



INDEX

Symbols

- \$ matches the end of a string [1-7](#)
- () in commands [1-11](#)
- * matches 0 or more sequences of a pattern [1-7](#)
- + matches 1 or more sequences of a pattern [1-7](#)
- . matches any single character [1-7](#)
- ? command [1-1](#)
- ? matches 0 or 1 occurrence of a pattern [1-7](#)
- ^ matches the beginning of a string [1-7](#)
- _ matches a comma (,), left brace ({), left parenthesis [1-7](#)
- “ [1-10](#)

Numerics

- 10-Gigabit Ethernet uplink
 - selecting [2-151](#)
 - showing the mode [2-439, 2-440](#)
- 802.1Q trunk ports and native VLANs [2-765](#)
- 802.1Q tunnel ports
 - configuring [2-707](#)
- 802.1S Multiple Spanning Tree
 - see MST
- 802.1X
 - configuring for multiple hosts [2-119](#)
 - configuring for single host [2-119](#)
 - configuring multiple domains [2-119](#)
 - disabling port control [2-112](#)
 - enabling port control [2-112](#)
- 802.1X Critical Authentication
 - disabling on a port [2-113](#)
 - disabling on a VLAN [2-116](#)
- EAPOL

- disabling send success packets [2-114](#)
- enabling send success packets [2-114](#)
- enabling on a port [2-113](#)
- enabling on a VLAN [2-116](#)
- returning delay time to default setting [2-115](#)
- setting delay time on a port [2-115](#)
- 802.1X Port Based Authentication
 - debugging 802.1X Port Based Authentication [2-74](#)
 - displaying port based authentication [2-423](#)
 - enabling accounting for authentication sessions [2-4](#)
 - enabling authentication on the system [2-130](#)
 - enabling guest VLAN [2-117](#)
 - enabling guest VLAN supplicant [2-110, 2-118](#)
 - enabling manual control of auth state [2-126](#)
 - enabling periodic re-authentication of the client [2-129](#)
 - initializing re-authentication of dot1x ports [2-128](#)
 - initializing state machines [2-121](#)
 - receive session termination message upon reboot [2-5](#)
 - setting maximum number for EAP requests [2-124](#)
 - setting the reauthentication timer [2-131](#)

A

- abbreviating commands
 - context-sensitive help [1-1](#)
- Access Gateway Module
 - connecting to a module [2-17](#)
 - connecting to a remote module [2-363](#)
 - connecting to a specific remote module [2-375](#)
- access-group
 - displaying mac interface [2-544](#)
 - show mode interface [2-395](#)
- access groups

- IP [2-6](#)
 - access lists
 - clearing an access template [2-39](#)
 - defining ARP [2-16](#)
 - displaying ARP information [2-398](#)
 - See also ACLs, MAC ACLs, and VACLs
 - access maps
 - applying with VLAN filter [2-767](#)
 - ACLs
 - access-group mode [2-6](#)
 - balancing hardware regions [2-12](#)
 - capturing control packets [2-8](#)
 - determining ACL hardware programming [2-10](#)
 - disabling hardware statistics [2-146](#)
 - displaying mac access-group interface [2-544](#)
 - enabling hardware statistics [2-146](#)
 - using ACL naming conventions for MAC ACLs [2-249](#)
 - action clause
 - specifying drop or forward action in a VACL [2-13](#)
 - addresses, configuring a maximum [2-324](#)
 - adjacency
 - debugging the adjacency table [2-67](#)
 - disabling the debug facility [2-67](#)
 - displaying information about the adjacency table [2-396](#)
 - displaying IPC table entries [2-67](#)
 - aggregate policer
 - displaying information [2-596](#)
 - aging time
 - displaying MAC address aging time [2-547](#)
 - MAC address table [2-252](#)
 - alarms
 - displaying operational status [2-427](#)
 - alternation
 - description [1-10](#)
 - anchoring
 - description [1-10](#)
 - ARP
 - access list, displaying detailed information [2-398](#)
 - defining access-lists [2-16](#)
 - ARP inspection
 - enforce certain types of checking [2-168](#)
 - ARP packet
 - deny based on DHCP bindings [2-106](#)
 - permit based on DHCP bindings [2-297](#)
 - authentication
 - setting username [2-752](#)
 - using an MD5-type encryption method [2-752](#)
 - verifying MD5 signature [2-754](#)
 - verifying the checksum for Flash memory [2-754](#)
 - auth fail VLAN
 - enable on a port [2-111](#)
 - set max number of attempts [2-110](#)
 - authorization state
 - enabling manual control [2-126](#)
 - authorization state of a controlled port [2-126](#)
 - automatic installation
 - displaying status [2-399](#)
 - automatic medium-dependent interface crossover
 - See Auto-MDIX
 - Auto-MDIX
 - disabling [2-279](#)
 - enabling [2-279](#)
 - auto-negotiate interface speed
 - example [2-695](#)
 - auto-QoS
 - configuring for VoIP [2-18](#)
 - displaying configuration [2-400](#)
-
- ## B
- baby giants
 - displaying the system MTU setting [2-628](#)
 - setting the maximum Layer 2 payload size [2-732](#)
 - BackboneFast
 - displaying debugging messages [2-93](#)
 - displaying spanning tree status [2-617](#)

- enabling debugging [2-93](#)
- bandwidth command [2-22](#)
- bindings
 - store for DHCP snooping [2-178](#)
- BOOT environment variable
 - displaying information [2-403](#)
- bootflash
 - displaying information [2-401](#)
- BPDUs
 - debugging spanning tree activities [2-91](#)
- bridge protocol data units
 - See BPDUs
- broadcast
 - counters [2-64](#)
- broadcast suppression level
 - configuring [2-696, 2-698](#)
 - enabling [2-696, 2-698](#)

