



Numerics

4K VLANs (support for 4,096 VLANs) [25-2](#)

802.1AE Tagging [63-2](#)

802.1Q

Layer 2 protocol tunneling

See Layer 2 protocol tunneling

mapping to ISL VLANs [25-7](#)

trunks [20-4](#)

restrictions [20-2](#)

tunneling

configuration guidelines [28-1](#)

configuring tunnel ports [28-6](#)

overview [28-4](#)

802.1Q Ethertype

specifying custom [20-15](#)

802.1X [76-1](#)

802.1x accounting [76-43](#)

802.3ad

See LACP

802.3af [19-2](#)

802.3at [19-2](#)

802.3x Flow Control [10-9](#)

A

AAA [70-3](#)

fail policy [76-8, 77-5](#)

AAA (authentication, authorization, and accounting). See also port-based authentication. [76-6, 77-2](#)

aaa accounting dot1x command [76-44](#)

aaa accounting system command [76-44](#)

abbreviating commands [2-5](#)

access, restricting MIB [79-10](#)

access control entries and lists [62-1](#)

access-enable host timeout (not supported) [62-4](#)

access port, configuring [20-14](#)

access rights [79-9](#)

access setup, example [79-11](#)

accounting

with 802.1x [76-43](#)

with IEEE 802.1x [76-16](#)

ACEs and ACLs [62-1](#)

ACLs

downloadable [77-2](#)

downloadable (dACLs) [76-24](#)

Filter-ID [76-25](#)

per-user [76-24](#)

port

defined [66-2](#)

redirect URL [76-25](#)

static sharing [76-25](#)

acronyms, list of [A-1](#)

activating lawful intercept [79-8](#)

admin function (mediation device) [79-7, 79-8](#)

administration, definition [79-6](#)

advertisements, VTP [24-4](#)

aggregate label [36-2, 36-5](#)

aggregate policing

see QoS policing

aging time

accelerated

for MSTP [30-45](#)

maximum

for MSTP [30-45, 30-46](#)

aging-time

IP MLS 48-12

alarms

- major 14-4
- minor 14-4

Allow DHCP Option 82 on Untrusted Port

- configuring 71-10
- understanding 71-5

any transport over MPLS (AToM) 38-3

- Ethernet over MPLS 38-3

ARP ACL 58-69, 62-12

ARP spoofing 73-3

AToM 38-3

audience 1-xliii

Authentication, Authorization, and Accounting (AAA) 70-3

authentication control-direction command 76-53

authentication event command 76-45

authentication failed VLAN

- See restricted VLAN

authentication open comand 76-15

authentication password, VTP 24-5

authentication periodic command 76-38, 76-50

authentication port-control command 76-45

authentication timer reauthenticate command 76-38

authorized ports with 802.1X 76-12

auto enablement 76-30

automatic QoS

- configuration guidelines and restrictions 59-2
- macros 59-4
- overview 59-2

AutoQoS 59-1

auto-sync command 9-4

B

BackboneFast

- See STP BackboneFast

backup interfaces

- See Flex Links

binding database, DHCP snooping

- See DHCP snooping binding database

binding table, DHCP snooping

- See DHCP snooping binding database

blocking state, STP 30-8

BPDU

- RSTP format 30-16

BPDU guard

- See STP BPDU guard

BPDUs

- Bridge Assurance 31-5
- Shared Spanning Tree Protocol (SSTP) 31-20

Bridge Assurance

- description 31-4 to 31-6
- inconsistent state 31-5
- supported protocols and link types 31-5

bridge groups 34-1

bridge ID

- See STP bridge ID

bridge priority, STP 30-34

bridge protocol data units

- see BPDUs

bridging 34-1

broadcast storms

- see traffic-storm control

C

CALEA, See Communications Assistance for Law Enforcement Act (CALEA)

Call Home

- description 50-3
- message format options 50-4
- messages
 - format options 50-4

call home 50-1

- alert groups 50-31
- contact information 50-21
- destination profiles 50-22

- displaying information 50-45
- pattern matching 50-36
- periodic notification 50-33
- rate limit messages 50-38
- severity threshold 50-33
- smart call home feature 50-5
- SMTP server 50-2
- testing communications 50-38
- call home alert groups
 - configuring 50-31
 - description 50-31
 - subscribing 50-31
- call home customer information
 - entering information 50-21
- call home destination profiles
 - attributes 50-23
 - description 50-23
 - displaying 50-48
- call home notifications
 - full-txt format for syslog 50-17
 - XML format for syslog 50-17
- CDP
 - host presence detection 76-14, 78-4
 - to configure Cisco phones 18-3
- CEF
 - configuring
 - RP 32-5
 - supervisor engine 32-4
 - examples 32-3
 - Layer 3 switching 32-2
 - packet rewrite 32-2
- certificate authority (CA) 50-2
- CGMP
 - disabling automatic detection 40-13
- channel-group group
 - command 22-9, 22-13, 22-14, 22-15, 22-16
 - command example 22-9, 22-14
- Cisco Discovery Protocol
 - See CDP
- Cisco Emergency Responder 18-4
- Cisco EnergyWise 12-1
- Cisco Express Forwarding 36-3
- CISCO-IP-TAP-MIB
 - citapStreamVRF 79-2
 - overview 79-8
 - restricting access to 79-10, 79-11
- CISCO-TAP2-MIB
 - accessing 79-9
 - overview 79-8
 - restricting access to 79-10, 79-11
- CISP 76-30
- CIST regional root
 - See MSTP
- CIST root
 - See MSTP
- class command 58-73
- class-map command 58-65
- class map configuration 58-70
- clear authentication sessions command 76-40
- clear counters command 10-12
- clear dot1x command 76-40
- clear interface command 10-13
- clear mls ip multicast statistics command
 - clears IP MMLS statistics 39-27
- CLI
 - accessing 2-1
 - backing out one level 2-5
 - console configuration mode 2-5
 - getting list of commands 2-6
 - global configuration mode 2-5
 - history substitution 2-4
 - interface configuration mode 2-5
 - privileged EXEC mode 2-5
 - ROM monitor 2-7
 - software basics 2-4
- Client Information Signalling Protocol
 - See CISP
- collection function 79-6

- command line processing 2-3
 - commands, getting list of 2-6
 - Communications Assistance for Law Enforcement Act
 - CALEA for Voice 79-5
 - lawful intercept 79-4
 - community ports 26-7
 - community VLANs 26-6, 26-7
 - configuration example
 - EoMPLS port mode 38-4, 38-7
 - EoMPLS VLAN mode 38-4
 - configuring 58-72
 - lawful intercept 79-10, 79-11, 79-12
 - SNMP 79-10
 - console configuration mode 2-5
 - content IAP 79-6
 - control plane policing
 - See CoPP
 - CoPP
 - applying QoS service policy to control plane 70-3
 - configuring
 - ACLs to match traffic 70-3
 - enabling MLS QoS 70-3
 - packet classification criteria 70-3
 - service-policy map 70-3
 - control plane configuration mode
 - entering 70-3
 - displaying
 - dynamic information 70-4
 - number of conforming bytes and packets 70-4
 - rate information 70-4
 - entering control plane configuration mode 70-3
 - monitoring statistics 70-4
 - overview 70-3
 - packet classification guidelines 70-4
 - traffic classification
 - defining 70-6
 - guidelines 70-7
 - overview 70-6
 - sample ACLs 70-7
 - sample classes 70-6
 - CoS
 - override priority 18-6, 19-5
 - counters
 - clearing interface 10-12, 10-13
 - critical authentication 76-8
 - critical authentication, IEEE 802.1x 76-47
 - CSCsr62404 10-9
 - CSCtc21076 62-14
 - CSCtd34068 58-2
 - CSCte40004 58-2
 - CSCtx75254 5-2
 - cTap2MediationDebug notification 79-12
 - cTap2MediationNewIndex object 79-8
 - cTap2MediationTable 79-8
 - cTap2MediationTimedOut notification 79-12
 - cTap2MIBActive notification 79-12
 - cTap2StreamDebug notification 79-12
 - cTap2StreamTable 79-8
 - customer contact information
 - entering for call home 50-21
-
- D**
- dACL
 - See ACLs, downloadable 76-24
 - dCEF 32-4
 - debug commands
 - IP MMLS 39-27
 - DEC spanning-tree protocol 34-1
 - default configuration
 - 802.1X 76-31, 77-7
 - dynamic ARP inspection 73-6
 - Flex Links 21-4
 - IP MMLS 39-9
 - MSTP 30-26
 - MVR 42-5
 - UDLD 11-4
 - voice VLAN 18-4

