



INDEX

A

- aaa accounting dot1x command [2-1](#)
- aaa authentication dot1x command [2-3](#)
- aaa authorization network command [2-5, 2-22, 2-26, 2-28, 2-30, 2-32, 2-136, 2-501, B-5, B-33](#)
- AAA methods [2-3](#)
- abort command [2-905](#)
- access control entries
 - See ACEs
- access control lists
 - See ACLs
- access groups
 - IP [2-196](#)
 - MAC, displaying [2-645](#)
- access list, IPv6 [2-265](#)
- access map configuration mode [2-343](#)
- access mode [2-845](#)
- access ports [2-845](#)
- ACEs [2-120, 2-422](#)
- ACLs
 - deny [2-118](#)
 - displaying [2-486](#)
 - for non-IP protocols [2-314](#)
 - IP [2-196](#)
 - matching [2-343](#)
 - on Layer 2 interfaces [2-196](#)
 - permit [2-420](#)
- action command [2-6](#)
- address aliasing [2-394](#)
- aggregate-port learner [2-409](#)
- allowed VLANs [2-865](#)
- apply command [2-905](#)
- archive copy-sw command [2-8](#)
- archive download-sw command [2-11](#)
- archive tar command [2-15](#)
- archive upload-sw command [2-18](#)
- arp (boot loader) command [A-2](#)
- arp access-list command [2-20](#)
- audience [xxi](#)
- authentication control-direction command [2-22](#)
- authentication event command [2-24](#)
- authentication failed VLAN
 - See dot1x auth-fail vlan
- authentication fallback command [2-26](#)
- authentication host-mode command [2-28](#)
- authentication open command [2-30](#)
- authentication order command [2-32](#)
- authentication periodic command [2-34](#)
- authentication port-control command [2-36](#)
- authentication priority command [2-38](#)
- authentication timer command [2-40](#)
- authentication violation command [2-42](#)
- auth-fail max-attempts
 - See dot1x auth-fail max-attempts
- auth-fail vlan
 - See dot1x auth-fail vlan
- auth open command [2-30](#)
- auth order command [2-32](#)
- authorization state of controlled port [2-152](#)
- auth timer command [2-40](#)
- autonegotiation of duplex mode [2-163](#)
- auto qos voip command [2-44](#)

B

BackboneFast, for STP [2-767](#)

backup interfaces

configuring [2-840](#)

displaying [2-567](#)

boot (boot loader) command [A-3](#)

boot auto-copy-sw command [2-49](#)

boot auto-download-sw command [2-50](#)

boot config-file command [2-52](#)

boot enable-break command [2-53](#)

boot helper command [2-54](#)

boot helper-config file command [2-55](#)

booting

Cisco IOS image [2-58](#)

displaying environment variables [2-496](#)

interrupting [2-53](#)

manually [2-56](#)

boot loader

accessing [A-1](#)

booting

Cisco IOS image [A-3](#)

helper image [2-54](#)

directories

creating [A-19](#)

displaying a list of [A-8](#)

removing [A-23](#)

displaying

available commands [A-13](#)

memory heap utilization [A-14](#)

version [A-30](#)

environment variables

described [A-24](#)

displaying settings [A-24](#)

location of [A-25](#)

setting [A-24](#)

unsetting [A-28](#)

boot loader (continued)

files

copying [A-6](#)

deleting [A-7](#)

displaying a list of [A-8](#)

displaying the contents of [A-5, A-20, A-27](#)

renaming [A-21](#)

file system

formatting [A-11](#)

initializing flash [A-10](#)

running a consistency check [A-12](#)

prompt [A-1](#)

resetting the system [A-22](#)

boot manual command [2-56](#)

boot private-config-file command [2-57](#)

boot system command [2-58](#)

BPDU filtering, for spanning tree [2-768, 2-803](#)

BPDU guard, for spanning tree [2-770, 2-803](#)

broadcast storm control [2-824](#)

C

candidate switches

See clusters

cat (boot loader) command [A-5](#)

caution, description [xxii](#)

CDP, enabling protocol tunneling for [2-292](#)

channel-group command [2-60](#)

channel-protocol command [2-64](#)

Cisco Network Assistant

See Network Assistant

Cisco SoftPhone

auto-QoS configuration [2-44](#)

trusting packets sent from [2-384](#)

CISP

See Client Information Signalling Protocol

cisp

debug platform cisp command [B-33](#)

cisp enable command [2-65](#)

- class command [2-66](#)
- class-map command [2-68](#)
- class maps
 - creating [2-68](#)
 - defining the match criteria [2-345](#)
 - displaying [2-502](#)
- class of service
 - See CoS
- clear dot1x command [2-70](#)
- clear eap command [2-71](#)
- clear energywise neighbors command [2-72](#)
- clear errdisable interface [2-73](#)
- clear ip arp inspection log command [2-74](#)
- clear ip arp inspection statistics command [2-75](#)
- clear ipc command [2-78](#)
- clear ip dhcp snooping database command [2-76](#)
- clear ipv6 dhcp conflict command [2-79](#)
- clear l2protocol-tunnel counters command [2-80](#)
- clear lacp command [2-81](#)
- clear logging onboard command [2-82](#)
- clear mac address-table command [2-83, 2-84](#)
- clear nmsp statistics command [2-85](#)
- clear pagp command [2-86](#)
- clear port-security command [2-87](#)
- clear spanning-tree counters command [2-89](#)
- clear spanning-tree detected-protocols command [2-90](#)
- clear vmps statistics command [2-91](#)
- clear vtp counters command [2-92](#)
- Client Information Signalling Protocol [2-65, 2-136, 2-501, B-5, B-33](#)
- cluster commander-address command [2-93](#)
- cluster discovery hop-count command [2-95](#)
- cluster enable command [2-96](#)
- cluster holdtime command [2-98](#)
- cluster member command [2-99](#)
- cluster outside-interface command [2-101](#)
- cluster requirements [xxii](#)
- cluster run command [2-102](#)
- clusters
 - adding candidates [2-99](#)
 - binding to HSRP group [2-103](#)
 - building manually [2-99](#)
 - communicating with
 - devices outside the cluster [2-101](#)
 - members by using Telnet [2-456](#)
 - debug messages, display [B-6](#)
 - displaying
 - candidate switches [2-505](#)
 - debug messages [B-6](#)
 - member switches [2-507](#)
 - status [2-503](#)
 - hop-count limit for extended discovery [2-95](#)
 - HSRP standby groups [2-103](#)
 - redundancy [2-103](#)
 - SNMP trap [2-757](#)
- cluster standby-group command [2-103](#)
- cluster timer command [2-105](#)
- command modes defined [1-2](#)
- command switch
 - See clusters
- configuration, initial
 - See getting started guide and hardware installation guide
- configuration files
 - password recovery disable considerations [A-1](#)
 - specifying the name [2-52, 2-57](#)
- configuring multiple interfaces [2-192](#)
- config-vlan mode
 - commands [2-891](#)
 - description [1-4](#)
 - entering [2-890](#)
 - summary [1-2](#)
- conventions
 - command [xxi](#)
 - for examples [xxii](#)
 - publication [xxi](#)
 - text [xxi](#)

copy (boot loader) command [A-6](#)
 copy logging onboard command [2-106](#)

CoS

assigning default value to incoming packets [2-354](#)
 assigning to Layer 2 protocol packets [2-295](#)
 overriding the incoming value [2-354](#)

CoS-to-DSCP map [2-358](#)

CPU ASIC statistics, displaying [2-509](#)

crashinfo files [2-183](#)

