



---

## Numerics

### 802.1X

- and switchport modes [2-470](#)
- See also port-based authentication
- violation error recovery [2-84](#)

---

## A

- aaa authentication dot1x command [2-1](#)
- AAA methods [2-1](#)
- abort command [2-518](#)
- access control entries
  - See ACEs
- access control lists
  - See ACLs
- access groups
  - IP [2-95](#)
  - MAC, displaying [2-306](#)
- access lists
  - IP [2-95](#)
  - on Layer 2 interfaces [2-95](#)
- access map configuration mode [2-141](#)
- access mode [2-469](#)
- access ports [2-469](#)
- ACEs [2-64, 2-197](#)
- ACLs
  - deny [2-62](#)
  - displaying [2-233](#)
  - for non-IP protocols [2-127](#)
  - matching [2-141](#)
  - permit [2-195](#)
- action command [2-3](#)

- address aliasing [2-186](#)
- aggregate-port learner [2-191](#)
- allowed VLANs [2-483](#)
- apply command [2-518](#)
- archive copy-sw command [2-5](#)
- archive download-sw command [2-8](#)
- archive tar command [2-11](#)
- archive upload-sw command [2-14](#)
- audience [xv](#)
- authorization state of controlled port [2-72](#)
- autonegotiation of duplex mode [2-81](#)
- auto qos voip command [2-16](#)

---

## B

- BackboneFast, for STP [2-406](#)
- boot (boot loader) command [A-2](#)
- boot auto-copy-sw command [2-20](#)
- boot boothlpr command [2-21](#)
- boot config-file command [2-22](#)
- boot enable-break command [2-23](#)
- boot helper command [2-24](#)
- boot helper-config file command [2-25](#)
- booting
  - Cisco IOS image [2-28](#)
  - displaying environment variables [2-239](#)
  - interrupting [2-23](#)
  - manually [2-26](#)
- boot loader
  - accessing [A-1](#)
  - booting
    - Cisco IOS image [A-2](#)
    - helper image [2-24](#)

directories

- creating [A-16](#)
- displaying a list of [A-7](#)
- removing [A-20](#)

displaying

- available commands [A-12](#)
- memory heap utilization [A-14](#)
- version [A-27](#)

environment variables

- described [A-21](#)
- displaying settings [A-21](#)
- location of [A-23](#)
- setting [A-21](#)
- unsetting [A-25](#)

files

- copying [A-5](#)
- deleting [A-6](#)
- displaying a list of [A-7](#)
- displaying the contents of [A-4, A-17, A-24](#)
- renaming [A-18](#)

file system

- formatting [A-10](#)
- initializing Flash [A-9](#)
- running a consistency check [A-11](#)

loading helper images [A-13](#)

prompt [A-1](#)

resetting the system [A-19](#)

boot manual command [2-26](#)

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

boot system command [2-28](#)

BPDU filtering, for spanning tree [2-407, 2-441](#)

BPDU guard, for spanning tree [2-409, 2-441](#)

broadcast storm control [2-458](#)

broadcast traffic counters [2-289](#)

---

## C

candidate switches

- See clusters

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

caution, description [xvi](#)

channel-group command [2-29](#)

channel-protocol command [2-32](#)

class command [2-33](#)

class-map command [2-35](#)

class maps

- creating [2-35](#)
- defining the match criteria [2-143](#)
- displaying [2-245](#)

class of service

- See CoS

clear lacp command [2-37](#)

clear mac address-table command [2-38](#)

clear pagp command [2-40](#)

clear setup express command [2-41](#)

clear spanning-tree counters command [2-42](#)

clear spanning-tree detected-protocols command [2-43](#)

clear vmps statistics command [2-44](#)

clear vtp counters command [2-45](#)

cluster commander-address command [2-46](#)

cluster discovery hop-count command [2-48](#)

cluster enable command [2-49](#)

cluster holdtime command [2-51](#)

cluster member command [2-52](#)

cluster outside-interface command [2-54](#)

cluster requirements

- See release notes [xvii](#)

cluster run command [2-55](#)

clusters

- adding candidates [2-52](#)
- binding to HSRP group [2-56](#)
- building manually [2-52](#)

