



INDEX

A

- aaa accounting dot1x command [2-1](#)
- aaa authentication dot1x command [2-3](#)
- aaa authorization network command [2-5, 2-28, 2-34, 2-36, 2-38, 2-40, 2-42, 2-131, 2-292, 2-485, B-8, B-35](#)
- AAA methods [2-3](#)
- access control entries
 - See ACEs
- access control lists
 - See ACLs
- access groups
 - IP [2-181](#)
 - MAC, displaying [2-594](#)
- access list, IPv6 [2-249](#)
- access map configuration mode [2-318](#)
- access mode [2-778](#)
- access ports [2-778](#)
- ACEs [2-122, 2-395](#)
- ACLs
 - deny [2-120](#)
 - displaying [2-461](#)
 - for non-IP protocols [2-296](#)
 - IP [2-181](#)
 - matching [2-318](#)
 - on Layer 2 interfaces [2-181](#)
 - permit [2-393](#)
- action command [2-6](#)
- address aliasing [2-369](#)
- aggregate-port learner [2-381](#)
- alarm command [2-12](#)
- alarm facility fcs-hysteresis command [2-8](#)
- alarm facility power-supply command [2-9](#)
- alarm facility temperature command [2-10](#)
- alarm IDs [2-13, 2-464](#)
- alarm profile
 - attaching to a port [2-14](#)
 - creating [2-12](#)
 - displaying [2-465](#)
- alarm profile (global configuration) command [2-12](#)
- alarm profile (interface configuration) command [2-14](#)
- alarm profile configuration mode [2-12](#)
- allowed VLANs [2-798](#)
- archive download-sw command [2-16](#)
- archive tar command [2-19](#)
- archive upload-sw command [2-22](#)
- arp access-list command [2-24](#)
- authentication command bounce-port ignore [2-26](#)
- authentication command disable-port ignore [2-27](#)
- authentication control-direction command [2-28](#)
- authentication event command [2-30](#)
- authentication failed VLAN
 - See dot1x auth-fail vlan
- authentication fallback command [2-34](#)
- authentication host-mode command [2-36](#)
- authentication mac-move permit command [2-38](#)
- authentication open command [2-40](#)
- authentication order command [2-42](#)
- authentication periodic command [2-44](#)
- authentication port-control command [2-46](#)
- authentication priority command [2-48](#)
- authentication timer command [2-50](#)
- authentication violation command [2-52](#)
- auth-fail max-attempts
 - See dot1x auth-fail max-attempts
- auth-fail vlan

See dot1x auth-fail vlan

auth open command [2-40](#)

auth order command [2-42](#)

authorization state of controlled port [2-148](#)

auth timer command [2-50](#)

autonegotiation of duplex mode [2-159](#)

auto qos voip command [2-54](#)

B

BackboneFast, for STP [2-708](#)

backup interfaces

- configuring [2-771](#)
- displaying [2-529](#)

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

boot config-file command [2-58](#)

boot enable-break command [2-59](#)

boot fast command [2-60](#)

boot helper command [2-61](#)

boot helper-config file command [2-62](#)

booting

- Cisco IOS image [2-65](#)
- displaying environment variables [2-478](#)
- interrupting [2-59](#)
- manually [2-63](#)

boot loader

- accessing [A-1](#)
- booting

 - Cisco IOS image [A-2](#)
 - helper image [2-61](#)

- directories

 - creating [A-15](#)
 - displaying a list of [A-8](#)
 - removing [A-19](#)

- displaying

 - available commands [A-13](#)
 - memory heap utilization [A-14](#)
 - version [A-27](#)

- environment variables

- described [A-20](#)
- displaying settings [A-20](#)
- location of [A-21](#)
- setting [A-20](#)
- unsetting [A-25](#)

files

- copying [A-6](#)
- deleting [A-7](#)
- displaying a list of [A-8](#)
- displaying the contents of [A-4, A-16, A-23](#)
- renaming [A-17](#)

file system

- formatting [A-11](#)
- initializing flash [A-10](#)
- running a consistency check [A-12](#)
- resetting the system [A-18](#)

boot manual command [2-63](#)

boot private-config-file command [2-64](#)

boot system command [2-65](#)

BPDU filtering, for spanning tree [2-709, 2-744](#)

BPDU guard, for spanning tree [2-711, 2-744](#)

broadcast storm control [2-762](#)

C

candidate switches

- See clusters

cat (boot loader) command [A-4](#)

channel-group command [2-66](#)

channel-protocol command [2-69](#)

Cisco SoftPhone

- auto-QoS configuration [2-54](#)
- trusting packets sent from [2-360](#)

CISP

- See Client Information Signalling Protocol

cisp

- debug platform cisp command [B-35](#)

cisp enable command [2-72](#)

class command [2-73](#)

- class-map command [2-75](#)
 - class maps
 - creating [2-75](#)
 - defining the match criteria [2-320](#)
 - displaying [2-486](#)
 - class of service
 - See CoS
 - clear dot1x command [2-77](#)
 - clear eap sessions command [2-78](#)
 - clear errdisable interface [2-79](#)
 - clear ip arp inspection log command [2-80](#)
 - clear ip arp inspection statistics command [2-81](#)
 - clear ipc command [2-84](#)
 - clear ip dhcp snooping database command [2-82](#)
 - clear ipv6 dhcp conflict command [2-85](#)
 - clear l2protocol-tunnel counters command [2-86](#)
 - clear lacp command [2-87](#)
 - clear mac address-table command [2-88, 2-89](#)
 - clear nmsp statistics command [2-90](#)
 - clear pagp command [2-91, 2-95](#)
 - clear port-security command [2-92](#)
 - clear psp counter [2-94](#)
 - clear psp counter command [2-94](#)
 - clear spanning-tree counters command [2-96](#)
 - clear spanning-tree detected-protocols command [2-97](#)
 - clear vmps statistics command [2-98](#)
 - clear vtp counters command [2-99](#)
 - Client Information Signalling Protocol [2-72, 2-131, 2-485, B-8, B-35](#)
 - cluster commander-address command [2-100](#)
 - cluster discovery hop-count command [2-102](#)
 - cluster enable command [2-103](#)
 - cluster holdtime command [2-104](#)
 - cluster member command [2-105](#)
 - cluster outside-interface command [2-107](#)
 - cluster run command [2-108](#)
 - clusters
 - adding candidates [2-105](#)
 - binding to HSRP group [2-109](#)
 - building manually [2-105](#)
 - communicating with
 - devices outside the cluster [2-107](#)
 - members by using Telnet [2-425](#)
 - debug messages, display [B-9](#)
 - displaying
 - candidate switches [2-489](#)
 - debug messages [B-9](#)
 - member switches [2-491](#)
 - status [2-487](#)
 - hop-count limit for extended discovery [2-102](#)
 - HSRP standby groups [2-109](#)
 - redundancy [2-109](#)
 - SNMP trap [2-699](#)
 - cluster standby-group command [2-109](#)
 - cluster timer command [2-111](#)
 - command modes defined [1-1](#)
 - command switch
 - See clusters
 - configuration files
 - password recovery disable considerations [A-1](#)
 - specifying the name [2-58, 2-64](#)
 - configuring multiple interfaces [2-177](#)
 - config-vlan mode
 - commands [2-820](#)
 - copy (boot loader) command [A-6](#)
 - CoS
 - assigning default value to incoming packets [2-330](#)
 - assigning to Layer 2 protocol packets [2-277](#)
 - overriding the incoming value [2-330](#)
 - CoS-to-DSCP map [2-334](#)
 - CPU ASIC statistics, displaying [2-493](#)
 - crashinfo files [2-169](#)
 - critical VLAN [2-31](#)
-
- ## D
- debug authentication [B-2](#)
 - debug auto qos command [B-4](#)

