



Numerics

802.1X

and switchport modes [2-427](#)

See also port-based authentication

violation error recovery [2-84](#)

A

aaa authentication dot1x command [2-1](#)

AAA methods [2-1](#)

abort command [2-475](#)

access control entries

See ACEs

access control lists

See ACLs

access groups

IP [2-95](#)

MAC, displaying [2-267](#)

access lists

IP [2-95](#)

on Layer 2 interfaces [2-95](#)

access map configuration mode [2-121](#)

access mode [2-426](#)

access ports [2-426](#)

ACEs [2-64, 2-177](#)

ACLs

deny [2-62](#)

displaying [2-209](#)

for non-IP protocols [2-115](#)

matching [2-121](#)

permit [2-175](#)

action command [2-3](#)

address aliasing [2-166](#)

aggregate-port learner [2-171](#)

allowed VLANs [2-440](#)

apply command [2-475](#)

archive copy-sw command [2-5](#)

archive download-sw command [2-7](#)

archive tar command [2-10](#)

archive upload-sw command [2-13](#)

audience [xv](#)

authorization state of controlled port [2-72](#)

autonegotiation of duplex mode [2-81](#)

auto qos voip command [2-15](#)

B

BackboneFast, for STP [2-364](#)

boot (boot loader) command [A-2](#)

boot auto-copy-sw command [2-19](#)

boot boothlpr 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

displaying environment variables [2-215](#)

interrupting [2-22](#)

IOS image [2-27](#)

manually [2-25](#)

boot loader

- accessing [A-1](#)
- booting
 - helper image [2-23](#)
 - IOS image [A-2](#)
- directories
 - creating [A-16](#)
 - displaying a list of [A-7](#)
 - removing [A-20](#)
- displaying
 - available commands [A-12](#)
 - memory heap utilization [A-14](#)
 - version [A-27](#)
- environment variables
 - described [A-21](#)
 - displaying settings [A-21](#)
 - location of [A-23](#)
 - setting [A-21](#)
 - unsetting [A-25](#)
- files
 - copying [A-5](#)
 - deleting [A-6](#)
 - displaying a list of [A-7](#)
 - displaying the contents of [A-4, A-17, A-24](#)
 - renaming [A-18](#)
- file system
 - formatting [A-10](#)
 - initializing Flash [A-9](#)
 - running a consistency check [A-11](#)
- loading helper images [A-13](#)
- prompt [A-1](#)
- resetting the system [A-19](#)
- boot manual command [2-25](#)
- boot private-config-file command [2-26](#)
- boot system command [2-27](#)
- BPDU filtering, for spanning tree [2-365, 2-398](#)
- BPDU guard, for spanning tree [2-367, 2-398](#)
- broadcast storm control [2-415](#)
- broadcast traffic counters [2-254](#)

C

- candidate switches
 - See clusters
- cat (boot loader) command [A-4](#)
- caution, description [xvi](#)
- channel-group command [2-28](#)
- channel-protocol command [2-32](#)
- class command [2-33](#)
- class-map command [2-35](#)
- class maps
 - creating [2-35](#)
 - defining the match criteria [2-123](#)
 - displaying [2-217](#)
- class of service
 - See CoS
- clear lacp command [2-37](#)
- clear mac-address-table command [2-38](#)
- clear pagp command [2-39](#)
- clear setup express command [2-40](#)
- clear spanning-tree counters command [2-41](#)
- clear spanning-tree detected-protocols command [2-42](#)
- clear vmps statistics command [2-43](#)
- clear vtp counters command [2-44](#)
- cluster commander-address command [2-45](#)
- cluster discovery hop-count command [2-47](#)
- cluster enable command [2-48](#)
- cluster holdtime command [2-50](#)
- cluster member command [2-51](#)
- cluster outside-interface command [2-53](#)
- cluster run command [2-54](#)
- clusters
 - adding candidates [2-51](#)
 - binding to HSRP group [2-55](#)
 - building manually [2-51](#)
 - communicating with
 - devices outside the cluster [2-53](#)
 - members by using Telnet [2-187](#)
 - debug messages, display [B-4](#)

clusters (continued)

- displaying
 - candidate switches [2-220](#)
 - debug messages [B-4](#)
 - member switches [2-222](#)
 - status [2-218](#)
- hop-count limit for extended discovery [2-47](#)
- HSRP standby groups [2-55](#)
- redundancy [2-55](#)
- SNMP trap [2-355](#)

cluster standby-group command [2-55](#)

cluster timer command [2-57](#)

command modes defined [1-2](#)

command switch

- See clusters

configuration files

- password recovery disable considerations [A-1](#)
- specifying the name [2-21, 2-26](#)

configuring multiple interfaces [2-90](#)

config-vlan mode

- commands [2-461](#)
- description [1-5](#)
- entering [2-460](#)
- summary [1-2](#)

conventions

- command [xvi](#)
- for examples [xvi](#)
- publication [xvi](#)
- text [xvi](#)

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

CoS

- assigning default value to incoming packets [2-131](#)
- overriding the incoming value [2-131](#)

CoS-to-DSCP map [2-135](#)

CPU ASIC statistics, displaying [2-224](#)

