



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

- 802.1Q trunk ports and native VLANs [2-503](#)
- 802.1Q tunnel ports
 - configuring [2-462](#)
- 802.1s Multiple Spanning Tree
 - see MST
- 802.1x Port Based Authentication
 - allowing multiple hosts on a port [2-86](#)
 - debugging 802.1x Port Based Authentication [2-49](#)
 - displaying port based authentication [2-256](#)
 - enabling accounting for authentication sessions [2-3](#)
 - enabling authentication on the system [2-91](#)
 - enabling guest VLAN [2-82](#)
 - enabling manual control of auth state [2-87](#)
 - enabling periodic re-authentication of the client [2-90](#)
 - initializing re-authentication of dot1x ports [2-89](#)
 - initializing state machines [2-83](#)
 - receive session termination message upon reboot [2-4](#)
 - setting maximum number for EAP requests [2-85](#)

A

- abbreviating commands
 - context-sensitive help [1-1](#)
- Access Gateway Module
 - connecting to a module [2-11](#)
 - connecting to a remote module [2-229](#)
 - connecting to a specific remote module [2-235](#)
- access-group
 - displaying mac interface [2-336](#)
 - show mode interface [2-239](#)
- access groups
 - IP [2-5](#)
- access lists
 - clearing an access template [2-26](#)
 - defining ARP [2-10](#)
 - displaying ARP information [2-240](#)
 - See also ACLs, MAC ACLs, and VACLs
- access maps
 - applying with VLAN filter [2-504](#)
- ACLs
 - access-group mode [2-5](#)
 - determining ACL hardware programming [2-6](#)
 - displaying mac access-group interface [2-336](#)
 - using ACL naming conventions for MAC ACLs [2-163](#)
- action clause
 - specifying drop or forward action in a VACL [2-8](#)
- adjacency
 - debugging the adjacency table [2-43](#)
 - disabling the debug facility [2-43](#)
 - displaying IPC table entries [2-43](#)
- aggregate policer
 - displaying information [2-369](#)

aging time
 displaying MAC address aging time [2-339](#)
 MAC address table [2-166](#)

alarms
 displaying operational status [2-259](#)

alternation
 description [1-9](#)

anchoring
 description [1-10](#)

ARP
 access list, displaying detailed information [2-240](#)
 defining access-lists [2-10](#)

ARP inspection
 enforce certain types of checking [2-118](#)

ARP packet
 deny based on DHCP bindings [2-79](#)
 permit based on DHCP bindings [2-190](#)

authentication
 setting username [2-494](#)
 using an MD5-type encryption method [2-494](#)
 verifying MD5 signature [2-495](#)
 verifying the checksum for Flash memory [2-495](#)

authorization state
 enabling manual control [2-87](#)

authorization state of a controlled port [2-87](#)

automatic installation
 displaying status [2-241](#)

auto-QoS
 configuring for VoIP [2-12](#)
 displaying configuration [2-242](#)

B

baby giants
 displaying the system MTU setting [2-394](#)
 setting the maximum Layer 2 payload size [2-479](#)

BackboneFast
 displaying debugging messages [2-68](#)
 displaying spanning tree status [2-385](#)

 enabling debugging [2-68](#)

bindings
 store for DHCP snooping [2-126](#)

BOOT environment variable
 displaying information [2-246](#)

bootflash
 displaying information [2-244](#)

BPDU
 debugging spanning tree activities [2-67](#)

bridge protocol data units
 See BPDU

broadcast suppression level
 configuring [2-454](#), [2-456](#)
 enabling [2-454](#), [2-456](#)

C

Catalyst 4507R [2-199](#)
 power redundancy mode [2-201](#)

CDP
 configuring tunneling encapsulation rate [2-160](#)
 enabling protocol tunneling for [2-157](#)
 set drop threshold for [2-159](#)

CEF
 displaying next-hop information [2-300](#)
 displaying VLAN configuration information [2-300](#)

cisco-desktop
 macro apply [2-172](#)

Cisco Express Forwarding
 See CEF

cisco-phone
 macro apply [2-174](#)

cisco-router
 macro apply [2-176](#)

cisco-switch
 macro apply [2-178](#)

clear commands
 clearing Gigabit Ethernet interfaces [2-24](#)
 clearing IGMP group cache entries [2-31](#)

