
Symbols

\$ matches the end of a string **1-7**
 () in commands **1-10**
 * 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 **2-125**
 showing the mode **2-352**
 802.1Q trunk ports and native VLANs **2-638**
 802.1Q tunnel ports
 configuring **2-587**
 802.1S Multiple Spanning Tree
 see MST
 802.1X
 disabling port control **2-92**
 enabling port control **2-92**
 802.1X Critical Authentication
 disabling on a port **2-93**
 disabling on a VLAN **2-96**
 EAPOL
 disabling send success packets **2-94**
 enabling send success packets **2-94**
 enabling on a port **2-93**

enabling on a VLAN **2-96**
 returning delay time to default setting **2-95**
 setting delay time on a port **2-95**
 802.1X Port Based Authentication
 allowing multiple hosts on a port **2-103**
 debugging 802.1X Port Based Authentication **2-56**
 displaying port based authentication **2-338**
 enabling accounting for authentication sessions **2-3**
 enabling authentication on the system **2-108**
 enabling guest VLAN **2-97**
 enabling guest VLAN supplicant **2-90, 2-98**
 enabling manual control of auth state **2-104**
 enabling periodic re-authentication of the client **2-107**
 initializing re-authentication of dot1x ports **2-106**
 initializing state machines **2-99**
 receive session termination message upon reboot **2-4**
 setting maximum number for EAP requests **2-102**
 setting the reauthentication timer **2-109**

A

abbreviating commands
 context-sensitive help **1-1**
 Access Gateway Module
 connecting to a module **2-12**
 connecting to a remote module **2-295**
 connecting to a specific remote module **2-305**
 access-group
 displaying mac interface **2-444**
 show mode interface **2-309**
 access groups
 IP **2-5**

- access lists
 - clearing an access template **2-28**
 - defining ARP **2-11**
 - displaying ARP information **2-312**
 - See also ACLs, MAC ACLs, and VACLs
 - access maps
 - applying with VLAN filter **2-639**
 - ACLs
 - access-group mode **2-5**
 - balancing hardware regions **2-8**
 - determining ACL hardware programming **2-6**
 - displaying mac access-group interface **2-444**
 - using ACL naming conventions for MAC ACLs **2-206**
 - action clause
 - specifying drop or forward action in a VACL **2-9**
 - addresses, configuring a maximum **2-263**
 - adjacency
 - debugging the adjacency table **2-50**
 - disabling the debug facility **2-50**
 - displaying information about the adjacency table **2-310**
 - displaying IPC table entries **2-50**
 - aggregate policer
 - displaying information **2-491**
 - aging time
 - displaying MAC address aging time **2-447**
 - MAC address table **2-209**
 - alarms
 - displaying operational status **2-341**
 - alternation
 - description **1-9**
 - anchoring
 - description **1-10**
 - ARP
 - access list, displaying detailed information **2-312**
 - defining access-lists **2-11**
 - ARP inspection
 - enforce certain types of checking **2-142**
 - ARP packet
 - deny based on DHCP bindings **2-86**
 - permit based on DHCP bindings **2-249**
 - authentication
 - setting username **2-629**
 - using an MD5-type encryption method **2-629**
 - verifying MD5 signature **2-630**
 - verifying the checksum for Flash memory **2-630**
 - auth fail VLAN
 - enable on a port **2-91**
 - set max number of attempts **2-90**
 - authorization state
 - enabling manual control **2-104**
 - authorization state of a controlled port **2-104**
 - automatic installation
 - displaying status **2-313**
 - automatic medium-dependent interface crossover
 - See Auto-MDIX
 - Auto-MDIX
 - disabling **2-234**
 - enabling **2-234**
 - auto-negotiate interface speed
 - example **2-578**
 - auto-QoS
 - configuring for VoIP **2-13**
 - displaying configuration **2-314**
-
- B**
- baby giants
 - displaying the system MTU setting **2-517**
 - setting the maximum Layer 2 payload size **2-612**
 - BackboneFast
 - displaying debugging messages **2-75**
 - displaying spanning tree status **2-507**
 - enabling debugging **2-75**
 - bindings
 - store for DHCP snooping **2-151**
 - BOOT environment variable
 - displaying information **2-318**

