



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 **2-547**
access control entries
 See ACEs
access control lists
 See ACLs
access groups
 IP **2-100**
 MAC, displaying **2-340**
 access map configuration mode **2-173**
 access mode **2-498**
 access ports **2-498**
 ACEs **2-54, 2-234**
 ACLs
 deny **2-52**
 displaying **2-264**
 for non-IP protocols **2-153**
 IP **2-100**
 matching **2-173**
 on Layer 2 interfaces **2-100**
 permit **2-232**
 action command **2-6**
 address aliasing **2-223**
 aggregate-port learner **2-228**
 allowed VLANs **2-513**
 apply command **2-547**
 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 **2-78**
autonegotiation of duplex mode **2-86**
auto qos voip command **2-16**

B

BackboneFast, for STP **2-434**
backup interfaces
 configuring **2-493**
 displaying **2-310**
boot (boot loader) command **A-2**
boot boothlp 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 **2-273**
 interrupting **2-22**
 manually **2-25**
boot loader
 accessing **A-1**
 booting
 Cisco IOS image **A-2**

-
- boot loader (continued)
- 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-13](#)
- 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 [2-435, 2-470](#)
- BPDU guard, for spanning tree [2-437, 2-470](#)
- break key detection [2-254, A-1](#)
- broadcast storm control [2-488](#)
-
- 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 [2-213](#)
- class command [2-32](#)
- class-map command [2-34](#)
- class maps
- creating [2-34](#)
 - defining the match criteria [2-175](#)
 - displaying [2-275](#)
- class of service
- See CoS
- clear dot1x command [2-36](#)
- clear eap command [2-37](#)
- clear lacp command [2-38](#)
- clear mac address-table command [2-39, 2-41](#)
- clear pagp command [2-42](#)
- clear port-security command [2-43](#)
- clear spanning-tree counters command [2-45](#)
- clear spanning-tree detected-protocols command [2-46](#)
- clear vmps statistics command [2-47](#)
- clear vtp counters command [2-48](#)
- clusters
- SNMP trap [2-425](#)
- 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 [2-96](#)
- config-vlan mode
- commands [2-533](#)
 - description [1-4](#)

config-vlan mode (continued)
 entering **2-532**
 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 **2-183**
 overriding the incoming value **2-183**

CoS-to-DSCP map **2-187**

CPU ASIC statistics, displaying **2-276**

crashinfo files **2-91**

D

debug auto qos command **B-2**
 debug backup command **B-4**
 debug dot1x command **B-5**
 debug dtp command **B-7**
 debug eap command **B-8**
 debug etherchannel command **B-10**
 debug interface command **B-12**
 debug ip igmp filter command **B-14**
 debug ip igmp max-groups command **B-15**
 debug ip igmp snooping command **B-16**
 debug lacp command **B-17**
 debug mac-notification command **B-18**
 debug matm command **B-19**
 debug matm move update command **B-20**
 debug monitor command **B-21**
 debug mvrdbg command **B-22**
 debug nvram command **B-23**
 debug pagp command **B-24**
 debug platform acl command **B-25**
 debug platform backup interface command **B-26**
 debug platform cpu-queues command **B-27**

debug platform dot1x command **B-29**
 debug platform etherchannel command **B-30**
 debug platform forw-tcam command **B-31**
 debug platform ip dhcp command **B-32**
 debug platform ip igmp snooping command **B-33**
 debug platform led command **B-35**
 debug platform matm command **B-36**
 debug platform messaging application command **B-38**
 debug platform phy command **B-39**
 debug platform pm command **B-41**
 debug platform port-asic command **B-43**
 debug platform port-security command **B-44**
 debug platform qos-acl-tcam command **B-45**
 debug platform remote-commands command **B-46**
 debug platform resource-manager command **B-47**
 debug platform snmp command **B-48**
 debug platform span command **B-49**
 debug platform supervisor-asic command **B-50**
 debug platform sw-bridge command **B-51**
 debug platform tcam command **B-52**
 debug platform udld command **B-54**
 debug platform vlan command **B-55**
 debug pm command **B-56**
 debug port-security command **B-58**
 debug qos-manager command **B-59**
 debug spanning-tree backbonefast command **B-62**
 debug spanning-tree bpdu command **B-63**
 debug spanning-tree bpdu-opt command **B-64**
 debug spanning-tree command **B-66**
 debug spanning-tree mstp command **B-65**
 debug spanning-tree switch command **B-67**
 debug spanning-tree uplinkfast command **B-69**
 debug sw-vlan command **B-70**
 debug sw-vlan ifs command **B-72**
 debug sw-vlan notification command **B-74**
 debug sw-vlan vtp command **B-76**
 debug udld command **B-78**
 debug vqpc command **B-80**
 define interface-range command **2-49**