- VTP 24-9
- default VLAN 20-10
- deficit weighted round robin 58-107
- denial of service protection 69-1
- destination-ip flow mask 48-8
- destination-source-ip flow mask 48-8
- device IDs
 - call home format 50-13, 50-14
- DHCP binding database
 - See DHCP snooping binding database
- DHCP binding table
 - See DHCP snooping binding database
- DHCP option 82
 - circuit ID suboption 71-7
 - overview 71-5
 - packet format, suboption
 - circuit ID 71-7
 - remote ID 71-7
 - remote ID suboption 71-7
- DHCP option 82 allow on untrusted port 71-10
- DHCP snooping
 - 802.1X data insertion 76-15
 - binding database
 - See DHCP snooping binding database
 - configuration guidelines 71-8
 - configuring 71-9
 - default configuration 71-8
 - displaying binding tables 71-18
 - enabling 71-9, 71-10, 71-11, 71-12, 71-13, 71-14
 - enabling the database agent 71-14
 - message exchange process 71-6
 - monitoring 72-5, 72-6
 - option 82 data insertion 71-5
 - overview 71-3
 - Snooping database agent 71-7
- DHCP snooping binding database
 - described 71-5
 - entries 71-5
- DHCP snooping binding table
 - See DHCP snooping binding database
- DHCP Snooping Database Agent
 - adding to the database (example) 71-18
 - enabling (example) 71-15
 - overview 71-7
 - reading from a TFTP file (example) 71-17
- DHCP snooping increased bindings limit 71-14
- differentiated services codepoint
 - See QoS DSCP
- DiffServ
 - configuring short pipe mode 60-32
 - configuring uniform mode 60-36
 - short pipe mode 60-29
 - uniform mode 60-31
- DiffServ tunneling modes 60-4
- Disabling PIM Snooping Designated Router Flooding 41-6
- distributed Cisco Express Forwarding
 - See dCEF
- distributed egress SPAN 53-10, 53-15
- DNS, See Domain Name System
- DNS, see Domain Name System
- documentation, related 1-xliii
- Domain Name System 79-2
- DoS protection 69-1
 - default configurations 69-17
 - egress ACL bridget packet rate limiters 69-13
 - FIB glean rate limiters 69-14
 - FIB receive rate limiters 69-14
 - ICMP redirect rate limiters 69-15
 - IGMP unreachable rate limiters 69-14
 - ingress ACL bridget packet rate limiters 69-13
 - IP errors rate limiters 69-16
 - IPv4 multicast rate limiters 69-16
 - IPv6 multicast rate limiters 69-16
 - Layer 2 PDU rate limiters 69-15
 - Layer 2 protocol tunneling rate limiters 69-16
 - Layer 3 security features rate limiters 69-14
 - monitoring packet drop statistics

- using monitor session commands 69-22
 - using VACL capture 69-24
 - MTU failure rate limiters 69-15
 - multicast IGMP snooping rate limiters 69-15
 - QoS ACLs 69-2
 - security ACLs 69-2
 - TTL failure rate limiter 69-13
 - uRPF check 69-6
 - uRPF failure rate limiters 69-13
 - VACL log rate limiters 69-15
 - dot1x initialize interface command 76-39
 - dot1x max-reauth-req command 76-43
 - dot1x max-req command 76-42
 - dot1x pae authenticator command 76-34
 - dot1x re-authenticate interface command 76-39
 - dot1x timeout quiet-period command 76-41
 - DSCP
 - See QoS DSCP
 - DSCP-based queue mapping 58-98
 - duplex command 10-5, 10-6
 - duplex mode
 - autonegotiation status 10-6
 - configuring interface 10-4
 - DWRR 58-107
 - dynamic ARP inspection
 - ARP cache poisoning 73-3
 - ARP requests, described 73-3
 - ARP spoofing attack 73-3
 - configuration guidelines 73-2
 - configuring
 - log buffer 73-13, 73-15
 - logging system messages 73-14
 - rate limit for incoming ARP packets 73-5, 73-10
 - default configuration 73-6
 - denial-of-service attacks, preventing 73-10
 - described 73-3
 - DHCP snooping binding database 73-4
 - displaying
 - ARP ACLs 73-15
 - configuration and operating state 73-15
 - trust state and rate limit 73-15
 - error-disabled state for exceeding rate limit 73-5
 - function of 73-4
 - interface trust states 73-4
 - log buffer
 - configuring 73-13, 73-15
 - logging of dropped packets, described 73-6
 - logging system messages
 - configuring 73-14
 - man-in-the middle attack, described 73-4
 - network security issues and interface trust states 73-4
 - priority of ARP ACLs and DHCP snooping entries 73-6
 - rate limiting of ARP packets
 - configuring 73-10
 - described 73-5
 - error-disabled state 73-5
 - validation checks, performing 73-11
 - Dynamic Host Configuration Protocol snooping 71-1
-
- ## E
- EAC 63-2
 - EAPOL. See also port-based authentication. 76-6
 - eFSU, See Enhanced Fast Software Upgrade (eFSU)
 - Egress ACL support for remarked DSCP 58-19
 - egress ACL support for remarked DSCP 58-61
 - egress replication performance improvement 39-14
 - egress SPAN 53-10
 - electronic traffic, monitoring 79-7
 - e-mail addresses
 - assigning for call home 50-21
 - e-mail notifications
 - Call Home 50-3
 - enable mode 2-5
 - enable sticky secure MAC address 78-8
 - enabling

- IP MMLS
 - on router interfaces 39-12
 - lawful intercept 79-8
 - SNMP notifications 79-12
- Endpoint Admission Control (EAC) 63-2
- EnergyWise 12-1
- enhanced Fast Software Upgrade (eFSU)
 - aborting (issu abortversion command) 5-13
 - accepting the new software version 5-11
 - committing the new software to standby RP (issu commitversion command) 5-12
 - displaying maximum outage time for module 5-10
 - error handling 5-5
 - forcing a switchover (issu runversion command) 5-10
 - issu loadversion command 5-8
 - loading new software onto standby RP 5-8
 - memory reservation on module 5-4
 - memory reservation on module, prohibiting 5-4
 - OIR not supported 5-2
 - operation 5-3
 - outage times 5-4
 - performing 5-5
 - steps 5-5
 - usage guidelines and limitations 5-2
 - verifying redundancy mode 5-7
- environmental monitoring
 - LED indications 14-4
 - SNMP traps 14-4
 - supervisor engine and switching modules 14-4
 - Syslog messages 14-4
 - using CLI commands 14-1
- EOBC
 - for MAC address table synchronization 20-3
- EoMPLS 38-3
 - configuring 38-4
 - configuring VLAN mode 38-3
 - guidelines and restrictions 38-2
 - port mode 38-3
 - VLAN mode 38-3
- ERSPAN 53-1
- EtherChannel
 - channel-group group
 - command 22-9, 22-13, 22-14, 22-15, 22-16
 - command example 22-9, 22-14
 - configuration guidelines 4-28, 22-2
 - configuring
 - Layer 2 22-9
 - configuring (tasks) 4-28, 22-7
 - interface port-channel
 - command example 22-8
 - interface port-channel (command) 22-8
 - lacp system-priority
 - command example 22-11
 - Layer 2
 - configuring 22-9, 22-15
 - load balancing
 - configuring 22-11
 - understanding 22-7
 - Min-Links 22-13, 22-14
 - modes 22-4
 - PAgP
 - understanding 22-5
 - port-channel interfaces 22-7
 - port-channel load-balance
 - command 22-11
 - command example 22-12
 - STP 22-7
 - understanding 4-4, 22-3
- EtherChannel Guard
 - See STP EtherChannel Guard
- Ethernet
 - setting port duplex 10-10
- Ethernet over MPLS (EoMPLS) configuration
 - EoMPLS port mode 38-6
 - EoMPLS VLAN mode 38-4
- EXP mutation 60-4
- extended range VLANs 25-2

See VLANs

extended system ID

MSTP 30-39

Extensible Authentication Protocol over LAN. See EAPOL.

