



INDEX

A

- aaa accounting dot1x command [2-1](#)
- aaa authentication dot1x command [2-3, 2-184](#)
- aaa authorization network command [2-5, 2-24, 2-30, 2-32, 2-34, 2-36, 2-38, 2-154, 2-329, 2-507, B-7, B-35](#)
- AAA methods [2-3](#)
- access control entries
 - See ACEs
- access control lists
 - See ACLs
- access groups
 - IP [2-207](#)
 - MAC, displaying [2-646](#)
- access list, IPv6 [2-281](#)
- access map configuration mode [2-345](#)
- access mode [2-839](#)
- access ports [2-839](#)
- ACEs [2-138, 2-426](#)
- ACLs
 - deny [2-136](#)
 - displaying [2-488](#)
 - for non-IP protocols [2-333](#)
 - IP [2-207](#)
 - matching [2-345](#)
 - on Layer 2 interfaces [2-207](#)
 - permit [2-424](#)
- action command [2-6](#)
- address aliasing [2-396](#)
- aggregate-port learner [2-412](#)
- allowed VLANs [2-859](#)
- archive copy-sw command [2-8](#)
- archive download-sw command [2-11](#)
- archive tar command [2-15](#)
- archive upload-sw command [2-18](#)
- arp (boot loader) command [A-2](#)
- arp access-list command [2-20](#)
- audience [xxi](#)
- authentication command bounce-port ignore [2-22](#)
- authentication command disable-port ignore [2-23](#)
- authentication control-direction command [2-24](#)
- authentication event command [2-26](#)
- authentication failed VLAN
 - See dot1x auth-fail vlan
- authentication fallback command [2-30](#)
- authentication host-mode command [2-32](#)
- authentication mac-move permit command [2-34](#)
- authentication open command [2-36](#)
- authentication order command [2-38](#)
- authentication periodic command [2-40](#)
- authentication port-control command [2-42](#)
- authentication priority command [2-44](#)
- authentication timer command [2-46](#)
- authentication violation command [2-48](#)
- auth-fail max-attempts
 - See dot1x auth-fail max-attempts
- auth-fail vlan
 - See dot1x auth-fail vlan
- auth open command [2-36](#)
- auth order command [2-38](#)
- authorization state of controlled port [2-171](#)
- auth timer command [2-46](#)
- autonegotiation of duplex mode [2-183](#)
- auto qos classify command [2-50](#)
- auto qos trust command [2-53](#)
- auto qos video command [2-56](#)

auto qos voip command [2-59](#)

B

BackboneFast, for STP [2-761](#)

backup interfaces

configuring [2-833](#)

displaying [2-569](#)

boot (boot loader) command [A-3](#)

boot auto-copy-sw command [2-65](#)

boot auto-download-sw command [2-66](#)

boot config-file command [2-69](#)

boot enable-break command [2-70](#)

boot helper command [2-71](#)

boot helper-config file command [2-72](#)

booting

Cisco IOS image [2-75](#)

displaying environment variables [2-501](#)

interrupting [2-70](#)

manually [2-73](#)

boot loader

accessing [A-1](#)

booting

Cisco IOS image [A-3](#)

helper image [2-71](#)

directories

creating [A-19](#)

displaying a list of [A-8](#)

removing [A-23](#)

displaying

available commands [A-13](#)

memory heap utilization [A-14](#)

version [A-30](#)

environment variables

described [A-24](#)

displaying settings [A-24](#)

location of [A-25](#)

setting [A-24](#)

unsetting [A-28](#)

files

copying [A-6](#)

deleting [A-7](#)

displaying a list of [A-8](#)

displaying the contents of [A-5, A-20, A-27](#)

renaming [A-21](#)

file system

formatting [A-11](#)

initializing flash [A-10](#)

running a consistency check [A-12](#)

prompt [A-1](#)

resetting the system [A-22](#)

boot manual command [2-73](#)

boot private-config-file command [2-74](#)

boot system command [2-75](#)

BPDU filtering, for spanning tree [2-762, 2-796](#)

BPDU guard, for spanning tree [2-764, 2-796](#)

broadcast storm control [2-817](#)

C

candidate switches

See clusters

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

caution, description [xxii](#)

CDP, enabling protocol tunneling for [2-308](#)

channel-group command [2-78](#)

channel-protocol command [2-82](#)

Cisco IP camera

auto-QoS configuration [2-56](#)

Cisco Network Assistant

See Network Assistant

Cisco SoftPhone

auto-QoS configuration [2-59](#)

trusting packets sent from [2-386](#)

Cisco Telepresence System

auto-QoS configuration [2-56](#)

CISP

See Client Information Signalling Protocol

- cisp
 - debug platform cisp command [B-35](#)
- cisp enable command [2-83](#)
- class command [2-84](#)
- class-map command [2-87](#)
- class maps
 - creating [2-87](#)
 - defining the match criteria [2-347](#)
 - displaying [2-508](#)
- class of service
 - See CoS
- clear dot1x command [2-89](#)
- clear eap sessions command [2-90](#)
- clear errdisable interface [2-91](#)
- clear ip arp inspection log command [2-92](#)
- clear ip arp inspection statistics command [2-93](#)
- clear ipc command [2-96](#)
- clear ip dhcp snooping database command [2-94](#)
- clear ipv6 dhcp conflict command [2-97](#)
- clear l2protocol-tunnel counters command [2-98](#)
- clear lacp command [2-99](#)
- clear logging onboard command [2-100](#)
- clear mac address-table command [2-101, 2-102](#)
- clear nmsp statistics command [2-103](#)
- clear pagp command [2-104](#)
- clear port-security command [2-105](#)
- clear spanning-tree counters command [2-107](#)
- clear spanning-tree detected-protocols command [2-108](#)
- clear vmps statistics command [2-109](#)
- clear vtp counters command [2-110](#)
- Client Information Signalling Protocol [2-83, 2-154, 2-507, B-7, B-35](#)
- cluster commander-address command [2-111](#)
- cluster discovery hop-count command [2-113](#)
- cluster enable command [2-114](#)
- cluster holdtime command [2-116](#)
- cluster member command [2-117](#)
- cluster outside-interface command [2-119](#)
- cluster requirements [xxii](#)
- cluster run command [2-120](#)
- clusters
 - adding candidates [2-117](#)
 - binding to HSRP group [2-121](#)
 - building manually [2-117](#)
 - communicating with
 - devices outside the cluster [2-119](#)
 - members by using Telnet [2-460](#)
 - debug messages, display [B-8](#)
 - displaying
 - candidate switches [2-511](#)
 - debug messages [B-8](#)
 - member switches [2-513](#)
 - status [2-509](#)
 - hop-count limit for extended discovery [2-113](#)
 - HSRP standby groups [2-121](#)
 - redundancy [2-121](#)
 - SNMP trap [2-749](#)
- cluster standby-group command [2-121](#)
- cluster timer command [2-123](#)
- command modes defined [1-2](#)
- command switch
 - See clusters
- configuration, initial
 - See getting started guide and hardware installation guide
- configuration files
 - password recovery disable considerations [A-1](#)
 - specifying the name [2-69, 2-74](#)
- configuring multiple interfaces [2-203](#)
- config-vlan mode
 - commands [2-885](#)
- conventions
 - command [xxi](#)
 - for examples [xxii](#)
 - publication [xxi](#)
 - text [xxi](#)
- copy (boot loader) command [A-6](#)
- copy logging onboard command [2-124](#)

CoS

- assigning default value to incoming packets [2-356](#)
- assigning to Layer 2 protocol packets [2-311](#)
- overriding the incoming value [2-356](#)

CoS-to-DSCP map [2-360](#)

CPU ASIC statistics, displaying [2-515](#)

crashinfo files [2-194](#)

critical VLAN [2-27](#)