- clearing interface counters [2-21](#)
- clearing IP access lists [2-26, 2-27](#)
- clearing IP ARP inspection statistics VLAN [2-28](#)
- clearing IP DHCP snooping database [2-29](#)
- clearing IP DHCP snooping database statistics [2-30](#)
- clearing MFIB counters and routes [2-34](#)
- clearing MFIB fastdrop entries [2-35](#)
- clearing PAgP channel information [2-38](#)
- clearing QoS aggregate counters [2-40](#)
- clearing VLAN interfaces [2-25](#)
- 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 [2-45](#)
- condition vlan
 - debugging VLAN output [2-48](#)
- configuration, saving [1-11](#)
- configuring
 - root as secondary [2-437](#)
- configuring a SPAN session to monitor
 - limit SPAN source traffic [2-182](#)
- configuring forward delay [2-433](#)
- configuring root as primary [2-437](#)
- CoS
 - assigning to Layer 2 protocol packets [2-158](#)
- CoS QoS default
 - defining value on an interface [2-214](#)

- Cost of Service
 - See QoS CoS
- counters
 - clearing interface counters [2-21](#)

D

- DAI
 - clear statistics [2-28](#)
- DBL
 - displaying qos dbl [2-370](#)
 - enabling DBL globally on the switch [2-215](#)
- debug commands
 - debugging backup events [2-44](#)
 - debugging DHCP snooping events [2-54](#)
 - debugging DHCP snooping messages [2-55](#)
 - debugging EtherChannel/PAgP/shim [2-50](#)
 - debugging IPC activity [2-53](#)
 - debugging IP DHCP snooping security messages [2-56](#)
 - debugging NVRAM activities [2-59](#)
 - debugging PAgP activities [2-60](#)
 - debugging port manager activities [2-63](#)
 - debugging software MAC filter updates [2-66](#)
 - debugging spanning tree activities [2-67](#)
 - debugging spanning tree backbonefast [2-68](#)
 - debugging spanning tree UplinkFast [2-71](#)
 - debugging supervisor redundancy [2-65](#)
 - debugging VLAN manager activities [2-72](#)
 - displaying monitor activity [2-58](#)
 - displaying the adjacency table [2-43](#)
 - enabling debug dot1x [2-49](#)
 - enabling debugging messages for ISL VLAN IDs [2-74](#)
 - enabling debugging messages for VTP [2-75](#)
 - enabling debugging of UDLD activity [2-76](#)
 - enabling switch shim debugging [2-69](#)
 - enabling VLAN manager file system error tests [2-73](#)
 - limiting debugging output for VLANs [2-48](#)
 - limiting interface debugging output [2-45](#)

- limiting output for debugging standby state changes [2-46](#)
 - shortcut to the debug condition interface [2-52](#)
 - debugging
 - activity monitoring [2-58](#)
 - DHCP snooping events [2-54](#)
 - DHCP snooping packets [2-55](#)
 - IPC activities [2-53](#)
 - IP DHCP snooping security packets [2-56](#)
 - NVRAM activities [2-59](#)
 - PAgP activities [2-60](#)
 - PAgP shim [2-50](#)
 - PM activities [2-63](#)
 - SMF address insertions and deletions [2-66](#)
 - spanning tree BackboneFast events [2-68](#)
 - spanning tree switch shim [2-69](#)
 - spanning tree UplinkFast events [2-71](#)
 - VLAN manager activities [2-72](#)
 - VLAN manager IOS file system error tests [2-73](#)
 - VTP protocol debug messages [2-75](#)
 - debug spanning tree switch [2-69](#)
 - debug sw-vlan vtp [2-75](#)
 - default CoS value [2-214](#)
 - default form of a command, using [1-6](#)
 - defining egress DSCP-to-CoS mapping [2-219](#)
 - DHCP
 - clearing database statistics [2-30](#)
 - DHCP bindings
 - configuring bindings [2-125](#)
 - deny ARP packet based on matches [2-79](#)
 - permit ARP packet based on matches [2-190](#)
 - DHCP snooping
 - clearing database [2-29](#)
 - displaying [2-301](#)
 - displaying binding table [2-302](#)
 - displaying status of DHCP database [2-305](#)
 - displaying status of error detection [2-262](#)
 - enabling DHCP globally [2-124](#)
 - enabling IP source guard [2-155](#)
 - enabling on a VLAN [2-131](#)
 - enabling option 82 [2-128](#)
 - enabling rate limiting on an interface [2-129](#)
 - enabling trust on an interface [2-130](#)
 - establishing binding configuration [2-125](#)
 - renew binding database [2-231](#)
 - store generated bindings [2-126](#)
 - diagnostic test
 - display module-based results [2-248](#)
 - displaying error disable recovery [2-263](#)
 - displaying inline power status [2-364](#)
 - displaying monitoring activity [2-58](#)
 - displaying SEEPROM information
 - GBIC [2-270](#)
 - displaying SPAN session information [2-393, 2-455](#)
 - document conventions [xvi](#)
 - document organization [xv](#)
 - DOS attack
 - protecting system's resources [2-113](#)
 - drop threshold, Layer 2 protocol tunneling [2-159](#)
 - DSCP rewrite for IP packets
 - enable [2-222](#)
 - duplex mode
 - configuring autonegotiation on an interface [2-94](#)
 - configuring full duplex on an interface [2-94](#)
 - configuring half duplex on an interface [2-94](#)
 - dynamic ARP inspection
 - preventing [2-113](#)
 - Dynamic Buffer Limiting
 - See DBL
 - Dynamic Host Configuration Protocol
 - See DHCP
-
- ## E
- EAP
 - restarting authentication process [2-85](#)
 - enabling
 - debugging for UDLD [2-76](#)