- delete (boot loader) command **A-6**
 delete command **2-51**
 deny command **2-52**
 detect mechanism, causes **2-87**
 device manager requirements **xvi**
 DHCP snooping
 accepting untrusted packets from edge switch **2-107**
 enabling
 on a VLAN **2-115**
 option 82 **2-105, 2-107**
 trust on an interface **2-113**
 error recovery timer **2-89**
 rate limiting **2-111**
 DHCP snooping binding database
 bindings
 displaying **2-322**
 displaying
 binding entries **2-322**
 dir (boot loader) command **A-7**
 directories, deleting **2-51**
 documentation, related **xvi**
 document conventions **xv**
 domain name, VTP **2-557, 2-561**
 dot1x auth-fail max-attempts **2-57**
 dot1x auth-fail vlan **2-59**
 dot1x command **2-55**
 dot1x control-direction command **2-61**
 dot1x critical global configuration command **2-63**
 dot1x critical interface configuration command **2-65**
 dot1x default command **2-67**
 dot1x guest-vlan command **2-68**
 dot1x host-mode command **2-70**
 dot1x initialize command **2-71**
 dot1x mac-auth-bypass command **2-72**
 dot1x max-reauth-req command **2-74**
 dot1x max-req command **2-76**
 dot1x pae command **2-77**
 dot1x port-control command **2-78**
 dot1x re-authenticate command **2-80**
 dot1x reauthentication command **2-81**
 dot1x timeout command **2-82**
 dropping packets, with ACL matches **2-6**
 DSCP-to-CoS map **2-187**
 DSCP-to-DSCP-mutation map **2-187**
 DTP **2-499**
 DTP flap
 error detection for **2-87**
 error recovery timer **2-89**
 DTP negotiation **2-500**
 duplex command **2-85**
 dynamic-access ports
 configuring **2-491**
 restrictions **2-492**
 dynamic auto VLAN membership mode **2-498**
 dynamic desirable VLAN membership mode **2-498**
 Dynamic Host Configuration Protocol (DHCP)
 See DHCP snooping
 Dynamic Trunking Protocol
 See DTP
-
- E**
- EAP-request/identity frame
 maximum number to send **2-76**
 response time before retransmitting **2-82**
 encapsulation methods **2-513**
 environment variables, displaying **2-273**
 errdisable detect cause command **2-87**
 errdisable recovery command **2-89**
 error conditions, displaying **2-301**
 error disable detection **2-87**
 error-disabled interfaces, displaying **2-310**
 EtherChannel
 assigning Ethernet interface to channel group **2-28**
 creating port-channel logical interface **2-94**
 debug EtherChannel/PAgP, display **B-10**
 debug platform-specific events, display **B-30**
 displaying **2-305**

EtherChannel (continued)
 interface information, displaying **2-310**
 LACP
 clearing channel-group information **2-38**
 debug messages, display **B-17**
 displaying **2-334**
 modes **2-28**
 port priority for hot-standby ports **2-142**
 restricting a protocol **2-31**
 system priority **2-144**
 load-distribution methods **2-242**

PAgP
 aggregate-port learner **2-228**
 clearing channel-group information **2-42**
 debug messages, display **B-24**
 displaying **2-385**
 error detection for **2-87**
 error recovery timer **2-89**
 learn method **2-228**
 modes **2-28**
 physical-port learner **2-228**
 priority of interface for transmitted traffic **2-230**

Ethernet controller, internal register display **2-278**
 Ethernet statistics, collecting **2-253**
 examples, conventions for **xvi**
 exception crashinfo command **2-91**
 exit command **2-547**
 extended-range VLANs
 and allowed VLAN list **2-513**
 and pruning-eligible list **2-513**
 configuring **2-532**
 extended system ID for STP **2-443**

F
 file name, VTP **2-557**
 files, deleting **2-51**
 flash_init (boot loader) command **A-9**
 Flex Links

configuring **2-493**
 displaying **2-310**
 flowcontrol command **2-92**
 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 **2-264**
 help (boot loader) command **A-12**
 hierarchical policy maps **2-240**
 host connection, port configuration **2-497**

I

IEEE 802.1x
 and switchport modes **2-499**
 violation error recovery **2-89**
 See also port-based authentication
 IEEE 802.1X Port Based Authentication
 enabling guest VLAN supplicant **2-58**
 IGMP filters
 applying **2-118**
 debug messages, display **B-14**
 IGMP groups, setting maximum **2-119**
 IGMP maximum groups, debugging **B-15**
 IGMP profiles
 creating **2-121**
 displaying **2-324**
 IGMP snooping
 adding ports as a static member of a group **2-138**

