



INDEX

A

- aaa accounting dot1x command **2-1**
- aaa authentication dot1x command **2-3**
- aaa authorization network command **2-5, 2-21, 2-27, 2-29, 2-31, 2-33, 2-35, 2-116, 2-255, 2-433, B-7, B-36**
- AAA methods **2-3**
- access control entries
 - See ACEs
- access control lists
 - See ACLs
- access groups
 - IP **2-164**
 - MAC, displaying **2-541**
 - access mode **2-735**
 - access ports **2-735**
- ACEs **2-107, 2-363**
- ACLs
 - deny **2-105**
 - displaying **2-416**
 - for non-IP protocols **2-259**
 - IP **2-164**
 - on Layer 2 interfaces **2-164**
 - permit **2-361**
 - address aliasing **2-343**
 - aggregate-port learner **2-355**
 - allowed VLANs **2-750**
 - archive copy-sw command **2-6**
 - archive download-sw command **2-9**
 - archive tar command **2-12**
 - archive upload-sw command **2-15**
 - arp access-list command **2-17**
 - authentication command bounce-port ignore **2-19**
 - authentication command disable-port ignore **2-20**
 - authentication control-direction command **2-21**
 - authentication event command **2-23**
 - authentication failed VLAN
 - See dot1x auth-fail vlan
 - authentication fallback command **2-27**
 - authentication host-mode command **2-29**
 - authentication mac-move permit command **2-31**
 - authentication open command **2-33**
 - authentication order command **2-35**
 - authentication periodic command **2-37**
 - authentication port-control command **2-39**
 - authentication priority command **2-41**
 - authentication timer command **2-43**
 - authentication violation command **2-45**
 - auth-fail max-attempts
 - See dot1x auth-fail max-attempts
 - auth-fail vlan
 - See dot1x auth-fail vlan
 - auth open command **2-33**
 - auth order command **2-35**
 - authorization state of controlled port **2-133**
 - auth timer command **2-43**
 - autonegotiation of duplex mode **2-144**
 - auto qos voip command **2-47**
 - Auto Smartports macros
 - LLDP **2-284**

B

BackboneFast, for STP **2-659**

backup interfaces

configuring **2-728**

displaying **2-480**

boot (boot loader) command **A-2**

boot auto-copy-sw command **2-51**

boot config-file command **2-52**

boot enable-break command **2-53**

boot helper command **2-54**

boot helper-config file command **2-55**

booting

Cisco IOS image **2-58**

displaying environment variables **2-429**

interrupting **2-53**

manually **2-56**

boot loader

accessing **A-1**

booting

Cisco IOS image **A-2**

helper image **2-54**

directories

creating **A-15**

displaying a list of **A-7**

removing **A-19**

displaying

available commands **A-12**

memory heap utilization **A-13**

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](#)

prompt [A-1](#)
 resetting the system [A-18](#)

boot manual command [2-56](#)
 boot private-config-file command [2-57](#)
 boot system command [2-58](#)
 BPDU filtering, for spanning tree [2-660, 2-695](#)
 BPDU guard, for spanning tree [2-662, 2-695](#)
 broadcast storm control [2-716](#)

C

candidate switches
 See clusters

cat (boot loader) command [A-4](#)
 channel-group command [2-60](#)
 channel-protocol command [2-63](#)
 Cisco SoftPhone
 auto-QoS configuration [2-47](#)
 trusting packets sent from [2-335](#)

CISP
 See Client Information Signalling Protocol

cisp
 debug platform cisp command [B-36](#)
 cisp enable command [2-64](#)
 class command [2-65](#)
 class-map command [2-67](#)

class maps
 creating [2-67](#)
 defining the match criteria [2-296](#)
 displaying [2-434](#)

class of service

 See CoS

clear dot1x command [2-69](#)
clear eap sessions command [2-70](#)
clear errdisable interface [2-71](#)
clear ip arp inspection log command [2-72](#)
clear ip arp inspection statistics command [2-73](#)
clear ip dhcp snooping database command [2-74](#)
clear lacp command [2-76](#)
clear mac address-table command [2-77, 2-78](#)
clear nmsp statistics command [2-79](#)
clear pagp command [2-80](#)
clear port-security command [2-81](#)
clear spanning-tree counters command [2-83](#)
clear spanning-tree detected-protocols command [2-84](#)
clear vmps statistics command [2-85](#)
clear vtp counters command [2-86](#)
Client Information Signalling Protocol [2-64, 2-116, 2-433, B-7, B-36](#)

cluster commander-address command [2-87](#)
cluster discovery hop-count command [2-89](#)
cluster enable command [2-90](#)
cluster holdtime command [2-91](#)
cluster member command [2-92](#)
cluster outside-interface command [2-94](#)
cluster run command [2-95](#)

clusters

 adding candidates [2-92](#)
 binding to HSRP group [2-96](#)
 building manually [2-92](#)
 communicating with
 devices outside the cluster [2-94](#)
 members by using Telnet [2-387](#)
 debug messages, display [B-8](#)