- debug backup command [B-6, B-7](#)
- debug cip [B-7](#)
- debug cisp command [B-8](#)
- debug cluster command [B-9](#)
- debug dot1x command [B-11](#)
- debug dtp command [B-12](#)
- debug eap command [B-13, B-88](#)
- debug etherchannel command [B-14](#)
- debug interface command [B-15](#)
- debug ip dhcp snooping command [B-16](#)
- debug ip igmp filter command [B-18](#)
- debug ip igmp max-groups command [B-19](#)
- debug ip igmp snooping command [B-20](#)
- debug ip verify source packet command [B-17](#)
- debug lacp command [B-21](#)
- debug lldp packets command [B-22](#)
- debug mac-notification command [B-23](#)
- debug matm command [B-24](#)
- debug matm move update command [B-25](#)
- debug monitor command [B-26](#)
- debug mvrdbg command [B-28](#)
- debug nmsp command [B-29](#)
- debug nvram command [B-30](#)
- debug pagp command [B-31](#)
- debug platform acl command [B-32](#)
- debug platform backup interface command [B-34](#)
- debug platform cisp command [B-35](#)
- debug platform cpu-queues command [B-36](#)
- debug platform dot1x command [B-38](#)
- debug platform etherchannel command [B-39](#)
- debug platform fallback-bridging command [B-40](#)
- debug platform forw-tcam command [B-41](#)
- debug platform ip arp inspection command [B-42](#)
- debug platform ip dhcp command [B-43](#)
- debug platform ip igmp snooping command [B-44](#)
- debug platform ip multicast command [B-46](#)
- debug platform ip source-guard command [B-48](#)
- debug platform ip unicast command [B-49](#)
- debug platform led command [B-51](#)
- debug platform matm command [B-52](#)
- debug platform messaging application command [B-53](#)
- 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 supervisor-asic command [B-64](#)
- debug platform sw-bridge command [B-65](#)
- debug platform tcam command [B-66](#)
- debug platform ulld command [B-69](#)
- debug platform vlan command [B-70](#)
- debug pm command [B-71](#)
- debug port-security command [B-73](#)
- debug profinet alarm [B-74](#)
- debug profinet cyclic [B-76](#)
- debug profinet error [B-78](#)
- debug profinet packet [B-80](#)
- debug profinet platform [B-82](#)
- debug profinet topology [B-84](#)
- debug profinet trace [B-86](#)
- debug qos-manager command [B-89](#)
- debug spanning-tree backbonefast command [B-92](#)
- debug spanning-tree bpdu command [B-93](#)
- debug spanning-tree bpdu-opt command [B-94](#)
- debug spanning-tree command [B-90](#)
- debug spanning-tree mstp command [B-95](#)
- debug spanning-tree switch command [B-97](#)
- debug spanning-tree uplinkfast command [B-99](#)
- debug sw-vlan command [B-100](#)
- debug sw-vlan ifs command [B-102](#)
- debug sw-vlan notification command [B-103](#)
- debug sw-vlan vtp command [B-105](#)
- debug ulld command [B-107](#)
- debug vqpc command [B-109](#)
- defaultPort profile [2-13, 2-14](#)

- define interface-range command [2-112](#)
- delete (boot loader) command [A-7](#)
- delete command [2-114](#)
- deny (ARP access-list configuration) command [2-115](#)
- deny (IPv6) command [2-117](#)
- deny command [2-120](#)
- detect mechanism, causes [2-160](#)
- DHCP snooping
 - accepting untrusted packets from edge switch [2-209](#)
 - enabling
 - on a VLAN [2-216](#)
 - option 82 [2-207, 2-209](#)
 - trust on an interface [2-214](#)
 - error recovery timer [2-166](#)
 - rate limiting [2-213](#)
- DHCP snooping binding database
 - binding file, configuring [2-205](#)
 - bindings
 - adding [2-203](#)
 - deleting [2-203](#)
 - displaying [2-548](#)
 - clearing database agent statistics [2-82](#)
 - database agent, configuring [2-205](#)
 - displaying
 - binding entries [2-548](#)
 - database agent status [2-551, 2-553](#)
 - renewing [2-429](#)
- dir (boot loader) command [A-8](#)
- directories, deleting [2-114](#)
- domain name, VTP [2-835](#)
- dot1x auth-fail max-attempts [2-125](#)
- dot1x auth-fail vlan [2-127](#)
- dot1x command [2-123](#)
- dot1x control-direction command [2-129](#)
- dot1x credentials (global configuration) command [2-131](#)
- dot1x critical global configuration command [2-132](#)
- dot1x critical interface configuration command [2-134](#)
- dot1x default command [2-136](#)
- dot1x fallback command [2-137](#)
- dot1x guest-vlan command [2-138](#)
- dot1x host-mode command [2-140](#)
- dot1x initialize command [2-142](#)
- dot1x mac-auth-bypass command [2-143](#)
- dot1x max-reauth-req command [2-145](#)
- dot1x max-req command [2-146](#)
- dot1x pae command [2-147](#)
- dot1x port-control command [2-148](#)
- dot1x re-authenticate command [2-150](#)
- dot1x reauthentication command [2-151](#)
- dot1x supplicant force-multicast command [2-152](#)
- dot1x test eapol-capable command [2-153](#)
- dot1x test timeout command [2-154](#)
- dot1x timeout command [2-155](#)
- dot1x violation-mode command [2-157](#)
- dropping packets, with ACL matches [2-6](#)
- drop threshold, Layer 2 protocol tunneling [2-274](#)
- DSCP-to-CoS map [2-334](#)
- DSCP-to-DSCP-mutation map [2-334](#)
- DTP [2-779](#)
- DTP flap
 - error detection for [2-160](#)
 - error recovery timer [2-166](#)
- DTP negotiation [2-783](#)
- dual-purpose uplink ports
 - selecting the type [2-324](#)
- duplex command [2-158](#)
- dynamic-access ports
 - configuring [2-767](#)
 - restrictions [2-768](#)
- dynamic ARP inspection
 - ARP ACLs
 - apply to a VLAN [2-189](#)
 - define [2-24](#)
 - deny packets [2-115](#)
 - display [2-469](#)
 - permit packets [2-385](#)
 - clear
 - log buffer [2-80](#)

- statistics [2-81](#)
- display
 - ARP ACLs [2-469](#)
 - configuration and operating state [2-543](#)
 - log buffer [2-543](#)
 - statistics [2-543](#)
 - trust state and rate limit [2-543](#)
- enable per VLAN [2-199](#)
- error detection for [2-160](#)
- log buffer
 - clear [2-80](#)
 - configure [2-193](#)
 - display [2-543](#)
- rate-limit incoming ARP packets [2-191](#)
- statistics
 - clear [2-81](#)
 - display [2-543](#)
- trusted interface state [2-195](#)
- type of packet logged [2-200](#)
- validation checks [2-197](#)
- dynamic auto VLAN membership mode [2-778](#)
- dynamic desirable VLAN membership mode [2-778](#)
- Dynamic Host Configuration Protocol (DHCP)
 - See DHCP snooping
- Dynamic Trunking Protocol
 - See DTP