F

fall-back bridging 34-1

fast link notification

on VSL failure 4-15

fiber-optic, detecting unidirectional links 11-1

FIB TCAM 36-3

figure

lawful intercept overview 79-5

filters, NDE

destination host filter, specifying 49-18

destination TCP/UDP port, specifying 49-17

protocol 49-18

source host and destination TCP/UDP port 49-17

Flex Links 21-1

configuration guidelines 21-2

configuring 21-4

default configuration 21-4

description 21-2

monitoring 21-6

flex links

interface preemption 21-3

flow control 10-9

flow masks

IP MLS

destination-ip 48-8

destination-source-ip 48-8

ip-full 48-8

minimum 48-11

overview 49-3

flows

IP MMLS

completely and partially switched 39-4

forward-delay time

MSTP 30-45

forward-delay time, STP 30-35

frame distribution

See EtherChannel load balancing

G

get requests 79-7, 79-8, 79-11

global configuration mode 2-5

guest VLAN and 802.1x 76-19

H

hardware Layer 3 switching

guidelines 32-2

hello time

MSTP 30-44

hello time, STP 30-35

High Capacity Power Supply Support 13-4

history

CLI 2-4

host mode

see port-based authentication

host ports

kinds of 26-7

host presence CDP message 18-4, 76-14

host presence TLV message 78-4

http

//www-tac.cisco.com/Teams/ks/c3/xmlkwery.php?srl
d=612293409 22-2

I

IAP

content IAP 79-6

definition 79-6

content IAP 79-6

identification IAP 79-6

- types of
- ICMP unreachable messages 62-2
- ID IAP 79-6
- IDs
 - serial IDs 50-14
- IEEE 802.1Q Ethertype
 - specifying custom 20-15
- IEEE 802.1Q Tagging on a Per-Port Basis 28-7
- IEEE 802.1w
 - See RSTP
- IEEE 802.1x
 - accounting 76-16, 76-43
 - authentication failed VLAN 76-20
 - critical ports 76-21
 - DHCP snooping 76-15
 - guest VLAN 76-19
 - MAC authentication bypass 76-26
 - network admission control Layer 2 validation 76-27
 - port security interoperability 76-23
 - RADIUS-supplied session timeout 76-38
 - voice VLAN 76-22
 - wake-on-LAN support 76-28
- IEEE 802.3ad
 - See LACP
- IEEE 802.3af 19-2
- IEEE 802.3at 19-2
- IEEE 802.3x Flow Control 10-9
- IEEE bridging protocol 34-1
- IGMP 40-1
 - configuration guidelines 47-9
 - enabling 40-9
 - join messages 40-3
 - leave processing
 - enabling 40-12
 - queries 40-4
 - query interval
 - configuring 40-11
 - snooping
 - fast leave 40-6
 - joining multicast group 40-3, 43-4
 - leaving multicast group 40-5, 43-4
 - understanding 40-3, 43-3
 - snooping querier
 - enabling 40-9
 - understanding 40-3, 43-3
- IGMPv3 39-10
- IGMP v3lite 39-10
- ignore port trust 58-15, 58-22, 58-58, 58-74
- inaccessible authentication bypass 76-21
- ingress SPAN 53-10
- intercept access point
 - See IAP
- intercept-related information (IRI) 79-6, 79-7
- intercepts, multiple 79-6
- interface
 - configuration mode 2-5
 - Layer 2 modes 20-4
 - number 10-2
- interface port-channel
 - command example 22-8
- interface port-channel (command) 22-8
- interfaces
 - configuring, duplex mode 10-3
 - configuring, speed 10-3
 - configuring, overview 10-2
 - counters, clearing 10-12, 10-13
 - displaying information about 10-12
 - maintaining 10-12
 - monitoring 10-12
 - range of 10-2
 - restarting 10-13
 - shutting down
 - task 10-13
- interfaces command 10-2
- interfaces range command 52-3
- interfaces range macro command 10-2
- internal VLANs 25-3
- Internet Group Management Protocol 40-1, 43-1

- IP accounting, IP MMLS and 39-2
 - IP CEF
 - topology (figure) 32-4
 - ip flow-export destination command 49-14
 - ip flow-export source command 48-14, 49-14, 49-15, 55-3, 55-4, 55-5
 - ip-full flow mask 48-8
 - ip http server 1-7
 - ip local policy route-map command 33-5
 - IP MLS
 - aging-time 48-12
 - flow masks
 - destination-ip 48-8
 - destination-source-ip 48-8
 - ip-full 48-8
 - minimum 48-11
 - overview 49-3
 - IP MMLS
 - cache, overview 39-3
 - configuration guideline 39-1
 - debug commands 39-27
 - default configuration 39-9
 - enabling
 - on router interfaces 39-12
 - flows
 - completely and partially switched 39-4
 - Layer 3 MLS cache 39-3
 - overview 39-3
 - packet rewrite 39-4
 - router
 - enabling globally 39-10
 - enabling on interfaces 39-12
 - multicast routing table, displaying 39-21
 - PIM, enabling 39-11
 - switch
 - statistics, clearing 39-27
 - unsupported features 39-2
 - IP multicast
 - IGMP snooping and 40-8
 - MLDv2 snooping and 47-9
 - overview 40-2, 43-2, 44-2
 - IP multicast MLS
 - See IP MMLS
 - ip multicast-routing command
 - enabling IP multicast 39-11
 - IP phone
 - configuring 18-5
 - ip pim command
 - enabling IP PIM 39-11
 - ip policy route-map command 33-5
 - IP Source Guard 72-1
 - configuring 72-3
 - configuring on private VLANs 72-5
 - displaying 72-5, 72-6
 - overview 72-2
 - IP unnumbered 34-1
 - IPv4 Multicast over Point-to-Point GRE Tunnels 1-8
 - IPv4 Multicast VPN 45-1
 - IPv6 Multicast PFC3 and DFC3 Layer 3 Switching 46-1
 - IPv6 QoS 58-4
 - ISL trunks 20-4
 - isolated port 26-7
 - isolated VLANs 26-6, 26-7
-
- J**
- join messages, IGMP 40-3
 - jumbo frames 10-6
-
- K**
- keyboard shortcuts 2-3
-
- L**
- label edge router 36-2
 - label switched path 38-1

