



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 [2-340](#)
- 802.1Q trunk ports and native VLANs [2-598](#)
- 802.1Q tunnel ports
 - configuring [2-553](#)
- 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 [2-326](#)
 - 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 [2-283](#)
 - connecting to a specific remote module [2-293](#)
- access-group
 - displaying mac interface [2-412](#)
 - show mode interface [2-297](#)
- access groups
 - IP [2-5](#)

- access lists
 - clearing an access template [2-28](#)
 - defining ARP [2-11](#)
 - displaying ARP information [2-300](#)
 - See also ACLs, MAC ACLs, and VACLs
 - access maps
 - applying with VLAN filter [2-599](#)
 - ACLs
 - access-group mode [2-5](#)
 - balancing hardware regions [2-8](#)
 - determining ACL hardware programming [2-6](#)
 - displaying mac access-group interface [2-412](#)
 - using ACL naming conventions for MAC ACLs [2-198](#)
 - action clause
 - specifying drop or forward action in a VACL [2-9](#)
 - addresses, configuring a maximum [2-254](#)
 - adjacency
 - debugging the adjacency table [2-50](#)
 - disabling the debug facility [2-50](#)
 - displaying information about the adjacency table [2-298](#)
 - displaying IPC table entries [2-50](#)
 - aggregate policer
 - displaying information [2-458](#)
 - aging time
 - displaying MAC address aging time [2-415](#)
 - MAC address table [2-201](#)
 - alarms
 - displaying operational status [2-329](#)
 - alternation
 - description [1-9](#)
 - anchoring
 - description [1-10](#)
 - ARP
 - access list, displaying detailed information [2-300](#)
 - 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 [2-240](#)
 - authentication
 - setting username [2-589](#)
 - using an MD5-type encryption method [2-589](#)
 - verifying MD5 signature [2-590](#)
 - verifying the checksum for Flash memory [2-590](#)
 - 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 [2-301](#)
 - auto-negotiate interface speed
 - example [2-544](#)
 - auto-QoS
 - configuring for VoIP [2-13](#)
 - displaying configuration [2-302](#)
-
- B**
- baby giants
 - displaying the system MTU setting [2-483](#)
 - setting the maximum Layer 2 payload size [2-572](#)
 - BackboneFast
 - displaying debugging messages [2-75](#)
 - displaying spanning tree status [2-474](#)
 - enabling debugging [2-75](#)
 - bindings
 - store for DHCP snooping [2-151](#)
 - BOOT environment variable
 - displaying information [2-306](#)
 - bootflash
 - displaying information [2-304](#)
 - BPDU
 - debugging spanning tree activities [2-74](#)
 - bridge protocol data units
 - See BPDUs

broadcast suppression level

configuring [2-545, 2-547](#)

enabling [2-545, 2-547](#)

C

cable diagnostics

TDR

displaying test results [2-307](#)

testing conditions of copper cables [2-573](#)

Catalyst 4507R [2-250](#)

power redundancy mode [2-255](#)

CDP

configuring tunneling encapsulation rate [2-188](#)

displaying

neighbor information [2-309](#)

enabling protocol tunneling for [2-184](#)

set drop threshold for [2-186](#)

CEF

displaying next-hop information [2-373](#)

displaying VLAN configuration information [2-373](#)

cisco-desktop

macro apply [2-209](#)

Cisco Express Forwarding

See CEF

cisco-phone

macro apply [2-211](#)

cisco-router

macro apply [2-213](#)

cisco-switch

macro apply [2-215](#)

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 [2-528](#)

configuring a SPAN session to monitor

limit SPAN source traffic [2-229](#)

configuring forward delay [2-524](#)

configuring root as primary [2-528](#)

CoPP

attaching

policy map to control plane [2-291](#)

displaying

policy-map class information [2-438](#)

entering configuration mode [2-48](#)

removing

service policy from control plane [2-291](#)

