



---

## A

aaa accounting dot1x command [2-1](#)  
aaa authentication dot1x command [2-3](#)  
AAA methods [2-3](#)  
access control entries  
    See ACEs  
access control lists  
    See ACLs  
access-group  
    show mode interface [2-381](#)  
access groups  
    IP [2-166](#)  
    MAC, displaying [2-147](#)  
    matching for QoS classification [2-309](#)  
access list, IPv6 [2-243](#)  
access mode [2-78](#)  
access-node-identifier, setting for the switch [2-383](#)  
access ports [2-78](#)  
ACEs [2-95](#), [2-356](#)  
ACLs  
    as match criteria for QoS classes [2-309](#)  
    deny [2-93](#)  
    displaying [2-28](#)  
    for non-IP protocols [2-287](#)  
    IP [2-166](#)  
    on Layer 2 interfaces [2-166](#)  
    permit [2-354](#)  
action command [2-5](#)  
address aliasing [2-334](#)  
aggregate interval burst-cycles command [2-9](#)  
aggregate interval command [2-7](#)  
aggregate policers

    applying [2-367](#)

    creating [2-362](#)

    displaying [2-175](#)

    QoS [2-364](#)

aggregate-port learner [2-343](#)

alarm-contact command [2-11](#)

alarm-contact status, displaying [2-62](#)

allowed VLANs [2-94](#)

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

archive tar command [2-16](#)

archive upload-sw command [2-19](#)

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

arp access-list command [2-21](#)

attaching policy maps to interfaces [2-9](#)

authorization state of controlled port [2-111](#)

autonegotiation of duplex mode [2-123](#)

---

## B

backup interfaces

    configuring [2-71](#)

    displaying [2-82](#)

bandwidth, configuring for QoS [2-23](#)

bandwidth command [2-23](#)

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

boot config-file command [2-27](#)

boot enable-break command [2-28](#)

boot helper command [2-29](#)

boot helper-config file command [2-30](#)

booting

    Cisco IOS image [2-33](#)

    displaying environment variables [2-33](#)

    interrupting [2-28](#)

- manually [2-31](#)
- boot loader
  - accessing [A-1](#)
  - booting
    - Cisco IOS image [A-3](#)
    - helper image [2-29](#)
  - directories
    - creating [A-18](#)
    - displaying a list of [A-8](#)
    - removing [A-22](#)
  - displaying
    - available commands [A-13](#)
    - memory heap utilization [A-14](#)
    - version [A-29](#)
  - environment variables
    - described [A-23](#)
    - displaying settings [A-23](#)
    - location of [A-24](#)
    - setting [A-23](#)
    - unsetting [A-27](#)
  - files
    - copying [A-6](#)
    - deleting [A-7](#)
    - displaying a list of [A-8](#)
    - displaying the contents of [A-5, A-19, A-26](#)
    - renaming [A-20](#)
  - file system
    - formatting [A-11](#)
    - initializing flash [A-10](#)
    - running a consistency check [A-12](#)
  - prompt [A-1](#)
  - resetting the system [A-21](#)
- boot manual command [2-31](#)
- boot private-config-file command [2-32](#)
- boot system command [2-33](#)
- BPDU filtering, for spanning tree [2-16, 2-54](#)
- BPDU guard, for spanning tree [2-18, 2-54](#)
- broadcast storm control [2-64](#)
- bundling characteristics, UNI [2-138](#)

- burst bytes, in QoS policers [2-358, 2-363](#)

---

## C

- cat (boot loader) command [A-5](#)
- CBWFQ, configuring [2-23](#)
- CDP, enabling protocol tunneling for [2-267](#)
- CFM [2-342](#)
- CFM as OAM protocol [2-342](#)
- channel-group command [2-34](#)
- channel-protocol command [2-38](#)
- child policy maps [2-11](#)
- circuit-id
  - setting for an interface [2-385](#)
- circuit-id, setting for an interface VLAN range [2-386](#)
- class-based traffic shaping [2-26](#)
- class-based weighted fair queuing
  - See CBWFQ
- class command [2-40](#)
- class-map command [2-42](#)
- class-map configuration mode [2-42](#)
- class maps
  - creating [2-42](#)
  - defining the match criteria [2-310, 2-312](#)
  - displaying [2-37](#)
  - matching in [2-42](#)
- class of service
  - See CoS
- clear ip arp inspection log command [2-44](#)
- clear ip arp inspection statistics command [2-45](#)
- clear ipc command [2-48](#)
- clear ipv6 dhcp conflict command [2-49](#)
- clear l2protocol-tunnel counters command [2-50](#)
- clear lacp command [2-51](#)
- clear logging onboard command [2-52](#)
- clear mac address-table command [2-53, 2-54](#)
- clear pagp command [2-55, 2-59](#)
- clear policer cpu uni-eni counters command [2-56](#)
- clear port-security command [2-57](#)

clear spanning-tree counters command [2-60](#)  
clear spanning-tree detected-protocols command [2-61](#)  
clear vmps statistics command [2-63](#)  
command modes defined [1-1](#)  
committed information rate in QoS policers [2-358, 2-362](#)  
configuration files  
    password recovery disable considerations [A-1](#)  
    specifying the name [2-27, 2-32](#)  
configuring multiple interfaces [2-162](#)  
conform-action command [2-64](#)  
control-plane policer [2-56](#)  
control-plane policer information, displaying [2-176](#)  
control-plane security [2-369](#)  
control plane statistics, clearing [2-56](#)  
copy (boot loader) command [A-6](#)  
copy logging onboard module command [2-66](#)  
CoS  
    as match criteria for QoS groups [2-310](#)  
    for QoS classification [2-13](#)  
    setting value in policy maps [2-13](#)  
CoS value, assigning to Layer 2 protocol packets [2-270](#)  
CPU ASIC statistics, displaying [2-38](#)  
CPU protection policers, displaying [C-24](#)  
cpu traffic qos cos command [2-68](#)  
cpu traffic qos dscp command [2-72](#)  
cpu traffic qos precedence command [2-77](#)  
cpu traffic qos qos-group command [2-80](#)