- bootflash
 displaying information **2-316**
- BPDUs
 debugging spanning tree activities **2-74**
- bridge protocol data units
 See BPDUs
- broadcast suppression level
 configuring **2-579, 2-581**
 enabling **2-579, 2-581**
-
- C**
- cable diagnostics
- TDR
 displaying test results **2-319**
 testing conditions of copper cables **2-613**
- Catalyst 4507R **2-259**
 power redundancy mode **2-264**
- CDP
 configuring tunneling encapsulation rate **2-196**
 displaying
 neighbor information **2-321**
 enabling protocol tunneling for **2-193**
 set drop threshold for **2-195**
- CEF
 displaying next-hop information **2-386**
 displaying VLAN configuration information **2-386**
- cisco-desktop
 macro apply **2-217**
- Cisco Express Forwarding
 See CEF
- cisco-phone
 macro apply **2-219**
- cisco-router
 macro apply **2-221**
- cisco-switch
 macro apply **2-223**
- clear commands
 clearing Gigabit Ethernet interfaces **2-26**
 clearing IGMP group cache entries **2-33**
 clearing interface counters **2-23**
 clearing IP access lists **2-28, 2-29**
 clearing IP ARP inspection statistics VLAN **2-30**
 clearing IP DHCP snooping database **2-31**
 clearing IP DHCP snooping database statistics **2-32**
 clearing MFIB counters and routes **2-36**
 clearing MFIB fastdrop entries **2-37**
 clearing PAgP channel information **2-42**
 clearing QoS aggregate counters **2-45**
 clearing VLAN interfaces **2-27**
- CLI string search
 anchoring **1-10**
 expressions **1-7**
 filtering **1-6**
 multiple-character patterns **1-8**
 multipliers **1-9**
 parentheses for recall **1-10**
 searching outputs **1-6**
 single-character patterns **1-7**
 using **1-6**
- command modes
 accessing privileged EXEC mode **1-4**
 exiting **1-4**
 understanding user EXEC and configuration modes **1-4**
- condition interface
 debugging interface-related activities **2-52**
- condition vlan
 debugging VLAN output **2-55**
 configuration, saving **1-11**
 configuring
 root as secondary **2-562**
 configuring a SPAN session to monitor
 limit SPAN source traffic **2-238**
 configuring forward delay **2-558**
 configuring root as primary **2-562**

- CoPP
- attaching
 - policy map to control plane **2-303**
 - displaying
 - policy-map class information **2-470**
 - entering configuration mode **2-48**
 - removing
 - service policy from control plane **2-303**
- CoS
- assigning to Layer 2 protocol packets **2-194**
 - CoS QoS default
 - defining value on an interface **2-279**
 - Cost of Service
 - See QoS CoS
 - counters
 - clearing interface counters **2-23**
-
- D**
- DAI
- clear statistics **2-30**
- DBL
- displaying qos dbl **2-492**
 - enabling DBL globally on the switch **2-280**
- debug commands
- debugging backup events **2-51**
 - debugging DHCP snooping events **2-61**
 - debugging DHCP snooping messages **2-62**
 - debugging EtherChannel/PAgP/shim **2-57**
 - debugging IPC activity **2-60**
 - debugging IP DHCP snooping security messages **2-63**
 - debugging NVRAM activities **2-66**
 - debugging PAgP activities **2-67**
 - debugging port manager activities **2-70**
 - debugging software MAC filter updates **2-73**
 - debugging spanning tree activities **2-74**
 - debugging spanning tree backbonefast **2-75**
 - debugging spanning tree UplinkFast **2-78**
 - debugging supervisor redundancy **2-72**
- debugging VLAN manager activities **2-79**
- displaying monitor activity **2-65**
- displaying the adjacency table **2-50**
- enabling debug dot1x **2-56**
- enabling debugging messages for ISL VLAN IDs **2-81**
- enabling debugging messages for VTP **2-82**
- enabling debugging of UDLD activity **2-83**
- enabling switch shim debugging **2-76**
- enabling VLAN manager file system error tests **2-80**
- limiting debugging output for VLANs **2-55**
- limiting interface debugging output **2-52**
- limiting output for debugging standby state changes **2-53**
- shortcut to the debug condition interface **2-59**
- debugging
- activity monitoring **2-65**
 - DHCP snooping events **2-61**
 - DHCP snooping packets **2-62**
 - IPC activities **2-60**
 - IP DHCP snooping security packets **2-63**
 - NVRAM activities **2-66**
 - PAgP activities **2-67**
 - PAgP shim **2-57**
 - PM activities **2-70**
 - SMF address insertions and deletions **2-73**
 - spanning tree BackboneFast events **2-75**
 - spanning tree switch shim **2-76**
 - spanning tree UplinkFast events **2-78**
 - VLAN manager activities **2-79**
 - VLAN manager IOS file system error tests **2-80**
 - VTP protocol debug messages **2-82**
 - debug spanning tree switch **2-76**
 - debug sw-vlan vtp **2-82**
 - default CoS value **2-279**
 - default form of a command, using **1-6**
 - defining egress DSCP-to-CoS mapping **2-285**
 - DHCP
 - clearing database statistics **2-32**