E

- EAP-request/identity frame
 - maximum number to send [2-146](#)
 - response time before retransmitting [2-155](#)
- environmental alarms, displaying [2-467](#)
- environment variables, displaying [2-478](#)
- errdisable detect cause command [2-160](#)
- errdisable detect cause small-frame comand [2-163](#)
- errdisable recovery cause small-frame [2-165](#)
- errdisable recovery command [2-166](#)
- error conditions, displaying [2-517](#)
- error disable detection [2-160](#)
- error-disabled interfaces, displaying [2-529](#)
- EtherChannel
 - assigning Ethernet interface to channel group [2-66](#)
 - creating port-channel logical interface [2-175](#)
 - debug EtherChannel/PAgP, display [B-14](#)
 - debug platform-specific events, display [B-39](#)
 - displaying [2-520](#)
 - enabling Layer 2 protocol tunneling for
 - LACP [2-275](#)
 - PAgP [2-275](#)
 - UDLD [2-275](#)
 - interface information, displaying [2-529](#)
- LACP
 - clearing channel-group information [2-87](#)
 - debug messages, display [B-21](#)
 - displaying [2-586](#)
 - modes [2-66](#)
 - port priority for hot-standby ports [2-278](#)
 - restricting a protocol [2-69](#)
 - system priority [2-280](#)
- load-distribution methods [2-403](#)
- PAgP
 - aggregate-port learner [2-381](#)
 - clearing channel-group information [2-91](#)
 - debug messages, display [B-31](#)
 - displaying [2-643](#)
 - error detection for [2-160](#)
 - error recovery timer [2-166](#)
 - learn method [2-381](#)
 - modes [2-66](#)
 - physical-port learner [2-381](#)
 - priority of interface for transmitted traffic [2-383](#)
- Ethernet controller, internal register display [2-495](#)
- Ethernet statistics, collecting [2-445](#)
- exception crashinfo command [2-169](#)
- extended discovery of candidate switches [2-102](#)
- extended-range VLANs
 - and allowed VLAN list [2-798](#)

- and pruning-eligible list [2-798](#)
- configuring [2-819](#)

extended system ID for STP [2-717](#)

F

facility alarm relays, displaying [2-523](#)

facility alarm status, displaying [2-524](#)

fallback profile command [2-170](#)

fallback profiles, displaying [2-525](#)

FCS bit error rate

- displaying [2-526](#)
- fluctuation threshold [2-8](#)
- setting [2-172](#)

FCS hysteresis threshold [2-8](#)

fcs-threshold command [2-172](#)

file name, VTP [2-835](#)

files, deleting [2-114](#)

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

flexible authentication ordering [2-42](#)

Flex Links

- configuring [2-771](#)
- configuring preferred VLAN [2-773](#)
- displaying [2-529](#)

flowcontrol command [2-173](#)

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

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

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

frame check sequence

- See FCS

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

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

G

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

H

hardware ACL statistics [2-461](#)

help (boot loader) command [A-13](#)

hierarchical policy maps [2-400](#)

hop-count limit for clusters [2-102](#)

host connection, port configuration [2-777](#)

host ports, private VLANs [2-781](#)

Hot Standby Router Protocol

- See HSRP

HSRP

- binding HSRP group to cluster [2-109](#)
- standby group [2-109](#)

I

IEEE 802.1Q trunk ports and native VLANs [2-826](#)

IEEE 802.1Q tunnel ports

- displaying [2-506](#)
- limitations [2-779](#)

IEEE 802.1x

- and switchport modes [2-779](#)
- violation error recovery [2-166](#)
- See also port-based authentication

IEEE 802.1X Port Based Authentication

- enabling guest VLAN supplicant [2-126, 2-137, 2-171](#)

IGMP filters

- applying [2-219](#)
- debug messages, display [B-18](#)

IGMP groups, setting maximum [2-221](#)

IGMP maximum groups, debugging [B-19](#)

IGMP profiles

- creating [2-223](#)
- displaying [2-556](#)

IGMP snooping

- adding ports as a static member of a group [2-238](#)
- displaying [2-557](#)
- enabling [2-225](#)
- enabling the configurable-leave timer [2-227](#)

- enabling the Immediate-Leave feature [2-235](#)
- flooding query count [2-232](#)
- interface topology change notification behavior [2-234](#)
- querier [2-229](#)
- query solicitation [2-232](#)
- report suppression [2-231](#)
- switch topology change notification behavior [2-232](#)
- images
 - See software images
- Immediate-Leave feature, MVR [2-371](#)
- immediate-leave processing [2-235](#)
- Immediate-Leave processing, IPv6 [2-270](#)
- interface configuration mode [1-2, 1-4](#)
- interface port-channel command [2-175](#)
- interface range command [2-177](#)
- interface-range macros [2-112](#)
- interfaces
 - assigning Ethernet interface to channel group [2-66](#)
 - configuring [2-158](#)
 - configuring multiple [2-177](#)
 - creating port-channel logical [2-175](#)
 - debug messages, display [B-15](#)
 - disabling [2-695](#)
 - displaying the MAC address table [2-605](#)
 - restarting [2-695](#)
- interface speed, configuring [2-754](#)
- interface vlan command [2-179](#)
- internal registers, displaying [2-495, 2-502](#)
- Internet Group Management Protocol
 - See IGMP
- invalid GBIC
 - error detection for [2-160](#)
 - error recovery timer [2-166](#)
- ip access-group command [2-181](#)
- ip address command [2-184](#)
- IP addresses, setting [2-184](#)
- IP address matching [2-318](#)
- ip admission command [2-186](#)
- ip admission name proxy http command [2-187](#)
- ip arp inspection filter vlan command [2-189](#)
- ip arp inspection limit command [2-191](#)
- ip arp inspection log-buffer command [2-193](#)
- ip arp inspection trust command [2-195](#)
- ip arp inspection validate command [2-197](#)
- ip arp inspection vlan command [2-199](#)
- ip arp inspection vlan logging command [2-200](#)
- IP DHCP snooping
 - See DHCP snooping
- ip dhcp snooping binding command [2-203](#)
- ip dhcp snooping command [2-202](#)
- ip dhcp snooping database command [2-205](#)
- ip dhcp snooping information option allow-untrusted command [2-209](#)
- ip dhcp snooping information option command [2-207](#)
- ip dhcp snooping information option format remote-id command [2-211](#)
- ip dhcp snooping limit rate command [2-213](#)
- ip dhcp snooping trust command [2-214](#)
- ip dhcp snooping verify command [2-215](#)
- ip dhcp snooping vlan command [2-216](#)
- ip dhcp snooping vlan information option format-type circuit-id string command [2-217](#)
- ip igmp filter command [2-219](#)
- ip igmp max-groups command [2-221, 2-244, 2-246](#)
- ip igmp profile command [2-223](#)
- ip igmp snooping command [2-225](#)
- ip igmp snooping last-member-query-interval command [2-227](#)
- ip igmp snooping querier command [2-229](#)
- ip igmp snooping report-suppression command [2-231](#)
- ip igmp snooping tcn command [2-232](#)
- ip igmp snooping tcn flood command [2-234](#)
- ip igmp snooping vlan immediate-leave command [2-235](#)
- ip igmp snooping vlan mrouter command [2-236](#)
- ip igmp snooping vlan static command [2-238](#)
- IP multicast addresses [2-368](#)
- IP phones
 - auto-QoS configuration [2-54](#)
 - trusting packets sent from [2-360](#)