D

- debug autoqos command [B-2](#)
- debug cluster command [B-4](#)
- debug dot1x command [B-6](#)
- debug dtp command [B-7](#)
- debug etherchannel command [B-8](#)
- debug interface command [B-9](#)
- debug ip igmp filter command [B-10](#)
- debug ip igmp max-groups command [B-11](#)
- debug ip igmp snooping command [B-12](#)
- debug lacp command [B-13](#)
- debug mac-notification command [B-14](#)
- debug matm command [B-15](#)
- debug monitor command [B-16](#)
- debug mvrdbg command [B-17](#)
- debug nvram command [B-18](#)
- debug pagp command [B-19](#)
- debug platform acl command [B-20](#)
- debug platform cli-redirectation main command [B-21](#)
- debug platform configuration command [B-22](#)
- debug platform cpu-queues command [B-23](#)
- debug platform device-manager command [B-25](#)
- debug platform dot1x command [B-26](#)
- debug platform etherchannel command [B-27](#)
- debug platform fallback-bridging command [B-28](#)
- debug platform forw-tcam command [B-29](#)
- debug platform ipc command [B-36](#)
- debug platform ip igmp snooping command [B-30](#)
- debug platform ip multicast command [B-32](#)
- debug platform ip unicast command [B-34](#)
- debug platform led command [B-37](#)
- debug platform matm command [B-38](#)
- debug platform messaging application command [B-39](#)
- debug platform phy command [B-40](#)
- debug platform pm command [B-42](#)
- debug platform port-asic command [B-44](#)

- debug platform port-security command [B-45](#)
- debug platform qos-acl-tcam command [B-46](#)
- debug platform remote-commands command [B-47](#)
- debug platform resource-manager command [B-48](#)
- debug platform snmp command [B-49](#)
- debug platform span command [B-50](#)
- debug platform stack-manager command [B-51](#)
- debug platform supervisor-asic command [B-52](#)
- debug platform sw-bridge command [B-53](#)
- debug platform tcam command [B-54](#)
- debug platform uddl command [B-57](#)
- debug platform vlan command [B-58](#)
- debug pm command [B-59](#)
- debug port-security command [B-61](#)
- debug qos-manager command [B-62](#)
- debug spanning-tree backbonefast command [B-65](#)
- debug spanning-tree bpdu command [B-66](#)
- debug spanning-tree bpdu-opt command [B-67](#)
- debug spanning-tree command [B-63](#)
- debug spanning-tree mstp command [B-68](#)
- debug spanning-tree switch command [B-70](#)
- debug spanning-tree uplinkfast command [B-72](#)
- debug sw-vlan command [B-73](#)
- debug sw-vlan ifs command [B-75](#)
- debug sw-vlan notification command [B-76](#)
- debug sw-vlan vtp command [B-78](#)
- debug uddl command [B-80](#)
- debug vqpc command [B-82](#)
- define interface-range command [2-58](#)
- delete (boot loader) command [A-6](#)
- delete command [2-60](#)
- deny command [2-62](#)
- detect mechanism, causes [2-82](#)
- dir (boot loader) command [A-7](#)
- directories, deleting [2-60](#)
- documentation
 - feedback [xviii](#)
 - obtaining
 - CD-ROM [xvii](#)
 - world wide web [xvii](#)
 - ordering [xviii](#)
 - related [xvii](#)
- document conventions [xvi](#)
- domain name, VTP [2-484](#), [2-488](#)
- dot1x default command [2-65](#)
- dot1x guest-vlan command [2-66](#)
- dot1x host-mode command [2-67](#)
- dot1x initialize command [2-69](#)
- dot1x max-req command [2-70](#)
- dot1x multiple-hosts command [2-71](#)
- dot1x port-control command [2-72](#)
- dot1x re-authenticate command [2-74](#)
- dot1x re-authentication command [2-75](#)
- dot1x reauthentication command [2-76](#)
- dot1x system-auth-control command [2-77](#)
- dot1x timeout command [2-78](#)
- dropping packets, with ACL matches [2-3](#)
- DSCP-to-CoS map [2-135](#)
- DSCP-to-DSCP-mutation map [2-135](#)
- DTP [2-427](#)
- DTP flap
 - error detection for [2-82](#)
 - error recovery timer [2-84](#)
- duplex command [2-80](#)
- dynamic-access ports
 - configuring [2-422](#)
 - restrictions [2-423](#)
- dynamic auto VLAN membership mode [2-426](#)
- dynamic desirable VLAN membership mode [2-426](#)
- Dynamic Trunking Protocol
 - See DTP

E

EAP-request/identity frame

- maximum number to send [2-70](#)
- response time before retransmitting [2-78](#)

encapsulation methods [2-440](#)

environment variables, displaying [2-215](#)

errdisable detect cause command [2-82](#)

errdisable recovery command [2-84](#)

error conditions, displaying [2-241](#)

error disable detection [2-82](#)

error-disabled interfaces, displaying [2-248](#)

EtherChannel

- assigning Ethernet interface to channel group [2-28](#)
- creating port-channel logical interface [2-88](#)
- debug EtherChannel/PAgP, display [B-8](#)
- debug platform-specific events, display [B-27](#)
- displaying [2-245](#)
- interface information, displaying [2-248](#)