- DHCP bindings
 configuring bindings **2-150**
 deny ARP packet based on matches **2-86**
 permit ARP packet based on matches **2-249**
- DHCP snooping
 clearing database **2-31**
 displaying binding table **2-388**
 displaying configuration information **2-387**
 displaying status of DHCP database **2-391**
 displaying status of error detection **2-344**
 enabling DHCP globally **2-149**
 enabling IP source guard **2-182**
 enabling on a VLAN **2-157**
 enabling option 82 **2-153, 2-154**
 enabling rate limiting on an interface **2-155**
 enabling trust on an interface **2-156**
 establishing binding configuration **2-150**
 renew binding database **2-297**
 store generated bindings **2-151**
- diagnostic test
 bootup packet memory **2-332**
 displaying attributes **2-326**
 display module-based results **2-328**
 running **2-89**
 show results for TDR **2-319**
 testing conditions of copper cables **2-613**
- displaying error disable recovery **2-345**
 displaying inline power status **2-483**
 displaying monitoring activity **2-65**
 displaying SEEPROM information
 GBIC **2-353**
 displaying SPAN session information **2-516, 2-580**
- document conventions **xviii**
 document organization **xvii**
- DoS
- CoPP
 attaching policy map to control plane **2-303**
 displaying policy-map class information **2-470**
 entering configuration mode **2-48**
- removing service policy from control plane **2-303**
 entering
 CoPP configuration mode **2-48**
- DOS attack
 protecting system's resources **2-137**
 drop threshold, Layer 2 protocol tunneling **2-195**
- DSCP rewrite for IP packets
 enable **2-288**
- dual-capable port
 selecting a connector **2-235**
- duplex mode
 configuring autonegotiation on an interface **2-111**
 configuring full duplex on an interface **2-111**
 configuring half duplex on an interface **2-111**
- dynamic ARP inspection
 preventing **2-137**
- Dynamic Buffer Limiting
 See DBL
- Dynamic Host Configuration Protocol
 See DHCP
-
- E**
- EAP
 restarting authentication process **2-102**
- EIGRP (Enhanced IGRP)
 filters
 routing updates, preventing **2-246**
- enabling
 debugging for UDLD **2-83**
 voice VLANs **2-582**
- environmental
 alarms **2-341**
 displaying information **2-341**
 status **2-341**
 temperature **2-341**
- erase a file **2-113**
- error disable detection
 enabling error disable detection **2-116**

error-disabled state
displaying [2-372](#)

error disable recovery
configuring recovery mechanism variables [2-118](#)
displaying recovery timer information [2-345](#)
enabling ARP inspection timeout [2-118](#)
specifying recovery cause [2-118](#)

EtherChannel
assigning interfaces to EtherChannel groups [2-17](#)
debugging EtherChannel [2-57](#)
debugging PAgP shim [2-57](#)
debugging spanning tree activities [2-74](#)
displaying information for a channel [2-346](#)
removing interfaces from EtherChannel groups [2-17](#)

EtherChannel guard
detecting STP misconfiguration [2-549](#)

Explicit Host Tracking
clearing the database [2-35](#)
enabling per-VLAN [2-169](#)

expressions
matching multiple expression occurrences [1-9](#)
multiple-character patterns [1-8](#)
multiplying pattern occurrence [1-10](#)
single-character patterns [1-7](#)

Extensible Authentication Protocol
See EAP

F

field replaceable unit (FRU)
displaying status information [2-341](#)

filters

EIGRP
routing updates, preventing [2-246](#)

Flash memory file system
displaying file system information [2-316](#)
verifying checksum [2-630](#)

flow control
configuring a gigabit interface for pause frames [2-121](#)
displaying per-interface statistics for flow control [2-350](#)

G

GBIC
displaying SEEPROM information [2-353](#)

Gigabit Ethernet interface
clearing the hardware logic [2-26](#)

Gigabit Ethernet uplink
selecting [2-125](#)
showing the mode [2-352](#)

global configuration mode
using [1-5](#)

H

hardware module
resetting a module by toggling the power [2-124](#)

hardware uplink
selecting the mode [2-125](#)
showing the mode [2-352](#)

helper addresses, IP [2-404](#)

hot standby protocol
debugging [2-53](#)
disabling debugging [2-53](#)
limiting output [2-53](#)

I

IDPROMs
displaying SEEPROM information
chassis [2-353](#)
clock module [2-353](#)
fan trays [2-353](#)
module [2-353](#)
mux buffer [2-353](#)

