



INDEX

A

aaa accounting dot1x command [2-1](#)
aaa authentication dot1x command [2-3](#)
aaa authorization network command [2-5](#)
AAA methods [2-3](#)
abort command [2-560](#)
access control entries
 See ACEs
access control lists
 See ACLs
access groups
 IP [2-104](#)
 MAC, displaying [2-356](#)
access map configuration mode [2-180](#)
access mode [2-512](#)
access ports [2-512](#)
ACEs [2-56](#), [2-242](#)
ACLs
 deny [2-54](#)
 displaying [2-274](#)
 for non-IP protocols [2-160](#)
 IP [2-104](#)
 matching [2-180](#)
 on Layer 2 interfaces [2-104](#)
 permit [2-240](#)
action command [2-6](#)
address aliasing [2-231](#)
aggregate-port learner [2-236](#)
allowed VLANs [2-526](#)
apply command [2-560](#)
archive download-sw command [2-8](#)
archive tar command [2-11](#)

archive upload-sw command [2-14](#)
audience [xv](#)
authentication failed VLAN
 See dot1x auth-fail vlan
auth-fail max-attempts
 See dot1x auth-fail max-attempts
auth-fail vlan
 See dot1x auth-fail vlan
authorization state of controlled port [2-80](#)
autonegotiation of duplex mode [2-87](#)
auto qos voip command [2-16](#)

B

BackboneFast, for STP [2-450](#)
backup interfaces
 configuring [2-507](#)
 displaying [2-323](#)
boot (boot loader) command [A-2](#)
boot bootlpr command [2-20](#)
boot config-file command [2-21](#)
boot enable-break command [2-22](#)
boot helper command [2-23](#)
boot helper-config file command [2-24](#)
booting
 Cisco IOS image [2-27](#)
 displaying environment variables [2-281](#)
 interrupting [2-22](#)
 manually [2-25](#)
boot loader
 accessing [A-1](#)

boot loader (continued)

- booting
 - Cisco IOS image [A-2](#)
 - helper image [2-23](#)
- directories
 - creating [A-15](#)
 - displaying a list of [A-7](#)
 - removing [A-19](#)
- displaying
 - available commands [A-12](#)
 - memory heap utilization [A-14](#)
 - version [A-26](#)
- environment variables
 - described [A-20](#)
 - displaying settings [A-20](#)
 - location of [A-21](#)
 - setting [A-20](#)
 - unsetting [A-24](#)
- files
 - copying [A-5](#)
 - deleting [A-6](#)
 - displaying a list of [A-7](#)
 - displaying the contents of [A-4, A-16, A-23](#)
 - renaming [A-17](#)
- file system
 - formatting [A-10](#)
 - initializing flash [A-9](#)
 - running a consistency check [A-11](#)
- loading helper images [A-18](#)
- resetting the system [A-18](#)
- boot manual command [2-25](#)
- boot private-config-file command [2-26](#)
- boot system command [2-27](#)
- BPDU filtering, for spanning tree [2-451, 2-484](#)
- BPDU guard, for spanning tree [2-453, 2-484](#)
- broadcast storm control [2-502](#)

C

- cat (boot loader) command [A-4](#)
- caution, description [xvi](#)
- channel-group command [2-28](#)
- channel-protocol command [2-31](#)
- Cisco SoftPhone
 - auto-QoS configuration [2-16](#)
 - trusting packets sent from [2-222](#)
- class command [2-32](#)
- class-map command [2-34](#)
- class maps
 - creating [2-34](#)
 - defining the match criteria [2-182](#)
 - displaying [2-285](#)
- class of service
 - See CoS
- clear dot1x command [2-36](#)
- clear eap sessions command [2-37](#)
- clear errdisable interface [2-38](#)
- clear ip dhcp snooping database command [2-39](#)
- clear lacp command [2-41](#)
- clear mac address-table command [2-42, 2-43](#)
- clear pagp command [2-44](#)
- clear port-security command [2-45](#)
- clear spanning-tree counters command [2-47](#)
- clear spanning-tree detected-protocols command [2-48](#)
- clear vmps statistics command [2-49](#)
- clear vtp counters command [2-50](#)
- clusters
 - SNMP trap [2-441](#)
- command modes defined [1-1](#)
- configuration, initial
 - See getting started guide and hardware installation guide
- configuration files
 - password recovery disable considerations [A-1](#)
 - specifying the name [2-21, 2-26](#)
- configuring multiple interfaces [2-101](#)

config-vlan mode
 commands [2-547](#)
 description [1-4](#)
 entering [2-546](#)
 summary [1-2](#)

conventions
 command [xv](#)
 for examples [xvi](#)
 publication [xv](#)
 text [xv](#)

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

CoS
 assigning default value to incoming packets [2-192](#)
 overriding the incoming value [2-192](#)

CoS-to-DSCP map [2-196](#)

CPU ASIC statistics, displaying [2-286](#)

crashinfo files [2-94](#)