- CoS
 - assigning to Layer 2 protocol packets [2-185](#)
 - CoS QoS default
 - defining value on an interface [2-268](#)
 - Cost of Service
 - See QoS CoS
 - counters
 - clearing interface counters [2-23](#)
-
- D**
- DAI
 - clear statistics [2-30](#)
 - DBL
 - displaying qos dbl [2-459](#)
 - enabling DBL globally on the switch [2-269](#)
 - 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 [2-268](#)
 - default form of a command, using [1-6](#)
 - defining egress DSCP-to-CoS mapping [2-273](#)
 - 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 [2-240](#)
 - DHCP snooping
 - clearing database [2-31](#)
 - displaying binding table [2-375](#)
 - displaying configuration information [2-374](#)
 - displaying status of DHCP database [2-378](#)

- displaying status of error detection [2-332](#)
- 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 [2-285](#)
- store generated bindings [2-151](#)
- diagnostic test
 - bootup packet memory [2-320](#)
 - displaying attributes [2-314](#)
 - display module-based results [2-316](#)
 - running [2-89](#)
 - show results for TDR [2-307](#)
 - testing conditions of copper cables [2-573](#)
- displaying error disable recovery [2-333](#)
- displaying inline power status [2-450](#)
- displaying monitoring activity [2-65](#)
- displaying SEEPROM information
 - GBIC [2-341](#)
- displaying SPAN session information [2-482, 2-546](#)
- document conventions [xvi](#)
- document organization [xv](#)
- DoS
 - CoPP
 - attaching policy map to control plane [2-291](#)
 - displaying policy-map class information [2-438](#)
 - entering configuration mode [2-48](#)
 - removing service policy from control plane [2-291](#)
 - entering
 - CoPP configuration mode [2-48](#)
- DOS attack
 - protecting system's resources [2-137](#)
- drop threshold, Layer 2 protocol tunneling [2-186](#)
- DSCP rewrite for IP packets
 - enable [2-276](#)

- dual-capable port
 - selecting a connector [2-226](#)
- 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 [2-237](#)
- enabling
 - debugging for UDLD [2-83](#)
 - voice VLANs [2-548](#)
- environmental
 - alarms [2-329](#)
 - displaying information [2-329](#)
 - status [2-329](#)
 - temperature [2-329](#)
- erase a file [2-113](#)
- error disable detection
 - enabling error disable detection [2-116](#)
- error-disabled state
 - displaying [2-359](#)
- error disable recovery
 - configuring recovery mechanism variables [2-118](#)
 - displaying recovery timer information [2-333](#)
 - 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 [2-334](#)
- removing interfaces from EtherChannel groups [2-17](#)

EtherChannel guard

- detecting STP misconfiguration [2-515](#)

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 [2-329](#)

filters

EIGRP

- routing updates, preventing [2-237](#)

Flash memory file system

- displaying file system information [2-304](#)
- verifying checksum [2-590](#)

flow control

- configuring a gigabit interface for pause frames [2-121](#)
- displaying per-interface statistics for flow control [2-338](#)

G

GBIC

- displaying SEEPROM information [2-341](#)

Gigabit Ethernet interface

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

Gigabit Ethernet uplink

- selecting [2-125](#)
- showing the mode [2-340](#)

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 [2-340](#)

helper addresses, IP [2-391](#)

hot standby protocol

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

I

IDPROMs

displaying SEEPROM information

- chassis [2-341](#)
- clock module [2-341](#)
- fan trays [2-341](#)
- module [2-341](#)
- mux buffer [2-341](#)
- power supplies [2-341](#)
- supervisor engine [2-341](#)

ifIndex persistence

- clearing SNMP ifIndex commands [2-503](#)
- compress SNMP ifIndex table format [2-508](#)
- disabling globally [2-507](#)
- disabling on an interface [2-504](#)
- enabling globally [2-507](#)