- IGMP snooping (continued)
- displaying **2-325, 2-330, 2-332**
 - enabling **2-123**
 - enabling the configurable-leave timer **2-125**
 - enabling the Immediate-Leave feature **2-134**
 - flooding query count **2-131**
 - interface topology change notification behavior **2-133**
 - multicast table **2-328**
 - querier **2-127**
 - query solicitation **2-131**
 - report suppression **2-129**
 - switch topology change notification behavior **2-131**
- images
- See software images
- Immediate-Leave feature, MVR **2-225**
- immediate-leave processing **2-134**
- initial configuration
- See getting started guide and hardware installation guide
- interface configuration mode **1-2, 1-4**
- interface port-channel command **2-94**
- interface range command **2-96**
- interface-range macros **2-49**
- interfaces
- assigning Ethernet interface to channel group **2-28**
 - configuring **2-85**
 - configuring multiple **2-96**
 - creating port-channel logical **2-94**
 - debug messages, display **B-12**
 - disabling **2-423**
 - displaying the MAC address table **2-352**
 - restarting **2-423**
 - interface speed, configuring **2-480**
 - interface vlan command **2-98**
 - internal registers, displaying **2-278, 2-285**
- Internet Group Management Protocol
- See IGMP
- invalid GBIC
- error detection for **2-87**
 - error recovery timer **2-89**
- ip access-group command **2-100**
- ip address command **2-102**
- IP addresses, setting **2-102**
- IP address matching **2-173**
- IP DHCP snooping
- See DHCP snooping
- ip dhcp snooping command **2-104**
- ip dhcp snooping information option allow-untrusted command **2-107**
- ip dhcp snooping information option command **2-105**
- ip dhcp snooping information option format remote-id command **2-109**
- ip dhcp snooping limit rate command **2-111**
- ip dhcp snooping trust command **2-113**
- ip dhcp snooping verify command **2-114**
- ip dhcp snooping vlan command **2-115**
- ip dhcp snooping vlan information option format-type circuit-id string command **2-116**
- ip igmp filter command **2-118**
- ip igmp max-groups command **2-119**
- ip igmp profile command **2-121**
- ip igmp snooping command **2-123**
- ip igmp snooping last-member-query-interval command **2-125**
- ip igmp snooping querier command **2-127**
- ip igmp snooping report-suppression command **2-129**
- ip igmp snooping tcn command **2-131**
- ip igmp snooping tcn flood command **2-133**
- ip igmp snooping vlan immediate-leave command **2-134**
- ip igmp snooping vlan mrouter command **2-136**
- ip igmp snooping vlan static command **2-138**
- IP multicast addresses **2-222**
- IP phones
- auto-QoS configuration **2-16**
 - trusting packets sent from **2-213**
- IP-precedence-to-DSCP map **2-187**
- IP source guard
- displaying
 - dynamic binding entries only **2-322**
- ip ssh command **2-140**