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-11](#)
- debug eap command [B-12](#)
- debug etherchannel command [B-13](#)
- debug fastethernet 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 matm command [B-25](#)
- debug matm move update command [B-26](#)
- debug monitor command [B-27](#)
- 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 cli-redirection main command [B-36](#)
- debug platform configuration command [B-37, B-45](#)
- debug platform cpu-queues command [B-38](#)
- debug platform device-manager command [B-40](#)
- debug platform dot1x command [B-41](#)
- debug platform etherchannel command [B-42](#)
- debug platform fallback-bridging command [B-43](#)
- debug platform forw-tcam command [B-44](#)
- debug platform ip arp inspection command [B-46](#)
- debug platform ipc command [B-55](#)
- debug platform ip dhcp command [B-47](#)
- debug platform ip igmp snooping command [B-48](#)
- debug platform ip multicast command [B-50](#)
- debug platform ip unicast command [B-52](#)
- debug platform ip wccp command [B-54](#)
- debug platform led command [B-56](#)
- debug platform matm command [B-57](#)
- debug platform messaging application command [B-58](#)
- debug platform phy command [B-59](#)
- debug platform pm command [B-61](#)
- debug platform port-asic command [B-63](#)
- debug platform port-security command [B-64](#)
- debug platform qos-acl-tcam command [B-65](#)
- debug platform remote-commands command [B-66](#)
- debug platform resource-manager command [B-67](#)
- debug platform snmp command [B-68](#)
- debug platform span command [B-69](#)
- debug platform stack-manager command [B-70](#)
- debug platform supervisor-asic command [B-71](#)
- debug platform sw-bridge command [B-72](#)
- debug platform tcam command [B-73](#)
- debug platform uidd command [B-76](#)
- debug platform vlan command [B-77](#)
- debug pm command [B-78](#)
- debug port-security command [B-80](#)
- debug qos-manager command [B-81](#)
- debug spanning-tree backbonefast command [B-84](#)

- debug spanning-tree bpdu command [B-85](#)
- debug spanning-tree bpdu-opt command [B-86](#)
- debug spanning-tree command [B-82](#)
- debug spanning-tree mstp command [B-87](#)
- debug spanning-tree switch command [B-89](#)
- debug spanning-tree uplinkfast command [B-91](#)
- debug sw-vlan command [B-92](#)
- debug sw-vlan ifs command [B-94](#)
- debug sw-vlan notification command [B-95](#)
- debug sw-vlan vtp command [B-97](#)
- debug uddl command [B-99](#)
- debug vqpc command [B-101](#)
- define interface-range command [2-126](#)
- delete (boot loader) command [A-7](#)
- delete command [2-128](#)
- deny (ARP access-list configuration) command [2-129](#)
- deny (IPv6) command [2-131](#)
- deny command [2-136](#)
- detect mechanism, causes [2-185](#)
- device manager requirements [xxii](#)
- DHCP snooping
 - accepting untrusted packets from edge switch [2-239](#)
 - enabling
 - on a VLAN [2-245](#)
 - option 82 [2-237, 2-239](#)
 - trust on an interface [2-243](#)
 - error recovery timer [2-190](#)
 - rate limiting [2-242](#)
- DHCP snooping binding database
 - binding file, configuring [2-235](#)
 - bindings
 - adding [2-233](#)
 - deleting [2-233](#)
 - displaying [2-591](#)
 - clearing database agent statistics [2-94](#)
 - database agent, configuring [2-235](#)
 - displaying
 - binding entries [2-591](#)
 - database agent status [2-593, 2-595](#)
 - renewing [2-468](#)
- Digital Optical Monitoring
 - see DoM
- dir (boot loader) command [A-8](#)
- directories, deleting [2-128](#)
- documentation, related [xxii](#)
- document conventions [xxi](#)
- DoM
 - displaying supported transceivers [2-582](#)
- domain name, VTP [2-902](#)
- dot1x auth-fail max-attempts [2-148](#)
- dot1x auth-fail vlan [2-150](#)
- dot1x command [2-146](#)
- dot1x control-direction command [2-152](#)
- dot1x credentials (global configuration) command [2-154](#)
- dot1x critical global configuration command [2-155](#)
- dot1x critical interface configuration command [2-157](#)
- dot1x default command [2-159](#)
- dot1x fallback command [2-160](#)
- dot1x guest-vlan command [2-161](#)
- dot1x host-mode command [2-163](#)
- dot1x initialize command [2-164](#)
- dot1x mac-auth-bypass command [2-165](#)
- dot1x max-reauth-req command [2-167](#)
- dot1x max-req command [2-169](#)
- dot1x pae command [2-170](#)
- dot1x port-control command [2-171](#)
- dot1x re-authenticate command [2-173](#)
- dot1x reauthentication command [2-174](#)
- dot1x supplicant force-multicast command [2-175](#)
- dot1x test eapol-capable command [2-176](#)
- dot1x test timeout command [2-177](#)
- dot1x timeout command [2-178](#)
- dot1x violation-mode command [2-181](#)
- dropping packets, with ACL matches [2-6](#)
- drop threshold, Layer 2 protocol tunneling [2-308](#)
- DSCP-to-CoS map [2-360](#)
- DSCP-to-DSCP-mutation map [2-360](#)
- DTP [2-840](#)

DTP flap

- error detection for [2-185](#)
- error recovery timer [2-190](#)

DTP negotiation [2-844](#)

dual IPv4 and IPv6 templates [2-418](#)

duplex command [2-182](#)

dynamic-access ports

- configuring [2-829](#)
- restrictions [2-830](#)

dynamic ARP inspection

- ARP ACLs
 - apply to a VLAN [2-215](#)
 - define [2-20](#)
 - deny packets [2-129](#)
 - display [2-492](#)
 - permit packets [2-416](#)
- clear
 - log buffer [2-92](#)
 - statistics [2-93](#)
- display
 - ARP ACLs [2-492](#)
 - configuration and operating state [2-586](#)
 - log buffer [2-586](#)
 - statistics [2-586](#)
 - trust state and rate limit [2-586](#)
- enable per VLAN [2-225](#)
- error detection for [2-185](#)
- error recovery timer [2-190](#)
- log buffer
 - clear [2-92](#)
 - configure [2-219](#)
 - display [2-586](#)
- rate-limit incoming ARP packets [2-217](#)
- statistics
 - clear [2-93](#)
 - display [2-586](#)
- trusted interface state [2-221](#)
- type of packet logged [2-226](#)
- validation checks [2-223](#)

- dynamic auto VLAN membership mode [2-839](#)
- dynamic desirable VLAN membership mode [2-839](#)

Dynamic Host Configuration Protocol (DHCP)

- See DHCP snooping

Dynamic Trunking Protocol

- See DTP

E

EAP-request/identity frame

- maximum number to send [2-169](#)
- response time before retransmitting [2-178](#)

encapsulation methods [2-859](#)

environment variables, displaying [2-501](#)

errdisable detect cause command [2-185](#)

errdisable detect cause small-frame command [2-188](#)

errdisable recovery cause small-frame [2-193](#)

errdisable recovery command [2-190](#)

error conditions, displaying [2-556](#)

error disable detection [2-185](#)

error-disabled interfaces, displaying [2-568](#)

EtherChannel

- assigning Ethernet interface to channel group [2-78](#)
- creating port-channel logical interface [2-201](#)
- debug EtherChannel/PAgP, display [B-13](#)
- debug platform-specific events, display [B-42](#)
- displaying [2-559](#)
- enabling Layer 2 protocol tunneling for
 - LACP [2-309](#)
 - PAgP [2-309](#)
 - UDLD [2-309](#)
- interface information, displaying [2-568](#)