- label switch router 36-2, 36-4
- LACP
 - system ID 22-6
- Law Enforcement Agency (LEA) 79-4
- lawful intercept
 - admin function 79-7, 79-8
 - collection function 79-6
 - configuring 79-10, 79-11, 79-12
 - enabling 79-8
 - IRI 79-6
 - mediation device 79-5
 - overview 79-4, 79-5
 - prerequisites 79-1
 - processing 79-7
 - security considerations 79-9
 - SNMP notifications 79-12
- lawful intercept processing 79-7
- Layer 2
 - configuring interfaces 20-5
 - access port 20-14
 - trunk 20-8
 - defaults 20-5
 - interface modes 20-4
 - show interfaces 10-8, 10-9, 20-6, 20-13
 - switching
 - understanding 20-2
 - trunks
 - understanding 20-4
 - VLAN
 - interface assignment 25-6
- Layer 2 Interfaces
 - configuring 20-1
- Layer 2 protocol tunneling
 - configuring Layer 2 tunnels 29-3
 - overview 29-2
- Layer 2 remarking 58-21
- Layer 2 Traceroute 56-1
- Layer 2 traceroute
 - and ARP 56-2
 - and CDP 56-1
 - described 56-2
 - IP addresses and subnets 56-2
 - MAC addresses and VLANs 56-2
 - multicast traffic 56-2
 - multiple devices on a port 56-2
 - unicast traffic 56-2
 - usage guidelines 56-1
- Layer 3
 - IP MMLS and MLS cache 39-3
- Layer 3 switched packet rewrite
 - CEF 32-2
- Layer 3 switching
 - CEF 32-2
- Layer 4 port operations (ACLs) 62-2
- leave processing, IGMP
 - enabling 40-12
- leave processing, MLDv2
 - enabling 47-12
- LERs 60-2, 60-6, 60-7
- Link Failure
 - detecting unidirectional 30-25
 - link negotiation 10-5
 - link redundancy
 - See Flex Links
- LLDP-MED
 - configuring
 - TLVs 19-8
- load deferral
 - MEC traffic recovery 4-6
- Local Egress Replication 39-14
- logical operation unit
 - See LOU
- loop guard
 - See STP loop guard
- LOU
 - description 62-3
 - determining maximum number of 62-3
- LSRs 60-2, 60-6

M

mab command 76-45, 76-50

MAC address-based blocking 65-1

MAC address table notification 20-7

MAC authentication bypass. See also port-based authentication. 76-26

MAC move (port security) 78-3

macros 3-1

See Smartports macros

MACSec 63-2

magic packet 76-28

main-cpu command 9-4

mapping 802.1Q VLANs to ISL VLANs 25-7

markdown

see QoS markdown

match ip address command 33-4

match length command 33-4

maximum aging time

MSTP 30-45

maximum aging time, STP 30-36

maximum hop count, MSTP 30-46

MEC

configuration 4-45

described 4-15

failure 4-16

port load share deferral 4-17

mediation device

admin function 79-7, 79-8

definition 79-5

description 79-5

MIBs

CISCO-IP-TAP-MIB 79-2, 79-8, 79-10

CISCO-TAP2-MIB 79-8, 79-9, 79-10

SNMP-COMMUNITY-MIB 79-9

SNMP-USM-MIB 79-4, 79-9

SNMP-VACM-MIB 79-4, 79-9

microflow policing rule

see QoS policing

Mini Protocol Analyzer 57-1

Min-Links 22-13

MLD

report 47-5

MLD snooping

query interval

configuring 47-10

MLDv1 47-2

MLDv2 47-1

enabling 47-11

leave processing

enabling 47-12

queries 47-6

snooping

fast leave 47-8

joining multicast group 47-5

leaving multicast group 47-7

understanding 47-3

snooping querier

enabling 47-10

understanding 47-3

MLDv2 Snooping 47-1

MLS

configuring threshold 39-15

RP

threshold 39-15

mls aging command

configuring IP MLS 48-12

mls flow command

configuring IP MLS 48-11, 48-15, 49-13

mls ip multicast command

enabling IP MMLS 39-12 to 39-24

mls nde flow command

configuring a host and port filter 49-17

configuring a host flow filter 49-18

configuring a port filter 49-17

configuring a protocol flow filter 49-18

mls nde sender command 49-12

monitoring

- Flex Links 21-6
- MVR 42-8
- private VLANs 26-16
- monitoring electronic traffic 79-7
- MPLS 36-1, 36-2
 - aggregate label 36-2
 - any transport over MPLS 38-3
 - basic configuration 36-9
 - core 36-4
 - DiffServ Tunneling Modes 60-29
 - egress 36-4
 - experimental field 60-3
 - hardware features 36-5
 - ingress 36-4
 - IP to MPLS path 36-4
 - labels 36-2
 - MPLS to IP path 36-4
 - MPLS to MPLS path 36-4
 - nonaggregate lable 36-2
 - QoS default configuration 60-13
 - restrictions 36-1
 - VPN 60-11
 - VPN guidelines and restrictions 37-2
- MPLS QoS
 - Classification 60-2
 - Class of Service 60-2
 - commands 60-15
 - configuring a class map 60-18
 - configuring a policy map 60-21
 - configuring egress EXP mutation 60-27
 - configuring EXP Value Maps 60-28
 - Differentiated Services Code Point 60-2
 - displaying a policy map 60-26
 - E-LSP 60-2
 - enabling QoS globally 60-17
 - EXP bits 60-2
 - features 60-2
 - IP Precedence 60-2
 - QoS Tags 60-2
 - queueing-only mode 60-17
- MPLS QoS configuration
 - class map to classify MPLS packets 60-18
- MPLS supported commands 36-2
- MPLS VPN
 - limitations and restrictions 37-2
- MQC
 - supported
 - policy maps 58-9
- MST
 - interoperation with Rapid PVST+ 31-20
 - root bridge 31-20
- MSTP
 - boundary ports
 - configuration guidelines 30-2
 - described 30-22
 - CIST, described 30-19
 - CIST regional root 30-20
 - CIST root 30-21
 - configuration guidelines 30-2
 - configuring
 - forward-delay time 30-45
 - hello time 30-44
 - link type for rapid convergence 30-46
 - maximum aging time 30-45
 - maximum hop count 30-46
 - MST region 30-38
 - neighbor type 30-46
 - path cost 30-42
 - port priority 30-41
 - root switch 30-39
 - secondary root switch 30-40
 - switch priority 30-43
 - CST
 - defined 30-19
 - operations between regions 30-20
 - default configuration 30-26
 - displaying status 30-47
 - enabling the mode 30-38

- extended system ID
 - effects on root switch 30-39
 - effects on secondary root switch 30-40
 - unexpected behavior 30-39
- IEEE 802.1s
 - implementation 30-23
 - port role naming change 30-23
 - terminology 30-21
- interoperability with IEEE 802.1D
 - described 30-24
 - restarting migration process 30-47
- IST
 - defined 30-19
 - master 30-20
 - operations within a region 30-20
- mapping VLANs to MST instance 30-38
- MST region
 - CIST 30-19
 - configuring 30-38
 - described 30-19
 - hop-count mechanism 30-22
 - IST 30-19
 - supported spanning-tree instances 30-19
- overview 30-18
- root switch
 - configuring 30-39
 - effects of extended system ID 30-39
 - unexpected behavior 30-39
- status, displaying 30-47
- MTU size (default) 25-3
- multiauthentication (multiauth). See also port-based authentication. 76-15
- multicast
 - IGMP snooping and 40-8
 - MLDv2 snooping and 47-9
 - NetFlow statistics 49-1
 - non-RPF 39-6
 - overview 40-2, 43-2, 44-2
 - PIM snooping 41-4
 - multicast, displaying routing table 39-21
 - Multicast enhancement - egress replication performance improvement 39-14
 - Multicast Enhancement - Replication Mode Detection 39-12
 - multicast flood blocking 75-1
 - multicast groups
 - joining 40-3, 43-4
 - leaving 40-5, 47-7
 - multicast groups, IPv6
 - joining 47-5
 - Multicast Listener Discovery version 2 47-1
 - Multicast Replication Mode Detection enhancement 39-12
 - multicast RPF 39-3
 - multicast storms
 - see traffic-storm control
 - multicast television application 42-3
 - multicast VLAN 42-2
 - Multicast VLAN Registration 42-1
 - multichassis EtherChannel
 - see MEC 4-15
 - Multidomain Authentication (MDA). See also port-based authentication. 76-14
 - Multilayer MAC ACL QoS Filtering 58-66, 62-9
 - multilayer switch feature card
 - see RP
 - multiple path RPF check 69-8
 - Multiple Spanning Tree
 - See MST
 - MUX-UNI Support 36-7
 - MUX-UNI support 36-7
 - MVAP (Multi-VLAN Access Port). See also port-based authentication. 76-22
 - MVR
 - and IGMPv3 42-2
 - configuring interfaces 42-6
 - default configuration 42-5
 - example application 42-3
 - in the switch stack 42-5