- voice VLANs [2-457](#)
- environmental
 - alarms [2-259](#)
 - displaying information [2-259](#)
 - status [2-259](#)
 - temperature [2-259](#)
- error disable detection
 - enabling error disable detection [2-96](#)
- error-disabled state
 - displaying [2-286](#)
- error disable recovery
 - configuring recovery mechanism variables [2-98](#)
 - displaying recovery timer information [2-263](#)
 - enabling ARP inspection timeout [2-98](#)
 - specifying recovery cause [2-98](#)
- EtherChannel
 - assigning interfaces to EtherChannel groups [2-16](#)
 - debugging EtherChannel [2-50](#)
 - debugging PAgP shim [2-50](#)
 - debugging spanning tree activities [2-67](#)
 - displaying information for a channel [2-264](#)
 - removing interfaces from EtherChannel groups [2-16](#)
- EtherChannel guard
 - detecting STP misconfiguration [2-424](#)
- Explicit Host Tracking
 - clearing the database [2-33](#)
 - displaying host membership [2-313](#)
 - enabling per-VLAN [2-142](#)
- 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 [2-259](#)
- Flash memory file system
 - displaying file system information [2-244](#)
 - verifying checksum [2-495](#)
- flow control
 - configuring a gigabit interface for pause frames [2-101](#)
 - displaying per-interface statistics for flow control [2-268](#)

G

- GBIC
 - displaying SEEPROM information [2-270](#)
- Gigabit Ethernet interface
 - clearing the hardware logic [2-24](#)
- global configuration mode
 - using [1-5](#)

H

- hardware module
 - resetting a module by toggling the power [2-104](#)
- host membership on an interface
 - displaying information [2-313](#)
- hot standby protocol
 - debugging [2-46](#)
 - disabling debugging [2-46](#)
 - limiting output [2-46](#)

I

- IDPROMs
 - displaying SEEPROM information
 - chassis [2-270](#)
 - clock module [2-270](#)
 - fan trays [2-270](#)

- module [2-270](#)
- mux buffer [2-270](#)
- power supplies [2-270](#)
- supervisor engine [2-270](#)
- ifIndex persistence
 - clearing SNMP ifIndex commands [2-413](#)
 - compress SNMP ifIndex table format [2-418](#)
 - disabling globally [2-417](#)
 - disabling on an interface [2-414](#)
 - enabling globally [2-417](#)
 - enabling on an interface [2-414](#)
- IGMP
 - applying filters for host joining on Layer 2 interfaces [2-133](#)
 - clearing IGMP group cache entries [2-31](#)
 - configuring frequency for IGMP host-query messages [2-136](#)
 - creating an IGMP profile [2-135](#)
 - displaying IGMP interface configuration information [2-307](#)
 - displaying profiles [2-308](#)
 - setting maximum group numbers [2-134](#)
- IGMP profiles
 - displaying [2-308](#)
- IGMP snooping
 - clearing the EHT database [2-33](#)
 - configuring a Layer 2 interface as a group member [2-146](#)
 - configuring a Layer 2 interface as a multicast router [2-144](#)
 - configuring a static VLAN interface [2-146](#)
 - displaying host membership [2-313](#)
 - displaying multicast information [2-315](#)
 - displaying VLAN information [2-309, 2-316](#)
 - enabling [2-137](#)
 - enabling immediate-leave processing [2-143](#)
 - enabling on a VLAN [2-141](#)
 - enabling per-VLAN Explicit Host Tracking [2-142](#)
- informs
 - enabling [2-415](#)
- inline power
 - displaying inline power status [2-364](#)
- inspection log
 - clearing log buffer [2-27](#)
- interface
 - displaying suppressed multicast bytes [2-280](#)
- interface capabilities
 - displaying [2-277](#)
- interface configuration mode
 - summary [1-5](#)
- interface link
 - display cable disconnect time [2-283](#)
- interfaces
 - configuring dot1q tunnel ports [2-462](#)
 - creating an interface-range macro [2-78](#)
 - debugging output of interface related activities [2-45](#)
 - displaying description [2-282](#)
 - displaying error-disabled state [2-286](#)
 - displaying information when tunneling is enabled [2-330](#)
 - displaying status [2-282](#)
 - displaying traffic for a specific interface [2-275](#)
 - executing a command on multiple ports in a range [2-108](#)
 - setting a CoS value for Layer 2 packets [2-158](#)
 - setting drop threshold for Layer 2 packets [2-159](#)
 - setting the interface type [2-462](#)
- interface speed
 - configuring interface speed [2-451](#)
- interface transceiver
 - displaying diagnostic data [2-289](#)
- internal VLAN allocation
 - configuring [2-505](#)
 - default setting [2-505](#)
 - displaying allocation information [2-404](#)
- Internet Group Management Protocol
 - See IGMP
- IP ARP
 - applying ARP ACL to VLAN [2-111](#)
 - clearing inspection statistics [2-28](#)
 - clearing status of log buffer [2-27](#)