C

- cable diagnostics
 - TDR
 - displaying test results [2-404](#)
 - testing conditions of copper cables [2-734](#)
- Catalyst 4507R [2-320](#)
- CDP
 - configuring tunneling encapsulation rate [2-238](#)
 - displaying
 - neighbor information [2-406](#)
 - enabling protocol tunneling for [2-234](#)
 - set drop threshold for [2-236](#)
- CEF
 - displaying next-hop information [2-476](#)
 - displaying VLAN configuration information [2-476](#)
- cisco-desktop
 - macro apply [2-259](#)
- Cisco Express Forwarding
 - See CEF
- cisco-phone
 - macro apply [2-261](#)
- cisco-router
 - macro apply [2-263](#)
- cisco-switch
 - macro apply [2-265](#)
- class maps
 - creating [2-32](#)
 - defining the match criteria [2-272](#)
- clear commands
 - clearing Gigabit Ethernet interfaces [2-37](#)
 - clearing IGMP group cache entries [2-46](#)
 - clearing interface counters [2-34](#)
 - clearing IP access lists [2-39, 2-40](#)
 - clearing IP ARP inspection statistics VLAN [2-41](#)
 - clearing IP DHCP snooping database statistics [2-45](#)
 - clearing MFIB counters and routes [2-49](#)
 - clearing MFIB fastdrop entries [2-50](#)
 - clearing PAgP channel information [2-55](#)
 - clearing QoS aggregate counters [2-58](#)
 - clearing VLAN interfaces [2-38](#)
- CLI string search
 - anchoring [1-10](#)
 - expressions [1-7](#)
 - filtering [1-6](#)
 - multiple-character patterns [1-8](#)
 - multipliers [1-9](#)
 - parentheses for recall [1-11](#)
 - searching outputs [1-6](#)
 - single-character patterns [1-7](#)
 - using [1-6](#)
- command modes
 - accessing privileged EXEC mode [1-5](#)
 - exiting [1-5](#)
 - understanding user EXEC and configuration modes [1-5](#)
- condition interface
 - debugging interface-related activities [2-69](#)
- condition vlan
 - debugging VLAN output [2-72](#)

- configuration, saving [1-11](#)
 - configuring
 - root as secondary [2-679](#)
 - configuring a SPAN session to monitor
 - limit SPAN source traffic [2-284](#)
 - configuring forward delay [2-675](#)
 - configuring root as primary [2-679](#)
 - CoPP
 - attaching
 - policy map to control plane [2-373](#)
 - displaying
 - policy-map class information [2-573](#)
 - entering configuration mode [2-62](#)
 - removing
 - service policy from control plane [2-373](#)
 - CoS
 - assigning to Layer 2 protocol packets [2-235](#)
 - CoS QoS default
 - defining value on an interface [2-343](#)
 - Cost of Service
 - See QoS CoS
 - counters
 - clearing interface counters [2-34](#)
-
- ## D
- DAI
 - clear statistics [2-41](#)
 - DBL
 - displaying qos dbl [2-597](#)
 - enabling DBL globally on the switch [2-344](#)
 - debug commands
 - debugging backup events [2-68](#)
 - debugging DHCP snooping events [2-79](#)
 - debugging DHCP snooping messages [2-80](#)
 - debugging EtherChannel/PAgP/shim [2-75](#)
 - debugging IPC activity [2-78](#)
 - debugging IP DHCP snooping security messages [2-81](#)
 - debugging NVRAM activities [2-84](#)
 - debugging PAgP activities [2-85](#)
 - debugging port manager activities [2-88](#)
 - debugging spanning tree activities [2-91](#)
 - debugging spanning tree backbonefast [2-93](#)
 - debugging spanning tree UplinkFast [2-96](#)
 - debugging supervisor redundancy [2-90](#)
 - debugging VLAN manager activities [2-97](#)
 - displaying monitor activity [2-83](#)
 - displaying the adjacency table [2-67](#)
 - enabling debug dot1x [2-74](#)
 - enabling debugging messages for ISL VLAN IDs [2-100](#)
 - enabling debugging messages for VTP [2-101](#)
 - enabling debugging of UDLD activity [2-102](#)
 - enabling switch shim debugging [2-94](#)
 - enabling VLAN manager file system error tests [2-98](#)
 - limiting debugging output for VLANs [2-72](#)
 - limiting interface debugging output [2-69](#)
 - limiting output for debugging standby state changes [2-70](#)
 - shortcut to the debug condition interface [2-77](#)
 - debugging
 - activity monitoring [2-83](#)
 - DHCP snooping events [2-79](#)
 - DHCP snooping packets [2-80](#)
 - IPC activities [2-78](#)
 - IP DHCP snooping security packets [2-81](#)
 - NVRAM activities [2-84](#)
 - PAgP activities [2-85](#)
 - PAgP shim [2-75](#)
 - PM activities [2-88](#)
 - spanning tree BackboneFast events [2-93](#)
 - spanning tree switch shim [2-94](#)
 - spanning tree UplinkFast events [2-96](#)
 - VLAN manager activities [2-97](#)
 - VLAN manager IOS file system error tests [2-98](#)
 - VTP protocol debug messages [2-101](#)
 - debug spanning tree switch [2-94](#)