- displaying
- candidate switches **2-437**
 - debug messages **B-8**
 - member switches **2-439**
 - status **2-435**
- hop-count limit for extended discovery **2-89**
- HSRP standby groups **2-96**
- redundancy **2-96**
- SNMP trap **2-649**
- cluster standby-group command **2-96**
- cluster timer command **2-98**
- command modes defined **1-2**
- command switch
- See clusters
- configuration files
- password recovery disable considerations **A-1**
 - specifying the name **2-52, 2-57**
- configuring multiple interfaces **2-160**
- config-vlan mode
- commands **2-771**
- copy (boot loader) command **A-5**
- CoS
- assigning default value to incoming packets **2-305**
 - overriding the incoming value **2-305**
- CoS-to-DSCP map **2-309**
- CPU ASIC statistics, displaying **2-441**
- crashinfo files **2-153**
- critical VLAN **2-24**
-
- D**
- debug authentication **B-2**
- debug auto qos command **B-4**
- debug backup command **B-6**
- debug cisp command **B-7**
- debug cluster command **B-8**
- debug dot1x command **B-10**
- debug dtp command **B-12**
- debug eap command **B-13**
- debug etherchannel command **B-14**
- debug ilpower command **B-15**
- debug interface command **B-16**
- debug ip dhcp snooping command **B-17**
- debug ip igmp filter command **B-19**
- debug ip igmp max-groups command **B-20**
- debug ip igmp snooping command **B-21**
- debug ip verify source packet command **B-18**
- debug lacp command **B-22**
- debug lldp packets command **B-23**
- debug mac-notification command **B-24**
- debug macro command **B-25**
- debug matm command **B-26**
- debug matm move update command **B-27**
- debug monitor command **B-28**
- debug mvrdbg command **B-30**
- debug nmsp command **B-31**
- debug nvram command **B-32**
- debug pagp command **B-33**
- debug platform acl command **B-34**
- debug platform backup interface command **B-35**
- debug platform cisp command **B-36**
- debug platform cli-redirection main command **B-37**
- debug platform configuration command **B-38, B-44**
- debug platform cpu-queues command **B-39**
- debug platform dot1x command **B-41**
- debug platform etherchannel command **B-42**
- debug platform forw-tcam command **B-43**
- debug platform ip arp inspection command **B-45**
- debug platform ip dhcp command **B-46**
- debug platform ip igmp snooping command **B-47**
- debug platform ip source-guard command **B-49**
- debug platform led command **B-50**
- debug platform matm command **B-51**
- debug platform messaging application command **B-52**
- debug platform phy command **B-54**
- debug platform pm command **B-56**
- debug platform port-asic command **B-58**
- debug platform port-security command **B-59**

debug platform qos-acl-tcam command **B-60**
debug platform resource-manager command **B-61**
debug platform snmp command **B-62**
debug platform span command **B-63**
debug platform stack-manager command **B-64**
debug platform supervisor-asic command **B-65**
debug platform sw-bridge command **B-66**
debug platform tcam command **B-67**
debug platform udld command **B-69**
debug platform vlan command **B-70**
debug pm command **B-71**
debug port-security command **B-73**
debug qos-manager command **B-74**
debug spanning-tree backbonefast command **B-77**
debug spanning-tree bpdu command **B-78**
debug spanning-tree bpdu-opt command **B-79**
debug spanning-tree command **B-75**
debug spanning-tree mstp command **B-80**
debug spanning-tree switch command **B-82**
debug spanning-tree uplinkfast command **B-84**
debug sw-vlan command **B-85**
debug sw-vlan ifs command **B-87**
debug sw-vlan notification command **B-88**
debug sw-vlan vtp command **B-90**
debug udld command **B-92**
debug vqpc command **B-94**
define interface-range command **2-99**
delete (boot loader) command **A-6**
delete command **2-102**
deny (ARP access-list configuration) command **2-103**
deny command **2-105**
detect mechanism, causes **2-145**
DHCP snooping
 accepting untrusted packets from edge switch **2-192**
 enabling
 on a VLAN **2-197**
 option 82 **2-190, 2-192**
 trust on an interface **2-195**

- error recovery timer **2-151**
- rate limiting **2-194**
- DHCP snooping binding database
 - binding file, configuring **2-188**
 - bindings
 - adding **2-186**
 - deleting **2-186**
 - displaying **2-500**
 - clearing database agent statistics **2-74**
 - database agent, configuring **2-188**
 - displaying
 - binding entries **2-500**
 - database agent status **2-503, 2-505**
 - renewing **2-395**
- dir (boot loader) command **A-7**
- directories, deleting **2-102**
- domain name, VTP **2-782**
- dot1x auth-fail max-attempts **2-110**
- dot1x auth-fail vlan **2-112**
- dot1x command **2-108**
- dot1x control-direction command **2-114**
- dot1x credentials (global configuration) command **2-116**
- dot1x critical global configuration command **2-117**
- dot1x critical interface configuration command **2-119**
- dot1x default command **2-121**
- dot1x fallback command **2-122**
- dot1x guest-vlan command **2-123**
- dot1x host-mode command **2-125**
- dot1x initialize command **2-127**
- dot1x mac-auth-bypass command **2-128**
- dot1x max-reauth-req command **2-130**
- dot1x max-req command **2-131**
- dot1x pae command **2-132**
- dot1x port-control command **2-133**
- dot1x re-authenticate command **2-135**
- dot1x reauthentication command **2-136**
- dot1x supplicant force-multicast command **2-137**
- dot1x test eapol-capable command **2-138**
- dot1x test timeout command **2-139**
- dot1x timeout command **2-140**
- dot1x violation-mode command **2-142**
- DSCP-to-CoS map **2-309**
- DSCP-to-DSCP-mutation map **2-309**
- DTP **2-736**
- DTP flap
 - error detection for **2-145**
 - error recovery timer **2-151**
- DTP negotiation **2-737**
- dual-purpose uplink ports
 - displaying the active media **2-488**
 - selecting the type **2-299**
- duplex command **2-143**
- dynamic-access ports
 - configuring **2-726**
 - restrictions **2-727**
- dynamic ARP inspection
 - ARP ACLs
 - apply to a VLAN **2-172**
 - define **2-17**
 - deny packets **2-103**
 - display **2-420**
 - permit packets **2-359**
 - clear
 - log buffer **2-72**
 - statistics **2-73**
 - display
 - ARP ACLs **2-420**
 - configuration and operating state **2-495**
 - log buffer **2-495**
 - statistics **2-495**
 - trust state and rate limit **2-495**
 - enable per VLAN **2-182**
 - log buffer
 - clear **2-72**
 - configure **2-176**
 - display **2-495**
 - rate-limit incoming ARP packets **2-174**