- communicating with
  - devices outside the cluster [2-54](#)
  - members by using Telnet [2-211](#)
- debug messages, display [B-4](#)
- displaying
  - candidate switches [2-248](#)
  - debug messages [B-4](#)
  - member switches [2-250](#)
  - status [2-246](#)
- hop-count limit for extended discovery [2-48](#)
- HSRP standby groups [2-56](#)
- redundancy [2-56](#)
- SNMP trap [2-397](#)
- cluster standby-group command [2-56](#)
- cluster timer command [2-58](#)
- CMS requirements
  - See switch software configuration guide [xvii](#)
- command modes defined [1-2](#)
- command switch
  - See clusters
- configuration, initial
  - See hardware installation guide
- configuration files
  - password recovery disable considerations [A-1](#)
  - specifying the name [2-22, 2-27](#)
- configuring multiple interfaces [2-90](#)
- config-vlan mode
  - commands [2-504](#)
  - description [1-4](#)
  - entering [2-503](#)
  - summary [1-2](#)
- conventions
  - command [xvi](#)
  - for examples [xvi](#)
  - publication [xvi](#)
  - text [xvi](#)
- copy (boot loader) command [A-5](#)

- CoS
  - assigning default value to incoming packets [2-151](#)
  - overriding the incoming value [2-151](#)
- CoS-to-DSCP map [2-155](#)
- CPU ASIC statistics, displaying [2-252](#)

---

## D

- debug autoqos command [B-2](#)
- debug cluster command [B-4](#)
- debug dot1x command [B-6](#)
- debug dtp command [B-7](#)
- debug etherchannel command [B-8](#)
- debug ilpower command [B-9](#)
- debug interface command [B-10](#)
- debug ip igmp filter command [B-11](#)
- debug ip igmp max-groups command [B-12](#)
- debug ip igmp snooping command [B-13](#)
- debug lacp command [B-14](#)
- debug mac-notification command [B-15](#)
- debug matm command [B-16](#)
- debug monitor command [B-17](#)
- debug mvrdbg command [B-18](#)
- debug nvram command [B-19](#)
- debug pagp command [B-20](#)
- debug platform acl command [B-21](#)
- debug platform cli-redirectation main command [B-22](#)
- debug platform configuration command [B-23](#)
- debug platform cpu-queues command [B-24](#)
- debug platform device-manager command [B-26](#)
- debug platform dot1x command [B-27](#)
- debug platform etherchannel command [B-28](#)
- debug platform fallback-bridging command [B-29](#)
- debug platform forw-tcam command [B-30](#)
- debug platform ipc command [B-38](#)
- debug platform ip dhcp command [B-31](#)
- debug platform ip igmp snooping command [B-32](#)
- debug platform ip multicast command [B-34](#)
- debug platform ip unicast command [B-36](#)

