

The following example disables tape key recycling:

```
switch# config t
switch(config)#sme cluster c1
switch(config-sme-cl)#no tape-keyrecycle
```

Related Commands	Command	Description
	<code>clear sme</code>	Clears Cisco SME configuration.
	<code>show sme cluster</code>	Displays information about the Cisco SME cluster

tape-read command-id

To configure a SCSI tape read command for a SAN tuner extension N port, use the `tape-read command-id` command.

```
tape-read command-id cmd-id target pwwn transfer-size bytes [continuous [filemark-frequency
frequency]] | num-transactions number [filemark-frequency frequency]]
```

Syntax Description

<code>cmd-id</code>	Specifies the command identifier. The range is 0 to 2147483647.
<code>target pwwn</code>	Specifies the target port WWN. The format is hh:hh:hh:hh:hh:hh:hh:hh.
<code>transfer-size bytes</code>	Specifies the transfer size in multiples of 512 bytes. The range is 512 to 8388608.
<code>continuous</code>	(Optional) Specifies that the command is performed continuously.
<code>filemark-frequency frequency</code>	(Optional) Specifies the filemark frequency. The range is 1 to 2147483647.
<code>num-transactions number</code>	(Optional) Specifies a number of transactions. The range is 1 to 2147483647.

Command Default

Filemark frequency: 0.

Command Modes

SAN extension N port configuration submode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

To stop a continuous SCSI tape read command in progress, use the `stop command-id` command.



Note

There can be just one outstanding I/O at a time to the virtual N port that emulates the tape behavior.

Examples

The following example configures a single SCSI tape read command:

```
switch# san-ext-tuner
switch(san-ext)# nwwn 10:00:00:00:00:00:00:00
switch(san-ext)# nport pwwn 12:00:00:00:00:00:00:56 vsan 13 interface gigabitethernet 1/2
switch(san-ext-nport)# tape-
read command-id 100 target 22:22:22:22:22:22:22:22 transfer-size 512000 num-transactions
5000000 filemark-frequency 32
```

The following example configures a continuous SCSI tape read command.

```
switch# san-ext-tuner
switch(san-ext)# nwwn 10:00:00:00:00:00:00:00
switch(san-ext)# nport pwwn 12:00:00:00:00:00:00:56 vsan 13 interface gigabitethernet 1/2
```

```
switch(san-ext-nport)# tape-  
read command-id 100 target 22:22:22:22:22:22:22:22 transfer-size 512000 continuous  
filemark-frequency 32
```

Related Commands

Command	Description
nport pwwn	Configures a SAN extension tuner N port.
san-ext-tuner	Enables the SAN extension tuner feature.
show san-ext-tuner	Displays SAN extension tuner information.
stop	Cancels a SCSI command in progress on a SAN extension tuner N port.

tape-volgrp

To configure the crypto tape volume group, use the `tape-volgrp` command. To disable this command, use the `no` form of the command.

```
tape-volgrp group name
no tape-volgrp group name
```

Syntax Description

group name	Specifies the tape volume group name.
------------	---------------------------------------

Command Default

None.

Command Modes

Cisco SME crypto backup tape group configuration submode.

Command History

Release	Modification
3.2(2)	This command was introduced.

Usage Guidelines

The tape volume group commands are available in the Cisco SME crypto tape volume group (`config-sme-cl-tape-bkgrp-volgrp`) submode.

Examples

The following example configures a crypto tape volume group:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# tape-bkgrp tbgl
switch(config-sme-cl-tape-bkgrp)# tape-volgrp tv1
switch(config-sme-cl-tape-bkgrp-volgrp)#
```

The following example removes a crypto tape volume group:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# tape-bkgrp tbgl
switch(config-sme-cl-tape-bkgrp)# no tape-volgrp tv1
```

Related Commands

Command	Description
<code>clear sme</code>	Clears Cisco SME configuration.
<code>show sme cluster tape</code>	Displays information about tapes

tape-write command-id

To configure a SCSI tape write command for a SAN tuner extension N port, use the tape-write command-id command.

```
tape-write command-id cmd-id target pwwn transfer-size bytes [continuous [filemark-frequency
frequency]] | num-transactions number [filemark-frequency frequency]]
```

Syntax Description	Parameter	Description
	cmd-id	Specifies the command identifier. The range is 0 to 2147483647.
	target pwwn	Specifies the target port WWN. The format is hh:hh:hh:hh:hh:hh:hh:hh.
	transfer-size bytes	Specifies the transfer size in multiples of 512 bytes. The range is 512 to 8388608.
	continuous	(Optional) Specifies that the command is performed continuously.
	filemark-frequency frequency	(Optional) Specifies the filemark frequency. The range is 1 to 2147483647.
	num-transactions number	(Optional) Specifies a number of transactions. The range is 1 to 2147483647.

Command Default Filemark frequency: 0.

Command Modes SAN extension N port configuration submode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines To stop a continuous SCSI tape write command in progress, use the stop command-id command.



Note There can be just one outstanding I/O at a time to the virtual N port that emulates the tape behavior.

Examples

The following example configures a single SCSI tape write command:

```
switch# san-ext-tuner
switch(san-ext)# nwwn 10:00:00:00:00:00:00:00
switch(san-ext)# nport pwwn 12:00:00:00:00:00:00:56 vsan 13 interface gigabitethernet 1/2
switch(san-ext-nport)# tape-
write command-id 100 target 22:22:22:22:22:22:22:22 transfer-size 512000 num-transactions
5000000 filemark-frequency 32
```

The following example configures a continuous SCSI tape write command:

```
switch# san-ext-tuner
switch(san-ext)# nwwn 10:00:00:00:00:00:00:00
switch(san-ext)# nport pwwn 12:00:00:00:00:00:00:56 vsan 13 interface gigabitethernet 1/2
```

```
switch(san-ext-nport)# tape-  
write command-id 100 target 22:22:22:22:22:22:22:22 transfer-size 512000 continuous  
filemark-frequency 32
```

Related Commands

Command	Description
nport pwwn	Configures a SAN extension tuner N port.
san-ext-tuner	Enables the SAN extension tuner feature.
show san-ext-tuner	Displays SAN extension tuner information.
stop	Cancels a SCSI command in progress on a SAN extension tuner N port.

target (iSLB initiator configuration)

To configure an iSLB initiator target, use the target command in iSLB initiator configuration submode. To remove the target configuration, use the no form of the command.

```
target device-alias device-alias|pwwn pWWN [vsan vsan-id] [no-zone] [trespass] [revert-primary-port]
[fc-lun LUN iscsi-lun LUN] [sec-device-alias device-alias|sec-pwwn pWWN] [sec-vsan sec-vsant-id]
[sec-lun LUN] [iqn-name target-name]
```

```
no target device-alias device-alias|pwwn pWWN [vsan vsan-id] [no-zone] [trespass]
[revert-primary-port] [fc-lun LUN iscsi-lun LUN] [sec-device-alias device-alias|sec-pwwn pWWN]
[sec-vsant sec-vsant-id] [sec-lun LUN] [iqn-name target-name]
```

Syntax Description

device-alias device-alias	Specifies the device alias of the Fibre Channel target.
pwwn pWWN	Specifies the pWWN of the Fibre Channel target. The format is hh:hh:hh:hh:hh:hh:hh:hh .
vsan	(Optional) Assigns VSAN membership to the initiator target.
vsan-id	(Optional) Specifies the VSAN ID. The range is 1 to 4093.
no-zone	(Optional) Indicates no automatic zoning.
trespass	(Optional) Enables trespass support.
revert-primary-port	(Optional) Reverts to the primary port when it comes back up.
fc-lun LUN	(Optional) Specifies the Fibre Channel LUN of the Fibre Channel target. The format is 0xhhhh[:hhhh[:hhhh[:hhhh]]].
iscsi-lun LUN	(Optional) Specifies the iSCSI LUN. The format is 0xhhhh[:hhhh[:hhhh[:hhhh]]].
sec-device-alias	(Optional) Specifies the device alias of the secondary Fibre Channel target.
target-device-alias	(Optional) Specifies the initiator's target device alias. The maximum size is 64.
sec-pwwn pWWN	(Optional) Specifies the pWWN of the secondary Fibre Channel target. The format is hh:hh:hh:hh:hh:hh:hh:hh .
sec-vsant	(Optional) Assigns VSAN membership to the initiator.
sec-vsant-id	(Optional) Specifies the VSAN ID. The range is 1 to 4093.
sec-lun LUN	(optional) Specifies the FC LUN of the secondary Fibre Channel target. The format is 0xhhhh[:hhhh[:hhhh[:hhhh]]].
iqn-name	(Optional) Specifies the name of the target.
target-name	Specifies the initiator's target name. The maximum size is 223.

Command Default

None.

Command Modes

iSLB initiator configuration submode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

You can configure an iSLB initiator target using the device alias or the pWWN. You have the option of specifying one or more of the following optional parameters:

- Secondary pWWN
- Secondary device alias
- LUN mapping
- IQN
- VSAN identifier

**Note**

The VSAN identifier is optional if the target is online. If the target is not online, the VSAN identifier is required.

If you configure an IQN for an initiator target, then that name is used to identify the initiator target. Otherwise, a unique IQN is generated for the initiator target.

Examples

The following example configures an iSLB initiator using an IP address and then enters iSLB initiator configuration submode:

```
switch# config t
switch(config)# islb initiator ip-address 209.165.200.226
```

The following example grants iSLB initiator access to the target using a pWWN with auto zoning enabled (default):

```
switch (config-islb-init)# target pwn 26:00:01:02:03:04:05:06
```

The following example grants iSLB initiator access to the target using a pWWN with auto zoning disabled:

```
switch (config-islb-init)# target pwn 26:00:01:02:03:04:05:06 no-zone
```

The following example grants iSLB initiator access to the target using a device alias and optional LUN mapping:

```
switch(config-islb-init)# target device-alias SampleAlias fc-lun 0x1234 iscsi-lun 0x2345
```

The following example grants iSLB initiator access to the target using a device alias and an optional IQN:

```
switch(config-islb-init)# target device-alias SampleAlias iqn-name iqn.1987-01.com.cisco.initiator
```

The following example grants iSLB initiator access to the target using a device alias and a VSAN identifier:


```
switch(config-islb-init)# target device-alias SampleAlias vsan 10
```



Note The VSAN identifier is optional if the target is online. If the target is not online, the VSAN identifier is required.

The following example disables the configured iSLB initiator target.

```
switch (config-islb-init)# no
target pwn 26:00:01:02:03:04:05:06
```

Related Commands

Command	Description
islb initiator	Assigns an iSLB name and IP address to the iSLB initiator and enters iSLB initiator configuration submode.
show isl b initiator	Displays iSLB CFS information.
show isl b initiator detail	Displays detailed iSLB initiator information.
show isl b initiator summary	Displays iSLB initiator summary information.

tclquit

To exit Tcl, use the tclquit command.

```
tclquit
```

Syntax Description None.

Command Default None.

Command Modes Interactive Tcl shell and Tcl script.

Command History	Release	Modification
	NX-OS 5.1(1)	This command was introduced.

Usage Guidelines Terminates the current Tcl process. Synonym for the exit command.

Examples The following example terminates the current interactive Tcl shell:

```
switch-tcl# tclquit
switch#
```

Related Commands	Command	Description
	exit	End the Tcl application (for a list of standard Tcl commands, see the Tcl documentation).

tcp cwm

To configure congestion window monitoring (CWM) TCP parameters, use the `tcp cwm` command. Use the no form of this command to disable this feature or revert to its factory defaults.

```
tcp cwm [burstsize size]
no tcp cwm [burstsize size]
```

Syntax Description	burstsize size	(Optional) Specifies the burstsize ranging from 10 to 100 KB.
---------------------------	----------------	---

Command Default	Enabled. The default FCIP burst size is 10 KB. The default iSCSI burst size is 50 KB
------------------------	--

Command Modes	FCIP profile configuration submode.
----------------------	-------------------------------------

Command History	Release	Modification
	1.3(4)	This command was introduced.

Usage Guidelines	Use these TCP parameters to control TCP retransmission behavior in a switch.
-------------------------	--

Examples The following example configures a FCIP profile and enables congestion monitoring:

```
switch# config terminal
switch(config)# fcip profile 5
switch(config-profile)# tcp cwm
```

The following example assigns the burstsize value at 20 KB:

```
switch(config-profile)# tcp cwm burstsize 20
```

The following example disables congestion monitoring:

```
switch(config-profile)# no tcp cwm
```

The following example leaves the CWM feature in an enabled state but changes the burstsize to the default of 10 KB:

```
switch(config-profile)# no tcp cwm burstsize 25
```

Related Commands	Command	Description
	fcip profile	Configures FCIP profile parameters.

Command	Description
show fcip profile	Displays FCIP profile information.

tcp keepalive-timeout

To configure the interval between which the TCP connection verifies if the FCIP link is functioning, use the `tcp keepalive-timeout` command. Use the `no` form of this command to disable this feature or revert to its factory defaults.

```
tcp keepalive-timeout seconds
no tcp keepalive-timeout seconds
```

Syntax Description	seconds	Specifies the time in seconds. The range is 1 to 7200.
---------------------------	---------	--

Command Default 60 seconds.

Command Modes FCIP profile configuration submode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines This command can be used to detect FCIP link failures.

Examples The following example configures a FCIP profile:

```
switch# config terminal
switch(config)# fcip profile 5
switch(config-profile)#
```

The following example specifies the keepalive timeout interval for the TCP connection:

```
switch(config-profile)# tcp keepalive-timeout 120
```

Related Commands	Command	Description
	fcip profile	Configures FCIP profile parameters.
	show fcip profile	Displays FCIP profile information.

tcp maximum-bandwidth-kbps

To manage the TCP window size in Kbps, use the `tcp maximum-bandwidth-kbps` command. Use the `no` form of this command to disable this feature or revert to its factory defaults.

```
tcp max-bandwidth-kbps bandwidth min-available-bandwidth-kbps threshold round-trip-time-ms
milliseconds | round-trip-time-us microseconds
no tcp max-bandwidth-kbps bandwidth min-available-bandwidth-kbps threshold round-trip-time-ms
milliseconds | round-trip-time-us microseconds
```

Syntax Description

bandwidth	Specifies the Kbps bandwidth. The range is 1000 to 1000000.
min-available-bandwidth-kbps	Configures the minimum slow start threshold.
threshold	Specifies the Kbps threshold. The range is 1000 to 1000000. For Cisco MDS 9250i Multiservice Fabric Switch, the range is 1000 to 10000000.
round-trip-time-ms milliseconds	Configures the estimated round-trip time across the IP network to reach the FCIP peer end point in milliseconds. The range is 0 to 300.
round-trip-time-us microeconds	Configures the estimated round-trip time across the IP network to reach the FCIP peer end point in microseconds. The range is 0 to 300000.

Command Default

Enabled.

The FCIP defaults are `max-bandwidth = 1G`, `min-available-bandwidth = 500 Mbps`, and `round-trip-time = 1 ms`.

The iSCSI defaults are `max-bandwidth = 10000 Mbps (10Gbps)`, `min-available-bandwidth = 8000 Mbps`, and `round-trip-time = 1 ms`.

Command Modes

FCIP profile configuration submode.

iSCSI interface configuration submode

Command History

Release	Modification
1.1(1)	This command was introduced.
6.2(5)	The IPStorage support was increased to 10G on the Cisco MDS 9250i Multiservice Fabric Switch.
6.2(13)	The maximum bandwidth of iSCSI was increased to 10G.

Usage Guidelines

The `maximum-bandwidth` option and the `round-trip-time` option together determine the window size.

The `minimum-available-bandwidth` option and the `round-trip-time` option together determine the threshold below which TCP aggressively increases its size. After it reaches the threshold the software uses standard TCP rules to reach the maximum available bandwidth.

When configuring tcp bandwidth using the tcp maximum-bandwidth-kbps and tcp minimum-bandwidth-kbps commands, the value should not exceed the maximum speed of the physical IPStorage port.

The maximum and minimum tcp bandwidth of all the FCIP and iSCSI interfaces that are using a specific Gigabit Ethernet or IPStorage port should not exceed the maximum speed of the physical IPStorage port.

For optimal performance the minimum-bandwidth-kbps should be 80%-90% of the maximum-bandwidth-kbps.

Examples

The following example configures a FCIP profile:

```
switch# config terminal
switch(config)# fcip profile 5
switch(config-profile)#
```

The following example configures the maximum available bandwidth at 900 Kbps, the minimum slow start threshold as 300 Kbps, and the round trip time as 10 milliseconds:

```
switch(config-profile)# tcp max-bandwidth-kbps 900 min-available-bandwidth-kbps 300
round-trip-time-ms 10
```

The following example reverts to the factory defaults:

```
switch(config-profile)# no tcp max-bandwidth-kbps 900 min-available-bandwidth-kbps 300
round-trip-time-ms 10
```

The following example configures the maximum available bandwidth at 2000 Kbps, the minimum slow start threshold as 2000 Kbps, and the round trip time as 200 microseconds:

```
switch(config-profile)# tcp max-bandwidth-kbps 2000 min-available-bandwidth-kbps 2000
round-trip-time-us 200
```

The following example configures an iSCSI profile:

```
switch# configure terminal
switch(config)# interface iscsi 1/1-2
switch(config-if)#
```

The following example configures the maximum available bandwidth at 9000000 Kbps, the minimum slow start threshold as 8000000 Kbps, and the round trip time as 20 milliseconds:

```
switch(config-if)# tcp max-bandwidth-kbps 9000000 min-available-bandwidth-kbps 8000000
round-trip-time-ms 20
```

The following example configures the maximum available bandwidth at 9000000 Kbps, the minimum slow start threshold as 8000000 Kbps, and the round trip time as 20 milliseconds:

```
switch(config-if)# tcp max-bandwidth-kbps 9000000 min-available-bandwidth-kbps 8000000
round-trip-time-ms 20
```

The following example reverts to the factory defaults:

```
switch(config-if)# no tcp max-bandwidth-kbps 10000000 min-available-bandwidth-kbps 8000000
round-trip-time-ms 20
```

The following example configures the maximum available bandwidth at 5000000 Kbps, the minimum slow start threshold as 4000000 Kbps, and the round trip time as 200 microseconds:

```
switch(config-if)# tcp max-bandwidth-kbps 5000000 min-available-bandwidth-kbps 4000000  
round-trip-time-ms 200
```

Related Commands

Command	Description
fcip profile	Configures FCIP profile parameters.
show fcip profile	Displays FCIP profile information.
show interface iscsi	Displays the iSCSI configuration for the port along with the tcp maximum and minimum bandwidth configuration.

tcp maximum-bandwidth-mbps

To manage the TCP window size in Mbps, use the `tcp maximum-bandwidth-mbps` command. Use the `no` form of this command to disable this feature or revert to its factory defaults.

```
tcp max-bandwidth-mbps bandwidth min-available-bandwidth-mbps threshold round-trip-time-ms
milliseconds | round-trip-time-us microseconds
no tcp max-bandwidth-mbps bandwidth min-available-bandwidth-mbps threshold round-trip-time-ms
milliseconds | round-trip-time-us microseconds
```

Syntax Description

bandwidth	Specifies the Mbps bandwidth. The range is 1 to 1000.
min-available-bandwidth-mbps	Configures the minimum slow start threshold.
threshold	Specifies the Mbps threshold. The range is 1 to 1000. For Cisco MDS 9250i Multiservice Fabric Switch, the range is 1 to 10000.
round-trip-time-ms milliseconds	Configures the estimated round trip time across the IP network to reach the FCIP peer end point in milliseconds. The range is 0 to 300.
round-trip-time-us microseconds	Configures the estimated round trip time across the IP network to reach the FCIP peer end point in microseconds. The range is 0 to 300000.

Command Default

Enabled.

The FCIP defaults are max-bandwidth = 1G, min-available-bandwidth = 500 Mbps, and round-trip-time = 1 ms.

The iSCSI defaults are max-bandwidth = 10000 Mbps (10Gbps), min-available-bandwidth = 8000 Mbps, and round-trip-time = 1 ms.

Command Modes

FCIP profile configuration submode.

iSCSI interface configuration submode

Command History

Release	Modification
1.1(1)	This command was introduced.
6.2(5)	The IPStorage support was increased to 10G on the Cisco MDS 9250i Multiservice Fabric Switch.
6.2(13)	The maximum bandwidth of iSCSI was increased to 10G.

Usage Guidelines

The maximum-bandwidth option and the round-trip-time option together determine the window size.

The minimum-available-bandwidth option and the round-trip-time option together determine the threshold below which TCP aggressively increases its size. After it reaches the threshold the software uses standard TCP rules to reach the maximum available bandwidth.

When configuring tcp bandwidth using the tcp maximum-bandwidth-mbps and tcp minimum-bandwidth-mbps commands, the value should not exceed the maximum speed of the physical IPStorage port.

The maximum and minimum tcp bandwidth of all the FCIP and iSCSI interfaces that are using a specific Gigabit Ethernet or IPStorage port should not exceed the maximum speed of the physical IPStorage port.

For optimal performance the minimum-bandwidth-mbps should be 80%-90% of the maximum-bandwidth-mbps.