- monitoring [42-8](#)
- multicast television application [42-3](#)
- restrictions [42-1](#)
- setting global parameters [42-6](#)

N

NAC

- agentless audit support [76-27](#)
- critical authentication [76-21, 76-47](#)
- IEEE 802.1x authentication using a RADIUS server [76-50](#)
- IEEE 802.1x validation using RADIUS server [76-50](#)
- inaccessible authentication bypass [76-47](#)
- Layer 2 IEEE 802.1x validation [76-50](#)
- Layer 2 IEEE802.1x validation [76-27](#)

native VLAN [20-11](#)

NDAC [63-2](#)

NDE

- configuration, displaying [49-18](#)
- displaying configuration [49-18](#)
- enabling [49-11](#)
- filters
 - destination host, specifying [49-18](#)
 - destination TCP/UDP port, specifying [49-17](#)
 - protocol, specifying [49-18](#)
 - source host and destination TCP/UDP port, specifying [49-17](#)
- multicast [49-1](#)
- specifying
 - destination host filters [49-18](#)
 - destination TCP/UDP port filters [49-17](#)
 - protocol filters [49-18](#)

NDE version 8 [49-3](#)

NEAT

- configuring [76-54](#)
- overview [76-30](#)

NetFlow

- table, displaying entries [32-5](#)

Netflow Multiple Export Destinations [49-15](#)

NetFlow search engine [39-7](#)

NetFlow version 9 [49-3](#)

Network Device Admission Control (NDAC) [63-2](#)

Network Edge Access Topology

See NEAT

network ports

Bridge Assurance [31-5](#)

description [31-2](#)

nonaggregate label [36-2, 36-5](#)

non-RPF multicast [39-6](#)

normal-range VLANs

See VLANs

notifications, See SNMP notifications

NSF with SSO does not support IPv6 multicast traffic. [7-1, 8-1](#)

O

OIR [10-11](#)

online diagnostics

CompactFlash disk verification [A-41](#)

configuring [15-2](#)

datapath verification [A-14](#)

diagnostic sanity check [15-24](#)

egress datapath test [A-4](#)

error counter test [A-4](#)

interrupt counter test [A-4](#)

memory tests [15-24](#)

overview [15-2](#)

running tests [15-6](#)

test descriptions [A-1](#)

understanding [15-2](#)

online diagnostic tests [A-1](#)

online insertion and removal

See OIR

out-f-band MAC address table synchronization

configuring [20-6](#)

in a VSS [4-2](#)

out of profile
 see QoS out of profile

P

packet burst 69-13
 packet capture 57-2
 packet recirculation 58-19
 packet rewrite

CEF 32-2
 IP MMLS and 39-4

packets
 multicast 66-6

PAgP
 understanding 22-5

path cost
 MSTP 30-42

PBACLs 62-6

PBF 67-4

PBR 1-8

PBR (policy-based routing)
 configuration (example) 33-7
 enabling 33-4

peer inconsistent state
 in PVST simulation 31-20

per-port VTP enable and disable 24-16

PFC
 recirculation 36-5

PFC3 39-7

PIM, IP MMLS and 39-11

PIM snooping
 designated router flooding 41-6
 enabling globally 41-5
 enabling in a VLAN 41-5
 overview 41-4

PoE 19-2
 Cisco prestandard 19-3
 IEEE 802.3af 19-2
 IEEE 802.3at 19-2

PoE management 19-3
 power policing 19-4
 power use measurement 19-4

police command 58-76

policy 58-65

policy-based ACLs (PBACLs) 62-6

policy-based forwarding (PBF) 68-2

policy-based routing

See PBR

policy-based routing (PBR)

configuring 33-1

policy map 58-72

attaching to an interface 58-79, 69-6

policy-map command 58-65, 58-73

port ACLs

defined 66-2

port ACLs (PACLs) 66-1

Port Aggregation Protocol

see PAgP

port-based authentication

AAA authorization 76-33

accounting 76-16

configuring 76-43

authentication server

defined 76-7, 77-3

RADIUS server 76-7

client, defined 76-7, 77-3

configuration guidelines 76-2, 77-1

configuring

guest VLAN 76-45

inaccessible authentication bypass 76-47

initializing authentication of a client 76-39

manual reauthentication of a client 76-39

RADIUS server 76-35, 77-10

RADIUS server parameters on the switch 76-34, 77-9

restricted VLAN 76-46

switch-to-authentication-server retransmission time 76-42

- switch-to-client EAP-request frame retransmission time 76-41
- switch-to-client frame-retransmission number 76-42, 76-43
- switch-to-client retransmission time 76-41
- user distribution 76-44
- VLAN group assignment 76-44
- default configuration 76-31, 77-7
- described 76-6
- device roles 76-7, 77-3
- DHCP snooping 76-15
- DHCP snooping and insertion 71-6
- displaying statistics 76-57, 77-15
- EAPOL-start frame 76-10
- EAP-request/identity frame 76-10
- EAP-response/identity frame 76-10
- enabling
 - 802.1X authentication 76-33, 76-34, 77-9
 - periodic reauthentication 76-38
- encapsulation 76-7
- guest VLAN
 - configuration guidelines 76-19, 76-20
 - described 76-19
- host mode 76-13
- inaccessible authentication bypass
 - configuring 76-47
 - described 76-21
 - guidelines 76-4
- initiation and message exchange 76-10
- MAC authentication bypass 76-26
- magic packet 76-28
- method lists 76-33
- modes 76-13
- multiauth mode, described 76-15
- multidomain authentication mode, described 76-14
- multiple-hosts mode, described 76-13
- ports
 - authorization state and dot1x port-control command 76-12
 - authorized and unauthorized 76-12
 - critical 76-21
 - voice VLAN 76-22
- port security
 - and voice VLAN 76-23
 - described 76-23
 - interactions 76-23
 - multiple-hosts mode 76-13
- pre-authentication open access 76-15, 76-36
- resetting to default values 76-57
- supplicant, defined 76-7
- switch
 - as proxy 76-7, 77-3
 - RADIUS client 76-7
- switch supplicant
 - configuring 76-54
 - overview 76-30
- user distribution
 - configuring 76-44
 - described 76-18
 - guidelines 76-4
- VLAN assignment
 - AAA authorization 76-33
 - characteristics 76-17
 - configuration tasks 76-18
 - described 76-17
- VLAN group
 - guidelines 76-4
- voice VLAN
 - described 76-22
 - PVID 76-22
 - VVID 76-22
 - wake-on-LAN, described 76-28
- port-based QoS features
 - see QoS
- port-channel
 - see EtherChannel
- port-channel load-balance
 - command 22-11
 - command example 22-11, 22-12