LACP

- clearing channel-group information [2-99, 2-100](#)
- debug messages, display [B-22](#)
- displaying [2-632](#)
- modes [2-78](#)
- port priority for hot-standby ports [2-312](#)
- restricting a protocol [2-82](#)

- system priority [2-314](#)
- load-distribution methods [2-434](#)
- PAGP
 - aggregate-port learner [2-412](#)
 - clearing channel-group information [2-104](#)
 - debug messages, display [B-31](#)
 - displaying [2-695](#)
 - error detection for [2-185](#)
 - error recovery timer [2-190](#)
 - learn method [2-412](#)
 - modes [2-78](#)
 - physical-port learner [2-412](#)
 - priority of interface for transmitted traffic [2-414](#)
- Ethernet controller, internal register display [2-517, 2-524](#)
- Ethernet Management port, debugging [B-14](#)
- Ethernet statistics, collecting [2-471](#)
- examples, conventions for [xxii](#)
- exception crashinfo command [2-194, 2-199](#)
- extended discovery of candidate switches [2-113](#)
- extended-range VLANs
 - and allowed VLAN list [2-859](#)
 - and pruning-eligible list [2-859](#)
 - configuring [2-884](#)
- extended system ID for STP [2-770](#)

F

- fallback profile command [2-195](#)
- fallback profiles, displaying [2-562](#)
- fan information, displaying [2-549](#)
- file name, VTP [2-902](#)
- files, deleting [2-128](#)
- flash_init (boot loader) command [A-10](#)
- flexible authentication ordering [2-38](#)
- Flex Links
 - configuring [2-833](#)
 - displaying [2-569](#)
- flow-based SPAN [2-389](#)
- flowcontrol command [2-197](#)

- format (boot loader) command [A-11](#)
- forwarding packets, with ACL matches [2-6](#)
- forwarding results, display [C-7](#)
- frame forwarding information, displaying [C-7](#)
- front-end controller counter and status information [C-9](#)
- fsck (boot loader) command [A-12](#)
- FSPAN [2-389](#)

G

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

H

- hardware ACL statistics [2-488](#)
- health monitoring diagnostic tests [2-139](#)
- help (boot loader) command [A-13](#)
- hierarchical policy maps [2-431](#)
- hop-count limit for clusters [2-113](#)
- host connection, port configuration [2-838](#)
- host ports, private VLANs [2-842](#)
- Hot Standby Router Protocol
 - See HSRP
- HSRP
 - binding HSRP group to cluster [2-121](#)
 - standby group [2-121](#)

I

- IEEE 802.1Q trunk ports and native VLANs [2-893](#)
- IEEE 802.1Q tunnel ports
 - configuring [2-839](#)
 - displaying [2-539](#)
 - limitations [2-840](#)
- IEEE 802.1x
 - and switchport modes [2-840](#)
 - violation error recovery [2-190](#)
 - See also port-based authentication

- IGMP filters
 - applying [2-248](#)
 - debug messages, display [B-19](#)
- IGMP groups, setting maximum [2-250](#)
- IGMP maximum groups, debugging [B-20](#)
- IGMP profiles
 - creating [2-252](#)
 - displaying [2-598](#)
- IGMP snooping
 - adding ports as a static member of a group [2-268](#)
 - displaying [2-599, 2-604, 2-606](#)
 - enabling [2-254](#)
 - enabling the configurable-leave timer [2-256](#)
 - enabling the Immediate-Leave feature [2-265](#)
 - flooding query count [2-262](#)
 - interface topology change notification behavior [2-264](#)
 - multicast table [2-602](#)
 - querier [2-258](#)
 - query solicitation [2-262](#)
 - report suppression [2-260](#)
 - switch topology change notification behavior [2-262](#)
- images
 - See software images
- Immediate-Leave processing
 - IGMP [2-265](#)
 - IPv6 [2-304](#)
 - MVR [2-398](#)
- initial configuration
 - See getting started guide and hardware installation guide
- interface configuration mode [1-2, 1-4](#)
- interface port-channel command [2-201](#)
- interface range command [2-203](#)
- interface-range macros [2-126](#)
- interfaces
 - assigning Ethernet interface to channel group [2-78](#)
 - configuring [2-182](#)
 - configuring multiple [2-203](#)
 - creating port-channel logical
 - debug messages, display [B-16](#)
 - disabling [2-745](#)
 - displaying the MAC address table [2-657](#)
 - restarting [2-745](#)
 - interface speed, configuring [2-807](#)
 - interface vlan command [2-205](#)
 - internal power supplies
 - See power supplies
 - internal registers, displaying [2-517, 2-524, 2-530](#)
 - Internet Group Management Protocol
 - See IGMP
 - invalid GBIC
 - error detection for [2-185](#)
 - error recovery timer [2-190](#)
 - ip access-group command [2-207](#)
 - ip address command [2-210](#)
 - IP addresses, setting [2-210](#)
 - IP address matching [2-345](#)
 - ip admission command [2-212](#)
 - ip admission name proxy http command [2-213](#)
 - ip arp inspection filter vlan command [2-215](#)
 - ip arp inspection limit command [2-217](#)
 - ip arp inspection log-buffer command [2-219](#)
 - ip arp inspection trust command [2-221](#)
 - ip arp inspection validate command [2-223](#)
 - ip arp inspection vlan command [2-225](#)
 - ip arp inspection vlan logging command [2-226](#)
 - ip device tracking command [2-228](#)
 - ip device tracking probe command [2-230](#)
 - IP DHCP snooping
 - See DHCP snooping
 - ip dhcp snooping binding command [2-233](#)
 - ip dhcp snooping command [2-232](#)
 - ip dhcp snooping database command [2-235](#)
 - ip dhcp snooping information option allow-untrusted command [2-239](#)
 - ip dhcp snooping information option command [2-237](#)
 - ip dhcp snooping information option format remote-id command [2-241](#)

- ip dhcp snooping limit rate command [2-242](#)
 - ip dhcp snooping trust command [2-243](#)
 - ip dhcp snooping verify command [2-244](#)
 - ip dhcp snooping vlan command [2-245](#)
 - ip dhcp snooping vlan information option format-type circuit-id string command [2-246](#)
 - ip igmp filter command [2-248](#)
 - ip igmp max-groups command [2-250](#), [2-275](#), [2-277](#)
 - ip igmp profile command [2-252](#)
 - ip igmp snooping command [2-254](#)
 - ip igmp snooping last-member-query-interval command [2-256](#)
 - ip igmp snooping querier command [2-258](#)
 - ip igmp snooping report-suppression command [2-260](#)
 - ip igmp snooping tcn command [2-262](#)
 - ip igmp snooping tcn flood command [2-264](#)
 - ip igmp snooping vlan immediate-leave command [2-265](#)
 - ip igmp snooping vlan mrouter command [2-266](#)
 - ip igmp snooping vlan static command [2-268](#)
 - IP multicast addresses [2-395](#)
 - IP phones
 - auto-QoS configuration [2-59](#)
 - trusting packets sent from [2-386](#)
 - IP-precedence-to-DSCP map [2-360](#)
 - ip snap forwarding command [2-270](#)
 - ip source binding command [2-271](#)
 - IP source guard
 - disabling [2-279](#)
 - displaying
 - binding entries [2-608](#)
 - configuration [2-610](#)
 - dynamic binding entries only [2-591](#)
 - enabling [2-279](#)
 - static IP source bindings [2-271](#)
 - ip ssh command [2-273](#)
 - IPv4 and IPv6
 - port-based trust [2-387](#)
 - IPv6 access list, deny conditions [2-131](#)
 - ipv6 access-list command [2-281](#)
 - ipv6 address dhcp command [2-284](#)
 - ipv6 dhcp client request vendor command [2-285](#)
 - ipv6 dhcp ping packets command [2-286](#)
 - ipv6 dhcp pool command [2-288](#)
 - ipv6 dhcp server command [2-291](#)
 - ipv6 mld snooping command [2-293](#)
 - ipv6 mld snooping last-listener-query count command [2-295](#)
 - ipv6 mld snooping last-listener-query-interval command [2-297](#)
 - ipv6 mld snooping listener-message-suppression command [2-299](#)
 - ipv6 mld snooping robustness-variable command [2-300](#)
 - ipv6 mld snooping tcn command [2-302](#)
 - ipv6 mld snooping vlan command [2-304](#)
 - IPv6 QoS
 - enabling [2-352](#)
 - IPv6 SDM template [2-472](#)
 - ipv6 traffic-filter command [2-306](#)
 - ip verify source command [2-279](#)
-
- J**
- jumbo frames
 - See MTU
-
- L**
- l2protocol-tunnel command [2-308](#)
 - l2protocol-tunnel cos command [2-311](#)
 - LACP
 - See EtherChannel
 - lacp port-priority command [2-312](#)
 - lacp system-priority command [2-314](#)
 - Layer 2 mode, enabling [2-827](#)
 - Layer 2 protocol ports, displaying [2-629](#)
 - Layer 2 protocol-tunnel
 - error detection for [2-185](#)
 - error recovery timer [2-190](#)