Examples

The following example configures a FCIP profile:

```
switch# config terminal
switch(config)# fcip profile 5
switch(config-profile)#
```

The following example configures the maximum available bandwidth at 900 Mbps, the minimum slow start threshold as 300 Mbps, and the round trip time as 10 milliseconds:

```
switch(config-profile)# tcp max-bandwidth-mbps 900 min-available-bandwidth-mbps 300
round-trip-time-ms 10
```

The following example reverts to the factory defaults:

```
switch(config-profile)# no tcp max-bandwidth-mbps 900 min-available-bandwidth-mbps 300
round-trip-time-ms 10
```

The following example configures the maximum available bandwidth at 2000 Mbps, the minimum slow start threshold as 2000 Mbps, and the round trip time as 200 microseconds:

```
switch(config-profile)# tcp max-bandwidth-mbps 2000 min-available-bandwidth-mbps 2000
round-trip-time-us 200
```

The following example configures an iSCSI profile:

```
switch# configure terminal
switch(config)# interface iscsi 1/1-2
switch(config-if)#
```

The following example configures the maximum available bandwidth at 9000 Mbps, the minimum slow start threshold as 8000 Mbps, and the round trip time as 20 milliseconds:

```
switch(config-if)# tcp max-bandwidth-mbps 9000 min-available-bandwidth-mbps 8000
round-trip-time-ms 20
```

The following example reverts to the factory defaults:

```
switch(config-if)# no tcp max-bandwidth-mbps 10000 min-available-bandwidth-mbps 8000
round-trip-time-ms 20
```

The following example configures the maximum available bandwidth at 5000 Mbps, the minimum slow start threshold as 4000 Mbps, and the round trip time as 200 microseconds:

```
switch(config-if)# tcp max-bandwidth-mbps 5000 min-available-bandwidth-mbps 4000
round-trip-time-ms 200
```

Related Commands

Command	Description
fcip profile	Configures FCIP profile parameters.
show fcip profile	Displays FCIP profile information.

Command	Description
show interface iscsi	Displays the iSCSI configuration for the port along with the tcp maximum and minimum bandwidth configuration.

tcp max-jitter

To estimate the maximum delay jitter experienced by the sender in microseconds, use the `tcp max-jitter` command. Use the `no` form of this command to disable this feature or revert to its factory defaults.

```
tcp max-jitter microseconds
no tcp max-jitter microseconds
```

Syntax Description

microseconds	Specifies the delay time in microseconds ranging from 0 to 10000.
--------------	---

Command Default

Enabled.

The default value is 100 microseconds for FCIP and 500 microseconds for iSCSI interfaces.

Command Modes

FCIP profile configuration submode.

Command History

Release	Modification
1.3(4)	This command was introduced.

Usage Guidelines

None.

Examples

The following example configures delay jitter time:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcip profile 3
switch(config-profile)# tcp max-jitter 600
switch(config-profile)# do show fcip profile 3
FCIP Profile 3
  Internet Address is 10.3.3.3 (interface GigabitEthernet2/3)
  Tunnels Using this Profile: fcip3
  Listen Port is 3225
  TCP parameters
    SACK is enabled
    PMTU discovery is enabled, reset timeout is 3600 sec
    Keep alive is 60 sec
    Minimum retransmission timeout is 200 ms
    Maximum number of re-transmissions is 4
    Send buffer size is 0 KB
    Maximum allowed bandwidth is 1000000 kbps
    Minimum available bandwidth is 500000 kbps
    Estimated round trip time is 1000 usec
    Congestion window monitoring is enabled, burst size is 10 KB
    Configured maximum jitter is 600 us
```

Related Commands

Command	Description
fcip profile	Configures FCIP profile parameters.

Command	Description
show fcip profile	Displays FCIP profile information.

tcp max-retransmissions

To specify the maximum number of times a packet is retransmitted before TCP decides to close the connection, use the `tcp max-retransmissions` command. Use the `no` form of this command to disable this feature or revert to its factory defaults.

```
tcp max-retransmissions number
no tcp max-retransmissions number
```

Syntax Description

number	Specifies the maximum number. The range is 1 to 8.
--------	--

Command Default

Enabled.

Command Modes

FCIP profile configuration submode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

The default is 4 and the range is from 1 to 8 retransmissions.

Examples

The following example configures a FCIP profile:

```
switch# config terminal
switch(config)# fcip profile 5
```

The following example specifies the maximum number of retransmissions :

```
switch(config-profile)# tcp max-retransmissions 6
```

Related Commands

Command	Description
<code>fcip profile</code>	Configures FCIP profile parameters.
<code>show fcip profile</code>	Displays FCIP profile information.

tcp min-retransmit-time

To control the minimum amount of time TCP waits before retransmitting, use the `tcp min-retransmit-time` command. Use the `no` form of this command to disable this feature or revert to its factory defaults.

```
tcp min-retransmit-time milliseconds
no tcp min-retransmit-time milliseconds
```

Syntax Description	milliseconds	Specifies the time in milliseconds. The range is 200 to 5000.
---------------------------	--------------	---

Command Default 300 milliseconds.

Command Modes FCIP profile configuration submode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines None.

Examples The following example configures a FCIP profile:

```
switch# config terminal
switch(config)# fcip profile 5
switch(config-profile)#
```

The following example specifies the minimum TCP retransmit time for the TCP connection:

```
switch(config-profile)# tcp min-retransmit-time 500
```

Related Commands	Command	Description
	fcip profile	Configures FCIP profile parameters.
	show fcip profile	Displays FCIP profile information.

tcp pmtu-enable

To configure path MTU (PMTU) discovery, use the `tcp pmtu-enable` command. Use the `no` form of this command to disable this feature or revert to its factory defaults.

```
tcp pmtu-enable [reset-timeout seconds]
no tcp pmtu-enable [reset-timeout seconds]
```

Syntax Description

reset-timeout seconds	(Optional) Specifies the PMTU reset timeout. The range is 60 to 3600 seconds.
-----------------------	---

Command Default

Enabled.
3600 seconds.

Command Modes

FCIP profile configuration submode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example configures a FCIP profile:

```
switch# config terminal
switch(config)# fcip profile 5
switch(config-profile)#
```

The following example disables PMTU discovery:

```
switch(config-profile)# no tcp pmtu-enable
```

The following example enables PMTU discovery with a default of 3600 seconds:

```
switch(config-profile)# tcp pmtu-enable
```

The following example specifies the PMTU reset timeout to 90 seconds:

```
switch(config-profile)# tcp pmtu-enable reset-timeout 90
```

The following example leaves the PMTU in an enabled state but changes the timeout to the default of 3600 seconds:

```
switch(config-profile)# no tcp pmtu-enable reset-timeout 600
```

Related Commands

Command	Description
fcip profile	Configures FCIP profile parameters.

Command	Description
show fcip profile	Displays FCIP profile information.

tcp sack-enable

To enable selective acknowledgment (SACK) to overcome the limitations of multiple lost packets during a TCP transmission, use the `tcp sack-enable` command. Use the `no` form of this command to disable this feature or revert to its factory defaults.

```
tcp sack-enable
no tcp sack-enable
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled

Command Modes FCIP profile configuration submenu.

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines The receiving TCP sends back SACK advertisements to the sender. The sender can then retransmit only the missing data segments.

Examples The following example configures a FCIP profile:

```
switch# config terminal
switch(config)# fcip profile 5
switch(config-profile)#
```

The following example enables the SACK mechanism on the switch:

```
switch(config-profile)# tcp sack-enable
```

Command	Description
<code>fcip profile</code>	Configures FCIP profile parameters.
<code>show fcip profile</code>	Displays FCIP profile information.

tcp send-buffer-size

To define the required additional buffering beyond the normal send window size that TCP allows before flow-controlling the switch's egress path for the FCIP interface, use the `tcp send-buffer-size` command. Use the `no` form of this command to disable this feature or revert to its factory defaults.

```
tcp send-buffer-size s size
no tcp send-buffer-size size
```

Syntax Description	size Specifies the buffer size in KB. The range is 0 to 8192.
---------------------------	--

Command Default	Enabled. The default FCIP buffer size is 0 KB. The default iSCSI buffer size is 4096 KB
------------------------	---

Command Modes	FCIP profile configuration submode.
----------------------	-------------------------------------

Command History	Release	Modification
	1.3(4)	This command was introduced.

Usage Guidelines	None.
-------------------------	-------

Examples The following example configures a FCIP profile:

```
switch# config terminal
switch(config)# fcip profile 5
switch(config-profile)#
```

The following example configure the advertised buffer size to 5000 KB:

```
switch(config-profile)# tcp send-buffer-size 5000
```

Related Commands	Command	Description
	fcip profile	Configures FCIP profile parameters.
	show fcip profile	Displays FCIP profile information.

tcp-connections

To configure the number of TCP connections for the FCIP interface, use the `tcp-connections` command. To revert to the default, use the `no` form of the command.

```
tcp-connections number
no tcp-connections number
```

Syntax Description

number	Enters the number of connections. Accepted values are 2 and 5 (For Cisco MDS 9250i Switch only).
--------	--

Command Default

Two TCP connections.

Command Modes

Interface configuration submode.

Command History

Release	Modification
1.1(1)	This command was introduced.
6.2(5)	Added a value, 5 for the number of TCP connections.

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

Use the `tcp-connections` option to specify the number of TCP connections contained in an FCIP link.

Set the TCP connections to 2 when:

- Both ends or peers of the FCIP tunnel are on Cisco MDS 9222i Switches or Cisco MDS 9000 18/4-Port Multiprotocol Services Modules (MSM) or Cisco MDS 9000 16-Port Storage Services Nodes (SSN).
- One end of the FCIP tunnel is on Cisco MDS 9222i switch, Cisco MDS 9000 18/4-Port Multiprotocol Services Module (MSM), or Cisco MDS 9000 16-Port Storage Services Node (SSN) and the other end is on Cisco MDS 9250i Switch.

Set the TCP connections to 5 when:

- Both ends of the FCIP tunnel are on Cisco MDS 9250i Switches.



Note

When both ends of the FCIP tunnel are on Cisco MDS 9250i Switches, the TCP connections can be set to either 2 or 5, we recommend to set the TCP connections to 5 for higher bandwidth.

Examples

The following example configures the TCP connections:

```
switch# config terminal
switch(config)# interface fcip 50
switch(config-if)# tcp-connections 2
switch(config-if)# no tcp-connections 2
```

Related Commands

Command	Description
show interface fcip number	Displays an interface state and statistics.
show running-config interface fcip number	Displays an interface configuration for a specified FCIP interface.

telemetry

To enter SAN Telemetry Streaming (STS) configuration mode, use the `telemetry` command. To exit STS configuration mode, use the `no` form of this command.

```
telemetry
```

```
no telemetry
```

Syntax Description This command has no arguments or keywords.

Command Default Telemetry configuration mode is disabled by default.

Command Modes Configuration mode (config)

Command History

Release	Modification
8.3(1)	This command was introduced.

Examples

This example shows how to enter STS configuration mode:

```
switch# configure
switch(config)# telemetry
```

This example shows how to exit STS configuration mode:

```
switch# configure
switch(config)# no telemetry
```

Related Commands

Command	Description
<code>feature telemetry</code>	Enables the SAN Telemetry Streaming feature.
<code>show running-config telemetry</code>	Displays the existing telemetry configuration.
<code>show telemetry</code>	Displays telemetry configuration.

telnet

To log in to a host that supports Telnet, use the telnet command in EXEC mode.

```
telnet hostnameip-address [port]
```

Syntax Description

hostname	Specifies a host name. Maximum length is 64 characters.
ip-address	Specifies an IP address.
port	(Optional) Specifies a port number. The range is 0 to 2147483647.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example establishes a Telnet session to the specified IP address:

```
switch# telnet 172.22.91.153
Trying 172.22.91.153...
Connected to 172.22.91.153.
Login:xxxxxxxx
Password:xxxxxxxx
switch#
```

Related Commands

Command	Description
telnet server enable	Enables the Telnet server.

telnet server enable

To enable the Telnet server if you want to return to a Telnet connection from a secure SSH connection, use the `telnet server enable` command. To disable the Telnet server, use the `no` form of this command

```
telnet server enable
no telnet server enable
```

Syntax Description This command has no arguments or keywords.

Command Default Enabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines None.

Examples The following example enables the Telnet server:

```
switch(config)# telnet server enable
updated
```

The following example disables the Telnet server:

```
switch(config)# no telnet server enable
updated
```

Related Commands	Command	Description
	telnet	Logs in to a host that supports Telnet.

terminal alias

To display and define command aliases for a user session, use the `terminal alias` command. To remove the alias definition, use the `no` form of this command.

```
terminal alias [persist] [alias-name alias-definition]
no terminal alias [persist] [alias-name alias-definition]
```

Syntax Description

<code>persist</code>	(Optional) Makes the setting persistent for the current and future sessions for the current user.
<code>alias-name</code>	(Optional) Alias name.
<code>alias-definition</code>	(Optional) Alias definition.

Command Default

Displays the command aliases available to the user session.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

Aliases that you define with the `terminal alias` command are only available to the current user. Other users cannot use these command aliases. To create aliases that other users can access, use the `cli alias name` command.

The alias setting applies only to the current user session. Use the `persist` keyword to change the setting for the current and future session for the current user.

Examples

This example shows how to define a command alias only for the current user session:

```
switch# terminal alias shint show interface brief
```

This example shows how to define a command alias to persist across a session for the current user:

```
switch# terminal alias persist shver show version
```

This example shows how to display the command aliases available to the current user session:

```
switch# terminal alias
CLI alias commands
=====
shint  :show interface brief
-----
alias  :show cli alias
```

This example shows how to remove a temporary command alias for the user session:

```
switch# no terminal alias shint
```

Related Commands

Command	Description
cli alias name	Defines a command alias name.

terminal ask-on-term

To enable all confirmation questions on the terminal, use the `terminal ask-on-term` command. To disable all confirmation questions, use the `no` form of this command.

```
terminal ask-on-term term
no terminal ask-on-term term
```

Syntax Description

term	Name of the session where you want to enable or disable the confirmation questions.
------	---

Command Default

All confirmation questions are enabled by default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

Confirmation questions are used in NX-OS to confirm actions that may cause traffic disruption. The `no terminal ask-on-term` command disables even the confirmation questions that are prompted during a reload operation.

Examples

This example shows how to enable all confirmation questions on terminal pts/0 only:

```
switch# terminal ask-on-term pts/0
```

This example shows how to disable all confirmation questions on terminal pts/0 only:

```
switch# no terminal ask-on-term pts/0
```

Related Commands

Command	Description
show users	Displays current user sessions and terminal names.
terminal dont-ask	Disables the terminal from asking you confirmation statements.

terminal color

To change the colors that are used when displaying the commands and outputs on the CLI for a user session, use the terminal color command. To revert to the default color, use the no form of this command.

```
terminal color [persist]
no terminal color [persist]
```

Syntax Description

persist	(Optional) Makes the setting persistent for the current and future sessions for the current user.
---------	---

Command Default

All CLI prompts, commands, and command outputs display in colors that are defined by the terminal emulator.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

The terminal color command changes the CLI colors as follows:

- Displays the command prompt in green if the previous command was successful.
- Displays the command prompt in red if an error occurred in the previous command.
- Displays the command in blue.
- Displays output in the default color that is defined by the terminal emulator.

The terminal color setting applies only to the current user session. Use the persist keyword to change the setting for the current and future session for the current user.

Examples

This example shows how to enable the terminal display colors for the current user session:

```
switch# terminal color
```

This example shows how to enable the terminal display colors for the current and future sessions for the current user:

```
switch# terminal color persist
```

This example shows how to revert to the default for the current user session:

```
switch# no terminal color
```

This example shows how to revert to the default for the current and future sessions for the current user:

```
switch# no terminal color persist
```

terminal deep-help

To enable the display of syntax of all possible options of a given command, use the terminal deep-help command. To disable detailed help, use the no form of this command.

```
terminal deep-help
no terminal deep-help
```

Command Default Detailed help is disabled by default.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines To invoke detailed help for a command, enter the command followed by simultaneously pressing the Alt and the ? keys (the Alt key is the option key on Mac).

Examples This example shows the possible options of the zoneset command:

```
switch# terminal deep-help
switch# zoneset alt-?
: zoneset distribute vsan <i0>
: zoneset export vsan <i0>
: zoneset import interface <if0> vsan <i0>
```

terminal dont-ask

To disable confirmation prompts on the CLI, use the terminal dont-ask command. To revert to the default, use the no form of this command.

```
terminal dont-ask [persist]
no terminal dont-ask [persist]
```

Syntax Description

persist	(Optional) Makes the setting persistent for the current and future sessions for the current user.
----------------	---

Command Default

Confirmation prompts are enabled.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

The terminal confirmation prompt setting applies only to the current user session. Use the persist keyword to change the setting for the current and future session for the current user.

Examples

This example shows how to disable the CLI confirmation prompts for the current user session:

```
switch# terminal dont-ask
```

This example shows how to disable the CLI confirmation prompts for the current and future sessions for the current user:

```
switch# terminal dont-ask persist
```

This example shows how to enable the terminal to ask confirmation statements:

```
switch# no terminal dont-ask
```

This example shows how to enable the CLI confirmation prompts for the current and future sessions for the current user:

```
switch# no terminal dont-ask persist
```

Related Commands

Command	Description
terminal ask-on-term	Enables all confirmation questions on the terminal.

terminal edit-mode vi

To enable VI style editing of CLI history commands, use the terminal edit-mode command. To revert to the default editing mode, use the no form of this command.

```
terminal edit-mode vi [persist]
no terminal edit-mode vi [persist]
```

Syntax Description

persist	(Optional) Makes the setting persistent for the current and future sessions for the current user.
---------	---

Command Default

The command line edit mode is set to EMACS by default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

The following table provides information about the difference between EMACS and VI mode editing commands:

Command	EMACS	VI
Delete line backward	Ctrl-u	dd
Delete word	Ctrl-w	dw Note This command deletes a word when the cursor is placed at the beginning of the word.
Back character	Ctrl-b	h
Forward character	Ctrl-f	l
Beginning of line	Ctrl-a	0
End of line	Ctrl-e	\$
Back one word	Esc, b	b
Forward one word	Esc, f	w
Delete character at the cursor	Ctrl-d	x
Replace character at the cursor	—	r

The edit mode setting applies only to the current user session. Use the persist keyword to change the setting for the current and future session for the current user.

Examples

This example shows how to change the edit mode for recalled commands to VI style for the current user session:

```
switch# terminal edit-mode vi
```

This example shows how to change the edit mode for recalled commands to VI style for the current and future session for the current user:

```
switch# terminal edit-mode vi persist
```

This example shows how to revert the edit mode for recalled command to EMACS style for the current user session:

```
switch# no terminal edit-mode vi
```

This example shows how to revert the edit mode for recalled command to EMACS style for the current and future sessions for the current user:

```
switch# no terminal edit-mode vi persist
```


terminal event-manager bypass

To bypass all EEM policies that use event cli match statements to trap specific CLI commands, use terminal event-manager bypass command. To revert, use the terminal no event-manager bypass command.

```
terminal event-manager bypass
terminal no event-manager bypass
```

Command Default EEM policies that match CLI commands are effective.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines This command allows the user to run commands that may be blocked or redirected by EEM policies.

Examples This example shows a simple event manger applet that matches a CLI command and how to the terminal event-manager bypass command allows the user to bypass the EEM policy completely.

```
switch# show running-config eem
event manager applet noClockDetail
event cli match "show clock detail"
action 10 syslog priority critical msg "blocking sh clock detail"
switch# show clock detail
% Command blocked by event manager policy
2019 Jan 1 12:33:44 switch %EEM_ACTION-2-CRIT: blocking sh clock detail
switch# terminal event-manager bypass
switch# show clock detail
Time source is NTP
12:33:55 CET Fri Jan 01 2019
summer-time configuration:
-----
timezone name: CEST
Starts : 5 Sun Mar at 02:00 hours
Ends : 5 Sun Oct at 02:00 hours
Minute offset:
```

This example shows how to restore matching of CLI commands by EEM policies:

```
switch# no terminal event-manager bypass
```

Related Commands	Command	Description
	show running-config eem	Displays EEM policy configurations.

terminal exec prompt timestamp

To configure printing timestamps before each CLI command is executed, use the terminal exec prompt timestamp command. To remove the configuration, use the no form of this command.

```
terminal exec prompt timestamp
no terminal exec prompt timestamp
```

Command Default Timestamp is not shown in the command output.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines This setting will automatically print CPU usage and timestamp information before each command is run. This can be helpful in debugging issues.