---

## D

DC power supply [2-378](#)  
debug backup command [B-2](#)  
debug dot1x command [B-3](#)  
debug dying-gasp command [B-4](#)  
debug etherchannel command [B-5](#)  
debug interface command [B-8](#)  
debug ip dhcp snooping command [B-9](#)  
debug ip igmp filter command [B-10](#)  
debug ip igmp max-groups command [B-11](#)  
debug ip igmp snooping command [B-12](#)  
debug ip sla error twamp connection command [B-13](#)  
debug ip sla error twamp control reflector command [B-15](#)  
debug ip sla error twamp control server command [B-17](#)  
debug ip sla error twamp session command [B-19](#)  
debug ip sla trace twamp connection command [B-21](#)  
debug ip sla trace twamp control reflector command [B-23](#)  
debug ip sla trace twamp control server command [B-25](#)  
debug ip sla trace twamp session command [B-27](#)  
debug ip verify source packet command [B-29](#)  
debug lacp command [B-30](#)  
debug mac-notification command [B-31](#)  
debug matm command [B-32](#)  
debug matm move update command [B-33](#)  
debug monitor command [B-34](#)  
debug mvrdbg command [B-35](#)  
debug nvram command [B-36](#)  
debug pagp command [B-37](#)  
debug platform acl command [B-38](#)  
debug platform backup interface command [B-39](#)  
debug platform cfm command [B-40](#)  
debug platform cpu-queues command [B-41](#)  
debug platform dot1ad command [B-43](#)  
debug platform dot1x command [B-44](#)  
debug platform etherchannel command [B-45](#)  
debug platform forw-tcam command [B-46](#)  
debug platform ip arp inspection command [B-47](#)  
debug platform ipc command [B-56](#)  
debug platform ip dhcp command [B-48](#)  
debug platform ip igmp snooping command [B-49](#)  
debug platform ip multicast command [B-51](#)  
debug platform ip source-guard command [B-53](#)  
debug platform led command [B-57](#)  
debug platform matm command [B-58](#)  
debug platform messaging application command [B-59](#)  
debug platform phy command [B-60](#)  
debug platform pm command [B-62](#)  
debug platform policer cpu uni-eni command [B-64](#)  
debug platform port-asic command [B-65](#)

- debug platform port-security command [B-66](#)
- debug platform qos-acl-tcam command [B-67](#)
- debug platform qos-manager command [B-68](#)
- debug platform remote-commands command [B-69](#)
- debug platform rep command [B-70](#)
- debug platform resource-manager command [B-71](#)
- debug platform snmp command [B-72](#)
- debug platform span command [B-73](#)
- debug platform supervisor-asic command [B-74](#)
- debug platform sw-bridge command [B-75](#)
- debug platform team command [B-76](#)
- debug platform udd command [B-78](#)
- debug platform vlan command [B-79](#)
- debug pm command [B-80](#)
- debug port-security command [B-82](#)
- debug qos-manager command [B-84](#)
- debug rep command [B-83](#)
- debug spanning-tree bpdu command [B-87](#)
- debug spanning-tree bpdu-opt command [B-88](#)
- debug spanning-tree command [B-85](#)
- debug spanning-tree mstp command [B-89](#)
- debug spanning-tree switch command [B-91](#)
- debug sw-vlan command [B-93](#)
- debug sw-vlan ifs command [B-94](#)
- debug sw-vlan notification command [B-95](#)
- debug udd command [B-97](#)
- debug vqpc command [B-99](#)
- default policer configuration
  - NNIs [C-26](#)
  - UNIs [C-25](#)
- define interface-range command [2-82](#)
- delete (boot loader) command [A-7](#)
- delete command [2-84](#)
- deny (ARP access-list configuration) command [2-85](#)
- deny (IPv6) command [2-87](#)
- deny command [2-93](#)
- detect mechanism, causes [2-126](#)
- DHCP snooping
  - accepting untrusted packets from edge switch [2-191](#)
  - enabling
    - on a VLAN [2-197](#)
    - option 82 [2-189, 2-191](#)
    - trust on an interface [2-195](#)
  - error recovery timer [2-128](#)
  - rate limiting [2-194](#)
- DHCP snooping binding database
  - binding file, configuring [2-187](#)
  - bindings
    - adding [2-185](#)
    - deleting [2-185](#)
    - displaying [2-103](#)
  - clearing database agent statistics [2-46](#)
  - database agent, configuring [2-187](#)
  - displaying
    - binding entries [2-103](#)
    - database agent status [2-105, 2-107](#)
    - renewing [2-404](#)
- diagnostic monitor command [2-96](#)
- diagnostic schedule test command [2-98](#)
- diagnostic start test command [2-100](#)
- differentiated service code point
  - See DSCP
- Digital Optical Monitoring
  - see DoM
- dir (boot loader) command [A-8](#)
- directories, deleting [2-84](#)
- distribution command [2-102](#)
- DoM
  - displaying supported transceivers [2-94, 2-6, 2-7](#)
- domains, CFM [2-342](#)
- dot1x default command [2-104](#)
- dot1x host-mode command [2-105](#)
- dot1x initialize command [2-107](#)
- dot1x max-req command [2-108, 2-110](#)
- dot1x port-control command [2-111](#)
- dot1x re-authenticate command [2-113](#)
- dot1x reauthentication command [2-114](#)
- dot1x supplicant force-multicast command [2-115](#)

- dot1x system-auth-control command [2-116](#)
- dot1x test eapol-capable command [2-117](#)
- dot1x test timeout command [2-118](#)
- dot1x timeout command [2-119](#)
- dot1x violation-mode command [2-121](#)
- drop eligibility indicator [2-15](#)
- drop eligibility indicator bit [2-312](#)
- dropping packets, with ACL matches [2-5](#)
- drop threshold, Layer 2 protocol tunneling [2-267](#)
- DSCP
  - as match criteria for QoS groups [2-314, 2-320](#)
  - for QoS traffic marking [2-17](#)
  - setting in policy maps [2-17](#)
- dual IPv4 and IPv6 templates [2-349](#)
- dual-purpose uplink ports, selecting the type [2-327](#)
- duplex command [2-122](#)
- dying-gasp command [2-124](#)
- dynamic-access ports
  - configuring [2-69](#)
  - restrictions [2-70](#)
- dynamic ARP inspection
  - ARP ACLs
    - apply to a VLAN [2-171](#)
    - define [2-21](#)
    - deny packets [2-85](#)
    - display [2-32](#)
    - permit packets [2-347](#)
  - clear
    - log buffer [2-44](#)
    - statistics [2-45](#)
  - display
    - ARP ACLs [2-32](#)
    - configuration and operating state [2-98](#)
    - log buffer [2-98](#)
    - statistics [2-98](#)
    - trust state and rate limit [2-98](#)
  - enable per VLAN [2-180](#)
  - error detection for [2-126](#)
  - error recovery timer [2-128](#)

- log buffer
  - clear [2-44](#)
  - configure [2-175](#)
  - display [2-98](#)
- rate-limit incoming ARP packets [2-173](#)
- statistics
  - clear [2-45](#)
  - display [2-98](#)
- trusted interface state [2-177](#)
- type of packet logged [2-181](#)
- validation checks [2-178](#)

Dynamic Host Configuration Protocol (DHCP)  
See DHCP snooping

---

## E

- EAP-request/identity frame
  - maximum number to send [2-110](#)
  - response time before retransmitting [2-119](#)
- E-LMI
  - enabling [2-136](#)
  - mapping [2-138](#)
- environment variables, displaying [2-33](#)
- errdisable detect cause command [2-126](#)
- errdisable recovery command [2-128](#)
- error conditions, displaying [2-66](#)
- error disable detection [2-126](#)
- error-disabled interfaces, displaying [2-82](#)
- EtherChannel
  - assigning Ethernet interface to channel group [2-34](#)
  - creating port-channel logical interface [2-160](#)
  - debug EtherChannel/PAgP, display [B-5](#)
  - debug platform-specific events, display [B-45](#)
  - displaying [2-69](#)
  - enabling Layer 2 protocol tunneling for
    - LACP [2-268](#)
    - PAgP [2-268](#)
    - UDLD [2-268](#)
  - interface information, displaying [2-82](#)