D

debug auto qos command [B-2](#)

debug backup command [B-4](#)

debug cisp command [B-5](#)

debug cluster command [B-6](#)

debug dot1x command [B-8](#)

debug dtp command [B-9](#)

debug eap command [B-10](#)

debug etherchannel command [B-11](#)

debug fastethernet command [B-12](#)

debug ilpower command [B-13](#)

debug interface command [B-16](#)

debug ip dhcp snooping command [B-14](#)

debug ip igmp filter command [B-17](#)

debug ip igmp max-groups command [B-18](#)

debug ip igmp snooping command [B-19](#)

debug ip verify source packet command [B-15](#)

debug lacp command [B-20](#)

debug lldp packets command [B-21](#)

debug mac-notification command [B-22](#)

debug matm command [B-23](#)

debug matm move update command [B-24](#)

debug monitor command [B-25](#)

debug mvrdbg command [B-26](#)

debug nmosp command [B-27](#)

debug nvram command [B-28](#)

debug pagp command [B-29](#)

debug platform acl command [B-30](#)

debug platform backup interface command [B-32](#)

debug platform cisp command [B-33](#)

debug platform cli-redirection main command [B-34](#)

debug platform configuration command [B-35, B-43](#)

debug platform cpu-queues command [B-36](#)

debug platform device-manager command [B-38](#)

debug platform dot1x command [B-39](#)

debug platform etherchannel command [B-40](#)

debug platform fallback-bridging command [B-41](#)

debug platform forw-tcam command [B-42](#)

debug platform ip arp inspection command [B-44](#)

debug platform ipc command [B-53](#)

debug platform ip dhcp command [B-45](#)

debug platform ip igmp snooping command [B-46](#)

debug platform ip multicast command [B-48](#)

debug platform ip unicast command [B-50](#)

debug platform ip wccp command [B-52](#)

debug platform led command [B-54](#)

debug platform matm command [B-55](#)

debug platform messaging application command [B-56](#)

debug platform phy command [B-57](#)

debug platform pm command [B-59](#)

debug platform port-asic command [B-61](#)

debug platform port-security command [B-62](#)

debug platform qos-acl-tcam command [B-63](#)

debug platform remote-commands command [B-64](#)

debug platform resource-manager command [B-65](#)

debug platform snmp command [B-66](#)

debug platform span command [B-67](#)

debug platform stack-manager command [B-68](#)

debug platform supervisor-asic command [B-69](#)

debug platform sw-bridge command [B-70](#)

debug platform tcam command [B-71](#)

debug platform udd command [B-74](#)

debug platform vlan command [B-75](#)

debug pm command [B-76](#)

debug port-security command [B-78](#)

debug qos-manager command [B-79](#)

debug spanning-tree backbonefast command [B-82](#)

- debug spanning-tree bpdu command [B-83](#)
- debug spanning-tree bpdu-opt command [B-84](#)
- debug spanning-tree command [B-80](#)
- debug spanning-tree mstp command [B-85](#)
- debug spanning-tree switch command [B-87](#)
- debug spanning-tree uplinkfast command [B-89](#)
- debug sw-vlan command [B-90](#)
- debug sw-vlan ifs command [B-92](#)
- debug sw-vlan notification command [B-93](#)
- debug sw-vlan vtp command [B-95](#)
- debug uddl command [B-97](#)
- debug vqpc command [B-99](#)
- define interface-range command [2-108](#)
- delete (boot loader) command [A-7](#)
- delete command [2-110](#)
- deny (ARP access-list configuration) command [2-111](#)
- deny (IPv6) command [2-113](#)
- deny command [2-118](#)
- detect mechanism, causes [2-174](#)
- device manager requirements [xxii](#)
- DHCP snooping
 - accepting untrusted packets from edge switch [2-224](#)
 - enabling
 - on a VLAN [2-230](#)
 - option 82 [2-222, 2-224](#)
 - trust on an interface [2-228](#)
 - error recovery timer [2-180](#)
 - rate limiting [2-227](#)
- DHCP snooping binding database
 - binding file, configuring [2-220](#)
 - bindings
 - adding [2-218](#)
 - deleting [2-218](#)
 - displaying [2-590](#)
 - clearing database agent statistics [2-76](#)
 - database agent, configuring [2-220](#)
 - displaying
 - binding entries [2-590](#)
 - database agent status [2-592, 2-594](#)
- DHCP snooping binding database (continued)
 - renewing [2-464](#)
- Digital Optical Monitoring
 - see DoM
- dir (boot loader) command [A-8](#)
- directories, deleting [2-110](#)
- documentation, related [xxii](#)
- document conventions [xxi](#)
- DoM
 - displaying supported transceivers [2-581](#)
- domain name, VTP [2-917, 2-921](#)
- dot1x auth-fail max-attempts [2-130](#)
- dot1x auth-fail vlan [2-132](#)
- dot1x command [2-128](#)
- dot1x control-direction command [2-134](#)
- dot1x credentials (global configuration) command [2-136](#)
- dot1x critical global configuration command [2-137](#)
- dot1x critical interface configuration command [2-139](#)
- dot1x default command [2-141](#)
- dot1x fallback command [2-142](#)
- dot1x guest-vlan command [2-143](#)
- dot1x host-mode command [2-145](#)
- dot1x initialize command [2-146](#)
- dot1x mac-auth-bypass command [2-147](#)
- dot1x max-reauth-req command [2-149](#)
- dot1x max-req command [2-150](#)
- dot1x pae command [2-151](#)
- dot1x port-control command [2-152](#)
- dot1x re-authenticate command [2-154](#)
- dot1x reauthentication command [2-155](#)
- dot1x test eapol-capable command [2-156](#)
- dot1x test timeout command [2-157](#)
- dot1x timeout command [2-158](#)
- dot1x violation-mode command [2-161](#)
- dropping packets, with ACL matches [2-6](#)
- drop threshold, Layer 2 protocol tunneling [2-292](#)
- DSCP-to-CoS map [2-358](#)
- DSCP-to-DSCP-mutation map [2-358](#)
- DTP [2-846](#)

DTP flap

- error detection for [2-174](#)
- error recovery timer [2-180](#)

DTP negotiation [2-850](#)dual IPv4 and IPv6 templates [2-415](#)duplex command [2-162](#)

dynamic-access ports

- configuring [2-836](#)
- restrictions [2-837](#)

dynamic ARP inspection

ARP ACLs

- apply to a VLAN [2-204](#)
- define [2-20](#)
- deny packets [2-111](#)
- display [2-490](#)
- permit packets [2-413](#)

clear

- log buffer [2-74](#)
- statistics [2-75](#)

display

- ARP ACLs [2-490](#)
- configuration and operating state [2-585](#)
- log buffer [2-585](#)
- statistics [2-585](#)
- trust state and rate limit [2-585](#)

enable per VLAN [2-214](#)error detection for [2-174](#)error recovery timer [2-180](#)

log buffer

- clear [2-74](#)
- configure [2-208](#)
- display [2-585](#)

rate-limit incoming ARP packets [2-206](#)

statistics

- clear [2-75](#)
- display [2-585](#)

trusted interface state [2-210](#)type of packet logged [2-215](#)validation checks [2-212](#)dynamic auto VLAN membership mode [2-845](#)dynamic desirable VLAN membership mode [2-845](#)

Dynamic Host Configuration Protocol (DHCP)

See DHCP snooping

Dynamic Trunking Protocol

See DTP

E

EAP-request/identity frame

- maximum number to send [2-150](#)
- response time before retransmitting [2-158](#)

encapsulation methods [2-865](#)energywise (global configuration) command [2-164, 2-166](#)energywise domain command [2-168](#)energywise query command [2-170](#)environment variables, displaying [2-496](#)errdisable detect cause command [2-174](#)errdisable detect cause small-frame command [2-177](#)errdisable recovery cause small-frame [2-179](#)errdisable recovery command [2-180](#)error conditions, displaying [2-554](#)error disable detection [2-174](#)error-disabled interfaces, displaying [2-566](#)