IP-precedence-to-DSCP map [2-334](#)
 ip source binding command [2-240](#)
 IP source guard
 disabling [2-248](#)
 displaying
 binding entries [2-564](#)
 configuration [2-565](#)
 dynamic binding entries only [2-548](#)
 enabling [2-248](#)
 static IP source bindings [2-240](#)
 ip ssh command [2-242](#)
 IPv6 access list, deny conditions [2-117](#)
 ipv6 access-list command [2-249](#)
 ipv6 address dhcp command [2-252](#)
 ipv6 dhcp client request vendor command [2-253](#)
 ipv6 dhcp ping packets command [2-254](#)
 ipv6 dhcp pool command [2-256](#)
 ipv6 dhcp server command [2-258](#)
 ipv6 mld snooping command [2-260](#)
 ipv6 mld snooping last-listener-query count
 command [2-262](#)
 ipv6 mld snooping last-listener-query-count
 command [2-262](#)
 ipv6 mld snooping last-listener-query-interval
 command [2-264](#)
 ipv6 mld snooping listener-message-suppression
 command [2-266](#)
 ipv6 mld snooping robustness-variable command [2-267](#)
 ipv6 mld snooping tcn command [2-269](#)
 ipv6 mld snooping vlan command [2-270](#)
 IPv6 SDM template [2-446](#)
 ipv6 traffic-filter command [2-272](#)
 ip verify source command [2-248](#)

J

jumbo frames
 See MTU

L

l2protocol-tunnel command [2-274](#)
 l2protocol-tunnel cos command [2-277](#)
 LACP
 See EtherChannel
 lacp port-priority command [2-278](#)
 lacp system-priority command [2-280](#)
 Layer 2 mode, enabling [2-765](#)
 Layer 2 protocol ports, displaying [2-583](#)
 Layer 2 protocol tunnel counters [2-86](#)
 Layer 2 protocol tunneling error recovery [2-275](#)
 Layer 2 traceroute
 IP addresses [2-810](#)
 MAC addresses [2-807](#)
 Layer 3 mode, enabling [2-765](#)
 line configuration mode [1-2, 1-4](#)
 Link Aggregation Control Protocol
 See EtherChannel
 link flap
 error detection for [2-160](#)
 error recovery timer [2-166](#)
 link state group command [2-286](#)
 link state track command [2-288](#)
 load-distribution methods for EtherChannel [2-403](#)
 location (global configuration) command [2-282](#)
 location (interface configuration) command [2-284](#)
 logging event command [2-289](#)
 logging file command [2-290](#)
 logical interface [2-175](#)
 loopback error
 detection for [2-160](#)
 recovery timer [2-166](#)
 loop guard, for spanning tree [2-719, 2-723](#)

M

mab request format attribute 32 command [2-292](#)
 mac access-group command [2-294](#)

- MAC access list configuration mode [2-296](#)
- mac access-list extended command [2-296](#)
- MAC access lists [2-120](#)
- MAC addresses
 - disabling MAC address learning per VLAN [2-299](#)
 - displaying
 - aging time [2-599](#)
 - all [2-597](#)
 - dynamic [2-603](#)
 - MAC address-table move updates [2-608](#)
 - notification settings [2-607, 2-610](#)
 - number of addresses in a VLAN [2-601](#)
 - per interface [2-605](#)
 - per VLAN [2-614](#)
 - static [2-612](#)
 - static and dynamic entries [2-595](#)
 - dynamic
 - aging time [2-298](#)
 - deleting [2-88](#)
 - displaying [2-603](#)
 - enabling MAC address notification [2-303](#)
 - enabling MAC address-table move update [2-301](#)
 - matching [2-318](#)
 - static
 - adding and removing [2-305](#)
 - displaying [2-612](#)
 - dropping on an interface [2-306](#)
 - tables [2-597](#)
- MAC address notification, debugging [B-23](#)
- mac address-table aging-time [2-294](#)
- mac address-table aging-time command [2-298](#)
- mac address-table learning command [2-299](#)
- mac address-table move update command [2-301](#)
- mac address-table notification command [2-303](#)
- mac address-table static command [2-305](#)
- mac address-table static drop command [2-306](#)
- macro apply command [2-308](#)
- macro description command [2-311](#)
- macro global command [2-312](#)
- macro global description command [2-315](#)
- macro name command [2-316](#)
- macros
 - adding a description [2-311](#)
 - adding a global description [2-315](#)
 - applying [2-312](#)
 - creating [2-316](#)
 - displaying [2-645](#)
 - interface range [2-112, 2-177](#)
 - specifying parameter values [2-312](#)
 - tracing [2-312](#)
- maps
 - QoS
 - defining [2-334](#)
 - displaying [2-624](#)
 - VLAN
 - creating [2-824](#)
 - defining [2-318](#)
 - displaying [2-686](#)
- match (access-map configuration) command [2-318](#)
- match (class-map configuration) command [2-320](#)
- maximum transmission unit
 - See MTU
- mdix auto command [2-323](#)
- media-type command [2-324](#)
- member switches
 - See clusters
- memory (boot loader) command [A-14](#)
- mkdir (boot loader) command [A-15](#)
- MLD snooping
 - configuring [2-266, 2-267](#)
 - configuring queries [2-262, 2-264](#)
 - configuring topology change notification [2-269](#)
 - displaying [2-573, 2-575, 2-579](#)
 - enabling [2-260](#)
- MLD snooping on a VLAN, enabling [2-270](#)
- mls qos aggregate-policer command [2-328](#)
- mls qos command [2-326](#)
- mls qos cos command [2-330](#)