## LACP

- clearing channel-group information [2-51](#)
- debug messages, display [B-30](#)
- displaying [2-135](#)
- modes [2-34](#)
- port priority for hot-standby ports [2-271](#)
- restricting a protocol [2-38](#)
- system priority [2-273](#)

load-distribution methods [2-374](#)

## PAgP

- aggregate-port learner [2-343](#)
- clearing channel-group information [2-55](#)
- debug messages, display [B-37](#)
- displaying [2-171](#)
- error detection for [2-126](#)
- error recovery timer [2-128](#)
- learn method [2-343](#)
- modes [2-34](#)
- physical-port learner [2-343](#)
- priority of interface for transmitted traffic [2-345](#)

Ethernet controller, internal register display [2-40](#)

ethernet dot1ad command [2-133](#)

ethernet evc command [2-135](#)

ethernet lmi ce-vlan map command [2-136](#), [2-138](#)

ethernet lmi command [2-136](#)

ethernet lmi global command [2-136](#)

Ethernet Local Management Interface

See E-LMI

ethernet loopback interface configuration command [2-140](#)

ethernet loopback privileged EXEC command [2-143](#)

ethernet oam remote-failure command [2-145](#)

Ethernet service

- debugging [B-6](#)
- displaying [2-74](#)

Ethernet service instance [2-5](#)

Ethernet service interfaces [2-77](#)

Ethernet statistics, collecting [2-1](#)

Ethernet UNI configuration [2-147](#)

ethernet uni id command [2-149](#)

Ethernet virtual connections

See EVCs

ethernet y1731 delay command [2-130](#)

ethernet y1731 loss command [2-132](#)

EVC configuration mode [2-135](#)

EVCs [2-135](#)

and VLANs [2-147](#)

service instances [2-5](#)

UNI counts [2-117](#)

EVC service

point-to-multipoint [2-117](#)

point-to-point [2-117](#)

exceed-action command [2-150](#)

extended-range VLANs

and allowed VLAN list [2-94](#)

configuring [2-123](#)

extended system ID for STP [2-24](#)

external alarms, configuring [2-11](#)

---

**F**

failure logging data

- clearing [2-52](#)
- copying [2-66](#)

fan information, displaying [2-62](#)

files, deleting [2-84](#)

flash\_init (boot loader) command [A-10](#)

Flex Links

- configuring [2-71](#)
- configuring preferred VLAN [2-73](#)
- displaying [2-82](#)

flowcontrol command [2-152](#)

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

forwarding packets, with ACL matches [2-5](#)

forwarding results, display [C-8](#)

frame consecutive command [2-154](#)

frame forwarding information, displaying [C-8](#)

frame interval command [2-155](#)

frequency (IP SLA) command [2-156](#)

front-end controller counter and status information [C-10](#)  
 fsck (boot loader) command [A-12](#)

## G

generic-error-message, setting for the switch [2-383](#)  
 global configuration mode [1-2, 1-3](#)

## H

hardware ACL statistics [2-28](#)  
 health-monitoring diagnostic testing [2-96](#)  
 help (boot loader) command [A-13](#)  
 history interval command [2-157](#)  
 host connection, port configuration [2-77](#)  
 host ports, private VLANs [2-81](#)  
 hw-module module logging onboard command [2-158](#)

## I

identifier-string, setting for the switch [2-383](#)  
 IEEE 802.1ag Connectivity Fault Management  
   See CFM  
 IEEE 802.1Q trunk ports and native VLANs [2-128](#)  
 IEEE 802.1Q tunnel ports  
   configuring [2-78](#)  
   displaying [2-57](#)  
   limitations [2-79](#)  
 IEEE 802.1x  
   and switchport modes [2-79](#)  
   violation error recovery [2-128](#)  
   See also port-based authentication  
 IGMP filters  
   applying [2-200](#)  
   debug messages, display [B-10](#)  
 IGMP groups, setting maximum [2-202](#)  
 IGMP maximum groups, debugging [B-11](#)  
 IGMP profiles

creating [2-204](#)  
 displaying [2-110](#)

### IGMP snooping

adding ports as a static member of a group [2-219](#)  
 displaying [2-111, 2-115, 2-116](#)  
 enabling [2-206](#)  
 enabling the configurable-leave timer [2-208](#)  
 enabling the Immediate-Leave feature [2-216](#)  
 flooding query count [2-214](#)  
 interface topology change notification behavior [2-215](#)  
 multicast table [2-113](#)  
 querier [2-210](#)  
 query solicitation [2-214](#)  
 report suppression [2-212](#)  
 switch topology change notification behavior [2-214](#)

### images

See software images

Immediate-Leave feature, MVR [2-336](#)  
 immediate-leave processing [2-216](#)  
 Immediate-Leave processing, IPv6 [2-263](#)  
 input policy maps  
   and ACL classification [2-309](#)  
   and aggregate policers [2-364](#)  
   commands not supported in [2-372](#)  
   configuration guidelines [2-372](#)  
 interface command [2-164](#)  
 interface configuration mode [1-2, 1-4](#)  
 interface port-channel command [2-160](#)  
 interface range command [2-162](#)  
 interface-range macros [2-82](#)  
 interfaces  
   assigning Ethernet interface to channel group [2-34](#)  
   configuring [2-122](#)  
   configuring multiple [2-162](#)  
   creating port-channel logical [2-160](#)  
   debug messages, display [B-8](#)  
   disabling [2-1](#)  
   displaying the MAC address table [2-155](#)  
   restarting [2-1](#)