- controlling packet logging [2-121](#)
- enabling dynamic inspection [2-120](#)
- limit rate of incoming requests [2-113](#)
- set per-port config trust state [2-117](#)
- showing status of dynamic ARP inspection [2-296](#)
- showing status of log buffer [2-299](#)

IPC

- debugging IPC activities [2-53](#)

IP DHCP Snooping

- See DHCP snooping

IP header validation

- disabling [2-154](#)
- enabling [2-154](#)

IP multicast

- displaying multicast routing table information [2-320](#)

IP packets

- enable DSCP rewrite [2-222](#)

IP phone and standard desktop

- enabling Cisco-recommended features [2-174](#)

IP source binding

- adding or deleting [2-151](#)
- displaying bindingstaggering [2-325](#)

IP source guard

- debugging messages [2-56](#)
- displaying configuration and filters [2-326](#)
- enabling on DHCP snooping [2-155](#)

J

Jumbo frames

- enabling jumbo frames [2-186](#)

L

LACP

- deselecting channeling protocol [2-18](#)
- enabling LACP on an interface [2-18](#)
- setting channeling protocol [2-18](#)

Layer 2

- displaying ACL configuration [2-336](#)

Layer 2 interface type

- specifying a nontrunking, nontagged single VLAN interface [2-462](#)
- specifying a trunking VLAN interface [2-462](#)

Layer 2 protocol ports

- displaying [2-330](#)

Layer 2 protocol tunneling error recovery [2-160](#)

Layer 2 switching

- enabling voice VLANs [2-457](#)
- modifying switching characteristics [2-457](#)

Layer 2 traceroute

- IP addresses [2-483](#)

Layer 3 switching

- displaying port status [2-287](#)
- displaying status of native VLAN tagging [2-287](#)

log buffer

- show status [2-299](#)

logging

- controlling IP ARP packets [2-121](#)

M

MAC Access Control Lists

- See MAC ACLs

MAC ACLs

- defining extended MAC access list [2-163](#)
- displaying MAC ACL information [2-401](#)
- naming an ACL [2-163](#)

MAC address filtering

- configuring [2-170](#)
- disabling [2-170](#)
- enabling [2-170](#)

MAC address table

- adding static entries [2-180](#)
- clearing dynamic entries [2-37](#)
- configuring aging time [2-166](#)
- displaying dynamic table entry information [2-341](#)