J

jumbo frames

See MTU

L

LACP

See EtherChannel

lacp port-priority command **2-142**

lacp system-priority command **2-144**

Layer 2 traceroute

IP addresses **2-523**

MAC addresses **2-520**

line configuration mode **1-2, 1-5**

Link Aggregation Control Protocol

See EtherChannel

link flap

error detection for **2-87**

error recovery timer **2-89**

link state group command **2-146**

link state track command **2-148**

load_helper (boot loader) command **A-13**

load-distribution methods for EtherChannel **2-242**

logging file command **2-149**

logical interface **2-94**

loopback error

detection for **2-87**

recovery timer **2-89**

loop guard, for spanning tree **2-445, 2-449**

M

mac access-group command **2-151**

MAC access-groups, displaying **2-340**

MAC access list configuration mode **2-153**

mac access-list extended command **2-153**

MAC access lists **2-52**

MAC addresses

displaying

aging time **2-346**

all **2-344**

dynamic **2-350**

MAC address-table move updates **2-354**

notification settings **2-356**

number of addresses in a VLAN **2-348**

per interface **2-352**

per VLAN **2-360**

static **2-358**

static and dynamic entries **2-342**

dynamic

aging time **2-155**

deleting **2-39**

displaying **2-350**

enabling MAC address notification **2-158**

enabling MAC address-table move update **2-156**

matching **2-173**

static

adding and removing **2-160**

displaying **2-358**

dropping on an interface **2-161**

tables **2-344**

MAC address notification, debugging **B-18**

mac address-table aging-time **2-151**

mac address-table aging-time command **2-155**

mac address-table move update command **2-156**

mac address-table notification command **2-158**

mac address-table static command **2-160**

mac address-table static drop command **2-161**

macro apply command **2-163**

macro description command **2-166**

macro global command **2-167**

macro global description command **2-170**

macro name command **2-171**

macros

adding a description **2-166**

adding a global description **2-170**

applying **2-167**

- macros (continued)
- creating **2-171**
 - displaying **2-387**
 - interface range **2-49, 2-96**
 - specifying parameter values **2-167**
 - tracing **2-167**
- manual
- audience **xv**
 - purpose of **xv**
- maps
- QoS
- defining **2-187**
 - displaying **2-370**
- VLAN
- creating **2-544**
 - defining **2-173**
 - displaying **2-414**
- match (access-map configuration) command **2-173**
- match (class-map configuration) command **2-175**
- maximum transmission unit
- See MTU
- mdix auto command **2-177**
- memory (boot loader) command **A-14**
- mkdir (boot loader) command **A-15**
- mls qos aggregate-policer command **2-181**
- mls qos command **2-179**
- mls qos cos command **2-183**
- mls qos dscp-mutation command **2-185**
- mls qos map command **2-187**
- mls qos queue-set output buffers command **2-191**
- mls qos queue-set output threshold command **2-193**
- mls qos rewrite ip dscp command **2-195**
- mls qos srr-queue input bandwidth command **2-197**
- mls qos srr-queue input buffers command **2-199**
- mls qos-srr-queue input cos-map command **2-201**
- mls qos srr-queue input dscp-map command **2-203**
- mls qos srr-queue input priority-queue command **2-205**
- mls qos srr-queue input threshold command **2-207**
- mls qos-srr-queue output cos-map command **2-209**
- mls qos srr-queue output dscp-map command **2-211**
- mls qos trust command **2-213**
- mls qos vlan-based command **2-215**
- mode, MVR **2-222**
- modes, commands **1-1**
- monitor session command **2-217**
- more (boot loader) command **A-16**
- MSTP
- displaying **2-396**
 - interoperability **2-46**
 - link type **2-447**
- MST region
- aborting changes **2-453**
 - applying changes **2-453**
 - configuration name **2-453**
 - configuration revision number **2-453**
 - current or pending display **2-453**
 - displaying **2-396**
 - MST configuration mode **2-453**
 - VLANs-to-instance mapping **2-453**
- path cost **2-455**
- protocol mode **2-451**
- restart protocol migration process **2-46**
- root port
- loop guard **2-445**
 - preventing from becoming designated **2-445**
 - restricting which can be root **2-445**
 - root guard **2-445**
- root switch
- affects of extended system ID **2-443**
 - hello-time **2-458, 2-466**
 - interval between BDPU messages **2-459**
 - interval between hello BPDU messages **2-458, 2-466**
 - max-age **2-459**
 - maximum hop count before discarding BPDU **2-460**
 - port priority for selection of **2-462**
 - primary or secondary **2-466**
 - switch priority **2-465**
 - state changes

MSTP (continued)

- blocking to forwarding state **2-472**
- enabling BPDU filtering **2-435, 2-470**
- enabling BPDU guard **2-437, 2-470**
- enabling Port Fast **2-470, 2-472**
- forward-delay time **2-457**
- length of listening and learning states **2-457**
- rapid transition to forwarding **2-447**
- shutting down Port Fast-enabled ports **2-470**
- state information display **2-395**

MTU

- configuring size **2-518**
- displaying global setting **2-403**
- multicast group address, MVR **2-225**
- multicast groups, MVR **2-223**
- multicast router learning method **2-136**
- multicast router ports, configuring **2-136**
- multicast storm control **2-488**
- multicast VLAN, MVR **2-222**
- multicast VLAN registration

See MVR

multiple hosts on authorized port **2-70**

Multiple Spanning Tree Protocol

See MSTP

MVR

- and address aliasing **2-223**
- configuring **2-222**
- configuring interfaces **2-225**
- debug messages, display **B-22**
- displaying **2-379**
- displaying interface information **2-381**
- members, displaying **2-383**
- mvr (global configuration) command **2-222**
- mvr (interface configuration) command **2-225**
- mvr vlan group command **2-226**

N

- native VLANs **2-513**
- nonegotiate
 - DTP messaging **2-500**
 - nonegotiate, speed **2-480**
- non-IP protocols
 - denying **2-52**
 - forwarding **2-232**
- non-IP traffic access lists **2-153**
- non-IP traffic forwarding
 - denying **2-52**
 - permitting **2-232**
- normal-range VLANs **2-532, 2-538**
- note, description **xvi**
- no vlan command **2-532, 2-542**