- interface speed, configuring [2-62](#)
- internal registers, displaying [2-40, 2-47](#)
- Internet Group Management Protocol
  - See IGMP
- invalid GBIC
  - error detection for [2-126](#)
  - error recovery timer [2-128](#)
- ip address command [2-169](#)
- IP addresses, setting [2-169](#)
- IP address matching [2-307](#)
- ip arp inspection filter vlan command [2-171](#)
- ip arp inspection limit command [2-173](#)
- ip arp inspection log-buffer command [2-175](#)
- ip arp inspection trust command [2-177](#)
- ip arp inspection validate command [2-178](#)
- ip arp inspection vlan command [2-180](#)
- ip arp inspection vlan logging command [2-181](#)
- IP DHCP snooping
  - See DHCP snooping
- ip dhcp snooping binding command [2-185](#)
- ip dhcp snooping command [2-184](#)
- ip dhcp snooping database command [2-187](#)
- ip dhcp snooping information option allow-untrusted command [2-191](#)
- ip dhcp snooping information option command [2-189](#)
- ip dhcp snooping information option format remote-id command [2-193](#)
- ip dhcp snooping limit rate command [2-194](#)
- ip dhcp snooping trust command [2-195](#)
- ip dhcp snooping verify command [2-196](#)
- ip dhcp snooping vlan command [2-197](#)
- ip dhcp snooping vlan information option format-type circuit-id string command [2-198](#)
- ip igmp filter command [2-200](#)
- ip igmp max-groups command [2-202, 2-237, 2-239](#)
- ip igmp profile command [2-204](#)
- ip igmp snooping command [2-206](#)
- ip igmp snooping last-member-query-interval command [2-208](#)
- ip igmp snooping querier command [2-210](#)
- ip igmp snooping report-suppression command [2-212](#)
- ip igmp snooping tcn command [2-214](#)
- ip igmp snooping tcn flood command [2-215](#)
- ip igmp snooping vlan immediate-leave command [2-216](#)
- ip igmp snooping vlan mrouter command [2-217](#)
- ip igmp snooping vlan static command [2-219](#)
- IP multicast addresses [2-333](#)
- IP precedence, as match criteria for QoS groups [2-316](#)
- ip sla command [2-221](#)
- ip sla reaction-configuration command [2-223](#)
- ip sla responder twamp command [2-226](#)
- ip sla schedule command [2-228](#)
- ip sla server twamp command [2-231](#)
- ip source binding command [2-233](#)
- IP source guard
  - disabling [2-241](#)
  - displaying
    - binding entries [2-122](#)
    - configuration [2-123](#)
  - enabling [2-241](#)
  - static IP source bindings [2-233](#)
- IP source guard, displaying dynamic binding entries [2-103](#)
- ip ssh command [2-235](#)
- IPv6 access list, deny conditions [2-87](#)
- ipv6 access-list command [2-243](#)
- ipv6 address dhcp command [2-245](#)
- ipv6 dhcp client request vendor command [2-246](#)
- ipv6 dhcp ping packets command [2-247](#)
- ipv6 dhcp pool command [2-248](#)
- ipv6 dhcp server command [2-250](#)
- ipv6 mld snooping command [2-252](#)
- ipv6 mld snooping last-listener-query count command [2-254](#)
- ipv6 mld snooping last-listener-query-interval command [2-256](#)
- ipv6 mld snooping listener-message-suppression command [2-258](#)
- ipv6 mld snooping robustness-variable command [2-259](#)
- ipv6 mld snooping tcn command [2-261](#)
- ipv6 mld snooping vlan command [2-263](#)



IPv6 SDM template [2-2](#)

ipv6 traffic-filter command [2-265](#)

ip verify source command [2-241](#)

## J

jumbo frames

See MTU

## L

l2protocol-tunnel command [2-267](#)

l2protocol-tunnel cos command [2-270](#)

LACP

See EtherChannel

lacp port-priority command [2-271](#)

lacp system-priority command [2-273](#)

Layer 2 mode, enabling [2-67](#)

Layer 2 protocol ports, displaying [2-133](#)

Layer 2 protocol-tunnel

error detection for [2-126](#)

error recovery timer [2-128](#)

Layer 2 protocol tunnel counters [2-50](#)

Layer 2 protocol tunneling error recovery [2-269](#)

Layer 2 traceroute

IP addresses [2-110](#)

MAC addresses [2-107](#)

Layer 3 mode, enabling [2-67](#)

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

Link Aggregation Control Protocol

See EtherChannel

link flap

error detection for [2-126](#)

error recovery timer [2-128](#)

link state group command [2-275](#)

link state track command [2-277](#)

load-distribution methods for EtherChannel [2-374](#)

location (global configuration) command [2-278](#)

location (interface configuration) command [2-280](#)

logging event command [2-282](#)

logging file command [2-283](#)

logical interface [2-160](#)

loopback error

detection for [2-126](#)

recovery timer [2-128](#)

loop guard, for spanning tree [2-26, 2-30](#)

## M

mac access-group command [2-285](#)

MAC access-groups, displaying [2-147](#)

MAC access list configuration mode [2-287](#)

mac access-list extended command [2-287](#)

MAC access lists [2-93](#)

MAC addresses

disabling MAC address learning per VLAN [2-290](#)

displaying

aging time [2-151](#)

all [2-150](#)

dynamic [2-154](#)

MAC address-table move updates [2-157](#)

notification settings [2-156, 2-158](#)

number of addresses in a VLAN [2-153](#)

per interface [2-155](#)

per VLAN [2-162](#)

static [2-160](#)

static and dynamic entries [2-148](#)

dynamic

aging time [2-289](#)

deleting [2-53](#)

displaying [2-154](#)

enabling MAC address notification [2-294](#)

enabling MAC address-table move update [2-292](#)

matching [2-307](#)

static

adding and removing [2-296](#)

displaying [2-160](#)

- dropping on an interface [2-297](#)
- tables [2-150](#)
- MAC address notification, debugging [B-31](#)
- mac address-table aging-time [2-285, 2-307](#)
- mac address-table aging-time command [2-289](#)
- mac address-table learning command [2-290](#)
- mac address-table move update command [2-292](#)
- mac address-table notification command [2-294](#)
- mac address-table static command [2-296](#)
- mac address-table static drop command [2-297](#)
- macro description command [2-301](#)
- macro global command [2-302](#)
- macro global description command [2-304](#)
- macro name command [2-305](#)
- macros
  - adding a description [2-301](#)
  - adding a global description [2-304](#)
  - applying [2-302](#)
  - creating [2-305](#)
  - displaying [2-173](#)
  - interface range [2-82, 2-162](#)
  - specifying parameter values [2-302](#)
  - tracing [2-302](#)
- maintenance end points [2-117](#)
- mapping tables, QoS [2-103](#)
- maps
  - class
    - creating [2-42](#)
  - VLAN
    - creating [2-126](#)
    - defining [2-307](#)
    - displaying [2-213](#)
- match access-group command [2-309](#)
- match cos command [2-310](#)
- match dot1ad dei command [2-312](#)
- match ip dscp command [2-314](#)
- match ip precedence command [2-316](#)
- match qos-group command [2-318](#)
- match vlan command [2-320](#)
- max-delay command [2-323](#)
- maximum transmission unit
  - See MTU
- mdix auto command [2-325](#)
- ME 34000EG-2CS switch policers [C-24](#)
- ME 3400E-24TS switch policers [C-24](#)
- ME 3400EG-12CS switch policers [C-24](#)
- media-type command [2-327](#)
- memory (boot loader) command [A-14](#)
- mgmt\_clr (boot loader) command [A-15](#)
- mgmt\_init (boot loader) command [A-16, A-17](#)
- mkdir (boot loader) command [A-18](#)
- MLD snooping
  - configuring [2-258, 2-259](#)
  - configuring queries [2-254, 2-256](#)
  - configuring topology change notification [2-261](#)
  - enabling [2-252](#)
- MLD snooping on a VLAN, enabling [2-263](#)
- mode, MVR [2-333](#)
- modes
  - show access-group interface [2-381](#)
- modes, commands [1-1](#)
- monitor session command [2-329](#)
- more (boot loader) command [A-19](#)
- MSTP
  - displaying [2-195](#)
  - interoperability [2-61](#)
  - link type [2-28](#)
  - MST region
    - aborting changes [2-34](#)
    - applying changes [2-34](#)
    - configuration name [2-34](#)
    - configuration revision number [2-35](#)
    - current or pending display [2-35](#)
    - displaying [2-195](#)
    - MST configuration mode [2-34](#)
    - VLANs-to-instance mapping [2-34](#)
  - path cost [2-36](#)
  - protocol mode [2-32](#)