- displaying entry count [2-340](#)
- displaying information [2-337](#)
- displaying interface-based information [2-343](#)
- displaying multicast information [2-345](#)
- displaying protocol-based information [2-347](#)
- displaying static table entry information [2-349](#)
- displaying the MAC address aging time [2-339](#)
- displaying VLAN-based information [2-351](#)
- learning in the protocol buckets [2-167](#)
- removing static entries [2-180](#)
- MAC address tables
 - adding static entries [2-170](#)
 - deleting secure or specific addresses [2-39](#)
 - disabling IGMP snooping on static MAC addresses [2-170](#)
 - removing static entries [2-170](#)
- mac-address-table static [2-170](#)
- MAC address unicast filtering
 - dropping unicast traffic [2-170](#)
- macro keywords
 - help strings [2-2](#)
- mapping secondary VLANs to MST instance [2-206](#)
- mapping VLAN(s) to an MST instance [2-105](#)
- match subcommand
 - accessing [2-19](#)
- maximum transmission unit (MTU)
 - displaying the system MTU setting [2-394](#)
 - setting the maximum Layer 2 payload size [2-479](#)
- MD5
 - verifying MD5 signature [2-495](#)
- message digest 5
 - See MD5
- MFIB
 - clearing ip mfib counters [2-34](#)
 - clearing ip mfib fastdrop [2-35](#)
 - displaying all active MFIB routes [2-317](#)
 - displaying MFIB fastdrop table entries [2-319](#)
 - enabling IP MFIB fastdrops [2-148](#)
- modes
 - access-group [2-5](#)
 - show access-group interface [2-239](#)
 - switching between PVST+, MST, and Rapid PVST [2-429](#)
 - See also command modes
- module password clearing [2-23](#)
- module reset
 - resetting a module by toggling the power [2-104](#)
- More-- prompt
 - filter [1-6](#)
 - search [1-7](#)
- MST
 - designating the primary and secondary root [2-437](#)
 - displaying MST protocol information [2-390](#)
 - displaying region configuration information [2-390](#)
 - displaying spanning tree information [2-390](#)
 - entering MST configuration submode [2-431](#)
 - setting configuration revision number [2-233](#)
 - setting path cost and port priority for instances [2-430](#)
 - setting the forward delay timer for all instances [2-433](#)
 - setting the hello-time delay timer for all instances [2-434](#)
 - setting the max-age timer for all instances [2-435](#)
 - setting the MST region name [2-187](#)
 - specifying the maximum number of hops [2-436](#)
 - switching between PVST+ and Rapid PVST [2-429](#)
 - using the MST configuration submode revision command [2-233](#)
 - using the submode name command [2-187](#)
- MTU
 - displaying global MTU settings [2-394](#)
- multicast
 - enabling storm control [2-456](#)
- multicast/unicast packets
 - prevent forwarding [2-461](#)
- Multicast Forwarding Information Base
 - See MFIB
- multiple-character patterns [1-8](#)
- multiple hosts on authorized port [2-86](#)

Multiple Spanning Tree

See MST

N

native VLAN

- controlling tagging of traffic [2-475](#)
- displaying ports eligible for native tagging [2-403](#)
- displaying ports eligible for tagging [2-403](#)
- enabling tagging on 802.1Q trunk ports [2-503](#)
- specifying the tagging of traffic [2-476](#)

NetFlow

- enabling NetFlow statistics [2-149](#)
- including infer fields in routing statistics [2-149](#)

next-hop

- displaying CEF VLAN information [2-300](#)

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

NVRAM

- debugging NVRAM activities [2-59](#)

O

output

- pattern searches [1-7](#)

P

packet forwarding

- prevent unknown packets [2-461](#)

packet memory failure

- direct switch action upon detection [2-81](#)

packet memory test

- bootup, displaying results [2-252](#)
- ongoing, displaying results [2-254](#)

PACL

- access-group mode [2-5](#)

paging prompt

- see --More-- prompt

PAGP

- clearing port channel information [2-38](#)
- debugging PAGP activity [2-60](#)
- deselecting channeling protocol [2-18](#)
- displaying port channel information [2-357](#)
- hot standby mode
 - returning to defaults [2-189](#)
 - selecting ports [2-189](#)
- input interface of incoming packets
 - learning [2-188](#)
 - returning to defaults [2-188](#)
- setting channeling protocol [2-18](#)

parentheses [1-10](#)

password

- clearing on an intelligent line module [2-23](#)
- establishing enhanced password security [2-494](#)
- setting username [2-494](#)

PBR

- displaying route maps [xvi](#)
- redistributing route maps [xvi](#)

PM activities

- debugging [2-63](#)
- disabling debugging [2-63](#)

Policy Based Routing

See PBR

Port Aggregation Protocol

See PAGP

port-based authentication

- displaying debug messages [2-49](#)
- displaying statistics and status [2-256](#)
- enabling 802.1X [2-87](#)
- manual control of authorization state [2-87](#)
- multiple hosts on authorized port [2-86](#)
- periodic re-authentication
 - enabling [2-90](#)
- re-authenticating 802.1X-enabled ports [2-89](#)
- switch-to-client frame-retransmission number [2-85](#)

port channel

- accessing [2-107](#)

