



INDEX

A

aaa accounting dot1x command [2-1](#)
aaa authentication dot1x command [2-3](#)
aaa authorization network command [2-5](#)
AAA methods [2-3](#)
abort command [2-795](#)
access control entries
 See ACEs
access control lists
 See ACLs
access groups
 IP [2-161](#)
 MAC, displaying [2-552](#)
access list, IPv6 [2-228](#)
access map configuration mode [2-288](#)
access mode [2-736](#)
access ports [2-736](#)
ACEs [2-94](#), [2-357](#)
ACLs
 deny [2-92](#)
 displaying [2-413](#)
 for non-IP protocols [2-268](#)
 IP [2-161](#)
 matching [2-288](#)
 on Layer 2 interfaces [2-161](#)
 permit [2-355](#)
action command [2-6](#)
address aliasing [2-337](#)
aggregate-port learner [2-343](#)
allowed VLANs [2-756](#)

apply command [2-795](#)
archive copy-sw command [2-8](#)
archive download-sw command [2-11](#)
archive tar command [2-15](#)
archive upload-sw command [2-18](#)
arp access-list command [2-20](#)
audience [xix](#)
authentication failed VLAN
 See dot1x auth-fail vlan
auth-fail max-attempts
 See dot1x auth-fail max-attempts
auth-fail vlan
 See dot1x auth-fail vlan
authorization state of controlled port [2-128](#)
autonegotiation of duplex mode [2-139](#)
auto qos voip command [2-22](#)

B

BackboneFast, for STP [2-661](#)
backup interfaces
 configuring [2-730](#)
 displaying [2-483](#)
boot (boot loader) command [A-2](#)
boot auto-copy-sw command [2-27](#)
boot auto-download-sw command [2-28](#)
boot boothlpr command [2-30](#)
boot config-file command [2-31](#)
boot enable-break command [2-32](#)
boot helper command [2-33](#)
boot helper-config file command [2-34](#)

booting

- Cisco IOS image [2-37](#)
- displaying environment variables [2-422](#)
- interrupting [2-28, 2-32](#)
- manually [2-35](#)

boot loader

- accessing [A-1](#)
- booting
 - Cisco IOS image [A-2](#)
 - helper image [2-33](#)
- directories
 - creating [A-15](#)
 - displaying a list of [A-7](#)
 - removing [A-19](#)
- displaying
 - available commands [A-12](#)
 - memory heap utilization [A-13](#)
 - version [A-26](#)

environment variables

- described [A-20](#)
- displaying settings [A-20](#)
- location of [A-21](#)
- setting [A-20](#)
- unsetting [A-24](#)

files

- copying [A-5](#)
- deleting [A-6](#)
- displaying a list of [A-7](#)
- displaying the contents of [A-4, A-16, A-23](#)
- renaming [A-17](#)

file system

- formatting [A-10](#)
- initializing flash [A-9](#)
- running a consistency check [A-11](#)

prompt [A-1](#)resetting the system [A-18](#)boot manual command [2-35](#)boot private-config-file command [2-36](#)boot system command [2-37](#)BPDU filtering, for spanning tree [2-662, 2-697](#)BPDU guard, for spanning tree [2-664, 2-697](#)broadcast storm control [2-718](#)**C**

candidate switches

See clusters

cat (boot loader) command [A-4](#)Catalyst 3750G Integrated Wireless LAN Controller Switch [2-404](#)caution, description **xx**CDP, enabling protocol tunneling for [2-247](#)channel-group command [2-39](#)channel-protocol command [2-43](#)

Cisco Network Assistant

See Network Assistant **xx**

Cisco SoftPhone

auto-QoS configuration [2-22](#)

trusting packets sent from [2-328](#)

class command [2-45](#)class-map command [2-47](#)

class maps

creating [2-47](#)

defining the match criteria [2-290](#)

displaying [2-427](#)

class of service

See CoS

clear dot1x command [2-49](#)clear eap sessions command [2-50](#)clear errdisable interface [2-51](#)clear ip arp inspection log command [2-52](#)clear ip arp inspection statistics command [2-53](#)clear ipc command [2-56](#)clear ip dhcp snooping database command [2-54](#)clear l2protocol-tunnel counters command [2-57](#)clear lacp command [2-58](#)clear mac address-table command [2-59, 2-61](#)clear pagp command [2-62](#)

- clear port-security command [2-63](#)
 - clear spanning-tree counters command [2-65](#)
 - clear spanning-tree detected-protocols command [2-66](#)
 - clear vmps statistics command [2-67](#)
 - clear vtp counters command [2-68](#)
 - cluster commander-address command [2-69](#)
 - cluster discovery hop-count command [2-71](#)
 - cluster enable command [2-72](#)
 - cluster holdtime command [2-73](#)
 - cluster member command [2-74](#)
 - cluster outside-interface command [2-76](#)
 - cluster requirements [xxi](#)
 - cluster run command [2-77](#)
 - clusters
 - adding candidates [2-74](#)
 - binding to HSRP group [2-78](#)
 - building manually [2-74](#)
 - communicating with
 - devices outside the cluster [2-76](#)
 - members by using Telnet [2-384](#)
 - debug messages, display [B-5](#)
 - displaying
 - candidate switches [2-430](#)
 - debug messages [B-5](#)
 - member switches [2-432](#)
 - status [2-428](#)
 - hop-count limit for extended discovery [2-71](#)
 - HSRP standby groups [2-78](#)
 - redundancy [2-78](#)
 - SNMP trap [2-651](#)
 - cluster standby-group command [2-78](#)
 - cluster timer command [2-80](#)
 - command modes defined [1-2](#)
 - commands changed in Cisco IOS Release 12.2(18)SE [1-6](#)
 - command switch
 - See clusters
 - configuration, initial
 - See getting started guide and hardware installation guide
 - configuration files
 - password recovery disable considerations [A-1](#)
 - specifying the name [2-31, 2-36](#)
 - configuring multiple interfaces [2-156](#)
 - config-vlan mode
 - commands [2-781](#)
 - description [1-4](#)
 - entering [2-780](#)
 - summary [1-3](#)
 - controller, wireless [2-404](#)
 - conventions
 - command [xx](#)
 - for examples [xx](#)
 - publication [xx](#)
 - text [xx](#)
 - copy (boot loader) command [A-5](#)
 - CoS
 - assigning default value to incoming packets [2-298](#)
 - assigning to Layer 2 protocol packets [2-250](#)
 - overriding the incoming value [2-298](#)
 - CoS-to-DSCP map [2-302](#)
 - CPU ASIC statistics, displaying [2-434](#)
 - crashinfo files [2-149](#)
-
- ## D
- debug auto qos command [B-2](#)
 - debug backup command [B-4](#)
 - debug cluster command [B-5](#)
 - debug dot1x command [B-7](#)
 - debug dtp command [B-9](#)
 - debug eap command [B-10](#)
 - debug etherchannel command [B-12](#)
 - debug ilpower command [B-14](#)
 - debug interface command [B-15](#)
 - debug ip dhcp snooping command [B-17](#)
 - debug ip igmp filter command [B-19](#)
 - debug ip igmp max-groups command [B-20](#)
 - debug ip igmp snooping command [B-21](#)