EtherChannel

assigning Ethernet interface to channel group [2-60](#)

creating port-channel logical interface [2-190](#)

debug EtherChannel/PAGP, display [B-11](#)

debug platform-specific events, display [B-40](#)

displaying [2-557](#)

enabling Layer 2 protocol tunneling for

LACP [2-293](#)

PAGP [2-293](#)

UDLD [2-293](#)

interface information, displaying [2-566](#)

EtherChannel (continued)

LACP

- clearing channel-group information [2-81, 2-82](#)
- debug messages, display [B-20](#)
- displaying [2-631](#)
- modes [2-60](#)
- port priority for hot-standby ports [2-296](#)
- restricting a protocol [2-64](#)
- system priority [2-298](#)

load-distribution methods [2-430](#)

PAgP

- aggregate-port learner [2-409](#)
- clearing channel-group information [2-86](#)
- debug messages, display [B-29](#)
- displaying [2-696](#)
- error detection for [2-174](#)
- error recovery timer [2-180](#)
- learn method [2-409](#)
- modes [2-60](#)
- physical-port learner [2-409](#)
- priority of interface for transmitted traffic [2-411](#)

Ethernet controller, internal register display [2-511, 2-519](#)Ethernet Management port, debugging [B-12](#)Ethernet statistics, collecting [2-467](#)examples, conventions for [xxii](#)exception crashinfo command [2-183, 2-188](#)exit command [2-905](#)extended discovery of candidate switches [2-95](#)

extended-range VLANs

- and allowed VLAN list [2-865](#)
- and pruning-eligible list [2-865](#)
- configuring [2-890](#)

extended system ID for STP [2-776](#)

Ffallback profile command [2-184](#)fallback profiles, displaying [2-560](#)fan information, displaying [2-547](#)file name, VTP [2-917](#)files, deleting [2-110](#)flash_init (boot loader) command [A-10](#)flexible authentication ordering [2-32](#)

Flex Links

configuring [2-840](#)displaying [2-567](#)flow-based SPAN [2-387](#)flowcontrol command [2-186](#)format (boot loader) command [A-11](#)forwarding packets, with ACL matches [2-6](#)forwarding results, display [C-7](#)frame forwarding information, displaying [C-7](#)front-end controller counter and status information [C-9](#)fsck (boot loader) command [A-12](#)FSPAN [2-387](#)

Gglobal configuration mode [1-2, 1-4](#)

Hhardware ACL statistics [2-486](#)health monitoring diagnostic tests [2-121](#)help (boot loader) command [A-13](#)hierarchical policy maps [2-428](#)hop-count limit for clusters [2-95](#)host connection, port configuration [2-844](#)host ports, private VLANs [2-848](#)

Hot Standby Router Protocol

See HSRP

HSRP

binding HSRP group to cluster [2-103](#)standby group [2-103](#)

I

IEEE 802.1Q trunk ports and native VLANs [2-908](#)

IEEE 802.1Q tunnel ports

configuring [2-845](#)

displaying [2-533](#)

limitations [2-846](#)

IEEE 802.1x

and switchport modes [2-846](#)

violation error recovery [2-180](#)

See also port-based authentication

IGMP filters

applying [2-233](#)

debug messages, display [B-17](#)

IGMP groups, setting maximum [2-235](#)

IGMP maximum groups, debugging [B-18](#)

IGMP profiles

creating [2-237](#)

displaying [2-597](#)

IGMP snooping

adding ports as a static member of a group [2-253](#)

displaying [2-598, 2-603, 2-605](#)

enabling [2-239](#)

enabling the configurable-leave timer [2-241](#)

enabling the Immediate-Leave feature [2-250](#)

flooding query count [2-247](#)

interface topology change notification behavior [2-249](#)

multicast table [2-601](#)

querier [2-243](#)

query solicitation [2-247](#)

report suppression [2-245](#)

switch topology change notification behavior [2-247](#)

images

See software images

Immediate-Leave processing

IGMP [2-250](#)

IPv6 [2-288](#)

MVR [2-396](#)

initial configuration

See getting started guide and hardware installation guide

interface configuration mode [1-2, 1-4](#)

interface port-channel command [2-190](#)

interface range command [2-192](#)

interface-range macros [2-108](#)

interfaces

assigning Ethernet interface to channel group [2-60](#)

configuring [2-162](#)

configuring multiple [2-192](#)

creating port-channel logical [2-190](#)

debug messages, display [B-16](#)

disabling [2-753](#)

displaying the MAC address table [2-657](#)

restarting [2-753](#)

interface speed, configuring [2-814](#)

interface vlan command [2-194](#)

internal power supplies

See power supplies

internal registers, displaying [2-511, 2-519, 2-524](#)

Internet Group Management Protocol

See IGMP

invalid GBIC

error detection for [2-174](#)

error recovery timer [2-180](#)

ip access-group command [2-196](#)

ip address command [2-199](#)

IP addresses, setting [2-199](#)

IP address matching [2-343](#)

ip admission command [2-201](#)

ip admission name proxy http command [2-202](#)

ip arp inspection filter vlan command [2-204](#)

ip arp inspection limit command [2-206](#)

ip arp inspection log-buffer command [2-208](#)

ip arp inspection trust command [2-210](#)

ip arp inspection validate command [2-212](#)

ip arp inspection vlan command [2-214](#)

ip arp inspection vlan logging command [2-215](#)

- IP DHCP snooping
 - See DHCP snooping
 - ip dhcp snooping binding command [2-218](#)
 - ip dhcp snooping command [2-217](#)
 - ip dhcp snooping database command [2-220](#)
 - ip dhcp snooping information option allow-untrusted command [2-224](#)
 - ip dhcp snooping information option command [2-222](#)
 - ip dhcp snooping information option format remote-id command [2-226](#)
 - ip dhcp snooping limit rate command [2-227](#)
 - ip dhcp snooping trust command [2-228](#)
 - ip dhcp snooping verify command [2-229](#)
 - ip dhcp snooping vlan command [2-230](#)
 - ip dhcp snooping vlan information option format-type circuit-id string command [2-231](#)
 - ip igmp filter command [2-233](#)
 - ip igmp max-groups command [2-235](#), [2-260](#), [2-262](#)
 - ip igmp profile command [2-237](#)
 - ip igmp snooping command [2-239](#)
 - ip igmp snooping last-member-query-interval command [2-241](#)
 - ip igmp snooping querier command [2-243](#)
 - ip igmp snooping report-suppression command [2-245](#)
 - ip igmp snooping tcn command [2-247](#)
 - ip igmp snooping tcn flood command [2-249](#)
 - ip igmp snooping vlan immediate-leave command [2-250](#)
 - ip igmp snooping vlan mrouter command [2-251](#)
 - ip igmp snooping vlan static command [2-253](#)
 - IP multicast addresses [2-393](#)
 - IP phones
 - auto-QoS configuration [2-44](#)
 - trusting packets sent from [2-384](#)
 - IP-precedence-to-DSCP map [2-358](#)
 - ip snap forwarding command [2-255](#)
 - ip source binding command [2-256](#)
 - IP source guard
 - disabling [2-264](#)
 - IP source guard (continued)
 - displaying
 - binding entries [2-607](#)
 - configuration [2-609](#)
 - dynamic binding entries only [2-590](#)
 - enabling [2-264](#)
 - static IP source bindings [2-256](#)
 - ip ssh command [2-258](#)
 - IPv4 and IPv6
 - port-based trust [2-385](#)
 - IPv6 access list, deny conditions [2-113](#)
 - ipv6 access-list command [2-265](#)
 - ipv6 address dhcp command [2-268](#)
 - ipv6 dhcp client request vendor command [2-269](#)
 - ipv6 dhcp ping packets command [2-270](#)
 - ipv6 dhcp pool command [2-272](#)
 - ipv6 dhcp server command [2-274](#)
 - ipv6 mld snooping command [2-276](#)
 - ipv6 mld snooping last-listener-query count command [2-278](#)
 - ipv6 mld snooping last-listener-query-interval command [2-280](#)
 - ipv6 mld snooping listener-message-suppression command [2-282](#)
 - ipv6 mld snooping robustness-variable command [2-284](#)
 - ipv6 mld snooping tcn command [2-286](#)
 - ipv6 mld snooping vlan command [2-288](#)
 - IPv6 SDM template [2-468](#)
 - ipv6 traffic-filter command [2-290](#)
 - ip verify source command [2-264](#)
-
- ## J
- jumbo frames
 - See MTU