- debug platform led command [B-39](#)
- debug platform matm command [B-40](#)
- debug platform messaging application command [B-41](#)
- debug platform phy command [B-42](#)
- debug platform pm command [B-44](#)
- debug platform port-asic command [B-46](#)
- debug platform port-security command [B-47](#)
- debug platform qos-acl-tcam command [B-48](#)
- debug platform remote-commands command [B-49](#)
- debug platform resource-manager command [B-50](#)
- debug platform snmp command [B-51](#)
- debug platform span command [B-52](#)
- debug platform stack-manager command [B-53](#)
- debug platform supervisor-asic command [B-54](#)
- debug platform sw-bridge command [B-55](#)
- debug platform tcam command [B-56](#)
- debug platform udd command [B-59](#)
- debug platform vlan command [B-60](#)
- debug pm command [B-61](#)
- debug port-security command [B-63](#)
- debug qos-manager command [B-64](#)
- debug spanning-tree backbonefast command [B-67](#)
- debug spanning-tree bpdu command [B-68](#)
- debug spanning-tree bpdu-opt command [B-69](#)
- debug spanning-tree command [B-65](#)
- debug spanning-tree mstp command [B-70](#)
- debug spanning-tree switch command [B-72](#)
- debug spanning-tree uplinkfast command [B-74](#)
- debug sw-vlan command [B-75](#)
- debug sw-vlan ifs command [B-77](#)
- debug sw-vlan notification command [B-78](#)
- debug sw-vlan vtp command [B-80](#)
- debug udd command [B-82](#)
- debug vqpc command [B-84](#)
- define interface-range command [2-59](#)
- delete (boot loader) command [A-6](#)
- delete command [2-61](#)
- deny command [2-62](#)
- detect mechanism, causes [2-82](#)
- DHCP snooping
  - enabling on a VLAN [2-105](#)
  - enabling option 82 [2-101](#)
  - enabling rate limiting on an interface [2-103](#)
  - enabling trust on an interface [2-104](#)
  - error recovery timer [2-84](#)
- dir (boot loader) command [A-7](#)
- directories, deleting [2-61](#)
- documentation
  - related [xvii](#)
- document conventions [xvi](#)
- domain name, VTP [2-527](#), [2-531](#)
- dot1x default command [2-65](#)
- dot1x guest-vlan command [2-66](#)
- dot1x host-mode command [2-67](#)
- dot1x initialize command [2-69](#)
- dot1x max-req command [2-70](#)
- dot1x multiple-hosts command [2-71](#)
- dot1x port-control command [2-72](#)
- dot1x re-authenticate command [2-74](#)
- dot1x re-authentication command [2-75](#)
- dot1x reauthentication command [2-76](#)
- dot1x system-auth-control command [2-77](#)
- dot1x timeout command [2-78](#)
- dropping packets, with ACL matches [2-3](#)
- DSCP-to-CoS map [2-155](#)
- DSCP-to-DSCP-mutation map [2-155](#)
- DTP [2-470](#)
- DTP flap
  - error detection for [2-82](#)
  - error recovery timer [2-84](#)
- duplex command [2-80](#)
- dynamic-access ports
  - configuring [2-465](#)
  - restrictions [2-466](#)
- dynamic auto VLAN membership mode [2-469](#)
- dynamic desirable VLAN membership mode [2-469](#)

## Dynamic Host Configuration Protocol (DHCP)

See DHCP snooping

## Dynamic Trunking Protocol

See DTP

---

**E**

## EAP-request/identity frame

maximum number to send [2-70](#)

response time before retransmitting [2-78](#)

encapsulation methods [2-483](#)environment variables, displaying [2-239](#)errdisable detect cause command [2-82](#)errdisable recovery command [2-84](#)error conditions, displaying [2-274](#)error disable detection [2-82](#)error-disabled interfaces, displaying [2-283](#)

## EtherChannel

assigning Ethernet interface to channel group [2-29](#)

creating port-channel logical interface [2-88](#)

debug EtherChannel/PAGP, display [B-8](#)

debug platform-specific events, display [B-28](#)

displaying [2-278](#)

interface information, displaying [2-283](#)

## LACP

clearing channel-group information [2-37](#)

debug messages, display [B-14](#)

displaying [2-302](#)

modes [2-29](#)

port priority for hot-standby ports [2-118](#)

restricting a protocol [2-32](#)

system priority [2-120](#)

load-distribution methods [2-204](#)

## PAGP

aggregate-port learner [2-191](#)

clearing channel-group information [2-40](#)

debug messages, display [B-20](#)

displaying [2-349](#)

error detection for [2-82](#)

error recovery timer [2-84](#)

learn method [2-191](#)

modes [2-29](#)

physical-port learner [2-191](#)

priority of interface for transmitted traffic [2-193](#)