- power supplies [2-353](#)
- supervisor engine [2-353](#)
- ifIndex persistence
 - clearing SNMP ifIndex commands [2-537](#)
 - compress SNMP ifIndex table format [2-542](#)
 - disabling globally [2-541](#)
 - disabling on an interface [2-538](#)
 - enabling globally [2-541](#)
 - enabling on an interface [2-538](#)
- IGMP
 - applying filters for host joining on Layer 2 interfaces [2-159](#)
 - clearing IGMP group cache entries [2-33](#)
 - configuring frequency for IGMP host-query messages [2-162](#)
 - creating an IGMP profile [2-161](#)
 - displaying IGMP interface configuration information [2-393](#)
 - displaying profiles [2-394](#)
 - setting maximum group numbers [2-160](#)
- IGMP profiles
 - displaying [2-394](#)
- IGMP snooping
 - clearing the EHT database [2-35](#)
 - configuring a Layer 2 interface as a group member [2-173](#)
 - configuring a Layer 2 interface as a multicast router [2-171](#)
 - configuring a static VLAN interface [2-173](#)
 - displaying multicast information [2-401](#)
 - displaying VLAN information [2-395, 2-399, 2-402](#)
 - enabling [2-164](#)
 - enabling immediate-leave processing [2-170](#)
 - enabling on a VLAN [2-168](#)
 - enabling per-VLAN Explicit Host Tracking [2-169](#)
- informs
 - enabling [2-539](#)
- inline power
 - displaying inline power status [2-483](#)
- In Service Software Upgrade
 - See ISSU
- inspection log
 - clearing log buffer [2-29](#)
- interface
 - displaying suppressed multicast bytes [2-366](#)
- interface capabilities
 - displaying [2-362](#)
- interface configuration mode
 - summary [1-5](#)
- interface link
 - display cable disconnect time [2-369](#)
- interfaces
 - configuring dot1q tunnel ports [2-587](#)
 - creating an interface-range macro [2-85](#)
 - debugging output of interface related activities [2-52](#)
 - displaying description [2-368](#)
 - displaying error-disabled state [2-372](#)
 - displaying information when tunneling is enabled [2-438](#)
 - displaying status [2-368](#)
 - displaying traffic for a specific interface [2-359](#)
 - entering interface configuration mode [2-129](#)
 - executing a command on multiple ports in a range [2-132](#)
 - selecting an interface to configure [2-129](#)
 - setting a CoS value for Layer 2 packets [2-194](#)
 - setting drop threshold for Layer 2 packets [2-195](#)
 - setting the interface type [2-587](#)
- interface speed
 - configuring interface speed [2-576](#)
- interface transceiver
 - displaying diagnostic data [2-375](#)
- internal VLAN allocation
 - configuring [2-640](#)
 - default setting [2-640](#)
 - displaying allocation information [2-528](#)
- Internet Group Management Protocol
 - See IGMP

IP ARP

- applying ARP ACL to VLAN [2-135](#)
- clearing inspection statistics [2-30](#)
- clearing status of log buffer [2-29](#)
- controlling packet logging [2-145](#)
- enabling dynamic inspection [2-144](#)
- limit rate of incoming requests [2-137](#)
- set per-port config trust state [2-141](#)
- showing status of dynamic ARP inspection [2-382](#)
- showing status of log buffer [2-385](#)

IPC

- debugging IPC activities [2-60](#)

IP DHCP Snooping

See DHCP snooping

IP header validation

- disabling [2-181](#)
- enabling [2-181](#)

IP interfaces

- displaying usability status [2-403](#)

IP multicast

- displaying multicast routing table information [2-409](#)

IP packets

- enable DSCP rewrite [2-288](#)

IP phone and standard desktop

- enabling Cisco-recommended features [2-219](#)

IP source binding

- adding or deleting [2-178](#)
- displaying bindingstagging [2-414](#)

IP source guard

- debugging messages [2-63](#)
- displaying configuration and filters [2-415](#)
- enabling on DHCP snooping [2-182](#)

ISSU

- canceling process [2-184](#)
- configuring rollback timer [2-192](#)
- displaying capability [2-419](#)
- displaying client information [2-421](#)
- displaying compatibility matrix [2-423](#)
- displaying config-sync failure information [2-427](#)

- displaying endpoint information [2-429](#)
- displaying entities [2-430](#)
- displaying FSM session [2-431](#)
- displaying messages [2-432](#)
- displaying negotiated [2-433](#)
- displaying rollback-timer [2-434](#)
- displaying session information [2-435](#)
- displaying software version [2-436](#)
- displaying state [2-436](#)
- forcing switchover to standby supervisor engine [2-191](#)
- loading new image [2-187](#)
- mismatched command listing [2-188](#)
- starting process [2-190](#)
- stopping rollback timer [2-185](#)

J

Jumbo frames

- enabling jumbo frames [2-242](#)

L

LACP

- deselecting channeling protocol [2-19](#)
- enabling LACP on an interface [2-19](#)
- setting channeling protocol [2-19](#)

Layer 2

- displaying ACL configuration [2-444](#)

Layer 2 interface type

- specifying a nontrunking, nontagged single VLAN interface [2-587](#)
- specifying a trunking VLAN interface [2-587](#)

Layer 2 protocol ports

- displaying [2-438](#)

Layer 2 protocol tunneling error recovery

Layer 2 switching

- enabling voice VLANs [2-582](#)
- modifying switching characteristics [2-582](#)

Layer 2 traceroute
 IP addresses **2-618**

Layer 3 switching
 displaying information about an adjacency table **2-310**
 displaying port status **2-373**
 displaying status of native VLAN tagging **2-373**

link-status event messages
 disabling
 globally **2-200, 2-203**
 on an interface **2-201, 2-204**
 enabling
 globally **2-200, 2-203**
 on an interface **2-201, 2-204**

log buffer
 show status **2-385**

logging
 controlling IP ARP packets **2-145**

M

MAC Access Control Lists
 See MAC ACLs

MAC ACLs

 defining extended MAC access list **2-206**
 displaying MAC ACL information **2-525**
 naming an ACL **2-206**