- debug ip verify source packet command [B-18](#)
- debug lacp command [B-22](#)
- debug mac-notification command [B-23](#)
- debug matm command [B-24](#)
- debug matm move update command [B-25](#)
- debug monitor command [B-26](#)
- debug mvrdbg command [B-28](#)
- debug nvram command [B-29](#)
- debug pagp command [B-30](#)
- debug platform acl command [B-31](#)
- debug platform backup interface command [B-32](#)
- debug platform cli-redirect main command [B-33](#)
- debug platform configuration command [B-34](#), [B-42](#)
- debug platform cpu-queues command [B-35](#)
- debug platform device-manager command [B-37](#)
- debug platform dot1x command [B-38](#)
- debug platform etherchannel command [B-39](#)
- debug platform fallback-bridging command [B-40](#)
- debug platform forw-team command [B-41](#)
- debug platform ip arp inspection command [B-44](#)
- debug platform ipc command [B-53](#)
- debug platform ip dhcp command [B-45](#)
- debug platform ip igmp snooping command [B-46](#)
- debug platform ip multicast command [B-48](#)
- debug platform ip unicast command [B-50](#)
- debug platform ip wccp command [B-52](#)
- debug platform led command [B-54](#)
- debug platform matm command [B-55](#)
- debug platform messaging application command [B-57](#)
- debug platform phy command [B-58](#)
- debug platform pm command [B-60](#)
- debug platform port-asic command [B-62](#)
- debug platform port-security command [B-63](#)
- debug platform qos-acl-tcam command [B-64](#)
- debug platform remote-commands command [B-65](#)
- debug platform resource-manager command [B-66](#)
- debug platform snmp command [B-67](#)
- debug platform span command [B-68](#)
- debug platform stack-manager command [B-69](#)
- debug platform supervisor-asic command [B-70](#)
- debug platform sw-bridge command [B-71](#)
- debug platform team command [B-72](#)
- debug platform udd command [B-75](#)
- debug platform vlan command [B-76](#)
- debug platform wireless-controller [B-102](#)
- debug pm command [B-77](#)
- debug port-security command [B-79](#)
- debug qos-manager command [B-80](#)
- debug spanning-tree backbonefast command [B-83](#)
- debug spanning-tree bpdu command [B-84](#)
- debug spanning-tree bpdu-opt command [B-85](#)
- debug spanning-tree command [B-81](#)
- debug spanning-tree mstp command [B-86](#)
- debug spanning-tree switch command [B-88](#)
- debug spanning-tree uplinkfast command [B-90](#)
- debug sw-vlan command [B-91](#)
- debug sw-vlan ifs command [B-93](#)
- debug sw-vlan notification command [B-95](#)
- debug sw-vlan vtp command [B-97](#)
- debug udd command [B-99](#)
- debug vqpc command [B-101](#)
- define interface-range command [2-82](#)
- delete (boot loader) command [A-6](#)
- delete command [2-84](#)
- deny (ARP access-list configuration) command [2-85](#)
- deny (IPv6) command [2-87](#)
- deny command [2-92](#)
- detect mechanism, causes [2-140](#)
- device manager requirements [xx](#)
- DHCP snooping
 - accepting untrusted packets from edge switch [2-189](#)
 - enabling
 - on a VLAN [2-196](#)
 - option 82 [2-187](#), [2-189](#)
 - trust on an interface [2-194](#)
 - error recovery timer [2-146](#)
 - rate limiting [2-193](#)

- DHCP snooping binding database
 - binding file, configuring [2-185](#)
 - bindings
 - adding [2-183](#)
 - deleting [2-183](#)
 - displaying [2-503](#)
 - clearing database agent statistics [2-54](#)
 - database agent, configuring [2-185](#)
 - displaying
 - binding entries [2-503](#)
 - database agent status [2-505, 2-507](#)
 - renewing [2-391](#)
- dir (boot loader) command [A-7](#)
- directories, deleting [2-84](#)
- documentation, related [xx](#)
- document conventions [xx](#)
- domain name, VTP [2-806, 2-810](#)
- dot1x auth-fail max-attempts [2-104](#)
- dot1x auth-fail vlan [2-106](#)
- dot1x command [2-102](#)
- dot1x control-direction command [2-108](#)
- dot1x critical global configuration command [2-110](#)
- dot1x critical interface configuration command [2-112](#)
- dot1x default command [2-114](#)
- dot1x fallback command [2-115](#)
- dot1x guest-vlan command [2-116](#)
- dot1x host-mode command [2-119](#)
- dot1x initialize command [2-121](#)
- dot1x mac-auth-bypass command [2-122](#)
- dot1x max-reauth-req command [2-124](#)
- dot1x max-req command [2-125](#)
- dot1x multiple-hosts command [2-126](#)
- dot1x pae command [2-127](#)
- dot1x port-control command [2-128](#)
- dot1x re-authenticate command [2-130](#)
- dot1x re-authentication command [2-131](#)
- dot1x reauthentication command [2-132](#)
- dot1x test eapol-capable command [2-133](#)
- dot1x test timeout command [2-134](#)
- dot1x timeout command [2-135](#)
- dropping packets, with ACL matches [2-6](#)
- drop threshold, Layer 2 protocol tunneling [2-247](#)
- DSCP-to-CoS map [2-302](#)
- DSCP-to-DSCP-mutation map [2-302](#)
- DTP [2-737](#)
- DTP flap
 - error detection for [2-140](#)
 - error recovery timer [2-146](#)
- DTP negotiation [2-741](#)
- duplex command [2-138](#)
- dynamic-access ports
 - configuring [2-728](#)
 - restrictions [2-729](#)
- dynamic ARP inspection
 - ARP ACLs
 - apply to a VLAN [2-169](#)
 - define [2-20](#)
 - deny packets [2-85](#)
 - display [2-417](#)
 - permit packets [2-347](#)
 - clear
 - log buffer [2-52](#)
 - statistics [2-53](#)
 - display
 - ARP ACLs [2-417](#)
 - configuration and operating state [2-498](#)
 - log buffer [2-498](#)
 - statistics [2-498](#)
 - trust state and rate limit [2-498](#)
 - enable per VLAN [2-179](#)
 - error detection for [2-140](#)
 - error recovery timer [2-146](#)
 - log buffer
 - clear [2-52](#)
 - configure [2-173](#)
 - display [2-498](#)
 - rate-limit incoming ARP packets [2-171](#)

dynamic ARP inspection (continued)

statistics

clear [2-53](#)display [2-498](#)trusted interface state [2-175](#)type of packet logged [2-180](#)validation checks [2-177](#)dynamic auto VLAN membership mode [2-736](#)dynamic desirable VLAN membership mode [2-736](#)

Dynamic Host Configuration Protocol (DHCP)

See DHCP snooping

Dynamic Trunking Protocol

See DTP

E

EAP-request/identity frame

maximum number to send [2-125](#)response time before retransmitting [2-135](#)encapsulation methods [2-756](#)environment variables, displaying [2-422](#)errdisable detect cause command [2-140](#)errdisable detect cause small-frame comand [2-143](#)errdisable recovery cause small-frame [2-145](#)errdisable recovery command [2-146](#)error conditions, displaying [2-469](#)error disable detection [2-140](#)error-disabled interfaces, displaying [2-483](#)