Examples This example shows the extra information that is displayed when this command is enabled:

```
switch# terminal exec prompt timestamp
switch# show banner motd
CPU utilization for five seconds: 2%/0%; one minute: 2%; five minutes: 2%
Time source is NTP
12:38:11.777 CET Sun Jan 06 2019
User Access Verification
```

terminal history no-exec-in-config

To exclude EXEC commands from the command history in config mode, use the terminal history no-exec-in-config command. To revert to the default, use the no form of this command.

```
terminal history no-exec-in-config
no terminal history no-exec-in-config
```

Command Default

The CLI command history always includes EXEC commands in configuration mode.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

By default, the Cisco NX-OS CLI history recalls all commands from the current command mode and higher command modes. For example, if you are working in global configuration mode, the command recall keystroke shortcuts recall both EXEC mode and global configuration mode commands. Using the terminal history no-exec-in-config command, you can avoid recalling any higher mode commands when you are in a configuration mode.

terminal home

To move the cursor to the line 1 and column 1 of the screen without erasing the screen output, use the terminal home command.

```
terminal home
```

Command Default

The cursor stays at the current line.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

terminal length

To set the number of lines used by the screen output pager, use the terminal length command. To revert to the default number of lines, use the no form of this command.

```
terminal length lines
terminal no length
```

Syntax Description

lines	Number of lines to display. Range is from 0 to 512. Enter 0 to disable paging.
-------	--

Command Default

If the terminal emulator does not specify a screen length, then the default length is set to 24 lines. Most modern terminals propagate their window length to the switch so that the switch will automatically page output to match the number of lines of the user's window.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

If a command output exceeds the number of terminal lines, the session pauses after displaying the number of lines set in the terminal length. Press the space bar to display another screen of lines or press the Enter key to display another line. To return to the command prompt, press Ctrl-C.

The terminal length setting applies only to the current session.

Examples

This example shows how to set the number of lines of command output to display on the terminal before pausing:

```
switch# terminal length 28
```

This example shows how to revert to the default number of lines:

```
switch# terminal no length
```

Related Commands

Command	Description
show terminal	Displays the terminal session configuration.
terminal width	Sets the number of character columns for the current terminal session.

terminal monitor

To automatically display new syslog messages to the current session, use the terminal monitor command.

```
terminal monitor
```

Command Default

Logs are printed to the console session and no logs are printed to terminal sessions.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

This command is helpful for monitoring of unexpected events during changes or debug messages during debugging. Be careful if this command is used for monitoring debugging as the session or system may be overloaded by the number of messages printed.

Related Commands

Command	Description
logging level	Configure different logging level for each facility.
show logging level	Displays the logging level of each syslog facility.

terminal output xml

To set the command output formatting to XML, use the `terminal output xml` command. To set the default output formatting, use the `no` form of this command.

```
terminal output xml [1.0NX-OS-version]
no terminal output xml [1.0NX-OS-version]
```

Syntax Description	1.0	(Optional) XML version 1.0.
	NX-OS-version	(Optional) Specifies the XML version depending on the Cisco NX-OS version that is installed on your switch.

Command Default Command outputs are in free form text for human consumption.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines This command is useful for scripts or other services that expect XML formatted output from CLI commands.

Examples This example shows how to set the command output formatting to XML:

```
switch# terminal output xml
```

This example shows how to set the command output formatting to XML version 1.0:

```
switch# terminal output xml 1.0
```

This example shows how to set the command output formatting to XML version 8.1.1b:

```
switch# terminal output xml 8.1.1b
```

This example shows how to set the command output formatting to default:

```
switch# no terminal output xml
```

Related Commands	Command	Description
	show terminal output xml version	Displays currently used XML version.

terminal password

To assign a password to be used in the copy {ftp | scp | sftp} commands, use the terminal password command. To remove the password, use the no form of this command.

```
terminal password
no terminal password
```

Command Default

There is no password set for the copy {ftp | scp | sftp} commands.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

The password that is configured by this command is not restricted to the current username. It will be used for the user specified in any copy command, which allows another user other than the current user to be given.

This command has two modes: inline and interactive. In the inline mode, the password is echoed on the screen. In the interactive mode, the password is not echoed. To use interactive mode, type the help character ? instead of a password. When prompted, enter the desired password.

This command is not stored in the switch configuration and is not persistent between logins.

Examples

This example shows how to configure a password in inline mode:

```
switch# terminal password myScpFtpPassword
```

This example shows how to configure a password to be used in the copy {scp | ftp | sftp} commands:

```
switch# terminal password?
enter password and type return
```

This example shows how to remove the password that is configured for the copy {scp | ftp | sftp} commands:

```
switch# no terminal password
```

Related Commands

Command	Description
copy	Copy a file.

terminal redirection-mode

To configure the file format of the show command output that is redirected to a file, use the terminal redirection-mode command.

```
terminal redirection-mode ascii | zipped
```

Syntax Description

ascii	Sets the redirection mode to ASCII.
zipped	Sets the redirection mode to gzip.

Command Default

The file format of redirected the show command output is set to ASCII by default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

Some of the show commands have lengthy outputs, especially show commands for debugging such as the show tech-support command. You can use the terminal redirection-mode command to reduce the size of the file when you redirect the output from the command.

The terminal redirection mode setting applies only to the current session.

Examples

This example shows how automatic zipping of redirected output works. The mode is set to zip, a file is created and then unzipped. The size of each file is checked.

```
switch# terminal redirection-mode zipped
switch# show tech-support acl > shTechAcl.gz
switch# dir shTechAcl.gz
16346 Jan 01 12:34:56 2010 shTechAcl.gz
switch# gunzip shTechAcl.gz
switch# dir shTechAcl
236449 Jan 01 12:34:56 2010 shTechAcl
```

This example shows how to configure ASCII format for the terminal redirection mode:

```
switch# terminal redirection-mode ascii
```

terminal session-timeout

To set the terminal inactivity timeout period for the current session, use the terminal session-timeout command.

```
terminal session-timeout minutes
```

Syntax Description

minutes	Session timeout period in minutes. Range is 0 to 525600.
---------	--

Command Default

Session timeout is disabled by default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

A value of 0 minutes disables the session timeout.

The terminal session inactivity timeout setting applies only to the current session.

Examples

This example shows how to configure the terminal session timeout period to 1 minute:

```
switch# terminal session-timeout 1
```

This example shows how to disable the terminal session timeout:

```
switch# terminal session-timeout 0
```

Related Commands

Command	Description
show terminal	Displays the terminal session configuration.

terminal sticky-mode

To search for a command match in the current mode only, use the terminal sticky-mode command.

```
terminal sticky-mode
terminal no sticky-mode
```

Command Default The current mode and all higher modes are searched for matching commands.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	1.0(2)	This command was introduced.

Examples This example shows how commands are constrained to the current mode when this setting is enabled:

```
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# show clock?
*** No matching command found in current mode, matching in (exec) mode ***
    clock Display current Date
switch(config)# exit
switch# terminal sticky-mode
switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# show clock?
^
% Invalid command at '^' marker.
```

terminal terminal-type

To set the terminal type, use the terminal terminal-type command. To revert to the default type, use the no form of this command.

```
terminal terminal-type type
terminal no terminal-type
```

Syntax Description

type	<p>Sets the terminal type. Maximum length is 80 characters.</p> <p>The supported types are:</p> <ul style="list-style-type: none"> • ansi • dumb • linux • rxvt • screen • sun • vt100 • vt102 • vt200 • vt220 • vt52 • xterm • xterm-256color • xterm-color • xterm-xfree86
-------------	---

Command Default

The default terminal type is ansi.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Examples

This example shows how to set the terminal type to xterm :

```
switch# terminal terminal-type xterm
```

This example shows how to revert to the default terminal type:

```
switch# terminal no terminal-type
```

Related Commands

Command	Description
show terminal	Displays the terminal session configuration.

terminal time

To save the current time to a variable, use the terminal time command.

```
terminal time [variable] [delta]
```

Syntax Description

variable	(Optional) Variable name to store the time.
delta	(Optional) Displays the delta time to the currently saved time value.

Command Default

Current time is not saved.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Examples

This example shows how to save the current time to a variable:

```
switch# terminal time t1
```

This example shows how to display the delta time to the currently saved time:

```
switch# terminal time t1 delta
```

terminal verify-only

To verify if a user is permitted to run given commands, use the terminal verify-only command.

```
terminal verify-only [username name]
terminal no verify-only [username name]
```

Syntax Description

username	(Optional) Specifies a user.
name	(Optional) Specifies a username.

Command Default

Remote users are restricted from verifying commands.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

When configured, this command changes the CLI mode to verify if a given command is allowed to be executed but does not execute the command. The full command to be tested should be given. If a username is specified, the tests are for the specified user and not for the current user. Issue the no option to revert to normal command execution mode.

Examples

This example shows how to verify if the current user can execute the show clock command:

```
switch# terminal verify-only

switch# show clock
% Success
```

This example shows how to test which commands the user 'a123456' may execute:

```
switch# terminal verify-only username a123456
```

Related Commands

Command	Description
aaa authorization	Configures authorization.
show user-account	Displays information of switch users.

terminal width

To set the number of character columns for the current terminal session, use the terminal width command. To revert to the default, use the no form of this command.

```
terminal width columns
terminal no width
```

Syntax Description

columns	Number of columns. The range is from 24 to 511.
---------	---

Command Default

If the terminal emulator does not specify a screen width, then the default number of character columns is 80. Most modern terminals propagate their window width to the switch so that the switch will automatically page output to match the width of the users window.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

The terminal width setting applies only to the current session.

Examples

This example shows how to set the number of columns to display on the terminal:

```
switch# terminal width 70
```

This example shows how to revert to the default number of columns:

```
switch# terminal no width
```

Related Commands

Command	Description
show terminal	Displays the terminal session configuration.
terminal length	Sets the number of lines on a screen for the current terminal session.

test aaa authorization

To verify if the authorization settings are correct or not, use the test aaa authorization command.

```
test aaa authorization command-type commands | config-commands user username command cmd
```

Syntax Description

command-type	Specifies the command type. You can use the keywords for the command type.
commands	Specifies authorization for all commands.
config-commands	Specifies authorization for configuration commands.
user	Specifies the user to be authorized. The maximum size is 32.
username	Specifies the user to be authorized.
cmd	Specifies command to be authorized.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to verify if the authorization settings are correct or not:

```
switch(config)# test aaa authorization command-type commands user ul command "feature dhcp"
% Success
switch(config)#
```

Related Commands

Command	Description
show aaa authorization all	Displays all authorization information.

test pfm snmp test-trap fan

To generate a test SNMP trap for fan 1, use the test pfm snmp test-trap fan command.

```
test pfm snmp test-trap fan
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Release	Modification
4.2(1)	This command was introduced.

Usage Guidelines Use the test pfm snmp test-trap fan command to generate a test SNMP trap message for fan 1 with status OK. The test traps are sent to all the configured trap receivers. You can configure a trap receiver by using the snmp-server host ip-address traps version command. This can be used to verify if the trap receivers are correctly configured to receive the traps.

Ensure that all the required SNMP trap receivers are configured with the snmp-server host ip-address traps command, before executing the test pfm snmp test-trap fan command.

Examples

The following example is one of the methods to verify the test SNMP trap messages for a fan in a device:

```
switch# test pfm snmp test-trap fan

pfm_cli_test_snmp_trap_fan: Sent dummy/test FAN SNMP Trap

!Check trap messages in the Device Manager Log!
2019.08.07 00:17:47 [snmp.trap] 00:17:47 10.106.29.18, 605 TRAP c=public
sysUpTime.0=7536993, snmpTrapOID.0=connUnitFabricID,
connUnitStatus.32.0.0.222.251.177.121.208.0.0.0.0.0.0=4,
connUnitState.32.0.0.222.251.177.121.208.0.0.0.0.0.0=2
2019.08.07 00:17:47 [snmp.trap] TrapChannel queueing 00:17:47 10.106.29.18, 605 TRAP
c=public sysUpTime.0=7536993, snmpTrapOID.0=connUnitFabricID,
connUnitStatus.32.0.0.222.251.177.121.208.0.0.0.0.0.0=4,
connUnitState.32.0.0.222.251.177.121.208.0.0.0.0.0.0=2
2019.08.07 00:17:47 [snmp.trap] 00:17:47 10.106.29.18, 606 TRAP c=public
sysUpTime.0=7537002, snmpTrapOID.0=cefcFanTrayStatusChange, cefcFanTrayOperStatus.534=2
2019.08.07 00:17:47 [snmp.trap] TrapChannel queueing 00:17:47 10.106.29.18, 606 TRAP
c=public sysUpTime.0=7537002, snmpTrapOID.0=cefcFanTrayStatusChange,
cefcFanTrayOperStatus.534=2
```

Related Commands

Command	Description
snmp-server host ip-address traps version	Sends SNMP traps to the configured hosts.
test pfm snmp test-trap powersupply	Displays the test SNMP traps to monitor power supply.

Command	Description
test pfm snmp test-trap temp_sensor	Displays the test SNMP traps to monitor tempertaure settings.

test pfm snmp test-trap powersupply

To generate a test SNMP trap for power supply on a Cisco device, use the `test pfm snmp test-trap powersupply` command.

```
test pfm snmp test-trap powersupply
```

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	4.2(1)	This command was introduced.

Usage Guidelines Use the `test pfm snmp test-trap powersupply` command to generate a test SNMP trap message for power supply with status OK. The test traps are sent to all the configured trap receivers. You can configure a trap receiver by using the `snmp-server host ip-address traps version` command. This can be used to verify if the trap receivers are correctly configured to receive the traps.

Ensure that all the required SNMP trap receivers are configured with the `snmp-server host ip-address traps` command, before executing the `test pfm snmp test-trap powersupply` command.

Examples

The following example is one of the methods to verify the test SNMP trap messages for power supply in a device:

```
switch# test pfm snmp test-trap powersupply

pfm_cli_test_snmp_trap_powersupply: Sent dummy/test POW SNMP Trap

!Check trap messages in the Device Manager Log!
2019.08.07 00:45:35 [snmp.trap] 00:45:35 10.106.22.18, 620 TRAP c=public
sysUpTime.0=7703861, snmpTrapOID.0=connUnitFabricID,
connUnitStatus.32.0.0.222.251.177.121.208.0.0.0.0.0.0=4,
connUnitState.32.0.0.222.251.177.121.208.0.0.0.0.0.0=2
2019.08.07 00:45:35 [snmp.trap] TrapChannel queueing 00:45:35 10.106.22.18, 620 TRAP
c=public sysUpTime.0=7703861, snmpTrapOID.0=connUnitFabricID,
connUnitStatus.32.0.0.222.251.177.121.208.0.0.0.0.0.0=4,
connUnitState.32.0.0.222.251.177.121.208.0.0.0.0.0.0=2
2019.08.07 00:45:35 [snmp.trap] 00:45:35 10.106.22.18, 621 TRAP c=public
sysUpTime.0=7703871, snmpTrapOID.0=cefcPowerStatusChange, cefcFRUPowerOperStatus.470=5,
cefcFRUPowerAdminStatus.470=1
2019.08.07 00:45:35 [snmp.trap] TrapChannel queueing 00:45:35 10.106.22.18, 621 TRAP
c=public sysUpTime.0=7703871, snmpTrapOID.0=cefcPowerStatusChange,
cefcFRUPowerOperStatus.470=5, cefcFRUPowerAdminStatus.470=1
```

Related Commands

Command	Description
<code>snmp-server host ip-address traps version</code>	Sends SNMP traps to the configured hosts.
<code>test pfm snmp test-trap fan</code>	Displays the test SNMP traps to monitor fan traps.

Command	Description
test pfm snmp test-trap temp_sensor	Displays the test SNMP traps to monitor tempertaure settings.

test pfm snmp test-trap temp_sensor

To generate a test SNMP trap for temperature settings, use the `test pfm snmp test-trap temp_sensor` command.

```
test pfm snmp test-trap temp_sensor
```

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC mode

Command History	Release	Modification
	4.2(1)	This command was introduced.

Usage Guidelines Use the `test pfm snmp test-trap temp_sensor` command to generate a test SNMP trap message for temperature settings of a device. The test traps are sent to all the configured trap receivers. You can configure a trap receiver by using the `snmp-server host ip-address traps version` command. This can be used to verify if the trap receivers are correctly configured to receive the traps.

Ensure that all the required SNMP trap receivers are configured with the `snmp-server host ip-address traps` command, before executing the `test pfm snmp test-trap temp_sensor` command.

Examples

The following example is one of the methods to verify the test SNMP trap messages for temperature settings in a device:

```
switch# test pfm snmp test-trap temp_sensor

pfm_cli_test_snmp_trap_sensor: Sent dummy/test TEMP SNMP Trap

!Check trap messages in the Device Manager Log!
2019.08.07 00:50:33 [snmp.trap] 00:50:33 10.106.29.18, 622 TRAP c=public
sysUpTime.0=7733672, snmpTrapOID.0=entSensorThresholdNotification,
entSensorThresholdValue.21590.12=34, entSensorValue.21590=56,
entSensorThresholdSeverity.21590.12=10
2019.08.07 00:50:33 [snmp.trap] TrapChannel queueing 00:50:33 10.106.29.18, 622 TRAP
c=public sysUpTime.0=7733672, snmpTrapOID.0=entSensorThresholdNotification,
entSensorThresholdValue.21590.12=34, entSensorValue.21590=56,
entSensorThresholdSeverity.21590.12=10
```

Related Commands

Command	Description
<code>snmp-server host ip-address traps version</code>	Sends SNMP traps to the configured hosts.
<code>test pfm snmp test-trap fan</code>	Displays the test SNMP traps to monitor fan traps.
<code>test pfm snmp test-trap powersupply</code>	Displays the test SNMP traps to monitor power supply.

time

To configure the time for the command schedule, use the time command. To disable this feature, use the no form of the command.

time daily daily-schedule | monthly monthly-schedule | start start-time | now | weekly weekly-schedule
no time

Syntax Description		
daily daily-schedule		Configures a daily command schedule. The format is HH:MM, where HH is hours (0 to 23) and MM is minutes (0 to 59). Maximum length is 5 characters.
monthly monthly-schedule		Configures a monthly command schedule. The format is dm:HH:MM, where dow is the day of the month (1 to 31), HH is hours (0 to 23) and MM is minutes (0 to 59). Maximum length is 8 characters.
start		Schedules a job to run at a future time.
start-time		Specifies the future time to run the job. The format is yyyy:mmm:dd:HH:MM, where yyyy is the year, mmm is the month (jan to dec), dd is the day of the month (1 to 31), HH is hours (0 to 23) and MM is minutes (0 to 59). Maximum length is 18 characters.
now		Starts the job two minutes after the command is entered.
weekly weekly-schedule		Configures a weekly command schedule. The format is dow:HH:MM, where dow is the day of the week (1 to 7, Sun to Sat), HH is hours (0 to 23) and MM is minutes (0 to 59). Maximum length is 10 characters.

Command Default

Disabled.

Command Modes

Scheduler job configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To use this command, the command scheduler must be enabled using the scheduler enable command.

Examples

The following example shows how to configure a command schedule job to run every Friday at 2200:

```
switch# config terminal
switch(config)# scheduler schedule name MySchedule
switch(config-schedule)# time weekly 6:22:00
```

The following example starts a command schedule job in two minutes and repeats every 24 hours:

```
switch(config-schedule)# time start now repeat 24:00
```

Related Commands

Command	Description
scheduler enable	Enables the command scheduler.
scheduler schedule name	Configures a schedule for the command scheduler.
show scheduler	Displays schedule information.

time-stamp

To enable FCIP time stamps on a frame, use the time-stamp command. To disable this command for the selected interface, use the no form of the command.

```
time-stamp [acceptable-diff number]
no time-stamp [acceptable-diff number]
```

Syntax Description	acceptable-diff number	(Optional) Configures the acceptable time difference for timestamps in milliseconds. The range is 500 to 10000.
---------------------------	------------------------	---

Command Default Disabled.

Command Modes Interface configuration submode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines Access this command from the switch(config-if)# submode.
The time-stamp option instructs the switch to discard frames that are older than a specified time.

Examples The following example enables the timestamp for an FCIP interface:

```
switch# config terminal
switch(config)# interface fcip 50
switch(config-if)# time-stamp
switch(config-if)# time-stamp acceptable-diff 4000
```

Related Commands	Command	Description
	show interface fcip	Displays the configuration for a specified FCIP interface.

tlport alpa-cache

To manually configure entries in an ALPA cache, use the `tlport alpa-cache` command. To disable the entries in an ALPA cache, use the `no` form of the command.

```
tlport alpa-cache interface interface pwwn pwwn alpa alpa
no tlport alpa-cache interface interface pwwn pwwn
```

Syntax Description		
interface interface		Specifies a Fibre Channel interface.
pwwn pwwn		Specifies the peer WWN ID for the ALPA cache entry.
alpa alpa		Specifies the ALPA cache to which this entry is to be added.

Command Default Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(5)	This command was introduced.

Usage Guidelines Generally, ALPA cache entries are automatically populated when an ALPA is assigned to a device. Use this command only if you want to manually add additional entries.

Examples The following example configures the specified pWWN as a new entry in this cache:

```
switch# config terminal
switch(config)# tlport alpa-cache interface fc1/2 pwwn 22:00:00:20:37:46:09:bd alpa 0x02
```

Related Commands	Command	Description
	show tlport	Displays TL port information.

traceroute

To print the route an IP packet takes to a network host, use the traceroute command in EXEC mode.