P

PAgP

- See EtherChannel
- pagp learn-method command **2-228**
- pagp port-priority command **2-230**
- password, VTP **2-557, 2-561**
- password-recovery mechanism, enabling and disabling **2-254**
- permit (MAC access-list configuration) command **2-232**
- per-VLAN spanning-tree plus
 - See STP
- physical-port learner **2-228**
- PID, displaying **2-320**
- PIM-DVMRP, as multicast router learning method **2-136**
- police aggregate command **2-237**
- police command **2-235**
- policed-DSCP map **2-187**
- policy-map command **2-239**
- policy maps
 - applying to an interface **2-256, 2-261**
 - creating **2-239**

policy maps (continued)

 displaying **2-390**

 hierarchical **2-240**

 policers

 displaying **2-363**

 for a single class **2-235**

 for multiple classes **2-181, 2-237**

 policed-DSCP map **2-187**

 traffic classification

 defining the class **2-32**

 defining trust states **2-525**

 setting DSCP or IP precedence values **2-259**

Port Aggregation Protocol

 See EtherChannel

port-based authentication

 AAA method list **2-3**

 debug messages, display **B-5**

 enabling IEEE 802.1x

 globally **2-55**

 per interface **2-78**

 guest VLAN **2-68**

 host modes **2-70**

 IEEE 802.1x AAA accounting methods **2-1**

 initialize an interface **2-71**

 MAC authentication bypass **2-72**

 manual control of authorization state **2-78**

 multiple hosts on authorized port **2-70**

 PAE as authenticator **2-77**

 periodic re-authentication

 enabling **2-81**

 time between attempts **2-82**

 quiet period between failed authentication

 exchanges **2-82**

 re-authenticating IEEE 802.1x-enabled ports **2-80**

 resetting configurable IEEE 802.1x parameters **2-67**

 switch-to-authentication server retransmission time **2-82**

 switch-to-client frame-retransmission number **2-74 to 2-76**

 switch-to-client retransmission time **2-82**

port-channel load-balance command **2-242**

Port Fast, for spanning tree **2-472**

port ranges, defining **2-49**

ports, debugging **B-56**

ports, protected **2-511**

port security

 aging **2-507**

 debug messages, display **B-58**

 enabling **2-502**

 violation error recovery **2-89**

port trust states for QoS **2-213**

port types, MVR **2-225**

priority-queue command **2-244**

privileged EXEC mode **1-2, 1-3**

product identification information, displaying **2-320**

protected ports, displaying **2-315**

pruning

 VLANs **2-513**

VTP

 displaying interface information **2-310**

 enabling **2-557, 2-561**

pruning-eligible VLAN list **2-515**

PVST+

 See STP

Q

QoS

 auto-QoS

 configuring **2-16**

 debug messages, display **B-2**

 displaying **2-269**

 class maps

 creating **2-34**

 defining the match criteria **2-175**

 displaying **2-275**

 defining the CoS value for an incoming packet **2-183**

 displaying configuration information **2-269, 2-362**

 DSCP transparency **2-195**

- QoS (continued)
- DSCP trusted ports
 - applying DSCP-to-DSCP-mutation map to **2-185**
 - defining DSCP-to-DSCP-mutation map **2-187**
 - egress queues
 - allocating buffers **2-191**
 - defining the CoS output queue threshold map **2-209**
 - defining the DSCP output queue threshold map **2-211**
 - displaying buffer allocations **2-366**
 - displaying CoS output queue threshold map **2-370**
 - displaying DSCP output queue threshold map **2-370**
 - displaying queueing strategy **2-366**
 - displaying queue-set settings **2-373**
 - enabling bandwidth shaping and scheduling **2-484**
 - enabling bandwidth sharing and scheduling **2-486**
 - limiting the maximum output on a port **2-482**
 - mapping a port to a queue-set **2-246**
 - mapping CoS values to a queue and threshold **2-209**
 - mapping DSCP values to a queue and threshold **2-211**
 - setting maximum and reserved memory allocations **2-193**
 - setting WTD thresholds **2-193**
 - enabling **2-179**
 - ingress queues
 - allocating buffers **2-199**
 - assigning SRR scheduling weights **2-197**
 - defining the CoS input queue threshold map **2-201**
 - defining the DSCP input queue threshold map **2-203**
 - displaying buffer allocations **2-366**
 - displaying CoS input queue threshold map **2-370**
 - displaying DSCP input queue threshold map **2-370**
 - displaying queueing strategy **2-366**
 - displaying settings for **2-364**
 - enabling the priority queue **2-205**
 - mapping CoS values to a queue and threshold **2-201**
 - mapping DSCP values to a queue and threshold **2-203**
 - setting WTD thresholds **2-207**
 - maps
 - defining **2-187, 2-201, 2-203, 2-209, 2-211**
 - displaying **2-370**
 - policy maps
 - applying an aggregate policer **2-237**
 - applying to an interface **2-256, 2-261**
 - creating **2-239**
 - defining policers **2-181, 2-235**
 - displaying policers **2-363**
 - displaying policy maps **2-390**
 - hierarchical **2-240**
 - policed-DSCP map **2-187**
 - setting DSCP or IP precedence values **2-259**
 - traffic classifications **2-32**
 - trust states **2-525**
 - port trust states **2-213**
 - queues, enabling the expedite **2-244**
 - statistics
 - in-profile and out-of-profile packets **2-366**
 - packets enqueued or dropped **2-366**
 - sent and received CoS values **2-366**
 - sent and received DSCP values **2-366**
 - trusted boundary for IP phones **2-213**
 - VLAN-based **2-215**
 - quality of service
 - See QoS
 - querytime, MVR **2-222**
 - queue-set command **2-246**