- debug sw-vlan vtp [2-101](#)
 - default CoS value [2-343](#)
 - default form of a command, using [1-6](#)
 - defining egress DSCP-to-CoS mapping [2-350](#)
 - DHCP
 - clearing database statistics [2-45](#)
 - DHCP bindings
 - configuring bindings [2-177](#)
 - deny ARP packet based on matches [2-106](#)
 - permit ARP packet based on matches [2-297](#)
 - DHCP snooping
 - clearing binding entries [2-42](#)
 - clearing database [2-44](#)
 - displaying binding table [2-479](#)
 - displaying configuration information [2-477](#)
 - displaying status of DHCP database [2-482](#)
 - displaying status of error detection [2-430](#)
 - enabling DHCP globally [2-176](#)
 - enabling IP source guard [2-211](#)
 - enabling on a VLAN [2-185](#)
 - enabling option 82 [2-180, 2-182](#)
 - enabling option-82 [2-187](#)
 - enabling rate limiting on an interface [2-183](#)
 - enabling trust on an interface [2-184](#)
 - establishing binding configuration [2-177](#)
 - renew binding database [2-365](#)
 - store generated bindings [2-178](#)
 - diagnostic test
 - bootup packet memory [2-417](#)
 - displaying attributes [2-411](#)
 - display module-based results [2-413](#)
 - running [2-109](#)
 - show results for TDR [2-404](#)
 - testing conditions of copper cables [2-734](#)
 - displaying error disable recovery [2-431](#)
 - displaying inline power status [2-588](#)
 - displaying monitoring activity [2-83](#)
 - displaying SEEPROM information
 - GBIC [2-441](#)
 - displaying SPAN session information [2-627, 2-697](#)
 - document conventions [1-xix](#)
 - document organization [1-xvii](#)
 - DoS
 - CoPP
 - attaching policy map to control plane [2-373](#)
 - displaying policy-map class information [2-573](#)
 - entering configuration mode [2-62](#)
 - removing service policy from control plane [2-373](#)
 - entering
 - CoPP configuration mode [2-62](#)
 - DOS attack
 - protecting system's resources [2-163](#)
 - drop threshold, Layer 2 protocol tunneling [2-236](#)
 - DSCP rewrite for IP packets
 - enable [2-353](#)
 - dual-capable port
 - selecting a connector [2-281](#)
 - duplex mode
 - configuring autonegotiation on an interface [2-133](#)
 - configuring full duplex on an interface [2-133](#)
 - configuring half duplex on an interface [2-133](#)
 - dynamic ARP inspection
 - preventing [2-163](#)
 - Dynamic Buffer Limiting
 - See DBL
 - Dynamic Host Configuration Protocol
 - See DHCP
-
- ## E
- EAP
 - restarting authentication process [2-124](#)
 - EIGRP (Enhanced IGRP)
 - filters
 - routing updates, preventing [2-294](#)
 - enabling
 - debugging for UDLD [2-102](#)
 - voice VLANs [2-700](#)

environmental

- alarms [2-427](#)
- displaying information [2-427](#)
- status [2-427](#)
- temperature [2-427](#)

erase a file [2-135](#)

error disable detection

- enabling error disable detection [2-138](#)

error-disabled state

- displaying [2-460](#)

error disable recovery

- configuring recovery mechanism variables [2-140](#)
- displaying recovery timer information [2-431](#)
- enabling ARP inspection timeout [2-140](#)
- specifying recovery cause [2-140](#)

EtherChannel

- assigning interfaces to EtherChannel groups [2-25](#)
- debugging EtherChannel [2-75](#)
- debugging PAgP shim [2-75](#)
- debugging spanning tree activities [2-91](#)
- displaying information for a channel [2-433](#)
- removing interfaces from EtherChannel groups [2-25](#)

EtherChannel guard

- detecting STP misconfiguration [2-665](#)

Explicit Host Tracking

- clearing the database [2-48](#)
- enabling per-VLAN [2-198](#)

expressions

- matching multiple expression occurrences [1-9](#)
- multiple-character patterns [1-8](#)
- multiplying pattern occurrence [1-11](#)
- single-character patterns [1-7](#)

Extensible Authentication Protocol

- See EAP

F

field replaceable unit (FRU)

- displaying status information [2-427](#)

filters

EIGRP

- routing updates, preventing [2-294](#)

Flash memory file system

- displaying file system information [2-401](#)
- verifying checksum [2-754](#)

flow control

- configuring a gigabit interface for pause frames [2-143](#)
- displaying per-interface statistics for flow control [2-437](#)

G

GBIC

- displaying EEPROM information [2-441](#)

Gigabit Ethernet interface

- clearing the hardware logic [2-37](#)

Gigabit Ethernet uplink

- selecting [2-151](#)
- showing the mode [2-439, 2-440](#)

global configuration mode

- using [1-5](#)

H

hardware module

- resetting a module by toggling the power [2-148](#)

hardware statistics

- disabling [2-146](#)
- enabling [2-146](#)

hardware uplink

- changing the mode [2-149](#)
- selecting the mode [2-151](#)
- showing the mode [2-439, 2-440](#)

helper addresses, IP [2-497](#)

hot standby protocol

- debugging [2-70](#)
- disabling debugging [2-70](#)
- limiting output [2-70](#)

IDPROMs

displaying SEEPROM information

chassis [2-441](#)

clock module [2-441](#)

fan trays [2-441](#)

module [2-441](#)

mux buffer [2-441](#)

power supplies [2-441](#)

supervisor engine [2-441](#)

ifIndex persistence

clearing SNMP ifIndex commands [2-651](#)

compress SNMP ifIndex table format [2-658](#)

disabling globally [2-657](#)

disabling on an interface [2-653](#)

enabling globally [2-657](#)

enabling on an interface [2-653](#)

IGMP

applying filters for host joining on Layer 2 interfaces [2-189](#)

clearing IGMP group cache entries [2-46](#)

configuring frequency for IGMP host-query messages [2-192](#)

creating an IGMP profile [2-191](#)

displaying IGMP interface configuration information [2-484](#)

displaying profiles [2-486](#)

setting maximum group numbers [2-190](#)

IGMP profiles

displaying [2-486](#)