- restart protocol migration process [2-61](#)
- root port
  - loop guard [2-26](#)
  - preventing from becoming designated [2-26](#)
  - restricting which can be root [2-26](#)
  - root guard [2-26](#)
- root switch
  - affects of extended system ID [2-24](#)
  - hello-time [2-39, 2-50](#)
  - interval between BPDU messages [2-41](#)
  - interval between hello BPDU messages [2-39, 2-50](#)
  - max-age [2-41](#)
  - maximum hop count before discarding BPDU [2-43](#)
  - port priority for selection of [2-45](#)
  - primary or secondary [2-50](#)
  - switch priority [2-48](#)
- state changes
  - blocking to forwarding state [2-57](#)
  - enabling BPDU filtering [2-16, 2-54](#)
  - enabling BPDU guard [2-18, 2-54](#)
  - enabling Port Fast [2-54, 2-57](#)
  - forward-delay time [2-38](#)
  - length of listening and learning states [2-38](#)
  - rapid transition to forwarding [2-28](#)
  - shutting down Port Fast-enabled ports [2-54](#)
- state information display [2-194](#)

MTU

- configuring size [2-100](#)
- displaying global setting [2-202](#)

multicast group address, MVR [2-336](#)

multicast groups, MVR [2-334](#)

Multicast Listener Discovery

- See MLD

multicast router learning method [2-217](#)

multicast router ports, configuring [2-217](#)

multicast router ports, IPv6 [2-263](#)

multicast storm control [2-64](#)

multicast VLAN, MVR [2-334](#)

multicast VLAN registration

- See MVR

multiple hosts on authorized port [2-105](#)

Multiple Spanning Tree Protocol

- See MSTP

multiplexing, UNI [2-147](#)

MVR

- and address aliasing [2-334](#)
- configuring [2-333](#)
- configuring interfaces [2-336](#)
- debug messages, display [B-35](#)
- displaying [2-166](#)
- displaying interface information [2-167](#)
- members, displaying [2-169](#)

mvr (global configuration) command [2-333](#)

mvr (interface configuration) command [2-336](#)

mvr vlan group command [2-337](#)

---

## N

native VLANs [2-94](#)

native VLAN tagging [2-128](#)

network node interface [2-376](#)

no authentication logging verbose [2-339](#)

no dot1x logging verbose [2-340](#)

no mab logging verbose [2-341](#)

nonegotiate, speed [2-62, 2-63](#)

non-IP protocols

- denying [2-93](#)
- forwarding [2-354](#)

non-IP traffic access lists [2-287](#)

non-IP traffic forwarding

- denying [2-93](#)
- permitting [2-354](#)

normal-range VLANs [2-123](#)

no vlan command [2-123](#)

**O**

- OAM PDUs [2-145](#)
- OAM protocol [2-342](#)
- oam protocol cfm svlan command [2-342](#)
- on-board failure logging, displaying [2-143](#)
- on-board failure logging, enabling [2-158](#)
- online diagnostics
  - enabling
    - scheduling [2-98](#)
  - global configuration mode
    - clearing test-based testing schedule [2-98](#)
    - setting test-based testing [2-98](#)
    - setting up test-based testing [2-98](#)
  - removing scheduling [2-98](#)
  - scheduled switchover
    - disabling [2-98](#)
    - enabling [2-98](#)
  - setting test interval [2-98](#)
  - starting testing [2-100](#)
- online diagnostic tests, displaying results [2-53](#)
- online diagnostic tests, starting [2-100](#)
- operation, administration, and maintenance protocol
  - See OAM
- output policy maps
  - and QoS group classification [2-318](#)
  - and traffic shaping [2-26](#)
  - commands not supported in [2-372](#)
  - configuration guidelines [2-372](#)
  - priority in [2-391](#)
  - queue limit in [2-398](#)
- pagp port-priority command [2-345](#)
- parent policy maps [2-11](#)
- password-recovery mechanism, enabling and disabling [2-7](#)
- permit (ARP access-list configuration) command [2-347](#)
- permit (IPv6) command [2-349](#)
- permit command [2-354](#)
- per-VLAN spanning-tree plus
  - See STP
- physical-port learner [2-343](#)
- PID, displaying [2-97](#)
- PIM-DVMRP, as multicast router learning method [2-217](#)
- police
  - multiple conform actions for a class [2-64](#)
  - multiple exceed actions for a class [2-150](#)
  - multiple violate actions for a class [2-121](#)
  - with priority [2-357](#)
- police aggregate command [2-367](#)
- police command [2-357](#)
- policer aggregate command [2-362](#)
- policer configuration
  - default for NNIs [C-26](#)
  - default for UNIs [C-25](#)
- policer cpu uni command [2-369](#)
- policers
  - aggregate [2-362, 2-367](#)
  - for CPU protection [2-369](#)
  - individual [2-357](#)
- policy-map class, configuring multiple actions [2-64, 2-150, 2-121](#)
- policy-map class configuration mode [2-40](#)
- policy-map class police configuration mode [2-64, 2-360](#)
- policy-map command [2-371](#)
- policy-map configuration mode [2-371](#)
- policy maps
  - and CoS classification [2-310](#)
  - and DSCP classification [2-315](#)
  - and IP precedence classification [2-316](#)
  - and policing [2-360](#)

**P**

- packet counters, display for PPPoE Intermediate Agent [2-187](#)
- PAgP
  - See EtherChannel
- pagp learn-method command [2-343](#)

- applying [2-9](#)
  - applying to an interface [2-372, 2-9, 2-23](#)
  - child [2-11](#)
  - creating [2-371](#)
  - displaying [2-178](#)
  - hierarchical [2-11](#)
  - parent [2-11](#)
  - policers
    - for a single class [2-357](#)
    - for multiple classes [2-362, 2-367, 2-369, 2-11](#)
  - setting priority [2-390](#)
  - setting QoS group identifier [2-21](#)
  - traffic classification, defining [2-40](#)
  - traffic marking
    - setting CoS values [2-13](#)
    - setting DSCP values [2-15, 2-17](#)
    - setting IP precedence values [2-19](#)
- Port Aggregation Protocol
- See EtherChannel
- port-based authentication
- AAA method list [2-3](#)
  - configuring violation modes [2-121](#)
  - debug messages, display [B-3](#)
  - enabling 802.1x
    - globally [2-116](#)
    - per interface [2-111](#)
  - host modes [2-105](#)
  - IEEE 802.1x AAA accounting methods [2-1](#)
  - initialize an interface [2-107, 2-118](#)
  - manual control of authorization state [2-111](#)
  - multiple hosts on authorized port [2-105](#)
  - periodic re-authentication
    - enabling [2-114](#)
    - time between attempts [2-119](#)
  - quiet period between failed authentication exchanges [2-119](#)
  - re-authenticating 802.1x-enabled ports [2-113](#)
  - resetting configurable 802.1x parameters [2-104](#)
  - switch-to-authentication server retransmission time [2-119](#)
  - switch-to-client frame-retransmission number [2-108 to 2-110](#)
  - switch-to-client retransmission time [2-119](#)
  - test for IEEE 802.1x readiness [2-117](#)
- port-channel load-balance command [2-374](#)
- Port Fast, for spanning tree [2-57](#)
- port ranges, defining [2-52, 2-66, 2-82](#)
- ports, debugging [B-80](#)
- ports, protected [2-92](#)
- port security
  - aging [2-88](#)
  - debug messages, display [B-82](#)
  - enabling [2-84](#)
  - violation error recovery [2-128](#)
- port shaping [2-27](#)
- port-type command [2-376](#)
- port types, MVR [2-336](#)
- power information, displaying [2-62](#)
- power-supply alarm indications, configuring [2-378](#)
- power-supply dual command [2-378](#)
- power-supply status, displaying [2-62](#)
- PPPoE Discovery
  - enable vendor-tag stripping on packetsPPPoE Server
    - enable vendor-tag stripping on Discovery packets [2-389](#)
- PPPoE Discovery packets, limit rate arriving on an interface [2-387](#)
- pppoe intermediate-agent
  - enable intermediate agent on a switch [2-380](#)
  - enable on an interface VLAN range [2-382](#)
  - enable PPPoE Intermediate Agent on an interface [2-381](#)
  - enable vendor-tag stripping of Discovery packets [2-389](#)
  - format-type (global) [2-383](#)
  - limit rate of PPPoE Discovery packets [2-387](#)
  - set circuit-id or remote-id for an interface [2-385](#)
  - set circuit-id or remote-id for an interface VLAN range [2-386](#)