```
traceroute [ipv6] [hostname [size packet-size] | ip-address] | [hostname | ip-address]
```

Syntax Description		
ipv6	(Optional) Traces a route to an IPv6 destination.	
hostname	(Optional) Specifies a host name. Maximum length is 64 characters.	
size packet-size	(Optional) Specifies a packet size. The range is 0 to 64.	
ip-address	(Optional) Specifies an IP address.	

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.
	3.0(1)	Added the ipv6 argument.

Usage Guidelines This command traces the route an IP packet follows to an Internet host by launching UDP probe packets with a small TTL (time to live) and then listening for an ICMP (Internet Control Message Protocol) “time exceeded” reply from a gateway.



Note Probes start with a TTL of one and increase by one until encountering an ICMP “port unreachable.” This means that the host was accessed or a maximum flag was found. A line is printed showing the TTL, address of the gateway, and round-trip time of each probe. If the probe answers come from different gateways, the address of each responding system is printed.

Examples

The following example prints the route IP packets take to the network host www.cisco.com:

```
switch# traceroute www.cisco.com
traceroute to www.cisco.com (171.71.181.19), 30 hops max, 38 byte packets
 1  kingfisher1-92.cisco.com (172.22.92.2)  0.598 ms  0.470 ms  0.484 ms
 2  nubulab-gw1-bldg6.cisco.com (171.71.20.130)  0.698 ms  0.452 ms  0.481 ms
 3  172.24.109.185 (172.24.109.185)  0.478 ms  0.459 ms  0.484 ms
 4  sjc12-lab4-gw2.cisco.com (172.24.111.213)  0.529 ms  0.577 ms  0.480 ms
 5  sjc5-sbb4-gw1.cisco.com (171.71.241.174)  0.521 ms  0.495 ms  0.604 ms
 6  sjc12-dc2-gw2.cisco.com (171.71.241.230)  0.521 ms  0.614 ms  0.479 ms
 7  sjc12-dc2-cec-css1.cisco.com (171.71.181.5)  2.612 ms  2.093 ms  2.118 ms
 8  www.cisco.com (171.71.181.19)  2.496 ms * 2.135 ms
```

transceiver-frequency

To set the interface clock to ethernet or Fibre Channel, use the transceiver-frequency command in interface configuration mode. To disable the ethernet clock for the port, use the no form of the command.

```
transceiver-frequency [ethernet] force
no transceiver-frequency [ethernet] force
```

Syntax Description

ethernet	(Optional) Specifies the ethernet transceiver frequency for an interface.
force	Specifies the force option.

Command Default

Fibre Channel.

Command Modes

Interface Configuration mode.

Command History

Release	Modification
5.0	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to set the interface clock to ethernet or Fibre Channel:

```
switch(config-if)# transceiver-frequency ethernet force
switch(config-if)#
```

transfer-ready-size

To configure the target transfer ready size for SCSI write commands on a SAN tuner extension N port, use the transfer-ready-size command.

transfer-ready-size bytes

Syntax Description	bytes	Specifies the transfer ready size in bytes. The range is 0 to 2147483647.
---------------------------	-------	---

Command Default	None.
------------------------	-------

Command Modes	SAN extension N port configuration submode.
----------------------	---

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines	For a SCSI write command-id command with a larger transfer size, the target performs multiple transfers based on the specified transfer size.
-------------------------	---

Examples	The following example configures the transfer ready size on a SAN extension tuner N port:
-----------------	---

```
switch# san-ext-tuner
switch(san-ext)# nwwn 10:00:00:00:00:00:00
switch(san-ext)# nport pwn 12:00:00:00:00:00:00:56 vsan 13 interface gigabitethernet 1/2
switch(san-ext-nport)# transfer-ready-size 512000
```

Related Commands	Command	Description
	nport pwn	Configures a SAN extension tuner N port.
	san-ext-tuner	Enables the SAN extension tuner feature.
	show san-ext-tuner	Displays SAN extension tuner information.
	write command-id	Configures a SCSI write command for a SAN extension tuner N port.

transport email

To configure the customer ID with the Call Home function, use the transport email command in Call Home configuration submode. To disable this feature, use the no form of the command.

```
transport email from email-address | reply-to email-address | smtp-server ip-address [port port-number]
no transport email from email-address | reply-to email-address | smtp-server ip-address [port port-number]
```

Syntax Description

from email-address	Specifies the from e-mail address. For example: SJ-9500-1@xyz.com. The maximum length is 255 characters.
reply-to email-address	Specifies the reply to e-mail address. For address, example: admin@xyz.com. The maximum length is 255 characters.
smtp-server ip-address	Specifies the SMTP server address, either DNS name or IP address. The maximum length is 255 characters.
port port-number	(Optional) Changes depending on the server location. The port usage defaults to 25 if no port number is specified.

Command Default

None.

Command Modes

Call Home configuration submode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example configures the from and reply-to e-mail addresses:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# transport email from user@company1.com
switch(config-callhome)# transport email reply-to person@place.com
```

The following example shows how to remove the callhome configuration for email smtp-server:

```
switch(config-callhome)# transport email smtp-server none
```

The following example configures the SMTP server and ports:

```
switch(config-callhome)# transport email smtp-server
```

```
switch(config-callhome)# transport email smtp-server 192.168.1.1
switch(config-callhome)# transport email smtp-server 192.168.1.1 port 30
```

Related Commands

Command	Description
callhome	Configures the Call Home function.
callhome test	Sends a dummy test message to the configured destination(s).
show callhome	Displays configured Call Home information.

transport email mail-server

To configure an SMTP server address, use the transport email mail-server command. To disable this feature, use the no form of the command.

```
transport email mail-server ipv4 | ipv6 | hostname [port port number] [priority priority number]
no transport email mail-server ipv4 | ipv6 | hostname [port port number] [priority priority number]
```

Syntax Description

ipv4	Specifies IPV4 SMTP address.
ipv6	Specifies IPV6 SMTP address.
hostname	Specifies DNS or IPV4 or IPV6 address.
port port number	(Optional) Specifies SMTP server port. The range is from 1 to 65535.
priority priority number	(Optional) Specifies SMTP server priority. The range is from 1 to 100.

Command Default

Enabled.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure an SMTP server port:

```
switch# callhome
```

```
switch(config-callhome)# transport email mail-server 192.168.10.23 port 4
switch# config t
```

The following example shows how to configure an SMTP server priority:

```
switch(config-callhome)# transport email mail-server 192.168.10.23 priority 60
switch# config t
```

Related Commands

Command	Description
callhome	Configures the Call Home function.

transport http proxy enable

To enable Smart Call Home to send all HTTP messages through the HTTP proxy server, use the transport http proxy enable command. To disable this feature, use the no form of the command.

```
transport http proxy enable
no transport http proxy enable
```

Syntax Description This command has no arguments or keywords.

Command Default Disabled.

Command Modes Callhome Configuration mode.

Command History	Release	Modification
	NX-OS 5.2(1)	This command was introduced.

Usage Guidelines None.



Note You can execute this command only after the proxy server address has been configured.



Note The VRF used for transporting messages through the proxy server is the same as that configured using the transport http use-vrf command.

Examples

The following example shows how to enable Smart Call Home to send all HTTP messages through the HTTP proxy server:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# callhome
switch(config-callhome)# transport http proxy enable
Cannot enable proxy until configured
switch(config-callhome)#
```

Related Commands	Command	Description
	callhome	Configures the Call Home function.

transport http proxy server

To configure proxy server address and port, use the transport http proxy server command. To disable this feature, use the no form of the command.

```
transport http proxy server ip-address [port number]
no transport http proxy server ip-address [port number]
```

Syntax Description

ip-address	HTTP Proxy server name or IP address (DNS name or IPv4 or IPv6 address)
port	(Optional) Specifies proxy server port.
number	(Optional) Port number. The range is from 1 to 65535.

Command Default

Default port number is 8080.

Command Modes

Callhome Configuration mode.

Command History

Release	Modification
NX-OS 5.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure proxy server address and port:

```
switch# config t
```

Enter configuration commands, one per line. End with CNTL/Z.switch(config)# callhome

```
switch(config-callhome)# transport http proxy server 192.0.2.1 port 2
```

```
switch(config-callhome)#
```

Related Commands

Command	Description
callhome	Configures the Call Home function.

trunk protocol enable

To configure the trunking protocol, use the trunk protocol enable command in configuration mode. To disable this feature, use the no form of the command.

```
trunk protocol enable
no trunk protocol enable
```

Syntax Description



Note Trunk protocol is enabled by default from Cisco MDS NX-OS Release 6.2(7) and later.

This command has no other arguments or keywords.

Command Default

Enabled.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
6.2(7)	This command was deprecated.

Usage Guidelines

If the trunking protocol is disabled on a switch, no port on that switch can apply new trunk configurations. Existing trunk configurations are not affected—the TE port continues to function in trunking mode, but only supports traffic in VSANs that it negotiated previously (when the trunking protocol was enabled). Also, other switches that are directly connected to this switch are similarly affected on the connected interfaces. In some cases, you may need to merge traffic from different port VSANs across a non-trunking ISL. If so, you need to disable the trunking protocol.

Examples

The following example shows how to disable the trunk protocol feature:

```
switch# config terminal
switch(config)# no trunk protocol enable
```

The following example shows how to enable the trunk protocol feature:

```
switch(config)# trunk protocol enable
```

Related Commands

Command	Description
show trunk protocol	Displays the trunk protocol status.

trustedcert

To set the trustedcert, use the trustedcert command. To disable this feature, use the no form of the command.

```
trustedcert attribute-name attribute-name search-filter string base-DN string
no trustedcert attribute-name attribute-name search-filter string base-DN string
```

Syntax Description

attribute-name attribute-name	Specifies LDAP attribute name. The maximum size is 128 characters.
search-filter	Specifies LDAP search filter. The maximum length is 128 characters.
string	Specifies search map search filter . The maximum length is 128 characters.
base-DN	Configure base DN to be used for search operation. The Maximum length is 63 characters.
string	Specifies search map base DN name. The Maximum length is 63 characters.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None.

Examples

```
The following example shows how to specify the LDAP trustcert :
switch(config)#ldap search-map s1
switch(config-ldap-search-map)# trusted attribute-name cACertificate
"(&(objectClass=certificationAuthority))" base-DN "CN=NTAuthCertificates,CN=Public Key
Services,CN=Services,CN=Configuration,DC=DCBU-ACS"
GROUP_NAME: map1
CRL
ATTR_NAME: map1
SEARCH_FLTR: map1
BASE_DN: DN1
Sending the SET_REQ
switch(config-ldap-search-map)#end
```

Related Commands

Command	Description
show ldap-server groups	Displays the configured LDAP server groups.

tune

To configure the tune IOA parameters, use the tune command. To delete the tune IOA parameter, use the no form of the command.

```
tune lrtpt-retx-timeout msec | round-trip-time ms | ta-buffer-size KB | timer load-balance global | target
seconds | rscn-suppression seconds | wa-buffer-size MB | wa-max-table-size KB
no tune lrtpt-retx-timeout msec | round-trip-time ms | ta-buffer-size KB | timer load-balance global | target
seconds | rscn-suppression seconds | wa-buffer-size MB | wa-max-table-size KB
```

Syntax Description

lrtpt-retx-timeout msec	Specifies LRTP retransmit timeout in milliseconds. The value can vary from 500 to 5000 msec. 2500 msec is the default.
round-trip-time ms	Specifies round-trip time in milliseconds. The value can vary from 1 to 100 ms. 15 ms is the default.
ta-buffer-size KB	Specifies tape acceleration buffer size in KB. The value can vary from 64 to 12288.
timer	Specifies tune IOA timers.
load-balance	Specifies IOA load-balance timers.
global seconds	Specifies global load-balancing timer value. The value can vary from 5 to 30 seconds. 5 seconds is the default.
target seconds	Specifies target load-balancing timer value. The value can vary from 2 to 30 seconds. 2 seconds is the default.
rscn-suppression seconds	Specifies IOA RSCN suppression timer value. The value can vary from 1 to 10 seconds. 5 seconds is the default.
wa-buffer-size MB	Specifies write acceleration buffer size in MB. The value can vary from 50 to 100 MB. 70 MB is the default.
wa-max-table-size KB	Specifies Write Max Table size in KB. The value can vary from 4 to 64 KB. 4 KB is the default.

Command Default

None.

Command Modes

Configuration submode.

Command History

Release	Modification
NX-OS 4.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure a IOA RSCN suppression timer value:

```
switch# conf t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ioa cluster tape_vault
switch(config-ioa-cl)# tune timer rscn-suppression 1
:switch(config-ioa-cl)#
```

The following example shows how to configure an IOA target load-balance timer value:

```
switch# conf t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ioa cluster tape_vault
switch(config-ioa-cl)# tune timer load-balance target 2
switch(config-ioa-cl)#
```

The following example shows how to configure a global IOA target load-balance timer value:

```
switch# conf t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ioa cluster tape_vault
switch(config-ioa-cl)# tune timer load-balance global 5
switch(config-ioa-cl)#
```

The following example shows how to configure the round-trip time in milliseconds:

```
switch# conf t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ioa cluster tape_vault
switch(config-ioa-cl)# tune round-trip-time 15
switch(config-ioa-cl)#
```

The following example shows how to configure the tape acceleration buffer size in KB:

```
switch# conf t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ioa cluster tape_vault
switch(config-ioa-cl)# tune ta-buffer-size 64
switch(config-ioa-cl)#
```

The following example shows how to configure the write acceleration buffer size in MB:

```
switch# conf t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ioa cluster tape_vault
switch(config-ioa-cl)# tune wa-buffer-size 15
switch(config-ioa-cl)#
```

The following example shows how to configure the write Max Table Size in KB:

```
switch# conf t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ioa cluster tape_vault
switch(config-ioa-cl)# tune wa-max-table-size 4
switch(config-ioa-cl)#
```

The following example shows how to configure the LRTP retransmit timeout in milliseconds:

```
switch# conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ioa cluster tape_vault

switch(config-ioa-cl)# tune lrtx-timeout 2500

switch(config-ioa-cl)#
```

Related Commands

Command	Description
flowgroup	Configures IOA flowgroup.

tune-timer

To tune the Cisco SME timers, use the `tune-timer` command. To disable this command, use the `no` form of the command.

```
tune-timer global_lb_timer global_lb_timer_value | rscn_suppression_timer rscn_suppression_timer_value
| tgt_lb_timer tgt_lb_timer_value
no tune-timer global_lb_timer global_lb_timer_value | rscn_suppression_timer rscn_suppression_timer_value
| tgt_lb_timer tgt_lb_timer_value
```

Syntax Description

<code>global_lb_timer</code>	Specifies the global load-balancing timer value.
<code>global_lb_timer_value</code>	Identifies the timer value. The range is from 5 to 30 seconds. The default value is 5 seconds.
<code>rscn_suppression_timer</code>	Specifies the Cisco SME Registered State Change Notification (RSCN) suppression timer value.
<code>rscn_suppression_timer_value</code>	Identifies the timer value. The range is from 1 to 10 seconds. The default value is 5 seconds.
<code>tgt_lb_timer</code>	Specifies the target load-balancing timer value.
<code>tgt_lb_timer_value</code>	Identifies the timer value. The range is from 2 to 30 seconds. The default value is 2 seconds.

Command Default

None.

Command Modes

Cisco SME cluster configuration submode.

Command History

Release	Modification
3.3(1a)	This command was introduced.

Usage Guidelines

The `tune-timer` command is used to tune various Cisco SME timers such as the RSCN suppression, global load balancing and target load-balancing timers. These timers should be used only in large scaling setups. The timer values are synchronized throughout the cluster.

Examples

The following example configures a global load-balancing timer value:

```
switch# config t
switch(config)# sme cluster c1
switch(config-sme-cl)# tune-timer tgt_lb_timer 6
switch(config-sme-cl)#
```

The following example configures a Cisco SME RSCN suppression timer value:

```
switch# config t
switch(config)# sme cluster c1
```



```
switch(config-sme-cl)# tune-timer rscn_suppression_timer 2  
switch(config-sme-cl)#
```

The following example configures a target load-balancing timer value:

```
switch# config t  
switch(config)# sme cluster c1  
switch(config-sme-cl)# tune-timer rscn_suppression_timer 2  
switch(config-sme-cl)#
```




U Commands

- [undebg all](#), on page 2044
- [update license](#), on page 2045
- [use-profile](#), on page 2046
- [use-retry](#), on page 2047
- [user-certdn-match](#), on page 2048
- [username](#), on page 2049
- [username \(iSCSI initiator configuration and iSLB initiator configuration\)](#), on page 2054
- [userprofile](#), on page 2056
- [user-pubkey-match](#), on page 2057
- [user-switch-bind](#), on page 2058

undebug all

To disable all debugging, use the `undebug all` command.

```
undebug all
```

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines Use this command to turn off all debugging.

Examples The following example shows how to disable all debugging on the switch:

```
switch# undebug all
```

Related Commands	Command	Description
	<code>no debug all</code>	Also disables all debug commands configured on the switch.
	<code>show debug</code>	Displays all debug commands configured on the switch.

update license

To update an existing license, use the update license command in EXEC mode.

```
update license url | bootflash: | slot0: | volatile: new_license_file old_license_file
```

Syntax Description

update license	Updates an installed, expiring license.
url	Specifies the URL for the license file to be uninstalled.
bootflash:	Specifies the license file location in internal bootflash memory.
slot0:	Specifies the license file in the CompactFlash memory or PCMCIA card.
volatile:	Specifies the license file in the volatile file system.
new_license_file	Location or URL of the new license file.
old_license file	Location or URL of the old license file that needs to be updated.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(2)	This command was introduced.

Examples

The following example updates a specific license:

```
switch# update license bootflash:sanextn2.lic sanextn1.lic
Updating sanextn1.lic:
SERVER this_host ANY
VENDOR cisco
# An example fcports license
INCREMENT SAN_EXTN_OVER_IP cisco 1.000 permanent 1 HOSTID=VDH=ABCD \
    NOTICE=<LicFileID>san_extn1.lic</LicFileID><LicLineID>0</LicLineID> \
    SIGN=33088E76F668

with bootflash:/sanextn2.lic:
SERVER this_host ANY
VENDOR cisco
# An example fcports license
INCREMENT SAN_EXTN_OVER_IP cisco 1.000 permanent 1 HOSTID=VDH=ABCD \
    NOTICE=<LicFileID>san_extn2.lic</LicFileID><LicLineID>1</LicLineID> \
    SIGN=67CB2A8CCAC2

Do you want to continue? (y/n) y
Updating license ..done
```

use-profile

To bind a profile to the FCIP interface, use the use-profile option. To disable a configured profile, use the no form of the option.

```
use-profile profile-id
no use-profile profile-id
```

Syntax Description

profile-id	Specifies the profile ID to be used. The range is 1 to 255.
------------	---

Command Default

None.

Command Modes

Interface configuration submode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

Access this command from the switch(config-if)# submode.

This command binds the profile with the FCIP interface.

Examples

The following example shows how to bind a profile to the FCIP interface:

```
switch# config terminal
switch(config)# interface fcip 50
switch(config-if)# use-profile 100
switch(config-if)# no use-profile 100
```



Note

Explicitly shutdown the FCIP interface using the no use-profile profile-id command before unbinding the interface.

Related Commands

Command	Description
show fcip	Displays information about the FCIP profile.
show interface fcip	Displays an interface configuration for a specified FCIP interface.

use-retry

To specify send retry details for the gRPC transport protocol, use the use-retry command. To remove the send retry details, use the no form of this command.

```
use-retry size buffer_size
```

```
no use-retry size
```

Syntax Description	size buffer_size	Send retry buffer size. Buffer size is in Mb and ranges from 10 to 1500.
---------------------------	---------------------	--

Command Default No send retry is specified.

Command Modes Telemetry destination configuration mode (conf-tm-dest-profile)

Command History	Release	Modification
	8.3(1)	This command was introduced.

Examples

This example shows how to specify send retry details for the gRPC transport protocol:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# destination-profile
switchconf-tm-dest-profile)# use-retry size 50
```

This example shows how to remove the send retry details:

```
switch# configure
switch(config)# telemetry
switch(config-telemetry)# destination-profile
switchconf-tm-dest-profile)# no use-retry
```

Related Commands	Command	Description
	destination-group	Creates a destination group and enters destination group configuration mode.
	feature telemetry	Enables the SAN Telemetry Streaming feature.
	show running-config telemetry	Displays the existing telemetry configuration.
	show telemetry	Displays telemetry configuration.
	telemetry	Enters SAN Telemetry Streaming configuration mode.

user-certdn-match

To set the certificate matching, use the user-certdn-match command. To disable this feature, use the no form of the command.

```
user-certdn-match attribute-name attribute-name search-filter string base-DN string
nouser-certdn-match attribute-name attribute-name search-filter string base-DN string
```

Syntax Description

attribute-name attribute-name	Specifies LDAP attribute name. The maximum size is 128 characters.
search-filter	Specifies LDAP search filter. The maximum length is 128 characters.
string	Specifies search map search filter . The maximum length is 128 characters.
base-DN	Configure base DN to be used for search operation. The Maximum length is 63 characters.
string	Specifies search map base DN name. The Maximum length is 63 characters.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None.