EtherChannel

assigning Ethernet interface to channel group [2-39](#)creating port-channel logical interface [2-154](#)debug EtherChannel/PAgP, display [B-12](#)debug platform-specific events, display [B-39](#)displaying [2-473](#)

enabling Layer 2 protocol tunneling for

LACP [2-248](#)PAgP [2-248](#)UDLD [2-248](#)interface information, displaying [2-483](#)

EtherChannel (continued)

LACP

clearing channel-group information [2-58](#)debug messages, display [B-22](#)displaying [2-543](#)modes [2-39](#)port priority for hot-standby ports [2-251](#)restricting a protocol [2-43](#)system priority [2-253](#)load-distribution methods [2-365](#)

PAgP

aggregate-port learner [2-343](#)clearing channel-group information [2-62](#)debug messages, display [B-30](#)displaying [2-596](#)error detection for [2-140](#)error recovery timer [2-146](#)learn method [2-343](#)modes [2-39](#)physical-port learner [2-343](#)priority of interface for transmitted traffic [2-345](#)Ethernet controller, internal register display [2-436](#)Ethernet statistics, collecting [2-393](#)examples, conventions for [xx](#)exception crashinfo command [2-149](#)exit command [2-795](#)extended discovery of candidate switches [2-71](#)

extended-range VLANs

and allowed VLAN list [2-756](#)and pruning-eligible list [2-756](#)configuring [2-780](#)extended system ID for STP [2-670](#)

Ffallback profile command [2-150](#)fallback profiles, displaying [2-476](#)fan information, displaying [2-464](#)file name, VTP [2-806](#)

files, deleting [2-84](#)

flash_init (boot loader) command [A-9](#)

Flex Links

- configuring [2-730](#)
- configuring preferred VLAN [2-733](#)
- displaying [2-483](#)

flowcontrol command [2-152](#)

format (boot loader) command [A-10](#)

forwarding packets, with ACL matches [2-6](#)

forwarding results, display [C-6](#)

frame forwarding information, displaying [C-8](#)

front-end controller, counter and status information [C-8](#)

fsck (boot loader) command [A-11](#)

G

global configuration mode [1-2, 1-4](#)

H

hardware ACL statistics [2-413](#)

help (boot loader) command [A-12](#)

hierarchical policy maps [2-363](#)

hop-count limit for clusters [2-71](#)

host connection, port configuration [2-735](#)

host ports, private VLANs [2-739](#)

Hot Standby Router Protocol

- See HSRP

HSRP

- binding HSRP group to cluster [2-78](#)
- standby group [2-78](#)

IEEE 802.1Q trunk ports and native VLANs [2-797](#)

IEEE 802.1Q tunnel ports

- configuring [2-736](#)
- displaying [2-453](#)
- limitations [2-737](#)

IEEE 802.1x

- and switchport modes [2-737](#)
- violation error recovery [2-146](#)
- See also port-based authentication

IEEE 802.1X Port Based Authentication

- enabling guest VLAN supplicant [2-105, 2-115, 2-151](#)

IGMP filters

- applying [2-199](#)
- debug messages, display [B-19](#)

IGMP groups, setting maximum [2-201](#)

IGMP maximum groups, debugging [B-20](#)

IGMP profiles

- creating [2-203](#)
- displaying [2-510](#)

IGMP snooping

- adding ports as a static member of a group [2-220](#)
- displaying [2-511, 2-516, 2-518](#)
- enabling [2-205](#)
- enabling the configurable-leave timer [2-207](#)
- enabling the Immediate-Leave feature [2-216](#)
- flooding query count [2-213](#)
- interface topology change notification behavior [2-215](#)
- multicast table [1-6, 2-514](#)
- querier [2-209](#)
- query solicitation [2-213](#)
- report suppression [2-211](#)
- switch topology change notification behavior [2-213](#)

images

See software images

Immediate-Leave feature, MVR [2-339](#)

immediate-leave processing [2-216](#)

Immediate-Leave processing, IPv6 [2-243](#)

initial configuration

See getting started guide and hardware installation guide

interface configuration mode [1-2, 1-4](#)

interface port-channel command [2-154](#)

interface range command [2-156](#)

interface-range macros [2-82](#)

interfaces

assigning Ethernet interface to channel group [2-39](#)

configuring [2-138](#)

configuring multiple [2-156](#)

creating port-channel logical [2-154](#)

debug messages, display [B-15](#)

disabling [2-647](#)

displaying the MAC address table [2-564](#)

restarting [2-647](#)

interface speed, configuring [2-707](#)

interface vlan command [2-159](#)

internal registers, displaying [2-436, 2-446](#)

Internet Group Management Protocol

See IGMP

invalid GBIC

error detection for [2-140](#)

error recovery timer [2-146](#)

ip access-group command [2-161](#)

ip address command [2-164](#)

IP addresses, setting [2-164](#)

IP address matching [2-288](#)

ip admission command [2-166](#)

ip admission name proxy http command [2-167](#)

ip arp inspection filter vlan command [2-169](#)

ip arp inspection limit command [2-171](#)

ip arp inspection log-buffer command [2-173](#)

ip arp inspection trust command [2-175](#)

ip arp inspection validate command [2-177](#)

ip arp inspection vlan command [2-179](#)

ip arp inspection vlan logging command [2-180](#)

IP DHCP snooping

See DHCP snooping

ip dhcp snooping binding command [2-183](#)

ip dhcp snooping command [2-182](#)

ip dhcp snooping database command [2-185](#)

ip dhcp snooping information option allow-untrusted command [2-189](#)

ip dhcp snooping information option command [2-187](#)

ip dhcp snooping information option format remote-id command [2-191](#)

ip dhcp snooping limit rate command [2-193](#)

ip dhcp snooping trust command [2-194](#)

ip dhcp snooping verify command [2-195](#)

ip dhcp snooping vlan command [2-196](#)

ip dhcp snooping vlan information option format-type circuit-id string command [2-197](#)

ip igmp filter command [2-199](#)

ip igmp max-groups command [2-201](#)

ip igmp profile command [2-203](#)

ip igmp snooping command [2-205](#)

ip igmp snooping last-member-query-interval command [2-207](#)

ip igmp snooping querier command [2-209](#)

ip igmp snooping report-suppression command [2-211](#)

ip igmp snooping tcn command [2-213](#)

ip igmp snooping tcn flood command [2-215](#)

ip igmp snooping vlan immediate-leave command [2-216](#)

ip igmp snooping vlan mrouter command [2-218](#)

ip igmp snooping vlan static command [2-220](#)

IP multicast addresses [2-336](#)

IP phones

auto-QoS configuration [2-22](#)

trusting packets sent from [2-328](#)

IP-precedence-to-DSCP map [2-302](#)

ip snap forwarding command [2-222](#)

ip source binding command [2-223](#)