MAC address filtering

 configuring **2-215**
 disabling **2-215**
 enabling **2-215**

MAC address table

 adding static entries **2-228**
 clearing dynamic entries **2-39, 2-41**
 configuring aging time **2-209**
 displaying dynamic table entry information **2-449**
 displaying entry count **2-448**
 displaying information **2-445**
 displaying interface-based information **2-451**
 displaying multicast information **2-453**

 displaying notification information **2-455**
 displaying protocol-based information **2-457**
 displaying static table entry information **2-459**
 displaying the MAC address aging time **2-447**
 displaying VLAN-based information **2-461**
 enabling authentication bypass **2-100**
 enabling notifications **2-213**
 learning in the protocol buckets **2-210**
 removing static entries **2-228**

MAC address tables
 adding static entries **2-215**
 deleting secure or specific addresses **2-43**
 disabling IGMP snooping on static MAC addresses **2-215**
 removing static entries **2-215**

mac-address-table static **2-215**

MAC address unicast filtering
 dropping unicast traffic **2-215**

macro
 displaying descriptions **2-227**

macro keywords
 help strings **2-2**

macros
 adding a global description **2-227**
 cisco global **2-225**
 system-cpp **2-226**
 mapping secondary VLANs to MST instance **2-271**
 mapping VLAN(s) to an MST instance **2-127**

match subcommand
 accessing **2-21**

maximum transmission unit (MTU)
 displaying the system MTU setting **2-517**
 setting the maximum Layer 2 payload size **2-612**

MD5
 verifying MD5 signature **2-630**

message digest 5
 See MD5

MFIB

clearing ip mfib counters **2-36**
 clearing ip mfib fastdrop **2-37**
 displaying all active MFIB routes **2-406**
 displaying MFIB fastdrop table entries **2-408**
 enabling IP MFIB fastdrops **2-175**

modes

access-group **2-5**
 show access-group interface **2-309**
 switching between PVST+, MST, and Rapid PVST **2-554**

See also command modes

module password clearing **2-25****module reset**

resetting a module by toggling the power **2-124**

--More-- prompt

filter **1-6**

search **1-7**

MST

designating the primary and secondary root **2-562**
 displaying MST protocol information **2-512**
 displaying region configuration information **2-512**
 displaying spanning tree information **2-512**
 entering MST configuration submode **2-556**
 setting configuration revision number **2-299**
 setting path cost and port priority for instances **2-555**
 setting the forward delay timer for all instances **2-558**
 setting the hello-time delay timer for all instances **2-559**
 setting the max-age timer for all instances **2-560**
 setting the MST region name **2-243**
 specifying the maximum number of hops **2-561**
 switching between PVST+ and Rapid PVST **2-554**
 using the MST configuration submode revision command **2-299**
 using the submode name command **2-243**

MTU

displaying global MTU settings **2-517**

multicast

enabling storm control **2-581**

multicast/unicast packets

prevent forwarding **2-586**

Multicast Forwarding Information Base

See MFIB

multiple-character patterns **1-8****multiple hosts on authorized port** **2-103****Multiple Spanning Tree**

See MST

N**native VLAN**

controlling tagging of traffic **2-607**

displaying ports eligible for native tagging **2-527**

displaying ports eligible for tagging **2-527**

enabling tagging on 802.1Q trunk ports **2-638**

specifying the tagging of traffic **2-608**

NetFlow

enabling NetFlow statistics **2-176**

including infer fields in routing statistics **2-176**

next-hop

displaying CEF VLAN information **2-386**

no form of a command, using **1-6****NVRAM**

debugging NVRAM activities **2-66**

O**output**

pattern searches **1-7**

P**packet forwarding**

prevent unknown packets **2-586**

packet memory failure
 direct switch action upon detection **2-88**

packet memory test
 bootup, displaying results **2-332, 2-334**
 ongoing, displaying results **2-336**

PACL
 access-group mode **2-5**

paging prompt
 see --More-- prompt

PAgP
 clearing port channel information **2-42**
 debugging PAgP activity **2-67**
 deselecting channeling protocol **2-19**
 displaying port channel information **2-467**
 hot standby mode
 returning to defaults **2-245**
 selecting ports **2-245**
 input interface of incoming packets
 learning **2-244**
 returning to defaults **2-244**
 setting channeling protocol **2-19**

parentheses **1-10**

password
 clearing on an intelligent line module **2-25**
 establishing enhanced password security **2-629**
 setting username **2-629**