- statistics
 clear **2-73**
 display **2-495**
- trusted interface state **2-178**
- type of packet logged **2-183**
- validation checks **2-180**
- dynamic auto VLAN membership mode **2-735**
- dynamic desirable VLAN membership mode **2-735**
- Dynamic Host Configuration Protocol (DHCP)
 See DHCP snooping
- Dynamic Trunking Protocol
 See DTP
-
- E**
- EAP-request/identity frame
 maximum number to send **2-131**
 response time before retransmitting **2-140**
- environment variables, displaying **2-429**
- errdisable detect cause command **2-145**
- errdisable detect cause small-frame comand **2-148**
- errdisable recovery cause small-frame **2-150**
- errdisable recovery command **2-151**
- error conditions, displaying **2-469**
- error disable detection **2-145**
- error-disabled interfaces, displaying **2-480**
- EtherChannel
 assigning Ethernet interface to channel group **2-60**
 creating port-channel logical interface **2-158**
 debug EtherChannel/PAgP, display **B-14**
 debug platform-specific events, display **B-42**
 displaying **2-473**
 interface information, displaying **2-480**
 LACP
 clearing channel-group information **2-76**
 debug messages, display **B-22**
 displaying **2-532**
 modes **2-60**
 port priority for hot-standby ports **2-240**
- restricting a protocol **2-63**
- system priority **2-242**
- load-distribution methods **2-370**
- PAgP
 aggregate-port learner **2-355**
 clearing channel-group information **2-80**
 debug messages, display **B-33**
 displaying **2-593**
 error detection for **2-145**
 error recovery timer **2-151**
 learn method **2-355**
 modes **2-60**
 physical-port learner **2-355**
 priority of interface for transmitted traffic **2-357**
- Ethernet controller, internal register display **2-443**
- Ethernet statistics, collecting **2-399**
- exception crashinfo command **2-153**
- extended discovery of candidate switches **2-89**
- extended-range VLANs
 and allowed VLAN list **2-750**
 and pruning-eligible list **2-750**
 configuring **2-770**
- extended system ID for STP **2-668**
-
- F**
- fallback profile command **2-154**
- fallback profiles, displaying **2-476**
- fan information, displaying **2-465**
- file name, VTP **2-782**
- files, deleting **2-102**
- flash_init (boot loader) command **A-9**
- flexible authentication ordering **2-35**
- Flex Links
 configuring **2-728**
 configuring preferred VLAN **2-730**
 displaying **2-480**
- flowcontrol command **2-156**
- format (boot loader) command **A-10**

forwarding results, display **C-5**
 frame forwarding information, displaying **C-5**
 front-end controller, counter and status information **C-7**
 fsck (boot loader) command **A-11**

G

global configuration mode **1-2, 1-4**

H

hardware ACL statistics **2-416**
 help (boot loader) command **A-12**
 hierarchical policy maps **2-368**
 hop-count limit for clusters **2-89**
 host connection, port configuration **2-734**
 Hot Standby Router Protocol
 See HSRP
 HSRP
 binding HSRP group to cluster **2-96**
 standby group **2-96**

I

IEEE 802.1x
 and switchport modes **2-736**
 violation error recovery **2-151**
 See also port-based authentication
 IEEE 802.1X Port Based Authentication
 enabling guest VLAN supplicant **2-111, 2-122, 2-155**
 IGMP filters
 applying **2-200**
 debug messages, display **B-19**
 IGMP groups, setting maximum **2-202**
 IGMP maximum groups, debugging **B-20**
 IGMP profiles
 creating **2-204**
 displaying **2-508**

IGMP snooping
 adding ports as a static member of a group **2-220**
 displaying **2-509, 2-514, 2-516**
 enabling **2-206**
 enabling the configurable-leave timer **2-208**
 enabling the Immediate-Leave feature **2-217**
 flooding query count **2-214**
 interface topology change notification behavior **2-216**
 multicast table **2-512**
 querier **2-210**
 query solicitation **2-214**
 report suppression **2-212**
 switch topology change notification behavior **2-214**
 images
 See software images
 Immediate-Leave feature, MVR **2-345**
 immediate-leave processing **2-217**
 Immediate-Leave processing, IPv6 **2-238**
 interface configuration mode **1-2, 1-4**
 interface port-channel command **2-158**
 interface range command **2-160**
 interface-range macros **2-99**
 interfaces
 assigning Ethernet interface to channel group **2-60**
 configuring **2-143**
 configuring multiple **2-160**
 creating port-channel logical **2-158**
 debug messages, display **B-16**
 disabling **2-645**
 displaying the MAC address table **2-553**
 restarting **2-645**
 interface speed, configuring **2-705**
 interface vlan command **2-162**
 internal registers, displaying **2-443, 2-452**
 Internet Group Management Protocol
 See IGMP
 invalid GBIC
 error detection for **2-145**
 error recovery timer **2-151**

ip access-group command **2-164**
 ip address command **2-167**
 IP addresses, setting **2-167**
 ip admission command **2-169**
 ip admission name proxy http command **2-170**
 ip arp inspection filter vlan command **2-172**
 ip arp inspection limit command **2-174**
 ip arp inspection log-buffer command **2-176**
 ip arp inspection trust command **2-178**
 ip arp inspection validate command **2-180**
 ip arp inspection vlan command **2-182**
 ip arp inspection vlan logging command **2-183**
 IP DHCP snooping
 See DHCP snooping
 ip dhcp snooping binding command **2-186**
 ip dhcp snooping command **2-185**
 ip dhcp snooping database command **2-188**
 ip dhcp snooping information option allow-untrusted command **2-192**
 ip dhcp snooping information option command **2-190**
 ip dhcp snooping limit rate command **2-194**
 ip dhcp snooping trust command **2-195**
 ip dhcp snooping verify command **2-196**
 ip dhcp snooping vlan command **2-197**
 ip dhcp snooping vlan information option format-type circuit-id string command **2-198**
 ip igmp filter command **2-200**
 ip igmp max-groups command **2-202**
 ip igmp profile command **2-204**
 ip igmp snooping command **2-206**
 ip igmp snooping last-member-query-interval command **2-208**
 ip igmp snooping querier command **2-210**
 ip igmp snooping report-suppression command **2-212**
 ip igmp snooping tcn command **2-214**
 ip igmp snooping tcn flood command **2-216**
 ip igmp snooping vlan immediate-leave command **2-217**
 ip igmp snooping vlan mrouter command **2-218**
 ip igmp snooping vlan static command **2-220**
 IP multicast addresses **2-342**