- Layer 2 protocol tunnel counters [2-98](#)
- Layer 2 protocol tunneling error recovery [2-309](#)
- Layer 2 traceroute
 - IP addresses [2-875](#)
 - MAC addresses [2-872](#)
- Layer 3 mode, enabling [2-827](#)
- license boot command [2-316](#)
- line configuration mode [1-3, 1-5](#)
- Link Aggregation Control Protocol
 - See EtherChannel
- link flap
 - error detection for [2-185](#)
 - error recovery timer [2-190](#)
- link state group command [2-318](#)
- link state track command [2-320](#)
- load-distribution methods for EtherChannel [2-434](#)
- location (global configuration) command [2-321](#)
- location (interface configuration) command [2-323](#)
- logging event command [2-325](#)
- logging event power-inline-status command [2-326](#)
- logging file command [2-327](#)
- logical interface [2-201](#)
- loopback error
 - detection for [2-185](#)
 - recovery timer [2-190](#)
- loop guard, for spanning tree [2-772, 2-776](#)

M

- mab request format attribute 32 command [2-329](#)
- mac access-group command [2-331](#)
- MAC access-groups, displaying [2-646](#)
- MAC access list configuration mode [2-333](#)
- mac access-list extended command [2-333](#)
- MAC access lists [2-136](#)
- MAC addresses
 - disabling MAC address learning per VLAN [2-336](#)
 - displaying
 - aging time [2-651](#)
 - all [2-649](#)
 - dynamic [2-655](#)
 - MAC address-table move updates [2-660](#)
 - notification settings [2-659, 2-662](#)
 - number of addresses in a VLAN [2-653](#)
 - per interface [2-657](#)
 - per VLAN [2-666](#)
 - static [2-664](#)
 - static and dynamic entries [2-647](#)
 - dynamic
 - aging time [2-335](#)
 - deleting [2-101](#)
 - displaying [2-655](#)
 - enabling MAC address notification [2-340](#)
 - enabling MAC address-table move update [2-338](#)
 - matching [2-345](#)
 - persistent stack [2-815](#)
 - static
 - adding and removing [2-342](#)
 - displaying [2-664](#)
 - dropping on an interface [2-343](#)
 - tables [2-649](#)
- MAC address notification, debugging [B-24](#)
- mac address-table aging-time [2-331, 2-345](#)
- mac address-table aging-time command [2-335](#)
- mac address-table learning command [2-336](#)
- mac address-table move update command [2-338](#)
- mac address-table notification command [2-340](#)
- mac address-table static command [2-342](#)
- mac address-table static drop command [2-343](#)
- MAC frames
 - See MTU
- macros
 - interface range [2-126, 2-203](#)
- manual
 - audience [xxi](#)
 - purpose of [xxi](#)
- maps
 - QoS

- defining [2-360](#)
 - displaying [2-676](#)
- VLAN
 - creating [2-890](#)
 - defining [2-345](#)
 - displaying [2-735](#)
- match (access-map configuration) command [2-345](#)
- match (class-map configuration) command [2-347](#)
- maximum transmission unit
 - See MTU
- mdix auto command [2-350](#)
- member switches
 - See clusters
- memory (boot loader) command [A-14](#)
- mgmt_clr (boot loader) command [A-16](#)
- mgmt_init (boot loader) command [A-17, A-18](#)
- mkdir (boot loader) command [A-19](#)
- MLD snooping
 - configuring [2-299, 2-300](#)
 - configuring queries [2-295, 2-297](#)
 - configuring topology change notification [2-302](#)
 - displaying [2-619, 2-621, 2-623, 2-625](#)
 - enabling [2-293](#)
 - enabling on a VLAN [2-304](#)
- mls qos aggregate-policer command [2-354](#)
- mls qos command [2-352](#)
- mls qos cos command [2-356](#)
- mls qos dscp-mutation command [2-358](#)
- mls qos map command [2-360](#)
- mls qos queue-set output buffers command [2-364](#)
- mls qos queue-set output threshold command [2-366](#)
- mls qos rewrite ip dscp command [2-368](#)
- mls qos srr-queue input bandwidth command [2-370](#)
- mls qos srr-queue input buffers command [2-372](#)
- mls qos-srr-queue input cos-map command [2-374](#)
- mls qos srr-queue input dscp-map command [2-376](#)
- mls qos srr-queue input priority-queue command [2-378](#)
- mls qos srr-queue input threshold command [2-380](#)
- mls qos-srr-queue output cos-map command [2-382](#)
- mls qos srr-queue output dscp-map command [2-384](#)
- mls qos trust command [2-386](#)
- mls qos vlan-based command [2-388](#)
- mode, MVR [2-395](#)
- Mode button, and password recovery [2-475](#)
- modes, commands [1-2](#)
- monitor session command [2-389](#)
- more (boot loader) command [A-20](#)
- MSTP
 - displaying [2-712](#)
 - interoperability [2-108](#)
 - link type [2-774](#)
 - MST region
 - aborting changes [2-780](#)
 - applying changes [2-780](#)
 - configuration name [2-780](#)
 - configuration revision number [2-780](#)
 - current or pending display [2-780](#)
 - displaying [2-712](#)
 - MST configuration mode [2-780](#)
 - VLANs-to-instance mapping [2-780](#)
 - path cost [2-782](#)
 - protocol mode [2-778](#)
 - restart protocol migration process [2-108](#)
 - root port
 - loop guard [2-772](#)
 - preventing from becoming designated [2-772](#)
 - restricting which can be root [2-772](#)
 - root guard [2-772](#)
 - root switch
 - affects of extended system ID [2-770](#)
 - hello-time [2-785, 2-792](#)
 - interval between BPDU messages [2-786](#)
 - interval between hello BPDU messages [2-785, 2-792](#)
 - max-age [2-786](#)
 - maximum hop count before discarding BPDU [2-787](#)
 - port priority for selection of [2-788](#)

- primary or secondary [2-792](#)
- switch priority [2-791](#)
- state changes
 - blocking to forwarding state [2-799](#)
 - enabling BPDU filtering [2-762, 2-796](#)
 - enabling BPDU guard [2-764, 2-796](#)
 - enabling Port Fast [2-796, 2-799](#)
 - forward-delay time [2-784](#)
 - length of listening and learning states [2-784](#)
 - rapid transition to forwarding [2-774](#)
 - shutting down Port Fast-enabled ports [2-796](#)
- state information display [2-711](#)