R

- radius-server dead-criteria command **2-247**
- radius-server host command **2-249**
- rapid per-VLAN spanning-tree plus
 - See STP
- rapid PVST+
 - See STP
- re-authenticating IEEE 802.1x-enabled ports **2-80**
- re-authentication
 - periodic **2-81**
 - time between attempts **2-82**

- receiver ports, MVR **2-225**
 receiving flow-control packets **2-92**
 recovery mechanism
 causes **2-89**
 display **2-299, 2-303**
 timer interval **2-89**
 remote-span command **2-251**
 Remote Switched Port Analyzer
 See RSPAN
 rename (boot loader) command **A-17**
 requirements
 device manager **xvi**
 reset (boot loader) command **A-18**
 reset command **2-547**
 restricted VLAN
 See dot1x auth-fail vlan
 rmdir (boot loader) command **A-19**
 rmon collection stats command **2-253**
 root guard, for spanning tree **2-445**
 RSPAN
 configuring **2-217**
 displaying **2-376**
 filter RSPAN traffic **2-217**
 remote-span command **2-251**
 sessions
 add interfaces to **2-217**
 displaying **2-376**
 start new **2-217**
-
- S**
- secure ports, limitations **2-504**
 sending flow-control packets **2-92**
 service password-recovery command **2-254**
 service-policy command **2-256**
 set (boot loader) command **A-20**
 set command **2-259**
 setup command **2-261**
 show access-lists command **2-264**
 show archive status command **2-267**
 show auto qos command **2-269**
 show boot command **2-273**
 show changes command **2-547**
 show class-map command **2-275**
 show controllers cpu-interface command **2-276**
 show controllers ethernet-controller command **2-278**
 show controllers tcam command **2-285**
 show controller utilization command **2-287**
 show current command **2-547**
 show dot1x command **2-289**
 show dtp **2-293**
 show eap command **2-295**
 show env command **2-298**
 show errdisable detect command **2-299**
 show errdisable flap-values command **2-301**
 show errdisable recovery command **2-303**
 show etherchannel command **2-305**
 show flowcontrol command **2-308**
 show interfaces command **2-310**
 show interfaces counters command **2-318**
 show inventory command **2-320**
 show ip dhcp snooping binding command **2-322**
 show ip dhcp snooping command **2-321**
 show ip igmp profile command **2-324**
 show ip igmp snooping command **2-325**
 show ip igmp snooping groups command **2-328**
 show ip igmp snooping mrouter command **2-330**
 show ip igmp snooping querier command **2-332**
 show lacp command **2-334**
 show link state group command **2-338**
 show mac access-group command **2-340**
 show mac address-table address command **2-344**
 show mac address-table aging time command **2-346**
 show mac address-table command **2-342**
 show mac address-table count command **2-348**
 show mac address-table dynamic command **2-350**
 show mac address-table interface command **2-352**
 show mac address-table move update command **2-354**

- show mac address-table notification command **2-41, 2-356**
B-20
- show mac address-table static command **2-358**
- show mac address-table vlan command **2-360**
- show mls qos aggregate-policer command **2-363**
- show mls qos command **2-362**
- show mls qos input-queue command **2-364**
- show mls qos interface command **2-366**
- show mls qos maps command **2-370**
- show mls qos queue-set command **2-373**
- show mls qos vlan command **2-375**
- show monitor command **2-376**
- show mvr command **2-379**
- show mvr interface command **2-381**
- show mvr members command **2-383**
- show pagp command **2-385**
- show parser macro command **2-387**
- 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 tcam command **C-28**
- show platform vlan command **C-30**
- show policy-map command **2-390**
- show port security command **2-392**
- show proposed command **2-547**
- show spanning-tree command **2-395**
- show storm-control command **2-401**
- show system mtu command **2-403**
- show trust command **2-525**
- show udld command **2-404**
- show version command **2-407**
- show vlan access-map command **2-414**
- show vlan command **2-409**
- show vlan command, fields **2-411**
- show vlan filter command **2-415**
- show vmps command **2-416**
- show vtp command **2-419**
- shutdown command **2-423**
- shutdown vlan command **2-424**
- Smartports macros
 See macros
- SNMP host, specifying **2-428**
- SNMP informs, enabling the sending of **2-425**
- snmp-server enable traps command **2-425**
- snmp-server host command **2-428**
- snmp trap mac-notification command **2-432**
- SNMP traps
 enabling MAC address notification trap **2-432**
 enabling the MAC address notification feature **2-158**
 enabling the sending of **2-425**
- SoftPhone
 See Cisco SoftPhone
- software images
 deleting **2-51**
 downloading **2-8**
 upgrading **2-8**
 uploading **2-14**
- software version, displaying **2-407**
- source ports, MVR **2-225**
- SPAN
 configuring **2-217**
- debug messages, display **B-21**