IGMP snooping

clearing the EHT database [2-48](#)

configuring a Layer 2 interface as a group member [2-202](#)

configuring a Layer 2 interface as a multicast router [2-200](#)

configuring a static VLAN interface [2-202](#)

displaying multicast information [2-493](#)

displaying VLAN information [2-487, 2-491, 2-494](#)

enabling [2-193](#)

enabling immediate-leave processing [2-199](#)

enabling on a VLAN [2-197](#)

enabling per-VLAN Explicit Host Tracking [2-198](#)

informs

enabling [2-655](#)

inline power

displaying inline power status [2-588](#)

In Service Software Upgrade

See ISSU

inspection log

clearing log buffer [2-40](#)

interface

displaying suppressed multicast bytes [2-454](#)

interface capabilities

displaying [2-450](#)

interface configuration mode

summary [1-5](#)

interface link

display cable disconnect time [2-457](#)

interfaces

configuring dot1q tunnel ports [2-707](#)

creating an interface-range macro [2-105](#)

debugging output of interface related activities [2-69](#)

displaying description [2-456](#)

displaying error-disabled state [2-460](#)

displaying information when tunneling is enabled [2-538](#)

displaying status [2-456](#)

displaying traffic for a specific interface [2-447](#)

entering interface configuration mode [2-155](#)

executing a command on multiple ports in a range [2-158](#)

selecting an interface to configure [2-155](#)

setting a CoS value for Layer 2 packets [2-235](#)

setting drop threshold for Layer 2 packets [2-236](#)

setting the interface type [2-707](#)

interface speed

configuring interface speed [2-693](#)

- interface transceiver
 - displaying diagnostic data [2-464](#)
- internal VLAN allocation
 - configuring [2-768](#)
 - default setting [2-768](#)
 - displaying allocation information [2-640](#)
- Internet Group Management Protocol
 - See IGMP
- IP ARP
 - applying ARP ACL to VLAN [2-161](#)
 - clearing inspection statistics [2-41](#)
 - clearing status of log buffer [2-40](#)
 - controlling packet logging [2-171](#)
 - enabling dynamic inspection [2-170](#)
 - limit rate of incoming requests [2-163](#)
 - set per-port config trust state [2-167](#)
 - showing status of dynamic ARP inspection [2-471](#)
 - showing status of log buffer [2-474](#)
- IPC
 - debugging IPC activities [2-78](#)
- IP DHCP Snooping
 - See DHCP snooping
- IP header validation
 - disabling [2-210](#)
 - enabling [2-210](#)
- IP interfaces
 - displaying usability status [2-496](#)
- IP multicast
 - displaying multicast routing table information [2-502](#)
- IP packets
 - enable DSCP rewrite [2-353](#)
- IP phone and standard desktop
 - enabling Cisco-recommended features [2-261](#)
- IP Port Security
 - enabling [2-211](#)
- IP source binding
 - adding or deleting [2-207](#)
 - displaying bindingstagging [2-507](#)
- IP source guard
 - debugging messages [2-81](#)
 - displaying configuration and filters [2-509](#)
 - enabling on DHCP snooping [2-211](#)
- IPv6 MLD
 - configuring queries [2-216, 2-218](#)
 - configuring snooping
 - last-listener-query-intervals [2-218](#)
 - configuring snooping
 - listener-message-suppression [2-220](#)
 - configuring snooping robustness-variables [2-221](#)
 - configuring tcn topology change notifications [2-223](#)
 - counting snooping last-listener-queries [2-216](#)
 - displaying information [2-514](#)
 - displaying ports for a switch or VLAN [2-516](#)
 - displaying querier information [2-517](#)
 - enabling snooping [2-214](#)
 - enabling snooping on a VLAN [2-224](#)
- ISSU
 - canceling process [2-226](#)
 - configuring rollback timer [2-233](#)
 - displaying capability [2-519](#)
 - displaying client information [2-521](#)
 - displaying compatibility matrix [2-523](#)
 - displaying endpoint information [2-528](#)
 - displaying entities [2-529](#)
 - displaying FSM session [2-530](#)
 - displaying messages [2-531](#)
 - displaying negotiated [2-533](#)
 - displaying rollback-timer [2-534](#)
 - displaying session information [2-535](#)
 - displaying software version [2-536](#)
 - displaying state [2-536](#)
 - forcing switchover to standby supervisor engine [2-232](#)
 - loading new image [2-229](#)
 - starting process [2-231](#)
 - stopping rollback timer [2-227](#)

J

Jumbo frames

- enabling jumbo frames [2-290](#)

L

LACP

- deselecting channeling protocol [2-27](#)
- enabling LACP on an interface [2-27](#)
- setting channeling protocol [2-27](#)
- setting system-priority [2-241](#)

Layer 2

- displaying ACL configuration [2-544](#)

Layer 2 interface type

- specifying a nontrunking, nontagged single VLAN interface [2-707](#)
- specifying a trunking VLAN interface [2-707](#)

Layer 2 protocol ports

- displaying [2-538](#)

Layer 2 protocol tunneling error recovery [2-238](#)

Layer 2 switching

- enabling voice VLANs [2-700](#)
- modifying switching characteristics [2-700](#)

Layer 2 traceroute

- IP addresses [2-739](#)

Layer 3 switching

- displaying information about an adjacency table [2-396](#)
- displaying port status [2-462](#)
- displaying status of native VLAN tagging [2-462](#)

link-status event messages

- disabling
 - globally [2-243, 2-246](#)
 - on an interface [2-244, 2-247](#)
- enabling
 - globally [2-243, 2-246](#)
 - on an interface [2-244, 2-247](#)

lldp run command [2-242](#)

log buffer

- show status [2-474](#)

logging

- controlling IP ARP packets [2-171](#)