D

debug auto qos command [28](#)
 debug backup command [30](#)
 debug dot1x command [31](#)
 debug dtp command [32](#)
 debug eap command [33](#)
 debug etherchannel command [34](#)
 debug interface command [35](#)
 debug ip igmp filter command [36](#)
 debug ip igmp max-groups command [37](#)
 debug ip igmp snooping command [38](#)
 debug lacp command [39](#)
 debug mac-notification command [40](#)
 debug matm command [41](#)
 debug matm move update command [42](#)
 debug monitor command [43](#)
 debug mvrdbg command [44](#)
 debug nvram command [45](#)
 debug pagp command [46](#)
 debug platform acl command [47](#)
 debug platform backup interface command [48](#)
 debug platform cpu-queues command [49](#)
 debug platform dot1x command [51](#)
 debug platform etherchannel command [52](#)
 debug platform forw-tcam command [53](#)
 debug platform ip dhcp command [54](#)
 debug platform ip igmp snooping command [55](#)
 debug platform led command [57](#)
 debug platform matm command [58](#)
 debug platform messaging application command [59](#)
 debug platform phy command [60](#)
 debug platform pm command [62](#)
 debug platform port-asic command [64](#)
 debug platform port-security command [65](#)
 debug platform qos-acl-tcam command [66](#)
 debug platform remote-commands command [67](#)
 debug platform resource-manager command [68](#)
 debug platform snmp command [69](#)
 debug platform span command [70](#)
 debug platform supervisor-asic command [71](#)
 debug platform sw-bridge command [72](#)
 debug platform tcam command [73](#)
 debug platform udd command [75](#)
 debug platform vlan command [76](#)
 debug pm command [77](#)
 debug port-security command [79](#)
 debug qos-manager command [80](#)
 debug spanning-tree backbonefast command [83](#)
 debug spanning-tree bpdu command [84](#)
 debug spanning-tree bpdu-opt command [85](#)
 debug spanning-tree command [81](#)
 debug spanning-tree mstp command [86](#)
 debug spanning-tree switch command [88](#)
 debug spanning-tree uplinkfast command [90](#)
 debug sw-vlan command [91](#)
 debug sw-vlan ifs command [93](#)
 debug sw-vlan notification command [94](#)
 debug sw-vlan vtp command [95](#)
 debug udd command [97](#)

- debug vqpc command 99
 - define interface-range command 2-51
 - delete (boot loader) command A-6
 - delete command 2-53
 - deny command 2-54
 - detect mechanism, causes 2-89
 - device manager requirements xvi
 - DHCP snooping
 - accepting untrusted packets from edge switch 2-114
 - enabling
 - on a VLAN 2-121
 - option 82 2-112, 2-114
 - trust on an interface 2-119
 - error recovery timer 2-91
 - rate limiting 2-118
 - DHCP snooping binding database
 - bindings
 - displaying 2-336
 - clearing database agent statistics 2-39
 - displaying
 - binding entries 2-336
 - database agent status 2-338
 - dir (boot loader) command A-7
 - directories, deleting 2-53
 - documentation, related xvi
 - document conventions xv
 - domain name, VTP 2-569, 2-573
 - dot1x auth-fail max-attempts 2-59
 - dot1x auth-fail vlan 2-61
 - dot1x command 2-57
 - dot1x control-direction command 2-63
 - dot1x critical global configuration command 2-65
 - dot1x critical interface configuration command 2-67
 - dot1x default command 2-69
 - dot1x fallback command 2-70
 - dot1x guest-vlan command 2-71
 - dot1x host-mode command 2-73
 - dot1x initialize command 2-74
 - dot1x mac-auth-bypass command 2-75
 - dot1x max-reauth-req command 2-77
 - dot1x max-req command 2-78
 - dot1x pae command 2-79
 - dot1x port-control command 2-80
 - dot1x re-authenticate command 2-82
 - dot1x reauthentication command 2-83
 - dot1x timeout command 2-84
 - dropping packets, with ACL matches 2-6
 - DSCP-to-CoS map 2-196
 - DSCP-to-DSCP-mutation map 2-196
 - DTP 2-513
 - DTP flap
 - error detection for 2-89
 - error recovery timer 2-91
 - DTP negotiation 2-514
 - dual-purpose uplink ports
 - selecting the type 2-186
 - duplex command 2-87
 - dynamic-access ports
 - configuring 2-505
 - restrictions 2-505
 - dynamic auto VLAN membership mode 2-512
 - dynamic desirable VLAN membership mode 2-512
 - Dynamic Host Configuration Protocol (DHCP)
 - See DHCP snooping
 - Dynamic Trunking Protocol
 - See DTP
-
- E**
- EAP-request/identity frame
 - maximum number to send 2-78
 - response time before retransmitting 2-84
 - encapsulation methods 2-526
 - environment variables, displaying 2-281
 - errdisable detect cause command 2-89
 - errdisable recovery command 2-91
 - error conditions, displaying 2-312
 - error disable detection 2-89

error-disabled interfaces, displaying [2-323](#)

EtherChannel

assigning Ethernet interface to channel group [2-28](#)

creating port-channel logical interface [2-99](#)

debug EtherChannel/PAgP, display [34](#)

debug platform-specific events, display [52](#)

displaying [2-316](#)

interface information, displaying [2-323](#)

LACP

clearing channel-group information [2-41](#)

debug messages, display [39](#)

displaying [2-350](#)

modes [2-28](#)

port priority for hot-standby ports [2-148](#)

restricting a protocol [2-31](#)

system priority [2-150](#)

load-distribution methods [2-250](#)

PAgP

aggregate-port learner [2-236](#)

clearing channel-group information [2-44](#)

debug messages, display [46](#)

displaying [2-400](#)

error detection for [2-89](#)

error recovery timer [2-91](#)

learn method [2-236](#)

modes [2-28](#)

physical-port learner [2-236](#)

priority of interface for transmitted traffic [2-238](#)

Ethernet controller, internal register display [2-288](#)