- creating [2-107](#)
 - displaying information [2-357](#)
 - load distribution method
 - resetting to defaults [2-194](#)
 - setting [2-194](#)
 - port range
 - executing [2-108](#)
 - port security
 - debugging ports security [2-64](#)
 - deleting secure or specific addresses [2-39](#)
 - enabling [2-464](#)
 - filter source IP and MAC addresses [2-155](#)
 - setting action upon security violation [2-464](#)
 - setting the rate limit for bad packets [2-464](#)
 - sticky port [2-464](#)
 - Port Trust Device
 - displaying [2-371](#)
 - power status
 - displaying inline power [2-364](#)
 - displaying power status [2-364](#)
 - power supply
 - configuring combined and redundant power on the Catalyst 4507R [2-199](#)
 - configuring inline power [2-196](#)
 - configuring power consumption [2-198](#)
 - configuring power redundancy on the Catalyst 4507R [2-201](#)
 - displaying the SEEPROM [2-270](#)
 - setting inline power state [2-195](#)
 - Private VLAN
 - See PVLANS
 - privileged EXEC mode, summary [1-5](#)
 - prompts
 - system [1-5](#)
 - protocol tunneling
 - configuring encapsulation rate [2-160](#)
 - disabling [2-157](#)
 - displaying port information [2-330](#)
 - enabling [2-157](#)
 - setting a CoS value for Layer 2 packets [2-158](#)
 - setting a drop threshold for Layer 2 packets [2-159](#)
 - PVLANS
 - configuring isolated, primary, and community PVLANS [2-202](#)
 - controlling tagging of native VLAN traffic [2-475](#)
 - disabling sticky-ARP [2-152](#)
 - displaying map information for VLAN SVIs [2-285](#)
 - displaying PVLANS information [2-406](#)
 - enabling interface configuration mode [2-462](#)
 - enabling sticky-ARP [2-152](#)
 - mapping VLANs to the same SVI [2-204](#)
 - specifying host ports [2-462](#)
 - specifying promiscuous ports [2-462](#)
 - PVST+
 - switching between PVST and MST [2-429](#)
-
- ## Q
- QoS
 - account Layer 2 encapsulation [2-209](#)
 - attaching a policy-map to an interface [2-234](#)
 - automatic configuration [2-12](#)
 - clearing aggregate counters [2-40](#)
 - configuring a QoS policy map [2-192](#)
 - configuring auto [2-12](#)
 - defining a named aggregate policer [2-211](#)
 - defining default CoS value [2-214](#)
 - defining ingress CoS-to-DSCP mapping [2-218](#)
 - displaying aggregate policer information [2-369](#)
 - displaying auto configuration [2-242](#)
 - displaying class maps information [2-247](#)
 - displaying configuration information [2-242](#)
 - displaying configurations of policies [2-360](#)
 - displaying policy map information [2-359](#)
 - displaying QoS information [2-368](#)
 - displaying QoS map information [2-372](#)
 - enabling global configuration mode [2-207](#)
 - enabling per-VLAN QoS for a Layer 2 interface [2-225](#)

- enabling QoS on an interface [2-208](#)
- mapping DSCP values to transmit queues [2-219](#)
- mapping egress DSCP-to-CoS [2-219](#)
- mapping the DSCP-to-CoS value [2-219](#)
- setting the mapping of policed DSCP values [2-221](#)
- setting the trust state [2-223](#)

QoS CoS

- configuring for tunneled Layer 2 protocol packets [2-158](#)
- defining default CoS value [2-214](#)

qos dbl [2-215](#)

question command [1-1](#)

queueing information

- displaying [2-371](#)

R

Rapid PVST

- switching between PVST and MST [2-429](#)

re-authenticating 802.1X-enabled ports [2-89](#)

re-authentication

- periodic [2-90](#)

reboots

- restoring bindings across [2-125](#)

redundancy

- accessing the main CPU [2-226](#)
- changing from active to standby supervisor engine [2-227](#)
- displaying information [2-374](#)
- displaying redundancy facility information [2-374](#)
- displaying RF client list [2-374](#)
- displaying RF operational counters [2-374](#)
- displaying RF states [2-374](#)
- enabling automatic synchronization [2-15](#)
- forcing switchover to standby supervisor engine [2-227](#)
- synchronizing the route processor configurations [2-180](#)

related documentation [xv](#)

remote SPAN

- See RSPAN

renew commands

- ip dhcp snooping database [2-231](#)

resetting PVLAN trunk

- setting switchport to trunk [2-462](#)

ROM monitor mode

- summary [1-6](#)

root guard

- displaying root inconsistency status [2-385](#)

Route Processor Redundancy

- See redundancy

RSPAN

- converting VLAN to RSPAN VLAN [2-230](#)
- displaying list [2-408](#)

S

saving configuration changes [1-11](#)

secure ports, limitations [2-465](#)

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 [2-381](#)

slot0

- displaying information about the system [2-383](#)

SMF

- debugging address insertions and deletions [2-66](#)