PBR
 displaying route maps **xviii**
 redistributing route maps **xviii**

PM activities
 debugging **2-70**
 disabling debugging **2-70**

Policy Based Routing
 See PBR

port, dual-capable
 selecting the connector **2-235**

Port Aggregation Protocol
 See PAgP

port-based authentication
 displaying debug messages **2-56**
 displaying statistics and status **2-338**
 enabling 802.1X **2-104**
 manual control of authorization state **2-104**
 multiple hosts on authorized port **2-103**
 periodic re-authentication
 enabling **2-107**
 re-authenticating 802.1X-enabled ports **2-106**
 switch-to-client frame-retransmission number **2-102**

port channel
 accessing **2-131**
 creating **2-131**
 displaying information **2-467**
 load distribution method
 resetting to defaults **2-253**
 setting **2-253**

port range
 executing **2-132**

port security
 debugging ports security **2-71**
 deleting secure or specific addresses **2-43**
 displaying settings for an interface or switch **2-477**
 enabling **2-592**
 filter source IP and MAC addresses **2-182**
 setting action upon security violation **2-592**
 setting the rate limit for bad packets **2-592**
 sticky port **2-592**

Port Trust Device
 displaying **2-493**

power status
 displaying inline power **2-483**
 displaying power status **2-483**

power supply
 configuring combined and redundant power on the Catalyst 4507R **2-259**
 configuring inline power **2-256**
 configuring power consumption **2-258**

- configuring power redundancy on the Catalyst 4507R **2-264**
- displaying the EEPROM **2-353**
- setting inline power state **2-255**
- Private VLAN
See PVLANs
- privileged EXEC mode, summary **1-5**
- prompts
- system **1-5**
- protocol tunneling
- configuring encapsulation rate **2-196**
 - disabling **2-193**
 - displaying port information **2-438**
 - enabling **2-193**
 - setting a CoS value for Layer 2 packets **2-194**
 - setting a drop threshold for Layer 2 packets **2-195**
- PVLANs
- configuring isolated, primary, and community PVLANs **2-265**
 - controlling tagging of native VLAN traffic **2-607**
 - disabling sticky-ARP **2-179**
 - displaying map information for VLAN SVIs **2-371**
 - displaying PVLAN information **2-530**
 - enabling interface configuration mode **2-587**
 - enabling sticky-ARP **2-179**
 - mapping VLANs to the same SVI **2-269**
 - specifying host ports **2-587**
 - specifying promiscuous ports **2-587**
- PVST+
switching between PVST and MST **2-554**
-
- Q**
- QoS
- account Layer 2 encapsulation **2-274**
 - attaching a policy-map to an interface **2-300**
 - automatic configuration **2-13**
 - clearing aggregate counters **2-45**
 - configuring a QoS policy map **2-251**
- configuring auto **2-13**
- defining a named aggregate policer **2-276**
- defining default CoS value **2-279**
- defining ingress CoS-to-DSCP mapping **2-283**
- displaying aggregate policer information **2-491**
- displaying auto configuration **2-314**
- displaying class maps information **2-324**
- displaying configuration information **2-314**
- displaying configurations of policies **2-473**
- displaying policy map information **2-469, 2-476**
- displaying QoS information **2-490**
- displaying QoS map information **2-494**
- enabling global configuration mode **2-272**
- enabling per-VLAN QoS for a Layer 2 interface **2-291**
- enabling QoS on an interface **2-273**
- mapping DSCP values to transmit queues **2-285**
- mapping egress DSCP-to-CoS **2-285**
- mapping the DSCP-to-CoS value **2-285**
- setting the mapping of policed DSCP values **2-287**
- setting the trust state **2-289**
- specifying flow-based match criteria **2-230**
- QoS CoS
- configuring for tunneled Layer 2 protocol packets **2-194**
 - defining default CoS value **2-279**
- qos dbl **2-280**
- question command **1-1**
- queueing information
- displaying **2-493**
-
- R**
- Rapid PVST
- switching between PVST and MST **2-554**
- re-authenticating 802.1X-enabled ports **2-106**
- re-authentication
- periodic **2-107**
 - set the time **2-109**
- reboots
- restoring bindings across **2-150**