LACP

- clearing channel-group information [2-37](#)
- debug messages, display [B-13](#)
- displaying [2-263](#)
- modes [2-28](#)
- port priority for hot-standby ports [2-107](#)
- restricting a protocol [2-32](#)
- system priority [2-109](#)

load-distribution methods [2-184](#)

PAgP

- aggregate-port learner [2-171](#)
- clearing channel-group information [2-39](#)
- debug messages, display [B-19](#)
- displaying [2-310](#)
- error detection for [2-82](#)
- error recovery timer [2-84](#)
- learn method [2-171](#)
- modes [2-28](#)
- physical-port learner [2-171](#)
- priority of interface for transmitted traffic [2-173](#)

Ethernet controller, internal register display [2-226](#)

Ethernet statistics, collecting [2-193](#)

examples, conventions for [xvi](#)

exit command [2-475](#)

extended discovery of candidate switches [2-47](#)

extended-range VLANs

- and allowed VLAN list [2-440](#)
- and pruning-eligible list [2-440](#)
- configuring [2-460](#)

extended system ID for STP [2-371](#)

F

fan information, displaying [2-237](#)

feedback to Cisco Systems, web [xviii](#)

file name, VTP [2-484](#)

files, deleting [2-60](#)

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

flowcontrol command [2-86](#)

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

forwarding packets, with ACL matches [2-3](#)

forwarding results, display [C-5](#)

frame forwarding information, displaying [C-5](#)

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

G

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

H

hardware ACL statistics [2-209](#)

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

hop-count limit for clusters [2-47](#)

host connection, port configuration [2-425](#)

HSRP

- binding HSRP group to cluster [2-55](#)
- standby group [2-55](#)

I

IGMP filters

- applying [2-100](#)
- debug messages, display [B-10](#)

IGMP groups, setting maximum [2-101](#)IGMP maximum groups, debugging [B-11](#)

IGMP profiles

- creating [2-102](#)
- displaying [2-257](#)

IGMP snooping

- displaying [2-258, 2-260](#)
- enabling [2-104](#)

images

- See software images

Immediate-Leave feature, MVR [2-168](#)Immediate-Leave processing [2-104](#)interface command [2-93](#)interface configuration mode [1-2, 1-4](#)interface port-channel command [2-88](#)interface range command [2-90](#)interface-range macros [2-58](#)

interfaces

- assigning Ethernet interface to channel group [2-28](#)
- configuring [2-80](#)
- configuring multiple [2-90](#)
- creating port-channel logical [2-88](#)
- debug messages, display [B-9](#)
- disabling [2-353](#)
- displaying the MAC address table [2-279](#)
- restarting [2-353](#)

interface speed, configuring [2-407](#)internal registers, displaying [2-226, 2-230](#)

invalid GBIC

- error detection for [2-82](#)
- error recovery timer [2-84](#)

ip address command [2-98](#)IP addresses, setting [2-98](#)IP address matching [2-121](#)ip igmp filter command [2-100](#)ip igmp max-groups command [2-101](#)ip igmp profile command [2-102](#)ip igmp snooping command [2-104](#)IP multicast addresses [2-165](#)

IP phones

- auto-QoS configuration [2-15](#)
- trusting packets sent from [2-158](#)

IP-precedence-to-DSCP map [2-135](#)**J**

jumbo frames. See MTU

L

LACP

- See EtherChannel

lacp port-priority command [2-107](#)lacp system-priority command [2-109](#)Layer 2 mode, enabling [2-420](#)

Layer 2 traceroute

- IP addresses [2-450](#)
- MAC addresses [2-447](#)

Layer 3 mode, enabling [2-420](#)line configuration mode [1-3, 1-6](#)

Link Aggregation Control Protocol

- See EtherChannel

link flap

- error detection for [2-82](#)
- error recovery timer [2-84](#)

load_helper (boot loader) command [A-13](#)load-distribution methods for EtherChannel [2-184](#)logging file command [2-111](#)logical interface [2-88](#)

loopback error

- detection for [2-82](#)
- recovery timer [2-84](#)

loop guard, for spanning tree [2-373, 2-377](#)

M

mac access-group command [2-113](#)

MAC access-groups, displaying [2-267](#)

MAC access list configuration mode [2-115](#)

mac access-list extended command [2-115](#)

MAC access lists [2-62](#)

MAC addresses

displaying

aging time [2-273](#)

all [2-271](#)

dynamic [2-277](#)

Layer 2 multicast entries [2-281](#)

notification settings [2-283](#)

number of addresses in a VLAN [2-275](#)

per interface [2-279](#)

per VLAN [2-287](#)

static [2-285](#)

static and dynamic entries [2-269](#)

dynamic

aging time [2-117](#)

deleting [2-38](#)

displaying [2-277](#)

enabling MAC address notification [2-118](#)

matching [2-121](#)

static

adding and removing [2-120](#)

displaying [2-285](#)

tables [2-271](#)

MAC address notification, debugging [B-14](#)

mac address-table aging-time [2-113, 2-121](#)

mac-address-table aging-time command [2-117](#)

mac-address-table notification command [2-118](#)

mac-address-table static command [2-120](#)

macros, interface range [2-58, 2-90](#)

manual

audience [xv](#)

purpose of [xv](#)

maps

QoS

defining [2-135](#)

displaying [2-296](#)