SNMP

- debugging spanning tree activities [2-67](#)
- ifIndex persistence
 - clearing SNMP ifIndex commands [2-413](#)
 - compress SNMP ifIndex table format [2-418](#)
 - disabling globally [2-417](#)
 - disabling on an interface [2-414](#)
 - enabling globally [2-417](#)

- enabling on an interface [2-414](#)
- informs
 - disabling [2-415](#)
 - enabling [2-415](#)
- traps
 - configuring to send when storm occurs [2-454](#)
 - disabling [2-415](#)
 - enabling [2-415](#)
- software MAC filter
 - See SMF
- SPAN commands
 - configuring a SPAN session to monitor [2-182](#)
 - displaying SPAN session information [2-393, 2-455](#)
- SPAN enhancements
 - displaying status [2-355](#)
- Spanning Tree Protocol
 - See STP
- SPAN session
 - displaying session information [2-355](#)
 - filter ACLs [2-182](#)
 - specify encap type [2-182](#)
 - turn off host learning based on ingress packets [2-182](#)
- special characters
 - anchoring, table [1-10](#)
- standard desktop
 - enabling Cisco-recommended features [2-172](#)
- standard desktop and Cisco IP phone
 - enabling Cisco-recommended features [2-174](#)
- sticky-ARP
 - disabling on PVLANS [2-152](#)
 - enabling on PVLANS [2-152](#)
- sticky port
 - deleting [2-39](#)
 - enabling security [2-464](#)
- storm control
 - configuring for action when storm occurs [2-454](#)
 - disabling suppression mode [2-262](#)
 - displaying settings [2-392](#)
 - enabling [2-454](#)
 - enabling broadcast [2-454, 2-456](#)
 - enabling multicast [2-454, 2-456](#)
 - enabling suppression mode [2-262](#)
 - enabling timer to recover from error disable [2-98](#)
 - enabling unicast [2-454, 2-456](#)
 - multicast, enabling [2-456](#)
 - setting high and low levels [2-454](#)
 - setting suppression level [2-262](#)
- STP
 - configuring link type for a port [2-427](#)
 - configuring tunneling encapsulation rate [2-160](#)
 - debugging all activities [2-67](#)
 - debugging spanning tree activities [2-67](#)
 - debugging spanning tree BackboneFast events [2-68](#)
 - debugging spanning tree UplinkFast [2-71](#)
 - detecting misconfiguration [2-424](#)
 - displaying active interfaces only [2-385](#)
 - displaying BackboneFast status [2-385](#)
 - displaying bridge status and configuration [2-385](#)
 - displaying default path cost method [2-385](#)
 - displaying spanning tree debug messages [2-67](#)
 - displaying status information [2-385](#)
 - displaying status per VLAN [2-385](#)
 - displaying summary of interface information [2-385](#)
 - displaying UplinkFast status [2-385](#)
 - enabling BPDU filtering by default on all PortFast ports [2-442](#)
 - enabling BPDU filtering on an interface [2-420](#)
 - enabling BPDU guard by default on all PortFast ports [2-444](#)
 - enabling BPDU guard on an interface [2-422](#)
 - enabling extended system ID [2-425](#)
 - enabling loop guard as a default on all ports [2-428](#)
 - enabling PortFast by default on all access ports [2-445](#)
 - enabling PortFast mode [2-440](#)
 - enabling protocol tunneling for [2-157](#)
 - enabling root guard [2-426](#)
 - enabling spanning tree BackboneFast [2-419](#)
 - enabling spanning tree on a per VLAN basis [2-449](#)

- enabling spanning tree UplinkFast [2-447](#)
- setting an interface priority [2-446](#)
- setting drop threshold for [2-159](#)
- setting pathcost [2-423](#)
- setting the default pathcost calculation method [2-439](#)
- subinterface configuration mode, summary [1-6](#)
- SVI
 - creating a Layer 3 interface on a VLAN [2-110](#)
- switchport [2-476](#)
- switchport interfaces
 - displaying status of Layer 3 port [2-287](#)
 - displaying status of native VLAN tagging [2-287](#)
- switch shim
 - debugging [2-69](#)
 - disabling debugging [2-69](#)
- switch to router connection
 - enabling Cisco-recommended features [2-176](#)
- switch to switch connection
 - enabling Cisco-recommended features [2-178](#)
- switch virtual interface
 - See SVI
- sw-vlan [2-72](#)
- system prompts [1-5](#)

T

- Tab key
 - command completion [1-1](#)
- tables
 - characters with special meaning [1-7](#)
 - mac access-list extended subcommands [2-163](#)
 - match syntax description [2-20](#)
 - multipliers [1-9](#)
 - relationship between duplex and speed commands [2-452](#)
 - show vlan command output fields [2-407](#)
 - show vtp command output fields [2-411](#)
 - special characters [1-9](#)
 - special characters used for anchoring [1-10](#)