Ethernet statistics, collecting [2-261](#)

examples, conventions for [xvi](#)

exception crashinfo command [2-94](#)

exit command [2-560](#)

extended-range VLANs

and allowed VLAN list [2-526](#)

and pruning-eligible list [2-526](#)

configuring [2-546](#)

extended system ID for STP [2-459](#)

F

fallback profile command [2-95](#)

fallback profiles

displaying [2-319](#)

file name, VTP [2-569](#)

files, deleting [2-53](#)

flash_init (boot loader) command [A-9](#)

Flex Links

configuring [2-507](#)

displaying [2-323](#)

flowcontrol command [2-97](#)

format (boot loader) command [A-10](#)

forwarding packets, with ACL matches [2-6](#)

forwarding results, display [C-6](#)

frame forwarding information, displaying [C-6](#)

fsck (boot loader) command [A-11](#)

G

global configuration mode [1-2, 1-3](#)

H

hardware ACL statistics [2-274](#)

help (boot loader) command [A-12](#)

hierarchical policy maps [2-248](#)

host connection, port configuration [2-511](#)

I

IEEE 802.1x

and switchport modes [2-513](#)

violation error recovery [2-91](#)

See also port-based authentication

IEEE 802.1X Port Based Authentication

enabling guest VLAN supplicant [2-60, 2-70, 2-96](#)

IGMP filters

- applying [2-124](#)
- debug messages, display [36](#)

IGMP groups, setting maximum [2-126](#)IGMP maximum groups, debugging [37](#)

IGMP profiles

- creating [2-128](#)
- displaying [2-341](#)

IGMP snooping

- adding ports as a static member of a group [2-144](#)
- displaying [2-342, 2-346, 2-348](#)
- enabling [2-130](#)
- enabling the configurable-leave timer [2-132](#)
- enabling the Immediate-Leave feature [2-141](#)
- flooding query count [2-138](#)
- interface topology change notification behavior [2-140](#)
- multicast table [2-344](#)
- querier [2-134](#)
- query solicitation [2-138](#)
- report suppression [2-136](#)
- switch topology change notification behavior [2-138](#)

images

See software images

Immediate-Leave feature, MVR [2-233](#)immediate-leave processing [2-141](#)

initial configuration

See getting started guide and hardware installation guide

interface configuration mode [1-2, 1-4](#)interface port-channel command [2-99](#)interface range command [2-101](#)interface-range macros [2-51](#)

interfaces

- assigning Ethernet interface to channel group [2-28](#)
- configuring [2-87](#)
- configuring multiple [2-101](#)
- creating port-channel logical [2-99](#)
- debug messages, display [35](#)
- disabling [2-439](#)

interfaces (continued)

- displaying the MAC address table [2-368](#)
- restarting [2-439](#)

interface speed, configuring [2-494](#)interface vlan command [2-103](#)internal registers, displaying [2-288, 2-296](#)

Internet Group Management Protocol

See IGMP

invalid GBIC

- error detection for [2-89](#)
- error recovery timer [2-91](#)

ip access-group command [2-104](#)ip address command [2-106](#)IP addresses, setting [2-106](#)IP address matching [2-180](#)ip admission command [2-108](#)ip admission name proxy http command [2-109](#)

IP DHCP snooping

See DHCP snooping

ip dhcp snooping command [2-111](#)ip dhcp snooping information option allow-untrusted command [2-114](#)ip dhcp snooping information option command [2-112](#)ip dhcp snooping information option format remote-id command [2-116](#)ip dhcp snooping limit rate command [2-118](#)ip dhcp snooping trust command [2-119](#)ip dhcp snooping verify command [2-120](#)ip dhcp snooping vlan command [2-121](#)ip dhcp snooping vlan information option format-type circuit-id string command [2-122](#)ip igmp filter command [2-124](#)ip igmp max-groups command [2-126](#)ip igmp profile command [2-128](#)ip igmp snooping command [2-130](#)ip igmp snooping last-member-query-interval command [2-132](#)ip igmp snooping querier command [2-134](#)ip igmp snooping report-suppression command [2-136](#)ip igmp snooping tcu command [2-138](#)

ip igmp snooping tcn flood command [2-140](#)
 ip igmp snooping vlan immediate-leave command [2-141](#)
 ip igmp snooping vlan mrouter command [2-142](#)
 ip igmp snooping vlan static command [2-144](#)
 IP multicast addresses [2-230](#)
 IP phones
 auto-QoS configuration [2-16](#)
 trusting packets sent from [2-222](#)
 IP-precedence-to-DSCP map [2-196](#)
 IP source guard
 displaying
 dynamic binding entries only [2-336](#)
 ip ssh command [2-146](#)

J

jumbo frames
 See MTU

L

LACP
 See EtherChannel
 lacp port-priority command [2-148](#)
 lacp system-priority command [2-150](#)
 Layer 2 traceroute
 IP addresses [2-537](#)
 MAC addresses [2-534](#)
 line configuration mode [1-2, 1-5](#)
 Link Aggregation Control Protocol
 See EtherChannel
 link flap
 error detection for [2-89](#)
 error recovery timer [2-91](#)
 link state group command [2-152](#)
 link state track command [2-154](#)
 load_helper (boot loader) command [A-13](#)
 load-distribution methods for EtherChannel [2-250](#)

logging event command [2-155](#)
 logging file command [2-156](#)
 logical interface [2-99](#)
 loopback error
 detection for [2-89](#)
 recovery timer [2-91](#)
 loop guard, for spanning tree [2-460, 2-464](#)