Ethernet controller, internal register display [2-254](#)

Ethernet statistics, collecting [2-217](#)

examples, conventions for [xvi](#)

exit command [2-518](#)

extended discovery of candidate switches [2-48](#)

## extended-range VLANs

and allowed VLAN list [2-483](#)

and pruning-eligible list [2-483](#)

configuring [2-503](#)

extended system ID for STP [2-415](#)

---

**F**

fan information, displaying [2-270](#)

file name, VTP [2-527](#)

files, deleting [2-61](#)

flash\_init (boot loader) command [A-9](#)

flowcontrol command [2-86](#)

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

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

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

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

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

---

**G**

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

---

**H**

hardware ACL statistics [2-233](#)

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

hop-count limit for clusters [2-48](#)

host connection, port configuration [2-468](#)

## HSRP

- binding HSRP group to cluster [2-56](#)
- standby group [2-56](#)

---

## IGMP filters

- applying [2-106](#)
- debug messages, display [B-11](#)

IGMP groups, setting maximum [2-107](#)

IGMP maximum groups, debugging [B-12](#)

## IGMP profiles

- creating [2-109](#)
- displaying [2-295](#)

## IGMP snooping

- displaying [2-296](#), [2-299](#)
- enabling [2-111](#)
- multicast table [2-300](#)
- report suppression [2-114](#)

## images

See software images

Immediate-Leave feature, MVR [2-188](#)

Immediate-Leave processing [2-111](#)

## initial configuration

See hardware installation guide

inline power, configuring [2-206](#)

interface command [2-93](#)

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

interface port-channel command [2-88](#)

interface range command [2-90](#)

interface-range macros [2-59](#)

## interfaces

- assigning Ethernet interface to channel group [2-29](#)
- configuring [2-80](#)
- configuring multiple [2-90](#)
- creating port-channel logical [2-88](#)
- debug messages, display [B-10](#)
- disabling [2-395](#)

- displaying the MAC address table [2-318](#)

- restarting [2-395](#)

interface speed, configuring [2-450](#)

internal registers, displaying [2-254](#), [2-263](#)

## invalid GBIC

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

ip address command [2-98](#)

IP addresses, setting [2-98](#)

IP address matching [2-141](#)

## IP DHCP Snooping

See DHCP snooping

ip dhcp snooping command [2-100](#)

ip dhcp snooping information option command [2-101](#)

ip dhcp snooping limit rate command [2-103](#)

ip dhcp snooping trust command [2-104](#)

ip dhcp snooping vlan command [2-105](#)

ip igmp filter command [2-106](#)

ip igmp max-groups command [2-107](#)

ip igmp profile command [2-109](#)

ip igmp snooping command [2-111](#)

ip igmp snooping report-suppression command [2-114](#)

IP multicast addresses [2-185](#)

## IP phones

- auto-QoS configuration [2-16](#)

- trusting packets sent from [2-178](#)

IP-precedence-to-DSCP map [2-155](#)

ip ssh command [2-116](#)

---

## J

jumbo frames. See MTU

---

## L

### LACP

See EtherChannel

lacp port-priority command [2-118](#)