L

- l2protocol-tunnel command [2-292](#)
- l2protocol-tunnel cos command [2-295](#)
- LACP
 - See EtherChannel
- lacp port-priority command [2-296](#)
- lacp system-priority command [2-298](#)
- Layer 2 mode, enabling [2-834](#)
- Layer 2 protocol ports, displaying [2-628](#)
- Layer 2 protocol-tunnel
 - error detection for [2-174](#)
 - error recovery timer [2-180](#)
- Layer 2 protocol tunnel counters [2-80](#)
- Layer 2 protocol tunneling error recovery [2-293](#)
- Layer 2 traceroute
 - IP addresses [2-881](#)
 - MAC addresses [2-878](#)
- Layer 3 mode, enabling [2-834](#)
- license boot command [2-300](#)
- line configuration mode [1-3, 1-5](#)
- Link Aggregation Control Protocol
 - See EtherChannel
- link flap
 - error detection for [2-174](#)
 - error recovery timer [2-180](#)
- link state group command [2-302](#)
- link state track command [2-304](#)
- load-distribution methods for EtherChannel [2-430](#)
- location (global configuration) command [2-305](#)
- location (interface configuration) command [2-307](#)
- logging event power-inline-status command [2-309](#)
- logging file command [2-310](#)
- logical interface [2-190](#)
- loopback error
 - detection for [2-174](#)
 - recovery timer [2-180](#)
- loop guard, for spanning tree [2-778, 2-782](#)

M

- mac access-group command [2-312](#)
- MAC access-groups, displaying [2-645](#)
- MAC access list configuration mode [2-314](#)
- mac access-list extended command [2-314](#)
- MAC access lists [2-118](#)
- MAC addresses
 - disabling MAC address learning per VLAN [2-317](#)
 - displaying
 - aging time [2-651](#)
 - all [2-649](#)
 - dynamic [2-655](#)
 - MAC address-table move updates [2-660](#)
 - notification settings [2-659, 2-662](#)
 - number of addresses in a VLAN [2-653](#)
 - per interface [2-657](#)
 - per VLAN [2-666](#)
 - static [2-664](#)
 - static and dynamic entries [2-647](#)
 - dynamic
 - aging time [2-316](#)
 - deleting [2-83](#)
 - displaying [2-655](#)
 - enabling MAC address notification [2-321](#)
 - enabling MAC address-table move update [2-319](#)
 - matching [2-343](#)
 - persistent stack [2-822](#)
 - static
 - adding and removing [2-323](#)
 - displaying [2-664](#)
 - dropping on an interface [2-324](#)
 - tables [2-649](#)
- MAC address notification, debugging [B-22](#)
- mac address-table aging-time [2-312, 2-343](#)
- mac address-table aging-time command [2-316](#)
- mac address-table learning command [2-317](#)
- mac address-table move update command [2-319](#)
- mac address-table notification command [2-321](#)

- mac address-table static command [2-323](#)
- mac address-table static drop command [2-324](#)
- MAC frames
 - See MTU
- macro apply command [2-326](#)
- macro auto execute command [2-329](#)
- macro auto global processing command [2-334](#)
- macro description command [2-336](#)
- macro global command [2-337](#)
- macro global description command [2-340](#)
- macro name command [2-341](#)
- macros
 - adding a description [2-336](#)
 - adding a global description [2-340](#)
 - applying [2-337](#)
 - creating [2-341](#)
 - displaying [2-698](#)
 - interface range [2-108, 2-192](#)
 - specifying parameter values [2-337](#)
 - tracing [2-337](#)
- manual
 - audience [xxi](#)
 - purpose of [xxi](#)
- maps
 - QoS
 - defining [2-358](#)
 - displaying [2-676](#)
 - VLAN
 - creating [2-902](#)
 - defining [2-343](#)
 - displaying [2-743](#)
- match (access-map configuration) command [2-343](#)
- match (class-map configuration) command [2-345](#)
- maximum transmission unit
 - See MTU
- mdix auto command [2-348](#)
- member switches
 - See clusters
- memory (boot loader) command [A-14](#)
- mgmt_clr (boot loader) command [A-16](#)
- mgmt_init (boot loader) command [A-17, A-18](#)
- mkdir (boot loader) command [A-19](#)
- MLD snooping
 - configuring [2-282, 2-284](#)
 - configuring queries [2-278, 2-280](#)
 - configuring topology change notification [2-286](#)
 - displaying [2-618, 2-620, 2-622, 2-624](#)
 - enabling [2-276](#)
 - enabling on a VLAN [2-288](#)
- mls qos aggregate-policer command [2-352](#)
- mls qos command [2-350](#)
- mls qos cos command [2-354](#)
- mls qos dscp-mutation command [2-356](#)
- mls qos map command [2-358](#)
- mls qos queue-set output buffers command [2-362](#)
- mls qos queue-set output threshold command [2-364](#)
- mls qos rewrite ip dscp command [2-366](#)
- mls qos srr-queue input bandwidth command [2-368](#)
- mls qos srr-queue input buffers command [2-370](#)
- mls qos srr-queue input cos-map command [2-372](#)
- mls qos srr-queue input dscp-map command [2-374](#)
- mls qos srr-queue input priority-queue command [2-376](#)
- mls qos srr-queue input threshold command [2-378](#)
- mls qos srr-queue output cos-map command [2-380](#)
- mls qos srr-queue output dscp-map command [2-382](#)
- mls qos trust command [2-384](#)
- mls qos vlan-based command [2-386](#)
- mode, MVR [2-393](#)
- Mode button, and password recovery [2-471](#)
- modes, commands [1-2](#)
- monitor session command [2-387](#)
- more (boot loader) command [A-20](#)
- MSTP
 - displaying [2-720](#)
 - interoperability [2-90](#)
 - link type [2-780](#)

MSTP (continued)

MST region

- aborting changes [2-786](#)
- applying changes [2-786](#)
- configuration name [2-786](#)
- configuration revision number [2-786](#)
- current or pending display [2-786](#)
- displaying [2-720](#)
- MST configuration mode [2-786](#)
- VLANs-to-instance mapping [2-786](#)

path cost [2-788](#)

protocol mode [2-784](#)

restart protocol migration process [2-90](#)

root port

- loop guard [2-778](#)
- preventing from becoming designated [2-778](#)
- restricting which can be root [2-778](#)
- root guard [2-778](#)

root switch

- affects of extended system ID [2-776](#)
- hello-time [2-791, 2-799](#)
- interval between BPDU messages [2-792](#)
- interval between hello BPDU messages [2-791, 2-799](#)
- max-age [2-792](#)
- maximum hop count before discarding BPDU [2-793](#)
- port priority for selection of [2-795](#)
- primary or secondary [2-799](#)
- switch priority [2-798](#)

state changes

- blocking to forwarding state [2-806](#)
- enabling BPDU filtering [2-768, 2-803](#)
- enabling BPDU guard [2-770, 2-803](#)
- enabling Port Fast [2-803, 2-806](#)
- forward-delay time [2-790](#)
- length of listening and learning states [2-790](#)
- rapid transition to forwarding [2-780](#)
- shutting down Port Fast-enabled ports [2-803](#)