M

mac access-group command [2-158](#)
 MAC access-groups, displaying [2-356](#)
 MAC access list configuration mode [2-160](#)
 mac access-list extended command [2-160](#)
 MAC access lists [2-54](#)
 MAC addresses
 displaying
 aging time [2-362](#)
 all [2-360](#)
 dynamic [2-366](#)
 MAC address-table move updates [2-370](#)
 notification settings [2-372](#)
 number of addresses in a VLAN [2-364](#)
 per interface [2-368](#)
 per VLAN [2-376](#)
 static [2-374](#)
 static and dynamic entries [2-358](#)
 dynamic
 aging time [2-162](#)
 deleting [2-42](#)
 displaying [2-366](#)
 enabling MAC address notification [2-165](#)
 enabling MAC address-table move update [2-163](#)
 matching [2-180](#)
 static
 adding and removing [2-167](#)
 displaying [2-374](#)
 dropping on an interface [2-168](#)
 tables [2-360](#)

- mac address notification, debugging [40](#)
- mac address-table aging-time [2-158, 2-180](#)
- mac address-table aging-time command [2-162](#)
- mac address-table move update command [2-163](#)
- mac address-table notification command [2-165](#)
- mac address-table static command [2-167](#)
- mac address-table static drop command [2-168](#)
- macro apply command [2-170](#)
- macro description command [2-173](#)
- macro global command [2-174](#)
- macro global description command [2-177](#)
- macro name command [2-178](#)
- macros
 - adding a description [2-173](#)
 - adding a global description [2-177](#)
 - applying [2-174](#)
 - creating [2-178](#)
 - displaying [2-402](#)
 - interface range [2-51, 2-101](#)
 - specifying parameter values [2-174](#)
 - tracing [2-174](#)
- manual
 - audience [xv](#)
 - purpose of [xv](#)
- maps
 - QoS
 - defining [2-196](#)
 - displaying [2-386](#)
 - VLAN
 - creating [2-557](#)
 - defining [2-180](#)
 - displaying [2-429](#)
- match (access-map configuration) command [2-180](#)
- match (class-map configuration) command [2-182](#)
- maximum transmission unit
 - See MTU
- mdix auto command [2-184](#)
- media-type command [2-186](#)
- memory (boot loader) command [A-14](#)
- mkdir (boot loader) command [A-15](#)
- mls qos aggregate-policer command [2-190](#)
- mls qos command [2-188](#)
- mls qos cos command [2-192](#)
- mls qos dscp-mutation command [2-194](#)
- mls qos map command [2-196](#)
- mls qos queue-set output buffers command [2-200](#)
- mls qos queue-set output threshold command [2-202](#)
- mls qos rewrite ip dscp command [2-204](#)
- mls qos srr-queue input bandwidth command [2-206](#)
- mls qos srr-queue input buffers command [2-208](#)
- mls qos-srr-queue input cos-map command [2-210](#)
- mls qos srr-queue input dscp-map command [2-212](#)
- mls qos srr-queue input priority-queue command [2-214](#)
- mls qos srr-queue input threshold command [2-216](#)
- mls qos-srr-queue output cos-map command [2-218](#)
- mls qos srr-queue output dscp-map command [2-220](#)
- mls qos trust command [2-222](#)
- mls qos vlan-based command [2-224](#)
- mode, MVR [2-230](#)
- Mode button, and password recovery [2-262](#)
- modes, commands [1-1](#)
- monitor session command [2-225](#)
- more (boot loader) command [A-16](#)
- MSTP
 - displaying [2-412](#)
 - interoperability [2-48](#)
 - link type [2-462](#)
 - MST region
 - aborting changes [2-468](#)
 - applying changes [2-468](#)
 - configuration name [2-468](#)
 - configuration revision number [2-468](#)
 - current or pending display [2-468](#)
 - displaying [2-412](#)
 - MST configuration mode [2-468](#)
 - VLANs-to-instance mapping [2-468](#)
 - path cost [2-470](#)
 - protocol mode [2-466](#)

MSTP (continued)

- restart protocol migration process [2-48](#)
 - root port
 - loop guard [2-460](#)
 - preventing from becoming designated [2-460](#)
 - restricting which can be root [2-460](#)
 - root guard [2-460](#)
 - root switch
 - affects of extended system ID [2-459](#)
 - hello-time [2-473, 2-480](#)
 - interval between BPDU messages [2-474](#)
 - interval between hello BPDU messages [2-473, 2-480](#)
 - max-age [2-474](#)
 - maximum hop count before discarding BPDU [2-475](#)
 - port priority for selection of [2-476](#)
 - primary or secondary [2-480](#)
 - switch priority [2-479](#)
 - state changes
 - blocking to forwarding state [2-486](#)
 - enabling BPDU filtering [2-451, 2-484](#)
 - enabling BPDU guard [2-453, 2-484](#)
 - enabling Port Fast [2-484, 2-486](#)
 - forward-delay time [2-472](#)
 - length of listening and learning states [2-472](#)
 - rapid transition to forwarding [2-462](#)
 - shutting down Port Fast-enabled ports [2-484](#)
 - state information display [2-411](#)
- MTU**
- configuring size [2-531](#)
 - displaying global setting [2-419](#)
- multicast group address, MVR [2-233](#)
- multicast groups, MVR [2-231](#)
- multicast router learning method [2-142](#)
- multicast router ports, configuring [2-142](#)
- multicast storm control [2-502](#)
- multicast VLAN, MVR [2-230](#)

multicast VLAN registration

See MVR

multiple hosts on authorized port [2-73](#)