VLAN

creating [2-472](#)

defining [2-121](#)

displaying [2-344](#)

match (access-map configuration) command [2-121](#)

match (class-map configuration) command [2-123](#)

maximum transmission unit

See MTU

mdix auto command [2-125](#)

member switches

See clusters

memory (boot loader) command [A-14](#)

mkdir (boot loader) command [A-16](#)

mls qos aggregate-policer command [2-129](#)

mls qos command [2-127](#)

mls qos cos command [2-131](#)

mls qos dscp-mutation command [2-133](#)

mls qos map command [2-135](#)

mls qos queue-set output buffers command [2-138](#)

mls qos queue-set output threshold command [2-140](#)

mls qos srr-queue input bandwidth command [2-142](#)

mls qos srr-queue input buffers command [2-144](#)

mls qos-srr-queue input cos-map command [2-146](#)

mls qos srr-queue input dscp-map command [2-148](#)

mls qos srr-queue input priority-queue command [2-150](#)

mls qos srr-queue input threshold command [2-152](#)

mls qos-srr-queue output cos-map command [2-154](#)

mls qos srr-queue output dscp-map command [2-156](#)

mls qos trust command [2-158](#)

mode, MVR [2-165](#)

Mode button, and password recovery [2-197](#)

modes, commands [1-2](#)

- monitor session command [2-160](#)
- more (boot loader) command [A-17](#)
- MSTP
 - displaying [2-324](#)
 - interoperability [2-42](#)
 - link type [2-375](#)
 - MST region
 - aborting changes [2-381](#)
 - applying changes [2-381](#)
 - configuration name [2-381](#)
 - configuration revision number [2-381](#)
 - current or pending display [2-381](#)
 - displaying [2-324](#)
 - MST configuration mode [2-381](#)
 - VLANs-to-instance mapping [2-381](#)
 - path cost [2-383](#)
 - protocol mode [2-379](#)
 - restart protocol migration process [2-42](#)
 - root port
 - loop guard [2-373](#)
 - preventing from becoming designated [2-373](#)
 - restricting which can be root [2-373](#)
 - root guard [2-373](#)
 - root switch
 - affects of extended system ID [2-371](#)
 - hello-time [2-386, 2-394](#)
 - interval between BDPUs messages [2-387](#)
 - interval between hello BPDUs messages [2-386, 2-394](#)
 - max-age [2-387](#)
 - maximum hop count before discarding BPDUs [2-389](#)
 - port priority for selection of [2-391](#)
 - primary or secondary [2-394](#)
 - switch priority [2-393](#)
- MSTP (continued)
 - state changes
 - blocking to forwarding state [2-400](#)
 - enabling BPDU filtering [2-365, 2-398](#)
 - enabling BPDU guard [2-367, 2-398](#)
 - enabling Port Fast [2-398, 2-400](#)
 - forward-delay time [2-385](#)
 - length of listening and learning states [2-385](#)
 - rapid transition to forwarding [2-375](#)
 - shutting down Port Fast-enabled ports [2-398](#)
 - state information display [2-323](#)
- MTU
 - configuring size [2-445](#)
 - displaying global setting [2-334](#)
- multicast group address, MVR [2-168](#)
- multicast groups, MVR [2-166](#)
- multicast router learning method [2-104](#)
- multicast router ports, configuring [2-104](#)
- multicast storm control [2-415](#)
- multicast traffic counters [2-254](#)
- multicast VLAN, MVR [2-165](#)
- multicast VLAN registration
 - See MVR
- multiple hosts on authorized port [2-67](#)
- Multiple Spanning Tree Protocol
 - See MSTP
- MVR
 - and address aliasing [2-166](#)
 - configuring [2-165](#)
 - configuring interfaces [2-168](#)
 - debug messages, display [B-17](#)
 - displaying [2-304](#)
 - displaying interface information [2-306](#)
 - members, displaying [2-308](#)
- mvr (global configuration) command [2-165](#)
- mvr (interface configuration) command [2-168](#)
- mvr vlan group command [2-169](#)

N

native VLANs [2-440](#)
 nonegotiate
 DTP messaging [2-428](#)
 speed [2-407](#)
 non-IP protocols
 denying [2-62](#)
 forwarding [2-175](#)
 non-IP traffic access lists [2-115](#)
 non-IP traffic forwarding
 denying [2-62](#)
 permitting [2-175](#)
 normal-range VLANs [2-460, 2-466](#)
 note, description [xvi](#)
 no vlan command [2-460, 2-470](#)