- redundancy
- accessing the main CPU [2-292](#)
 - changing from active to standby supervisor engine [2-293](#)
 - displaying information [2-496](#)
 - displaying redundancy facility information [2-496](#)
 - displaying RF client list [2-496](#)
 - displaying RF operational counters [2-496](#)
 - displaying RF states [2-496](#)
 - enabling automatic synchronization [2-16](#)
 - forcing switchover to standby supervisor engine [2-293](#)
 - set the mode [2-236](#)
 - synchronizing the route processor configurations [2-228](#)
- related documentation [xvii](#)
- remote SPAN
- See RSPAN
- renew commands
- ip dhcp snooping database [2-297](#)
- resetting PVLAN trunk
- setting switchport to trunk [2-587](#)
- rj45 connector, selecting the connector [2-235](#)
- ROM monitor mode
- summary [1-6](#)
- Route Processor Redundancy
- See redundancy
- RPR
- set the redundancy mode [2-236](#)
- RSPAN
- converting VLAN to RSPAN VLAN [2-296](#)
 - displaying list [2-532](#)
-
- S**
- saving configuration changes [1-11](#)
- secure address, configuring [2-261](#)
- secure ports, limitations [2-593](#)
- set the redundancy mode [2-236](#)
- sfp connector, selecting the connector [2-235](#)
- 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 [2-503](#)
- slot0
- displaying information about the system [2-505](#)
- SMF
- debugging address insertions and deletions [2-73](#)
- SNMP
- debugging spanning tree activities [2-74](#)
 - ifIndex persistence
 - clearing SNMP ifIndex commands [2-537](#)
 - compress SNMP ifIndex table format [2-542](#)
 - disabling globally [2-541](#)
 - disabling on an interface [2-538](#)
 - enabling globally [2-541](#)
 - enabling on an interface [2-538](#)
 - informs
 - disabling [2-539](#)
 - enabling [2-539](#)
 - traps
 - configuring to send when storm occurs [2-579](#)
 - disabling [2-539](#)
 - enabling [2-539](#)
 - mac-notification
 - adding [2-543](#)
 - removing [2-543](#)
- software MAC filter
- See SMF
- SPAN commands
- configuring a SPAN session to monitor [2-238](#)
 - displaying SPAN session information [2-516, 2-580](#)

- SPAN enhancements
 - displaying status [2-465](#)
- Spanning Tree Protocol
 - See STP
- SPAN session
 - displaying session information [2-465](#)
 - filter ACLs [2-238](#)
 - specify encapsulation type [2-238](#)
 - turn off host learning based on ingress packets [2-238](#)
- special characters
 - anchoring, table [1-10](#)
- SSO [2-236](#)
- standard desktop
 - enabling Cisco-recommended features [2-217](#)
- standard desktop and Cisco IP phone
 - enabling Cisco-recommended features [2-219](#)
- sticky address, configuring [2-262](#)
- sticky-ARP
 - disabling on PVLANS [2-179](#)
 - enabling on PVLANS [2-179](#)
- sticky port
 - deleting [2-43](#)
 - enabling security [2-592](#)
- storm control
 - configuring for action when storm occurs [2-579](#)
 - disabling suppression mode [2-344](#)
 - displaying settings [2-515](#)
 - enabling [2-579](#)
 - enabling broadcast [2-579, 2-581](#)
 - enabling multicast [2-579, 2-581](#)
 - enabling suppression mode [2-344](#)
 - enabling timer to recover from error disable [2-118](#)
 - enabling unicast [2-579, 2-581](#)
 - multicast, enabling [2-581](#)
 - setting high and low levels [2-579](#)
 - setting suppression level [2-344](#)
- STP
 - configuring link type for a port [2-552](#)
 - configuring tunneling encapsulation rate [2-196](#)
 - debugging all activities [2-74](#)
 - debugging spanning tree activities [2-74](#)
 - debugging spanning tree BackboneFast events [2-75](#)
 - debugging spanning tree UplinkFast [2-78](#)
 - detecting misconfiguration [2-549](#)
 - displaying active interfaces only [2-507](#)
 - displaying BackboneFast status [2-507](#)
 - displaying bridge status and configuration [2-507](#)
 - displaying spanning tree debug messages [2-74](#)
 - displaying summary of interface information [2-507](#)
 - enabling BPDU filtering by default on all PortFast ports [2-567](#)
 - enabling BPDU filtering on an interface [2-545](#)
 - enabling BPDU guard by default on all PortFast ports [2-569](#)
 - enabling BPDU guard on an interface [2-547](#)
 - enabling extended system ID [2-550](#)
 - enabling loop guard as a default on all ports [2-553](#)
 - enabling PortFast by default on all access ports [2-570](#)
 - enabling PortFast mode [2-565](#)
 - enabling protocol tunneling for [2-193](#)
 - enabling root guard [2-551](#)
 - enabling spanning tree BackboneFast [2-544](#)
 - enabling spanning tree on a per VLAN basis [2-574](#)
 - enabling spanning tree UplinkFast [2-572](#)
 - setting an interface priority [2-571](#)
 - setting drop threshold for [2-195](#)
 - setting pathcost [2-548](#)
 - setting the default pathcost calculation method [2-564](#)
 - subinterface configuration mode, summary [1-6](#)
 - SVI
 - creating a Layer 3 interface on a VLAN [2-134](#)
 - switchport [2-608](#)
 - switchport interfaces
 - displaying status of Layer 3 port [2-373](#)
 - displaying status of native VLAN tagging [2-373](#)
 - switch shim
 - debugging [2-76](#)
 - disabling debugging [2-76](#)