- mls qos dscp-mutation command [2-332](#)
- mls qos map command [2-334](#)
- mls qos queue-set output buffers command [2-338](#)
- mls qos queue-set output threshold command [2-340](#)
- mls qos rewrite ip dscp command [2-342](#)
- mls qos srr-queue input bandwidth command [2-344](#)
- mls qos srr-queue input buffers command [2-346](#)
- mls qos-srr-queue input cos-map command [2-348](#)
- mls qos srr-queue input dscp-map command [2-350](#)
- mls qos srr-queue input priority-queue command [2-352](#)
- mls qos srr-queue input threshold command [2-354](#)
- mls qos-srr-queue output cos-map command [2-356](#)
- mls qos srr-queue output dscp-map command [2-358](#)
- mls qos trust command [2-360](#)
- mls qos vlan-based command [2-362](#)
- mode, MVR [2-368](#)
- modes, commands [1-1](#)
- monitor session command [2-363](#)
- more (boot loader) command [A-16](#)
- MSTP
 - displaying [2-668](#)
 - interoperability [2-97](#)
 - link type [2-721](#)
 - MST region
 - aborting changes [2-727](#)
 - applying changes [2-727](#)
 - configuration name [2-727](#)
 - configuration revision number [2-727](#)
 - current or pending display [2-727](#)
 - displaying [2-668](#)
 - MST configuration mode [2-727](#)
 - VLANs-to-instance mapping [2-727](#)
 - path cost [2-729](#)
 - protocol mode [2-725](#)
 - restart protocol migration process [2-97](#)
 - root port
 - loop guard [2-719](#)
 - preventing from becoming designated [2-719](#)
 - restricting which can be root [2-719](#)
 - root guard [2-719](#)
 - root switch
 - affects of extended system ID [2-717](#)
 - hello-time [2-732, 2-740](#)
 - interval between BPDU messages [2-733](#)
 - interval between hello BPDU messages [2-732, 2-740](#)
 - max-age [2-733](#)
 - maximum hop count before discarding BPDU [2-734](#)
 - port priority for selection of [2-736](#)
 - primary or secondary [2-740](#)
 - switch priority [2-739](#)
 - state changes
 - blocking to forwarding state [2-746](#)
 - enabling BPDU filtering [2-709, 2-744](#)
 - enabling BPDU guard [2-711, 2-744](#)
 - enabling Port Fast [2-744, 2-746](#)
 - forward-delay time [2-731](#)
 - length of listening and learning states [2-731](#)
 - rapid transition to forwarding [2-721](#)
 - shutting down Port Fast-enabled ports [2-744](#)
 - state information display [2-667](#)
- MTU
 - configuring size [2-803](#)
 - displaying global setting [2-675](#)
- Multicast Listener Discovery
 - See MLD
- multicast group address, MVR [2-371](#)
- multicast groups, MVR [2-369](#)
- Multicast Listener Discovery
 - See MLD
- multicast router learning method [2-236](#)
- multicast router ports, configuring [2-236](#)
- multicast router ports, IPv6 [2-270](#)
- multicast storm control [2-762](#)
- multicast VLAN, MVR [2-368](#)
- multicast VLAN registration
 - See MVR

Multiple Spanning Tree Protocol

See MSTP

MVR

and address aliasing [2-369](#)configuring [2-368](#)configuring interfaces [2-371](#)debug messages, display [B-28](#)displaying [2-632](#)displaying interface information [2-634](#)members, displaying [2-636](#)mvr (global configuration) command [2-368](#)mvr (interface configuration) command [2-371](#)mvr vlan group command [2-372](#)**N**native VLANs [2-798](#)native VLAN tagging [2-826](#)network-policy (global configuration) command [2-375](#)network-policy command [2-374](#)network-policy profile (network-policy configuration) command [2-377](#)nmsp attachment suppress command [2-380](#)nmsp command [2-379](#)nonegotiate, speed [2-754](#)nonegotiating DTP messaging [2-783](#)

non-IP protocols

denying [2-120](#)forwarding [2-393](#)non-IP traffic access lists [2-296](#)

non-IP traffic forwarding

denying [2-120](#)permitting [2-393](#)normal-range VLANs [2-819](#)notifies command [2-12](#)no vlan command [2-819](#)**O**

online diagnostics

displaying

configured boot-up coverage level [2-506](#)current scheduled tasks [2-506](#)event logs [2-506](#)supported test suites [2-506](#)test ID [2-506](#)test results [2-506](#)test statistics [2-506](#)

global configuration mode

clearing health monitoring diagnostic test schedule [2-80](#)setting health monitoring diagnostic testing [2-80](#)setting up health monitoring diagnostic test schedule [2-80](#)**P**

PAgP

See EtherChannel

pagp learn-method command [2-381](#)pagp port-priority command [2-383](#)password, VTP [2-836](#)permit (ARP access-list configuration) command [2-385](#)permit (IPv6) command [2-387](#)permit (MAC access-list configuration) command [2-393](#)

per-VLAN spanning-tree plus

See STP

physical-port learner [2-381](#)PID, displaying [2-542](#)PIM-DVMRP, as multicast router learning method [2-236](#)police aggregate command [2-398](#)police command [2-396](#)policed-DSCP map [2-334](#)policy-map command [2-400](#)

policy maps

applying to an interface [2-451, 2-456](#)

- creating [2-400](#)
- displaying [2-648](#)
- hierarchical [2-400](#)
- policers
 - displaying [2-617](#)
 - for a single class [2-396](#)
 - for multiple classes [2-328, 2-398](#)
 - policed-DSCP map [2-334](#)
- traffic classification
 - defining the class [2-73](#)
 - defining trust states [2-812](#)
 - setting DSCP or IP precedence values [2-454](#)
- Port Aggregation Protocol
 - See EtherChannel
- port-based authentication
 - AAA method list [2-3](#)
 - configuring violation modes [2-157](#)
 - debug messages, display [B-11](#)
 - enabling IEEE 802.1x
 - globally [2-123](#)
 - per interface [2-148](#)
 - guest VLAN [2-138](#)
 - host modes [2-140](#)
 - IEEE 802.1x AAA accounting methods [2-1](#)
 - initialize an interface [2-142, 2-154](#)
 - MAC authentication bypass [2-143](#)
 - manual control of authorization state [2-148](#)
 - PAE as authenticator [2-147](#)
 - periodic re-authentication
 - enabling [2-151](#)
 - time between attempts [2-155](#)
 - quiet period between failed authentication exchanges [2-155](#)
 - re-authenticating IEEE 802.1x-enabled ports [2-150](#)
 - resetting configurable IEEE 802.1x parameters [2-136](#)
 - switch-to-authentication server retransmission time [2-155](#)
 - switch-to-client frame-retransmission number [2-145 to 2-146](#)
 - switch-to-client retransmission time [2-155](#)
 - test for IEEE 802.1x readiness [2-153](#)
 - port-channel load-balance command [2-403](#)
 - Port Fast, for spanning tree [2-746](#)
 - port ranges, defining [2-112](#)
 - ports, debugging [B-71](#)
 - ports, protected [2-796](#)
 - port security
 - aging [2-790](#)
 - debug messages, display [B-73](#)
 - enabling [2-785](#)
 - violation error recovery [2-166](#)
 - port trust states for QoS [2-360](#)
 - port types, MVR [2-371](#)
 - power supply alarms, setting [2-9](#)
 - power-supply dual command [2-405](#)
 - power-supply mode [2-405](#)
 - Precision Time Protocol
 - primary temperature alarm [2-10](#)
 - priority-queue command [2-406](#)
 - private-vlan command [2-408](#)
 - private-vlan mapping command [2-411](#)
 - private VLANs
 - association [2-794](#)
 - configuring [2-408](#)
 - configuring ports [2-781](#)
 - host ports [2-781](#)
 - mapping
 - configuring [2-794](#)
 - promiscuous ports [2-781](#)
 - privileged EXEC mode [1-2, 1-3](#)
 - product identification information, displaying [2-542](#)
 - profinet [2-413](#)
 - promiscuous ports, private VLANs [2-781](#)
 - protected ports, displaying [2-534](#)
 - pruning
 - VLANs [2-798](#)
 - VTP
 - displaying interface information [2-529](#)
 - enabling [2-836](#)

pruning-eligible VLAN list [2-799](#)

psp [2-415](#)

psp command [2-415](#)

ptp (global configuration) command [2-416](#)

ptp interface configuration command [2-418](#)