- speed command options [2-451](#)
- TAC
 - displaying information useful to TAC [2-395](#)
- TCAM
 - debugging spanning tree activities [2-67](#)
- temperature readings
 - displaying information [2-259](#)
- timer information [2-263](#)
- traffic shaping
 - enable on an interface [2-236](#)
- traps, enabling [2-415](#)
- trunk encapsulation
 - setting format [2-476](#)
- trunk interfaces
 - displaying trunk interfaces information [2-294](#)
- trust state
 - setting [2-117](#)
- tunnel ports
 - displaying information about Layer 2 protocol [2-330](#)
- TX queues
 - allocating bandwidth [2-486](#)
 - returning to default values [2-486](#)
 - setting priority to high [2-486](#)
 - specifying burst size [2-486](#)
 - specifying traffic rate [2-486](#)

U

- UDLD
 - enabling by default on all fiber interfaces [2-488](#)
 - enabling on an individual interface [2-490](#)
 - preventing a fiber interface from being enabled [2-490](#)
 - resetting all shutdown ports [2-492](#)
 - setting the message timer [2-488](#)
- Unidirectional Link Detection
 - See UDLD
- unknown multicast traffic, preventing [2-461](#)
- unknown unicast traffic, preventing [2-461](#)
- user EXEC mode, summary [1-5](#)

username

setting password and privilege level [2-494](#)

V

VACLs

- access-group mode [2-5](#)
- applying VLAN access maps [2-504](#)
- displaying VLAN access map information [2-401](#)
- specifying an action in a VLAN access map [2-8](#)
- specifying the match clause for a VLAN access-map sequence [2-181](#)
- using a VLAN filter [2-504](#)

VLAN

- applying an ARP ACL [2-111](#)
- configuring [2-497](#)
- converting to RSPAN VLAN [2-230](#)
- displaying CEF information [2-300](#)
- displaying CEF next-hop information [2-300](#)
- displaying information on switch interfaces [2-309](#)
- displaying information on VLAN switch interfaces [2-316](#)
- displaying information sorted by group IP address [2-309](#)
- displaying IP address and version information [2-309](#)
- displaying Layer 2 VLAN information [2-398](#)
- displaying statistical information [2-353](#)
- displaying VLAN information [2-400](#)
- enabling dynamic ARP inspection [2-120](#)
- enabling Explicit Host Tracking [2-142](#)
- enabling guest per-port [2-82](#)
- entering VLAN configuration mode [2-501](#)
- native frames
 - enabling tagging on all 802.1Q trunk ports [2-503](#)
- pruning the list for VTP [2-476](#)
- setting the list of allowed [2-476](#)

VLAN Access Control Lists

See VACLs

VLAN access map

See VACLs

VLAN database

resetting [2-232](#)

VLAN debugging

limiting output [2-48](#)

VLAN manager

- debugging [2-72](#)
- disabling debugging [2-72](#)
- IOS file system error tests
 - debugging [2-73](#)
 - disabling debugging [2-73](#)

VLAN Query Protocol

See VQP

VLAN query protocol (VQPC)

debugging [2-77](#)

VLANs

- clearing
 - counters [2-41](#)
- clearing hardware logic [2-25](#)
- configuring
 - internal allocation scheme [2-505](#)
- displaying
 - internal VLAN allocation information [2-404](#)
 - RSPAN VLANs [2-408](#)
- entering VLAN configuration mode [2-501](#)

VMPS

- configuring servers [2-509](#)
- reconfirming dynamic VLAN assignments [2-507](#)

voice VLANs

enabling [2-457](#)

VoIP

configuring auto-QoS [2-12](#)

VQP

- per-server retry count [2-508](#)
- reconfirming dynamic VLAN assignments [2-507](#)

VTP

- configuring the administrative domain name [2-513](#)
- configuring the device in VTP client mode [2-512](#)

- configuring the device in VTP server mode [2-516](#)
 - configuring the device in VTP transparent mode [2-517](#)
 - configuring tunnel encapsulation rate [2-160](#)
 - creating a VTP domain password [2-514](#)
 - displaying domain information [2-410](#)
 - displaying statistics information [2-410](#)
 - enabling protocol tunneling for [2-157](#)
 - enabling pruning in the VLAN database [2-515](#)
 - enabling VTP version 2 mode [2-518](#)
 - modifying the VTP configuration storage file name [2-511](#)
 - set drop threshold for [2-159](#)
- VTP protocol code
- activating debug messages [2-75](#)
 - deactivating debug messages [2-75](#)