P

PAgP
 See EtherChannel
 pagp learn-method command [2-171](#)
 pagp port-priority command [2-173](#)
 password, VTP [2-484, 2-488](#)
 password-recovery mechanism, enabling and
 disabling [2-197](#)
 permit command [2-175](#)
 per-VLAN spanning-tree plus
 See STP
 physical-port learner [2-171](#)
 PIM-DVMRP, as multicast router learning method [2-104](#)
 police aggregate command [2-180](#)
 police command [2-178](#)
 policed-DSCP map [2-135](#)
 policy-map command [2-182](#)
 policy maps
 applying to an interface [2-199, 2-204](#)
 creating [2-182](#)
 displaying [2-312](#)
 policers
 displaying [2-290](#)
 for a single class [2-178](#)
 for multiple classes [2-129, 2-180](#)
 policed-DSCP map [2-135](#)
 traffic classification
 defining the class [2-33](#)
 defining trust states [2-453](#)
 setting DSCP or IP precedence values [2-202](#)
 Port Aggregation Protocol
 See EtherChannel
 port-based authentication
 AAA method list [2-1](#)
 debug messages, display [B-6](#)
 enabling 802.1X
 globally [2-77](#)
 per interface [2-72](#)
 guest VLAN [2-66](#)
 host modes [2-67](#)
 initialize an interface [2-69](#)
 manual control of authorization state [2-72](#)
 multiple hosts on authorized port [2-67](#)
 periodic re-authentication
 enabling [2-76](#)
 time between attempts [2-78](#)
 quiet period between failed authentication
 exchanges [2-78](#)
 re-authenticating 802.1X-enabled ports [2-74](#)
 resetting configurable 802.1X parameters [2-65](#)
 statistics and status display [2-232](#)
 switch-to-authentication server retransmission
 time [2-78](#)
 switch-to-client frame-retransmission number [2-70](#)
 switch-to-client retransmission time [2-78](#)

port-channel load-balance command [2-184](#)

Port Fast, for spanning tree [2-400](#)

port ranges, defining [2-58](#)

ports, debugging [B-59](#)

ports, protected [2-438](#)

port security

- aging [2-434](#)
- debug messages, display [B-61](#)
- enabling [2-430](#)
- violation error recovery [2-84](#)

port trust states for QoS [2-158](#)

port types, MVR [2-168](#)

power information, displaying [2-237](#)

priority value, stack member [2-331, 2-417](#)

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

protected ports, displaying [2-252](#)

pruning

- VLANs [2-440](#)
- VTP

 - displaying interface information [2-248](#)
 - enabling [2-484, 2-488](#)

pruning-eligible VLAN list [2-442](#)

publications for products, technologies, and network solutions [xix](#)

PVST+

- See STP

Q

QoS

auto-QoS

- configuring [2-15](#)
- debug messages, display [B-2](#)
- displaying [2-212](#)

class maps

- creating [2-35](#)
- defining the match criteria [2-123](#)
- displaying [2-217](#)

defining the CoS value for an incoming packet [2-131](#)

QoS (continued)

displaying configuration information [2-212, 2-289](#)

DSCP trusted ports

- applying DSCP-to-DSCP-mutation map to [2-133](#)
- defining DSCP-to-DSCP-mutation map [2-135](#)

egress queues

- allocating buffers [2-138](#)
- defining the CoS output queue threshold map [2-154](#)
- defining the DSCP output queue threshold map [2-156](#)
- displaying buffer allocations [2-293](#)
- displaying CoS output queue threshold map [2-296](#)
- displaying DSCP output queue threshold map [2-296](#)
- displaying queueing strategy [2-293](#)
- displaying queue-set settings [2-299](#)
- enabling bandwidth shaping and scheduling [2-411](#)
- enabling bandwidth sharing and scheduling [2-413](#)
- limiting the maximum output on a port [2-409](#)
- mapping a port to a queue-set [2-186](#)
- mapping CoS values to a queue and threshold [2-154](#)
- mapping DSCP values to a queue and threshold [2-156](#)
- setting maximum and reserved memory allocations [2-140](#)
- setting WTD thresholds [2-140](#)

enabling [2-127](#)

ingress queues

- allocating buffers [2-144](#)
- assigning SRR scheduling weights [2-142](#)
- defining the CoS input queue threshold map [2-146](#)
- defining the DSCP input queue threshold map [2-148](#)
- displaying buffer allocations [2-293](#)
- displaying CoS input queue threshold map [2-296](#)
- displaying DSCP input queue threshold map [2-296](#)
- displaying queueing strategy [2-293](#)
- displaying settings for [2-291](#)
- enabling the priority queue [2-150](#)
- mapping CoS values to a queue and threshold [2-146](#)
- mapping DSCP values to a queue and threshold [2-148](#)
- setting WTD thresholds [2-152](#)

QoS (continued)

- maps
 - defining [2-135, 2-146, 2-148, 2-154, 2-156](#)
 - displaying [2-296](#)
 - policy maps
 - applying an aggregate policer [2-180](#)
 - applying to an interface [2-199, 2-204](#)
 - creating [2-182](#)
 - defining policers [2-129, 2-178](#)
 - displaying policers [2-290](#)
 - displaying policy maps [2-312](#)
 - policed-DSCP map [2-135](#)
 - setting DSCP or IP precedence values [2-202](#)
 - traffic classifications [2-33](#)
 - trust states [2-453](#)
 - port trust states [2-158](#)
 - statistics
 - in-profile and out-of-profile packets [2-293](#)
 - packets enqueued or dropped [2-293](#)
 - sent and received CoS values [2-293](#)
 - sent and received DSCP values [2-293](#)
 - trusted boundary for IP phones [2-158](#)
- quality of service
- See QoS
- querytime, MVR [2-165](#)
- queue-set command [2-186](#)

R

- rapid per-VLAN spanning-tree plus
 - See STP
- rapid PVST+
 - See STP
- rcommand command [2-187](#)
- re-authenticating 802.1X-enabled ports [2-74](#)
- re-authentication
 - periodic [2-76](#)
 - time between attempts [2-78](#)
- receiver ports, MVR [2-168](#)