set trust configuration on an interface [2-387, 2-388](#)

PPPoE Intermediate Agent, display configuration and statistics (packet counters) [2-187](#)

precedence

- for QoS traffic marking [2-19](#)
- setting in policy maps [2-19](#)

priority command [2-390](#)

priority queuing, QoS [2-390](#)

priority with police, QoS [2-390](#)

private-vlan command [2-393](#)

private-vlan mapping command [2-396](#)

private VLANs

- association [2-90](#)
- configuring [2-393](#)
- configuring ports [2-81](#)
- displaying [2-208](#)
- host ports [2-81](#)
- mapping
  - configuring [2-90](#)
  - displaying [2-82](#)
- promiscuous ports [2-81](#)

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

product identification information, displaying [2-97](#)

promiscuous ports, private VLANs [2-81](#)

PVST+

- See STP

---

## Q

### QoS

- aggregate policers
  - applying [2-367](#)
  - creating [2-362](#)
  - displaying [2-175](#)
- class maps
  - creating [2-42](#)
  - defining the match criteria [2-310, 2-312](#)
  - displaying [2-37](#)
- conform actions, configuring [2-65](#)

- displaying statistics for [2-178, C-33](#)
- exceed actions, configuring [2-151](#)
- policy maps
  - applying an aggregate policer [2-362, 2-367, 2-369, 2-11](#)
  - applying to an interface [2-9, 2-23](#)
  - creating [2-371](#)
  - defining policers [2-357](#)
  - displaying policy maps [2-178](#)
  - setting CoS values [2-13](#)
  - setting DSCP values [2-15, 2-17](#)
  - setting IP precedence values [2-19](#)
  - setting QoS group identifier [2-21](#)
  - traffic classifications [2-40](#)
- table maps
  - configuring [2-103](#)
  - displaying [2-203](#)
- violate actions, configuring [2-122](#)

### QoS groups

- as match criteria [2-318](#)
- for QoS traffic classification [2-21](#)
- setting in policy maps [2-21](#)

### QoS match criteria

- ACLs [2-309](#)
- CoS value [2-310](#)
- DSCP value [2-314, 2-320](#)
- precedence value [2-316](#)
- QoS group number [2-318](#)

### quality of service

- See QoS

- querytime, MVR [2-333](#)

- queue-limit command [2-398](#)

---

## R

- rapid per-VLAN spanning-tree plus

- See STP

- rapid PVST+

- See STP

re-authenticating 802.1x-enabled ports [2-113](#)

re-authentication

- periodic [2-114](#)
- time between attempts [2-119](#)

receiver ports, MVR [2-336](#)

receiving flow-control packets [2-152](#)

recovery mechanism

- causes [2-128](#)
- display [2-35, 2-64, 2-67](#)
- timer interval [2-129](#)

remote-id, setting for an interface [2-385](#)

remote-id, setting for an interface VLAN range [2-386](#)

remote-span command [2-402](#)

Remote Switched Port Analyzer

- See RSPAN

rename (boot loader) command [A-20](#)

renew ip dhcp snooping database command [2-404](#)

rep admin vlan command [2-405](#)

rep block port command [2-406](#)

rep lsl-age-timer command [2-410](#)

rep preempt delay command [2-412](#)

rep preempt segment command [2-414](#)

rep segment command [2-415](#)

rep stcn command [2-418](#)

reset (boot loader) command [A-21](#)

resource templates, displaying [2-192](#)

rmdir (boot loader) command [A-22](#)

rmon collection stats command [2-1](#)

root guard, for spanning tree [2-26](#)

routed ports

- IP addresses on [2-170](#)
- number supported [2-170](#)

RSPAN

- configuring [2-329](#)
- displaying [2-164](#)
- filter RSPAN traffic [2-329](#)
- remote-span command [2-402](#)
- sessions
  - add interfaces to [2-329](#)

- displaying [2-164](#)
- start new [2-329](#)

---

## S

scheduled switchover

- disabling [2-98](#)
- enabling [2-98](#)

scheduling diagnostic tests [2-98](#)

sdm prefer command [2-2](#)

SDM templates

- allowed resources [2-3](#)
- displaying [2-192](#)
- dual IPv4 and IPv6 [2-2](#)

secure ports, limitations [2-86](#)

sending flow-control packets [2-152](#)

service instance command [2-5](#)

service instances, displaying [2-75](#)

service password-recovery command [2-7](#)

service policy (policy-map class configuration) command [2-11](#)

service-policy interface configuration command [2-9](#)

service-policy policy-map class configuration command [2-11](#)

set (boot loader) command [A-23](#)

set cos command [2-13](#)

set dot1ad dei command [2-15](#)

set dscp command [2-17](#)

set precedence command [2-19](#)

set qos-group command [2-21](#)

setup command [2-23](#)

SFPs, displaying information about [2-97](#)

shape average command [2-26](#)

show access-lists command [2-28](#)

show aggregate-policer command [2-202](#)

show archive status command [2-31](#)

show arp access-list command [2-32](#)

show boot command [2-33](#)

show class-map command [2-37](#)