- IP source guard
 - disabling [2-227](#)
 - displaying
 - binding entries [2-520](#)
 - configuration [2-522](#)
 - dynamic binding entries only [2-503](#)
 - enabling [2-227](#)
 - static IP source bindings [2-223](#)
 - ip ssh command [2-225](#)
 - IPv6 access list, deny conditions [2-87](#)
 - ipv6 access-list command [2-228](#)
 - ipv6 mld snooping command [2-231](#)
 - ipv6 mld snooping last-listener-query count command [2-233](#)
 - ipv6 mld snooping last-listener-query-interval command [2-235](#)
 - ipv6 mld snooping listener-message-suppression command [2-237](#)
 - ipv6 mld snooping robustness-variable command [2-239](#)
 - ipv6 mld snooping tcn command [2-241](#)
 - ipv6 mld snooping vlan command [2-243](#)
 - IPv6 SDM template [2-395](#)
 - ipv6 traffic-filter command [2-245](#)
 - ip verify source command [2-227](#)
-
- J**
- jumbo frames
 - See MTU
-
- L**
- l2protocol-tunnel command [2-247](#)
 - l2protocol-tunnel cos command [2-250](#)
 - LACP
 - See EtherChannel
 - lacp port-priority command [2-251](#)
 - lacp system-priority command [2-253](#)
 - Layer 2 mode, enabling [2-726](#)
 - Layer 2 protocol ports, displaying [2-540](#)
 - Layer 2 protocol-tunnel
 - error detection for [2-140](#)
 - error recovery timer [2-146](#)
 - Layer 2 protocol tunnel counters [2-57](#)
 - Layer 2 protocol tunneling error recovery [2-248](#)
 - Layer 2 traceroute
 - IP addresses [2-771](#)
 - MAC addresses [2-768](#)
 - Layer 3 mode, enabling [2-726](#)
 - line configuration mode [1-3, 1-5](#)
 - Link Aggregation Control Protocol
 - See EtherChannel
 - link flap
 - error detection for [2-140](#)
 - error recovery timer [2-146](#)
 - link state group command [2-259](#)
 - link state track command [2-261](#)
 - load-distribution methods for EtherChannel [2-365](#)
 - location (global configuration) command [2-255](#)
 - location (interface configuration) command [2-257](#)
 - logging event command [2-262](#)
 - logging event power-inline-status command [2-263](#)
 - logging file command [2-264](#)
 - logical interface [2-154](#)
 - loopback error
 - detection for [2-140](#)
 - recovery timer [2-146](#)
 - loop guard, for spanning tree [2-672, 2-676](#)
-
- M**
- mac access-group command [2-266](#)
 - MAC access-groups, displaying [2-552](#)
 - MAC access list configuration mode [2-268](#)
 - mac access-list extended command [2-268](#)
 - MAC access lists [2-92](#)

MAC addresses

displaying

aging time [2-558](#)all [2-556](#)dynamic [2-562](#)MAC address-table move updates [2-566](#)notification settings [2-568](#)number of addresses in a VLAN [2-560](#)per interface [2-564](#)per VLAN [2-572](#)static [2-570](#)static and dynamic entries [2-554](#)

dynamic

aging time [2-270](#)deleting [2-59](#)displaying [2-562](#)enabling MAC address notification [2-273](#)enabling MAC address-table move update [2-271](#)matching [2-288](#)persistent stack [2-715](#)

static

adding and removing [2-275](#)displaying [2-570](#)dropping on an interface [2-276](#)tables [2-556](#)MAC address notification, debugging [B-23](#)mac address-table aging-time [2-266, 2-288](#)mac address-table aging-time command [2-270](#)mac address-table move update command [2-271](#)mac address-table notification command [2-273](#)mac address-table static command [2-275](#)mac address-table static drop command [2-276](#)macro apply command [2-278](#)macro description command [2-281](#)macro global command [2-282](#)macro global description command [2-285](#)macro name command [2-286](#)

macros

adding a description [2-281](#)adding a global description [2-285](#)applying [2-282](#)creating [2-286](#)displaying [2-598](#)interface range [2-82, 2-156](#)specifying parameter values [2-282](#)tracing [2-282](#)

manual

audience [xix](#)purpose of [xix](#)

maps

QoS

defining [2-302](#)displaying [2-582](#)

VLAN

creating [2-792](#)defining [2-288](#)displaying [2-636](#)match (access-map configuration) command [2-288](#)match (class-map configuration) command [2-290](#)

maximum transmission unit

See MTU

mdix auto command [2-292](#)

member switches

See clusters

memory (boot loader) command [A-13](#)mkdir (boot loader) command [A-15](#)

MLD snooping

configuring [2-237, 2-239](#)configuring queries [2-233, 2-235](#)configuring topology change notification [2-241](#)displaying [2-530, 2-532, 2-534, 2-536](#)enabling [2-231](#)MLD snooping on a VLAN, enabling [2-243](#)mls qos aggregate-policer command [2-296](#)mls qos command [2-294](#)mls qos cos command [2-298](#)

- mls qos dscp-mutation command [2-300](#)
- mls qos map command [2-302](#)
- mls qos queue-set output buffers command [2-306](#)
- mls qos queue-set output threshold command [2-308](#)
- mls qos rewrite ip dscp command [2-310](#)
- mls qos srr-queue input bandwidth command [2-312](#)
- mls qos srr-queue input buffers command [2-314](#)
- mls qos-srr-queue input cos-map command [2-316](#)
- mls qos srr-queue input dscp-map command [2-318](#)
- mls qos srr-queue input priority-queue command [2-320](#)
- mls qos srr-queue input threshold command [2-322](#)
- mls qos-srr-queue output cos-map command [2-324](#)
- mls qos srr-queue output dscp-map command [2-326](#)
- mls qos trust command [2-328](#)
- mls qos vlan-based command [2-330](#)
- mode, MVR [2-336](#)
- Mode button, and password recovery [2-399](#)
- modes, commands [1-2](#)
- monitor session command [2-331](#)
- more (boot loader) command [A-16](#)
- MSTP
 - displaying [2-614](#)
 - interoperability [2-66](#)
 - link type [2-674](#)
 - MST region
 - aborting changes [2-680](#)
 - applying changes [2-680](#)
 - configuration name [2-680](#)
 - configuration revision number [2-680](#)
 - current or pending display [2-680](#)
 - displaying [2-614](#)
 - MST configuration mode [2-680](#)
 - VLANs-to-instance mapping [2-680](#)
 - path cost [2-682](#)
 - protocol mode [2-678](#)
 - restart protocol migration process [2-66](#)
- MSTP (continued)
 - root port
 - loop guard [2-672](#)
 - preventing from becoming designated [2-672](#)
 - restricting which can be root [2-672](#)
 - root guard [2-672](#)
 - root switch
 - affects of extended system ID [2-670](#)
 - hello-time [2-685, 2-693](#)
 - interval between BPDU messages [2-686](#)
 - interval between hello BPDU messages [2-685, 2-693](#)
 - max-age [2-686](#)
 - maximum hop count before discarding BPDU [2-687](#)
 - port priority for selection of [2-689](#)
 - primary or secondary [2-693](#)
 - switch priority [2-692](#)
 - state changes
 - blocking to forwarding state [2-699](#)
 - enabling BPDU filtering [2-662, 2-697](#)
 - enabling BPDU guard [2-664, 2-697](#)
 - enabling Port Fast [2-697, 2-699](#)
 - forward-delay time [2-684](#)
 - length of listening and learning states [2-684](#)
 - rapid transition to forwarding [2-674](#)
 - shutting down Port Fast-enabled ports [2-697](#)
 - state information display [2-613](#)
- MTU
 - configuring size [2-765](#)
 - displaying global setting [2-625](#)
- Multicast Listener Discovery
 - See MLD
- multicast group address, MVR [2-339](#)
- multicast groups, MVR [2-337](#)
- Multicast Listener Discovery
 - See MLD
- multicast router learning method [2-218](#)
- multicast router ports, configuring [2-218](#)

multicast router ports, IPv6 [2-243](#)
 multicast storm control [2-718](#)
 multicast VLAN, MVR [2-336](#)
 multicast VLAN registration
 See MVR
 Multiple Spanning Tree Protocol
 See MSTP
 MVR
 and address aliasing [2-337](#)
 configuring [2-336](#)
 configuring interfaces [2-339](#)
 debug messages, display [B-28](#)
 displaying [2-590](#)
 displaying interface information [2-592](#)
 members, displaying [2-594](#)
 mvr (global configuration) command [2-336](#)
 mvr (interface configuration) command [2-339](#)
 mvr vlan group command [2-340](#)