MTU

- configuring size [2-868](#)
- displaying global setting [2-724](#)
- MAC [2-869](#)
- system jumbo [2-869](#)
- system routing [2-869](#)

Multicast Listener Discovery

See MLD

- multicast group address, MVR [2-398](#)
- multicast groups, MVR [2-396](#)

Multicast Listener Discovery

See MLD

- multicast router learning method [2-266](#)
- multicast router ports, configuring [2-266](#)
- multicast router ports, IPv6 [2-304](#)
- multicast storm control [2-817](#)
- multicast VLAN, MVR [2-395](#)
- multicast VLAN registration

See MVR

- multiple hosts on authorized port [2-163](#)

Multiple Spanning Tree Protocol

See MSTP

MVR

- and address aliasing [2-396](#)
- configuring [2-395](#)
- configuring interfaces [2-398](#)
- debug messages, display [B-28](#)

- displaying [2-685](#)
- displaying interface information [2-687](#)
- members, displaying [2-689](#)
- mvr (global configuration) command [2-395](#)
- mvr (interface configuration) command [2-398](#)
- mvr vlan group command [2-399](#)

N

- native VLANs [2-859](#)
- native VLAN tagging [2-893](#)
- Network Assistant requirements [xxii](#)
- network-policy (global configuration) command [2-402](#)
- network-policy command [2-401](#)
- network-policy profile (network-policy configuration) command [2-403](#)
- nmosp attachment suppress command [2-406](#)
- nmosp command [2-405](#)
- nonegotiate
 - DTP messaging [2-844](#)
 - speed [2-807](#)
- non-IP protocols
 - denying [2-136](#)
 - forwarding [2-424](#)
- non-IP traffic access lists [2-333](#)
- non-IP traffic forwarding
 - denying [2-136](#)
 - permitting [2-424](#)
- non-stop forwarding [2-410](#)
- normal-range VLANs [2-884, 2-889](#)
- note, description [xxii](#)
- no vlan command [2-884](#)
- nsf command [2-410](#)

O

- online diagnostics
 - configuring health monitoring diagnostic tests [2-139](#)
 - displaying

- configured boot-up coverage level [2-534](#)
- current scheduled tasks [2-534](#)
- event logs [2-534](#)
- supported test suites [2-534](#)
- test ID [2-534](#)
- test results [2-534](#)
- test statistics [2-534](#)
- enabling
 - scheduling [2-141](#)
 - syslog messages [2-139](#)
- global configuration mode
 - clearing health monitoring diagnostic test schedule [2-139](#)
 - clearing test-based testing schedule [2-141](#)
 - setting health monitoring diagnostic testing [2-139](#)
 - setting test-based testing [2-141](#)
 - setting up health monitoring diagnostic test schedule [2-139](#)
 - setting up test-based testing [2-141](#)
- removing scheduling [2-141](#)
- scheduled switchover
 - disabling [2-141](#)
 - enabling [2-141](#)
- setting test interval [2-141](#)
- specifying health monitoring diagnostic tests [2-139](#)
- starting testing [2-143](#)

P

PAgP

See EtherChannel

- pagp learn-method command [2-412](#)
- pagp port-priority command [2-414](#)
- password, VTP [2-903](#)
- password-recovery mechanism, enabling and disabling [2-475](#)
- permit (ARP access-list configuration) command [2-416](#)
- permit (IPv6) command [2-418](#)
- permit (MAC access-list configuration) command [2-424](#)

- per-VLAN spanning-tree plus
 - See STP
- physical-port learner [2-412](#)
- PID, displaying [2-585](#)
- PIM-DVMRP, as multicast router learning method [2-266](#)
- PoE
 - configuring the power budget [2-439](#)
 - configuring the power management mode [2-436](#)
 - displaying controller register values [2-527](#)
 - displaying power management information [2-701](#)
 - error detection for [2-185](#)
 - error recovery timer [2-190](#)
 - logging of status [2-326](#)
 - monitoring power [2-441](#)
 - policing power consumption [2-441](#)
- police aggregate command [2-429](#)
- police command [2-427](#)
- policed-DSCP map [2-360](#)
- policy-map command [2-431](#)
- policy maps
 - applying to an interface [2-477, 2-483](#)
 - creating [2-431](#)
 - displaying [2-697](#)
 - hierarchical [2-431](#)
- policers
 - displaying [2-669](#)
 - for a single class [2-427](#)
 - for multiple classes [2-354, 2-429](#)
 - policed-DSCP map [2-360](#)
- traffic classification
 - defining the class [2-84](#)
 - defining trust states [2-877](#)
 - setting DSCP or IP precedence values [2-481](#)

Port Aggregation Protocol

See EtherChannel

port-based authentication

- AAA method list [2-3](#)
- configuring violation modes [2-181](#)
- debug messages, display [B-10](#)

- enabling guest VLAN supplicant [2-149, 2-160](#)
 - enabling IEEE 802.1x
 - globally [2-146](#)
 - per interface [2-171](#)
 - guest VLAN [2-161](#)
 - host modes [2-163](#)
 - IEEE 802.1x AAA accounting methods [2-1](#)
 - initialize an interface [2-164, 2-177](#)
 - MAC authentication bypass [2-165](#)
 - manual control of authorization state [2-171](#)
 - multiple hosts on authorized port [2-163](#)
 - PAE as authenticator [2-170](#)
 - periodic re-authentication
 - enabling [2-174](#)
 - time between attempts [2-178](#)
 - quiet period between failed authentication exchanges [2-178](#)
 - re-authenticating IEEE 802.1x-enabled ports [2-173](#)
 - resetting configurable IEEE 802.1x parameters [2-159](#)
 - switch-to-authentication server retransmission time [2-178](#)
 - switch-to-client frame-retransmission number [2-167 to 2-169](#)
 - switch-to-client retransmission time [2-178](#)
 - test for IEEE 802.1x readiness [2-176](#)
 - port-based trust
 - IPv4 and IPv6 [2-387](#)
 - port-channel load-balance command [2-434](#)
 - Port Fast, for spanning tree [2-799](#)
 - port ranges, defining [2-124, 2-126](#)
 - ports, debugging [B-78](#)
 - ports, protected [2-857](#)
 - port security
 - aging [2-851](#)
 - debug messages, display [B-80](#)
 - enabling [2-846](#)
 - violation error recovery [2-190](#)
 - port trust states for QoS [2-386](#)
 - port types, MVR [2-398](#)
 - power information, displaying [2-549](#)
 - power inline command [2-436](#)
 - power inline consumption command [2-439](#)
 - power inline police command [2-441](#)
 - Power over Ethernet
 - See PoE
 - power rps command (user EXEC) [2-444](#)
 - power supply
 - configuring [2-446](#)
 - managing [2-446](#)
 - power supply command [2-446](#)
 - priority-queue command [2-448](#)
 - priority value, stack member [2-719, 2-822](#)
 - private-vlan command [2-450](#)
 - private-vlan mapping command [2-453](#)
 - private VLANs
 - association [2-855](#)
 - configuring [2-450](#)
 - configuring ports [2-842](#)
 - displaying [2-730](#)
 - host ports [2-842](#)
 - mapping
 - configuring [2-855](#)
 - displaying [2-568](#)
 - promiscuous ports [2-842](#)
 - privileged EXEC mode [1-2, 1-3](#)
 - product identification information, displaying [2-585](#)
 - promiscuous ports, private VLANs [2-842](#)
 - protected ports, displaying [2-574](#)
 - pruning
 - VLANs [2-859](#)
 - VTP
 - enabling [2-903](#)
 - pruning-eligible VLAN list [2-861](#)
 - PVST+
 - See STP
-
- Q**
- QoS