PTP settings [2-418](#)

PVST+

See STP

Q

QoS

auto-QoS

configuring [2-54](#)

debug messages, display [B-4](#)

displaying [2-474](#)

class maps

creating [2-75](#)

defining the match criteria [2-320](#)

displaying [2-486](#)

defining the CoS value for an incoming packet [2-330](#)

displaying configuration information [2-474, 2-616](#)

DSCP transparency [2-342](#)

DSCP trusted ports

applying DSCP-to-DSCP-mutation map to [2-332](#)

defining DSCP-to-DSCP-mutation map [2-334](#)

egress queues

allocating buffers [2-338](#)

defining the CoS output queue threshold map [2-356](#)

defining the DSCP output queue threshold map [2-358](#)

displaying buffer allocations [2-620](#)

displaying CoS output queue threshold map [2-624](#)

displaying DSCP output queue threshold map [2-624](#)

displaying queueing strategy [2-620](#)

displaying queue-set settings [2-627](#)

enabling bandwidth shaping and scheduling [2-758](#)

enabling bandwidth sharing and scheduling [2-760](#)

limiting the maximum output on a port [2-756](#)

mapping a port to a queue-set [2-420](#)

mapping CoS values to a queue and threshold [2-356](#)

mapping DSCP values to a queue and threshold [2-358](#)

setting maximum and reserved memory allocations [2-340](#)

setting WTD thresholds [2-340](#)

enabling [2-326](#)

ingress queues

allocating buffers [2-346](#)

assigning SRR scheduling weights [2-344](#)

defining the CoS input queue threshold map [2-348](#)

defining the DSCP input queue threshold map [2-350](#)

displaying buffer allocations [2-620](#)

displaying CoS input queue threshold map [2-624](#)

displaying DSCP input queue threshold map [2-624](#)

displaying queueing strategy [2-620](#)

displaying settings for [2-618](#)

enabling the priority queue [2-352](#)

mapping CoS values to a queue and threshold [2-348](#)

mapping DSCP values to a queue and threshold [2-350](#)

setting WTD thresholds [2-354](#)

maps

defining [2-334, 2-348, 2-350, 2-356, 2-358](#)

displaying [2-624](#)

policy maps

applying an aggregate policer [2-398](#)

applying to an interface [2-451, 2-456](#)

creating [2-400](#)

defining policers [2-328, 2-396](#)

displaying policers [2-617](#)

- displaying policy maps [2-648](#)
- hierarchical [2-400](#)
- policed-DSCP map [2-334](#)
- setting DSCP or IP precedence values [2-454](#)
- traffic classifications [2-73](#)
- trust states [2-812](#)
- port trust states [2-360](#)
- queues, enabling the expedite [2-406](#)
- statistics
 - in-profile and out-of-profile packets [2-620](#)
 - packets enqueued or dropped [2-620](#)
 - sent and received CoS values [2-620](#)
 - sent and received DSCP values [2-620](#)
- trusted boundary for IP phones [2-360](#)
- VLAN-based [2-362](#)
- quality of service
 - See QoS
- querytime, MVR [2-368](#)
- queue-set command [2-420](#)

R

- radius-server dead-criteria command [2-421](#)
- radius-server host command [2-423](#)
- rapid per-VLAN spanning-tree plus
 - See STP
- rapid PVST+
 - See STP
- rcommand command [2-425](#)
- re-authenticating IEEE 802.1x-enabled ports [2-150](#)
- re-authentication
 - periodic [2-151](#)
 - time between attempts [2-155](#)
- receiver ports, MVR [2-371](#)
- receiving flow-control packets [2-173](#)
- recovery mechanism
 - causes [2-166](#)
 - display [2-79](#), [2-480](#), [2-516](#), [2-518](#)
 - timer interval [2-167](#)

- redundancy for cluster switches [2-109](#)
- relay-major command [2-12](#)
- relay-minor command [2-12](#)
- remote-span command [2-427](#)
- Remote Switched Port Analyzer
 - See RSPAN
- rename (boot loader) command [A-17](#)
- renew ip dhcp snooping database command [2-429](#)
- rep admin vlan command [2-431](#)
- rep block port command [2-432](#)
- rep lsl-age-timer command [2-435](#)
- rep preempt delay command [2-437](#)
- rep preempt segment command [2-439](#)
- rep segment command [2-440](#)
- rep stcn command [2-443](#)
- reset (boot loader) command [A-18](#)
- resource templates, displaying [2-663](#)
- restricted VLAN
 - See dot1x auth-fail vlan
- rmdir (boot loader) command [A-19](#)
- rmon collection stats command [2-445](#)
- root guard, for spanning tree [2-719](#)

- routed ports
 - IP addresses on [2-185](#)
 - number supported [2-185](#)

- RSPAN
 - configuring [2-363](#)
 - displaying [2-630](#)
 - filter RSPAN traffic [2-363](#)
 - remote-span command [2-427](#)
 - sessions
 - displaying [2-630](#)

S

- sdm prefer command [2-446](#)
- SDM templates
 - displaying [2-663](#)
 - dual IPv4 and IPv6 [2-446](#)

- secondary temperature alarm [2-10](#)
- secure ports, limitations [2-787](#)
- see PTP
- sending flow-control packets [2-173](#)
- service password-recovery command [2-449](#)
- service-policy command [2-451](#)
- set (boot loader) command [A-20](#)
- set command [2-454](#)
- setup command [2-456](#)
- setup express command [2-459](#)
- show access-lists command [2-461](#)
- show alarm description port [2-464](#)
- show alarm description port command [2-464](#)
- show alarm profile command [2-465](#)
- show alarm settings command [2-467](#)
- show archive status command [2-468](#)
- show arp access-list command [2-469](#)
- show authentication command [2-470](#)
- show auto qos command [2-474](#)
- show boot command [2-478](#)
- show cable-diagnostics tdr command [2-480](#)
- show cisp command [2-485](#)
- show class-map command [2-486](#)
- show cluster candidates command [2-489](#)
- show cluster command [2-487](#)
- show cluster members command [2-491](#)
- show controllers cpu-interface command [2-493](#)
- show controllers ethernet-controller command [2-495](#)
- show controllers tcam command [2-502](#)
- show controller utilization command [2-504](#)
- show dot1q-tunnel command [2-506](#)
- show dot1x command [2-507](#)
- show dtp [2-511](#)
- show eap command [2-513](#)
- show env command [2-515](#)
- show errdisable detect command [2-516](#)
- show errdisable flap-values command [2-517](#)
- show errdisable recovery command [2-518](#)
- show etherchannel command [2-520](#)
- show facility-alarm relay command [2-523](#)
- show facility-alarm status [2-523](#)
- show facility-alarm status command [2-524](#)
- show fallback profile command [2-525](#)
- show fcs threshold command [2-526](#)
- show flowcontrol command [2-528](#)
- show interface rep command [2-540](#)
- show interfaces command [2-529](#)
- show interfaces counters command [2-538](#)
- show interfaces rep command [2-540](#)
- show inventory command [2-542](#)
- show ip arp inspection command [2-543](#)
- show ipc command [2-567](#)
- show ip dhcp snooping binding command [2-548](#)
- show ip dhcp snooping command [2-547](#)
- show ip dhcp snooping database command [2-551, 2-553](#)
- show ip igmp profile command [2-556](#)
- show ip igmp snooping address command [2-575](#)
- show ip igmp snooping command [2-557, 2-573](#)
- show ip igmp snooping groups command [2-559](#)
- show ip igmp snooping mrouter command [2-561, 2-577](#)
- show ip igmp snooping querier command [2-562, 2-579](#)
- show ip source binding command [2-564](#)
- show ipv6 access-list command [2-570](#)
- show ipv6 dhcp conflict command [2-572](#)
- show ipv6 route updated [2-581](#)
- show ip verify source command [2-565](#)
- show l2protocol-tunnel command [2-583](#)
- show lacp command [2-586](#)
- show link state group command [2-592](#)
- show location [2-590](#)
- show mac access-group command [2-594](#)
- show mac address-table address command [2-597](#)
- show mac address-table aging time command [2-599](#)
- show mac address-table command [2-595](#)
- show mac address-table count command [2-601](#)
- show mac address-table dynamic command [2-603](#)
- show mac address-table interface command [2-605](#)
- show mac address-table learning command [2-607](#)