Multiple Spanning Tree Protocol

See MSTP

MVR

and address aliasing [2-231](#)

configuring [2-230](#)

configuring interfaces [2-233](#)

debug messages, display [44](#)

displaying [2-394](#)

displaying interface information [2-396](#)

members, displaying [2-398](#)

mvr (global configuration) command [2-230](#)

mvr (interface configuration) command [2-233](#)

mvr vlan group command [2-234](#)

N

native VLANs [2-526](#)

nonegotiate

DTP messaging [2-514](#)

nonegotiate, speed [2-494](#)

non-IP protocols

denying [2-54](#)

forwarding [2-240](#)

non-IP traffic access lists [2-160](#)

non-IP traffic forwarding

denying [2-54](#)

permitting [2-240](#)

normal-range VLANs [2-546, 2-551](#)

note, description [xvi](#)

no vlan command [2-546, 2-555](#)

P

PAgP

See EtherChannel

pagp learn-method command [2-236](#)
 pagp port-priority command [2-238](#)
 password, VTP [2-569, 2-573](#)
 password-recovery mechanism, enabling and disabling [2-262](#)
 permit (MAC access-list configuration) command [2-240](#)
 per-VLAN spanning-tree plus
 See STP
 physical-port learner [2-236](#)
 PID, displaying [2-333](#)
 PIM-DVMRP, as multicast router learning method [2-142](#)
 police aggregate command [2-245](#)
 police command [2-243](#)
 policed-DSCP map [2-196](#)
 policy-map command [2-247](#)
 policy maps
 applying to an interface [2-264, 2-269](#)
 creating [2-247](#)
 displaying [2-405](#)
 hierarchical [2-248](#)
 policers
 displaying [2-379](#)
 for a single class [2-243](#)
 for multiple classes [2-190, 2-245](#)
 policed-DSCP map [2-196](#)
 traffic classification
 defining the class [2-32](#)
 defining trust states [2-539](#)
 setting DSCP or IP precedence values [2-267](#)
 Port Aggregation Protocol
 See EtherChannel
 port-based authentication
 AAA method list [2-3](#)
 debug messages, display [31](#)
 enabling IEEE 802.1x
 globally [2-57](#)
 per interface [2-80](#)
 guest VLAN [2-71](#)
 host modes [2-73](#)

port-based authentication (continued)

 IEEE 802.1x AAA accounting methods [2-1](#)
 initialize an interface [2-74](#)
 MAC authentication bypass [2-75](#)
 manual control of authorization state [2-80](#)
 multiple hosts on authorized port [2-73](#)
 PAE as authenticator [2-79](#)
 periodic re-authentication
 enabling [2-83](#)
 time between attempts [2-84](#)
 quiet period between failed authentication exchanges [2-84](#)
 re-authenticating IEEE 802.1x-enabled ports [2-82](#)
 resetting configurable IEEE 802.1x parameters [2-69](#)
 switch-to-authentication server retransmission time [2-84](#)
 switch-to-client frame-retransmission number [2-77 to 2-78](#)
 switch-to-client retransmission time [2-84](#)
 port-channel load-balance command [2-250](#)
 Port Fast, for spanning tree [2-486](#)
 port ranges, defining [2-51](#)
 ports, debugging [77](#)
 ports, protected [2-525](#)
 port security
 aging [2-521](#)
 debug messages, display [79](#)
 enabling [2-516](#)
 violation error recovery [2-91](#)
 port trust states for QoS [2-222](#)
 port types, MVR [2-233](#)
 priority-queue command [2-252](#)
 privileged EXEC mode [1-2, 1-3](#)
 product identification information, displaying [2-333](#)
 protected ports, displaying [2-329](#)
 pruning
 VLANs [2-526](#)
 VTP
 displaying interface information [2-323](#)
 enabling [2-569, 2-573](#)

pruning-eligible VLAN list [2-528](#)

PVST+

See STP

Q

QoS

auto-QoS

configuring [2-16](#)

debug messages, display [28](#)

displaying [2-278](#)

class maps

creating [2-34](#)

defining the match criteria [2-182](#)

displaying [2-285](#)

defining the CoS value for an incoming packet [2-192](#)

displaying configuration information [2-278, 2-378](#)

DSCP transparency [2-204](#)

DSCP trusted ports

applying DSCP-to-DSCP-mutation map to [2-194](#)

defining DSCP-to-DSCP-mutation map [2-196](#)

egress queues

allocating buffers [2-200](#)

defining the CoS output queue threshold map [2-218](#)

defining the DSCP output queue threshold map [2-220](#)

displaying buffer allocations [2-382](#)

displaying CoS output queue threshold map [2-386](#)

displaying DSCP output queue threshold map [2-386](#)

displaying queueing strategy [2-382](#)

displaying queue-set settings [2-389](#)

enabling bandwidth shaping and scheduling [2-498](#)

enabling bandwidth sharing and scheduling [2-500](#)

limiting the maximum output on a port [2-496](#)

mapping a port to a queue-set [2-254](#)