MSTP (continued)

state information display [2-718](#)

MTU

- configuring size [2-874](#)
- displaying global setting [2-732](#)
- MAC [2-875](#)
- system jumbo [2-875](#)
- system routing [2-875](#)

Multicast Listener Discovery

See MLD

multicast group address, MVR [2-396](#)

multicast groups, MVR [2-394](#)

Multicast Listener Discovery

See MLD

multicast router learning method [2-251](#)

multicast router ports, configuring [2-251](#)

multicast router ports, IPv6 [2-288](#)

multicast storm control [2-824](#)

multicast VLAN, MVR [2-393](#)

multicast VLAN registration

See MVR

multiple hosts on authorized port [2-145](#)

Multiple Spanning Tree Protocol

See MSTP

MVR

- and address aliasing [2-394](#)
- configuring [2-393](#)
- configuring interfaces [2-396](#)
- debug messages, display [B-26](#)
- displaying [2-685](#)
- displaying interface information [2-687](#)
- members, displaying [2-689](#)
- mvr (global configuration) command [2-393](#)
- mvr (interface configuration) command [2-396](#)
- mvr vlan group command [2-397](#)

N

native VLANs [2-865](#)
 native VLAN tagging [2-908](#)
 Network Assistant requirements [xxii](#)
 network-policy (global configuration) command [2-400](#)
 network-policy command [2-399](#)
 network-policy profile (network-policy configuration) command [2-402](#)
 nmsp attachment suppress command [2-406](#)
 nmsp command [2-404](#)
 nonegotiate
 DTP messaging [2-850](#)
 speed [2-814](#)
 non-IP protocols
 denying [2-118](#)
 forwarding [2-420](#)
 non-IP traffic access lists [2-314](#)
 non-IP traffic forwarding
 denying [2-118](#)
 permitting [2-420](#)
 non-stop forwarding [2-407](#)
 normal-range VLANs [2-890, 2-896](#)
 note, description [xxii](#)
 no vlan command [2-890, 2-900](#)
 nsf command [2-407](#)

O

online diagnostics
 configuring health monitoring diagnostic tests [2-121](#)
 displaying
 configured boot-up coverage level [2-528](#)
 current scheduled tasks [2-528](#)
 event logs [2-528](#)
 supported test suites [2-528](#)
 test ID [2-528](#)
 test results [2-528](#)
 test statistics [2-528](#)

online diagnostics (continued)
 enabling
 scheduling [2-123](#)
 syslog messages [2-121](#)
 global configuration mode
 clearing health monitoring diagnostic test schedule [2-121](#)
 clearing test-based testing schedule [2-123](#)
 setting health monitoring diagnostic testing [2-121](#)
 setting test-based testing [2-123](#)
 setting up health monitoring diagnostic test schedule [2-121](#)
 setting up test-based testing [2-123](#)
 removing scheduling [2-123](#)
 scheduled switchover
 disabling [2-123](#)
 enabling [2-123](#)
 setting test interval [2-123](#)
 specifying health monitoring diagnostic tests [2-121](#)
 starting testing [2-125](#)

P

PAgP
 See EtherChannel
 pagp learn-method command [2-409](#)
 pagp port-priority command [2-411](#)
 password, VTP [2-917, 2-921](#)
 password-recovery mechanism, enabling and disabling [2-471](#)
 permit (ARP access-list configuration) command [2-413](#)
 permit (IPv6) command [2-415](#)
 permit (MAC access-list configuration) command [2-420](#)
 per-VLAN spanning-tree plus
 See STP
 physical-port learner [2-409](#)
 PID, displaying [2-584](#)
 PIM-DVMRP, as multicast router learning method [2-251](#)

- PoE
 - configuring the power budget [2-435](#)
 - configuring the power management mode [2-432](#)
 - displaying controller register values [2-522](#)
 - displaying power management information [2-706](#)
 - error detection for [2-174](#)
 - error recovery timer [2-180](#)
 - logging of status [2-309](#)
 - monitoring power [2-437](#)
 - policing power consumption [2-437](#)
- police aggregate command [2-425](#)
- police command [2-423](#)
- policed-DSCP map [2-358](#)
- policy-map command [2-427](#)
- policy maps
 - applying to an interface [2-473, 2-479](#)
 - creating [2-427](#)
 - displaying [2-701](#)
 - hierarchical [2-428](#)
 - policers
 - displaying [2-669](#)
 - for a single class [2-423](#)
 - for multiple classes [2-352, 2-425](#)
 - policed-DSCP map [2-358](#)
 - traffic classification
 - defining the class [2-66](#)
 - defining trust states [2-883](#)
 - setting DSCP or IP precedence values [2-477](#)
- Port Aggregation Protocol
 - See EtherChannel
- port-based authentication
 - AAA method list [2-3](#)
 - configuring violation modes [2-161](#)
 - debug messages, display [B-8](#)
 - enabling guest VLAN supplicant [2-130, 2-142](#)
 - enabling IEEE 802.1x
 - globally [2-128](#)
 - per interface [2-152](#)
 - guest VLAN [2-143](#)
 - port-based authentication (continued)
 - host modes [2-145](#)
 - IEEE 802.1x AAA accounting methods [2-1](#)
 - initialize an interface [2-146, 2-157](#)
 - MAC authentication bypass [2-147](#)
 - manual control of authorization state [2-152](#)
 - multiple hosts on authorized port [2-145](#)
 - PAE as authenticator [2-151](#)
 - periodic re-authentication
 - enabling [2-155](#)
 - time between attempts [2-158](#)
 - quiet period between failed authentication exchanges [2-158](#)
 - re-authenticating IEEE 802.1x-enabled ports [2-154](#)
 - resetting configurable IEEE 802.1x parameters [2-141](#)
 - switch-to-authentication server retransmission time [2-158](#)
 - switch-to-client frame-retransmission number [2-149 to 2-150](#)
 - switch-to-client retransmission time [2-158](#)
 - test for IEEE 802.1x readiness [2-156](#)
- port-based trust
 - IPv4 and IPv6 [2-385](#)
- port-channel load-balance command [2-430](#)
- Port Fast, for spanning tree [2-806](#)
- port ranges, defining [2-106, 2-108](#)
- ports, debugging [B-76](#)
- ports, protected [2-863](#)
- port security
 - aging [2-857](#)
 - debug messages, display [B-78](#)
 - enabling [2-852](#)
 - violation error recovery [2-180](#)
- port trust states for QoS [2-384](#)
- port types, MVR [2-396](#)
- power information, displaying [2-547](#)
- power inline command [2-432](#)
- power inline consumption command [2-435](#)
- power inline police command [2-437](#)

Power over Ethernet

- See PoE

power rps command (user EXEC) [2-440](#)

power supply

- configuring [2-443](#)
- managing [2-443](#)

power supply command [2-443](#)

priority-queue command [2-444](#)

priority value, stack member [2-727](#), [2-829](#)

private-vlan command [2-446](#)

private-vlan mapping command [2-449](#)

private VLANs

- association [2-861](#)
- configuring [2-446](#)
- configuring ports [2-848](#)
- displaying [2-738](#)
- host ports [2-848](#)
- mapping
 - configuring [2-861](#)
 - displaying [2-566](#)
- promiscuous ports [2-848](#)

privileged EXEC mode [1-2](#), [1-3](#)

product identification information, displaying [2-584](#)

promiscuous ports, private VLANs [2-848](#)

protected ports, displaying [2-572](#)

pruning

- VLANs [2-865](#)
- VTP
 - displaying interface information [2-566](#)
 - enabling [2-917](#), [2-921](#)

pruning-eligible VLAN list [2-867](#)