Examples

```
The following example shows how to set the certificate matching:
switch(config)#ldap search-map s1
switch(config-ldap-search-map)# user-certdn-match attribute-name map1 search-filter map1
base-DN a
switch(config-ldap-search-map)#
```

Related Commands

Command	Description
show ldap-server groups	Displays the configured LDAP server groups.

username

To define a user, use the username command in configuration mode. To undo the configuration or revert to factory defaults. Use the no form of the command

```
username name [expire date | Keypair export uri dsa | rsa [force] | generate dsa | rsa [force] | import
bootflash:uri | volatile:uri dsa | rsa [force] iscsi | password [0 | 5 | 7] user-password [expire date] [role
rolename] | priv-lvl privilege-level | role rolename | ssh-cert-dn distinguished-name dsa | rsa | sshkey
key-content | file filename]
```

```
no username name [expire date | Keypair export bootflash:uri | volatile:uri dsa | rsa [force] | generate
dsa | rsa [force] | import bootflash:uri | volatile:uri dsa | rsa [force] iscsi | password [0 | 5 | 7]
user-password [expire date] [role rolename] | priv-lvl privilege-level | role rolename | ssh-cert-dn
distinguished-name dsa | rsa | sshkey key-content | file filename]
```

Syntax Description

name	Specifies the name of the user. Maximum length is 32 characters.
expire date	(Optional) Specifies the date when this user account expires (in YYYY-MM-DD format).
Keypair	(Optional) Specifies SSH (Secure shell) user keys.
export uri	Exports keypairs to bootflash or remote directory.
dsa	Specifies DSA keys.
rsa	Specifies RSA keys.
force	(Optional) Specifies the generation of keys even if previous ones are present.
generate	Generates SSH key pairs.
import	Import keypair from bootflash or remote directory.
bootflash: uri	Specifies URI or alias of the bootflash or file system to export.
volatile: uri	Specifies URI or alias of the volatile or file system to import.
iscsi	(Optional) Identifies an iSCSI user.
password	(Optional) Configures a password for the user. The password is limited to 80 characters. The minimum length is 8 characters.
0	<p>(Optional) Specifies a clear text password for the user.</p> <p>Note From Cisco MDS NX-OS Release 8.4(1) and later, the password length is limited to 127 characters.</p> <p>Note From Cisco MDS NX-OS Release 8.4(2), the "?" character is supported in the clear text password, hence help option will not be available in the password. After typing the password, if you type ?, you can see the help option.</p>

5	(Optional) Specifies a strongly encrypted password for the user.
7	(Optional) Specifies an encrypted password for an ISCSI user. The encrypted password length is limited to 64 characters. Note From Cisco MDS NX-OS Release 8.3(1) and later, the description for the keyword 7 is modified from Encrypted password to Encrypted password for ISCSI user.
user-password	Enters the password. Maximum length is 32 characters.
role rolename	(Optional) Specifies the role name of the user. Maximum length is 32 characters.
priv-lvl privilege-level	(Optional) Specifies privilege level. The range is from 1 to 15 characters.
ssh-cert-dn distinguished-name	(Optional) Specifies the SSH X.509 certificate distinguished name. The maximum size is 512.
dsa	(Optional) Specifies the DSA algorithm.
rsa	(Optional) Specifies the RSA algorithm.
sshkey key_content	(Optional) Specifies the actual contents of the SSH public key in OPENSSH format.
file filename	(Optional) Specifies a file containing the SSH public key either in OPENSSH or IETF SECH or Public Key Certificate in PEM format.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
2.0(x)	<ul style="list-style-type: none"> Removed the update_snmpv3 option. Added level 7 for passwords.
3.0(1)	Added the ssh-cert-dn, dsa, and rsa options.
5.0(1a)	Added the keypair and Priv-lvl keyword to the syntax description.
8.3(1)	Description for the keyword 7 was modified from Encrypted password to Encrypted password for ISCSI user.
8.4(1)	The password character limit was modified from 80 to 127 characters.
8.4(2)	Added support to add "?" character in the clear text password.

Usage Guidelines

To change the SNMP password, a clear text CLI password is required. You must know the SNMPv3 password to change the password using the CLI.

The password specified in the username command is synchronized as the auth and priv passphrases for the SNMP user.

Deleting a user using either command results in the user being deleted for both SNMP and CLI.

User-role mapping changes are synchronized in SNMP and CLI.

The SSH X.509 certificate distinguished name (DN) is the distinguished name in the certificate. You need to extract the distinguished name from the certificate and specify the subject name as the argument to the username command.

The SSHkey is the public key that we use to authorize any remote machine to log in to the switch without the need to enter the password. Basically it is the passwordless authentication for the user who has that key. These keys are used by the SSH Server of the switch to authenticate a user.

The SSH keys will be used by the SSH client on the switch while doing an SSH/SCP to connect to the remote host from the switch. This keypair can be used to do a passwordless SSH/SCP from the switch to a remote server.

Examples

The following example shows how to configure the privilege level that the user need to assign:

```
switch(config)# username admin priv-lvl 13
switch(config)#
```

The following example shows how to generate SSH keys:

```
switch(config)# username admin keypair generate rsa force
generating rsa key(1024 bits).....
.generated rsa key
switch(config)#
```

The following example shows how to delete SSH keys:

```
switch(config)# no username admin keypair generate rsa force
generating rsa key(1024 bits).....
.generated rsa key
switch(config)#
```

The following example shows how to export a keypair to bootflash or to the volatile directory:

```
switch(config)# username admin keypair export bootflash:xyz rsa force
Enter Passphrase:
switchg(config)#
```

The user can configure the same set of SSH keypairs on different switches by copying the public and private keypair to that switch and importing them using the following commands.

The following example shows how to import keypair from bootflash or volatile directory:

```
switch(config)# username admin keypair import bootflash:xyz rsa force
Enter Passphrase:
switchg(config)#
```

The following example shows how to define a user:

```
switch(config)# username knuckles password testpw role bodega
switch(config)# do show user-account
user:admin
    this user account has no expiry date
    roles:network-admin
user:knuckles
    this user account has no expiry date
    roles:bodega
```

The following example configures the name for a user to log in using iSCSI authentication:

```
switch(config)# username iscsi
```

The following example places you in the mode for the specified role (techdocs). The prompt indicates that you are now in the role configuration submode. This submode is now specific to the techdocs group.

```
switch(config)# username role name techdocs
switch(config-role)#
```

The following example deletes the role called techdocs:

```
switch(config)# no username role name techdocs
```

The following example assigns a description to the new role. The description is limited to one line and can contain spaces:

```
switch(config-role)# description Entire Tech. Docs. group
```

The following example resets the description for the Tech. Docs. group:

```
switch(config-role)# no description
```

The following example creates or updates the user account (usam) along with a password (abcd) that is set to expire on 2009-05-31:

```
switch(config)# username usam password abcd expire 2009-05-31
```

The following example creates or updates the user account (msam) along with a password (abcd) specified in clear text (indicated by 0):

```
switch(config)# username msam password 0 abcd role network-operator
```

The following example specifies an encrypted (specified by 5) password (!@*asdfsdfjh!@df) for the user account (user1):

```
switch(config)# username user1 password 5!@*asdfsdfjh!@df
```

The following example adds the specified user (usam) to the network-admin role:

```
switch(config)# username usam role network-admin
```

The following example deletes the specified user (usam) from the vsan-admin role:

```
switch(config)# no username usam role vsan-admin
```

The following example shows how to define a distinguished name on a switch for SSH certificate authentication:

```
switch# config t
switch(config)# username knuckles ssh-cert-dn /CN=excal-1.cisco.com rsa

switch(config)# do show user-account

user:admin
    this user account has no expiry date
    roles:network-admin
user:knuckles
    this user account has no expiry date
    roles:network-operator
    ssh cert DN : /CN=excal-1.cisco.com; Algo: x509v3-sign-rsa
```

The following example specifies the SSH X.509 certificate distinguished name and DSA algorithm for an existing user account (usam):

```
switch(config)# username usam ssh-cert-dn usam-dn dsa
```

The following example specifies the SSH X.509 certificate distinguished name and RSA algorithm for an existing user account:

```
switch(config)# username user1 ssh-cert-dn user1-dn rsa
```

The following example deletes the SSH X.509 certificate distinguished name for the user account:

```
switch(config)# no username admin ssh-cert-dnadmin-dn dsa
```

The following example identifies the contents of the SSH key for the specified user (usam):

```
switch(config)# username usam sshkey fsafsd2344234234ffgsdfgffsdfsfsssf
```

The following example deletes the SSH key content identification for the user (usam):

```
switch(config)# no username usam sshkey fsafsd2344234234ffgsdfgffsdfsfsssf
```

The following example updates the SNMPv3 password for the specified user (joe). The local CLI password and the SNMP password are updated. If user Joe does not exist, the command fails:

```
switch(config)# username joe password wxyz6789 update-snmpv3 abcd1234
```

Related Commands

Command	Description
role	Configures user roles.
show username	Displays username information.

username (iSCSI initiator configuration and iSLB initiator configuration)

To assign a username for iSCSI login authentication, use the `username` command in iSCSI initiator configuration submode. To assign a username for iSLB login authentication, use the `username` command in iSLB initiator configuration submode. To disable this feature, use the `no` form of the command.

```
username username
no username username
```

Syntax Description	<code>username</code> Specifies the username for iSCSI or iSLB login authentication.
---------------------------	--

Command Default None.

Command Modes iSCSI initiator configuration submode.iSLB initiator configuration submode.

Command History	Release	Modification
	1.3(2)	This command was introduced.
	3.0(1)	Added iSLB initiator configuration submode.

Usage Guidelines None.

Examples The following example assigns the username for iSCSI login authentication of an iSCSI initiator:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# iscsi initiator name iqn.1987-02.com.cisco.initiator
switch(config-iscsi-init)# username iSCSIloginUsername
switch(config-iscsi-init)#
```

The following example assigns the username tester for iSLB login authentication of an iSLB initiator:

```
switch# config t
switch(config)# islb initiator ip-address 100.10.10.10
switch(config-iscsi-islb-init)# username ?
<WORD> Enter username <Max Size - 128>
switch(config-iscsi-islb-init)# username tester
```

The following example removes the username tester for an iSLB initiator:

```
switch (config-iscsi-islb-init)# no
username tester
```

Related Commands	Command	Description
	iscsi initiator name	Assigns an iSCSI name and changes to iSCSI initiator configuration submode.
	islb initiator	Assigns an iSLB name and IP address to the iSLB initiator and enters iSLB initiator configuration submode.
	show iscsi initiator	Displays information about a configured iSCSI initiator.
	show iscsi initiator configured	Displays iSCSI initiator information for the configured iSCSI initiator.
	show iscsi initiator detail	Displays detailed iSCSI initiator information.
	show iscsi initiator summary	Displays iSCSI initiator summary information.
	show islb initiator	Displays iSLB initiator information.
	show islb initiator configured	Displays iSLB initiator information for the configured iSLB initiator.
	show islb initiator detail	Displays detailed iSLB initiator information.
	show islb initiator summary	Displays iSLB initiator summary information.

userprofile

To set the userprofile, use the userprofile command. To disable this feature, use the no form of the command.

```
userprofile attribute-name attribute-name search-filter string base-DN string
no userprofile attribute-name attribute-name search-filter string base-DN string
```

Syntax Description

attribute-name attribute-name	Specifies LDAP attribute name. The maximum size is 128 characters.
search-filter string	Specifies search map search filter. The maximum length is 128 characters.
base-DN string	Specifies search map base-DN name. The maximum length is 128 characters.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None.

Examples

```
The following example shows how to set the pubkey matching :
switch(config)#ldap search-map s1
switch(config-ldap-search-map)# userprofile attribute-name map1 search-filter map1 base-DN
a
```

Usage Guidelines

None.

Examples

```
The following example shows how to set the CRLlookup:---add the output
switch(config)# ldap search-map map1
switch(config-ldap-search-map)# crllook attribute-name map1 search-filter map1 b
ase-DN DN1
GROUP_NAME: map1
CRL
ATTR_NAME: map1
SEARCH_FLTR: map1
BASE_DN: DN1
Sending the SET_REQ
switch(config-ldap-search-map)#
switch(config-ldap-search-map)#end
```

Command	Description
show crypto ssh-auth-map	displays mapping filters applied for SSH authentication.

user-pubkey-match

To set the user-pubkey matching, use the user-pubkey-match command. To disable this feature, use the no form of the command.

```
user-pubkey-match attribute-name attribute-name search-filter string base-DN string
nouser-pubkey-match attribute-name attribute-name search-filter string base-DN string
```

Syntax Description	attribute-name attribute-name	Specifies LDAP attribute name. The maximum size is 128 characters.
	search-filter	Specifies LDAP search filter. The maximum length is 128 characters.
	string	Specifies search map search filter . The maximum length is 128 characters.
	base-DN	Configure base DN to be used for search operation. The Maximum length is 63 characters.
	string	Specifies search map base DN name. The Maximum length is 63 characters.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines None.

Examples

```
The following example shows how to set the pubkey matching :
switch(config)#ldap search-map s1
switch(config-ldap-search-map)# user-pubkey-match attribute-name map1 search-filter map1
base-DN a
switch(config-ldap-search-map)#
```

Related Commands	Command	Description
	show ldap-server groups	Displays the configured LDAP server groups.

user-switch-bind

To set the user-switch-bind, use the user-switch-bind command. To disable this feature, use the no form of the command.

```
user-switch-bind attribute-name attribute-name search-filter string base-DN string
nouser-switch-bind attribute-name attribute-name search-filter string base-DN string
```

Syntax Description

attribute-name attribute-name	Specifies LDAP attribute name. The maximum size is 128 characters.
search-filter	Specifies LDAP search filter. The maximum length is 128 characters.
string	Specifies search map search filter . The maximum length is 128 characters.
base-DN	Configure base DN to be used for search operation. The Maximum length is 63 characters.
string	Specifies search map base DN name. The Maximum length is 63 characters.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
NX-OS 5.0(1a)	This command was introduced.

Usage Guidelines

None.

Examples

```
The following example shows how to set the pubkey matching :
switch(config)#ldap search-map s1
switch(config-ldap-search-map)# user-switch-bind attribute-name a search-filter a base-DN
a
switch(config-ldap-search-map)#
```

Related Commands

Command	Description
show ldap-server groups	Displays the configured LDAP server groups.



V Commands

- [virtual-domain \(SDV virtual device configuration submode\)](#), on page 2060
- [virtual-fcid \(SDV virtual device configuration submode\)](#), on page 2061
- [vims range](#), on page 2062
- [vrrp](#), on page 2063
- [vsan \(iSCSI initiator configuration and iSLB initiator configuration\)](#), on page 2065
- [vsan database](#), on page 2067
- [vsan interface](#), on page 2068
- [vsan interop](#), on page 2069
- [vsan loadbalancing](#), on page 2070
- [vsan name](#), on page 2071
- [vsan policy deny](#), on page 2072
- [vsan suspend](#), on page 2074
- [vsan wwn fcid](#), on page 2076

virtual-domain (SDV virtual device configuration submode)

To configure a persistent virtual domain, use the virtual-domain command in SDV virtual device configuration submode. To remove a persistent virtual domain, use the no form of the command.

```
virtual-domain domain-name
no virtual-domain domain-name
```

Syntax Description

domain-name	Specifies the persistent virtual domain. The range is 1 to 239 or 0x1 to 0xef.
-------------	--

Command Default

No virtual domains are configured by default.

Command Modes

SDV virtual device configuration submode.

Command History

Release	Modification
3.1(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure a persistent virtual domain:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# sdv virtual-device name sql vsan 1
switch(config-sdv-virt-dev)# virtual-domain 1
```

Related Commands

Command	Description
sdv enable	Enables or disables SAN device virtualization.
show sdv statistics	Displays SAN device virtualization statistics.

virtual-fcid (SDV virtual device configuration submode)

To configure a persistent virtual FC ID, use the virtual-fcid command in SDV virtual device configuration submode. To remove a persistent virtual FC ID, use the no form of the command.

```
virtual-fcid fc-id
no virtual-fcid fc-id
```

Syntax Description

fc-id	Specifies the persistent virtual FC ID. The format is 0xhhhhhh, where h is a hexadecimal number.
-------	--

Command Default

No virtual FC IDs are configured by default.

Command Modes

SDV virtual device configuration submode.

Command History

Release	Modification
3.1(2)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure a persistent virtual FC ID:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# sdv virtual-device name sqa1 vsan 1
switch(config-sdv-virt-dev)# virtual-fcid 0xd66e54
```

Related Commands

Command	Description
sdv enable	Enables or disables SAN device virtualization.
show sdv statistics	Displays SAN device virtualization statistics.

vims range

To limit the Local VE IDs a hypervisor HBA driver can use, use the vims range command. By restricting the Local VE ID range to use a subset of bits in the CS_CTL field, it can be partitioned and shared with future Fibre Channel features.

```
vims range rangevsan id
```

Syntax Description

range	Specifies the low range and high range values for Virtual Machine Identifier (VMID). The range is from 1 to 255.
vsan id	Specifies a VSAN ID for which the range is being configured.

Command Default

None

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.2(1)	This command was introduced.

Usage Guidelines

There is no mechanism in the VMID protocol for the Virtual Machine Identification Server (VMIS) to notify the attached hypervisor HBA driver clients of a new VE ID range. For clients to detect a new range, they must query the VMIS again. To force the clients to query again after a range modification, the user must manually log the FCIDs out and back in to the fabric. Therefore, local clients continue to tag the VM traffic with the previous range until this occurs. This restriction applies when enabling and disabling VMID, and changing the VE ID range of a VSAN.

Examples

This example shows how to configure multiple Local VE ID ranges for use by VEMs in a VSAN:

```
switch# configure terminal
switch(config)# vims range 3-45,51-70 vsan 1
```

Related Commands

Command	Description
feature vmis	Enables the VMID feature.
show vims range	Displays the VMIS range.

vrrp

To enable VRRP, use the vrrp command in configuration mode. Use the no form of the command to revert to the factory defaults or to negate a command.

```
vrrp ipv4-vr-group-number address ip-address [secondary] | advertisement-interval seconds | authentication
md5 keyname spi index | text password | preempt | priority value | shutdown | track interface mgmt 0
| vsan vsan-id ipv6 ipv6-vr-group-number address ipv6-address | advertisement-interval centiseconds |
preempt | priority value | shutdown | track interface mgmt 0 | vsan vsan-id
no vrrp ipv4-vr-group-number address ip-address [secondary] | advertisement-interval seconds |
authentication md5 keyname spi index | text password | preempt | priority value | shutdown | track
interface mgmt 0 | vsan vsan-id ipv6 ipv6-vr-group-number address ipv6-address | advertisement-interval
centiseconds | preempt | priority value | shutdown | track interface mgmt 0 | vsan vsan-id
```

Syntax Description

ipv4-vr-group-number	Specifies an IPv4 virtual router group number. The range is 1 to 255.
address ip-address	Adds or removes an IP address to the virtual router.
secondary	(Optional) Configures a virtual IP address without an owner.
advertisement-interval seconds	Sets the time interval between advertisements. For IPv4, the range is 1 to 255 seconds.
authentication	Configures the authentication method.
md5 keyname	Sets the MD5 authentication key. Maximum length is 16 characters.
spi index	Sets the security parameter index. The range is 0x0 to 0xfffff.
text password	Sets an authentication password. Maximum length is 8 characters.
preempt	Enables preemption of lower priority master.
priority value	Configures the virtual router priority. The range is 1 to 254.
shutdown	Disables the VRRP configuration.
track	Tracks the availability of another interface.
interface fc slot/port	Adds a member using the Fibre Channel interface to a Cisco MDS 9000 Family switch.
mgmt 0	Specifies the management interface.
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
ipv6 ipv6-vr-group-number	Specifies VRRP IPv6 on the interface. The range is 1 to 255.
address ipv6-address	Adds or removes an IPv6 address to the virtual router.
advertisement-interval centiseconds	Sets the time interval between advertisements. For IPv6, the range is 100 to 4095 centiseconds.

Command Default Disabled.

Command Modes Interface configuration mode.

Release	Modified
1.0(2)	This command was introduced.
3.0(1)	<ul style="list-style-type: none"> Added the IPv6 option. Added the address and advertisement-interval options that are specific to IPv6.

Usage Guidelines You enter the Virtual Router configuration submode to access the options for this command. From the VSAN or mgmt0 (management) interface configuration submode, enter `vrrp number` to enter the `switch(config-if-vrrp)#` prompt. By default, a virtual router is always disabled (`shutdown`). VRRP can be configured only if this state is disabled. Be sure to configure at least one IP address before attempting to enable a virtual router.

The total number of of VRRP groups that can be configured on a Gigabit Ethernet port, including main interfaces and subinterfaces, cannot exceed seven. This limitation applies to both IPv4 and IPv6 groups.



Note If you configure secondary VRRP IPv6 addresses on an IPFC VSAN interface, you must remove the secondary VRRP IPv6 addresses before downgrading to a release prior to Cisco Release 3.0(1). This is required only when you configure IPv6 addresses.

Examples

The following example enables VRRP configuration:

```
switch(config-if-vrrp)# no
shutdown
```

The following example disables VRRP configuration:

```
switch(config-if-vrrp)# shutdown
```

The following example configures an IPv4 address for the selected VRRP:

```
switch# config terminal
switch(config)# interface vsan
1 switch(config-if)# vrrp 250

switch(config-if-vrrp)# address 10.0.0.10
```

Related Commands

Command	Description
<code>clear vrrp</code>	Clears all the software counters for the specified virtual router.
<code>show vrrp</code>	Displays VRRP configuration information.

vsan (iSCSI initiator configuration and iSLB initiator configuration)

To assign an iSCSI or iSLB initiator to a VSAN other than the default VSAN, use the vsan command in iSCSI initiator configuration submode or iSLB initiator configuration submode. To disable this feature, use the no form of the command.