QoS (continued)

mapping CoS values to a queue and threshold [2-218](#)

mapping DSCP values to a queue and threshold [2-220](#)

setting maximum and reserved memory allocations [2-202](#)

setting WTD thresholds [2-202](#)

enabling [2-188](#)

ingress queues

allocating buffers [2-208](#)

assigning SRR scheduling weights [2-206](#)

defining the CoS input queue threshold map [2-210](#)

defining the DSCP input queue threshold map [2-212](#)

displaying buffer allocations [2-382](#)

displaying CoS input queue threshold map [2-386](#)

displaying DSCP input queue threshold map [2-386](#)

displaying queueing strategy [2-382](#)

displaying settings for [2-380](#)

enabling the priority queue [2-214](#)

mapping CoS values to a queue and threshold [2-210](#)

mapping DSCP values to a queue and threshold [2-212](#)

setting WTD thresholds [2-216](#)

maps

defining [2-196, 2-210, 2-212, 2-218, 2-220](#)

displaying [2-386](#)

policy maps

applying an aggregate policer [2-245](#)

applying to an interface [2-264, 2-269](#)

creating [2-247](#)

defining policers [2-190, 2-243](#)

displaying policers [2-379](#)

displaying policy maps [2-405](#)

hierarchical [2-248](#)

policed-DSCP map [2-196](#)

setting DSCP or IP precedence values [2-267](#)

QoS (continued)

- traffic classifications [2-32](#)
- trust states [2-539](#)
- port trust states [2-222](#)
- queues, enabling the expedite [2-252](#)
- statistics
 - in-profile and out-of-profile packets [2-382](#)
 - packets enqueued or dropped [2-382](#)
 - sent and received CoS values [2-382](#)
 - sent and received DSCP values [2-382](#)
- trusted boundary for IP phones [2-222](#)
- VLAN-based [2-224](#)
- quality of service
 - See QoS
- querytime, MVR [2-230](#)
- queue-set command [2-254](#)

R

- radius-server dead-criteria command [2-255](#)
- radius-server host command [2-257](#)
- rapid per-VLAN spanning-tree plus
 - See STP
- rapid PVST+
 - See STP
- re-authenticating IEEE 802.1x-enabled ports [2-82](#)
- re-authentication
 - periodic [2-83](#)
 - time between attempts [2-84](#)
- receiver ports, MVR [2-233](#)
- receiving flow-control packets [2-97](#)
- recovery mechanism
 - causes [2-91](#)
 - display [2-38, 2-283, 2-310, 2-314](#)
 - timer interval [2-91](#)
- remote-span command [2-259](#)
- Remote Switched Port Analyzer
 - See RSPAN
- rename (boot loader) command [A-17](#)

- requirements
 - device manager [xvi](#)
- reset (boot loader) command [A-18](#)
- reset command [2-560](#)
- restricted VLAN
 - See dot1x auth-fail vlan
- rmdir (boot loader) command [A-19](#)
- rmon collection stats command [2-261](#)
- root guard, for spanning tree [2-460](#)
- RSPAN
 - configuring [2-225](#)
 - displaying [2-392](#)
 - filter RSPAN traffic [2-225](#)
 - remote-span command [2-259](#)
 - sessions
 - add interfaces to [2-225](#)
 - displaying [2-392](#)
 - start new [2-225](#)

S

- secure ports, limitations [2-518](#)
- sending flow-control packets [2-97](#)
- service password-recovery command [2-262](#)
- service-policy command [2-264](#)
- set (boot loader) command [A-20](#)
- set command [2-267](#)
- setup command [2-269](#)
- setup express command [2-272](#)
- show access-lists command [2-274](#)
- show archive status command [2-277](#)
- show auto qos command [2-278](#)
- show boot command [2-281](#)
- show cable-diagnostics tdr command [2-283](#)
- show changes command [2-560](#)
- show class-map command [2-285](#)
- show controllers cpu-interface command [2-286](#)
- show controllers ethernet-controller command [2-288](#)
- show controllers tcam command [2-296](#)

- show controller utilization command [2-298](#)
- show current command [2-560](#)
- show dot1x command [2-300](#)
- show dtp [2-304](#)
- show eap command [2-306](#)
- show env command [2-309](#)
- show errdisable detect command [2-310](#)
- show errdisable flap-values command [2-312](#)
- show errdisable recovery command [2-314](#)
- show etherchannel command [2-316](#)
- show fallback profile command [2-319](#)
- show flowcontrol command [2-321](#)
- show interfaces command [2-323](#)
- show interfaces counters command [2-331](#)
- show inventory command [2-333](#)
- show ip dhcp snooping binding command [2-336](#)
- show ip dhcp snooping command [2-335](#)
- show ip dhcp snooping database command [2-338](#)
- show ip igmp profile command [2-341](#)
- show ip igmp snooping command [2-342](#)
- show ip igmp snooping groups command [2-344](#)
- show ip igmp snooping mrouter command [2-346](#)
- show ip igmp snooping querier command [2-348](#)
- show lacp command [2-350](#)
- show link state group command [2-354](#)
- show mac access-group command [2-356](#)
- show mac address-table address command [2-360](#)
- show mac address-table aging time command [2-362](#)
- show mac address-table command [2-358](#)
- show mac address-table count command [2-364](#)
- show mac address-table dynamic command [2-366](#)
- show mac address-table interface command [2-368](#)
- show mac address-table move update command [2-370](#)
- show mac address-table notification command [2-43, 2-372, 42](#)
- show mac address-table static command [2-374](#)
- show mac address-table vlan command [2-376](#)
- show mls qos aggregate-policer command [2-379](#)
- show mls qos command [2-378](#)
- show mls qos input-queue command [2-380](#)
- show mls qos interface command [2-382](#)
- show mls qos maps command [2-386](#)
- show mls qos queue-set command [2-389](#)
- show mls qos vlan command [2-391](#)
- show monitor command [2-392](#)
- show mvr command [2-394](#)
- show mvr interface command [2-396](#)
- show mvr members command [2-398](#)
- show pagp command [2-400](#)
- show parser macro command [2-402](#)
- show platform acl command [C-2](#)
- show platform backup interface command [C-3](#)
- show platform configuration command [C-4](#)
- show platform etherchannel command [C-5](#)
- show platform forward command [C-6](#)
- show platform igmp snooping command [C-8](#)
- show platform layer4op command [C-10](#)
- show platform mac-address-table command [C-11](#)
- show platform messaging command [C-12](#)
- show platform monitor command [C-13](#)
- show platform mvr table command [C-14](#)
- show platform pm command [C-15](#)
- show platform port-asic command [C-16](#)
- show platform port-security command [C-21](#)
- show platform qos command [C-22](#)
- show platform resource-manager command [C-23](#)
- show platform snmp counters command [C-25](#)
- show platform spanning-tree command [C-26](#)
- show platform stp-instance command [C-27](#)
- show platform team command [C-28](#)
- show platform vlan command [C-30](#)
- show policy-map command [2-405](#)
- show port security command [2-407](#)
- show proposed command [2-560](#)
- show setup express command [2-410](#)
- show spanning-tree command [2-411](#)
- show storm-control command [2-417](#)
- show system mtu command [2-419](#)