- show controllers cpu-interface command [2-38](#)
- show controllers ethernet-controller command [2-40](#)
- show controllers team command [2-47](#)
- show controllers utilization command [2-49](#)
- show controller utilization command [2-49](#)
- show cpu traffic qos command [2-51](#)
- show diagnostic command [2-53](#)
- show dot1q-tunnel command [2-57](#)
- show dot1x command [2-58](#)
- show dying-gasp packets command [2-61](#)
- show env command [2-62](#)
- show errdisable detect command [2-64](#)
- show errdisable flap-values command [2-66](#)
- show errdisable recovery command [2-67](#)
- show etherchannel command [2-69](#)
- show ethernet loopback command [2-72](#)
- show ethernet service evc command [2-74](#)
- show ethernet service instance command [2-75](#)
- show ethernet service interface command [2-77](#)
- show flowcontrol command [2-79](#)
- show idprom command [2-80](#)
- show interface rep command [2-92](#)
- show interfaces command [2-82](#)
- show interfaces counters command [2-90](#)
- show interfaces rep command [2-92](#)
- show interface transceivers command [2-94](#)
- show inventory command [2-97](#)
- show ip arp inspection command [2-98](#)
- show ipc command [2-125](#)
- show ip dhcp snooping binding command [2-103](#)
- show ip dhcp snooping command [2-102](#)
- show ip dhcp snooping database command [2-105, 2-107](#)
- show ip igmp profile command [2-110](#)
- show ip igmp snooping command [2-111](#)
- show ip igmp snooping command querier detail [2-116](#)
- show ip igmp snooping groups command [2-113](#)
- show ip igmp snooping mrouter command [2-115](#)
- show ip igmp snooping querier command [2-116](#)
- show ip igmp snooping querier detail command [2-116](#)
- show ip sla standards command [2-118](#)
- show ip sla twamp connection [2-51](#)
- show ip sla twamp connection command [2-119](#)
- show ip sla twamp session command [2-121](#)
- show ip source binding command [2-122](#)
- show ipv6 access-list command [2-128](#)
- show ipv6 dhcp conflict command [2-130](#)
- show ipv6 route updated command [2-131](#)
- show ip verify source command [2-123](#)
- show l2protocol-tunnel command [2-133](#)
- show lacp command [2-135](#)
- show link state group command [2-139](#)
- show location command [2-141](#)
- show logging onboard command [2-143](#)
- show mac access-group command [2-147](#)
- show mac address-table address command [2-150](#)
- show mac address-table aging time command [2-151](#)
- show mac address-table command [2-148](#)
- show mac address-table count command [2-153](#)
- show mac address-table dynamic command [2-154](#)
- show mac address-table interface command [2-155](#)
- show mac address-table learning command [2-156](#)
- show mac address-table move update command [2-157](#)
- show mac address-table notification command [2-54, 2-158, B-33](#)
- show mac address-table static command [2-160](#)
- show mac address-table vlan command [2-162](#)
- show monitor command [2-164](#)
- show mvr command [2-166](#)
- show mvr interface command [2-167](#)
- show mvr members command [2-169](#)
- show pagp command [2-171](#)
- show parser macro command [2-173](#)
- show platform acl command [C-2](#)
- show platform backup interface command [C-3](#)
- show platform cfm command [C-4](#)
- show platform configuration command [C-5](#)
- show platform dl command [C-6](#)
- show platform etherchannel command [C-7](#)



- show platform forward command [C-8](#)
- show platform frontend-controller command [C-10](#)
- show platform igmp snooping command [C-11](#)
- show platform ipc trace command [C-14](#)
- show platform ip multicast command [C-12](#)
- show platform ip unicast command [C-13](#)
- show platform ipv6 unicast command [C-15](#)
- show platform l2pt dm command [C-17](#)
- show platform layer4op command [C-18, C-40](#)
- show platform mac-address-table command [C-19](#)
- show platform messaging command [C-20](#)
- show platform monitor command [C-21](#)
- show platform mvr table command [C-22](#)
- show platform pm command [C-23](#)
- show platform policer cpu command [C-24](#)
- show platform port-asic command [C-28](#)
- show platform port-security command [C-32](#)
- show platform qos command [C-33](#)
- show platform resource-manager command [C-36](#)
- show platform snmp counters command [C-38](#)
- show platform spanning-tree synchronization command [C-39](#)
- show platform stp-instance command [C-41](#)
- show platform team command [C-42](#)
- show platform vlan command [C-44](#)
- show platform vlan mapping command [C-45](#)
- show policer aggregate command [2-175](#)
- show policer cpu uni-eni command [2-176](#)
- show policy-map command [2-178](#)
- show policy-map interface output fields [2-181](#)
- show port security command [2-183](#)
- show port-type command [2-185](#)
- show rep topology command [2-189](#)
- show sdm prefer command [2-192](#)
- show spanning-tree command [2-194](#)
- show storm-control command [2-200](#)
- show system mtu command [2-202](#)
- show udd command [2-204](#)
- show version command [2-206](#)
- show vlan access-map command [2-213](#)
- show vlan command [2-208](#)
- show vlan command, fields [2-210](#)
- show vlan filter command [2-214](#)
- show vlan mapping command [2-215](#)
- show vmpls command [2-217](#)
- shutdown command [2-1](#)
- shutdown threshold, Layer 2 protocol tunneling [2-267](#)
- shutdown vlan command [2-2](#)
- SNMP host, specifying [2-8](#)
- SNMP informs, enabling the sending of [2-4](#)
- snmp mib rep trap-rate command [2-3](#)
- snmp-server enable traps command [2-4](#)
- snmp-server host command [2-8](#)
- snmp trap mac-notification change command [2-12](#)
- SNMP traps
  - enabling MAC address notification trap [2-12](#)
  - enabling the MAC address notification feature [2-294](#)
  - enabling the sending of [2-4](#)
- software images
  - deleting [2-84](#)
  - downloading [2-13](#)
  - upgrading [2-13](#)
  - uploading [2-19](#)
- software version, displaying [2-206](#)
- source ports, MVR [2-336](#)
- SPAN
  - configuring [2-329](#)
  - debug messages, display [B-34](#)
  - displaying [2-164](#)
  - filter SPAN traffic [2-329](#)
  - sessions
    - add interfaces to [2-329](#)
    - displaying [2-164](#)
    - start new [2-329](#)
- spanning-tree bpdudfilter command [2-14, 2-16](#)
- spanning-tree bpduguard command [2-18](#)
- spanning-tree cost command [2-20](#)
- spanning-tree etherchannel command [2-22](#)