- SPAN (continued)
- displaying [2-376](#)
 - filter SPAN traffic [2-217](#)
 - sessions
 - add interfaces to [2-217](#)
 - displaying [2-376](#)
 - start new [2-217](#)
 - spanning [2-474](#)
 - spanning-tree backbonefast command [2-434](#)
 - spanning-tree bpdufilter command [2-435](#)
 - spanning-tree bpduguard command [2-437](#)
 - spanning-tree cost command [2-439](#)
 - spanning-tree etherchannel command [2-441](#)
 - spanning-tree extend system-id command [2-443](#)
 - spanning-tree guard command [2-445](#)
 - spanning-tree link-type command [2-447](#)
 - spanning-tree loopguard default command [2-449](#)
 - spanning-tree mode command [2-451](#)
 - spanning-tree mst configuration command [2-453](#)
 - spanning-tree mst cost command [2-455](#)
 - spanning-tree mst forward-time command [2-457](#)
 - spanning-tree mst hello-time command [2-458](#)
 - spanning-tree mst max-age command [2-459](#)
 - spanning-tree mst max-hops command [2-460](#)
 - spanning-tree mst port-priority command [2-462](#)
 - spanning-tree mst pre-standard command [2-464](#)
 - spanning-tree mst priority command [2-465](#)
 - spanning-tree mst root command [2-466](#)
 - spanning-tree portfast (global configuration) command [2-470](#)
 - spanning-tree portfast (interface configuration) command [2-472](#)
 - spanning-tree port-priority command [2-468](#)
 - Spanning Tree Protocol
 - See STP
 - spanning-tree transmit hold-count command [2-474](#)
 - spanning-tree uplinkfast command [2-475](#)
 - spanning-tree vlan command [2-477](#)
 - speed command [2-480](#)
 - srr-queue bandwidth limit command [2-482](#)
 - srr-queue bandwidth shape command [2-484](#)
 - srr-queue bandwidth share command [2-486](#)
 - SSH, configuring version [2-140](#)
 - static-access ports, configuring [2-491](#)
 - statistics, Ethernet group [2-253](#)
 - sticky learning, enabling [2-502](#)
 - storm-control command [2-488](#)
 - STP
 - BackboneFast [2-434](#)
 - counters, clearing [2-45](#)
 - debug messages, display
 - BackboneFast events [B-62](#)
 - MSTP [B-65](#)
 - optimized BPDU handling [B-64](#)
 - spanning-tree activity [B-60](#)
 - switch shim [B-67](#)
 - transmitted and received BPDU [B-63](#)
 - UplinkFast [B-69](#)
 - detection of indirect link failures [2-434](#)
 - EtherChannel misconfiguration [2-441](#)
 - extended system ID [2-443](#)
 - path cost [2-439](#)
 - protocol modes [2-451](#)
 - root port
 - accelerating choice of new [2-475](#)
 - loop guard [2-445](#)
 - preventing from becoming designated [2-445](#)
 - restricting which can be root [2-445](#)
 - root guard [2-445](#)
 - UplinkFast [B-69](#)
 - root switch
 - affects of extended system ID [2-443, 2-478](#)
 - hello-time [2-477](#)
 - interval between BDPU messages [2-477](#)
 - interval between hello BPDU messages [2-477](#)
 - max-age [2-477](#)
 - port priority for selection of [2-468](#)
 - primary or secondary [2-477](#)

STP (continued)

- switch priority **2-477**
- state changes
 - blocking to forwarding state **2-472**
 - enabling BPDU filtering **2-435, 2-470**
 - enabling BPDU guard **2-437, 2-470**
 - enabling Port Fast **2-470, 2-472**
 - enabling timer to recover from error state **2-89**
 - forward-delay time **2-477**
 - length of listening and learning states **2-477**
 - shutting down Port Fast-enabled ports **2-470**
- state information display **2-395**
- VLAN options **2-465, 2-477**