- receiving flow-control packets [2-86](#)
- recovery mechanism
 - causes [2-84](#)
 - display [2-239, 2-243](#)
 - timer interval [2-84](#)
- redundancy for cluster switches [2-55](#)
- reload command [2-189](#)
- remote command command [2-190](#)
- remote-span command [2-191](#)
- Remote Switched Port Analyzer
 - See RSPAN
- rename (boot loader) command [A-18](#)
- reset (boot loader) command [A-19](#)
- reset command [2-475](#)
- resource templates, displaying [2-319](#)
- rmdir (boot loader) command [A-20](#)
- rmon collection stats command [2-193](#)
- root guard, for spanning tree [2-373](#)
- routed ports
 - IP addresses on [2-99](#)
 - number supported [2-99](#)
- RSPAN
 - configuring [2-160](#)
 - displaying [2-301](#)
 - filter RSPAN traffic [2-160](#)
 - remote-span command [2-191](#)
 - sessions
 - add interfaces to [2-160](#)
 - displaying [2-301](#)
 - start new [2-160](#)

S

- SDM mismatch mode [2-195, 2-332](#)
- sdm prefer command [2-194](#)
- secure ports, limitations [2-431](#)
- sending flow-control packets [2-86](#)
- service password-recovery command [2-197](#)
- service-policy command [2-199](#)

- session command [2-201](#)
- set (boot loader) command [A-21](#)
- set command [2-202](#)
- setup command [2-204](#)
- setup express command [2-207](#)
- show access-lists command [2-209](#)
- show auto qos command [2-212](#)
- show boot command [2-215](#)
- show changes command [2-475](#)
- show class-map command [2-217](#)
- show cluster candidates command [2-220](#)
- show cluster command [2-218](#)
- show cluster members command [2-222](#)
- show controllers cpu-interface command [2-224](#)
- show controllers ethernet-controller command [2-226](#)
- show controllers tcam command [2-230](#)
- show current command [2-475](#)
- show dot1x command [2-232](#)
- show dtp [2-235](#)
- show env command [2-237](#)
- show errdisable detect command [2-239](#)
- show errdisable flap-values command [2-241](#)
- show errdisable recovery command [2-243](#)
- show etherchannel command [2-245](#)
- show interfaces command [2-248](#)
- show interfaces counters command [2-254](#)
- show ip igmp profile command [2-257](#)
- show ip igmp snooping command [2-258](#)
- show ip igmp snooping mrouter command [2-260](#)
- show ip igmp snooping multicast command [2-261](#)
- show lacp command [2-263](#)
- show mac access-group command [2-267](#)
- show mac-address-table address command [2-271](#)
- show mac-address-table aging time command [2-273](#)
- show mac-address-table command [2-269](#)
- show mac-address-table count command [2-275](#)
- show mac-address-table dynamic command [2-277](#)
- show mac-address-table interface command [2-279](#)
- show mac address-table multicast command [2-281](#)
- show mac-address-table notification command [2-283](#)
- show mac-address-table static command [2-285](#)
- show mac-address-table vlan command [2-287](#)
- show mls qos aggregate-policer command [2-290](#)
- show mls qos command [2-289](#)
- show mls qos input-queue command [2-291](#)
- show mls qos interface command [2-293](#)
- show mls qos maps command [2-296](#)
- show mls qos queue-set command [2-299](#)
- show monitor command [2-301](#)
- show mvr command [2-304](#)
- show mvr interface command [2-306](#)
- show mvr members command [2-308](#)
- show pagp command [2-310](#)
- show platform acl command [C-2](#)
- show platform configuration command [C-3](#)
- show platform etherchannel command [C-4](#)
- show platform forward command [C-5](#)
- show platform igmp snooping command [C-7](#)
- show platform ipc trace command [C-12](#)
- show platform ip multicast command [C-9](#)
- show platform ip unicast command [C-10](#)
- show platform layer4op command [C-13](#)
- show platform mac-address-table command [C-14](#)
- show platform messaging command [C-15](#)
- show platform monitor command [C-16](#)
- show platform mvr table command [C-17](#)
- show platform pm command [C-18](#)
- show platform port-asic command [C-19](#)
- show platform port-security command [C-24](#)
- show platform qos command [C-25](#)
- show platform resource-manager command [C-26](#)
- show platform snmp counters command [C-28](#)
- show platform spanning-tree command [C-29](#)
- show platform stack-manager command [C-31](#)
- show platform stp-instance command [C-30](#)
- show platform tb command [C-33](#)
- show platform tcam command [C-35](#)
- show platform vlan command [C-38](#)