- spanning-tree extend system-id command [2-24](#)
- spanning-tree guard command [2-26](#)
- spanning-tree link-type command [2-28](#)
- spanning-tree loopguard default command [2-30](#)
- spanning-tree mode command [2-32](#)
- spanning-tree mst configuration command [2-34](#)
- spanning-tree mst cost command [2-36](#)
- spanning-tree mst forward-time command [2-38](#)
- spanning-tree mst hello-time command [2-39](#)
- spanning-tree mst max-age command [2-41](#)
- spanning-tree mst max-hops command [2-43](#)
- spanning-tree mst port-priority command [2-45](#)
- spanning-tree mst pre-standard command [2-47](#)
- spanning-tree mst priority command [2-48](#)
- spanning-tree mst root command [2-50](#)
- spanning-tree portfast (global configuration) command [2-54](#)
- spanning-tree portfast (interface configuration) command [2-57](#)
- spanning-tree port-priority command [2-52](#)
- Spanning Tree Protocol
  - See STP
- spanning-tree vlan command [2-59](#)
- speed command [2-62](#)
- SSH, configuring version [2-235](#)
- static-access ports, configuring [2-69](#)
- statistics, Ethernet group [2-1](#)
- sticky learning, enabling [2-84](#)
- storm-control command [2-64](#)
- STP
  - counters, clearing [2-60](#)
  - debug messages, display
    - MSTP [B-89](#)
    - optimized BPDUs handling [B-88](#)
    - spanning-tree activity [B-85](#)
    - switch shim [B-91](#)
    - transmitted and received BPDUs [B-87](#)
  - enabling on ENIs [2-14](#)
  - enabling protocol tunneling for [2-267](#)
- EtherChannel misconfiguration [2-22](#)
- extended system ID [2-24](#)
- path cost [2-20](#)
- protocol modes [2-32](#)
- root port
  - loop guard [2-26](#)
  - preventing from becoming designated [2-26](#)
  - restricting which can be root [2-26](#)
  - root guard [2-26](#)
- root switch
  - affects of extended system ID [2-24, 2-60](#)
  - hello-time [2-59](#)
  - interval between BPDU messages [2-59](#)
  - interval between hello BPDU messages [2-59](#)
  - max-age [2-59](#)
  - port priority for selection of [2-52](#)
  - primary or secondary [2-59](#)
  - switch priority [2-59](#)
- state changes
  - blocking to forwarding state [2-57](#)
  - enabling BPDU filtering [2-16, 2-54](#)
  - enabling BPDU guard [2-18, 2-54](#)
  - enabling Port Fast [2-54, 2-57](#)
  - enabling timer to recover from error state [2-128](#)
  - forward-delay time [2-59](#)
  - length of listening and learning states [2-59](#)
  - shutting down Port Fast-enabled ports [2-54](#)
- state information display [2-194](#)
- VLAN options [2-48, 2-59](#)
- SVIs, creating [2-164](#)
- Switched Port Analyzer
  - See SPAN
- switching characteristics
  - modifying [2-67](#)
  - returning to interfaces [2-67](#)
- switchport access command [2-69](#)
- switchport backup interface command [2-71](#)
- switchport block command [2-75](#)
- switchport command [2-67](#)

switchport host command [2-77](#)  
 switchport mode command [2-78](#)  
 switchport mode private-vlan command [2-81](#)  
 switchport port-security aging command [2-88](#)  
 switchport port-security command [2-84](#)  
 switchport private-vlan command [2-90](#)  
 switchport protected command [2-92](#)  
 switchports, displaying [2-82](#)  
 switchport trunk command [2-94](#)  
 switchport vlan mapping command [2-96](#)  
 system env temperature threshold yellow command [2-99](#)  
 system message logging, save message to flash [2-283](#)  
 system mtu command [2-100](#)  
 system resource templates [2-2](#)

## T

table-map command [2-103](#)  
 table-map configuration mode [2-103](#)  
 table maps
 

- configuring [2-103](#)
- displaying [2-203](#)
- QoS [2-103](#)

 tar files, creating, listing, and extracting [2-16](#)  
 TDR, running [2-105](#)  
 temperature information, displaying [2-62](#)  
 temperature status, displaying [2-62](#)  
 templates, system resources [2-2](#)  
 test cable-diagnostics tdr command [2-105](#)  
 traceroute mac command [2-107](#)  
 traceroute mac ip command [2-110](#)  
 traffic shaping, QoS [2-26](#)  
 trunking, VLAN mode [2-78](#)  
 trunk mode [2-78](#)  
 trunk ports [2-78](#)  
 trust configuration, setting on an interface [2-387, 2-388](#)  
 tunnel ports, Layer 2 protocol, displaying [2-133](#)  
 type (boot loader) command [A-26](#)

## U

UDLD
 

- aggressive mode [2-112, 2-114](#)
- debug messages, display [B-97](#)
- enable globally [2-112](#)
- enable per interface [2-114](#)
- error recovery timer [2-128](#)
- message timer [2-112](#)
- normal mode [2-112, 2-114](#)
- reset a shutdown interface [2-116](#)
- status [2-204](#)

 uddl command [2-112](#)  
 uddl port command [2-114](#)  
 uddl reset command [2-116](#)  
 UNI
 

- bundling and multiplexing [2-147](#)
- Ethernet [2-147](#)

 unicast storm control [2-64](#)  
 uni count command [2-117](#)  
 UniDirectional Link Detection
 

- See UDLD

 UNI ID, Ethernet [2-149](#)  
 uni-vlan command [2-119](#)  
 unknown multicast traffic, preventing [2-75](#)  
 unknown unicast traffic, preventing [2-75](#)  
 unset (boot loader) command [A-27](#)  
 upgrading
 

- software images [2-13](#)
- monitoring status of [2-31](#)

 user EXEC mode [1-2](#)  
 user network interface [2-376](#)

## V

version (boot loader) command [A-29](#)  
 violate-action command [2-121](#)  
 vlan access-map command [2-126](#)  
 VLAN access map configuration mode [2-126](#)

- VLAN access maps
  - actions [2-5](#)
  - displaying [2-213](#)
- vlan command [2-123](#)
- VLAN configuration mode
  - commands [2-123](#)
  - description [1-4](#)
  - entering [2-123](#)
  - summary [1-2](#)
- vlan dot1q tag native command [2-128](#)
- vlan filter command [2-130](#)
- VLAN filters, displaying [2-214](#)
- VLAN ID range [2-123](#)
- VLAN ID translation
  - See VLAN mapping
- VLAN mapping
  - configuring [2-96](#)
  - described [2-97](#)
  - displaying [2-215](#)
- VLAN maps
  - applying [2-130](#)
  - creating [2-126](#)
  - defining [2-307](#)
  - displaying [2-213](#)
- VLAN Query Protocol
  - See VQP
- VLANs
  - adding [2-123](#)
  - configuring [2-123](#)
  - debug messages, display
    - activation of [B-95](#)
    - VLAN IOS file system error tests [B-94](#)
    - VLAN manager activity [B-93](#)
  - displaying configurations [2-208](#)
  - extended-range [2-123](#)
  - MAC addresses
    - displaying [2-162](#)
    - number of [2-153](#)
  - normal-range [2-123](#)
  - private [2-81](#)
    - configuring [2-393](#)
    - displaying [2-208](#)
 See also private VLANs
  - restarting [2-2](#)
  - saving the configuration [2-123](#)
  - shutting down [2-2](#)
  - suspending [2-2](#)
- VMPS
  - configuring servers [2-135](#)
  - displaying [2-217](#)
  - error recovery timer [2-129](#)
  - reconfirming dynamic VLAN assignments [2-132](#)
  - vmips reconfirm (global configuration) command [2-133](#)
  - vmips reconfirm (privileged EXEC) command [2-132](#)
  - vmips retry command [2-134](#)
  - vmips server command [2-135](#)
- VQP
  - and dynamic-access ports [2-70](#)
  - clearing client statistics [2-63](#)
  - displaying information [2-217](#)
  - per-server retry count [2-134](#)
  - reconfirmation interval [2-133](#)
  - reconfirming dynamic VLAN assignments [2-132](#)
- VTP
  - enabling
    - tunneling for [2-267](#)

---

## W

### Weighted Tail Drop

See WTD

WTD, queue-limit command [2-398](#)