N

native VLANs [2-756](#)
 native VLAN tagging [2-797](#)
 Network Admission Control Software Configuration Guide [2-166, 2-168](#)
 Network Assistant requirements [xx](#)
 nonegotiate, speed [2-707](#)
 nonegotiating DTP messaging [2-741](#)
 non-IP protocols
 denying [2-92](#)
 forwarding [2-355](#)
 non-IP traffic access lists [2-268](#)
 non-IP traffic forwarding
 denying [2-92](#)
 permitting [2-355](#)
 non-stop forwarding [2-342](#)
 normal-range VLANs [2-780, 2-786](#)
 note, description [xx](#)

no vlan command [2-780, 2-790](#)
 nsf command [2-342](#)

O

online diagnostics
 displaying
 configured boot-up coverage level [2-450](#)
 current scheduled tasks [2-450](#)
 event logs [2-450](#)
 supported test suites [2-450](#)
 test ID [2-450](#)
 test results [2-450](#)
 test statistics [2-450](#)
 global configuration mode
 clearing health monitoring diagnostic test schedule [2-52](#)
 clearing test-based testing schedule [2-98](#)
 setting health monitoring diagnostic testing [2-52](#)
 setting test-based testing [2-98](#)
 setting up health monitoring diagnostic test schedule [2-52](#)
 setting up test-based testing [2-98](#)
 health monitoring diagnostic tests, configuring [2-95](#)
 scheduled switchover
 disabling [2-98](#)
 enabling [2-98](#)
 scheduling
 enabling [2-98](#)
 removing [2-98](#)
 testing, starting [2-100](#)
 test interval, setting [2-98](#)

P

PAgP
 See EtherChannel
 pagp learn-method command [2-343](#)
 pagp port-priority command [2-345](#)

- password, VTP [2-806, 2-810](#)
- password-recovery mechanism, enabling and disabling [2-399](#)
- permit (ARP access-list configuration) command [2-347](#)
- permit (IPv6) command [2-349](#)
- permit (MAC access-list configuration) command [2-355](#)
- per-VLAN spanning-tree plus
 - See STP
- physical-port learner [2-343](#)
- PID, displaying [2-497](#)
- PIM-DVMRP, as multicast router learning method [2-218](#)
- PoE
 - configuring the power budget [2-370](#)
 - configuring the power management mode [2-367](#)
 - displaying controller register values [2-444](#)
 - displaying power management information [2-606](#)
 - logging of status [2-263](#)
- police aggregate command [2-360](#)
- police command [2-358](#)
- policed-DSCP map [2-302](#)
- policy-map command [2-362](#)
- policy maps
 - applying to an interface [2-401, 2-408](#)
 - creating [2-362](#)
 - displaying [2-601](#)
 - hierarchical [2-363](#)
 - policers
 - displaying [2-575](#)
 - for a single class [2-358](#)
 - for multiple classes [2-296, 2-360](#)
 - policed-DSCP map [2-302](#)
 - traffic classification
 - defining the class [2-45](#)
 - defining trust states [2-773](#)
 - setting DSCP or IP precedence values [2-406](#)
- Port Aggregation Protocol
 - See EtherChannel
- port-based authentication
 - AAA method list [2-3](#)
 - debug messages, display [B-7](#)
 - enabling IEEE 802.1x
 - globally [2-102](#)
 - per interface [2-128](#)
 - guest VLAN [2-116](#)
 - host modes [2-119](#)
 - IEEE 802.1x AAA accounting methods [2-1](#)
 - initialize an interface [2-121, 2-134](#)
 - MAC authentication bypass [2-122](#)
 - manual control of authorization state [2-128](#)
 - PAE as authenticator [2-127](#)
 - periodic re-authentication
 - enabling [2-132](#)
 - time between attempts [2-135](#)
 - quiet period between failed authentication exchanges [2-135](#)
 - re-authenticating IEEE 802.1x-enabled ports [2-130](#)
 - resetting configurable IEEE 802.1x parameters [2-114](#)
 - switch-to-authentication server retransmission time [2-135](#)
 - switch-to-client frame-retransmission number [2-124 to 2-125](#)
 - switch-to-client retransmission time [2-135](#)
 - test for IEEE 802.1x readiness [2-133](#)
- port-channel load-balance command [2-365](#)
- Port Fast, for spanning tree [2-699](#)
- port ranges, defining [2-82](#)
- ports, debugging [B-77](#)
- ports, protected [2-754](#)
- port security
 - aging [2-748](#)
 - debug messages, display [B-79](#)
 - enabling [2-743](#)
 - violation error recovery [2-146](#)
- port trust states for QoS [2-328](#)
- port types, MVR [2-339](#)

power information, displaying [2-464](#)

power inline command [2-367](#)

power inline consumption command [2-370](#)

Power over Ethernet

- See PoE

priority-queue command [2-372](#)

priority value, stack member [2-621, 2-721](#)

private-vlan command [2-374](#)

private-vlan mapping command [2-377](#)

private VLANs

- association [2-752](#)
- configuring [2-374](#)
- configuring ports [2-739](#)
- displaying [2-631](#)
- host ports [2-739](#)
- mapping
 - configuring [2-752](#)
 - displaying [2-483](#)
- promiscuous ports [2-739](#)

privileged EXEC mode [1-2, 1-3](#)

product identification information, displaying [2-497](#)

promiscuous ports, private VLANs [2-739](#)

protected ports, displaying [2-489](#)

pruning

- VLANs [2-756](#)
- VTP
 - displaying interface information [2-483](#)
 - enabling [2-806, 2-810](#)

pruning-eligible VLAN list [2-758](#)

PVST+

- See STP

Q

QoS

auto-QoS

- configuring [2-22](#)
- debug messages, display [1-6, B-2](#)
- displaying [2-418](#)

QoS (continued)

class maps

- creating [2-47](#)
- defining the match criteria [2-290](#)
- displaying [2-427](#)

defining the CoS value for an incoming packet [2-298](#)

displaying configuration information [2-418, 2-574](#)

DSCP transparency [2-310](#)