- show policy-map command [2-312](#)
- show port security command [2-314](#)
- show proposed command [2-475](#)
- show running-config vlan command [2-317](#)
- show sdm prefer command [2-319](#)
- show setup express command [2-322](#)
- show spanning-tree command [2-323](#)
- show storm-control command [2-329](#)
- show switch command [2-331](#)
- show system mtu command [2-334](#)
- show trust command [2-453](#)
- show udd command [2-335](#)
- show version command [2-338](#)
- show vlan access-map command [2-344](#)
- show vlan command [2-340](#)
- show vlan command, fields [2-341](#)
- show vlan filter command [2-345](#)
- show vmps command [2-346](#)
- show vtp command [2-349](#)
- shutdown command [2-353](#)
- shutdown vlan command [2-354](#)
- SNMP host, specifying [2-358](#)
- SNMP informs, enabling the sending of [2-355](#)
- snmp-server enable traps command [2-355](#)
- snmp-server host command [2-358](#)
- snmp trap mac-notification command [2-362](#)
- SNMP traps
 - enabling MAC address notification trap [2-362](#)
 - enabling the MAC address notification feature [2-118](#)
 - enabling the sending of [2-355](#)
- software images
 - copying [2-5](#)
 - deleting [2-60](#)
 - downloading [2-7](#)
 - upgrading [2-5, 2-7](#)
 - uploading [2-13](#)
- software version, displaying [2-338](#)
- source ports, MVR [2-168](#)
- SPAN
 - configuring [2-160](#)
 - debug messages, display [B-16](#)
 - displaying [2-301](#)
 - filter SPAN traffic [2-160](#)
 - sessions
 - add interfaces to [2-160](#)
 - displaying [2-301](#)
 - start new [2-160](#)
 - spanning-tree backbonefast command [2-364](#)
 - spanning-tree bpdudfilter command [2-365](#)
 - spanning-tree bpduguard command [2-367](#)
 - spanning-tree cost command [2-369](#)
 - spanning-tree extend system-id command [2-371](#)
 - spanning-tree guard command [2-373](#)
 - spanning-tree link-type command [2-375](#)
 - spanning-tree loopguard default command [2-377](#)
 - spanning-tree mode command [2-379](#)
 - spanning-tree mst configuration command [2-381](#)
 - spanning-tree mst cost command [2-383](#)
 - spanning-tree mst forward-time command [2-385](#)
 - spanning-tree mst hello-time command [2-386](#)
 - spanning-tree mst max-age command [2-387](#)
 - spanning-tree mst max-hops command [2-389](#)
 - spanning-tree mst port-priority command [2-391](#)
 - spanning-tree mst priority command [2-393](#)
 - spanning-tree mst root command [2-394](#)
 - spanning-tree portfast (global configuration) command [2-398](#)
 - spanning-tree portfast (interface configuration) command [2-400](#)
 - spanning-tree port-priority command [2-396](#)
- Spanning Tree Protocol
 - See STP
 - spanning-tree uplinkfast command [2-402](#)
 - spanning-tree vlan command [2-404](#)
 - speed command [2-407](#)
 - srr-queue bandwidth limit command [2-409](#)
 - srr-queue bandwidth shape command [2-411](#)

- srr-queue bandwidth share command [2-413](#)
- stack member
 - access [2-201](#)
 - number [2-331, 2-418](#)
 - priority value [2-417](#)
 - reloading [2-189](#)
- stacks, switch
 - reloading [2-189](#)
 - stack member access [2-201](#)
 - stack member number [2-331, 2-418](#)
 - stack member priority value [2-331, 2-417](#)
- static-access ports, configuring [2-422](#)
- statistics, Ethernet group [2-193](#)
- sticky learning, enabling [2-430](#)
- storm-control command [2-415](#)
- STP
 - BackboneFast [2-364](#)
 - counters, clearing [2-41](#)
 - debug messages, display
 - BackboneFast events [B-65](#)
 - MSTP [B-68](#)
 - optimized BPDUs handling [B-67](#)
 - spanning-tree activity [B-63](#)
 - switch shim [B-70](#)
 - transmitted and received BPDUs [B-66](#)
 - UplinkFast [B-72](#)
 - detection of indirect link failures [2-364](#)
 - extended system ID [2-371](#)
 - path cost [2-369](#)
 - protocol modes [2-379](#)
 - root port
 - accelerating choice of new [2-402](#)
 - loop guard [2-373](#)
 - preventing from becoming designated [2-373](#)
 - restricting which can be root [2-373](#)
 - root guard [2-373](#)
 - UplinkFast [2-402](#)
 - STP (continued)
 - root switch
 - affects of extended system ID [2-371, 2-405](#)
 - hello-time [2-404](#)
 - interval between BPDU messages [2-404](#)
 - interval between hello BPDU messages [2-404](#)
 - max-age [2-404](#)
 - port priority for selection of [2-396](#)
 - primary or secondary [2-404](#)
 - switch priority [2-404](#)
 - state changes
 - blocking to forwarding state [2-400](#)
 - enabling BPDU filtering [2-365, 2-398](#)
 - enabling BPDU guard [2-367, 2-398](#)
 - enabling Port Fast [2-398, 2-400](#)
 - enabling timer to recover from error state [2-84](#)
 - forward-delay time [2-404](#)
 - length of listening and learning states [2-404](#)
 - shutting down Port Fast-enabled ports [2-398](#)
 - state information display [2-323](#)
 - VLAN options [2-393, 2-404](#)
 - SVIs
 - creating [2-93](#)
 - Switched Port Analyzer
 - See SPAN
 - switching characteristics
 - modifying [2-420, 2-428](#)
 - returning to interfaces [2-420, 2-428](#)
 - switchport access command [2-422](#)
 - switchport block command [2-424](#)
 - switchport command [2-420](#)
 - switchport host command [2-425](#)
 - switchport mode command [2-426](#)
 - switchport nonegotiate command [2-428](#)
 - switchport port-security aging command [2-434](#)
 - switchport port-security command [2-430](#)
 - switchport priority extend command [2-436](#)
 - switchport protected command [2-438](#)
 - switchports, displaying [2-248](#)

switchport trunk command [2-440](#)
 switchport voice vlan command [2-443](#)
 switch priority command [2-417](#)
 switch renumber command [2-418](#)
 system message logging, save message to Flash [2-111](#)
 system mtu command [2-445](#)
 system resource templates [2-194](#)