IP phones
 auto-QoS configuration **2-47**
 trusting packets sent from **2-335**
 IP-precedence-to-DSCP map **2-309**
 ip source binding command **2-222**
 IP source guard
 disabling **2-226**
 displaying
 binding entries **2-518**
 configuration **2-520**
 dynamic binding entries only **2-500**
 enabling **2-226**
 static IP source bindings **2-222**
 ip ssh command **2-224**
 ipv6 mld snooping command **2-227**
 ipv6 mld snooping last-listener-query count command **2-229**
 ipv6 mld snooping last-listener-query-interval command **2-231**
 ipv6 mld snooping listener-message-suppression command **2-233**
 ipv6 mld snooping robustness-variable command **2-234**
 ipv6 mld snooping tcn command **2-236**
 ipv6 mld snooping vlan command **2-238**
 IPv6 SDM template **2-400**
 ip verify source command **2-226**

J

jumbo frames
 See MTU

L

LACP
 See EtherChannel
 lacp port-priority command **2-240**
 lacp system-priority command **2-242**

- Layer 2 traceroute
 IP addresses **2-761**
 MAC addresses **2-758**
- line configuration mode **1-3, 1-5**
- Link Aggregation Control Protocol
 See EtherChannel
- link flap
 error detection for **2-145**
 error recovery timer **2-151**
- link state group command **2-248**
- link state track command **2-250**
- load-distribution methods for EtherChannel **2-370**
- location (global configuration) command **2-244**
- location (interface configuration) command **2-246**
- logging event command **2-251**
- logging event power-inline-status command **2-252**
- logging file command **2-253**
- logical interface **2-158**
- loopback error
 detection for **2-145**
 recovery timer **2-151**
- loop guard, for spanning tree **2-670, 2-674**
-
- M**
- mab request format attribute 32 command **2-255**
- mac access-group command **2-257**
- MAC access-groups, displaying **2-541**
- MAC access list configuration mode **2-259**
- mac access-list extended command **2-259**
- MAC access lists **2-105**
- MAC addresses
 disabling MAC address learning per VLAN **2-262**
 displaying
 aging time **2-547**
 all **2-545**
 dynamic **2-551**
 MAC address-table move updates **2-556**
 notification settings **2-555, 2-558**
- number of addresses in a VLAN **2-549**
- per interface **2-553**
- per VLAN **2-562**
- static **2-560**
- static and dynamic entries **2-543**
- dynamic
 aging time **2-261**
 deleting **2-77**
 displaying **2-551**
 enabling MAC address notification **2-266**
 enabling MAC address-table move update **2-264**
 persistent stack **2-713**
 static
 adding and removing **2-268**
 displaying **2-560**
 dropping on an interface **2-269**
 tables **2-545**
 MAC address notification, debugging **B-24**
 mac address-table aging-time **2-257**
 mac address-table aging-time command **2-261**
 mac address-table learning command **2-262**
 mac address-table move update command **2-264**
 mac address-table notification command **2-266**
 mac address-table static command **2-268**
 mac address-table static drop command **2-269**
 macro apply command **2-271**
 macro auto device command **2-274**
 macro auto execute command **2-276**
 macro auto file command **2-282**
 macro auto global processing command **2-284**
 macro auto mac-address-group command **2-286**
 macro auto sticky command **2-288**
 macro description command **2-289**
 macro global command **2-290**
 macro global description command **2-293**
 macro name command **2-294**
 macros
 adding a description **2-289**
 adding a global description **2-293**

- applying **2-290**
- creating **2-294**
- displaying **2-595**
- interface range **2-99, 2-160**
- specifying parameter values **2-290**
- tracing **2-290**
- maps
 - QoS
 - defining **2-309**
 - displaying **2-574**
 - match (class-map configuration) command **2-296**
 - maximum transmission unit
 - See MTU
 - mdix auto command **2-298**
 - media-type command **2-299**
 - member switches
 - See clusters
 - memory (boot loader) command **A-13**
 - mkdir (boot loader) command **A-15**
 - MLD snooping
 - configuring **2-233, 2-234**
 - configuring queries **2-229, 2-231**
 - configuring topology change notification **2-236**
 - displaying **2-522, 2-524, 2-526, 2-528**
 - enabling **2-227**
 - MLD snooping on a VLAN, enabling **2-238**
 - mls qos aggregate-policer command **2-303**
 - mls qos command **2-301**
 - mls qos cos command **2-305**
 - mls qos dscp-mutation command **2-307**
 - mls qos map command **2-309**
 - mls qos queue-set output buffers command **2-313**
 - mls qos queue-set output threshold command **2-315**
 - mls qos rewrite ip dscp command **2-317**
 - mls qos srr-queue input bandwidth command **2-319**
 - mls qos srr-queue input buffers command **2-321**
 - mls qos-srr-queue input cos-map command **2-323**
 - mls qos srr-queue input dscp-map command **2-325**
 - mls qos srr-queue input priority-queue command **2-327**
 - mls qos srr-queue input threshold command **2-329**
 - mls qos-srr-queue output cos-map command **2-331**
 - mls qos srr-queue output dscp-map command **2-333**
 - mls qos trust command **2-335**
 - mode, MVR **2-342**
 - Mode button, and password recovery **2-402**
 - modes, commands **1-2**
 - monitor session command **2-337**
 - more (boot loader) command **A-16**
 - MSTP
 - displaying **2-615**
 - interoperability **2-84**
 - link type **2-672**
 - MST region
 - aborting changes **2-678**
 - applying changes **2-678**
 - configuration name **2-678**
 - configuration revision number **2-678**
 - current or pending display **2-678**
 - displaying **2-615**
 - MST configuration mode **2-678**
 - VLANs-to-instance mapping **2-678**
 - path cost **2-680**
 - protocol mode **2-676**
 - restart protocol migration process **2-84**
 - root port
 - loop guard **2-670**
 - preventing from becoming designated **2-670**
 - restricting which can be root **2-670**
 - root guard **2-670**
 - root switch
 - affects of extended system ID **2-668**
 - hello-time **2-683, 2-691**
 - interval between BDPU messages **2-684**
 - interval between hello BPDU messages **2-683, 2-691**
 - max-age **2-684**
 - maximum hop count before discarding BPDU **2-685**