show trust command [2-539](#)
 show uddl command [2-420](#)
 show version command [2-423](#)
 show vlan access-map command [2-429](#)
 show vlan command [2-425](#)
 show vlan command, fields [2-427](#)
 show vlan filter command [2-430](#)
 show vmps command [2-431](#)
 show vtp command [2-434](#)
 shutdown command [2-439](#)
 shutdown vlan command [2-440](#)
 Smartports macros
 See macros
 SNMP host, specifying [2-444](#)
 SNMP informs, enabling the sending of [2-441](#)
 snmp-server enable traps command [2-441](#)
 snmp-server host command [2-444](#)
 snmp trap mac-notification command [2-448](#)
 SNMP traps
 enabling MAC address notification trap [2-448](#)
 enabling the MAC address notification feature [2-165](#)
 enabling the sending of [2-441](#)
 SoftPhone
 See Cisco SoftPhone
 software images
 deleting [2-53](#)
 downloading [2-8](#)
 upgrading [2-8](#)
 uploading [2-14](#)
 software version, displaying [2-423](#)
 source ports, MVR [2-233](#)
 SPAN
 configuring [2-225](#)
 debug messages, display [43](#)
 displaying [2-392](#)
 filter SPAN traffic [2-225](#)

SPAN (continued)

 sessions
 add interfaces to [2-225](#)
 displaying [2-392](#)
 start new [2-225](#)
 spanning [2-488](#)
 spanning-tree backbonefast command [2-450](#)
 spanning-tree bpduguard command [2-453](#)
 spanning-tree bpduguard command [2-453](#)
 spanning-tree cost command [2-455](#)
 spanning-tree etherchannel command [2-457](#)
 spanning-tree extend system-id command [2-459](#)
 spanning-tree guard command [2-460](#)
 spanning-tree link-type command [2-462](#)
 spanning-tree loopguard default command [2-464](#)
 spanning-tree mode command [2-466](#)
 spanning-tree mst configuration command [2-468](#)
 spanning-tree mst cost command [2-470](#)
 spanning-tree mst forward-time command [2-472](#)
 spanning-tree mst hello-time command [2-473](#)
 spanning-tree mst max-age command [2-474](#)
 spanning-tree mst max-hops command [2-475](#)
 spanning-tree mst port-priority command [2-476](#)
 spanning-tree mst pre-standard command [2-478](#)
 spanning-tree mst priority command [2-479](#)
 spanning-tree mst root command [2-480](#)
 spanning-tree portfast (global configuration) command [2-484](#)
 spanning-tree portfast (interface configuration) command [2-486](#)
 spanning-tree port-priority command [2-482](#)
 Spanning Tree Protocol
 See STP
 spanning-tree transmit hold-count command [2-488](#)
 spanning-tree uplinkfast command [2-489](#)
 spanning-tree vlan command [2-491](#)
 speed command [2-494](#)
 srr-queue bandwidth limit command [2-496](#)
 srr-queue bandwidth shape command [2-498](#)

srr-queue bandwidth share command [2-500](#)

SSH, configuring version [2-146](#)

static-access ports, configuring [2-505](#)

statistics, Ethernet group [2-261](#)

sticky learning, enabling [2-516](#)

storm-control command [2-502](#)

STP

BackboneFast [2-450](#)

counters, clearing [2-47](#)

debug messages, display

BackboneFast events [83](#)

MSTP [86](#)

optimized BPDUs handling [85](#)

spanning-tree activity [81](#)

switch shim [88](#)

transmitted and received BPDUs [84](#)

UplinkFast [90](#)

detection of indirect link failures [2-450](#)

EtherChannel misconfiguration [2-457](#)

extended system ID [2-459](#)

path cost [2-455](#)

protocol modes [2-466](#)

root port

accelerating choice of new [2-489](#)

loop guard [2-460](#)

preventing from becoming designated [2-460](#)

restricting which can be root [2-460](#)

root guard [2-460](#)

UplinkFast [2-489](#)

root switch

affects of extended system ID [2-459, 2-492](#)

hello-time [2-491](#)

interval between BDPUs messages [2-491](#)

interval between hello BDPUs messages [2-491](#)

max-age [2-491](#)

port priority for selection of [2-482](#)

primary or secondary [2-491](#)

switch priority [2-491](#)

state changes

STP (continued)i

blocking to forwarding state [2-486](#)

enabling BPDU filtering [2-451, 2-484](#)

enabling BPDU guard [2-453, 2-484](#)

enabling Port Fast [2-484, 2-486](#)

enabling timer to recover from error state [2-91](#)

forward-delay time [2-491](#)

length of listening and learning states [2-491](#)

shutting down Port Fast-enabled ports [2-484](#)

state information display [2-411](#)