- port-channel load-defer command 4-45
- port-channel port load-defer command 4-45
- port cost, STP 30-32
- port debounce timer
 - disabling 10-10
 - displaying 10-10
 - enabling 10-10
- PortFast
 - edge ports 31-2
 - network ports 31-2
 - See STP PortFast
- PortFast Edge BPDU filtering
 - See STP PortFast Edge BPDU filtering
- PortFast port types
 - description 31-2, 31-2 to ??
 - edge 31-2
 - network 31-2
- port mode 38-3
- port negotiation 10-5
- port priority
 - MSTP 30-41
- port priority, STP 30-31
- ports
 - setting the debounce timer 10-10
- port security
 - aging 78-9, 78-10
 - configuring 78-4
 - described 78-3
 - displaying 78-10
 - enable sticky secure MAC address 78-8
 - sticky MAC address 78-3
 - violations 78-3
- Port Security is supported on trunks 78-2, 78-5, 78-7, 78-9
- port security MAC move 78-3
- port security on PVLAN ports 78-2
- Port Security with Sticky Secure MAC Addresses 78-3
- power management
 - enabling/disabling redundancy 13-2
 - overview 13-1
 - powering modules up or down 13-3
 - power policing 19-8
- power negotiation
 - through LLDP 19-8
- Power over Ethernet 19-2
- power over ethernet 19-2
- pre-authentication open access. See port-based authentication.
- preemption, default configuration 21-4
- preemption delay, default configuration 21-4
- prerequisites for lawful intercept 79-1
- primary links 21-2
- primary VLANs 26-6
- priority
 - overriding CoS 18-6, 19-5
- private hosts 27-1
- private hosts feature
 - configuration guidelines 27-1
 - configuring (detailed steps) 27-9
 - configuring (summary) 27-8
 - multicast operation 27-4
 - overview 27-4
 - port ACLs (PACLs) 27-7
 - port types 27-5, 27-6
 - protocol-independent MAC ACLs 27-4
 - restricting traffic flow with PACLs 27-5
 - spoofing protection 27-3
- private VLANs 26-1
 - across multiple switches 26-9
 - and SVIs 26-10
 - benefits of 26-5
 - community VLANs 26-6, 26-7
 - configuration guidelines 26-2, 26-4, 26-10
 - configuring 26-10
 - host ports 26-14
 - promiscuous ports 26-15
 - routing secondary VLAN ingress traffic 26-13
 - secondary VLANs with primary VLANs 26-12
 - VLANs as private 26-11

- end station access to 26-8
 - IP addressing 26-8
 - isolated VLANs 26-6, 26-7
 - monitoring 26-16
 - ports
 - community 26-7
 - configuration guidelines 26-4
 - isolated 26-7
 - promiscuous 26-7
 - primary VLANs 26-6
 - secondary VLANs 26-6
 - subdomains 26-5
 - traffic in 26-10
 - privileged EXEC mode 2-5
 - promiscuous ports 26-7
 - protocol tunneling
 - See Layer 2 protocol tunneling 29-2
 - PVRST
 - See Rapid-PVST 30-3
 - PVST
 - description 30-3
 - PVST simulation
 - description 31-20
 - peer inconsistent state 31-20
 - root bridge 31-20
-
- Q**
- QoS
 - auto-QoS
 - enabling for VoIP 59-4
 - IPv6 58-4
 - See also automatic QoS 59-1
 - QoS classification (definition) 58-120
 - QoS congestion avoidance
 - definition 58-121
 - QoS CoS
 - and ToS final L3 Switching Engine values 58-18
 - and ToS final values from L3 Switching Engine 58-18
 - definition 58-120
 - port value, configuring 58-91
 - QoS default configuration 58-111, 61-2
 - QoS DSCP
 - definition 58-121
 - internal values 58-16
 - maps, configuring 58-86
 - QoS dual transmit queue
 - thresholds
 - configuring 58-92, 58-96
 - QoS Ethernet egress port
 - scheduling 58-111
 - scheduling, congestion avoidance, and marking 58-18
 - QoS Ethernet ingress port
 - classification, marking, scheduling, and congestion avoidance 58-12
 - QoS final L3 Switching Engine CoS and ToS values 58-18
 - QoS internal DSCP values 58-16
 - QoS L3 Switching Engine
 - classification, marking, and policing 58-15
 - feature summary 58-22
 - QoS labels (definition) 58-121
 - QoS mapping
 - CoS values to DSCP values 58-83, 58-86
 - DSCP markdown values 58-34, 58-87, 60-14
 - DSCP mutation 58-82, 60-27
 - DSCP values to CoS values 58-89
 - IP precedence values to DSCP values 58-87
 - QoS markdown 58-25
 - QoS marking
 - definition 58-121
 - trusted ports 58-21
 - untrusted ports 58-20
 - QoS multilayer switch feature card 58-23
 - QoS out of profile 58-25
 - QoS policing

- definition 58-121
- microflow, enabling for nonrouted traffic 58-60
- QoS policing rule
 - aggregate 58-23
 - creating 58-64
 - microflow 58-23
- QoS port
 - trust state 58-89, 58-91
- QoS port-based or VLAN-based 58-60
- QoS queues
 - transmit, allocating bandwidth between 58-107
- QoS receive queue 58-14, 58-102, 58-104
 - drop thresholds 58-28
- QoS RP
 - marking 58-23
- QoS scheduling (definition) 58-121
- QoS session-based 58-17
- QoS single-receive, dual-transmit queue ports
 - configuring 58-97
- QoS statistics data export 61-2
 - configuring 61-2
 - configuring destination host 61-7
 - configuring time interval 61-6, 61-8
- QoS ToS
 - and CoS final values from L3 Switching Engine 58-18
 - definition 58-121
- QoS traffic flow through QoS features 58-9
- QoS transmit queue
 - size ratio 58-109, 58-110
- QoS transmit queues 58-29, 58-100, 58-101, 58-103, 58-104
- QoS trust-cos
 - port keyword 58-20
- QoS trust-dscp
 - port keyword 58-20
- QoS trust-ipprec
 - port keyword 58-20
- QoS untrusted port keyword 58-20

- QoS VLAN-based or port-based 58-17, 58-60
- quad-supervisor
 - uplink forwarding 4-9
- queries, IGMP 40-4
- queries, MLDv2 47-6

R

- RADIUS 71-6
- RADIUS. See also port-based authentication. 76-7
- range
 - command 52-3
 - macro 10-2
- rapid convergence 30-14
- Rapid-PVST
 - enabling 30-36
- Rapid PVST+
 - interoperation with MST 31-20
- Rapid-PVST+
 - overview 30-3
- Rapid Spanning Tree
 - See RSTP
- Rapid Spanning Tree Protocol
 - See RSTP
- receive queues
 - see QoS receive queues
- recirculation 36-5, 58-19
- redirect URLs
 - described 76-25
- reduced MAC address 30-3
- redundancy (RPR+) 9-1
 - configuring 9-4
 - configuring supervisor engine 9-2
 - displaying supervisor engine configuration 9-5
 - redundancy command 9-4
- related documentation 1-xliii
- Remote Authentication Dial-In User Service. See RADIUS.
- Replication Mode Detection 39-12

- report, MLD 47-5
 - reserved-range VLANs
 - See VLANs
 - restricted VLAN
 - configuring 76-46
 - described 76-20
 - using with IEEE 802.1x 76-20
 - restricting MIB access 79-10, 79-11
 - rewrite, packet
 - CEF 32-2
 - IP MMLS 39-4
 - RHI 4-52
 - RIF cache monitoring 10-12
 - ROM monitor
 - CLI 2-7
 - root bridge
 - MST 31-20
 - PVST simulation 31-20
 - root bridge, STP 30-29
 - root guard
 - See STP root guard
 - root switch
 - MSTP 30-39
 - route health injection
 - See RHI
 - route-map (IP) command 33-4
 - route maps
 - defining 33-4
 - router guard 44-1
 - routing table, multicast 39-21
 - RPF
 - failure 39-6
 - multicast 39-3
 - non-RPF multicast 39-6
 - RPR and RPR+ support IPv6 multicast traffic 9-1
 - RSTP
 - active topology 30-13
 - BPDU
 - format 30-16
 - processing 30-17
 - designated port, defined 30-13
 - designated switch, defined 30-13
 - interoperability with IEEE 802.1D
 - described 30-24
 - restarting migration process 30-47
 - topology changes 30-17
 - overview 30-13
 - port roles
 - described 30-13
 - synchronized 30-15
 - proposal-agreement handshake process 30-14
 - rapid convergence
 - described 30-14
 - edge ports and Port Fast 30-14
 - point-to-point links 30-14, 30-46
 - root ports 30-14
 - root port, defined 30-13
 - See also MSTP
-
- S**
- Sampled NetFlow
 - description 49-9
 - scheduling
 - see QoS
 - secondary VLANs 26-6
 - Secure MAC Address Aging Type 78-9
 - security
 - configuring 64-1, 70-3
 - security, port 78-3
 - security considerations 79-9
 - Security Exchange Protocol (SXP) 63-2
 - Security Group Access Control List (SGACL) 63-2
 - Security Group Tag (SGT) 63-2
 - serial IDs
 - description 50-14
 - serial interfaces
 - clearing 10-13