port priority for selection of **2-687**

primary or secondary **2-691**

switch priority **2-690**

state changes

blocking to forwarding state **2-697**

enabling BPDU filtering **2-660, 2-695**

enabling BPDU guard **2-662, 2-695**

enabling Port Fast **2-695, 2-697**

forward-delay time **2-682**

length of listening and learning states **2-682**

rapid transition to forwarding **2-672**

shutting down Port Fast-enabled ports **2-695**

state information display **2-614**

MTU

configuring size **2-755**

displaying global setting **2-627**

Multicase Listener Discovery

See MLD

multicast group address, MVR **2-345**

multicast groups, MVR **2-343**

Multicast Listener Discovery

See MLD

multicast router learning method **2-218**

multicast router ports, configuring **2-218**

multicast router ports, IPv6 **2-238**

multicast storm control **2-716**

multicast VLAN, MVR **2-342**

multicast VLAN registration

See MVR

Multiple Spanning Tree Protocol

See MSTP

MVR

and address aliasing **2-343**

configuring **2-342**

configuring interfaces **2-345**

debug messages, display **B-30**

displaying **2-583**

displaying interface information **2-585**

members, displaying **2-587**

mvr (global configuration) command **2-342**

mvr (interface configuration) command **2-345**

mvr vlan group command **2-346**

N

native VLANs **2-750**

Network Admission Control Software Configuration Guide **2-169, 2-171**

network-policy (global configuration) command **2-349**

network-policy command **2-348**

network-policy profile (network-policy configuration) command **2-351**

nmfsp attachment suppress command **2-354**

nmfsp command **2-353**

nonegotiate, speed **2-705**

nonegotiating DTP messaging **2-737**

non-IP protocols

denying **2-105**

forwarding **2-361**

non-IP traffic access lists **2-259**

non-IP traffic forwarding

denying **2-105**

permitting **2-361**

normal-range VLANs **2-770, 2-775**

no vlan command **2-770**

O

online diagnostics

global configuration mode

clearing health monitoring diagnostic test schedule **2-72**

setting health monitoring diagnostic testing **2-72**

setting up health monitoring diagnostic test schedule **2-72**

P

PAgP

See EtherChannel

pagp learn-method command **2-355**

pagp port-priority command **2-357**

password, VTP **2-783**

password-recovery mechanism, enabling and
disabling **2-402**

permit (ARP access-list configuration) command **2-359**

permit (MAC access-list configuration) command **2-361**

per-VLAN spanning-tree plus

See STP

physical-port learner **2-355**

PID, displaying **2-494**

PIM-DVMRP, as multicast router learning method **2-218**

PoE

configuring the power budget **2-375**

configuring the power management mode **2-372**

displaying controller register values **2-450**

displaying power management information **2-603**

logging of status **2-252**

monitoring power **2-377**

policing power consumption **2-377**

police aggregate command **2-366**

police command **2-364**

policed-DSCP map **2-309**

policy-map command **2-368**

policy maps

applying to an interface **2-404, 2-409**

creating **2-368**

displaying **2-598**

hierarchical **2-368**

policers

displaying **2-567**

for a single class **2-364**

for multiple classes **2-303, 2-366**

policed-DSCP map **2-309**

- traffic classification
 defining the class **2-65**
 defining trust states **2-763**
 setting DSCP or IP precedence values **2-407**
- Port Aggregation Protocol
 See EtherChannel
- port-based authentication
 AAA method list **2-3**
 configuring violation modes **2-142**
 debug messages, display **B-10**
 enabling IEEE 802.1x
 globally **2-108**
 per interface **2-133**
 guest VLAN **2-123**
 host modes **2-125**
 IEEE 802.1x AAA accounting methods **2-1**
 initialize an interface **2-127, 2-139**
 MAC authentication bypass **2-128**
 manual control of authorization state **2-133**
 PAE as authenticator **2-132**
 periodic re-authentication
 enabling **2-136**
 time between attempts **2-140**
 quiet period between failed authentication exchanges **2-140**
 re-authenticating IEEE 802.1x-enabled ports **2-135**
 resetting configurable IEEE 802.1x parameters **2-121**
 switch-to-authentication server retransmission time **2-140**
 switch-to-client frame-retransmission number **2-130 to 2-131**
 switch-to-client retransmission time **2-140**
 test for IEEE 802.1x readiness **2-138**
- port-channel load-balance command **2-370**
- Port Fast, for spanning tree **2-697**
- port ranges, defining **2-99**
- ports, debugging **B-71**
- ports, protected **2-748**
- port security
 aging **2-744**
- debug messages, display **B-73**
 enabling **2-739**
 violation error recovery **2-151**
- port trust states for QoS **2-335**
- port types, MVR **2-345**
- power information, displaying **2-465**
- power inline command **2-372**
- power inline consumption command **2-375**
- power inline police command **2-377**
- Power over Ethernet
 See PoE
- priority-queue command **2-380**
- priority value, stack member **2-622, 2-721**
- privileged EXEC mode **1-2, 1-3**
- product identification information, displaying **2-494**
- protected ports, displaying **2-486**
- pruning
 VLANs **2-750**
- VTP
 displaying interface information **2-480**
 enabling **2-783**
- pruning-eligible VLAN list **2-751**
- PVST+
 See STP
-
- Q**
- QoS
 auto-QoS
 configuring **2-47**
 debug messages, display **B-4**
 displaying **2-425**
- class maps
 creating **2-67**
 defining the match criteria **2-296**
 displaying **2-434**
- defining the CoS value for an incoming packet **2-305**
- displaying configuration information **2-425, 2-566**
- DSCP transparency **2-317**