- auto-QoS
 - configuring [2-59](#)
 - debug messages, display [B-4](#)
 - displaying [2-497](#)
- auto-QoS trust
 - configuring [2-53](#)
- auto-QoS video
 - configuring [2-56](#)
- class maps
 - creating [2-87](#)
 - defining the match criteria [2-347](#)
 - displaying [2-508](#)
- defining the CoS value for an incoming packet [2-356](#)
- displaying configuration information [2-497, 2-668](#)
- DSCP transparency [2-368](#)
- DSCP trusted ports
 - applying DSCP-to-DSCP-mutation map to [2-358](#)
 - defining DSCP-to-DSCP-mutation map [2-360](#)
- egress queues
 - allocating buffers [2-364](#)
 - defining the CoS output queue threshold map [2-382](#)
 - defining the DSCP output queue threshold map [2-384](#)
 - displaying buffer allocations [2-672](#)
 - displaying CoS output queue threshold map [2-676](#)
 - displaying DSCP output queue threshold map [2-676](#)
 - displaying queueing strategy [2-672](#)
 - displaying queue-set settings [2-679](#)
 - enabling bandwidth shaping and scheduling [2-811](#)
 - enabling bandwidth sharing and scheduling [2-813](#)
 - limiting the maximum output on a port [2-809](#)
 - mapping a port to a queue-set [2-455](#)
 - mapping CoS values to a queue and threshold [2-382](#)
 - mapping DSCP values to a queue and threshold [2-384](#)
 - setting maximum and reserved memory allocations [2-366](#)
 - setting WTD thresholds [2-366](#)
- enabling [2-352](#)
- enabling IPv6 QoS [2-352](#)
- ingress queues
 - allocating buffers [2-372](#)
 - assigning SRR scheduling weights [2-370](#)
 - defining the CoS input queue threshold map [2-374](#)
 - defining the DSCP input queue threshold map [2-376](#)
 - displaying buffer allocations [2-672](#)
 - displaying CoS input queue threshold map [2-676](#)
 - displaying DSCP input queue threshold map [2-676](#)
 - displaying queueing strategy [2-672](#)
 - displaying settings for [2-670](#)
 - enabling the priority queue [2-378](#)
 - mapping CoS values to a queue and threshold [2-374](#)
 - mapping DSCP values to a queue and threshold [2-376](#)
 - setting WTD thresholds [2-380](#)
- maps
 - defining [2-360, 2-374, 2-376, 2-382, 2-384](#)
 - displaying [2-676](#)
- policy maps
 - applying an aggregate policer [2-429](#)
 - applying to an interface [2-477, 2-483](#)
 - creating [2-431](#)
 - defining policers [2-354, 2-427](#)
 - displaying policers [2-669](#)
 - displaying policy maps [2-697](#)
 - hierarchical [2-431](#)
 - policed-DSCP map [2-360](#)
 - setting DSCP or IP precedence values [2-481](#)
 - traffic classifications [2-84](#)
 - trust states [2-877](#)
- port trust states [2-386](#)

queues, enabling the expedite [2-448](#)
 statistics
 in-profile and out-of-profile packets [2-672](#)
 packets enqueued or dropped [2-672](#)
 sent and received CoS values [2-672](#)
 sent and received DSCP values [2-672](#)
 trusted boundary for IP phones [2-386](#)
 VLAN-based [2-388](#)
 quality of service
 See QoS
 querytime, MVR [2-395](#)
 queue-set command [2-455](#)

R
 radius-server dead-criteria command [2-456](#)
 radius-server host command [2-458](#)
 rapid per-VLAN spanning-tree plus
 See STP
 rapid PVST+
 See STP
 rcommand command [2-460](#)
 re-authenticating IEEE 802.1x-enabled ports [2-173](#)
 re-authentication
 periodic [2-174](#)
 time between attempts [2-178](#)
 receiver ports, MVR [2-398](#)
 receiving flow-control packets [2-197](#)
 recovery mechanism
 causes [2-190](#)
 display [2-91, 2-504, 2-554, 2-557](#)
 timer interval [2-191](#)
 redundancy for cluster switches [2-121](#)
 redundant power supply
 See RPS
 reload command [2-462](#)
 remote command [2-464](#)
 remote-span command [2-466](#)
 Remote Switched Port Analyzer

 See RSPAN
 rename (boot loader) command [A-21](#)
 renew ip dhcp snooping database command [2-468](#)
 requirements
 cluster [xxii](#)
 device manager [xxii](#)
 Network Assistant [xxii](#)
 reset (boot loader) command [A-22](#)
 resource templates, displaying [2-707](#)
 restricted VLAN
 See dot1x auth-fail vlan
 rmdir (boot loader) command [A-23](#)
 rmon collection stats command [2-471](#)
 root guard, for spanning tree [2-772](#)
 routed ports
 IP addresses on [2-211](#)
 number supported [2-211](#)
 routing frames
 See MTU
 RPS 2300
 configuring [2-444](#)
 managing [2-444](#)
 RSPAN
 configuring [2-389](#)
 displaying [2-682](#)
 filter RSPAN traffic [2-389](#)
 remote-span command [2-466](#)
 sessions
 add interfaces to [2-389](#)
 displaying [2-682](#)
 start new [2-389](#)

S

scheduled switchover
 disabling [2-141](#)
 enabling [2-141](#)
 SDM mismatch mode [2-473, 2-720](#)
 sdm prefer command [2-472](#)

- SDM templates
 - allowed resources [2-473](#)
 - and stacking [2-473](#)
 - displaying [2-707](#)
 - dual IPv4 and IPv6 [2-472](#)
- secure ports, limitations [2-848](#)
- sending flow-control packets [2-197](#)
- service password-recovery command [2-475](#)
- service-policy command [2-477](#)
- session command [2-480](#)
- set (boot loader) command [A-24](#)
- set command [2-481](#)
- setup command [2-483](#)
- setup express command [2-486](#)
- show access-lists command [2-488](#)
- show archive status command [2-491](#)
- show arp access-list command [2-492](#)
- show authentication command [2-493](#)
- show auto qos command [2-497](#)
- show boot command [2-501](#)
- show cable-diagnostics tdr command [2-504](#)
- show cisp command [2-507](#)
- show class-map command [2-508](#)
- show cluster candidates command [2-511](#)
- show cluster command [2-509](#)
- show cluster members command [2-513](#)
- show controllers cpu-interface command [2-515](#)
- show controllers ethernet-controller command [2-517](#)
- show controllers ethernet-controller fastethernet command [2-524](#)
- show controllers power inline command [2-527](#)
- show controllers team command [2-530](#)
- show controller utilization command [2-532](#)
- show dot1q-tunnel command [2-539](#)
- show dot1x command [2-540](#)
- show dtp [2-544](#)
- show eap command [2-546](#)
- show env command [2-549](#)
- show errdisable detect command [2-554](#)
- show errdisable flap-values command [2-556](#)
- show errdisable recovery command [2-557](#)
- show etherchannel command [2-559](#)
- show fallback profile command [2-562](#)
- show flowcontrol command [2-564](#)
- show idprom command [2-566](#)
- show interfaces command [2-568](#)
- show interfaces counters command [2-579](#)
- show interface transceivers command [2-582](#)
- show inventory command [2-585](#)
- show ip arp inspection command [2-586](#)
- show ipc command [2-612](#)
- show ip dhcp snooping binding command [2-591](#)
- show ip dhcp snooping command [2-590](#)
- show ip dhcp snooping database command [2-593, 2-595](#)
- show ip igmp profile command [2-598](#)
- show ip igmp snooping address command [2-621](#)
- show ip igmp snooping command [2-599, 2-619](#)
- show ip igmp snooping groups command [2-602](#)
- show ip igmp snooping mrouter command [2-604, 2-623](#)
- show ip igmp snooping querier command [2-606, 2-625](#)
- show ip source binding command [2-608](#)
- show ipv6 access-list command [2-616](#)
- show ipv6 dhcp conflict command [2-618](#)
- show ipv6 route updated [2-627](#)
- show ip verify source command [2-610](#)
- show l2protocol-tunnel command [2-629](#)
- show lacp command [2-632](#)
- show link state group command [2-636](#)
- show location [2-638](#)
- show location command [2-638](#)
- show logging onboard command [2-641](#)
- show mac access-group command [2-646](#)
- show mac address-table address command [2-649](#)
- show mac address-table aging time command [2-651](#)
- show mac address-table command [2-647](#)
- show mac address-table count command [2-653](#)
- show mac address-table dynamic command [2-655](#)
- show mac address-table interface command [2-657](#)