```
vsan vsan-id
no vsan vsan-id
```

Syntax Description	
vsan-id	Specifies a VSAN ID. The range 1 to 4093.

Command Default None.

Command Modes iSCSI initiator configuration submode.iSLB initiator configuration submode.

Command History	Release	Modification
	1.3(2)	This command was introduced.
	3.0(1)	Added iSLB initiator configuration submode.

Usage Guidelines When you configure an iSLB initiator in a VSAN other than VSAN 1 (the default VSAN), the initiator is automatically removed from VSAN 1. For example, if you configure an iSLB initiator in VSAN 2 and you also want it to be present in VSAN 1, you must explicitly configure the initiator in VSAN 1.

Examples The following example assigns an iSCSI initiator to a VSAN other than the default VSAN:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# iscsi initiator name iqn.1987-02.com.cisco.initiator
switch(config-iscsi-init)# vsan 40
switch(config-iscsi-init)#
```

The following example assigns an iSLB initiator to a VSAN other than the default VSAN:

```
switch# config t
switch(config)# islb initiator ip-address 100.10.10.10
ips-hac2(config-islb-init)# vsan ?
<1-4093> Enter VSAN
ips-hac2(config-islb-init)# vsan 10
```

The following example removes the iSLB initiator:

```
switch (config-islb-init)# no
vsan 10
```

Related Commands

Command	Description
iscsi initiator name	Assigns an iSCSI name and changes to iSCSI initiator configuration submode.
show islb initiator	Displays iSLB initiator information.
show iscsi initiator	Displays information about a configured iSCSI initiator.
show iscsi initiator configured	Displays iSCSI initiator information for the configured iSCSI initiator.
show iscsi initiator detail	Displays detailed iSCSI initiator information.
show iscsi initiator summary	Displays iSCSI initiator summary information.
show islb initiator	Displays iSLB initiator information.
show islb initiator configured	Displays iSLB initiator information for the configured iSLB initiator.
show islb initiator detail	Displays detailed iSLB initiator information.
show islb initiator summary	Displays iSLB initiator summary information.

vsan database

To create multiple fabrics sharing the same physical infrastructure, assign ports to VSANs, turn on or off interop mode, load balance either per originator exchange or by source-destination ID, and in order to be able to define these VSANs and specify the various VSAN attributes, use the vsan database command in the vsan database submode.

Syntax Description This command has no arguments or keywords.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.2(2)	This command was introduced.

Usage Guidelines None.

Examples The following examples show how to create multiple fabrics sharing the same physical infrastructure and how to assign ports to VSANs:

```
switch# config terminal
switch(config)# vsan database
switch(config-vsan-db)#
```

Related Commands	Command	Description
	vsan wwn	Configures a WWN for a suspended VSAN that has interop mode 4 enabled.

vsan interface

To add interfaces to VSAN, use the `vsan interface` command. To delete a configured role, use the `no` form of this command.

```
vsan vsan-id interface fc slot/port | fcip fcip-id | iscsi slot/port | port-channel portchannel-number |
vfc ID/slot | vfc-port-channel ID
no vsan vsan-id interface fc slot/port | fcip fcip-id | iscsi slot/port | port-channel portchannel-number
| vfc ID/slot | vfc-port-channel ID
```

Syntax Description

<code>vsan vsan-id</code>	Specifies the VSAN ID. The range is 1 to 4093.
<code>interface fc slot/port</code>	(Optional) Specifies the Fibre Channel interface slot and port number.
<code>fcip fcip-id</code>	(Optional) Specifies the FCIP interface.
<code>iscsi slot/port</code>	(Optional) Configures the iSCSI interface slot or port.
<code>port-channel portchannel-number</code>	(Optional) Specifies the port channel number. The range is 1 to 256.
<code>vfc ID/slot</code>	(Optional) Specifies the virtual Fibre Channel interface ID or slot. The range is 1 to 8192.
<code>vfc-port-channel ID</code>	(Optional) Specifies the virtual Fibre Channel port channel virtual interface ID. The range is 513 to 4096.

Command Default

All interfaces are in VSAN 1 by default.

Command Modes

Configuration mode—`vsan database` submode.

Command History

Release	Modification
1.2(1)	This command was introduced.

Usage Guidelines

You can configure a role so that it only allows commands to be performed for a selected set of VSANs. By default, the VSAN policy of a role is `permit`. In other words, the role can perform commands configured by the `rule` command in all VSANs. In order to selectively allow VSANs for a role, the VSAN policy needs to be set to `deny` and then the appropriate VSANs need to be permitted.

Examples

The following example show how to add interfaces to VSAN:

```
switch# configure
switch(config)# vsan database
switch(config-vsan-db)# vsan 2
switch(config-vsan-db)# vsan 2 interface iscsi 2/1
switch(config-vsan-db)# end
switch#
```

vsan interop

To specify the VSAN interoperability mode value, use the `vsan interop` command. Use the `no` form of this command to delete a configured role.

```
vsan vsan-id interop [mode] [loadbalancing src-dst-id | src-dst-ox-id]
no vsan vsan-id interop [mode] [loadbalancing src-dst-id | src-dst-ox-id]
```

Syntax Description

vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
interop	Turns on interoperability mode.
mode	Specifies the interop mode. The range is 1 to 4.
loadbalancing	Configures load-balancing scheme.
src-dst-id	Sets src-id/dst-id for load-balancing.
src-dst-ox-id	Sets ox-id/src-id/dst-id for load-balancing (default).

Command Default

interop mode none and src-dst-ox-id.

Command Modes

Configuration mode—vsan database submode.

Command History

Release	Modification
1.2(1)	This command was introduced.

Usage Guidelines

You can configure a role so that it only allows commands to be performed for a selected set of VSANs. By default, the VSAN policy of a role is `permit`. In other words, the role can perform commands configured by the `rule` command in all VSANs. In order to selectively allow VSANs for a role, the VSAN policy needs to be set to `deny` and then the appropriate VSANs need to be permitted.

Examples

The following example shows how to specify the Interoperability mode value for Src-id/dst-id loadbalancing:

```
switch# config terminal
switch(config)# vsan database
switch(config-vsan-db)# vsan 2
switch(config-vsan-db)# vsan 1 interop 1 loadbalancing src-dst-id
vsan 1:interoperability mode 1 allowed domain list [97-127] does not include all
  assigned and configured domains or conflicts with existing allowed domain lists
switch(config-vsan-db)#
```

vsan loadbalancing

To configure the VSAN loadbalancing scheme, use the vsan loadbalancing command. Use the no form of this command to delete a configured role.

```
vsan vsan-id loadbalancing src-dst-id | src-dst-ox-id
no vsan vsan-id loadbalancing src-dst-id | src-dst-ox-id
```

Syntax Description

vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
loadbalancing	Configures load-balancing scheme.
src-dst-id	Sets src-id/dst-id for load-balancing.
src-dst-ox-id	Sets ox-id/src-id/dst-id for load-balancing (default).

Command Default

. src-dst-ox-id

Command Modes

Configuration mode—vsan database submode.

Command History

Release	Modification
1.2(1)	This command was introduced.

Usage Guidelines

You can configure a role so that it only allows commands to be performed for a selected set of VSANs. By default, the VSAN policy of a role is permit. In other words, the role can perform commands configured by the rule command in all VSANs. In order to selectively allow VSANs for a role, the VSAN policy needs to be set to deny and then the appropriate VSANs need to be permitted.

Examples

The following example shows how to configure loadbalancing scheme for a Src-id/dst-id loadbalancing:

```
switch# config terminal
switch(config)# vsan database
switch(config-vsan-db)# vsan 2 loadbalancing src-dst-ox-id
switch(config-vsan-db)#
```

vsan name

To assign a name to a VSAN, use the `vsan name` command. Use the `no` form of this command to delete a configured role.

```
vsan vsan-id name name interop [mode] loadbalancing src-dst-idsrc-dst-ox-id
loadbalancing src-dst-idsrc-dst-ox-id
suspend [interop [mode] [loadbalancing src-dst-idsrc-dst-ox-id]]
no vsan vsan-id name name interop [mode] loadbalancing src-dst-idsrc-dst-ox-id
loadbalancing src-dst-idsrc-dst-ox-id
suspend [interop [mode] [loadbalancing src-dst-idsrc-dst-ox-id]]
```

Syntax Description

vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
name name	Assigns a name to the VSAN. Maximum length is 32 characters.
interop	Turns on interoperability mode.
mode	Specifies the interop mode. The range is 1 to 4.
loadbalancing	Configures load-balancing scheme.
src-dst-id	Sets src-id/dst-id for load-balancing.
src-dst-ox-id	Sets ox-id/src-id/dst-id for load-balancing (default).

Command Default

no name, no suspend, interop mode none and src-dst-ox-id.

Command Modes

Configuration mode—vsan database submode.

Command History

Release	Modification
1.2(1)	This command was introduced.

Usage Guidelines

You can configure a role so that it only allows commands to be performed for a selected set of VSANs. By default, the VSAN policy of a role is permit. In other words, the role can perform commands configured by the `rule` command in all VSANs. In order to selectively allow VSANs for a role, the VSAN policy needs to be set to deny and then the appropriate VSANs need to be permitted.

Examples

The following example shows how to assign a name to a VSAN:

```
switch# config terminal
switch(config)# vsan database
switch(config-vsan-db)# vsan 2 name vname
switch(config-vsan-db)#
```

vsan policy deny

To configure a VSAN-based role, use the `vsan policy deny` command in configuration mode. Use the `no` form of this command to delete a configured role.

```
vsan policy deny permit vsan vsan-id
no vsan policy deny permit vsan vsan-id
```

Syntax Description

permit	Remove commands from the role.
vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default

Permit.

Command Modes

Configuration mode—role name submode.

Command History

Release	Modification
1.2(1)	This command was introduced.

Usage Guidelines

You can configure a role so that it only allows commands to be performed for a selected set of VSANs. By default, the VSAN policy of a role is permit. In other words, the role can perform commands configured by the `rule` command in all VSANs. In order to selectively allow VSANs for a role, the VSAN policy needs to be set to deny and then the appropriate VSANs need to be permitted.

Examples

The following example places you in `sangroup` role submode:

```
switch# config t
switch(config)# role name sangroup
switch(config-role)#
```

The following example changes the VSAN policy of this role to deny and places you in a submode where VSANs can be selectively permitted:

```
switch(config)# vsan policy deny
switch(config-role-vsan)
```

The following example deletes the configured VSAN role policy and reverts to the factory default (permit):

```
switch(config-role)# no vsan policy deny
```

The following example permits this role to perform the allowed commands for VSANs 10 through 30:

```
switch(config-role)# permit vsan 10-30
```


The following example removes the permission for this role to perform commands for VSAN 15 to 20:

```
switch(config-role-vsan)# no permit vsan 15-20
```

vsan suspend

To suspend a VSAN, use the `vsan suspend` command. Use the `no` form of this command to delete a configured role.

```
vsan vsan-id suspend [interop [mode] [loadbalancing src-dst-id | src-dst-ox-id] src-dst-ox-id]
no vsan vsan-id suspend [interop [mode] [loadbalancing src-dst-id | src-dst-ox-id] src-dst-ox-id]
```

Syntax Description

<code>vsan vsan-id</code>	Specifies the VSAN ID. The range is 1 to 4093.
<code>suspend</code>	Suspends the VSAN.
<code>interop</code>	Turns on interoperability mode.
<code>mode</code>	Specifies the interop mode. The range is 1 to 4.
<code>loadbalancing</code>	Configures load-balancing scheme.
<code>src-dst-id</code>	Sets <code>src-id/dst-id</code> for load-balancing.
<code>src-dst-ox-id</code>	Sets <code>ox-id/src-id/dst-id</code> for load-balancing (default).

Command Default

`interop mode none` and `src-dst-ox-id..`

Command Modes

Configuration mode—`vsan database` submode.

Command History

Release	Modification
1.2(1)	This command was introduced.

Usage Guidelines

You can configure a role so that it only allows commands to be performed for a selected set of VSANs. By default, the VSAN policy of a role is `permit`. In other words, the role can perform commands configured by the `rule` command in all VSANs. In order to selectively allow VSANs for a role, the VSAN policy needs to be set to `deny` and then the appropriate VSANs need to be permitted.



Danger

`vsan suspend` command done on an active VSAN is a very invasive command that requires a lot of supervisor processing. The supervisor is responsible for logging each device out, deprogramming ACLs, removing FCNS entries, generating RSCNs, etc. Because of this, care should be taken when doing this when there are many devices logged into the switch in the VSAN. After suspending the VSAN a minimum of 5 minutes should elapse prior to doing an `no vsan suspend` to ensure that all of the prior processing has completed.

Examples

The following example shows how to suspend a VSAN and enable interop mode 4:

```
switch# config t
switch(config)# vsan database
switch(config-vsan-db)# vsan 100 suspend
```

```
switch(config-vsan-db)#
```

vsan wwn fcid

To allocate an FCID to a WWN in the persistent FCID database, use the `vsan wwn fcid` command. To remove this allocation, use the `no` form of this command.

```
vsan vID wwn wID fcid fID [ area ] [ dynamic ]
no vsan vID wwn wID fcid fID [ area ] [ dynamic ]
```

Syntax Description

<code>vsan vID</code>	Specifies the VSAN ID. Range is 1–4093.
<code>wwn wID</code>	Specifies the MAC address. The address is in the format hh:hh:hh:hh:hh:hh:hh:hh.
<code>fcid fID</code>	Specifies the persistent FCID. Range is 0x0-0xfffff.
<code>area</code>	(Optional) Specifies to reserve all non xxxx00 FCIDs in the specified domain and area from being allocated to devices.
<code>dynamic</code>	(Optional) Marks the entry as a dynamic type.

Command Default

A unique FCID is allocated to a WWN the first time it FLOGIs in to the switch.

Command Modes

FCID database configuration submode (`config-fcid-db`)

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

To assist in predictability, the MDS switch has the capability to always assign the same FCID to the same WWN of a device that logs in to the fabric. This allows devices to be zoned by FCID, for example. When the persistent FCID database is enabled, a `vsan vID wwn wID fcid fID` configuration line is automatically added whenever a device FLOGIs in to the switch. There may be occasions where this configuration needs to be manually manipulated, for example when an HBA is replaced then the old WWN must be removed from the FCID and the new HBA WWN assigned to the same FCID.

To allow only a single FCID to be allocated in a particular domain and area, set the last 2 digits of the `fcid` argument as 00 and use the `area` option. This causes the xxxx00 FCID from the domain and area to be allocated to the WWN and the 255 remaining FCIDs in the area to be unavailable.

The `dynamic` keyword marks an entry as purgeable by the `purge fcdomain fcid` command. If an entry is static (not marked as dynamic) then it will be ignored by the `purge fcdomain fcid` command. Entries automatically created by the system in the FCID persistent database are marked as dynamic.

To avoid assigning a duplicate FCID, use the `show fcdomain address-allocation vsan` command to display the FCIDs that are in use.

Examples

The following example displays how to configure the WWN of a device with an FCID in VSAN 10 as a static entry:

```

switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain fcid database
switch(config-fcid-db)# vsan 10 wwn 33:e8:00:05:30:00:16:df fcid 0x070128

```

The following example displays how to configure the WWN of a device with an FCID in VSAN 10 as a dynamic type entry:

```

switch# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcdomain fcid database
switch(config-fcid-db)# vsan 10 wwn 33:e8:00:05:30:00:16:df fcid 0x070128 dynamic

```

Related Commands

Command	Description
fcdomain fcid persistent	Enables the persistent FCID feature.
purge fcdomain fcid	Purges unused dynamic entries from the persistent FCID database.
show fcdomain	Displays the Fibre Channel domain information.
show fcdomain fcid persistent	Displays the persistent FCID database.



W Commands

- [write command-id](#), on page 2080
- [write erase](#), on page 2081
- [write-accelerator](#), on page 2082
- [wwn oui](#), on page 2084
- [wwn secondary-mac](#), on page 2085
- [wwn vsan](#), on page 2086

write command-id

To configure a SCSI write command for a SAN tuner extension N port, use the write command-id command.

```
write command-id cmd-id target pwwn transfer-size bytes [outstanding-ios value [continuous |
num-transactions number]]
```

Syntax Description

cmd-id	Specifies the command identifier. The range is 0 to 2147483647.
target pwwn	Specifies the target port WWN. The format is hh:hh:hh:hh:hh:hh:hh:hh.
transfer-size bytes	Specifies the transfer size in multiples of 512 bytes. The range is 512 to 8388608.
outstanding-ios value	(Optional) Specifies the number of outstanding I/Os. The range is 1 to 1024.
continuous	(Optional) Specifies that the command is performed continuously.
num-transactions number	(Optional) Specifies a number of transactions. The range is 1 to 2147483647.

Command Default

The default for outstanding I/Os is 1.

Command Modes

SAN extension N port configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

To stop a SCSI write command in progress, use the stop command.

Examples

The following example configures a continuous SCSI write command:

```
switch# san-ext-tuner
switch(san-ext)# nwwn 10:00:00:00:00:00:00:00
switch(san-ext)# nport pwwn 12:00:00:00:00:00:00:56 vsan 13 interface gigabitethernet 1/2
switch(san-ext-nport)# write command-id 100 target 22:22:22:22:22:22:22:22 transfer-size
512000 outstanding-ios 2 continuous
```

Related Commands

Command	Description
nport pwwn	Configures a SAN extension tuner N port.
san-ext-tuner	Enables the SAN extension tuner feature.
show san-ext-tuner	Displays SAN extension tuner information.
stop	Cancels a SCSI command in progress on a SAN extension tuner N port.

write erase

To clear a startup configuration, enter the write erase command from the EXEC mode prompt.

```
write erase [boot | debug]
```

Syntax Description	
boot	(Optional) Destroys boot configuration.
debug	(Optional) Clears the existing debug configuration.

Command Default None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines Once this command is issued, the switch's startup configuration reverts to factory defaults. The running configuration is not affected. The write erase command erases the entire startup configuration with the exception of any configuration that affects the loader functionality.

The write erase boot command only erases the configuration that affects the loader functionality. The loader functionality configuration includes the boot variables and the mgmt0 IP configuration information (IP address, netmask, and default gateway).

Examples

The following example clears the existing startup configuration completely:

```
switch# write erase
```

The following example clears the loader functionality configuration:

```
switch# write erase boot
```

This command will erase the boot variables and the ip configuration of interface mgmt 0

write-accelerator

To enable write acceleration and tape acceleration for the FCIP interface, use the write-accelerator command in configuration mode. To disable this feature or revert to the default values, use the no form of the command.

```
write-accelerator [tape-accelerator [flow-control-butter-size bytes]]
no write-accelerator [tape-accelerator [flow-control-butter-size]]
```

Syntax Description

tape-accelerator	(Optional) Enables tape acceleration.
flow-control-butter-size bytes	(Optional) Specifies the flow control buffer size.

Command Default

Disabled.

The default flow control buffer size is 256 bytes.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(1)	This command was introduced.
2.0(x)	Added tape-accelerator and flow-control-butter-size options.

Usage Guidelines

The write acceleration feature is disabled by default and must be enabled on both sides of the FCIP link. If it is only enabled on one side of the FCIP tunnel, then the tunnel will not initialize.

In Cisco MDS SAN-OS Release 3.x, the write-accelerator command enables read acceleration if both ends of an FCIP tunnel are running SAN-OS Release 3.x.

If one end of an FCIP tunnel is running SAN-OS Release 3.x, and the other end is running SAN-OS Release 2.x, the write-accelerator command enables write acceleration only.



Tip

FCIP tape acceleration does not work if the FCIP port is part of a PortChannel or if there are multiple paths between the initiator and the target port. Such a configuration might cause SCSI discovery failure or broken write or read operations.

Examples

The following command enables write acceleration on the specified FCIP interface:

```
switch# config terminal
switch(config)# interface fcip 51
switch(config-if)# write-accelerator
```

The following command enables write acceleration and tape acceleration on the specified FCIP interface:

```
switch# config terminal
```

```
switch(config)# interface fcip 51
switch(config-if)# write-accelerator tape-accelerator
```

The following command disables tape acceleration on the specified FCIP interface:

```
switch# config terminal
switch(config)# interface fcip 51
switch(config-if)# no write-accelerator tape-acceleration
```

The following command disables both write acceleration and tape acceleration on the specified FCIP interface:

```
switch# config terminal
switch(config)# interface fcip 51
switch(config-if)# no write-accelerator
```

Related Commands

Command	Description
show interface fcip	Displays an interface configuration for a specified FCIP interface.

wwn oui

To add a new Cisco Organizationally Unique Identifier (OUI) to the OUI database, use the `wwn oui` command. To delete OUIs, use the `no` form of this command.

```
wwn oui id
no wwn oui {id | all}
```

Syntax Description

`id` Specifies the OUI. The range is from 0x1 to 0xfffff.