- synchronous
 - maintaining 10-13
- server IDs
 - description 50-14
- service-policy command 58-65
- service-policy input command 58-61, 58-79, 58-83, 58-85, 60-28, 69-6
- service-provider network, MSTP and RSTP 30-18
- set default interface command 33-4
- set interface command 33-4
- set ip default next-hop command 33-4
- set ip df command
 - PBR 33-4
- set ip next-hop command 33-4
- set ip precedence command
 - PBR 33-4
- set ip vrf command
 - PBR 33-4
- set power redundancy enable/disable command 13-2
- set requests 79-7, 79-8, 79-11
- setting up lawful intercept 79-7
- SGACL 63-2
- SGT 63-2
- shaped round robin 58-107
- short pipe mode
 - configuring 60-32
- show authentication command 76-58
- show catalyst6000 chassis-mac-address command 30-4
- show dot1x interface command 76-39
- show eobc command 10-12
- show history command 2-4
- show ibc command 10-12
- show interfaces command 10-8, 10-9, 10-12, 20-6, 20-13
 - clearing interface counters 10-12
 - displaying, speed and duplex mode 10-6
- show ip flow export command
 - displaying NDE export flow IP address and UDP port 49-16
- show ip interface command
 - displaying IP MMLS interfaces 39-19
- show ip local policy command 33-5
- show ip mroute command
 - displaying IP multicast routing table 39-21
- show ip pim interface command
 - displaying IP MMLS router configuration 39-19
- show mab command 76-61
- show mls aging command 48-13
- show mls ip multicast group command
 - displaying IP MMLS group 39-22, 39-25
- show mls ip multicast interface command
 - displaying IP MMLS interface 39-22, 39-25
- show mls ip multicast source command
 - displaying IP MMLS source 39-22, 39-25
- show mls ip multicast statistics command
 - displaying IP MMLS statistics 39-22, 39-25
- show mls ip multicast summary
 - displaying IP MMLS configuration 39-22, 39-25
- show mls nde command 49-18
 - displaying NDE flow IP address 49-16
- show mls rp command
 - displaying IP MLS configuration 48-11
- show module command 9-5
- show platform entry command 32-5
- show protocols command 10-12
- show rif command 10-12
- show running-config command 10-12
 - displaying ACLs 66-7, 66-8
- show svclic rhi-routes command 4-52
- show version command 10-12
- shutdown command 10-13
- shutdown interfaces
 - result 10-13
- slot number, description 10-2
- smart call home 50-1
 - description 50-5
 - destination profile (note) 50-23
 - registration requirements 50-5
 - service contract requirements 50-2

- Transport Gateway (TG) aggregation point 50-4
- SMARTnet
 - smart call home registration 50-5
- smart port macros 3-1
 - configuration guidelines 3-2
- Smartports macros
 - applying global parameter values 3-14
 - applying macros 3-14
 - creating 3-13
 - default configuration 3-4
 - defined 3-4
 - displaying 3-15
 - tracing 3-2
- SNMP
 - configuring 79-10
 - default view 79-9
 - get and set requests 79-7, 79-8, 79-11
 - notifications 79-9, 79-12
 - support and documentation 1-7
- SNMP-COMMUNITY-MIB 79-9
- SNMP-USM-MIB 79-4, 79-9
- SNMP-VACM-MIB 79-4, 79-9
- snooping
 - See IGMP snooping
- software
 - upgrading router 5-5
- source IDs
 - call home event format 50-13
- source-only-ip flow mask 48-8
- source specific multicast with IGMPv3, IGMP v3lite, and URD 39-10
- SPAN
 - configuration guidelines 53-2
 - configuring 53-12
 - sources 53-16, 53-19, 53-21, 53-22, 53-24, 53-25, 53-26, 53-28
 - VLAN filtering 53-30
 - destination port support on EtherChannels 53-12, 53-19, 53-22, 53-24, 53-25, 53-29
 - distributed egress 53-10, 53-15
 - modules that disable for ERSPAN 53-7
 - input packets with don't learn option
 - ERSPAN 53-28, 53-29
 - local SPAN 53-17, 53-18, 53-19
 - RSPAN 53-22, 53-23, 53-25
 - understanding 53-12
 - local SPAN egress session increase 53-3, 53-16
 - overview 53-7
- SPAN Destination Port Permit Lists 53-15
- spanning-tree backbonefast
 - command 31-15, 31-16
 - command example 31-15, 31-16
- spanning-tree cost
 - command 30-33
 - command example 30-33
- spanning-tree portfast
 - command 31-2, 31-3, 31-4
 - command example 31-3, 31-4
- spanning-tree portfast bpdu-guard
 - command 31-8
- spanning-tree port-priority
 - command 30-31
- spanning-tree protocol for bridging 34-1
- spanning-tree uplinkfast
 - command 31-13
 - command example 31-13
- spanning-tree vlan
 - command 30-27, 30-29, 30-30, 30-31, 31-8, 31-17
 - command example 30-28, 30-29, 30-30, 30-31
- spanning-tree vlan cost
 - command 30-33
- spanning-tree vlan forward-time
 - command 30-35
 - command example 30-35
- spanning-tree vlan hello-time
 - command 30-35
 - command example 30-35
- spanning-tree vlan max-age
 - command 30-36

- command example 30-36
- spanning-tree vlan port-priority
 - command 30-31
 - command example 30-32
- spanning-tree vlan priority
 - command 30-34
 - command example 30-34
- speed
 - configuring interface 10-4
- speed command 1-3, 10-4
- speed mode
 - autonegotiation status 10-6
- SRR 58-107
- standards, lawful intercept 79-4
- standby links 21-2
- static sharing
 - description 76-25
- statistics
 - 802.1X 76-57, 77-15
- sticky ARP 69-21
- sticky MAC address 78-3
- Sticky secure MAC addresses 78-8, 78-9
- storm control
 - see traffic-storm control
- STP
 - configuring 30-26
 - bridge priority 30-34
 - enabling 30-27, 30-28
 - forward-delay time 30-35
 - hello time 30-35
 - maximum aging time 30-36
 - port cost 30-32
 - port priority 30-31
 - root bridge 30-29
 - secondary root switch 30-30
 - defaults 30-25
 - EtherChannel 22-7
 - normal ports 31-3
 - understanding 30-2
 - 802.1Q Trunks 30-12
 - Blocking State 30-8
 - BPDU s 30-4
 - disabled state 30-12
 - forwarding state 30-11
 - learning state 30-10
 - listening state 30-9
 - overview 30-3
 - port states 30-6
 - protocol timers 30-5
 - root bridge election 30-5
 - topology 30-5
 - STP BackboneFast
 - configuring 31-15
 - figure
 - adding a switch 31-18
 - spanning-tree backbonefast
 - command 31-15, 31-16
 - command example 31-15, 31-16
 - understanding 31-13
 - STP BPDU Guard
 - configuring 31-7
 - spanning-tree portfast bpdu-guard
 - command 31-8
 - understanding 31-7
 - STP bridge ID 30-3
 - STP EtherChannel guard 31-16
 - STP extensions
 - description ?? to 31-20
 - STP loop guard
 - configuring 31-19
 - overview 31-17
 - STP PortFast
 - BPDU filter
 - configuring 31-10
 - BPDU filtering 31-9
 - configuring 31-2
 - spanning-tree portfast
 - command 31-2, 31-3, 31-4