- DSCP trusted ports
- applying DSCP-to-DSCP-mutation map to [2-307](#)
 - defining DSCP-to-DSCP-mutation map [2-309](#)
- egress queues
- allocating buffers [2-313](#)
 - defining the CoS output queue threshold map [2-331](#)
 - defining the DSCP output queue threshold map [2-333](#)
 - displaying buffer allocations [2-570](#)
 - displaying CoS output queue threshold map [2-574](#)
 - displaying DSCP output queue threshold map [2-574](#)
 - displaying queueing strategy [2-570](#)
 - displaying queue-set settings [2-577](#)
 - enabling bandwidth shaping and scheduling [2-709](#)
 - enabling bandwidth sharing and scheduling [2-711](#)
 - limiting the maximum output on a port [2-707](#)
 - mapping a port to a queue-set [2-382](#)
 - mapping CoS values to a queue and threshold [2-331](#)
 - mapping DSCP values to a queue and threshold [2-333](#)
 - setting maximum and reserved memory allocations [2-315](#)
 - setting WTD thresholds [2-315](#)
- enabling [2-301](#)
- ingress queues
- allocating buffers [2-321](#)
 - assigning SRR scheduling weights [2-319](#)
 - defining the CoS input queue threshold map [2-323](#)
 - defining the DSCP input queue threshold map [2-325](#)
 - displaying buffer allocations [2-570](#)
 - displaying CoS input queue threshold map [2-574](#)
 - displaying DSCP input queue threshold map [2-574](#)
 - displaying queueing strategy [2-570](#)
- displaying settings for [2-568](#)
- enabling the priority queue [2-327](#)
- mapping CoS values to a queue and threshold [2-323](#)
- mapping DSCP values to a queue and threshold [2-325](#)
- setting WTD thresholds [2-329](#)
- maps
- defining [2-309, 2-323, 2-325, 2-331, 2-333](#)
 - displaying [2-574](#)
- policy maps
- applying an aggregate policer [2-366](#)
 - applying to an interface [2-404, 2-409](#)
 - creating [2-368](#)
 - defining policers [2-303, 2-364](#)
 - displaying policers [2-567](#)
 - displaying policy maps [2-598](#)
 - hierarchical [2-368](#)
 - policed-DSCP map [2-309](#)
 - setting DSCP or IP precedence values [2-407](#)
 - traffic classifications [2-65](#)
 - trust states [2-763](#)
 - port trust states [2-335](#)
 - queues, enabling the expedite [2-380](#)
- statistics
- in-profile and out-of-profile packets [2-570](#)
 - packets enqueued or dropped [2-570](#)
 - sent and received CoS values [2-570](#)
 - sent and received DSCP values [2-570](#)
 - trusted boundary for IP phones [2-335](#)
- quality of service
- See QoS
- querytime, MVR [2-342](#)
- queue-set command [2-382](#)
-
- R**
- radius-server dead-criteria command [2-383](#)
- radius-server host command [2-385](#)