- enabling on an interface [2-504](#)
- 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 [2-380](#)
 - displaying profiles [2-381](#)
 - setting maximum group numbers [2-160](#)
- IGMP profiles
 - displaying [2-381](#)
- 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 [2-388](#)
 - displaying VLAN information [2-382, 2-386, 2-389](#)
 - 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 [2-505](#)
- inline power
 - displaying inline power status [2-450](#)
- inspection log
 - clearing log buffer [2-29](#)
- interface
 - displaying suppressed multicast bytes [2-353](#)
- interface capabilities
 - displaying [2-350](#)
- interface configuration mode
 - summary [1-5](#)
- interface link
 - display cable disconnect time [2-356](#)
- interfaces
 - configuring dot1q tunnel ports [2-553](#)
 - creating an interface-range macro [2-85](#)
 - debugging output of interface related activities [2-52](#)
 - displaying description [2-355](#)
 - displaying error-disabled state [2-359](#)
 - displaying information when tunneling is enabled [2-406](#)
 - displaying status [2-355](#)
 - displaying traffic for a specific interface [2-347](#)
 - 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 [2-185](#)
 - setting drop threshold for Layer 2 packets [2-186](#)
 - setting the interface type [2-553](#)
- interface speed
 - configuring interface speed [2-542](#)
- interface transceiver
 - displaying diagnostic data [2-362](#)
- internal VLAN allocation
 - configuring [2-600](#)
 - default setting [2-600](#)
 - displaying allocation information [2-494](#)
- 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 [2-369](#)
 - showing status of log buffer [2-372](#)

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 [2-390](#)

IP multicast

displaying multicast routing table information [2-396](#)

IP packets

enable DSCP rewrite [2-276](#)

IP phone and standard desktop

enabling Cisco-recommended features [2-211](#)

IP source binding

adding or deleting [2-178](#)

displaying bindingstaggering [2-401](#)

IP source guard

debugging messages [2-63](#)

displaying configuration and filters [2-402](#)

enabling on DHCP snooping [2-182](#)

specifying a trunking VLAN interface [2-553](#)

Layer 2 protocol ports

displaying [2-406](#)

Layer 2 protocol tunneling error recovery [2-188](#)**Layer 2 switching**

enabling voice VLANs [2-548](#)

modifying switching characteristics [2-548](#)

Layer 2 traceroute

IP addresses [2-578](#)

Layer 3 switching

displaying information about an adjacency table [2-298](#)

displaying port status [2-360](#)

displaying status of native VLAN tagging [2-360](#)

link-status event messages

disabling

globally [2-192, 2-195](#)

on an interface [2-193, 2-196](#)

enabling

globally [2-192, 2-195](#)

on an interface [2-193, 2-196](#)

log buffer

show status [2-372](#)

logging

controlling IP ARP packets [2-145](#)

J**Jumbo frames**

enabling jumbo frames [2-233](#)

L**LACP**

deselecting channeling protocol [2-19](#)

enabling LACP on an interface [2-19](#)

setting channeling protocol [2-19](#)

Layer 2

displaying ACL configuration [2-412](#)

Layer 2 interface type

specifying a nontrunking, nontagged single VLAN interface [2-553](#)

M**MAC Access Control Lists**

See MAC ACLs

MAC ACLs

defining extended MAC access list [2-198](#)

displaying MAC ACL information [2-491](#)

naming an ACL [2-198](#)

MAC address filtering

configuring [2-207](#)

disabling [2-207](#)

enabling [2-207](#)

MAC address table

adding static entries [2-220](#)