- command example 31-3, 31-4
 - understanding 31-2
 - STP port types
 - normal 31-3
 - STP root guard 31-17
 - STP UplinkFast
 - configuring 31-12
 - spanning-tree uplinkfast
 - command 31-13
 - command example 31-13
 - understanding 31-11
 - subdomains, private VLAN 26-5
 - supervisor engine
 - environmental monitoring 14-1
 - redundancy 9-1
 - synchronizing configurations 9-5
 - supervisor engine redundancy
 - configuring 9-2
 - supervisor engines
 - displaying redundancy configuration 9-5
 - supplicant 76-7
 - surveillance 79-7
 - svelc command 4-51
 - Switched Port Analyzer 53-1
 - switch fabric functionality 17-1
 - configuring 17-3
 - monitoring 17-4
 - switchport
 - configuring 20-14
 - example 20-13
 - show interfaces 10-8, 10-9, 20-6, 20-13
 - switchport access vlan 20-6, 20-7, 20-10, 20-14
 - example 20-15
 - switchport mode access 20-4, 20-6, 20-7, 20-14
 - example 20-15
 - switchport mode dynamic 20-9
 - switchport mode dynamic auto 20-4
 - switchport mode dynamic desirable 20-4
 - default 20-5
 - example 20-13
 - switchport mode trunk 20-4, 20-9
 - switchport nonegotiate 20-4
 - switchport trunk allowed vlan 20-11
 - switchport trunk encapsulation 20-7, 20-9
 - switchport trunk encapsulation dot1q
 - example 20-13
 - switchport trunk encapsulation negotiate
 - default 20-5
 - switchport trunk native vlan 20-11
 - switchport trunk pruning vlan 20-12
 - switch priority
 - MSTP 30-43
 - switch TopN reports
 - foreground execution 55-2
 - running 55-3
 - viewing 55-3
 - SXP 63-2
 - system event archive (SEA) 51-1
 - System Hardware Capacity 1-4
-
- ## T
- TDR
 - checking cable connectivity 10-14
 - enabling and disabling test 10-14
 - guidelines 10-14
 - Telnet
 - accessing CLI 2-2
 - Time Domain Reflectometer 10-14
 - TLV
 - host presence detection 18-4, 76-14, 78-4
 - traceroute, Layer 2
 - and ARP 56-2
 - and CDP 56-1
 - described 56-2
 - IP addresses and subnets 56-2
 - MAC addresses and VLANs 56-2
 - multicast traffic 56-2

- multiple devices on a port [56-2](#)
- unicast traffic [56-2](#)
- usage guidelines [56-1](#)
- traffic-storm control
 - command
 - broadcast [74-4](#)
 - described [74-2](#)
 - monitoring [74-5](#)
 - thresholds [74-2](#)
- traffic suppression
 - see traffic-storm control
- transmit queues
 - see QoS transmit queues
- traps, see SNMP notifications
- trunks [20-4](#)
 - 802.1Q Restrictions [20-2](#)
 - allowed VLANs [20-11](#)
 - configuring [20-8](#)
 - default interface configuration [20-6](#)
 - default VLAN [20-10](#)
 - different VTP domains [20-4](#)
 - native VLAN [20-11](#)
 - to non-DTP device [20-4](#)
 - VLAN 1 minimization [20-12](#)
- trust-dscp
 - see QoS trust-dscp
- trusted boundary [18-6](#)
- trusted boundary (extended trust for CDP devices) [18-4](#)
- trust-ipprec
 - see QoS trust-ipprec
- trustpoint [50-2](#)
- tunneling [60-4, 60-29](#)
- tunneling, 802.1Q
 - See 802.1Q [28-4](#)
- type length value
 - See TLV

U

- UDE
 - configuration [35-5](#)
 - overview [35-4](#)
- UDE and UDLR [35-1](#)
- UDLD
 - default configuration [11-4](#)
 - enabling
 - globally [11-5](#)
 - on ports [11-5, 11-6](#)
 - overview [11-2](#)
- UDLR [35-1](#)
 - back channel [35-3](#)
 - configuration [35-6](#)
 - tunnel
 - (example) [35-7](#)
 - ARP and NHRP [35-4](#)
- UDLR (unidirectional link routing) [35-1](#)
- UDP port for SNMP notifications [79-12](#)
- UMFB [75-2](#)
- unauthorized ports with 802.1X [76-12](#)
- unicast storms
 - see traffic-storm control
- Unidirectional Ethernet [35-1](#)
- unidirectional ethernet
 - example of setting [35-5](#)
- UniDirectional Link Detection Protocol
 - see UDLD
- uniform mode
 - configuring [60-36](#)
- unknown multicast flood blocking
 - See UMFB
- unknown unicast and multicast flood blocking [75-1](#)
- unknown unicast flood blocking
 - See UUFBL
- unknown unicast flood rate-limiting
 - See UUFRL
- untrusted

see QoS trust-cos
 see QoS untrusted

UplinkFast

See STP UplinkFast

URD 39-10

User-Based Rate Limiting 58-25, 58-76

user EXEC mode 2-5

UUFb 75-2

UUFRL 75-2

V

VACLs 67-2

configuring

examples 67-5

Layer 3 VLAN interfaces 67-5

Layer 4 port operations 62-2

logging

configuration example 67-8

configuring 67-7

restrictions 67-7

MAC address based 67-2

multicast packets 66-6

SVIs 67-5

WAN interfaces 67-2

vlan

command 25-5, 25-6, 49-13, 53-20

command example 25-6

VLAN Access Control Lists

See VACLs

VLAN-based QoS filtering 58-67, 62-10

VLAN-bridge spanning-tree protocol 34-1

vlan database

command 25-5, 25-6, 49-13, 53-20

vlan group command 76-44

VLAN locking 25-4

vlan mapping dot1q

command 25-8

VLAN maps

applying 66-8

VLAN mode 38-3

VLAN port provisioning verification 25-4

VLANs

allowed on trunk 20-11

configuration guidelines 25-2

configuring 25-1

configuring (tasks) 25-4

defaults 25-3

extended range 25-3

interface assignment 25-6

multicast 42-2

name (default) 25-3

normal range 25-3

reserved range 25-3

support for 4,096 VLANs 25-2

token ring 25-3

trunks

understanding 20-4

understanding 25-2

VLAN 1 minimization 20-12

VTP domain 25-4

VLAN translation

command example 25-8, 25-9

voice VLAN

Cisco 7960 phone, port connections 18-2

configuration guidelines 18-1

configuring IP phone for data traffic

override CoS of incoming frame 18-6, 19-5

configuring ports for voice traffic in

802.1Q frames 18-5

connecting to an IP phone 18-5

default configuration 18-4

overview 18-2

voice VLAN. See also port-based authentication. 76-22

VPN

configuration example 37-4

guidelines and restrictions 37-2

VPN supported commands 37-2

VPN switching [37-1](#)

VSS

dual-active detection

Enhanced PAgP, advantages [4-24](#)

Enhanced PAgP, description [4-24](#)

enhanced PAgP, description [4-46](#)

fast-hello, advantages [4-24](#)

fast-hello, description [4-25](#)

VSLP fast-hello, configuration [4-47](#)

VTP

advertisements [24-4](#), [24-5](#)

client, configuring [24-15](#)

configuration guidelines [24-1](#)

default configuration [24-9](#)

disabling [24-15](#)

domains [24-3](#)

VLANs [25-4](#)

modes

client [24-4](#)

server [24-4](#)

transparent [24-4](#)

monitoring [24-17](#)

overview [24-2](#)

per-port enable and disable [24-16](#)

pruning

configuration [20-12](#)

configuring [24-12](#)

overview [24-7](#)

server, configuring [24-15](#)

statistics [24-17](#)

transparent mode, configuring [24-15](#)

version 2

enabling [24-13](#)

overview [24-5](#)

version 3

enabling [24-13](#)

overview [24-6](#)

server type, configuring [24-11](#)

W

wake-on-LAN. See also port-based authentication. [76-28](#)

web-based authentication

AAA fail policy [77-5](#)

description [77-2](#)

web browser interface [1-7](#)

weighted round robin [58-107](#)

wiretaps [79-4](#)

WRR [58-107](#)