- show mac address-table learning command [2-659](#)
- show mac address-table move update command [2-660](#)
- show mac address-table notification command [2-102](#), [2-662](#), [B-26](#)
- show mac address-table static command [2-664](#)
- show mac address-table vlan command [2-666](#)
- show mls qos aggregate-policer command [2-669](#)
- show mls qos command [2-668](#)
- show mls qos input-queue command [2-670](#)
- show mls qos interface command [2-672](#)
- show mls qos maps command [2-676](#)
- show mls qos queue-set command [2-679](#)
- show mls qos vlan command [2-681](#)
- show monitor command [2-682](#)
- show mvr command [2-685](#)
- show mvr interface command [2-687](#)
- show mvr members command [2-689](#)
- show network-policy profile command [2-691](#)
- show nmsp command [2-692](#)
- show pagp command [2-695](#)
- show platform acl command [C-2](#)
- show platform backup interface command [C-3](#)
- show platform configuration command [C-4](#)
- show platform dl command [C-5](#)
- show platform etherchannel command [C-6](#)
- show platform forward command [C-7](#)
- show platform frontend-controller command [C-9](#)
- show platform igmp snooping command [C-10](#)
- show platform ipc trace command [C-18](#)
- show platform ip multicast command [C-12](#)
- show platform ip unicast command [C-13](#)
- show platform ipv6 mld snooping command [C-19](#)
- show platform ipv6 unicast command [C-20](#)
- show platform ip wccp command [C-17](#)
- show platform layer4op command [C-22](#)
- show platform mac-address-table command [C-23](#)
- show platform messaging command [C-24](#)
- show platform monitor command [C-25](#)
- show platform mvr table command [C-26](#)
- show platform pm command [C-27](#)
- show platform port-asic command [C-28](#)
- show platform port-security command [C-33](#)
- show platform qos command [C-34](#)
- show platform resource-manager command [C-35](#)
- show platform snmp counters command [C-37](#)
- show platform spanning-tree command [C-38](#)
- show platform stack-manager command [C-40](#)
- show platform stp-instance command [C-39](#)
- show platform tb command [C-44](#)
- show platform team command [C-46](#)
- show platform vlan command [C-49](#)
- show policy-map command [2-697](#)
- show port security command [2-698](#)
- show power inline command [2-701](#)
- show sdm prefer command [2-707](#)
- show setup express command [2-710](#)
- show spanning-tree command [2-711](#)
- show storm-control command [2-717](#)
- show switch command [2-719](#)
- show system mtu command [2-724](#)
- show trust command [2-877](#)
- show udd command [2-725](#)
- show version command [2-728](#)
- show vlan access-map command [2-735](#)
- show vlan command [2-730](#)
- show vlan command, fields [2-732](#)
- show vlan filter command [2-736](#)
- show vmps command [2-737](#)
- show vtp command [2-739](#)
- shutdown command [2-745](#)
- shutdown threshold, Layer 2 protocol tunneling [2-308](#)
- shutdown vlan command [2-746](#)
- small-frame violation rate command [2-747](#)
- SNMP host, specifying [2-755](#)
- SNMP informs, enabling the sending of [2-749](#)
- snmp-server enable traps command [2-749](#)
- snmp-server host command [2-755](#)
- snmp trap mac-notification change command [2-759](#)

- SNMP traps
 - enabling MAC address notification trap [2-759](#)
 - enabling the MAC address notification feature [2-340](#)
 - enabling the sending of [2-749](#)
- SoftPhone
 - See Cisco SoftPhone
- software images
 - copying [2-8](#)
 - deleting [2-128](#)
 - downloading [2-11](#)
 - upgrading [2-8, 2-11](#)
 - uploading [2-18](#)
- software version, displaying [2-728](#)
- source ports, MVR [2-398](#)
- SPAN
 - configuring [2-389](#)
 - debug messages, display [B-27](#)
 - displaying [2-682](#)
 - filter SPAN traffic [2-389](#)
 - sessions
 - add interfaces to [2-389](#)
 - displaying [2-682](#)
 - start new [2-389](#)
- spanning-tree backbonefast command [2-761](#)
- spanning-tree bpdudfilter command [2-762](#)
- spanning-tree bpduguard command [2-764](#)
- spanning-tree cost command [2-766](#)
- spanning-tree etherchannel command [2-768](#)
- spanning-tree extend system-id command [2-770](#)
- spanning-tree guard command [2-772](#)
- spanning-tree link-type command [2-774](#)
- spanning-tree loopguard default command [2-776](#)
- spanning-tree mode command [2-778](#)
- spanning-tree mst configuration command [2-780](#)
- spanning-tree mst cost command [2-782](#)
- spanning-tree mst forward-time command [2-784](#)
- spanning-tree mst hello-time command [2-785](#)
- spanning-tree mst max-age command [2-786](#)
- spanning-tree mst max-hops command [2-787](#)
- spanning-tree mst port-priority command [2-788](#)
- spanning-tree mst pre-standard command [2-790](#)
- spanning-tree mst priority command [2-791](#)
- spanning-tree mst root command [2-792](#)
- spanning-tree portfast (global configuration) command [2-796](#)
- spanning-tree portfast (interface configuration) command [2-799](#)
- spanning-tree port-priority command [2-794](#)
- Spanning Tree Protocol
 - See STP
- spanning-tree transmit hold-count command [2-801](#)
- spanning-tree uplinkfast command [2-802](#)
- spanning-tree vlan command [2-804](#)
- speed command [2-807](#)
- srr-queue bandwidth limit command [2-809](#)
- srr-queue bandwidth shape command [2-811](#)
- srr-queue bandwidth share command [2-813](#)
- SSH, configuring version [2-273](#)
- stack-mac persistent timer command [2-815](#)
- stack member
 - access [2-480](#)
 - number [2-719, 2-825](#)
 - priority value [2-822](#)
 - provisioning [2-823](#)
 - reloading [2-462](#)
- stacks, switch
 - disabling a member [2-820](#)
 - enabling a member [2-820](#)
 - MAC address [2-815](#)
 - provisioning a new member [2-823](#)
 - reloading [2-462](#)
 - stack member access [2-480](#)
 - stack member number [2-719, 2-825](#)
 - stack member priority value [2-719, 2-822](#)
- static-access ports, configuring [2-829](#)
- statistics, Ethernet group [2-471](#)
- sticky learning, enabling [2-846](#)
- storm-control command [2-817](#)