M

MAC Access Control Lists

- See MAC ACLs

MAC ACLs

- defining extended MAC access list [2-249](#)
- displaying MAC ACL information [2-637](#)
- naming an ACL [2-249](#)

MAC address filtering

- configuring [2-258](#)
- disabling [2-258](#)
- enabling [2-258](#)

MAC address table

- adding static entries [2-270](#)
- clearing dynamic entries [2-52, 2-54](#)
- configuring aging time [2-252](#)
- displaying dynamic table entry information [2-551](#)
- displaying entry count [2-549](#)
- displaying information [2-545](#)
- displaying interface-based information [2-553](#)
- displaying multicast information [2-555](#)
- displaying notification information [2-557](#)
- displaying protocol-based information [2-559](#)
- displaying static table entry information [2-561](#)
- displaying the MAC address aging time [2-547](#)
- displaying VLAN-based information [2-564](#)
- enabling authentication bypass [2-122](#)
- enabling notifications [2-256](#)
- learning in the protocol buckets [2-253](#)
- removing static entries [2-270](#)

MAC address tables

- adding static entries [2-258](#)
- deleting secure or specific addresses [2-56](#)

- disabling IGMP snooping on static MAC addresses [2-258](#)
 - removing static entries [2-258](#)
- mac-address-table static [2-258](#)
- MAC address unicast filtering
 - dropping unicast traffic [2-258](#)
- macro
 - displaying descriptions [2-269](#)
- macro keywords
 - help strings [2-2](#)
- macros
 - adding a global description [2-269](#)
 - cisco global [2-267](#)
 - system-cpp [2-268](#)
- mapping secondary VLANs to MST instance [2-333](#)
- mapping VLAN(s) to an MST instance [2-153](#)
- match (class-map configuration) command [2-272](#)
- maximum transmission unit (MTU)
 - displaying the system MTU setting [2-628](#)
 - setting the maximum Layer 2 payload size [2-732](#)
- MD5
 - verifying MD5 signature [2-754](#)
- message digest 5
 - See MD5
- MFIB
 - clearing ip mfib counters [2-49](#)
 - clearing ip mfib fastdrop [2-50](#)
 - displaying all active MFIB routes [2-499](#)
 - displaying MFIB fastdrop table entries [2-501](#)
 - enabling IP MFIB fastdrops [2-204](#)
- MLD
 - configuring snooping
 - last-listener-query-intervals [2-218](#)
 - configuring snooping
 - listener-message-suppression [2-220](#)
 - configuring snooping robustness-variables [2-221](#)
 - configuring topology change notifications [2-223](#)
 - counting snooping last-listener-queries [2-216](#)
 - enabling snooping [2-214](#)
 - enabling snooping on a VLAN [2-224](#)
- MLD snooping
 - displaying [2-517](#)
- modes
 - access-group [2-6](#)
 - show access-group interface [2-395](#)
 - switching between PVST+, MST, and Rapid PVST [2-670](#)
 - See also command modes
- module password clearing [2-36](#)
- module reset
 - resetting a module by toggling the power [2-148](#)
- More-- prompt
 - filter [1-6](#)
 - search [1-7](#)
- MST
 - designating the primary and secondary root [2-679](#)
 - displaying MST protocol information [2-622](#)
 - displaying region configuration information [2-622](#)
 - displaying spanning tree information [2-622](#)
 - entering MST configuration submode [2-673](#)
 - setting configuration revision number [2-367](#)
 - setting path cost and port priority for instances [2-671](#)
 - setting the forward delay timer for all instances [2-675](#)
 - setting the hello-time delay timer for all instances [2-676](#)
 - setting the max-age timer for all instances [2-677](#)
 - setting the MST region name [2-291](#)
 - specifying the maximum number of hops [2-678](#)
 - switching between PVST+ and Rapid PVST [2-670](#)
 - using the MST configuration submode revision command [2-367](#)
 - using the submode name command [2-291](#)
- MTU
 - displaying global MTU settings [2-628](#)
- Multicast Listener Discovery
 - See MLD
- multicast
 - counters [2-64](#)
 - enabling storm control [2-698](#)
- multicast/unicast packets

prevent forwarding [2-706](#)

Multicast Forwarding Information Base

See MFIB

multiple-character patterns [1-8](#)

Multiple Spanning Tree

See MST

N

native VLAN

controlling tagging of traffic [2-727](#)

displaying ports eligible for native tagging [2-639](#)

displaying ports eligible for tagging [2-639](#)

enabling tagging on 802.1Q trunk ports [2-765](#)

specifying the tagging of traffic [2-728](#)

NetFlow

enabling NetFlow statistics [2-205](#)

including infer fields in routing statistics [2-205](#)

next-hop

displaying CEF VLAN information [2-476](#)

no form of a command, using [1-6](#)

NVRAM

debugging NVRAM activities [2-84](#)

O

output

pattern searches [1-7](#)

P

packet forwarding

prevent unknown packets [2-706](#)

packet memory failure

direct switch action upon detection [2-108](#)

packet memory test

bootup, displaying results [2-417, 2-419](#)

ongoing, displaying results [2-421](#)

PACL

access-group mode [2-6](#)

paging prompt

see --More-- prompt

PAGP

clearing port channel information [2-55](#)

debugging PAGP activity [2-85](#)

deselecting channeling protocol [2-27](#)

displaying port channel information [2-570](#)

hot standby mode

returning to defaults [2-293](#)

selecting ports [2-293](#)

input interface of incoming packets

learning [2-292](#)

returning to defaults [2-292](#)

setting channeling protocol [2-27](#)

parentheses [1-11](#)

password

clearing on an intelligent line module [2-36](#)

establishing enhanced password security [2-752](#)

setting username [2-752](#)