- show mac address-table move update command [2-608](#)
- show mac address-table notification command [2-89, 2-610, B-25](#)
- show mac address-table static command [2-612](#)
- show mac address-table vlan command [2-614](#)
- show mls qos aggregate-policer command [2-617](#)
- show mls qos command [2-616](#)
- show mls qos input-queue command [2-618](#)
- show mls qos interface command [2-620](#)
- show mls qos maps command [2-624](#)
- show mls qos queue-set command [2-627](#)
- show mls qos vlan command [2-629](#)
- show monitor command [2-630](#)
- show mvr command [2-632](#)
- show mvr interface command [2-634](#)
- show mvr members command [2-636](#)
- show network-policy profile command [2-638](#)
- show nmsp command [2-640](#)
- show pagp command [2-643](#)
- show parser macro command [2-645](#)
- 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 ip multicast command [C-9](#)
- show platform ip unicast command [C-10](#)
- show platform ipv6 unicast command [C-14](#)
- show platform ip wccp command [C-13](#)
- show platform layer4op command [C-16](#)
- show platform mac-address-table command [C-17](#)
- show platform messaging command [C-18](#)
- show platform monitor command [C-19](#)
- show platform mvr table command [C-20](#)
- show platform pm command [C-21](#)
- show platform port-asic command [C-22](#)
- show platform port-security command [C-26](#)
- show platform qos command [C-27](#)
- show platform resource-manager command [C-28](#)
- show platform snmp counters command [C-30](#)
- show platform spanning-tree command [C-31](#)
- show platform stp-instance command [C-32](#)
- show platform team command [C-33](#)
- show platform vlan command [C-36](#)
- show policy-map command [2-648](#)
- show port security command [2-650](#)
- show profinet [2-653](#)
- show psp config [2-655](#)
- show psp config command [2-655](#)
- show psp statistics [2-656](#)
- show psp statistics command [2-656](#)
- show ptp command [2-657](#)
- show rep topology command [2-660](#)
- show sdm prefer command [2-663](#)
- show setup express command [2-666](#)
- show spanning-tree command [2-667](#)
- show storm-control command [2-673](#)
- show system mtu command [2-675](#)
- show trust command [2-812](#)
- show uddl command [2-676](#)
- show version command [2-679](#)
- show vlan access-map command [2-686](#)
- show vlan command [2-681](#)
- show vlan command, fields [2-683](#)
- show vlan filter command [2-687](#)
- show vmps command [2-688](#)
- show vtp command [2-690](#)
- shutdown command [2-695](#)
- shutdown threshold, Layer 2 protocol tunneling [2-274](#)
- shutdown vlan command [2-696](#)
- small violation-rate command [2-697](#)
- Smartports macros
 - See macros
- SNMP host, specifying [2-703](#)
- SNMP informs, enabling the sending of [2-699](#)
- snmp-server enable traps command [2-699](#)
- snmp-server host command [2-703](#)

- snmp trap mac-notification change command [2-706](#)
- SNMP traps
 - enabling MAC address notification trap [2-706](#)
 - enabling the MAC address notification feature [2-303](#)
 - enabling the sending of [2-699](#)
- SoftPhone
 - See Cisco SoftPhone
- software images
 - deleting [2-114](#)
 - downloading [2-16](#)
 - upgrading [2-16](#)
 - uploading [2-22](#)
- software version, displaying [2-679](#)
- source ports, MVR [2-371](#)
- SPAN
 - configuring [2-363](#)
 - debug messages, display [B-26](#)
 - displaying [2-630](#)
 - filter SPAN traffic [2-363](#)
 - sessions
 - add interfaces to [2-363](#)
 - displaying [2-630](#)
 - start new [2-363](#)
- spanning-tree backbonefast command [2-708](#)
- spanning-tree bpdudfilter command [2-709](#)
- spanning-tree bpduguard command [2-711](#)
- spanning-tree cost command [2-713](#)
- spanning-tree etherchannel command [2-715](#)
- spanning-tree extend system-id command [2-717](#)
- spanning-tree guard command [2-719](#)
- spanning-tree link-type command [2-721](#)
- spanning-tree loopguard default command [2-723](#)
- spanning-tree mode command [2-725](#)
- spanning-tree mst configuration command [2-727](#)
- spanning-tree mst cost command [2-729](#)
- spanning-tree mst forward-time command [2-731](#)
- spanning-tree mst hello-time command [2-732](#)
- spanning-tree mst max-age command [2-733](#)
- spanning-tree mst max-hops command [2-734](#)
- spanning-tree mst port-priority command [2-736](#)
- spanning-tree mst pre-standard command [2-738](#)
- spanning-tree mst priority command [2-739](#)
- spanning-tree mst root command [2-740](#)
- spanning-tree portfast (global configuration) command [2-744](#)
- spanning-tree portfast (interface configuration) command [2-746](#)
- spanning-tree port-priority command [2-742](#)
- Spanning Tree Protocol
 - See STP
- spanning-tree transmit hold-count command [2-748](#)
- spanning-tree uplinkfast command [2-749](#)
- spanning-tree vlan command [2-751](#)
- speed command [2-754](#)
- srr-queue bandwidth limit command [2-756](#)
- srr-queue bandwidth share command [2-760](#)
- SSH, configuring version [2-242](#)
- static-access ports, configuring [2-767](#)
- statistics, Ethernet group [2-445](#)
- sticky learning, enabling [2-785](#)
- storm-control command [2-762](#)
- STP
 - BackboneFast [2-708](#)
 - counters, clearing [2-96](#)
 - debug messages, display
 - BackboneFast events [B-92](#)
 - MSTP [B-95](#)
 - optimized BPDUs handling [B-94](#)
 - spanning-tree activity [B-90](#)
 - switch shim [B-97](#)
 - transmitted and received BPDUs [B-93](#)
 - UplinkFast [B-99](#)
 - detection of indirect link failures [2-708](#)
 - EtherChannel misconfiguration [2-715](#)
 - extended system ID [2-717](#)
 - path cost [2-713](#)
 - protocol modes [2-725](#)
 - root port