- lacp system-priority command [2-120](#)
  - Layer 2 mode, enabling [2-463](#)
  - Layer 2 traceroute
    - IP addresses [2-494](#)
    - MAC addresses [2-491](#)
  - Layer 3 mode, enabling [2-463](#)
  - line configuration mode [1-3, 1-5](#)
  - Link Aggregation Control Protocol
    - See EtherChannel
  - link flap
    - error detection for [2-82](#)
    - error recovery timer [2-84](#)
  - load\_helper (boot loader) command [A-13](#)
  - load-distribution methods for EtherChannel [2-204](#)
  - logging event command [2-122](#)
  - logging file command [2-123](#)
  - logical interface [2-88](#)
  - loopback error
    - detection for [2-82](#)
    - recovery timer [2-84](#)
  - loop guard, for spanning tree [2-417, 2-421](#)
- 
- ## M
- mac access-group command [2-125](#)
  - MAC access-groups, displaying [2-306](#)
  - MAC access list configuration mode [2-127](#)
  - mac access-list extended command [2-127](#)
  - MAC access lists [2-62](#)
  - MAC addresses
    - displaying
      - aging time [2-312](#)
      - all [2-310](#)
      - dynamic [2-316](#)
      - Layer 2 multicast entries [2-320](#)
      - notification settings [2-322](#)
      - number of addresses in a VLAN [2-314](#)
      - per interface [2-318](#)
      - per VLAN [2-326](#)
      - static [2-324](#)
      - static and dynamic entries [2-308](#)
    - dynamic
      - aging time [2-129](#)
      - deleting [2-38](#)
      - displaying [2-316](#)
    - enabling MAC address notification [2-131](#)
    - matching [2-141](#)
    - static
      - adding and removing [2-133](#)
      - displaying [2-324](#)
      - dropping on an interface [2-134](#)
    - tables [2-310](#)
  - MAC address notification, debugging [B-15](#)
  - mac address-table aging-time [2-125, 2-141](#)
  - mac address-table aging-time command [2-129](#)
  - mac address-table notification command [2-131](#)
  - mac address-table static command [2-133](#)
  - mac address-table static drop command [2-134](#)
  - macro apply command [2-136](#)
  - macro description command [2-138](#)
  - macro name command [2-139](#)
  - macros
    - adding a description [2-138](#)
    - applying [2-136](#)
    - creating [2-139](#)
    - displaying [2-351](#)
    - tracing [2-136](#)
  - macros, interface range [2-59, 2-90](#)
  - manual
    - audience [xv](#)
    - purpose of [xv](#)
  - maps
    - QoS
      - defining [2-155](#)
      - displaying [2-335](#)

- VLAN
  - creating [2-515](#)
  - defining [2-141](#)
  - displaying [2-386](#)
- match (access-map configuration) command [2-141](#)
- match (class-map configuration) command [2-143](#)
- maximum transmission unit
  - See MTU
- mdix auto command [2-145](#)
- member switches
  - See clusters
- memory (boot loader) command [A-14](#)
- mkdir (boot loader) command [A-16](#)
- mls qos aggregate-policer command [2-149](#)
- mls qos command [2-147](#)
- mls qos cos command [2-151](#)
- mls qos dscp-mutation command [2-153](#)
- mls qos map command [2-155](#)
- mls qos queue-set output buffers command [2-158](#)
- mls qos queue-set output threshold command [2-160](#)
- mls qos srr-queue input bandwidth command [2-162](#)
- mls qos srr-queue input buffers command [2-164](#)
- mls qos srr-queue input cos-map command [2-166](#)
- mls qos srr-queue input dscp-map command [2-168](#)
- mls qos srr-queue input priority-queue command [2-170](#)
- mls qos srr-queue input threshold command [2-172](#)
- mls qos srr-queue output cos-map command [2-174](#)
- mls qos srr-queue output dscp-map command [2-176](#)
- mls qos trust command [2-178](#)
- mode, MVR [2-185](#)
- Mode button, and password recovery [2-221](#)
- modes, commands [1-2](#)
- monitor session command [2-180](#)
- more (boot loader) command [A-17](#)
- MSTP
  - displaying [2-366](#)
  - interoperability [2-43](#)
  - link type [2-419](#)
  - MST region
    - aborting changes [2-425](#)
    - applying changes [2-425](#)
    - configuration name [2-425](#)
    - configuration revision number [2-425](#)
    - current or pending display [2-425](#)
    - displaying [2-366](#)
    - MST configuration mode [2-425](#)
    - VLANs-to-instance mapping [2-425](#)
  - path cost [2-427](#)
  - protocol mode [2-423](#)
  - restart protocol migration process [2-43](#)
  - root port
    - loop guard [2-417](#)
    - preventing from becoming designated [2-417](#)
    - restricting which can be root [2-417](#)
    - root guard [2-417](#)
  - root switch
    - affects of extended system ID [2-415](#)
    - hello-time [2-430, 2-437](#)
    - interval between BPDU messages [2-431](#)
    - interval between hello BPDU messages [2-430, 2-437](#)
    - max-age [2-431](#)
    - maximum hop count before discarding BPDU [2-432](#)
    - port priority for selection of [2-434](#)
    - primary or secondary [2-437](#)
    - switch priority [2-436](#)
  - state changes
    - blocking to forwarding state [2-443](#)
    - enabling BPDU filtering [2-407, 2-441](#)
    - enabling BPDU guard [2-409, 2-441](#)
    - enabling Port Fast [2-441, 2-443](#)
    - forward-delay time [2-429](#)
    - length of listening and learning states [2-429](#)
    - rapid transition to forwarding [2-419](#)
    - shutting down Port Fast-enabled ports [2-441](#)
  - state information display [2-365](#)
- MTU
  - configuring size [2-488](#)
  - displaying global setting [2-376](#)