PVST+

- See STP

Q

QoS

auto-QoS

- configuring [2-44](#)
- debug messages, display [B-2](#)
- displaying [2-492](#)

class maps

- creating [2-68](#)
- defining the match criteria [2-345](#)
- displaying [2-502](#)

defining the CoS value for an incoming packet [2-354](#)

displaying configuration information [2-492](#), [2-668](#)

DSCP transparency [2-366](#)

DSCP trusted ports

- applying DSCP-to-DSCP-mutation map to [2-356](#)
- defining DSCP-to-DSCP-mutation map [2-358](#)

egress queues

- allocating buffers [2-362](#)
- defining the CoS output queue threshold map [2-380](#)
- defining the DSCP output queue threshold map [2-382](#)
- displaying buffer allocations [2-672](#)
- displaying CoS output queue threshold map [2-676](#)
- displaying DSCP output queue threshold map [2-676](#)
- displaying queueing strategy [2-672](#)
- displaying queue-set settings [2-679](#)
- enabling bandwidth shaping and scheduling [2-818](#)
- enabling bandwidth sharing and scheduling [2-820](#)
- limiting the maximum output on a port [2-816](#)
- mapping a port to a queue-set [2-451](#)
- mapping CoS values to a queue and threshold [2-380](#)
- mapping DSCP values to a queue and threshold [2-382](#)

QoS (continued)

- setting maximum and reserved memory allocations [2-364](#)
- setting WTD thresholds [2-364](#)
- enabling [2-350](#)
- ingress queues
 - allocating buffers [2-370](#)
 - assigning SRR scheduling weights [2-368](#)
 - defining the CoS input queue threshold map [2-372](#)
 - defining the DSCP input queue threshold map [2-374](#)
 - displaying buffer allocations [2-672](#)
 - displaying CoS input queue threshold map [2-676](#)
 - displaying DSCP input queue threshold map [2-676](#)
 - displaying queueing strategy [2-672](#)
 - displaying settings for [2-670](#)
 - enabling the priority queue [2-376](#)
 - mapping CoS values to a queue and threshold [2-372](#)
 - mapping DSCP values to a queue and threshold [2-374](#)
 - setting WTD thresholds [2-378](#)
- maps
 - defining [2-358](#), [2-372](#), [2-374](#), [2-380](#), [2-382](#)
 - displaying [2-676](#)
- policy maps
 - applying an aggregate policer [2-425](#)
 - applying to an interface [2-473](#), [2-479](#)
 - creating [2-427](#)
 - defining policers [2-352](#), [2-423](#)
 - displaying policers [2-669](#)
 - displaying policy maps [2-701](#)
 - hierarchical [2-428](#)
 - policed-DSCP map [2-358](#)
 - setting DSCP or IP precedence values [2-477](#)
 - traffic classifications [2-66](#)
 - trust states [2-883](#)
- port trust states [2-384](#)

QoS (continued)

- queues, enabling the expedite [2-444](#)
- statistics
 - in-profile and out-of-profile packets [2-672](#)
 - packets enqueued or dropped [2-672](#)
 - sent and received CoS values [2-672](#)
 - sent and received DSCP values [2-672](#)
- trusted boundary for IP phones [2-384](#)
- VLAN-based [2-386](#)
- quality of service
 - See QoS
- querytime, MVR [2-393](#)
- queue-set command [2-451](#)

R

- radius-server dead-criteria command [2-452](#)
- radius-server host command [2-454](#)
- rapid per-VLAN spanning-tree plus
 - See STP
- rapid PVST+
 - See STP
- rcommand command [2-456](#)
- re-authenticating IEEE 802.1x-enabled ports [2-154](#)
- re-authentication
 - periodic [2-155](#)
 - time between attempts [2-158](#)
- receiver ports, MVR [2-396](#)
- receiving flow-control packets [2-186](#)
- recovery mechanism
 - causes [2-180](#)
 - display [2-73](#), [2-499](#), [2-552](#), [2-555](#)
 - timer interval [2-181](#)
- redundancy for cluster switches [2-103](#)
- redundant power supply
 - See RPS
- reload command [2-458](#)
- remote command [2-460](#)
- remote-span command [2-462](#)

- Remote Switched Port Analyzer
 - See RSPAN
- rename (boot loader) command [A-21](#)
- renew ip dhcp snooping database command [2-464](#)
- requirements
 - cluster [xxii](#)
 - device manager [xxii](#)
 - Network Assistant [xxii](#)
- reset (boot loader) command [A-22](#)
- reset command [2-905](#)
- resource templates, displaying [2-711](#)
- restricted VLAN
 - See dot1x auth-fail vlan
- rmdir (boot loader) command [A-23](#)
- rmon collection stats command [2-467](#)
- root guard, for spanning tree [2-778](#)
- routed ports
 - IP addresses on [2-200](#)
 - number supported [2-200](#)
- routing frames
 - See MTU
- RPS 2300
 - configuring [2-440](#)
 - managing [2-440](#)
- RSPAN
 - configuring [2-387](#)
 - displaying [2-682](#)
 - filter RSPAN traffic [2-387](#)
 - remote-span command [2-462](#)
 - sessions
 - add interfaces to [2-387](#)
 - displaying [2-682](#)
 - start new [2-387](#)
- SDM mismatch mode [2-469, 2-728](#)
- sdm prefer command [2-468](#)
- SDM templates
 - allowed resources [2-469](#)
 - and stacking [2-469](#)
 - displaying [2-711](#)
 - dual IPv4 and IPv6 [2-468](#)
- secure ports, limitations [2-854](#)
- sending flow-control packets [2-186](#)
- service password-recovery command [2-471](#)
- service-policy command [2-473](#)
- session command [2-476](#)
- set (boot loader) command [A-24](#)
- set command [2-477](#)
- setup command [2-479](#)
- setup express command [2-482](#)
- shell trigger command [2-484](#)
- show access-lists command [2-486](#)
- show archive status command [2-489](#)
- show arp access-list command [2-490](#)
- show authentication command [2-491](#)
- show auto qos command [2-492](#)
- show boot command [2-496](#)
- show cable-diagnostics tdr command [2-499](#)
- show changes command [2-905](#)
- show cisp command [2-501](#)
- show class-map command [2-502](#)
- show cluster candidates command [2-505](#)
- show cluster command [2-503](#)
- show cluster members command [2-507](#)
- show controllers cpu-interface command [2-509](#)
- show controllers ethernet-controller command [2-511](#)
- show controllers ethernet-controller fastethernet command [2-519](#)
- show controllers power inline command [2-522](#)
- show controllers team command [2-524](#)
- show controller utilization command [2-526](#)
- show current command [2-905](#)
- show dot1q-tunnel command [2-533](#)

S

- scheduled switchover
 - disabling [2-123](#)
 - enabling [2-123](#)