rapid per-VLAN spanning-tree plus

 See STP

rapid PVST+

 See STP

rcommand command **2-387**

re-authenticating IEEE 802.1x-enabled ports **2-135**

re-authentication

 periodic **2-136**

 time between attempts **2-140**

receiver ports, MVR **2-345**

receiving flow-control packets **2-156**

recovery mechanism

 causes **2-151**

 display **2-71, 2-431, 2-467, 2-471**

 timer interval **2-151**

redundancy for cluster switches **2-96**

reload command **2-389**

remote command **2-391**

remote-span command **2-393**

Remote Switched Port Analyzer

 See RSPAN

rename (boot loader) command **A-17**

renew ip dhcp snooping database command **2-395**

reset (boot loader) command **A-18**

resource templates, displaying **2-608**

restricted VLAN

 See dot1x auth-fail vlan

rmdir (boot loader) command **A-19**

rmon collection stats command **2-399**

root guard, for spanning tree **2-670**

RSPAN

 configuring **2-337**

 displaying **2-580**

 filter RSPAN traffic **2-337**

 remote-span command **2-393**

 sessions

 displaying **2-580**

S

SDM mismatch mode **2-623**

sdm prefer command **2-400**

SDM templates

 displaying **2-608**

 dual IPv4 and IPv6 **2-400**

secure ports, limitations **2-741**

sending flow-control packets **2-156**

service password-recovery command **2-402**

service-policy command **2-404**

session command **2-406**

set (boot loader) command **A-20**

set command **2-407**

setup command **2-409**

setup express command **2-412**

shell trigger command **2-414**

show access-lists command **2-416**

show archive status command **2-419**

show arp access-list command **2-420**

show authentication command **2-421**

show auto qos command **2-425**

show boot command **2-429**

show cable-diagnostics tdr command **2-431**

show cisp command **2-433**

show class-map command **2-434**

show cluster candidates command **2-437**

show cluster command **2-435**

show cluster members command **2-439**

show controllers cpu-interface command **2-441**

show controllers ethernet-controller command **2-443**

show controllers power inline command **2-450**

show controllers tcam command **2-452**

show controller utilization command **2-454**

show dot1x command **2-456**

show dtp **2-460**

show eap command **2-462**

show env command **2-465**

show errdisable detect command **2-467**

- show errdisable flap-values command **2-469**
 show errdisable recovery command **2-471**
 show etherchannel command **2-473**
 show fallback profile command **2-476**
 show flowcontrol command **2-478**
 show interfaces command **2-480**
 show interfaces counters command **2-491**
 show inventory command **2-494**
 show ip arp inspection command **2-495**
 show ip dhcp snooping binding command **2-500**
 show ip dhcp snooping command **2-499**
 show ip dhcp snooping database command **2-503, 2-505**
 show ip igmp profile command **2-508**
 show ip igmp snooping address command **2-524**
 show ip igmp snooping command **2-509, 2-522**
 show ip igmp snooping groups command **2-512**
 show ip igmp snooping mrouter command **2-514, 2-526**
 show ip igmp snooping querier command **2-516, 2-528**
 show ip source binding command **2-518**
 show ipv6 route updated **2-530**
 show ip verify source command **2-520**
 show lacp command **2-532**
 show link state group command **2-539**
 show location **2-536**
 show mac access-group command **2-541**
 show mac address-table address command **2-545**
 show mac address-table aging time command **2-547**
 show mac address-table command **2-543**
 show mac address-table count command **2-549**
 show mac address-table dynamic command **2-551**
 show mac address-table interface command **2-553**
 show mac address-table learning command **2-555**
 show mac address-table move update command **2-556**
 show mac address-table notification command **2-78, 2-558, B-27**
 show mac address-table static command **2-560**
 show mac address-table vlan command **2-562**
 show macro auto command **2-564**
 show mls qos aggregate-policer command **2-567**
 show mls qos command **2-566**
 show mls qos input-queue command **2-568**
 show mls qos interface command **2-570**
 show mls qos maps command **2-574**
 show mls qos queue-set command **2-577**
 show mls qos vlan command **2-579**
 show monitor command **2-580**
 show mvr command **2-583**
 show mvr interface command **2-585**
 show mvr members command **2-587**
 show network-policy profile command **2-589**
 show nmfp command **2-590**
 show pagp command **2-593**
 show parser macro command **2-595**
 show platform acl command **C-2**
 show platform backup interface command **C-3**
 show platform etherchannel command **C-4**
 show platform forward command **C-5**
 show platform frontend-controller command **C-7**
 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 stack manager command **C-28**
 show platform stp-instance command **C-27**
 show platform tb command **C-32**
 show platform tcam command **C-34**
 show platform vlan command **C-36**
 show policy-map command **2-598**
 show port security command **2-600**

- show power inline command **2-603**
- show sdm prefer command **2-608**
- show setup express command **2-610**
- show shell command **2-611**
- show spanning-tree command **2-614**
- show storm-control command **2-620**
- show switch command **2-622**
- show system mtu command **2-627**
- show trust command **2-763**
- show udld command **2-629**
- show version command **2-632**
- show vlan command **2-634**
- show vlan command, fields **2-635**
- show vmps command **2-637**
- show vtp command **2-640**
- shutdown command **2-645**
- shutdown vlan command **2-646**
- small violation-rate command **2-647**
- Smartports macros
See macros
- SNMP host, specifying **2-653**
- SNMP informs, enabling the sending of **2-649**
- snmp-server enable traps command **2-649**
- snmp-server host command **2-653**
- snmp trap mac-notification change command **2-657**
- SNMP traps
enabling MAC address notification trap **2-657**
enabling the MAC address notification feature **2-266**
enabling the sending of **2-649**
- SoftPhone
See Cisco SoftPhone
- software images
copying **2-6**
deleting **2-102**
downloading **2-9**
upgrading **2-6, 2-9**
uploading **2-15**
- software version, displaying **2-632**
- source ports, MVR **2-345**
- SPAN
configuring **2-337**
debug messages, display **B-28**
displaying **2-580**
filter SPAN traffic **2-337**
sessions
add interfaces to **2-337**
displaying **2-580**
start new **2-337**
- spanning-tree backbonefast command **2-659**
- spanning-tree bpdufilter command **2-660**
- spanning-tree bpduguard command **2-662**
- spanning-tree cost command **2-664**
- spanning-tree etherchannel command **2-666**
- spanning-tree extend system-id command **2-668**
- spanning-tree guard command **2-670**
- spanning-tree link-type command **2-672**
- spanning-tree loopguard default command **2-674**
- spanning-tree mode command **2-676**
- spanning-tree mst configuration command **2-678**
- spanning-tree mst cost command **2-680**
- spanning-tree mst forward-time command **2-682**
- spanning-tree mst hello-time command **2-683**
- spanning-tree mst max-age command **2-684**
- spanning-tree mst max-hops command **2-685**
- spanning-tree mst port-priority command **2-687**
- spanning-tree mst pre-standard command **2-689**
- spanning-tree mst priority command **2-690**
- spanning-tree mst root command **2-691**
- spanning-tree portfast (global configuration) command **2-695**
- spanning-tree portfast (interface configuration) command **2-697**
- spanning-tree port-priority command **2-693**
- Spanning Tree Protocol
See STP
- spanning-tree transmit hold-count command **2-699**
- spanning-tree uplinkfast command **2-700**
- spanning-tree vlan command **2-702**