multicast group address, MVR [2-188](#)  
 multicast groups, MVR [2-186](#)  
 multicast router learning method [2-111](#)  
 multicast router ports, configuring [2-111](#)  
 multicast storm control [2-458](#)  
 multicast traffic counters [2-289](#)  
 multicast VLAN, MVR [2-185](#)  
 multicast VLAN registration  
     See MVR  
 multiple hosts on authorized port [2-67](#)  
 Multiple Spanning Tree Protocol  
     See MSTP  
 MVR  
     and address aliasing [2-186](#)  
     configuring [2-185](#)  
     configuring interfaces [2-188](#)  
     debug messages, display [B-18](#)  
     displaying [2-343](#)  
     displaying interface information [2-345](#)  
     members, displaying [2-347](#)  
 mvr (global configuration) command [2-185](#)  
 mvr (interface configuration) command [2-188](#)  
 mvr vlan group command [2-189](#)

---

## N

native VLANs [2-483](#)  
 nonegotiate  
     DTP messaging [2-471](#)  
     speed [2-450](#)  
 non-IP protocols  
     denying [2-62](#)  
     forwarding [2-195](#)  
 non-IP traffic access lists [2-127](#)  
 non-IP traffic forwarding  
     denying [2-62](#)  
     permitting [2-195](#)  
 normal-range VLANs [2-503, 2-509](#)

note, description [xvi](#)  
 no vlan command [2-503, 2-513](#)

---

## P

PAgP  
     See EtherChannel  
 pagp learn-method command [2-191](#)  
 pagp port-priority command [2-193](#)  
 password, VTP [2-527, 2-531](#)  
 password-recovery mechanism, enabling and  
     disabling [2-221](#)  
 permit command [2-195](#)  
 per-VLAN spanning-tree plus  
     See STP  
 physical-port learner [2-191](#)  
 PIM-DVMRP, as multicast router learning method [2-111](#)  
 PoE  
     logging of status [2-122](#)  
 police aggregate command [2-200](#)  
 police command [2-198](#)  
 policed-DSCP map [2-155](#)  
 policy-map command [2-202](#)  
 policy maps  
     applying to an interface [2-223, 2-228](#)  
     creating [2-202](#)  
     displaying [2-353](#)  
     policers  
         displaying [2-329](#)  
         for a single class [2-198](#)  
         for multiple classes [2-149, 2-200](#)  
         policed-DSCP map [2-155](#)  
     traffic classification  
         defining the class [2-33](#)  
         defining trust states [2-496](#)  
         setting DSCP or IP precedence values [2-226](#)  
 Port Aggregation Protocol  
     See EtherChannel