PM activities

debugging [2-88](#)

disabling debugging [2-88](#)

police (percent) command [2-304](#)

police (two rates) command [2-306, 2-308](#)

police command [2-299](#)

policy maps

creating [2-312](#)

marking [2-377](#)

See also QoS, hierarchical policies

traffic classification

defining the class

defining trust states [2-742](#)

port, dual-capable

selecting the connector [2-281](#)

Port Aggregation Protocol

See PAGP

port-based authentication

- displaying debug messages [2-74](#)
- displaying statistics and status [2-423](#)
- enabling 802.1X [2-126](#)
- host modes [2-119](#)
- manual control of authorization state [2-126](#)
- periodic re-authentication
 - enabling [2-129](#)
- re-authenticating 802.1X-enabled ports [2-128](#)
- switch-to-client frame-retransmission number [2-124](#)
- port channel
 - accessing [2-157](#)
 - creating [2-157](#)
 - displaying information [2-570](#)
 - load distribution method
 - resetting to defaults [2-314](#)
 - setting [2-314](#)
- port range
 - executing [2-158](#)
- port security
 - debugging ports security [2-89](#)
 - deleting secure or specific addresses [2-56](#)
 - displaying settings for an interface or switch [2-581](#)
 - enabling [2-712](#)
 - filter source IP and MAC addresses [2-211](#)
 - setting action upon security violation [2-712](#)
 - setting the rate limit for bad packets [2-712](#)
 - sticky port [2-712](#)
- Port Trust Device
 - displaying [2-598](#)
- power status
 - displaying inline power [2-588](#)
 - displaying power status [2-588](#)
- power supply
 - configuring combined and redundant power on the Catalyst 4507R [2-320](#)
 - configuring inline power [2-317](#)
 - configuring power consumption [2-319](#)
 - displaying the SEEPROM [2-441](#)
 - setting inline power state [2-316](#)

- priority command [2-325](#)
- priority-queue command [2-65](#)
- Private VLAN
 - See PVLANS
- privileged EXEC mode, summary [1-5](#)
- prompts
 - system [1-5](#)
- protocol tunneling
 - configuring encapsulation rate [2-238](#)
 - disabling [2-234](#)
 - displaying port information [2-538](#)
 - enabling [2-234](#)
 - setting a CoS value for Layer 2 packets [2-235](#)
 - setting a drop threshold for Layer 2 packets [2-236](#)
- PVLANS
 - configuring isolated, primary, and community PVLANS [2-327](#)
 - controlling tagging of native VLAN traffic [2-727](#)
 - disabling sticky-ARP [2-208](#)
 - displaying map information for VLAN SVIs [2-459](#)
 - displaying PVLAN information [2-642](#)
 - enabling interface configuration mode [2-707](#)
 - enabling sticky-ARP [2-208](#)
 - mapping VLANs to the same SVI [2-331](#)
 - specifying host ports [2-707](#)
 - specifying promiscuous ports [2-707](#)
- PVST+
 - switching between PVST and MST [2-670](#)

Q

- QoS
 - account Layer 2 encapsulation [2-336](#)
 - attaching a policy-map to an interface [2-368](#)
 - automatic configuration [2-18](#)
 - class maps
 - creating [2-32](#)
 - defining the match criteria [2-272](#)
 - clearing aggregate counters [2-58](#)

- configuring auto [2-18](#)
- defining a named aggregate policer [2-338](#)
- defining default CoS value [2-343](#)
- defining ingress CoS-to-DSCP mapping [2-348](#)
- displaying aggregate policer information [2-596](#)
- displaying auto configuration [2-400](#)
- displaying class maps information [2-409](#)
- displaying configuration information [2-400](#)
- displaying configurations of policies [2-576](#)
- displaying policy map information [2-572, 2-579](#)
- displaying QoS information [2-595](#)
- displaying QoS map information [2-600](#)
- egress queue-sets
 - enabling the priority queue [2-65](#)
- enabling global configuration mode [2-334](#)
- enabling on control packets [2-341](#)
- enabling per-VLAN QoS for a Layer 2 interface [2-356](#)
- enabling QoS on an interface [2-335](#)
- hierarchical policies
 - average-rate traffic shaping on a class [2-388](#)
 - bandwidth allocation for a class [2-22, 2-31](#)
 - creating a service policy [2-371](#)
 - marking [2-377](#)
 - strict priority queueing (LLQ) [2-325](#)
- mapping DSCP values to transmit queues [2-350](#)
- mapping egress DSCP-to-CoS [2-350](#)
- mapping the DSCP-to-CoS value [2-350](#)
- policy maps
 - creating [2-312](#)
 - marking [2-377](#)
 - traffic classifications
 - trust states [2-742](#)
- setting the mapping of policed DSCP values [2-352](#)
- setting the trust state [2-354](#)
- specifying flow-based match criteria [2-275](#)
- Supervisor Engine 6-E
 - setting CoS [2-379](#)
 - setting DSCP [2-381](#)

- setting precedence values [2-384](#)
- setting QoS group identifiers [2-387](#)

QoS CoS

- configuring for tunneled Layer 2 protocol packets [2-235](#)
- defining default CoS value [2-343](#)

- qos dbl [2-344](#)

- quality of service

- See QoS

- question command [1-1](#)

- queueing information

- displaying [2-598](#)

R

Rapid PVST

- switching between PVST and MST [2-670](#)

- re-authenticating 802.1X-enabled ports [2-128](#)

- re-authentication

- periodic [2-129](#)

- set the time [2-131](#)

- reboots

- restoring bindings across [2-177](#)

- redundancy

- accessing the main CPU [2-358](#)

- changing from active to standby supervisor engine [2-361](#)

- displaying information [2-602](#)

- displaying ISSU config-sync failure information [2-606](#)

- displaying redundancy facility information [2-602](#)