- speed command **2-705**
- srr-queue bandwidth limit command **2-707**
- srr-queue bandwidth share command **2-711**
- SSH, configuring version **2-224**
- stack-mac persistent timer command **2-713**
- stack member
- access **2-406**
 - number **2-622, 2-724**
 - priority value **2-721**
 - provisioning **2-722**
 - reloading **2-389**
- stacks, switch
- disabling a member **2-719**
 - enabling a member **2-719**
 - MAC address **2-713**
 - provisioning a new member **2-722**
 - reloading **2-389**
 - stack member access **2-406**
 - stack member number **2-622, 2-724**
 - stack member priority value **2-622, 2-721**
- static-access ports, configuring **2-726**
- statistics, Ethernet group **2-399**
- sticky learning, enabling **2-739**
- storm-control command **2-716**
- STP
- BackboneFast **2-659**
 - counters, clearing **2-83**
 - debug messages, display
 - BackboneFast events **B-77**
 - MSTP **B-80**
 - optimized BPDUs handling **B-79**
 - spanning-tree activity **B-75**
 - switch shim **B-82**
 - transmitted and received BPDUs **B-78**
 - UplinkFast **B-84**
 - detection of indirect link failures **2-659**
 - EtherChannel misconfiguration **2-666**
 - extended system ID **2-668**
 - path cost **2-664**
- protocol modes **2-676**
- root port
- accelerating choice of new **2-700**
 - loop guard **2-670**
 - preventing from becoming designated **2-670**
 - restricting which can be root **2-670**
 - root guard **2-670**
 - UplinkFast **2-700**
- root switch
- affects of extended system ID **2-668, 2-703**
 - hello-time **2-702**
 - interval between BDPU messages **2-702**
 - interval between hello BPDU messages **2-702**
 - max-age **2-702**
 - port priority for selection of **2-693**
 - primary or secondary **2-702**
 - switch priority **2-702**
- state changes
- blocking to forwarding state **2-697**
 - enabling BPDU filtering **2-660, 2-695**
 - enabling BPDU guard **2-662, 2-695**
 - enabling Port Fast **2-695, 2-697**
 - enabling timer to recover from error state **2-151**
 - forward-delay time **2-702**
 - length of listening and learning states **2-702**
 - shutting down Port Fast-enabled ports **2-695**
 - state information display **2-614**
 - VLAN options **2-690, 2-702**
- Switched Port Analyzer
- See SPAN
- switchport access command **2-726**
- switchport backup interface command **2-728**
- switchport block command **2-732**
- switchport host command **2-734**
- switchport mode command **2-735**
- switchport nonegotiate command **2-737**
- switchport port-security aging command **2-744**
- switchport port-security command **2-739**
- switchport priority extend command **2-746**

switchport protected command **2-748**
 switchports, displaying **2-480**
 switchport trunk command **2-750**
 switchport voice vlan command **2-753**
 switch priority command **2-719, 2-721**
 switch provision command **2-722**
 switch renumber command **2-724**
 system message logging **2-252**
 system message logging, save message to flash **2-253**
 system mtu command **2-755**
 system resource templates **2-400**

T

tar files, creating, listing, and extracting **2-12**
 TDR, running **2-757**
 Telnet, using to communicate to cluster switches **2-387**
 temperature information, displaying **2-465**
 templates, SDM **2-400**
 templates, system resources **2-400**
 test cable-diagnostics tdr command **2-757**
 traceroute mac command **2-758**
 traceroute mac ip command **2-761**
 trunking, VLAN mode **2-735**
 trunk mode **2-735**
 trunk ports **2-735**
 trunks, to non-DTP device **2-736**
 trusted boundary for QoS **2-335**
 trusted port states for QoS **2-335**
 type (boot loader) command **A-23**

U

UDLD
 aggressive mode **2-765, 2-767**
 debug messages, display **B-92**
 enable globally **2-765**
 enable per interface **2-767**

error recovery timer **2-151**
 message timer **2-765**
 normal mode **2-765, 2-767**
 reset a shutdown interface **2-769**
 status **2-629**
 udld command **2-765**
 udld port command **2-767**
 udld reset command **2-769**
 unicast storm control **2-716**
 UniDirectional Link Detection
 See UDLD
 unknown multicast traffic, preventing **2-732**
 unknown unicast traffic, preventing **2-732**
 unset (boot loader) command **A-24**
 upgrading
 software images
 copying **2-6**
 downloading **2-9**
 monitoring status of **2-419**
 UplinkFast, for STP **2-700**
 user EXEC mode **1-2, 1-3**

V

version (boot loader) command **A-26**
 version mismatch mode **2-623, C-29**
 vlan (global configuration) command **2-770**
 VLAN configuration
 rules **2-773**
 saving **2-770**
 VLAN configuration mode
 commands
 VLAN **2-775**
 VTP **2-788**
 description **1-4**
 entering **2-770, 2-776**
 summary **1-3**
 VLAN ID range **2-770**

VLAN Query Protocol

See VQP

VLANS

adding **2-770**

configuring **2-770, 2-775**

debug messages, display

ISL **B-88**

VLAN IOS file system error tests **B-87**

VLAN manager activity **B-85**

VTP **B-90**

displaying configurations **2-634**

enabling guest VLAN supplicant **2-111, 2-122, 2-155**

extended-range **2-770**

MAC addresses

displaying **2-562**

number of **2-549**

media types **2-773**

normal-range **2-770, 2-775**

restarting **2-646**

saving the configuration **2-770**

shutting down **2-646**

SNMP traps for VTP **2-651, 2-654**

suspending **2-646**

VLAN Trunking Protocol

See VTP

VM mode **2-623, C-29**

VMPS

configuring servers **2-780**

displaying **2-637**

error recovery timer **2-151**

reconfirming dynamic VLAN assignments **2-777**

vmmps reconfirm (global configuration) command **2-778**

vmmps reconfirm (privileged EXEC) command **2-777**

vmmps retry command **2-779**

vmmps server command **2-780**

voice VLAN

configuring **2-753**

setting port priority **2-746**

VQP

and dynamic-access ports **2-727**

clearing client statistics **2-85**

displaying information **2-637**

per-server retry count **2-779**

reconfirmation interval **2-778**

reconfirming dynamic VLAN assignments **2-777**

VTP

changing characteristics **2-782**

clearing pruning counters **2-86**

configuring

domain name **2-782**

file name **2-782**

mode **2-782**

password **2-783**

counters display fields **2-641**

displaying information **2-640**

enabling

pruning **2-783**

Version 2 **2-783**

enabling per port **2-787**

mode **2-782**

pruning **2-783**

saving the configuration **2-770**

statistics **2-640**

status **2-640**

status display fields **2-643**

vtp (global configuration) command **2-782**

vtp interface configuration) command **2-787**

vtp primary command **2-789**