port-based authentication

- AAA method list [2-1](#)
- debug messages, display [B-6](#)
- enabling 802.1X
  - globally [2-77](#)
  - per interface [2-72](#)
- guest VLAN [2-66](#)
- host modes [2-67](#)
- initialize an interface [2-69](#)
- manual control of authorization state [2-72](#)
- multiple hosts on authorized port [2-67](#)
- periodic re-authentication
  - enabling [2-76](#)
  - time between attempts [2-78](#)
- quiet period between failed authentication exchanges [2-78](#)
- re-authenticating 802.1X-enabled ports [2-74](#)
- resetting configurable 802.1X parameters [2-65](#)
- switch-to-authentication server retransmission time [2-78](#)
- switch-to-client frame-retransmission number [2-70](#)
- switch-to-client retransmission time [2-78](#)

port-channel load-balance command [2-204](#)

Port Fast, for spanning tree [2-443](#)

port ranges, defining [2-59](#)

ports, debugging [B-61](#)

ports, protected [2-481](#)

port security

- aging [2-477](#)
- debug messages, display [B-63](#)
- enabling [2-473](#)
- violation error recovery [2-84](#)

port trust states for QoS [2-178](#)

port types, MVR [2-188](#)

power information, displaying [2-270](#)

power inline command [2-206](#)

Power over Ethernet (PoE) controller, displaying [2-261](#)

priority-queue command [2-208](#)

priority value, stack member [2-373, 2-460](#)

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

protected ports, displaying [2-288](#)

pruning

- VLANs [2-483](#)
- VTP
  - displaying interface information [2-283](#)
  - enabling [2-527, 2-531](#)

pruning-eligible VLAN list [2-485](#)

PVST+

- See STP

---

## Q

QoS

auto-QoS

- configuring [2-16](#)
- debug messages, display [B-2](#)
- displaying [2-236](#)

class maps

- creating [2-35](#)
- defining the match criteria [2-143](#)
- displaying [2-245](#)

defining the CoS value for an incoming packet [2-151](#)

displaying configuration information [2-236, 2-328](#)

DSCP trusted ports

- applying DSCP-to-DSCP-mutation map to [2-153](#)
- defining DSCP-to-DSCP-mutation map [2-155](#)

egress queues

- allocating buffers [2-158](#)
- defining the CoS output queue threshold map [2-174](#)
- defining the DSCP output queue threshold map [2-176](#)
- displaying buffer allocations [2-332](#)
- displaying CoS output queue threshold map [2-335](#)
- displaying DSCP output queue threshold map [2-335](#)
- displaying queueing strategy [2-332](#)
- displaying queue-set settings [2-338](#)
- enabling bandwidth shaping and scheduling [2-454](#)
- enabling bandwidth sharing and scheduling [2-456](#)
- limiting the maximum output on a port [2-452](#)

- mapping a port to a queue-set [2-210](#)
- mapping CoS values to a queue and threshold [2-174](#)
- mapping DSCP values to a queue and threshold [2-176](#)
- setting maximum and reserved memory allocations [2-160](#)
- setting WTD thresholds [2-160](#)
- enabling [2-147](#)
- ingress queues
  - allocating buffers [2-164](#)
  - assigning SRR scheduling weights [2-162](#)
  - defining the CoS input queue threshold map [2-166](#)
  - defining the DSCP input queue threshold map [2-168](#)
  - displaying buffer allocations [2-332](#)
  - displaying CoS input queue threshold map [2-335](#)
  - displaying DSCP input queue threshold map [2-335](#)
  - displaying queueing strategy [2-332](#)
  - displaying settings for [2-330](#)
  - enabling the priority queue [2-170](#)
  - mapping CoS values to a queue and threshold [2-166](#)
  - mapping DSCP values to a queue and threshold [2-168](#)
  - setting WTD thresholds [2-172](#)
- maps
  - defining [2-155, 2-166, 2-168, 2-174, 2-176](#)
  - displaying [2-335](#)
- policy maps
  - applying an aggregate policer [2-200](#)
  - applying to an interface [2-223, 2-228](#)
  - creating [2-202](#)
  - defining policers [2-149, 2-198](#)
  - displaying policers [2-329](#)
  - displaying policy maps [2-353](#)
  - policed-DSCP map [2-155](#)
  - setting DSCP or IP precedence values [2-226](#)
  - traffic classifications [2-33](#)
  - trust states [2-496](#)
- port trust states [2-178](#)
- queues
  - enabling the expedite [2-208](#)