- switch to router connection
enabling Cisco-recommended features **2-221**
- switch to switch connection
enabling Cisco-recommended features **2-223**
- switch virtual interface
See SVI
- sw-vlan** **2-79**
- system prompts **1-5**
-
- T**
- Tab key
command completion **1-1**
- tables
characters with special meaning **1-7**
mac access-list extended subcommands **2-206**
match syntax description **2-22**
multipliers **1-9**
relationship between duplex and speed commands **2-577**
show cable-diagnostics tdr command output fields **2-320**
show cdp neighbors detail field descriptions **2-323**
show cdp neighbors field descriptions **2-322**
show ip interface field descriptions **2-404**
show policy-map control-plane field descriptions **2-472**
show vlan command output fields **2-531**
show vtp command output fields **2-535**
special characters **1-9**
special characters used for anchoring **1-10**
speed command options **2-230, 2-576**
valid interface types **2-129**
- TAC
displaying information useful to TAC **2-518**
- TCAM
debugging spanning tree activities **2-74**
- TDR
displaying cable diagnostic test results **2-319**
test condition of copper cables **2-613**
- temperature readings
displaying information **2-341**
- timer information **2-345**
- traffic shaping
enable on an interface **2-307**
traps, enabling **2-539**
- trunk encapsulation
setting format **2-608**
- trunk interfaces
displaying trunk interfaces information **2-380**
- trust state
setting **2-141**
- tunnel ports
displaying information about Layer 2 protocol **2-438**
- TX queues
allocating bandwidth **2-621**
returning to default values **2-621**
setting priority to high **2-621**
specifying burst size **2-621**
specifying traffic rate **2-621**
-
- U**
- UDLD
displaying administrative and operational status **2-520**
enabling by default on all fiber interfaces **2-623**
enabling on an individual interface **2-625**
preventing a fiber interface from being enabled **2-625**
resetting all shutdown ports **2-627**
setting the message timer **2-623**
- Unidirectional Link Detection
See UDLD
- unknown multicast traffic, preventing **2-586**
unknown unicast traffic, preventing **2-586**
- user EXEC mode, summary **1-5**
- username
setting password and privilege level **2-629**

V**VACLS**

- access-group mode [2-5](#)
- applying VLAN access maps [2-639](#)
- displaying VLAN access map information [2-525](#)
- specifying an action in a VLAN access map [2-9](#)
- specifying the match clause for a VLAN access-map sequence [2-229](#)
- using a VLAN filter [2-639](#)

VLAN

- applying an ARP ACL [2-135](#)
- configuring [2-632](#)
- converting to RSPAN VLAN [2-296](#)
- displaying CEF information [2-386](#)
- displaying CEF next-hop information [2-386](#)
- displaying information on switch interfaces [2-395, 2-399](#)
- displaying information on VLAN switch interfaces [2-402](#)
- displaying information sorted by group IP address [2-395, 2-399](#)
- displaying IP address and version information [2-395, 2-399](#)
- displaying Layer 2 VLAN information [2-521](#)
- displaying statistical information [2-463](#)
- displaying VLAN information [2-523](#)
- enabling dynamic ARP inspection [2-144](#)
- enabling Explicit Host Tracking [2-169](#)
- enabling guest per-port [2-97](#)
- enabling guest VLAN supplicant [2-90, 2-98](#)
- entering VLAN configuration mode [2-636](#)
- native frames
 - enabling tagging on all 802.1Q trunk ports [2-638](#)
- pruning the list for VTP [2-608](#)
- setting the list of allowed [2-608](#)

VLAN Access Control Lists

See VACLS

VLAN access map

See VACLS

VLAN database

resetting [2-298](#)

VLAN debugging

limiting output [2-55](#)

VLAN manager

debugging [2-79](#)

disabling debugging [2-79](#)

IOS file system error tests

debugging [2-80](#)

disabling debugging [2-80](#)

VLAN Query Protocol

See VQP

VLAN query protocol (VQPC)

debugging [2-84](#)

VLANs

clearing

counters [2-46](#)

clearing hardware logic [2-27](#)

configuring

internal allocation scheme [2-640](#)

displaying

internal VLAN allocation information [2-528](#)

RSPAN VLANs [2-532](#)

entering VLAN configuration mode [2-636](#)

VMPS

configuring servers [2-644](#)

reconfirming dynamic VLAN assignments [2-642](#)

voice VLANs

enabling [2-582](#)

VoIP

configuring auto-QoS [2-13](#)

VQP

per-server retry count [2-643](#)

reconfirming dynamic VLAN assignments [2-642](#)

VTP

configuring the administrative domain name [2-648](#)

configuring the device in VTP client mode [2-647](#)

configuring the device in VTP server mode [2-651](#)

configuring the device in VTP transparent mode [2-652](#)

configuring tunnel encapsulation rate [2-196](#)
creating a VTP domain password [2-649](#)
displaying domain information [2-534](#)
displaying statistics information [2-534](#)
enabling protocol tunneling for [2-193](#)
enabling pruning in the VLAN database [2-650](#)
enabling VTP version 2 mode [2-653](#)
modifying the VTP configuration storage file
 name [2-646](#)
set drop threshold for [2-195](#)

VTP protocol code

- activating debug messages [2-82](#)
- deactivating debug messages [2-82](#)