- show dot1x command [2-534](#)
- show dtp [2-538](#)
- show eap command [2-540](#)
- show energywise command [2-543](#)
- show env command [2-547](#)
- show errdisable detect command [2-552](#)
- show errdisable flap-values command [2-554](#)
- show errdisable recovery command [2-555](#)
- show etherchannel command [2-557](#)
- show fallback profile command [2-560](#)
- show flowcontrol command [2-562](#)
- show idprom command [2-564](#)
- show interfaces command [2-566](#)
- show interfaces counters command [2-578](#)
- show interface transceivers command [2-581](#)
- show inventory command [2-584](#)
- show ip arp inspection command [2-585](#)
- show ipc command [2-611](#)
- show ip dhcp snooping binding command [2-590](#)
- show ip dhcp snooping command [2-589](#)
- show ip dhcp snooping database command [2-592, 2-594](#)
- show ip igmp profile command [2-597](#)
- show ip igmp snooping address command [2-620](#)
- show ip igmp snooping command [2-598, 2-618](#)
- show ip igmp snooping groups command [2-601](#)
- show ip igmp snooping mrouter command [2-603, 2-622](#)
- show ip igmp snooping querier command [2-605, 2-624](#)
- show ip source binding command [2-607](#)
- show ipv6 access-list command [2-615](#)
- show ipv6 dhcp conflict command [2-617](#)
- show ipv6 route updated [2-626](#)
- show ip verify source command [2-609](#)
- show l2protocol-tunnel command [2-628](#)
- show lacp command [2-631](#)
- show link state group command [2-635](#)
- show location [2-637](#)
- show location command [2-637](#)
- show logging onboard command [2-640](#)
- show mac access-group command [2-645](#)
- show mac address-table address command [2-649](#)
- show mac address-table aging time command [2-651](#)
- show mac address-table command [2-647](#)
- show mac address-table count command [2-653](#)
- show mac address-table dynamic command [2-655](#)
- show mac address-table interface command [2-657](#)
- show mac address-table learning command [2-659](#)
- show mac address-table move update command [2-660](#)
- show mac address-table notification command [2-84, 2-662, B-24](#)
- show mac address-table static command [2-664](#)
- show mac address-table vlan command [2-666](#)
- show mls qos aggregate-policer command [2-669](#)
- show mls qos command [2-668](#)
- show mls qos input-queue command [2-670](#)
- show mls qos interface command [2-672](#)
- show mls qos maps command [2-676](#)
- show mls qos queue-set command [2-679](#)
- show mls qos vlan command [2-681](#)
- show monitor command [2-682](#)
- show mvr command [2-685](#)
- show mvr interface command [2-687](#)
- show mvr members command [2-689](#)
- show network-policy profile command [2-691](#)
- show nmsp command [2-693](#)
- show pagp command [2-696](#)
- show parser macro command [2-698](#)
- show platform acl command [C-2](#)
- show platform backup interface command [C-3](#)
- show platform configuration command [C-4](#)
- show platform dl command [C-5](#)
- show platform etherchannel command [C-6](#)
- show platform forward command [C-7](#)
- show platform frontend-controller command [C-9](#)
- show platform igmp snooping command [C-10](#)
- show platform ipc trace command [C-18](#)
- show platform ip multicast command [C-12](#)
- show platform ip unicast command [C-13](#)
- show platform ipv6 unicast command [C-19](#)

- show platform ip wccp command [C-17](#)
- show platform layer4op command [C-21](#)
- show platform mac-address-table command [C-22](#)
- show platform messaging command [C-23](#)
- show platform monitor command [C-24](#)
- show platform mvr table command [C-25](#)
- show platform pm command [C-26](#)
- show platform port-asic command [C-27](#)
- show platform port-security command [C-32](#)
- show platform qos command [C-33](#)
- show platform resource-manager command [C-34](#)
- show platform snmp counters command [C-36](#)
- show platform spanning-tree command [C-37](#)
- show platform stack-manager command [C-39](#)
- show platform stp-instance command [C-38](#)
- show platform tb command [C-43](#)
- show platform team command [C-45](#)
- show platform vlan command [C-48](#)
- show policy-map command [2-701](#)
- show port security command [2-703](#)
- show power inline command [2-706](#)
- show proposed command [2-905](#)
- show sdm prefer command [2-711](#)
- show setup express command [2-714](#)
- show shell command [2-715](#)
- show spanning-tree command [2-718](#)
- show storm-control command [2-725](#)
- show switch command [2-727](#)
- show system mtu command [2-732](#)
- show trust command [2-883](#)
- show udd command [2-733](#)
- show version command [2-736](#)
- show vlan access-map command [2-743](#)
- show vlan command [2-738](#)
- show vlan command, fields [2-740](#)
- show vlan filter command [2-744](#)
- show vmps command [2-745](#)
- show vtp command [2-748](#)
- shutdown command [2-753](#)
- shutdown threshold, Layer 2 protocol tunneling [2-292](#)
- shutdown vlan command [2-754](#)
- small-frame violation rate command [2-755](#)
- Smartports macros
 - See macros
- SNMP host, specifying [2-761](#)
- SNMP informs, enabling the sending of [2-757](#)
- snmp-server enable traps command [2-757](#)
- snmp-server host command [2-761](#)
- snmp trap mac-notification command [2-765](#)
- SNMP traps
 - enabling MAC address notification trap [2-765](#)
 - enabling the MAC address notification feature [2-321](#)
 - enabling the sending of [2-757](#)
- SoftPhone
 - See Cisco SoftPhone
- software images
 - copying [2-8](#)
 - deleting [2-110](#)
 - downloading [2-11](#)
 - upgrading [2-8, 2-11](#)
 - uploading [2-18](#)
- software version, displaying [2-736](#)
- source ports, MVR [2-396](#)
- SPAN
 - configuring [2-387](#)
 - debug messages, display [B-25](#)
 - displaying [2-682](#)
 - filter SPAN traffic [2-387](#)
 - sessions
 - add interfaces to [2-387](#)
 - displaying [2-682](#)
 - start new [2-387](#)
- spanning-tree backbonefast command [2-767](#)
- spanning-tree bpdudfilter command [2-768](#)
- spanning-tree bpduguard command [2-770](#)
- spanning-tree cost command [2-772](#)
- spanning-tree etherchannel command [2-774](#)
- spanning-tree extend system-id command [2-776](#)

- spanning-tree guard command [2-778](#)
- spanning-tree link-type command [2-780](#)
- spanning-tree loopguard default command [2-782](#)
- spanning-tree mode command [2-784](#)
- spanning-tree mst configuration command [2-786](#)
- spanning-tree mst cost command [2-788](#)
- spanning-tree mst forward-time command [2-790](#)
- spanning-tree mst hello-time command [2-791](#)
- spanning-tree mst max-age command [2-792](#)
- spanning-tree mst max-hops command [2-793](#)
- spanning-tree mst port-priority command [2-795](#)
- spanning-tree mst pre-standard command [2-797](#)
- spanning-tree mst priority command [2-798](#)
- spanning-tree mst root command [2-799](#)
- spanning-tree portfast (global configuration) command [2-803](#)
- spanning-tree portfast (interface configuration) command [2-806](#)
- spanning-tree port-priority command [2-801](#)
- Spanning Tree Protocol
 - See STP
- spanning-tree transmit hold-count command [2-808](#)
- spanning-tree uplinkfast command [2-809](#)
- spanning-tree vlan command [2-811](#)
- speed command [2-814](#)
- srr-queue bandwidth limit command [2-816](#)
- srr-queue bandwidth shape command [2-818](#)
- srr-queue bandwidth share command [2-820](#)
- SSH, configuring version [2-258](#)
- stack-mac persistent timer command [2-822](#)
- stack member
 - access [2-476](#)
 - number [2-727, 2-832](#)
 - priority value [2-829](#)
 - provisioning [2-830](#)
 - reloading [2-458](#)
- stacks, switch
 - disabling a member [2-827](#)
 - enabling a member [2-827](#)
- stacks, switch (continued)
 - MAC address [2-822](#)
 - provisioning a new member [2-830](#)
 - reloading [2-458](#)
 - stack member access [2-476](#)
 - stack member number [2-727, 2-832](#)
 - stack member priority value [2-727, 2-829](#)
- static-access ports, configuring [2-836](#)
- statistics, Ethernet group [2-467](#)
- sticky learning, enabling [2-852](#)
- storm-control command [2-824](#)
- STP
 - BackboneFast [2-767](#)
 - counters, clearing [2-89](#)
 - debug messages, display
 - BackboneFast events [B-82](#)
 - MSTP [B-85](#)
 - optimized BPDUs handling [B-84](#)
 - spanning-tree activity [B-80](#)
 - switch shim [B-87](#)
 - transmitted and received BPDUs [B-83](#)
 - UplinkFast [B-89](#)
 - detection of indirect link failures [2-767](#)
 - enabling protocol tunneling for [2-292](#)
 - EtherChannel misconfiguration [2-774](#)
 - extended system ID [2-776](#)
 - path cost [2-772](#)
 - protocol modes [2-784](#)
 - root port
 - accelerating choice of new [2-809](#)
 - loop guard [2-778](#)
 - preventing from becoming designated [2-778](#)
 - restricting which can be root [2-778](#)
 - root guard [2-778](#)
 - UplinkFast [2-809](#)