T

TAC

toll-free telephone numbers [xix](#)
 website [xviii](#)
 tar files, creating, listing, and extracting [2-10](#)
 technical assistance
 case priority definitions [xix](#)
 opening a case [xix](#)
 TAC website [xviii](#)
 toll-free telephone numbers [xix](#)
 Telnetting to cluster switches [2-187](#)
 temperature information, displaying [2-237](#)
 templates, system resources [2-194](#)
 traceroute mac command [2-447](#)
 traceroute mac ip command [2-450](#)
 trunking, VLAN mode [2-426](#)
 trunk mode [2-426](#)
 trunk ports [2-426](#)
 trunks, to non-DTP device [2-427](#)
 trusted boundary for QoS [2-158](#)
 trusted port states for QoS [2-158](#)
 type (boot loader) command [A-24](#)

U

UDLD

aggressive mode [2-455, 2-457](#)
 debug messages, display [B-80](#)
 enable globally [2-455](#)

UDLD (continued)

 enable per interface [2-457](#)
 error recovery timer [2-84](#)
 message timer [2-455](#)
 normal mode [2-455, 2-457](#)
 reset a shutdown interface [2-459](#)
 status [2-335](#)
 udd (global configuration) command [2-455](#)
 udd (interface configuration) command [2-457](#)
 udd reset command [2-459](#)
 unicast storm control [2-415](#)
 unicast traffic counters [2-254](#)
 UniDirectional Link Detection
 See UDLD
 unknown multicast traffic, preventing [2-424](#)
 unknown unicast traffic, preventing [2-424](#)
 unset (boot loader) command [A-25](#)
 upgrading, software images [2-5, 2-7](#)
 UplinkFast, for STP [2-402](#)
 user EXEC mode [1-2, 1-3](#)

V

version (boot loader) command [A-27](#)
 version mismatch mode [2-332](#)
 vlan (global configuration) command [2-460](#)
 vlan (VLAN configuration) command [2-466](#)
 vlan access-map command [2-472](#)
 VLAN access map configuration mode [2-472](#)
 VLAN access maps
 actions [2-3](#)
 displaying [2-344](#)
 VLAN configuration
 rules [2-464, 2-468](#)
 saving [2-460, 2-470](#)

VLAN configuration mode

commands

VLAN [2-466](#)VTP [2-488](#)description [1-5](#)entering [2-474](#)summary [1-3](#)vlan database command [2-474](#)vlan filter command [2-477](#)VLAN filters, displaying [2-345](#)VLAN ID range [2-460, 2-466](#)

VLAN maps

applying [2-477](#)creating [2-472](#)defining [2-121](#)displaying [2-344](#)

VLAN Query Protocol

See VQP

VLANs

adding [2-460](#)configuring [2-460, 2-466](#)

debug messages, display

ISL [B-76](#)VLAN IOS file system error tests [B-75](#)VLAN manager activity [B-73](#)VTP [B-78](#)displaying configurations [2-317, 2-340](#)extended-range [2-460](#)

MAC addresses

displaying [2-287](#)number of [2-275](#)media types [2-463, 2-468](#)normal-range [2-460, 2-466](#)restarting [2-354](#)saving the configuration [2-460](#)shutting down [2-354](#)SNMP traps for VTP [2-356, 2-359](#)suspending [2-354](#)variables [2-466](#)

VLAN Trunking Protocol

See VTP

VM mode [2-332](#)

VMPS

configuring servers [2-482](#)displaying [2-346](#)error recovery timer [2-84](#)reconfirming dynamic VLAN assignments [2-479](#)vmmps reconfirm (global configuration) command [2-480](#)vmmps reconfirm (privileged EXEC) command [2-479](#)vmmps retry command [2-481](#)vmmps server command [2-482](#)

voice VLAN

configuring [2-443](#)setting port priority [2-436](#)

VQP

and dynamic-access ports [2-423](#)clearing client statistics [2-43](#)displaying information [2-346](#)per-server retry count [2-481](#)reconfirmation interval [2-480](#)reconfirming dynamic VLAN assignments [2-479](#)

VTP

changing characteristics [2-484](#)clearing pruning counters [2-44](#)

configuring

domain name [2-484, 2-488](#)file name [2-484](#)mode [2-484, 2-488](#)password [2-484, 2-488](#)counters display fields [2-350](#)displaying information [2-349](#)

enabling

pruning [2-484, 2-488](#)version 2 [2-484, 2-488](#)mode [2-484, 2-488](#)pruning [2-484, 2-488](#)saving the configuration [2-460, 2-470](#)statistics [2-349](#)

VTP (continued)

- status [2-349](#)

- status display fields [2-351](#)

- vtp (global configuration) command [2-484](#)

- vtp (VLAN configuration) command [2-488](#)