`all` Deletes all the user-defined OUIs.

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
7.3(0)D1(1)	This command was introduced.

Usage Guidelines

OUIs identify the manufacturer of SAN devices.

This command should be used when connecting another Cisco device to an MDS device when the MDS device does not recognize the other Cisco device as a Cisco device. The newly added device is usually not recognized when the NX-OS version on the MDS device is older than the other Cisco device. The other Cisco device can be another MDS device or it can be some other device such as a Cisco Nexus device.

The following example shows how to add an OUI to the OUI database:

```
switch# configure terminal
switch(config)# wwn oui 0x1000
```

The following example shows how to delete an OUI from the OUI database:

```
switch# configure terminal
switch(config)# no wwn oui 0x1000
```

Related Commands

Command	Description
<code>show wwn oui</code>	Displays all OUIs in the OUI database.
<code>wwn secondary-mac</code>	Allocates secondary MAC addresses.

wwn secondary-mac

To allocate secondary MAC addresses, use the `wwn secondary-mac` command.

```
wwn secondary-mac wwn-id range address-range
```

Syntax Description

wwn-id	The secondary MAC address with the format hh:hh:hh:hh:hh:hh.
range address-range	The range for the specified WWN. The only valid value is 64.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

This command cannot be undone.

Changes to the worldwide names are only performed as required. They should not be changed on a daily basis. These changes should be made by an administrator or individual who is completely familiar with switch operations.

Examples

The following example allocates a secondary range of MAC addresses:

```
switch(config)# wwnm secondary-mac 00:99:55:77:55:55 range 64
This command CANNOT be undone.
Please enter the BASE MAC ADDRESS again: 00:99:55:77:55:55
Please enter the mac address RANGE again: 64
From now on WWN allocation would be based on new MACs.
Are you sure? (yes/no) no
You entered: no. Secondary MAC NOT programmed
```

wwn vsan

To configure a WWN for a suspended VSAN that has interop mode 4 enabled, use the `wwn vsan` command in configuration mode. To discard the configuration, use the `no` form of the command.

```
wwn vsan vsan-id vsan-wwn wwn
no wwn vsan vsan-id vsan-wwn wwn
```

Syntax Description

vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
vsan-wwn wwn	Specifies the WWN for the VSAN. The format is hh:hh:hh:hh:hh:hh:hh:hh.

Command Default

None.

Command Modes

Configuration submode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

This command can succeed only if the following conditions are satisfied:

- The VSAN must be suspended.
- The VSAN must have interop mode 4 enabled before you can specify the switch WWN for it.
- The switch WWN must be unique throughout the entire fabric.
- The configured switch WWN must have McData OUI [08:00:88].

Examples

The following example shows how to assign a WWN to a VSAN.

```
switch# config t
switch(config)# wwn vsan 100 vsan-wwn 20:64:08:00:88:0d:5f:81
WWN can be configured for vsan in suspended state only
switch(config)# vsan database
switch(config-vsan-db)# vsan 100 suspend
switch(config-vsan-db)# exit
switch(config)# wwn vsan 100 vsan-wwn 20:64:08:00:88:0d:5f:81
switch(config)#
```

Related Commands

Command	Description
vsan database	Creates multiple fabrics sharing the same physical infrastructure, assigns ports to a VSAN, turns on or off interop mode, and load balances either per originator exchange or source-destination ID.



Z Commands

- [zone broadcast enable vsan](#), on page 2088
- [zone clone](#), on page 2089
- [zone commit vsan](#), on page 2090
- [zone compact vsan](#), on page 2091
- [zone confirm-commit enable](#), on page 2092
- [zone convert smart-zoning](#), on page 2094
- [zone convert zone](#), on page 2096
- [zone copy](#), on page 2098
- [zone default-zone](#), on page 2100
- [zone gs](#), on page 2101
- [zone merge-control restrict vsan](#), on page 2103
- [zone mode enhanced vsan](#), on page 2104
- [zone name \(configuration mode\)](#), on page 2107
- [zone name \(zone set configuration submode\)](#), on page 2111
- [zone rename](#), on page 2112
- [zone rscn address-format port](#), on page 2113
- [zone smart-zoning enable](#), on page 2114
- [zone-attribute-group clone](#), on page 2115
- [zone-attribute-group name](#), on page 2116
- [zone-attribute-group rename](#), on page 2117
- [zonename \(iSLB initiator configuration\)](#), on page 2118
- [zoneset \(configuration mode\)](#), on page 2120
- [zoneset \(EXEC mode\)](#), on page 2122
- [zoneset overwrite-control vsan](#), on page 2124

zone broadcast enable vsan

To enable zone broadcast frames for a VSAN in basic zoning mode, use the zone broadcast enable VSAN command in configuration mode. To disable this feature, use the no form of the command.

```
zone broadcast enable vsan vsan-id
no zone broadcast enable vsan vsan-id
```

Syntax Description

vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
---------	--

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
5.x	This command was deprecated.
2.0(x)	This command was introduced.

Usage Guidelines

Broadcast frames are sent to all Nx ports. If any NL port attached to an FL port shares a broadcast zone with the source of the broadcast frame, then the frames are broadcast to all devices in the loop.

This command only applies to basic zoning mode.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example shows how to enable zone configuration broadcasting over the fabric:

```
switch# config terminal
switch(config)# zone broadcast enable vsan 10
```

Related Commands

Command	Description
show zone	Displays zone information.

zone clone

To clone a zone name, use the zone clone command in configuration mode.

```
zone clone origZone-Name cloneZone-Name vsan vsan-id
```

Syntax Description

origZone-Name cloneZone-Name	Clones a zone attribute group from the current name to a new name. Maximum length of names is 64 characters.
vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
2.1(1a)	This command was introduced.

Usage Guidelines

Use the no form of the zone name (configuration mode) command to delete the zone name.

Examples

The following example creates a clone of the original zone group named origZone into the clone zone group cloneZone on VSAN 45:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# zone clone origZone cloneZone vsan 45
```

Related Commands

Command	Description
show zone	Displays zone information.

zone commit vsan

To commit zoning changes to a VSAN, use the zone commit vsan command in configuration mode. To negate the command, use the no form of the command.

```
zone commit vsan vsan-id [force]
no zone commit vsan vsan-id [force]
```

Syntax Description

vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
force	(Optional) Forces the commit.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
2.0(1a)	This command was introduced.

Usage Guidelines

Use the no form of the zone commit vsan command to clear a session lock on a switch where the lock originated.

Examples

The following example commits zoning changes to VSAN 200:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# zone commit vsan 200
```

Related Commands

Command	Description
show zone	Displays zone information.

zone compact vsan

To compact a zone database in a VSAN, use the zone compact vsan command.

```
zone compact vsan vsan-id
```

Syntax Description	vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
---------------------------	---------	--

Command Default	None.
------------------------	-------

Command Modes	Configuration mode.
----------------------	---------------------

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines Prior to Cisco MDS SAN-OS Release 3.0(1), only 2000 zones were supported per VSAN. Starting with SAN-OS Release 3.0(1), 8000 zones are supported.

If more than 2000 zones are added, then a configuration check is registered to indicate that downgrading to a previous release could cause you to lose the zones over the limit. To avoid the configuration check, you can delete the excess zones and compact the zone database for the VSAN. If there are 2000 zones or fewer after you delete excess zones, the compacting process reissues zone IDs and the configuration can be supported by previous versions.

If you want to downgrade, you should configure less than 2001 zones across all VSANs and then issue the zone compact vsan command on all VSANs.

If you attempt to merge VSANs, the merge will fail if more than 2000 zones are present in a VSAN and the neighboring VSAN cannot support more than 2000 zones.

Activation will fail if more than 2000 zones are present in the VSAN and all the switches in the fabric cannot support more than 2000 zones.

Examples

The following example shows how to compact a zone database in VSAN 1:

```
switch# config terminal
switch(oongif)# zone compact vsan 1
```

Related Commands	Command	Description
	show zone	Displays zone information.
	show zone analysis	Displays detailed analysis and statistical information about the zoning database.

zone confirm-commit enable

To enable the display of the pending-diff and subsequent confirmation of pending-diff on issuing a zone commit, use the zone confirm-commit enable command in configuration mode. To disable this feature command, use the no form of the command.

```
zone confirm-commit enable vsan vsan-id
no zone confirm-commit enable vsan vsan-id
```

Syntax Description

vsan	Enables the zone pending-diff display during commit for a VSAN.
vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
6.2(9)	This command was introduced.

Usage Guidelines

This command is available only in enhanced mode.

If the zone confirm-commit command is enabled for a VSAN, on committing the pending database, the pending-diff is displayed on the console and the user is prompted for Yes or No. If the zone confirm-commit command is disabled, the pending-diff is not displayed and the user is not prompted for Yes or No.



Note If this feature is enabled, downgrade is blocked by a configuration check. To resume downgrade correctly, confirm-commit has to be disabled on all VSANs.

Examples

The following example shows how to enable the confirm messages during commit for a VSAN:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# zone confirm-commit enable vsan 1
switch(config)#
```

The following example shows how to disable the confirm messages during commit for a VSAN:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# no zone confirm-commit enable vsan 1
switch(config)#
```

Related Commands

Command	Description
show running-config zone | inc confirm	Checks if the confirm-commit option is enabled for any VSAN.

zone convert smart-zoning

To configure smart zoning convert commands, use the zone convert smart-zoning command in configuration mode.

```
zone convert smart-zoning fcalias name fcalias-name vsan vsan-id | vsan vsan-id | zone name
zone-name vsan vsan-id | zoneset name zoneset-name vsan vsan-id
```

Syntax Description

fcalias name	Specifies auto-convert commands for a fcalias.
fcalias-name	Specifies the fcalias name. The maximum size is 64 characters.
vsan	Specifies the auto convert commands for a VSAN.
vsan-id	Specifies the VSAN ID. The range is from 1 to 4093.
zone name	Specifies the auto convert commands for a given zone.
zone-name	Specifies the zone name. The maximum size is 64 characters.
zoneset name	Specifies the auto convert commands for a zoneset.
zoneset-name	Specifies the zoneset name. The maximum size is 64 characters.
vsan	Specifies the VSAN.
vsan-id	Specifies the VSAN ID. The range is from 1 to 4093.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
6.2(7)	Changed the command output.
5.2(6)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to Specify the auto convert commands for a VSAN.

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# zone convert smart-zoning vsan 1
smart-zoning auto_convert initiated. This operation can take few minutes. Please wait..
switch(config)#
```

Related Commands

Command	Description
show zone	Displays zone information.

zone convert zone

To convert the zone member type from one type to another, use the zone convert zone command in the configuration mode.

```
zone convert zoneset name source-member-type dest-member-type vsan vsan-id
```

Syntax Description

name	Displays the name of the zone or zoneset. All members of the specified zone or zoneset will be converted to the new type.
source-member-type	Displays the member type of the members that have to be converted. The values of the supported source member types include fWWN, pWWN, Device-Alias, FCID, Interface and Interface-Domain.
dest-member-type	Displays the member type of the destination member. The values of the supported destination member types include fWWN, pWWN, Device-Alias, FCID, Interface, and Interface-Domain.
vsan vsan-id	Displays the VSAN ID.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
3.2(1)	This command was introduced.

Usage Guidelines

To use this command, all members have to be logged in. The conversion will fail even if a single member conversion is not achieved.

[Table 24: Conversion Matrix of the Member Types, on page 2096](#) describes the conversion matrix of the member types supported by this command.

Table 24: Conversion Matrix of the Member Types

Source Member Types	Supported Destination Member Types
fWWN	pWWN, FCID, Device-alias, Interface, Interface-Domain
Interface	pWWN, FCID, Device-alias, Interface, Interface-Domain
Interface-Domain	pWWN, FCID, Device-alias, Interface
pWWN	FCID, Device-Alias
FCID	pWWN, Device-Alias
Device-Alias	FCID, pWWN

Examples

The following example shows the zone member type conversion:

```
switch# show zoneset name zs1
zoneset name zs1 vsan 1
  zone name zone2 vsan 1
    fcid 0x0b04d3
    fcid 0x0b04cd
    fcid 0x0b04ce
    fcid 0x0b04d1
    fcid 0x0b04d2

  zone name zone1 vsan 1
    fcid 0x0b04d6
    fcid 0x0b04d9
switch# conf t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# zone convert zoneset name zs1 fcid pwwn vsan 1
switch(config)# ex
switch# show zoneset name zs1
zoneset name zs1 vsan 1
  zone name zone2 vsan 1
    pwwn 22:00:00:0c:50:02:cf:56
    pwwn 22:00:00:0c:50:02:cf:72
    pwwn 22:00:00:0c:50:02:ca:b5
    pwwn 22:00:00:0c:50:02:cb:43
    pwwn 22:00:00:0c:50:02:cd:c0

  zone name zone1 vsan 1
    pwwn 22:00:00:0c:50:02:cb:0c
    pwwn 22:00:00:0c:50:02:c9:a2
```

Related Commands

Command	Description
show zone	Displays the zone information.
show zoneset	Displays the configured zone sets.

zone copy

To copy the active zone set to the full zone set, use the zone copy command in EXEC mode. Use the no form of the command to negate the command or revert to the factory defaults.

```
zone copy active-zoneset full-zoneset vsan vsan-id
zone copy vsan vsan-id active-zoneset bootflash:ftp: | full-zoneset | scp: | sftp: | tftp: | volatile:
```

Syntax Description

active-zoneset	Copies from the active zone set.
full-zoneset	Copies the active zone set to the full-zone set.
vsan vsan-id	Configures to copy active zone set on a VSAN to full zone set. The ID of the VSAN is from 1 to 4093.
bootflash:	Copies the active zone set to a location in the bootflash: directory.
ftp:	Copies the active zone set to a remote location using the FTP protocol.
scp:	Copies the active zone set to a remote location using the SCP protocol.
sftp:	Copies the active zone set to a remote location using the SFTP protocol.
slot0:	Copies the active zone set to a location in the slot0: directory.
tftp:	Copies the active zone set to a remote location using the TFTP protocol.
volatile:	Copies the active zone set to a location in the volatile: directory.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(1)	This command was modified.

Usage Guidelines

None.

Examples

The following example copies the active zone set to the full zone set:

```
switch# zone copy active-zoneset full-zoneset vsan 1
```

The following example copies the active zone set in VSAN 3 to a remote location using SCP:

```
switch# zone copy vsan 3 active-zoneset scp://guest@myserver/tmp/active_zoneset.txt
```

Related Commands

Command	Description
show zone	Displays zone information.

zone default-zone

To define whether a default zone (nodes not assigned a created zone) permits or denies access to all in the default zone, use the zone default-zone command in configuration mode. Use the no form of the command to negate the command or revert to the factory defaults.

```
zone default-zone [permit] vsan vsan-id
no zone default-zone [permit] vsan vsan-id
```

Syntax Description

permit	(Optional) Permits access to all in the default zone.
vsan vsan-id	Sets default zoning behavior for the specified VSAN. The ID of the VSAN is from 1 to 4093.

Command Default

All default zones are permitted access.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

Use the zone default-zone permit vsan command to define the operational values for the default zone in a VSAN. This command applies to existing VSANs; it has no effect on VSANs that have not yet been created.

Use the system default zone default-zone permit command to use the default values defined for the default zone for all VSANs. The default values are used when you initially create a VSAN and it becomes active.

Examples

The following example permits default zoning in VSAN 2:

```
switch# config terminal
switch(config)# zone default-zone permit vsan 2
```

Related Commands

Command	Description
show zone	Displays zone information.
system default zone default-zone permit	Configures default values for a zone.

zone gs

To change zone generic service permission for a given VSAN, use zone gs command. To set the value for zone generic service permission as none (deny) for a given VSAN, use the no form of the command.

```
zone gs read|read-write vsan vsan-id
no zone gs read|read-write vsan vsan-id
```

Syntax Description	
read	Specifies the zone generic service permission as read only.
read-write	Specifies the zone generic service permission as read write.
vsan	Specifies the zone generic service permission as read only on a given VSAN.
vsan-id	Specifies VSAN ID. The range is from 1 to 4093.

Command Default read-write.

Command Modes Configuration mode.

Command History	Release	Modification
	3.2(1)	This command was introduced.

Usage Guidelines Zone generic service permission setting is used to control zoning operation through the GS (generic service) interface. The zone generic service permission can be read-only, read-write or none (deny). Modifying gs permission value as write only is not supported.

Examples The following example shows how to configure zone generic service permission value as read only for a given VSAN:

```
switch# config terminal
switch(config)# zone gs read vsan 1
switch(config)#
```

The following example shows how to configure zone generic service permission value as read-write for a given VSAN:

```
switch# config terminal
switch(config)# zone gs read-write vsan1
switch(config)#
```

The following example shows how to configure zone generic service permission value as none(deny) for a given VSAN:

```
switch# config terminal
switch(config)# no zone gs read-write vsan 1
switch(config)#
```

Related Commands

Command	Description
show zone policy vsan	Displays the zone policy for a given VSAN.

zone merge-control restrict vsan

To restrict zone database merging, use the zone merge-control restrict vsan command in configuration mode. To disable this feature, use the no form of the command.

```
zone merge-control restrict vsan vsan-id  
no zone merge-control restrict vsan vsan-id
```

Syntax Description

vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
---------	--

Command Default

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

If merge control setting is restricted and the two databases are not identical, the ISLs between the switches are isolated.

Examples

The following example shows how to configure zone merge control:

```
switch# config terminal  
switch(config)# zone merge-control restrict vsan 10
```

Related Commands

Command	Description
show zone	Displays zone information.

zone mode enhanced vsan

To enable enhanced zoning for a VSAN, use the zone mode enhanced vsan command in configuration mode. To disable this feature, use the no form of the command.

```
zone mode enhanced vsan vsan-id [ single-session ]
no zone mode enhanced vsan vsan-id [ single-session ]
```

Syntax Description

vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
single-session	(Optional) Allows zoning changes only from a single session.

Command Default

Disabled.

Command Modes

Configuration mode (config)

Command History

Release	Modification
8.4(2)	Added the single-session option.
2.0(x)	This command was introduced.

Usage Guidelines

Before using the zone mode enhanced vsan command, verify that all switches in the fabric are capable of working in enhanced zoning mode. If one or more switches are not capable of working in enhanced zoning mode, then the request to enable enhanced zoning mode is rejected.

When the zone mode enhanced vsan command completes successfully, the software automatically starts a session, distributes the zoning database using the enhanced zoning data structures, applies the configuration changes, and sends a release change authorization (RCA) to all switches in the fabric. All switches in the fabric then enable enhanced zoning mode.

The single-session option enforces a limit of one zone configuration session on the switch holding the zone configuration lock in a VSAN and identified by a user's login session. If the login session is disconnected for some reason, such as after a supervisor switchover, the zone session remains, retaining the fabric wide lock and any pending changes. Attempts to make further zone configuration changes from any other login to the switch will be rejected with an error message displaying the previous session owner information. This session information can also be viewed using the show zone status command. To recover, the session lock must be cleared using the clear zone lock command from the switch the lock was originally obtained from. Clearing the session lock will delete any pending zoning configuration and the zone configuration changes will have to be reentered. Use the show zone pending-diff command to display any pending zoning configuration changes prior to clearing the zone lock.

The single-session option is not accepted unless enhanced zoning is already enabled for that VSAN. Enable enhanced zoning in the VSAN first and then use the single-session option with subsequent zone mode enhanced commands.

Examples

The following example shows how to enable enhanced zoning mode on VSAN 10:


```
switch# configure terminal
switch(config)# zone mode enhanced vsan 10
```

The following example shows how to enable zoning changes only from a single session on VSAN 10:

```
switch# configure terminal
switch(config)# zone mode enhanced vsan 10 single-session
```

The following example shows how to disable only the zoning changes from a single session without disabling the enhanced zoning mode on VSAN 10:

```
switch# configure terminal
switch(config)# no zone mode enhanced vsan 10 single-session
```

The following example shows how to disable single session and enhanced zoning mode on VSAN 10:

```
switch# configure terminal
switch(config)# no zone mode enhanced vsan 10
```

The following examples show how to clear the zoning configuration session lock and verify the status of the session when the single-session option is enabled:

- The following example shows that the zoning configuration session is locked by another session:

```
switch# configure
switch(config)# zone name engineering vsan 2
Error:This login is not the zoning session lock owner. Lock taken by test-user@pts/0
from 192.168.1.1 with PID=6629 at 2019-01-09T06:19:40.55504Z
```

- The following example shows the zoning configuration session lock status when the session is locked by user test-user. The session status is shown in the session: field:

```
switch(config-zone)# show zone status vsan 2
VSAN: 2 default-zone: permit distribute: full Interop: default
mode: enhanced merge-control: allow
session: cli [test-user] on user/0 from 192.168.1.1 at 2019-01-09T06:19:40.55504Z

single-session: enabled
hard-zoning: enabled broadcast: unsupported
smart-zoning: disabled
rscn-format: fabric-address
activation overwrite control: disabled
Default zone:
qos: none broadcast: unsupported ronly: unsupported
Full Zoning Database :
DB size: 360 bytes
Zonesets: 2 Zones: 3 Aliases: 0 Attribute-groups: 1
Active Zoning Database :
Database Not Available
Current Total Zone DB Usage: 360 / 4000000 bytes (0 % used)
Pending (Session) DB size:
Full DB Copy size: 396 bytes
Active DB Copy size: 0 bytes
SFC size: 5104 / 4000000 bytes (0 % used)
Status:
```

- The following example shows how to clear the zoning configuration session lock. This should be done from the same switch where the session is locked. The IP address of the switch holding the lock may be identified in the session: field of the above command.