- accelerating choice of new [2-749](#)
 - loop guard [2-719](#)
 - preventing from becoming designated [2-719](#)
 - restricting which can be root [2-719](#)
 - root guard [2-719](#)
 - UplinkFast [2-749](#)
 - root switch
 - affects of extended system ID [2-717, 2-752](#)
 - hello-time [2-751](#)
 - interval between BPDU messages [2-751](#)
 - interval between hello BPDU messages [2-751](#)
 - max-age [2-751](#)
 - port priority for selection of [2-742](#)
 - primary or secondary [2-751](#)
 - switch priority [2-751](#)
 - state changes
 - blocking to forwarding state [2-746](#)
 - enabling BPDU filtering [2-709, 2-744](#)
 - enabling BPDU guard [2-711, 2-744](#)
 - enabling Port Fast [2-744, 2-746](#)
 - enabling timer to recover from error state [2-166](#)
 - forward-delay time [2-751](#)
 - length of listening and learning states [2-751](#)
 - shutting down Port Fast-enabled ports [2-744](#)
 - state information display [2-667](#)
 - VLAN options [2-739, 2-751](#)
 - SVIs, creating [2-179](#)
 - SVI status calculation [2-769](#)
 - Switched Port Analyzer
 - See SPAN
 - switching characteristics
 - modifying [2-765](#)
 - returning to interfaces [2-765](#)
 - switchport access command [2-767](#)
 - switchport autostate exclude command [2-769](#)
 - switchport backup interface command [2-771](#)
 - switchport block command [2-775](#)
 - switchport command [2-765](#)
 - switchport host command [2-777](#)
 - switchport mode command [2-778](#)
 - switchport mode private-vlan command [2-781](#)
 - switchport nonegotiate command [2-783](#)
 - switchport port-security aging command [2-790](#)
 - switchport port-security command [2-785](#)
 - switchport priority extend command [2-792](#)
 - switchport private-vlan command [2-794](#)
 - switchport protected command [2-796](#)
 - switchports, displaying [2-529](#)
 - switchport trunk command [2-798](#)
 - switchport voice vlan command [2-801](#)
 - syslog command [2-12](#)
 - system message logging, save message to flash [2-290](#)
 - system mtu command [2-803](#)
 - system resource templates [2-446](#)
-
- ## T
- tar files, creating, listing, and extracting [2-19](#)
 - TDR, running [2-805](#)
 - Telnet, using to communicate to cluster switches [2-425](#)
 - temperature alarms, setting [2-10](#)
 - templates, system resources [2-446](#)
 - test cable-diagnostics tdr command [2-805](#)
 - test relay [2-806](#)
 - test relay command [2-806](#)
 - traceroute mac command [2-807](#)
 - traceroute mac ip command [2-810](#)
 - trunking, VLAN mode [2-778](#)
 - trunk mode [2-778](#)
 - trunk ports [2-778](#)
 - trunks, to non-DTP device [2-779](#)
 - trusted boundary for QoS [2-360](#)
 - trusted port states for QoS [2-360](#)
 - tunnel ports, Layer 2 protocol, displaying [2-583](#)
 - type (boot loader) command [A-23](#)

U

UDLD

- aggressive mode [2-814, 2-816](#)
- debug messages, display [B-107](#)
- enable globally [2-814](#)
- enable per interface [2-816](#)
- error recovery timer [2-166](#)
- message timer [2-814](#)
- normal mode [2-814, 2-816](#)
- reset a shutdown interface [2-818](#)
- status [2-676](#)

udld command [2-814](#)

udld port command [2-816](#)

udld reset command [2-818](#)

unicast storm control [2-762](#)

UniDirectional Link Detection

See UDLD

unknown multicast traffic, preventing [2-775](#)

unknown unicast traffic, preventing [2-775](#)

unset (boot loader) command [A-25](#)

upgrading

software images

downloading [2-16](#)

monitoring status of [2-468](#)

UplinkFast, for STP [2-749](#)

user EXEC mode [1-2](#)

V

version (boot loader) command [A-27](#)

vlan (global configuration) command [2-819](#)

vlan access-map command [2-824](#)

VLAN access map configuration mode [2-824](#)

VLAN access maps

actions [2-6](#)

displaying [2-686](#)

VLAN-based QoS [2-362](#)

VLAN configuration

rules [2-822](#)

saving [2-819](#)

VLAN configuration mode

description [1-4](#)

entering [2-819](#)

summary [1-2](#)

vlan dot1q tag native command [2-826](#)

vlan filter command [2-828](#)

VLAN filters, displaying [2-687](#)

VLAN ID range [2-819](#)

VLAN maps

applying [2-828](#)

creating [2-824](#)

defining [2-318](#)

displaying [2-686](#)

VLAN Query Protocol

See VQP

VLANs

adding [2-819](#)

configuring [2-819](#)

debug messages, display

ISL [B-103](#)

VLAN IOS file system error tests [B-102](#)

VLAN manager activity [B-100](#)

VTP [B-105](#)

displaying configurations [2-681](#)

enabling guest VLAN supplicant [2-126, 2-137, 2-171](#)

extended-range [2-819](#)

MAC addresses

displaying [2-614](#)

number of [2-601](#)

media types [2-822](#)

normal-range [2-819](#)

private [2-781](#)

configuring [2-408](#)

See also private VLANs

restarting [2-696](#)

saving the configuration [2-819](#)

shutting down [2-696](#)

- SNMP traps for VTP [2-701](#)
- suspending [2-696](#)
- VLAN Trunking Protocol
 - See VTP
- VMPS
 - configuring servers [2-833](#)
 - displaying [2-688](#)
 - error recovery timer [2-167](#)
 - reconfirming dynamic VLAN assignments [2-830](#)
- vmmps reconfirm (global configuration) command [2-831](#)
- vmmps reconfirm (privileged EXEC) command [2-830](#)
- vmmps retry command [2-832](#)
- vmmps server command [2-833](#)
- voice VLAN
 - configuring [2-801](#)
 - setting port priority [2-792](#)
- VQP
 - and dynamic-access ports [2-768](#)
 - clearing client statistics [2-98](#)
 - displaying information [2-688](#)
 - per-server retry count [2-832](#)
 - reconfirmation interval [2-831](#)
 - reconfirming dynamic VLAN assignments [2-830](#)
- VTP
 - changing characteristics [2-835](#)
 - clearing pruning counters [2-99](#)
 - configuring
 - domain name [2-835](#)
 - file name [2-835](#)
 - mode [2-835](#)
 - password [2-836](#)
 - counters display fields [2-691](#)
 - displaying information [2-690](#)
 - enabling
 - pruning [2-836](#)
 - Version 2 [2-836](#)
 - enabling per port [2-840](#)
 - mode [2-835](#)
 - pruning [2-836](#)
 - saving the configuration [2-819](#)
 - statistics [2-690](#)
 - status [2-690](#)
 - status display fields [2-693](#)
 - vtp (global configuration) command [2-835](#)
 - vtp interface configuration) command [2-840](#)
 - vtp primary command [2-841](#)