- displaying RF client list [2-602](#)

- displaying RF operational counters [2-602](#)

- displaying RF states [2-602](#)

- enabling automatic synchronization [2-21](#)

- forcing switchover to standby supervisor engine [2-361](#)

- mismatched command listing [2-359](#)

- set the mode [2-282](#)

synchronizing the route processor configurations [2-270](#)

related documentation [1-xvii](#)

remote SPAN

See RSPAN

renew commands

ip dhcp snooping database [2-365](#)

resetting PVLAN trunk

setting switchport to trunk [2-707](#)

rj45 connector, selecting the connector [2-281](#)

ROM monitor mode

summary [1-6](#)

Route Processor Redundancy

See redundancy

RPF

disabling IPv4 exists-only checks [2-213](#)

enabling IPv4 exists-only checks [2-213](#)

RPR

set the redundancy mode [2-282](#)

RSPAN

converting VLAN to RSPAN VLAN [2-364](#)

displaying list [2-644](#)

S

saving configuration changes [1-11](#)

secure address, configuring [2-322](#)

secure ports, limitations [2-713](#)

service-policy command (policy-map class) [2-371](#)

set the redundancy mode [2-282](#)

sfp connector, selecting the connector [2-281](#)

shape command [2-388](#)

show commands

filtering parameters [1-7](#)

searching and filtering [1-6](#)

show platform commands [1-11](#)

Simple Network Management Protocol

See SNMP

single-character patterns

special characters [1-7](#)

slaveslot0

displaying information on the standby supervisor [2-613](#)

slot0

displaying information about the system [2-615](#)

SNMP

debugging spanning tree activities [2-91](#)

ifIndex persistence

clearing SNMP ifIndex commands [2-651](#)

compress SNMP ifIndex table format [2-658](#)

disabling globally [2-657](#)

disabling on an interface [2-653](#)

enabling globally [2-657](#)

enabling on an interface [2-653](#)

informs

disabling [2-655](#)

enabling [2-655](#)

traps

configuring to send when storm occurs [2-696](#)

disabling [2-655](#)

enabling [2-655](#)

mac-notification

adding [2-659](#)

removing [2-659](#)

SPAN commands

configuring a SPAN session to monitor [2-284](#)

displaying SPAN session information [2-627, 2-697](#)

SPAN enhancements

displaying status [2-568](#)

Spanning Tree Protocol

See STP

SPAN session

displaying session information [2-568](#)

filter ACLs [2-284](#)

specify encaps type [2-284](#)

turn off host learning based on ingress packets [2-284](#)

special characters

anchoring, table [1-10](#)

- SSO [2-282](#)
- standard desktop
 - enabling Cisco-recommended features [2-259](#)
- standard desktop and Cisco IP phone
 - enabling Cisco-recommended features [2-261](#)
- sticky address, configuring [2-323](#)
- sticky-ARP
 - disabling on PVLANS [2-208](#)
 - enabling on PVLANS [2-208](#)
- sticky port
 - deleting [2-56](#)
 - enabling security [2-712](#)
- storm control
 - configuring for action when storm occurs [2-696](#)
 - disabling suppression mode [2-430](#)
 - displaying settings [2-625](#)
 - enabling [2-696](#)
 - enabling broadcast [2-696, 2-698](#)
 - enabling multicast [2-696, 2-698](#)
 - enabling suppression mode [2-430](#)
 - enabling timer to recover from error disable [2-140](#)
 - enabling unicast [2-696, 2-698](#)
 - multicast, enabling [2-698](#)
 - setting high and low levels [2-696](#)
 - setting suppression level [2-430](#)
- STP
 - configuring link type for a port [2-668](#)
 - configuring tunneling encapsulation rate [2-238](#)
 - debugging all activities [2-91](#)
 - debugging spanning tree activities [2-91](#)
 - debugging spanning tree BackboneFast events [2-93](#)
 - debugging spanning tree UplinkFast [2-96](#)
 - detecting misconfiguration [2-665](#)
 - displaying active interfaces only [2-617](#)
 - displaying BackboneFast status [2-617](#)
 - displaying bridge status and configuration [2-617](#)
 - displaying spanning tree debug messages [2-91](#)
 - displaying summary of interface information [2-617](#)
 - enabling BPDU filtering by default on all PortFast ports [2-684](#)
 - enabling BPDU filtering on an interface [2-661](#)
 - enabling BPDU guard by default on all PortFast ports [2-686](#)
 - enabling BPDU guard on an interface [2-663](#)
 - enabling extended system ID [2-666](#)
 - enabling loop guard as a default on all ports [2-669](#)
 - enabling PortFast by default on all access ports [2-687](#)
 - enabling PortFast mode [2-682](#)
 - enabling protocol tunneling for [2-234](#)
 - enabling root guard [2-667](#)
 - enabling spanning tree BackboneFast [2-660](#)
 - enabling spanning tree on a per VLAN basis [2-691](#)
 - enabling spanning tree UplinkFast [2-689](#)
 - setting an interface priority [2-688](#)
 - setting drop threshold for [2-236](#)
 - setting pathcost [2-664](#)
 - setting the default pathcost calculation method [2-681](#)
- subinterface configuration mode, summary [1-6](#)
- SVI
 - creating a Layer 3 interface on a VLAN [2-160](#)
- switching characteristics
 - excluding from link-up calculation [2-704](#)
 - modifying [2-704](#)
 - returning to interfaces
 - capture function [2-704](#)
- switchport [2-728](#)
- switchport interfaces
 - displaying status of Layer 3 port [2-462](#)
 - displaying status of native VLAN tagging [2-462](#)
- switch shim
 - debugging [2-94](#)
 - disabling debugging [2-94](#)
- switch to router connection
 - enabling Cisco-recommended features [2-263](#)
- switch to switch connection
 - enabling Cisco-recommended features [2-265](#)
- switch virtual interface