- clearing dynamic entries [2-39, 2-41](#)
- configuring aging time [2-201](#)
- displaying dynamic table entry information [2-417](#)
- displaying entry count [2-416](#)
- displaying information [2-413](#)
- displaying interface-based information [2-419](#)
- displaying multicast information [2-421](#)
- displaying notification information [2-423](#)
- displaying protocol-based information [2-425](#)
- displaying static table entry information [2-427](#)
- displaying the MAC address aging time [2-415](#)
- displaying VLAN-based information [2-429](#)
- enabling authentication bypass [2-100](#)
- enabling notifications [2-205](#)
- learning in the protocol buckets [2-202](#)
- removing static entries [2-220](#)
- MAC address tables
 - adding static entries [2-207](#)
 - deleting secure or specific addresses [2-43](#)
 - disabling IGMP snooping on static MAC addresses [2-207](#)
 - removing static entries [2-207](#)
- mac-address-table static [2-207](#)
- MAC address unicast filtering
 - dropping unicast traffic [2-207](#)
- macro global description command [2-219](#)
- macro keywords
 - help strings [2-2](#)
- macros
 - adding a global description [2-219](#)
 - cisco global [2-217](#)
 - system-cpp [2-218](#)
- mapping secondary VLANs to MST instance [2-260](#)
- mapping VLAN(s) to an MST instance [2-127](#)
- match subcommand
 - accessing [2-21](#)
- maximum transmission unit (MTU)
 - displaying the system MTU setting [2-483](#)
 - setting the maximum Layer 2 payload size [2-572](#)
- MD5
 - verifying MD5 signature [2-590](#)
- message digest 5
 - See MD5
- MFIB
 - clearing ip mfib counters [2-36](#)
 - clearing ip mfib fastdrop [2-37](#)
 - displaying all active MFIB routes [2-393](#)
 - displaying MFIB fastdrop table entries [2-395](#)
 - enabling IP MFIB fastdrops [2-175](#)
- modes
 - access-group [2-5](#)
 - show access-group interface [2-297](#)
 - switching between PVST+, MST, and Rapid PVST [2-520](#)
 - 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 [2-528](#)
 - displaying MST protocol information [2-478](#)
 - displaying region configuration information [2-478](#)
 - displaying spanning tree information [2-478](#)
 - entering MST configuration submode [2-522](#)
 - setting configuration revision number [2-287](#)
 - setting path cost and port priority for instances [2-521](#)
 - setting the forward delay timer for all instances [2-524](#)
 - setting the hello-time delay timer for all instances [2-525](#)
 - setting the max-age timer for all instances [2-526](#)
 - setting the MST region name [2-234](#)
 - specifying the maximum number of hops [2-527](#)
 - switching between PVST+ and Rapid PVST [2-520](#)
 - using the MST configuration submode revision command [2-287](#)
 - using the submode name command [2-234](#)

MTU

displaying global MTU settings [2-483](#)

multicast

enabling storm control [2-547](#)

multicast/unicast packets

prevent forwarding [2-552](#)

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 [2-567](#)

displaying ports eligible for native tagging [2-493](#)

displaying ports eligible for tagging [2-493](#)

enabling tagging on 802.1Q trunk ports [2-598](#)

specifying the tagging of traffic [2-568](#)

NetFlow

enabling NetFlow statistics [2-176](#)

including infer fields in routing statistics [2-176](#)

next-hop

displaying CEF VLAN information [2-373](#)

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 [2-552](#)

packet memory failure

direct switch action upon detection [2-88](#)

packet memory test

bootup, displaying results [2-320, 2-322](#)

ongoing, displaying results [2-324](#)

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 [2-435](#)

hot standby mode

returning to defaults [2-236](#)

selecting ports [2-236](#)

input interface of incoming packets

learning [2-235](#)

returning to defaults [2-235](#)

setting channeling protocol [2-19](#)

parentheses [1-10](#)**password**

clearing on an intelligent line module [2-25](#)

establishing enhanced password security [2-589](#)

setting username [2-589](#)

PBR

displaying route maps [xvi](#)

redistributing route maps [xvi](#)

PM activities

debugging [2-70](#)

disabling debugging [2-70](#)

Policy Based Routing

See PBR

- port, dual-capable
 - selecting the connector [2-226](#)
- Port Aggregation Protocol
 - See PAgP
- port-based authentication
 - displaying debug messages [2-56](#)
 - displaying statistics and status [2-326](#)
 - 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 [2-435](#)
 - load distribution method
 - resetting to defaults [2-244](#)
 - setting [2-244](#)
- 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 [2-445](#)
 - enabling [2-555](#)
 - filter source IP and MAC addresses [2-182](#)
 - setting action upon security violation [2-555](#)
 - setting the rate limit for bad packets [2-555](#)
 - sticky port [2-555](#)
- Port Trust Device
 - displaying [2-460](#)
- power status
 - displaying inline power [2-450](#)
 - displaying power status [2-450](#)
- power supply
 - configuring combined and redundant power on the Catalyst 4507R [2-250](#)
 - configuring inline power [2-247](#)
 - configuring power consumption [2-249](#)
 - configuring power redundancy on the Catalyst 4507R [2-255](#)
 - displaying the SEEPROM [2-341](#)
 - setting inline power state [2-246](#)
- Private VLAN
 - See PVLANS
- privileged EXEC mode, summary [1-5](#)
- prompts
 - system [1-5](#)
- protocol tunneling
 - configuring encapsulation rate [2-188](#)
 - disabling [2-184](#)
 - displaying port information [2-406](#)
 - enabling [2-184](#)
 - setting a CoS value for Layer 2 packets [2-185](#)
 - setting a drop threshold for Layer 2 packets [2-186](#)
- PVLANS
 - configuring isolated, primary, and community PVLANS [2-256](#)
 - controlling tagging of native VLAN traffic [2-567](#)
 - disabling sticky-ARP [2-179](#)
 - displaying map information for VLAN SVIs [2-358](#)
 - displaying PVLAN information [2-496](#)
 - enabling interface configuration mode [2-553](#)
 - enabling sticky-ARP [2-179](#)
 - mapping VLANs to the same SVI [2-258](#)
 - specifying host ports [2-553](#)
 - specifying promiscuous ports [2-553](#)
- PVST+
 - switching between PVST and MST [2-520](#)