VLAN options [2-479, 2-491](#)

Switched Port Analyzer

See SPAN

switchport access command [2-505](#)

switchport backup interface command [2-507](#)

switchport block command [2-510](#)

switchport host command [2-511](#)

switchport mode command [2-512](#)

switchport nonegotiate command [2-514](#)

switchport port-security aging command [2-521](#)

switchport port-security command [2-516](#)

switchport priority extend command [2-523](#)

switchport protected command [2-525](#)

switchports, displaying [2-323](#)

switchport trunk command [2-526](#)

switchport voice vlan command [2-529](#)

system message logging, save message to flash [2-156](#)

system mtu command [2-531](#)

T

tar files, creating, listing, and extracting [2-11](#)

TDR, running [2-533](#)

test cable-diagnostics tdr command [2-533](#)

traceroute mac command [2-534](#)

traceroute mac ip command [2-537](#)

trunking, VLAN mode [2-512](#)

trunk mode [2-512](#)

trunk ports [2-512](#)

trunks, to non-DTP device [2-513](#)
 trusted boundary for QoS [2-222](#)
 trusted port states for QoS [2-222](#)
 type (boot loader) command [A-23](#)

U

UDLD

aggressive mode [2-541, 2-543](#)
 debug messages, display [97](#)
 enable globally [2-541](#)
 enable per interface [2-543](#)
 error recovery timer [2-91](#)
 message timer [2-541](#)
 normal mode [2-541, 2-543](#)
 reset a shutdown interface [2-545](#)
 status [2-420](#)

udld command [2-541](#)

udld port command [2-543](#)

udld reset command [2-545](#)

unicast storm control [2-502](#)

UniDirectional Link Detection

See UDLD

unknown multicast traffic, preventing [2-510](#)

unknown unicast traffic, preventing [2-510](#)

unset (boot loader) command [A-24](#)

upgrading

software images [2-8](#)

monitoring status of [2-277](#)

upgrading information

See release notes

UplinkFast, for STP [2-489](#)

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

V

version (boot loader) command [A-26](#)

VLAN

enabling guest VLAN supplicant [2-60, 2-70](#)

vlan (global configuration) command [2-546](#)

vlan (VLAN configuration) command [2-551](#)

vlan access-map command [2-557](#)

VLAN access map configuration mode [2-557](#)

VLAN access maps

actions [2-6](#)

displaying [2-429](#)

VLAN-based QoS [2-224](#)

VLAN configuration

rules [2-549, 2-553](#)

saving [2-546, 2-555](#)

VLAN configuration mode

commands

VLAN [2-551](#)

VTP [2-573](#)

description [1-5](#)

entering [2-559](#)

summary [1-2](#)

vlan database command [2-559](#)

vlan filter command [2-562](#)

VLAN filters, displaying [2-430](#)

VLAN ID range [2-546, 2-551](#)

VLAN maps

applying [2-562](#)

creating [2-557](#)

defining [2-180](#)

displaying [2-429](#)

VLAN Query Protocol

See VQP

VLANs

adding [2-546](#)

configuring [2-546, 2-551](#)

debug messages, display

ISL [94](#)

VLANs (continued)

VLAN IOS file system error tests [93](#)

VLAN manager activity [91](#)

VTP [95](#)

displaying configurations [2-425](#)

enabling guest VLAN supplicant [2-96](#)

extended-range [2-546](#)

MAC addresses

displaying [2-376](#)

number of [2-364](#)

media types [2-548, 2-553](#)

normal-range [2-546, 2-551](#)

restarting [2-440](#)

saving the configuration [2-546](#)

shutting down [2-440](#)

SNMP traps for VTP [2-442, 2-445](#)

suspending [2-440](#)

variables [2-551](#)

VLAN Trunking Protocol

See VTP

VMPS

configuring servers [2-567](#)

displaying [2-431](#)

error recovery timer [2-91](#)

reconfirming dynamic VLAN assignments [2-564](#)

vmmps reconfirm (global configuration) command [2-565](#)

vmmps reconfirm (privileged EXEC) command [2-564](#)

vmmps retry command [2-566](#)

vmmps server command [2-567](#)

voice VLAN

configuring [2-529](#)

setting port priority [2-523](#)

VQP

and dynamic-access ports [2-505](#)

clearing client statistics [2-49](#)

displaying information [2-431](#)

per-server retry count [2-566](#)

reconfirmation interval [2-565](#)

reconfirming dynamic VLAN assignments [2-564](#)

VTP

changing characteristics [2-569](#)

clearing pruning counters [2-50](#)

configuring

domain name [2-569, 2-573](#)

file name [2-569](#)

mode [2-569, 2-573](#)

password [2-569, 2-573](#)

counters display fields [2-435](#)

displaying information [2-434](#)

enabling

pruning [2-569, 2-573](#)

Version 2 [2-569, 2-573](#)

mode [2-569, 2-573](#)

pruning [2-569, 2-573](#)

saving the configuration [2-546, 2-555](#)

statistics [2-434](#)

status [2-434](#)

status display fields [2-436](#)

vtp (global configuration) command [2-569](#)

vtp (VLAN configuration) command [2-573](#)