See SVI

sw-vlan [2-97](#)

system prompts [1-5](#)

T

Tab key

command completion [1-1](#)

tables

characters with special meaning [1-7](#)

mac access-list extended subcommands [2-249](#)

multipliers [1-9](#)

relationship between duplex and speed
commands [2-694](#)

show cable-diagnostics tdr command output
fields [2-405](#)

show cdp neighbors detail field descriptions [2-408](#)

show cdp neighbors field descriptions [2-407](#)

show ip interface field descriptions [2-497](#)

show policy-map control-plane field
descriptions [2-575](#)

show vlan command output fields [2-643](#)

show vtp command output fields [2-648](#)

special characters [1-9](#)

special characters used for anchoring [1-10](#)

speed command options [2-275, 2-694](#)

valid interface types [2-155](#)

TAC

displaying information useful to TAC [2-629](#)

TCAM

debugging spanning tree activities [2-91](#)

TDR

displaying cable diagnostic test results [2-404](#)

test condition of copper cables [2-734](#)

temperature readings

displaying information [2-427](#)

Ten-Gigabit Ethernet uplink

blocking ports on redundant Supervisor Engine
6-E [2-149](#)

timer information [2-431](#)

traffic shaping

enable on an interface [2-390](#)

traps, enabling [2-655](#)

trunk encapsulation

setting format [2-728](#)

trunk interfaces

displaying trunk interfaces information [2-469](#)

trust state

setting [2-167](#)

tunnel ports

displaying information about Layer 2 protocol [2-538](#)

TX queues

allocating bandwidth [2-744](#)

returning to default values [2-744](#)

setting priority to high [2-744](#)

specifying burst size [2-744](#)

specifying traffic rate [2-744](#)

U

UDLD

displaying administrative and operational
status [2-631](#)

enabling by default on all fiber interfaces [2-746](#)

enabling on an individual interface [2-748](#)

preventing a fiber interface from being enabled [2-748](#)

resetting all shutdown ports [2-750](#)

setting the message timer [2-746](#)

unicast

counters [2-64](#)

Unidirectional Link Detection

See UDLD

unknown multicast traffic, preventing [2-706](#)

unknown unicast traffic, preventing [2-706](#)

user EXEC mode, summary [1-5](#)

username

setting password and privilege level [2-752](#)

V

VACLs

- access-group mode [2-6](#)
- applying VLAN access maps [2-767](#)
- displaying VLAN access map information [2-637](#)
- specifying an action in a VLAN access map [2-13](#)
- specifying the match clause for a VLAN access-map sequence [2-271](#)
- using a VLAN filter [2-767](#)

VLAN

- applying an ARP ACL [2-161](#)
- configuring [2-756](#)
- configuring service policies [2-761](#)
- converting to RSPAN VLAN [2-364](#)
- displaying CEF information [2-476](#)
- displaying CEF next-hop information [2-476](#)
- displaying information on switch interfaces [2-487, 2-491](#)
- displaying information on VLAN switch interfaces [2-494](#)
- displaying information sorted by group IP address [2-487, 2-491](#)
- displaying IP address and version information [2-487, 2-491](#)
- displaying Layer 2 VLAN information [2-633](#)
- displaying statistical information [2-566](#)
- displaying VLAN information [2-635](#)
- enabling dynamic ARP inspection [2-170](#)
- enabling Explicit Host Tracking [2-198](#)
- enabling guest per-port [2-117](#)
- enabling guest VLAN supplicant [2-110, 2-118](#)
- entering VLAN configuration mode [2-761, 2-763](#)
- native frames
 - enabling tagging on all 802.1Q trunk ports [2-765](#)
- pruning the list for VTP [2-728](#)
- setting the list of allowed [2-728](#)

VLAN Access Control Lists

See VACLs

VLAN access map

See VACLs

VLAN database

- resetting [2-366](#)

VLAN debugging

- limiting output [2-72](#)

VLAN link-up calculation

- excluding a switch port [2-704](#)
- including a switch port [2-704](#)

VLAN manager

- debugging [2-97](#)
- disabling debugging [2-97](#)
- IOS file system error tests
 - debugging [2-98](#)
 - disabling debugging [2-98](#)

VLAN Query Protocol

See VQP

VLAN query protocol (VQPC)

- debugging [2-104](#)

VLANs

- clearing
 - counters [2-60](#)
- clearing hardware logic [2-38](#)
- configuring
 - internal allocation scheme [2-768](#)
- displaying
 - internal VLAN allocation information [2-640](#)
 - RSPAN VLANs [2-644](#)
- entering VLAN configuration mode [2-763](#)

VMPS

- configuring servers [2-772](#)
- reconfirming dynamic VLAN assignments [2-104, 2-770](#)

voice VLANs

- enabling [2-700](#)

VoIP

- configuring auto-QoS [2-18](#)

VQP

- per-server retry count [2-771](#)

reconfirming dynamic VLAN assignments [2-104](#),
[2-770](#)

VTP

configuring the administrative domain name [2-776](#)

configuring the device in VTP client mode [2-775](#)

configuring the device in VTP server mode [2-779](#)

configuring the device in VTP transparent
mode [2-780](#)

configuring tunnel encapsulation rate [2-238](#)

creating a VTP domain password [2-777](#)

displaying domain information [2-647](#)

displaying statistics information [2-647](#)

enabling protocol tunneling for [2-234](#)

enabling pruning in the VLAN database [2-778](#)

enabling VTP version 2 mode [2-781](#)

modifying the VTP configuration storage file
name [2-774](#)

set drop threshold for [2-236](#)

VTP protocol code

activating debug messages [2-101](#)

deactivating debug messages [2-101](#)