Q**QoS**

- account Layer 2 encapsulation [2-263](#)
 - attaching a policy-map to an interface [2-288](#)
 - automatic configuration [2-13](#)
 - clearing aggregate counters [2-45](#)
 - configuring a QoS policy map [2-242](#)
 - configuring auto [2-13](#)
 - defining a named aggregate policer [2-265](#)
 - defining default CoS value [2-268](#)
 - defining ingress CoS-to-DSCP mapping [2-272](#)
 - displaying aggregate policer information [2-458](#)
 - displaying auto configuration [2-302](#)
 - displaying class maps information [2-312](#)
 - displaying configuration information [2-302](#)
 - displaying configurations of policies [2-441](#)
 - displaying policy map information [2-437, 2-444](#)
 - displaying QoS information [2-457](#)
 - displaying QoS map information [2-461](#)
 - enabling global configuration mode [2-261](#)
 - enabling per-VLAN QoS for a Layer 2 interface [2-279](#)
 - enabling QoS on an interface [2-262](#)
 - mapping DSCP values to transmit queues [2-273](#)
 - mapping egress DSCP-to-CoS [2-273](#)
 - mapping the DSCP-to-CoS value [2-273](#)
 - setting the mapping of policed DSCP values [2-275](#)
 - setting the trust state [2-277](#)
 - specifying flow-based match criteria [2-222](#)
- QoS CoS**
- configuring for tunneled Layer 2 protocol packets [2-185](#)
 - defining default CoS value [2-268](#)
- qos dbl [2-269](#)
- question command [1-1](#)
- queueing information
- displaying [2-460](#)

R**Rapid PVST**

- switching between PVST and MST [2-520](#)
- 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 [2-280](#)
 - changing from active to standby supervisor engine [2-281](#)
 - displaying information [2-463](#)
 - displaying redundancy facility information [2-463](#)
 - displaying RF client list [2-463](#)
 - displaying RF operational counters [2-463](#)
 - displaying RF states [2-463](#)
 - enabling automatic synchronization [2-16](#)
 - forcing switchover to standby supervisor engine [2-281](#)
 - set the mode [2-227](#)
 - synchronizing the route processor configurations [2-220](#)
- related documentation [xv](#)
- remote SPAN
- See RSPAN
- renew commands
- ip dhcp snooping database [2-285](#)
- resetting PVLAN trunk
- setting switchover to trunk [2-553](#)
- rj45 connector, selecting the connector [2-226](#)
- ROM monitor mode
- summary [1-6](#)
- Route Processor Redundancy
- See redundancy
- RPR
- set the redundancy mode [2-227](#)

RSPAN

- converting VLAN to RSPAN VLAN [2-284](#)
- displaying list [2-498](#)

S

saving configuration changes [1-11](#)

secure address, configuring [2-252](#)

secure ports, limitations [2-556](#)

set the redundancy mode [2-227](#)

sfp connector, selecting the connector [2-226](#)

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 [2-470](#)

slot0

- displaying information about the system [2-472](#)

SMF

- debugging address insertions and deletions [2-73](#)

SNMP

- debugging spanning tree activities [2-74](#)

ifIndex persistence

- clearing SNMP ifIndex commands [2-503](#)

- compress SNMP ifIndex table format [2-508](#)