- STP
- BackboneFast [2-761](#)
 - counters, clearing [2-107](#)
 - debug messages, display
 - BackboneFast events [B-84](#)
 - MSTP [B-87](#)
 - optimized BPDUs handling [B-86](#)
 - spanning-tree activity [B-82](#)
 - switch shim [B-89](#)
 - transmitted and received BPDUs [B-85](#)
 - UplinkFast [B-91](#)
 - detection of indirect link failures [2-761](#)
 - enabling protocol tunneling for [2-308](#)
 - EtherChannel misconfiguration [2-768](#)
 - extended system ID [2-770](#)
 - path cost [2-766](#)
 - protocol modes [2-778](#)
 - root port
 - accelerating choice of new [2-802](#)
 - loop guard [2-772](#)
 - preventing from becoming designated [2-772](#)
 - restricting which can be root [2-772](#)
 - root guard [2-772](#)
 - UplinkFast [2-802](#)
 - root switch
 - affects of extended system ID [2-770, 2-805](#)
 - hello-time [2-804](#)
 - interval between BPDU messages [2-804](#)
 - interval between hello BPDU messages [2-804](#)
 - max-age [2-804](#)
 - port priority for selection of [2-794](#)
 - primary or secondary [2-804](#)
 - switch priority [2-804](#)
 - state changes
 - blocking to forwarding state [2-799](#)
 - enabling BPDU filtering [2-762, 2-796](#)
 - enabling BPDU guard [2-764, 2-796](#)
 - enabling Port Fast [2-796, 2-799](#)
 - enabling timer to recover from error state [2-190](#)
 - forward-delay time [2-804](#)
 - length of listening and learning states [2-804](#)
 - shutting down Port Fast-enabled ports [2-796](#)
 - state information display [2-711](#)
 - VLAN options [2-791, 2-804](#)
 - SVIs, creating [2-205](#)
 - SVI status calculation [2-831](#)
 - Switched Port Analyzer
 - See SPAN
 - switching characteristics
 - modifying [2-827](#)
 - returning to interfaces [2-827](#)
 - switchport access command [2-829](#)
 - switchport autostate exclude command [2-831](#)
 - switchport backup interface command [2-833](#)
 - switchport block command [2-836](#)
 - switchport command [2-827](#)
 - switchport host command [2-838](#)
 - switchport mode command [2-839](#)
 - switchport mode private-vlan command [2-842](#)
 - switchport nonegotiate command [2-844](#)
 - switchport port-security aging command [2-851](#)
 - switchport port-security command [2-846](#)
 - switchport priority extend command [2-853](#)
 - switchport private-vlan command [2-855](#)
 - switchport protected command [2-857](#)
 - switchports, displaying [2-568](#)
 - switchport trunk command [2-859](#)
 - switchport voice detect [2-862](#)
 - switchport voice vlan command [2-863](#)
 - switch priority command [2-820, 2-822](#)
 - switch provision command [2-823](#)
 - switch renumber command [2-825](#)
 - system env temperature threshold yellow command [2-866](#)
 - system message logging [2-326](#)
 - system message logging, save message to flash [2-327](#)
 - system mtu command [2-868](#)
 - system resource templates [2-472](#)

T

tar files, creating, listing, and extracting [2-15](#)
 TDR, running [2-871](#)
 Telnet, using to communicate to cluster switches [2-460](#)
 temperature information, displaying [2-549](#)
 templates, system resources [2-472](#)
 test cable-diagnostics tdr command [2-871](#)
 traceroute mac command [2-872](#)
 traceroute mac ip command [2-875](#)
 trunking, VLAN mode [2-839](#)
 trunk mode [2-839](#)
 trunk ports [2-839](#)
 trunks, to non-DTP device [2-840](#)
 trusted boundary for QoS [2-386](#)
 trusted port states for QoS [2-386](#)
 tunnel ports, Layer 2 protocol, displaying [2-629](#)
 type (boot loader) command [A-27](#)

U

UDLD
 aggressive mode [2-879, 2-881](#)
 debug messages, display [B-99](#)
 enable globally [2-879](#)
 enable per interface [2-881](#)
 error recovery timer [2-190](#)
 message timer [2-879](#)
 normal mode [2-879, 2-881](#)
 reset a shutdown interface [2-883](#)
 status [2-725](#)
 udd command [2-879](#)
 udd port command [2-881](#)
 udd reset command [2-883](#)
 unicast storm control [2-817](#)
 UniDirectional Link Detection
 See UDLD
 unknown multicast traffic, preventing [2-836](#)
 unknown unicast traffic, preventing [2-836](#)

unset (boot loader) command [A-28](#)
 upgrading
 copying software images [2-8](#)
 downloading software images [2-11](#)
 software images, monitoring status of [2-491](#)
 upgrading information
 See release notes
 UplinkFast, for STP [2-802](#)
 user EXEC mode [1-2, 1-3](#)

V

version (boot loader) command [A-30](#)
 version mismatch mode [2-720, C-41](#)
 vlan (global configuration) command [2-884](#)
 vlan (VLAN configuration) command [2-889](#)
 vlan access-map command [2-890](#)
 VLAN access map configuration mode [2-890](#)
 VLAN access maps
 actions [2-6](#)
 displaying [2-735](#)
 VLAN-based QoS [2-388](#)
 VLAN configuration
 rules [2-887](#)
 saving [2-884](#)
 VLAN configuration mode
 commands
 VLAN [2-889](#)
 VTP [2-908](#)
 description [1-4](#)
 entering [2-884, 2-892](#)
 summary [1-3](#)
 vlan database command [2-892](#)
 vlan dot1q tag native command [2-893](#)
 vlan filter command [2-895](#)
 VLAN filters, displaying [2-736](#)
 VLAN ID range [2-884](#)
 VLAN maps
 applying [2-895](#)

- creating [2-890](#)
- defining [2-345](#)
- displaying [2-735](#)
- VLAN Query Protocol
 - See VQP
- VLANs
 - adding [2-884](#)
 - configuring [2-884, 2-889](#)
 - debug messages, display
 - ISL [B-95](#)
 - VLAN IOS file system error tests [B-94](#)
 - VLAN manager activity [B-92](#)
 - VTP [B-97](#)
 - displaying configurations [2-730](#)
 - extended-range [2-884](#)
 - MAC addresses
 - displaying [2-666](#)
 - number of [2-653](#)
 - media types [2-887](#)
 - normal-range [2-884, 2-889](#)
 - private [2-842](#)
 - configuring [2-450](#)
 - displaying [2-730](#)
 - See also private VLANs
 - restarting [2-746](#)
 - saving the configuration [2-884](#)
 - shutting down [2-746](#)
 - SNMP traps for VTP [2-752, 2-756](#)
 - suspending [2-746](#)
- VLAN Trunking Protocol
 - See VTP
- VM mode [2-720, C-41](#)
- VMPS
 - configuring servers [2-900](#)
 - displaying [2-737](#)
 - error recovery timer [2-191](#)
 - reconfirming dynamic VLAN assignments [2-897](#)
- vmpls reconfirm (global configuration) command [2-898](#)
- vmpls reconfirm (privileged EXEC) command [2-897](#)
- vmpls retry command [2-899](#)
- vmpls server command [2-900](#)
- voice VLAN
 - configuring [2-862, 2-863](#)
 - setting port priority [2-853](#)
- VQP
 - and dynamic-access ports [2-830](#)
 - clearing client statistics [2-109](#)
 - displaying information [2-737](#)
 - per-server retry count [2-899](#)
 - reconfirmation interval [2-898](#)
 - reconfirming dynamic VLAN assignments [2-897](#)
- VTP
 - changing characteristics [2-902](#)
 - clearing pruning counters [2-110](#)
 - configuring
 - domain name [2-902](#)
 - file name [2-902](#)
 - mode [2-902](#)
 - password [2-903](#)
 - counters display fields [2-740](#)
 - displaying information [2-739](#)
 - enabling
 - pruning [2-903](#)
 - tunneling for [2-308](#)
 - Version 2 [2-903](#)
 - enabling per port [2-907](#)
 - mode [2-902](#)
 - pruning [2-903](#)
 - saving the configuration [2-884](#)
 - statistics [2-739](#)
 - status [2-739](#)
 - status display fields [2-742](#)
- vtp (global configuration) command [2-902](#)
- vtp (VLAN configuration) command [2-908](#)
- vtp interface configuration command [2-907](#)
- vtp primary command [2-909](#)