- STP (continued)
 - root switch
 - affects of extended system ID [2-776, 2-812](#)
 - hello-time [2-811](#)
 - interval between BPDU messages [2-811](#)
 - interval between hello BPDU messages [2-811](#)
 - max-age [2-811](#)
 - port priority for selection of [2-801](#)
 - primary or secondary [2-811](#)
 - switch priority [2-811](#)
 - state changes
 - blocking to forwarding state [2-806](#)
 - enabling BPDU filtering [2-768, 2-803](#)
 - enabling BPDU guard [2-770, 2-803](#)
 - enabling Port Fast [2-803, 2-806](#)
 - enabling timer to recover from error state [2-180](#)
 - forward-delay time [2-811](#)
 - length of listening and learning states [2-811](#)
 - shutting down Port Fast-enabled ports [2-803](#)
 - state information display [2-718](#)
 - VLAN options [2-798, 2-811](#)
 - SVIs, creating [2-194](#)
 - SVI status calculation [2-838](#)
 - Switched Port Analyzer
 - See SPAN
 - switching characteristics
 - modifying [2-834](#)
 - returning to interfaces [2-834](#)
 - switchport access command [2-836](#)
 - switchport autostate exclude command [2-838](#)
 - switchport backup interface command [2-840](#)
 - switchport block command [2-843](#)
 - switchport command [2-834](#)
 - switchport host command [2-844](#)
 - switchport mode command [2-845](#)
 - switchport mode private-vlan command [2-848](#)
 - switchport nonegotiate command [2-850](#)
 - switchport port-security aging command [2-857](#)
 - switchport port-security command [2-852](#)
 - switchport priority extend command [2-859](#)
 - switchport private-vlan command [2-861](#)
 - switchport protected command [2-863](#)
 - switchports, displaying [2-567](#)
 - switchport trunk command [2-865](#)
 - switchport voice detect [2-868](#)
 - switchport voice vlan command [2-869](#)
 - switch priority command [2-827, 2-829](#)
 - switch provision command [2-830](#)
 - switch renumber command [2-832](#)
 - system env temperature threshold yellow command [2-872](#)
 - system message logging [2-309](#)
 - system message logging, save message to flash [2-310](#)
 - system mtu command [2-874](#)
 - system resource templates [2-468](#)
-
- T**
- tar files, creating, listing, and extracting [2-15](#)
 - TDR, running [2-877](#)
 - Telnet, using to communicate to cluster switches [2-456](#)
 - temperature information, displaying [2-547](#)
 - templates, system resources [2-468](#)
 - test cable-diagnostics tdr command [2-877](#)
 - traceroute mac command [2-878](#)
 - traceroute mac ip command [2-881](#)
 - trunking, VLAN mode [2-845](#)
 - trunk mode [2-845](#)
 - trunk ports [2-845](#)
 - trunks, to non-DTP device [2-846](#)
 - trusted boundary for QoS [2-384](#)
 - trusted port states for QoS [2-384](#)
 - tunnel ports, Layer 2 protocol, displaying [2-628](#)
 - type (boot loader) command [A-27](#)

U**UDLD**

- aggressive mode [2-885, 2-887](#)
- debug messages, display [B-97](#)
- enable globally [2-885](#)
- enable per interface [2-887](#)
- error recovery timer [2-180](#)
- message timer [2-885](#)
- normal mode [2-885, 2-887](#)
- reset a shutdown interface [2-889](#)
- status [2-733](#)

udld command [2-885](#)

udld port command [2-887](#)

udld reset command [2-889](#)

unicast storm control [2-824](#)

UniDirectional Link Detection

See UDLD

unknown multicast traffic, preventing [2-843](#)

unknown unicast traffic, preventing [2-843](#)

unset (boot loader) command [A-28](#)

upgrading

copying software images [2-8](#)

downloading software images [2-11](#)

software images, monitoring status of [2-489](#)

upgrading information

See release notes

UplinkFast, for STP [2-809](#)

user EXEC mode [1-2, 1-3](#)

V

version (boot loader) command [A-30](#)

version mismatch mode [2-728, C-40](#)

vlan (global configuration) command [2-890](#)

vlan (VLAN configuration) command [2-896](#)

vlan access-map command [2-902](#)

VLAN access map configuration mode [2-902](#)

VLAN access maps

actions [2-6](#)

displaying [2-743](#)

VLAN-based QoS [2-386](#)

VLAN configuration

rules [2-893, 2-898](#)

saving [2-890, 2-900](#)

VLAN configuration mode

commands

VLAN [2-896](#)

VTP [2-921](#)

description [1-5](#)

entering [2-904](#)

summary [1-3](#)

vlan database command [2-904](#)

vlan dot1q tag native command [2-908](#)

vlan filter command [2-910](#)

VLAN filters, displaying [2-744](#)

VLAN ID range [2-890, 2-896](#)

VLAN maps

applying [2-910](#)

creating [2-902](#)

defining [2-343](#)

displaying [2-743](#)

VLAN Query Protocol

See VQP

VLANs

adding [2-890](#)

configuring [2-890, 2-896](#)

debug messages, display

ISL [B-93](#)

VLAN IOS file system error tests [B-92](#)

VLAN manager activity [B-90](#)

VTP [B-95](#)

displaying configurations [2-738](#)

extended-range [2-890](#)

MAC addresses

displaying [2-666](#)

number of [2-653](#)

VLANs (continued)

- media types [2-893, 2-898](#)
- normal-range [2-890, 2-896](#)
- private [2-848](#)
 - configuring [2-446](#)
 - displaying [2-738](#)
- See also private VLANs
- restarting [2-754](#)
- saving the configuration [2-890](#)
- shutting down [2-754](#)
- SNMP traps for VTP [2-759, 2-762](#)
- suspending [2-754](#)
- variables [2-896](#)

VLAN Trunking Protocol

See VTP

VM mode [2-728, C-40](#)

VMPS

- configuring servers [2-915](#)
- displaying [2-745](#)
- error recovery timer [2-181](#)
- reconfirming dynamic VLAN assignments [2-912](#)
- vmmps reconfirm (global configuration) command [2-913](#)
- vmmps reconfirm (privileged EXEC) command [2-912](#)
- vmmps retry command [2-914](#)
- vmmps server command [2-915](#)

voice VLAN

- configuring [2-868, 2-869](#)
- setting port priority [2-859](#)

VQP

- and dynamic-access ports [2-837](#)
- clearing client statistics [2-91](#)
- displaying information [2-745](#)
- per-server retry count [2-914](#)
- reconfirmation interval [2-913](#)
- reconfirming dynamic VLAN assignments [2-912](#)

VTP

- changing characteristics [2-917](#)
- clearing pruning counters [2-92](#)
- configuring
 - domain name [2-917, 2-921](#)
 - file name [2-917](#)
 - mode [2-917, 2-921](#)
 - password [2-917, 2-921](#)
- counters display fields [2-749](#)
- displaying information [2-748](#)
- enabling
 - pruning [2-917, 2-921](#)
 - tunneling for [2-292](#)
 - Version 2 [2-917, 2-921](#)
- mode [2-917, 2-921](#)
- pruning [2-917, 2-921](#)
- saving the configuration [2-890, 2-900](#)
- statistics [2-748](#)
- status [2-748](#)
- status display fields [2-750](#)
- vtp (global configuration) command [2-917](#)
- vtp (VLAN configuration) command [2-921](#)