- disabling globally [2-507](#)

- disabling on an interface [2-504](#)

- enabling globally [2-507](#)

- enabling on an interface [2-504](#)

informs

- disabling [2-505](#)

- enabling [2-505](#)

traps

- configuring to send when storm occurs [2-545](#)

- disabling [2-505](#)

- enabling [2-505](#)

- mac-notification

- adding [2-509](#)

- removing [2-509](#)

software MAC filter

See SMF

SPAN commands

- configuring a SPAN session to monitor [2-229](#)

- displaying SPAN session information [2-482, 2-546](#)

SPAN enhancements

- displaying status [2-433](#)

Spanning Tree Protocol

See STP

SPAN session

- displaying session information [2-433](#)

- filter ACLs [2-229](#)

- specify encaps type [2-229](#)

- turn off host learning based on ingress packets [2-229](#)

special characters

- anchoring, table [1-10](#)

SSO [2-227](#)

standard desktop

- enabling Cisco-recommended features [2-209](#)

standard desktop and Cisco IP phone

- enabling Cisco-recommended features [2-211](#)

sticky address, configuring [2-253](#)

sticky-ARP

- disabling on PVLANS [2-179](#)

- enabling on PVLANS [2-179](#)

sticky port

- deleting [2-43](#)

- enabling security [2-555](#)

storm control

- configuring for action when storm occurs [2-545](#)

- disabling suppression mode [2-332](#)

- displaying settings [2-481](#)

- enabling [2-545](#)
- enabling broadcast [2-545, 2-547](#)
- enabling multicast [2-545, 2-547](#)
- enabling suppression mode [2-332](#)
- enabling timer to recover from error disable [2-118](#)
- enabling unicast [2-545, 2-547](#)
- multicast, enabling [2-547](#)
- setting high and low levels [2-545](#)
- setting suppression level [2-332](#)

STP

- configuring link type for a port [2-518](#)
- configuring tunneling encapsulation rate [2-188](#)
- 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 [2-515](#)
- displaying active interfaces only [2-474](#)
- displaying BackboneFast status [2-474](#)
- displaying bridge status and configuration [2-474](#)
- displaying spanning tree debug messages [2-74](#)
- displaying summary of interface information [2-474](#)
- enabling BPDU filtering by default on all PortFast ports [2-533](#)
- enabling BPDU filtering on an interface [2-511](#)
- enabling BPDU guard by default on all PortFast ports [2-535](#)
- enabling BPDU guard on an interface [2-513](#)
- enabling extended system ID [2-516](#)
- enabling loop guard as a default on all ports [2-519](#)
- enabling PortFast by default on all access ports [2-536](#)
- enabling PortFast mode [2-531](#)
- enabling protocol tunneling for [2-184](#)
- enabling root guard [2-517](#)
- enabling spanning tree BackboneFast [2-510](#)
- enabling spanning tree on a per VLAN basis [2-540](#)
- enabling spanning tree UplinkFast [2-538](#)
- setting an interface priority [2-537](#)
- setting drop threshold for [2-186](#)

- setting pathcost [2-514](#)
- setting the default pathcost calculation method [2-530](#)
- subinterface configuration mode, summary [1-6](#)
- SVI
 - creating a Layer 3 interface on a VLAN [2-134](#)
- switchport [2-568](#)
- switchport interfaces
 - displaying status of Layer 3 port [2-360](#)
 - displaying status of native VLAN tagging [2-360](#)
- switch shim
 - debugging [2-76](#)
 - disabling debugging [2-76](#)
- switch to router connection
 - enabling Cisco-recommended features [2-213](#)
- switch to switch connection
 - enabling Cisco-recommended features [2-215](#)
- 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 [2-198](#)
- match syntax description [2-22](#)
- multipliers [1-9](#)
- relationship between duplex and speed
 - commands [2-543](#)
- show cable-diagnostics tdr command output
 - fields [2-308](#)
- show cdp neighbors detail field descriptions [2-311](#)
- show cdp neighbors field descriptions [2-310](#)
- show ip interface field descriptions [2-391](#)
- show policy-map control-plane field descriptions [2-440](#)
- show vlan command output fields [2-497](#)