Switched Port Analyzer

- See SPAN

switchport access command **2-491**

switchport backup interface command **2-493**

switchport block command **2-496**

switchport host command **2-497**

switchport mode command **2-498**

switchport nonegotiate command **2-500**

switchport port-security aging command **2-507**

switchport port-security command **2-502**

switchport priority extend command **2-509**

switchport protected command **2-511**

switchports, displaying **2-310**

switchport trunk command **2-513**

switchport voice vlan command **2-516**

system message logging, save message to flash **2-149**

system mtu command **2-518**

T

tar files, creating, listing, and extracting **2-11**

traceroute mac command **2-520**

traceroute mac ip command **2-523**

trunking, VLAN mode **2-498**

trunk mode **2-498**

trunk ports **2-498**

trunks, to non-DTP device **2-499**

trusted boundary for QoS **2-213**

trusted port states for QoS **2-213**

type (boot loader) command **A-23**

U

UDLD

- aggressive mode **2-527, 2-529**
- debug messages, display **B-78**
- enable globally **2-527**
- enable per interface **2-529**
- error recovery timer **2-89**
- message timer **2-527**
- normal mode **2-527, 2-529**
- reset a shutdown interface **2-531**
- status **2-404**

udld command **2-527**

udld port command **2-529**

udld reset command **2-531**

unicast storm control **2-488**

UniDirectional Link Detection

- See UDLD

unknown multicast traffic, preventing **2-496**

unknown unicast traffic, preventing **2-496**

unset (boot loader) command **A-24**

upgrading

- software images **2-8**
- monitoring status of **2-267**

upgrading information

- See release notes

UplinkFast, for STP **2-475**

user EXEC mode **1-2**

V

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

VLAN

enabling guest VLAN supplicant [2-58](#)

vlan (global configuration) command [2-532](#)

vlan (VLAN configuration) command [2-538](#)

vlan access-map command [2-544](#)

VLAN access map configuration mode [2-544](#)

VLAN access maps

actions [2-6](#)

displaying [2-414](#)

VLAN-based QoS [2-215](#)

VLAN configuration

rules [2-535, 2-540](#)

saving [2-532, 2-542](#)

VLAN configuration mode

commands

 VLAN [2-538](#)

 VTP [2-561](#)

description [1-4](#)

entering [2-546](#)

summary [1-2](#)

vlan database command [2-546](#)

vlan filter command [2-550](#)

VLAN filters, displaying [2-415](#)

VLAN ID range [2-532, 2-538](#)

VLAN maps

applying [2-550](#)

creating [2-544](#)

defining [2-173](#)

displaying [2-414](#)

VLAN Query Protocol

See VQP

VLANS

adding [2-532](#)

configuring [2-532, 2-538](#)

debug messages, display

ISL [B-74](#)

VLAN IOS file system error tests [B-72](#)

VLAN manager activity [B-70](#)

VTP [B-76](#)

displaying configurations [2-409](#)

extended-range [2-532](#)

MAC addresses

 displaying [2-360](#)

 number of [2-348](#)

media types [2-534, 2-540](#)

normal-range [2-532, 2-538](#)

restarting [2-424](#)

saving the configuration [2-532](#)

shutting down [2-424](#)

SNMP traps for VTP [2-426, 2-429](#)

suspending [2-424](#)

variables [2-538](#)

VLAN Trunking Protocol

See VTP

VMPS

configuring servers [2-555](#)

displaying [2-416](#)

error recovery timer [2-89](#)

reconfirming dynamic VLAN assignments [2-552](#)

vmps reconfirm (global configuration) command [2-553](#)

vmps reconfirm (privileged EXEC) command [2-552](#)

vmps retry command [2-554](#)

vmps server command [2-555](#)

voice VLAN

configuring [2-516](#)

setting port priority [2-509](#)

VQP

and dynamic-access ports [2-492](#)

clearing client statistics [2-47](#)

displaying information [2-416](#)

per-server retry count [2-554](#)

reconfirmation interval [2-553](#)

reconfirming dynamic VLAN assignments [2-552](#)

VTP

changing characteristics **2-557**
clearing pruning counters **2-48**
configuring
 domain name **2-557, 2-561**
 file name **2-557**
 mode **2-557, 2-561**
 password **2-557, 2-561**
counters display fields **2-420**
displaying information **2-419**
enabling
 pruning **2-557, 2-561**
 Version 2 **2-557, 2-561**
mode **2-557, 2-561**
pruning **2-557, 2-561**
saving the configuration **2-532, 2-542**
statistics **2-419**
status **2-419**
status display fields **2-421**
vtp (global configuration) command **2-557**
vtp (VLAN configuration) command **2-561**