```
switch(config)# clear zone lock vsan 2
Command will clear lock from the entire fabric only if issued on initiating switch.
Else lock will be cleared only locally.
Do you want to continue? (y/n) [n] y
```

- The following example shows the zoning configuration session lock status after clearing the lock. The session status is shown in the session: field.

```
switch(config)# show zone status vsan 2
VSAN: 2 default-zone: deny distribute: full Interop: default
mode: enhanced merge-control: allow
session: none
single-session: enabled
hard-zoning: enabled broadcast: unsupported
```

Related Commands

Command	Description
clear zone lock	Clears zone server database lock.
show zone	Displays zone information.

zone name (configuration mode)

To create a zone, use the zone name command in configuration mode. Use the no form of the command to negate the command or revert to the factory defaults.

```
zone name zone-name vsan vsan-id attribute broadcast|smart-zoning|qos priority high|low|medium
|read-only attribute-group group-name member device-alias alias-name [lun lun-id]|domain-id
domain-id port-number port-number|fcalias name|fcid fcid-value [lun lun-id]|fwwn fwwn-id|
interface fc slot / port [domain-id domain-id|swwn swwn-id]|ip-address ip-address [subnet-mask]
|pwwn pwwn-id [lun lun-id]|symbolic-nodename identifier member device-alias alias-name [lun
lun-id]|domain-id domain-id port-number port-number|fcalias name|fcid fcid-value [lun lun-id]|
fwwn fwwn-id|interface fc slot / port [domain-id domain-id|swwn swwn-id]|ip-address ip-address
[subnet-mask]|pwwn pwwn-id [lun lun-id]|symbolic-nodename identifier
no zone name zone-name vsan vsan-id attribute broadcast|smart-zoning|qos priority high|low|
medium|read-only attribute-group group-name member device-alias alias-name [lun lun-id]|domain-id
domain-id port-number port-number|fcalias name|fcid fcid-value [lun lun-id]|fwwn fwwn-id|
interface fc slot / port [domain-id domain-id|swwn swwn-id]|ip-address ip-address [subnet-mask]
|pwwn pwwn-id [lun lun-id]|symbolic-nodename identifier member device-alias alias-name [lun
lun-id]|domain-id domain-id port-number port-number|fcalias name|fcid fcid-value [lun lun-id]|
fwwn fwwn-id|interface fc slot / port [domain-id domain-id|swwn swwn-id]|ip-address ip-address
[subnet-mask]|pwwn pwwn-id [lun lun-id]|symbolic-nodename identifier
interface bay port|ext port
```

Syntax Description

zone-name	Specifies the name of the zone. Maximum length is 64 characters.
vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.
attribute	Sets zone attributes.
read-only	Sets read-only attribute for the zone (default is read-write).
broadcast	Sets broadcast attribute for the zone.
smart-zoning	Sets the smart zoning for the zone.
qos priority {high | low | medium}	Sets QoS attribute for the zone (default is low).
attribute-group group-name	Configures an attribute group. Maximum length is 64 characters.
member	Adds a member to a zone.
device-alias alias-name	Adds a member using the device alias name.
lun lun-id	Specifies the LUN number in hexadecimal format.
domain-id domain-id	Adds a member using the domain ID.
port-number port-number	Adds a member using the port number of the domain ID portnumber association.
fcalias name	Adds a member using the fcalias name.

fcid fcid-id	Adds a member using the FCID member in the format 0xhhhhhh.
fwwn fwwn-id	Adds a member using the fabric port WWN in the format hh:hh:hh:hh:hh:hh:hh:hh.
interface fc slot/port	Adds a member using the Fibre Channel interface to a Cisco MDS 9000 Family switch.
interface bay | ext port	Adds a member using the Fibre Channel interface to a Cisco Fabric Switch for HP c-Class BladeSystem or to a Cisco Fabric Switch for IBM BladeCenter . The range is 0 to 48.
swwn swwn-id	(Optional) Specifies the switch WWN in the format hh:hh:hh:hh:hh:hh:hh:hh.
ip-address ip-address	Adds a member using the IP address.
subnet-mask	(Optional) Specifies an optional subnet mask.
pwwn pwwn-id	Adds a member using the port WWN in the format hh:hh:hh:hh:hh:hh:hh:hh.
symbolic-nodename identifier	Adds a member using the symbolic node name in the form of a name or an IP address.

Command Default Zone attribute is read-only.

Command Modes Configuration mode.

Release	Modification
1.0(2)	This command was introduced.
1.2(1)	Added the attribute, interface, and lun subcommands.
2.0(x)	<ul style="list-style-type: none"> Added the broadcast and qos priority options to the attribute subcommand. Added the attribute-group subcommand. Added the device-alias aliasname [lun lun-id] option to the member subcommand.
3.1(2)	Added the interface bay | ext option to the member subcommand.
5.2(6)	Added the smart-zoning keyword to the syntax description.

Usage Guidelines Zones are assigned to zone sets, zone sets are then activated from one switch and propagate across the fabric to all switches. Zones allow security by permitting and denying access between nodes (hosts and storage). zone name commands are issued from the configuration mode. Configure a zone for a VSAN from the config-zone submode.

Use the show wwn switch command to retrieve the sWWN. If you do not provide a sWWN, the software automatically uses the local sWWN.

Broadcast frames are sent to all Nx ports.

If any NL port attached to an FL port shares a broadcast zone with the source of the broadcast frame, The frames then are broadcast to all devices in the loop.

Examples

The following example configures attributes for the specified zone (Zone1) based on the member type (pWWN, fabric pWWN, FCID, or FC alias) and value specified:

```
switch# config terminal
switch(config)# zone name Zone1 vsan 10

switch(config-zone)# attribute broadcast

switch(config-zone)# attribute read-only
```

The following example configures members for the specified zone (Zone2) based on the member type (pWWN, fabric pWWN, FCID, or FC alias) and value specified:

```
switch# config terminal
switch(config)# zone name Zone2 vsan 10

switch(config-zone)# attribute broadcast

switch(config-zone)# attribute read-only
```

pWWN example:

```
switch(config-zone)# member pwn 10:00:00:23:45:67:89:ab
Fabric pWWN example:
switch(config-zone)# member fwn 10:01:10:01:10:ab:cd:ef
FC ID example:
switch(config-zone)# member fcid 0xce00d1
FC alias example:
switch(config-zone)# member fcalias Payroll
Domain ID example:
switch(config-zone)# member domain-id 2 portnumber 23
FC alias example:
switch(config-zone)# member ipaddress 10.15.0.0 255.255.0.0
Local sWWN interface example:
switch(config-zone)# member interface fc 2/1
Remote sWWN interface example:
switch(config-zone)# member interface fc2/1 swwn 20:00:00:05:30:00:4a:de
Domain ID interface example:
switch(config-zone)# member interface fc2/1 domain-id 25
The following example shows how to remove the smart zoning configuration:
switch# config terminal
switch(config)# zone name Zone2 vsan 10

switch(config-zone)# no attribute smart-zoning

switch(config-zone)#
```

Related Commands

Command	Description
zone-attribute-group name	Configures zone attribute groups.
zone rename	Renames zones.

zone name (configuration mode)

Command	Description
show zone	Displays zone information.

zone name (zone set configuration submode)

To configure a zone in a zone set, use the zone name command in zone set configuration submode. To delete the zone from the zone set, use the no form of the command.

```
zone name zone-name
no zone name zone-name
```

Syntax Description

zone-name	Specifies the name of the zone. Maximum length is 64 characters.
-----------	--

Command Default

None.

Command Modes

Zone set configuration mode.

Command History

Release	Modification
1.0(2)	This command was modified.

Usage Guidelines

None.

Examples

The following example configure a zone in a zone set:

```
switch# config terminal
switch(config)# zoneset name Sample vsan 1
switch(config-zoneset)# zone name MyZone
```

The following example deletes a zone from a zone set:

```
switch(config-zoneset)# no zone name Zone2
```

Related Commands

Command	Description
show zoneset	Displays zone set information.
zone name (configuration mode)	Configure zones.
zoneset	Configures zone set attributes.

zone rename

To rename a zone, use the zone rename command in configuration mode.

```
zone rename current-name new-name vsan vsan-id
```

Syntax Description

current-name	Specifies the current fcalias name. Maximum length is 64 characters.
new-name	Specifies the new fcalias name. Maximum length is 64 characters.
vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

Configuration submode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to rename a zone:

```
switch# zone rename ZoneA ZoneB vsan 10
```

Related Commands

Command	Description
show zone	Displays zone information.
zone name	Creates and configures zones.

zone rscn address-format port

To configure switch to send the port-address format RSCN for zone configuration changes , use the zone rscn address-format port. To revert to the default settings, use the no form of the command.

```
zone rscn address-format port vsan vsan-id
no zone rscn address-format port vsan vsan-id
```

Syntax Description

vsan	Specifies the VSAN ID.
vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
6.2(1)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to configure the switches to the port-address format.

```
switch(config)# zone rscn address-format port vsan 10
switch#
```

Related Commands

Command	Description
show zone	Displays zone information.
zone name	Creates and configures zones.

zone smart-zoning enable

To enable the smart zoning feature, use the zone smart-zoning enable command. To disable this feature, use the no form of this command.

```
zone smart-zoning enable vsan vsan-id
no zone smart-zoning enable vsan vsan-id
```

Syntax Description

vsan	Specifies the smart zoning feature on the given VSAN.
vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
5.2(6)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to enable the smart zoning feature on the given VSAN:

```
switch# zone smart-zoning enable vsan 10
```

Related Commands

Command	Description
show zone	Displays the zone information.

zone-attribute-group clone

To clone a zone attribute group, use the zone-attribute-group clone command in configuration mode.

```
zone attribute clone origAttGrp-Name cloneAttGrp-Name vsan vsan-id
```

Syntax Description	origAttGrp-Name cloneAttGrp-Name	Clones a zone attribute group from the current name to a new name. Maximum length of names is 64 characters.
	vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.1(1a)	This command was introduced.

Usage Guidelines To remove the zone attribute group, use the no form of the zone-attribute-group name command.

Examples The following example shows how to clone a zone attribute group with the original name origZoneAttGrp to a copy named cloneZoneAttGrp on VSAN 45:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# zone-attribute-group clone origZoneAttGrp cloneZoneAttGrp vsan 45
```

Related Commands	Command	Description
	show zone-attribute-group	Displays zone attribute group information.

zone-attribute-group name

To create and configure a zone attribute group for enhanced zoning, use the zone-attribute-group name command in configuration mode. To remove the zone attribute group, use the no form of the command.

```
zone attribute group name zone-name vsan vsan-id
no zone attribute group name zone-name vsan vsan-id
```

Syntax Description

zone-name	Specifies the zone attribute name. Maximum length is 64 characters.
vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default

None.

Command Modes

Configuration mode.

Command History

Release	Modification
2.0(x)	This command was introduced.

Usage Guidelines

You can use this command to create a zone attribute group and to modify an existing zone attribute group.

Zone attribute groups are only supported for enhanced zoning. You can enable enhanced zoning using the zone mode enhanced vsan command.

Examples

The following example shows how to create a zone attribute group and enter attribute group configuration submode:

```
switch# config terminal
switch(config)# zone-attribute-group name admin-attributes vsan 10
switch(config-attribute-group)#
```

Related Commands

Command	Description
show zone-attribute-group	Displays zone attribute group information.
zone mode enhanced vsan	Enables enhanced zoning for a VSAN.

zone-attribute-group rename

To rename a zone attribute group, use the zone-attribute-group rename command in configuration mode.

```
zone attribute group rename current-name new-name vsan vsan-id
```

Syntax Description	Parameter	Description
	current-name	Specifies the current zone attribute name. Maximum length is 64 characters.
	new-name	Specifies the new zone attribute name. Maximum length is 64 characters.
	vsan vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Command Default None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to rename a zone attribute group:

```
switch# config terminal
switch(config)# zone-attribute-group rename Group1 Group2 vsan 10
```

Related Commands	Command	Description
	show zone-attribute-group	Displays zone attribute group information.

zonename (iSLB initiator configuration)

To assign a zone name for the initiator, use the `zonename` command in iSLB initiator configuration submode. To remove the zone name for the initiator, use the `no` form of the command.

```
zonename name
no zonename name
```

Syntax Description

zonename name	Assigns the zone name for the initiator. The maximum size is 55.
---------------	--

Command Default

Automatically generated.

Command Modes

iSCSI initiator configuration submode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

You can configure a zone name where the iSLB initiators and initiator targets are added. If you do not specify a zone name, the IPS manager creates one dynamically. iSLB zone sets have the following considerations:

- Auto-zoning of the initiator with the initiator targets is enabled by default.
- A zone set must be active for a VSAN for auto-zones to be created in that VSAN. The `zoneset activate` command creates auto-zones only if at least one other change has been made to the zone set.
- iSLB zone set activation might fail if another zone set activation is in process or if the zoning database is locked. Retry the iSLB zone set activation if a failure occurs. To avoid this problem, only perform only one zoning related operation (normal zones, IVR zones, or iSLB zones) at a time.
- If IVR and iSLB are enabled in the same fabric, at least one switch in the fabric must have both features enabled. Any zoning related configuration or activation operation (for normal zones, IVR zones, or iSLB zones) must be performed on this switch. Otherwise, traffic might be disrupted in the fabric.

Examples

The following example assigns the zone name for the iSLB initiator:

```
switch# config t
switch(config)# islb initiator ip-address 100.10.10.10
ips-hac2(config-iscsi-islb-init)# zonename ?
<WORD> Enter zone name <Max Size - 55>
ips-hac2(config-islb-init)# zonename testzone1
```

The following example removes the zone name and reverts to the default zone name for the iSLB initiator:

```
switch (config-islb-init)# no
zonename testzone1
```

Related Commands	Command	Description
	islb initiator	Assigns an iSLB name and IP address to the iSLB initiator and enters iSLB initiator configuration submode.
	show islb initiator	Displays iSCSI server load balancing (iSLB) CFS information.
	show islb initiator detail	Displays detailed iSLB initiator information.
	show islb initiator summary	Displays iSLB initiator summary information.

zoneset (configuration mode)

To group zones under one zone set, use the zoneset command. To negate the command or revert to the factory defaults, use the no form of the command.

```
zoneset activate name zoneset-name vsan vsan-id [force] | clone zoneset-currentName
zoneset-cloneName | distribute full vsan vsan-id | name zoneset-name vsan vsan-id | rename current-name
new-name vsan vsan-id
no zoneset activate name zoneset-name vsan vsan-id | clone zoneset-currentName zoneset-cloneName
| distribute full vsan vsan-id | name zoneset-name vsan vsan-id | rename current-name new-name vsan
vsan-id
```

Syntax Description

activate	Activates a zone set
force	Forces to activate a new zone set even when the zone set overwrite control is activated.
clone zoneset-currentName zoneset-cloneName	Clones a zone set from the current name to a new name. Maximum length of names is 64 characters.
name zoneset-name	Specifies a name for a zone set. Maximum length is 64 characters.
distribute full vsan vsan-id	Enables zone set propagation. Activates a zone set on the specified VSAN. The range is 1 to 4093.
rename	Renames a zone set.
current-name	Specifies the current fcalias name.
new-name	Specifies the new fcalias name.

Command Default

None.

Command Modes

Configuration mode (config)

Command History

Release	Modification
1.0(2)	This command was introduced.
2.0(x)	Added the rename option.
2.1(1a)	Added the clone option.
6.2(13)	Added the force option.

Usage Guidelines

Zones are activated by activating the parent zone set.

The zoneset distribute full vsan command distributes the operational values for the default zone to all zone sets in a VSAN. If you do not want to distribute the operation values, use the system default zone distribute

full command to distribute the default values. The default values are used when you initially create a VSAN and it becomes active.

The zoneset distribute full vsan command applies to existing VSANs; it has no effect on VSANs that have not yet been created.

Examples

The following example activates a zone set named gottons in VSAN 333:

```
switch# config terminal
switch(config)# zoneset activate name gottons vsan 333
Zoneset Activation initiated. check zone status
```

The following example clones a zone set named zSet1 into a new zoneset named zSetClone in VSAN 45:

```
switch(config)# zoneset ?
  activate      Activate a zoneset
  clone         Zoneset clone command
  distribute    Enable zoneset propagation
  name          Configure a zoneset
  rename        Zoneset rename command
switch(config)# zoneset clone ?
  <WORD>        Current zoneset name (Max Size - 64)
switch(config)# zoneset clone existing ?
  <WORD>        New zoneset name (Max Size - 64)
switch(config)# zoneset clone existing new ?
  vsan         Clone zoneset name on a vsan
switch(config)# zoneset clone existing new vsan ?
  <1-4093>     VSAN id
switch(config)# zoneset clone existing new vsan 1 ?
  <cr>        Carriage Return
switch(config)# zoneset clone existing zSet1 zSetClone vsan 45
```

The following example distributes the operational values for the default zone to all zone sets in VSAN 22:

```
switch(config)# zoneset distribute full vsan 22
```

Related Commands

Command	Description
show zoneset	Displays zone set information.
system default zone distribute full	Configures default values for distribution to a zone set
zoneset overwrite-control	Enabling this command for a VSAN causes the zoneset activate command to fail if the zone set name is different from the currently active zone set name and the force parameter is not specified. This can prevent an inadvertent zoneset activation.

zoneset (EXEC mode)

To merge zone set databases, use the zoneset command in EXEC mode.

```
zoneset distribute | export | import interface fc slot-number | fcip interface-number | port-channel
port-number vsan vsan-id
import interface bay-ext port | port-channel port-number
```

Syntax Description

distribute	Distributes the full zone set in the fabric.
export	Exports the zone set database to the adjacent switch on the specified VSAN. The active zone set in this switch becomes the activated zone set of the merged SAN.
import	Imports the zone set database to the adjacent switch on the specified interface. The active zone set in the adjacent switch becomes the activated zone set of the merged SAN.
interface	Configures the interface.
fc slot-number	Configures a Fibre Channel interface for the specified slot number and port number on an MDS 9000 Family switch.
fcip interface-number	Selects the FCIP interface on an MDS 9000 Family switch to configure the specified interface from 1 to 255.
interface bay| ext port	(Optional) Configures a Fibre Channel interface for the specified port on a Cisco Fabric Switch for HP c-Class BladeSystem or on a Cisco Fabric Switch for IBM BladeCenter . The range is 0 to 48.
	Specifies PortChannel interface.
vsan vsan-id port-channel port-number	Merges the zone set database of a VSAN on the specified interface. The ID of the VSAN is from 1 to 4093.

Command Default

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(2)	This command was introduced.
3.1(2)	Added the interface bay| ext option.

Usage Guidelines

You can also use the zoneset import and the zoneset export commands for a range of VSANs.

The zoneset distribute vsan vsan-id command is supported in interop 2 and interop 3 modes not in interop 1 mode.



Note If a port is part of a PortChannel in the interface, you cannot import the zone set database of the port; therefore, you should import the zone set database of the PortChannel.

Examples

The following example imports the zone set database from the adjacent switch connected through the VSAN 2 interface:

```
switch# zoneset import interface fc1/3 vsan 2
```

The following example exports the zone set database to the adjacent switch connected through VSAN 5:

```
switch# zoneset export vsan 5
```

The following example distributes the zone set in VSAN 333:

```
switch# zoneset distribute vsan 333  
Zoneset distribution initiated. check zone status
```

Related Commands

Command	Description
show zone status vsan	Displays the distribution status for the specified VSAN.
show zoneset	Displays zone set information.

zoneset overwrite-control vsan

Enabling the zoneset overwrite-control command for a VSAN causes the zoneset activate command to fail if the zone set name is different from the currently active zone set name, and the force parameter is not specified. This can prevent an inadvertent zoneset activation. To disable this feature, use the no form of this command.

```
zoneset overwrite-control vsan id
```

Syntax Description

vsan	Specifies a virtual storage area network (VSAN).
id	VSAN ID. The VSAN ID is in the range of 1 to 4093.

Command Default

This feature is disabled by default.

Command Modes

Configuration mode (config)

Command History

Release	Modification
6.2(13)	This command was introduced.

Usage Guidelines

The zoneset overwrite-control vsan id command can be enabled only in an enhanced zone mode. Even when the zoneset overwrite-control vsan id command is enabled, the user can override it and continue with the activation of a new zoneset using the zoneset activate name name vsan id force command.

Examples

The following example shows how to enable the activation overwrite control for a specified VSAN:

```
switch(config)# zoneset overwrite-control vsan 3
WARNING: This will enable Activation Overwrite control. Do you want to continue? (y/n) [n]
```

Related Commands

Command	Description
show zone status vsan vsan-id	Displays zone settings for a VSAN, including if overwrite control is enabled or disabled for the VSAN.
show zoneset	Displays zone set information.
zoneset (configuration mode)	Configures zoneset.