DSCP trusted ports

- applying DSCP-to-DSCP-mutation map to [2-300](#)
- defining DSCP-to-DSCP-mutation map [2-302](#)

egress queues

- allocating buffers [2-306](#)
- defining the CoS output queue threshold map [2-324](#)
- defining the DSCP output queue threshold map [2-326](#)
- displaying buffer allocations [2-578](#)
- displaying CoS output queue threshold map [2-582](#)
- displaying DSCP output queue threshold map [2-582](#)
- displaying queueing strategy [2-578](#)
- displaying queue-set settings [2-585](#)
- enabling bandwidth shaping and scheduling [2-711](#)
- enabling bandwidth sharing and scheduling [2-713](#)
- limiting the maximum output on a port [2-709](#)
- mapping a port to a queue-set [2-379](#)
- mapping CoS values to a queue and threshold [2-324](#)
- mapping DSCP values to a queue and threshold [2-326](#)
- setting maximum and reserved memory allocations [2-308](#)
- setting WTD thresholds [2-308](#)

enabling [2-294](#)

QoS (continued)

ingress queues

- allocating buffers [2-314](#)
- assigning SRR scheduling weights [2-312](#)
- defining the CoS input queue threshold map [2-316](#)
- defining the DSCP input queue threshold map [2-318](#)
- displaying buffer allocations [2-578](#)
- displaying CoS input queue threshold map [2-582](#)
- displaying DSCP input queue threshold map [2-582](#)
- displaying queueing strategy [2-578](#)
- displaying settings for [2-576](#)
- enabling the priority queue [2-320](#)
- mapping CoS values to a queue and threshold [2-316](#)
- mapping DSCP values to a queue and threshold [2-318](#)
- setting WTD thresholds [2-322](#)

maps

- defining [2-302](#), [2-316](#), [2-318](#), [2-324](#), [2-326](#)
- displaying [2-582](#)

policy maps

- applying an aggregate policer [2-360](#)
- applying to an interface [2-401](#), [2-408](#)
- creating [2-362](#)
- defining policers [2-296](#), [2-358](#)
- displaying policers [2-575](#)
- displaying policy maps [2-601](#)
- hierarchical [2-363](#)
- policed-DSCP map [2-302](#)
- setting DSCP or IP precedence values [2-406](#)
- traffic classifications [2-45](#)
- trust states [2-773](#)

port trust states [2-328](#)queues, enabling the expedite [2-372](#)

QoS (continued)

statistics

- in-profile and out-of-profile packets [2-578](#)
 - packets enqueued or dropped [2-578](#)
 - sent and received CoS values [2-578](#)
 - sent and received DSCP values [2-578](#)
 - trusted boundary for IP phones [2-328](#)
 - VLAN-based [2-330](#)
- quality of service
- See QoS
- querytime, MVR [2-336](#)
- queue-set command [2-379](#)

R

- radius-server dead-criteria command [2-380](#)
- radius-server host command [2-382](#)
- rapid per-VLAN spanning-tree plus
 - See STP
- rapid PVST+
 - See STP
- rcommand command [2-384](#)
- re-authenticating IEEE 802.1x-enabled ports [2-130](#)
- re-authentication
 - periodic [2-132](#)
 - time between attempts [2-135](#)
- receiver ports, MVR [2-339](#)
- receiving flow-control packets [2-152](#)
- recovery mechanism
 - causes [2-146](#)
 - display [2-51](#), [2-424](#), [2-467](#), [2-471](#)
 - timer interval [2-147](#)
- redundancy for cluster switches [2-78](#)
- reload command [2-386](#)
- remote command [2-388](#)
- remote-span command [2-389](#)
- Remote Switched Port Analyzer
 - See RSPAN
- rename (boot loader) command [A-17](#)

renew ip dhcp snooping database command [2-391](#)

requirements

cluster [xxi](#)

device manager [xx](#)

Network Assistant [xx](#)

reset (boot loader) command [A-18](#)

reset command [2-795](#)

resource templates, displaying [2-609](#)

restricted VLAN

See dot1x auth-fail vlan

rmdir (boot loader) command [A-19](#)

rmon collection stats command [2-393](#)

root guard, for spanning tree [2-672](#)

routed ports

IP addresses on [2-165](#)

number supported [2-165](#)

RSPAN

configuring [2-331](#)

displaying [2-588](#)

filter RSPAN traffic [2-331](#)

remote-span command [2-389](#)

sessions

displaying [2-588](#)

S

scheduled switchover

disabling [2-98](#)

enabling [2-98](#)

SDM mismatch mode [2-396, 2-622](#)

sdm prefer command [2-395](#)

SDM templates

allowed resources [2-397](#)

and stacking [2-396](#)

displaying [2-609](#)

dual IPv4 and IPv6 [2-395](#)

secure ports, limitations [2-745](#)

sending flow-control packets [2-152](#)

service password-recovery command [2-399](#)

service-policy command [2-401](#)

session command [2-404](#)

set (boot loader) command [A-20](#)

set command [2-406](#)

setup command [2-408](#)

setup express command [2-411](#)

show access-lists command [2-413](#)

show archive status command [2-416](#)

show arp access-list command [2-417](#)

show auto qos command [2-418](#)

show boot command [2-422](#)

show cable-diagnostics tdr command [2-424](#)

show changes command [2-795](#)

show class-map command [2-427](#)

show cluster candidates command [2-430](#)

show cluster command [2-428](#)

show cluster members command [2-432](#)

show controllers cpu-interface command [2-434](#)

show controllers ethernet-controller command [2-436](#)

show controllers power inline command [2-444](#)

show controllers team command [2-446](#)

show controller utilization command [2-448](#)

show current command [2-795](#)

show dot1q-tunnel command [2-453](#)

show dot1x command [2-454](#)

show dtp [2-459](#)

show eap command [2-461](#)

show env command [2-464](#)

show errdisable detect command [2-467](#)

show errdisable flap-values command [2-469](#)

show errdisable recovery command [2-471](#)

show etherchannel command [2-473](#)

show fallback profile command [2-476](#)

show flowcontrol command [2-478](#)

show idprom command [2-480](#)

show interfaces command [2-483](#)

show interfaces counters command [2-494](#)

show inventory command [2-497](#)

show ip arp inspection command [2-498](#)