- show vtp command output fields [2-501](#)
- special characters [1-9](#)
- special characters used for anchoring [1-10](#)
- speed command options [2-222, 2-542](#)
- valid interface types [2-129](#)

TAC

- displaying information useful to TAC [2-484](#)

TCAM

- debugging spanning tree activities [2-74](#)

TDR

- displaying cable diagnostic test results [2-307](#)
- test condition of copper cables [2-573](#)

temperature readings

- displaying information [2-329](#)

timer information [2-333](#)

traffic shaping

- enable on an interface [2-295](#)

traps, enabling [2-505](#)

trunk encapsulation

- setting format [2-568](#)

trunk interfaces

- displaying trunk interfaces information [2-367](#)

trust state

- setting [2-141](#)

tunnel ports

- displaying information about Layer 2 protocol [2-406](#)

TX queues

- allocating bandwidth [2-581](#)
- returning to default values [2-581](#)
- setting priority to high [2-581](#)
- specifying burst size [2-581](#)
- specifying traffic rate [2-581](#)

U

UDLD

- displaying administrative and operational status [2-486](#)
- enabling by default on all fiber interfaces [2-583](#)
- enabling on an individual interface [2-585](#)

- preventing a fiber interface from being enabled [2-585](#)
- resetting all shutdown ports [2-587](#)
- setting the message timer [2-583](#)

Unidirectional Link Detection

- See UDLD

unknown multicast traffic, preventing [2-552](#)

unknown unicast traffic, preventing [2-552](#)

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

username

- setting password and privilege level [2-589](#)

V

VACLs

- access-group mode [2-5](#)
- applying VLAN access maps [2-599](#)
- displaying VLAN access map information [2-491](#)
- specifying an action in a VLAN access map [2-9](#)
- specifying the match clause for a VLAN access-map sequence [2-221](#)
- using a VLAN filter [2-599](#)

VLAN

- applying an ARP ACL [2-135](#)
- configuring [2-592](#)
- converting to RSPAN VLAN [2-284](#)
- displaying CEF information [2-373](#)
- displaying CEF next-hop information [2-373](#)
- displaying information on switch interfaces [2-382, 2-386](#)
- displaying information on VLAN switch interfaces [2-389](#)
- displaying information sorted by group IP address [2-382, 2-386](#)
- displaying IP address and version information [2-382, 2-386](#)
- displaying Layer 2 VLAN information [2-488](#)
- displaying statistical information [2-431](#)
- displaying VLAN information [2-490](#)
- 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 [2-596](#)
- native frames
 - enabling tagging on all 802.1Q trunk ports [2-598](#)
 - pruning the list for VTP [2-568](#)
 - setting the list of allowed [2-568](#)
- VLAN Access Control Lists
 - See VACLs
- VLAN access map
 - See VACLs
- VLAN database
 - resetting [2-286](#)
- 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 [2-600](#)
 - displaying
 - internal VLAN allocation information [2-494](#)
 - RSPAN VLANs [2-498](#)
 - entering VLAN configuration mode [2-596](#)
- VMPS
 - configuring servers [2-604](#)
 - reconfirming dynamic VLAN assignments [2-602](#)
- voice VLANs
 - enabling [2-548](#)
- VoIP
 - configuring auto-QoS [2-13](#)
- VQP
 - per-server retry count [2-603](#)
 - reconfirming dynamic VLAN assignments [2-602](#)
- VTP
 - configuring the administrative domain name [2-608](#)
 - configuring the device in VTP client mode [2-607](#)
 - configuring the device in VTP server mode [2-611](#)
 - configuring the device in VTP transparent mode [2-612](#)
 - configuring tunnel encapsulation rate [2-188](#)
 - creating a VTP domain password [2-609](#)
 - displaying domain information [2-500](#)
 - displaying statistics information [2-500](#)
 - enabling protocol tunneling for [2-184](#)
 - enabling pruning in the VLAN database [2-610](#)
 - enabling VTP version 2 mode [2-613](#)
 - modifying the VTP configuration storage file name [2-606](#)
 - set drop threshold for [2-186](#)
- VTP protocol code
 - activating debug messages [2-82](#)
 - deactivating debug messages [2-82](#)