- show ipc command [2-524](#)
- show ip dhcp snooping binding command [2-503](#)
- show ip dhcp snooping command [2-502](#)
- show ip dhcp snooping database command [2-505, 2-507](#)
- show ip igmp profile command [2-510](#)
- show ip igmp snooping address command [2-532](#)
- show ip igmp snooping command [2-511, 2-530](#)
- show ip igmp snooping groups command [2-514](#)
- show ip igmp snooping mrouter command [2-516, 2-534](#)
- show ip igmp snooping querier command [2-518, 2-536](#)
- show ip source binding command [2-520](#)
- show ipv6 access-list command [2-528](#)
- show ipv6 route updated [2-538](#)
- show ip verify source command [2-522](#)
- show l2protocol-tunnel command [2-540](#)
- show lacp command [2-543](#)
- show link state group command [2-550](#)
- show location [2-547](#)
- show mac access-group command [2-552](#)
- show mac address-table address command [2-556](#)
- show mac address-table aging time command [2-558](#)
- show mac address-table command [2-554](#)
- show mac address-table count command [2-560](#)
- show mac address-table dynamic command [2-562](#)
- show mac address-table interface command [2-564](#)
- show mac address-table move update command [2-566](#)
- show mac address-table notification command [2-61, 2-568, B-25](#)
- show mac address-table static command [2-570](#)
- show mac address-table vlan command [2-572](#)
- show mls qos aggregate-policer command [2-575](#)
- show mls qos command [2-574](#)
- show mls qos input-queue command [2-576](#)
- show mls qos interface command [2-578](#)
- show mls qos maps command [2-582](#)
- show mls qos queue-set command [2-585](#)
- show mls qos vlan command [2-587](#)
- show monitor command [2-588](#)
- show mvr command [2-590](#)
- show mvr interface command [2-592](#)
- show mvr members command [2-594](#)
- show pagp command [2-596](#)
- show parser macro command [2-598](#)
- show platform acl command [C-2](#)
- show platform backup interface command [C-3](#)
- show platform configuration command [C-4](#)
- show platform etherchannel command [C-5](#)
- show platform forward command [C-6](#)
- show platform frontend-controller command [C-8](#)
- show platform igmp snooping command [C-9](#)
- show platform ipc trace command [C-17](#)
- show platform ip multicast command [C-11](#)
- show platform ip unicast command [C-12](#)
- show platform ipv6 unicast command [C-18](#)
- show platform ip wccp command [C-16](#)
- show platform layer4op command [C-20](#)
- show platform mac-address-table command [C-21](#)
- show platform messaging command [C-22](#)
- show platform monitor command [C-23](#)
- show platform mvr table command [C-24](#)
- show platform pm command [C-25](#)
- show platform port-asic command [C-26](#)
- show platform port-security command [C-31](#)
- show platform qos command [C-32](#)
- show platform resource-manager command [C-33](#)
- show platform snmp counters command [C-35](#)
- show platform spanning-tree command [C-36](#)
- show platform stack-manager command [C-38](#)
- show platform stp-instance command [C-37](#)
- show platform tb command [C-40](#)
- show platform team command [C-42](#)
- show platform vlan command [C-45](#)
- show policy-map command [2-601](#)
- show port security command [2-603](#)
- show power inline command [2-606](#)
- show proposed command [2-795](#)
- show sdm prefer command [2-609](#)
- show setup express command [2-612](#)

- show spanning-tree command [2-613](#)
- show storm-control command [2-619](#)
- show switch command [2-621](#)
- show system mtu command [2-625](#)
- show trust command [2-773](#)
- show udd command [2-626](#)
- show version command [2-629](#)
- show vlan access-map command [2-636](#)
- show vlan command [2-631](#)
- show vlan command, fields [2-633](#)
- show vlan filter command [2-638](#)
- show vmps command [2-639](#)
- show vtp command [2-642](#)
- shutdown command [2-647](#)
- shutdown threshold, Layer 2 protocol tunneling [2-247](#)
- shutdown vlan command [2-648](#)
- small violation-rate command [2-649](#)
- Smartports macros
 - See macros
- SNMP host, specifying [2-655](#)
- SNMP informs, enabling the sending of [2-651](#)
- snmp-server enable traps command [2-651](#)
- snmp-server host command [2-655](#)
- snmp trap mac-notification command [2-659](#)
- SNMP traps
 - enabling MAC address notification trap [2-659](#)
 - enabling the MAC address notification feature [2-273](#)
 - enabling the sending of [2-651](#)
- SoftPhone
 - See Cisco SoftPhone
- software images
 - copying [2-8](#)
 - deleting [2-84](#)
 - downloading [2-11](#)
 - upgrading [2-8, 2-11](#)
 - uploading [2-18](#)
- software version, displaying [2-629](#)
- source ports, MVR [2-339](#)
- SPAN
 - configuring [2-331](#)
 - debug messages, display [B-26](#)
 - displaying [2-588](#)
 - filter SPAN traffic [2-331](#)
 - sessions
 - add interfaces to [2-331](#)
 - displaying [2-588](#)
 - start new [2-331](#)
 - spanning-tree backbonefast command [2-661](#)
 - spanning-tree bpdufilter command [2-662](#)
 - spanning-tree bpduguard command [2-664](#)
 - spanning-tree cost command [2-666](#)
 - spanning-tree etherchannel command [2-668](#)
 - spanning-tree extend system-id command [2-670](#)
 - spanning-tree guard command [2-672](#)
 - spanning-tree link-type command [2-674](#)
 - spanning-tree loopguard default command [2-676](#)
 - spanning-tree mode command [2-678](#)
 - spanning-tree mst configuration command [2-680](#)
 - spanning-tree mst cost command [2-682](#)
 - spanning-tree mst forward-time command [2-684](#)
 - spanning-tree mst hello-time command [2-685](#)
 - spanning-tree mst max-age command [2-686](#)
 - spanning-tree mst max-hops command [2-687](#)
 - spanning-tree mst port-priority command [2-689](#)
 - spanning-tree mst pre-standard command [2-691](#)
 - spanning-tree mst priority command [2-692](#)
 - spanning-tree mst root command [2-693](#)
 - spanning-tree portfast (global configuration) command [2-697](#)
 - spanning-tree portfast (interface configuration) command [2-699](#)
 - spanning-tree port-priority command [2-695](#)
- Spanning Tree Protocol
 - See STP
 - spanning-tree transmit hold-count command [2-701](#)
 - spanning-tree uplinkfast command [2-702](#)
 - spanning-tree vlan command [2-704](#)

- speed command [2-707](#)
- srr-queue bandwidth limit command [2-709](#)
- srr-queue bandwidth share command [2-713](#)
- SSH, configuring version [2-225](#)
- stack-mac persistent timer command [2-715](#)
- stack member
 - access [2-404](#)
 - number [2-621, 2-724](#)
 - priority value [2-721](#)
 - provisioning [2-722](#)
 - reloading [2-386](#)
- stacks, switch
 - MAC address [2-715](#)
 - provisioning a new member [2-722](#)
 - reloading [2-386](#)
 - stack member access [2-404](#)
 - stack member number [2-621, 2-724](#)
 - stack member priority value [2-621, 2-721](#)
- static-access ports, configuring [2-728](#)
- statistics, Ethernet group [2-393](#)
- sticky learning, enabling [2-743](#)
- storm-control command [2-718](#)
- STP
 - BackboneFast [2-661](#)
 - counters, clearing [2-65](#)
 - debug messages, display
 - BackboneFast events [B-83](#)
 - MSTP [B-86](#)
 - optimized BPDUs handling [B-85](#)
 - spanning-tree activity [B-81](#)
 - switch shim [B-88](#)
 - transmitted and received BPDUs [B-84](#)
 - UplinkFast [B-90](#)
 - detection of indirect link failures [2-661](#)
 - enabling protocol tunneling for [2-247](#)
 - EtherChannel misconfiguration [2-668](#)
 - extended system ID [2-670](#)
 - path cost [2-666](#)
 - protocol modes [2-678](#)
- STP (continued)
 - root port
 - accelerating choice of new [2-702](#)
 - loop guard [2-672](#)
 - preventing from becoming designated [2-672](#)
 - restricting which can be root [2-672](#)
 - root guard [2-672](#)
 - UplinkFast [2-702](#)
 - root switch
 - affects of extended system ID [2-670, 2-705](#)
 - hello-time [2-704](#)
 - interval between BPDU messages [2-704](#)
 - interval between hello BPDU messages [2-704](#)
 - max-age [2-704](#)
 - port priority for selection of [2-695](#)
 - primary or secondary [2-704](#)
 - switch priority [2-704](#)
 - state changes
 - blocking to forwarding state [2-699](#)
 - enabling BPDU filtering [2-662, 2-697](#)
 - enabling BPDU guard [2-664, 2-697](#)
 - enabling Port Fast [2-697, 2-699](#)
 - enabling timer to recover from error state [2-146](#)
 - forward-delay time [2-704](#)
 - length of listening and learning states [2-704](#)
 - shutting down Port Fast-enabled ports [2-697](#)
 - state information display [2-613](#)
 - VLAN options [2-692, 2-704](#)
- SVIs, creating [2-159](#)
- Switched Port Analyzer
 - See SPAN
- switching characteristics
 - modifying [2-726](#)
 - returning to interfaces [2-726](#)
- switchport access command [2-728](#)
- switchport backup interface command [2-730](#)
- switchport block command [2-734](#)
- switchport command [2-726](#)
- switchport host command [2-735](#)

switchport mode command [2-736](#)
 switchport mode private-vlan command [2-739](#)
 switchport negotiate command [2-741](#)
 switchport port-security aging command [2-748](#)
 switchport port-security command [2-743](#)
 switchport priority extend command [2-750](#)
 switchport private-vlan command [2-752](#)
 switchport protected command [2-754](#)
 switchports, displaying [2-483](#)
 switchport trunk command [2-756](#)
 switchport voice vlan command [2-760, 2-761](#)
 switch priority command [2-721](#)
 switch provision command [2-722](#)
 switch renumber command [2-724](#)
 system env temperature threshold yellow command [2-763](#)
 system message logging [2-263](#)
 system message logging, save message to flash [2-264](#)
 system mtu command [2-765](#)
 system resource templates [2-395](#)

T

tar files, creating, listing, and extracting [2-15](#)
 TDR, running [2-767](#)
 Telnet, using to communicate to cluster switches [2-384](#)
 temperature information, displaying [2-464](#)
 templates, system resources [2-395](#)
 test cable-diagnostics tdr command [2-767](#)
 traceroute mac command [2-768](#)
 traceroute mac ip command [2-771](#)
 trunking, VLAN mode [2-736](#)
 trunk mode [2-736](#)
 trunk ports [2-736](#)
 trunks, to non-DTP device [2-737](#)
 trusted boundary for QoS [2-328](#)
 trusted port states for QoS [2-328](#)
 tunnel ports, Layer 2 protocol, displaying [2-540](#)
 type (boot loader) command [A-23](#)

U

UDLD

aggressive mode [2-775, 2-777](#)
 debug messages, display [B-99](#)
 enable globally [2-775](#)
 enable per interface [2-777](#)
 error recovery timer [2-146](#)
 message timer [2-775](#)
 normal mode [2-775, 2-777](#)
 reset a shutdown interface [2-779](#)
 status [2-626](#)
 udd command [2-775](#)
 udd port command [2-777](#)
 udd reset command [2-779](#)
 unicast storm control [2-718](#)
 UniDirectional Link Detection
 See UDLD
 unknown multicast traffic, preventing [2-734](#)
 unknown unicast traffic, preventing [2-734](#)
 unset (boot loader) command [A-24](#)
 upgrading
 software images
 copying [2-8](#)
 downloading [2-11](#)
 monitoring status of [2-416](#)
 upgrading information
 See release notes
 UplinkFast, for STP [2-702](#)
 user EXEC mode [1-2, 1-3](#)

V

version (boot loader) command [A-26](#)
 version mismatch mode [2-622](#)
 vlan (global configuration) command [2-780](#)
 vlan (VLAN configuration) command [2-786](#)
 vlan access-map command [2-792](#)
 VLAN access map configuration mode [2-792](#)

- VLAN access maps
 - actions [2-6](#)
 - displaying [2-636](#)
- VLAN-based QoS [2-330](#)
- VLAN configuration
 - rules [2-783, 2-788](#)
 - saving [2-780, 2-790](#)
- VLAN configuration mode
 - commands
 - VLAN [2-786](#)
 - VTP [2-810](#)
 - description [1-5](#)
 - entering [2-794](#)
 - summary [1-3](#)
- vlan database command [2-794](#)
- vlan dot1q tag native command [2-797](#)
- vlan filter command [2-799](#)
- VLAN filters, displaying [2-638](#)
- VLAN ID range [2-780, 2-786](#)
- VLAN maps
 - applying [2-799](#)
 - creating [2-792](#)
 - defining [2-288](#)
 - displaying [2-636](#)
- VLAN Query Protocol
 - See VQP
- VLANs
 - adding [2-780](#)
 - configuring [2-780, 2-786](#)
 - debug messages, display
 - ISL [B-95](#)
 - VLAN IOS file system error tests [B-93](#)
 - VLAN manager activity [B-91](#)
 - VTP [B-97](#)
 - displaying configurations [2-631](#)
 - enabling guest VLAN supplicant [2-105, 2-115, 2-151](#)
 - extended-range [2-780](#)
- VLANs (continued)
 - MAC addresses
 - displaying [2-572](#)
 - number of [2-560](#)
 - media types [2-783, 2-788](#)
 - normal-range [2-780, 2-786](#)
 - private [2-739](#)
 - configuring [2-374](#)
 - displaying [2-631](#)
 - See also private VLANs
 - restarting [2-648](#)
 - saving the configuration [2-780](#)
 - shutting down [2-648](#)
 - SNMP traps for VTP [2-653, 2-656](#)
 - suspending [2-648](#)
 - variables [2-786](#)
- VLAN Trunking Protocol
 - See VTP
- VM mode [2-622](#)
- VMPS
 - configuring servers [2-804](#)
 - displaying [2-639](#)
 - error recovery timer [2-147](#)
 - reconfirming dynamic VLAN assignments [2-801](#)
- vmpls reconfirm (global configuration) command [2-802](#)
- vmpls reconfirm (privileged EXEC) command [2-801](#)
- vmpls retry command [2-803](#)
- vmpls server command [2-804](#)
- voice VLAN
 - configuring [2-760, 2-761](#)
 - setting port priority [2-750](#)
- VQP
 - and dynamic-access ports [2-729](#)
 - clearing client statistics [2-67](#)
 - displaying information [2-639](#)
 - per-server retry count [2-803](#)
 - reconfirmation interval [2-802](#)
 - reconfirming dynamic VLAN assignments [2-801](#)

VTP

changing characteristics [2-806](#)

clearing pruning counters [2-68](#)

configuring

domain name [2-806, 2-810](#)

file name [2-806](#)

mode [2-806, 2-810](#)

password [2-806, 2-810](#)

counters display fields [2-643](#)

displaying information [2-642](#)

enabling

pruning [2-806, 2-810](#)

tunneling for [2-247](#)

Version 2 [2-806, 2-810](#)

mode [2-806, 2-810](#)

pruning [2-806, 2-810](#)

saving the configuration [2-780, 2-790](#)

statistics [2-642](#)

status [2-642](#)

status display fields [2-645](#)

vtp (global configuration) command [2-806](#)

vtp (VLAN configuration) command [2-810](#)

W

wireless controller, accessing [2-404](#)

wireless controller switch. [B-102](#)

X

XENPAK module serial EEPROM information [2-440, 2-480](#)