- statistics
  - in-profile and out-of-profile packets [2-332](#)
  - packets enqueued or dropped [2-332](#)
  - sent and received CoS values [2-332](#)
  - sent and received DSCP values [2-332](#)
  - trusted boundary for IP phones [2-178](#)
- quality of service
  - See QoS
- querytime, MVR [2-185](#)
- queue-set command [2-210](#)

---

## R

- rapid per-VLAN spanning-tree plus
  - See STP
- rapid PVST+
  - See STP
- rcommand command [2-211](#)
- re-authenticating 802.1X-enabled ports [2-74](#)
- re-authentication
  - periodic [2-76](#)
  - time between attempts [2-78](#)
- receiver ports, MVR [2-188](#)
- receiving flow-control packets [2-86](#)
- recovery mechanism
  - causes [2-84](#)
  - display [2-241, 2-243, 2-272, 2-276](#)
  - timer interval [2-84](#)
- redundancy for cluster switches [2-56](#)
- reload command [2-213](#)
- remote command command [2-214](#)
- remote-span command [2-215](#)
- Remote Switched Port Analyzer
  - See RSPAN
- rename (boot loader) command [A-18](#)
- requirements
  - cluster
    - See release notes [xvii](#)

## CMS

See switch software configuration guide [xvii](#)

reset (boot loader) command [A-19](#)

reset command [2-518](#)

resource templates, displaying [2-361](#)

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

rmon collection stats command [2-217](#)

root guard, for spanning tree [2-417](#)

routed ports

IP addresses on [2-99](#)

number supported [2-99](#)

## RSPAN

configuring [2-180](#)

displaying [2-340](#)

filter RSPAN traffic [2-180](#)

remote-span command [2-215](#)

sessions

add interfaces to [2-180](#)

displaying [2-340](#)

start new [2-180](#)

show cluster candidates command [2-248](#)

show cluster command [2-246](#)

show cluster members command [2-250](#)

show controllers cpu-interface command [2-252](#)

show controllers ethernet-controller command [2-254](#)

show controllers power inline command [2-261](#)

show controllers team command [2-263](#)

show current command [2-518](#)

show dot1x command [2-265](#)

show dtp [2-268](#)

show env command [2-270](#)

show errdisable detect command [2-272](#)

show errdisable flap-values command [2-274](#)

show errdisable recovery command [2-276](#)

show etherchannel command [2-278](#)

show flowcontrol command [2-281](#)

show interfaces command [2-283](#)

show interfaces counters command [2-289](#)

show ip dhcp snooping binding command [2-293](#)

show ip dhcp snooping command [2-292](#)

show ip igmp profile command [2-295](#)

show ip igmp snooping command [2-296](#)

show ip igmp snooping mrouter command [2-299](#)

show ip igmp snooping multicast command [2-300](#)

show lacp command [2-302](#)

show mac access-group command [2-306](#)

show mac address-table address command [2-310](#)

show mac address-table aging time command [2-312](#)

show mac address-table command [2-308](#)

show mac address-table count command [2-314](#)

show mac address-table dynamic command [2-316](#)

show mac address-table interface command [2-318](#)

show mac address-table multicast command [2-320](#)

show mac address-table notification command [2-322](#)

show mac address-table static command [2-324](#)

show mac address-table vlan command [2-326](#)

show mls qos aggregate-policer command [2-329](#)

show mls qos command [2-328](#)

show mls qos input-queue command [2-330](#)

## S

SDM mismatch mode [2-219, 2-374](#)

sdm prefer command [2-218](#)

secure ports, limitations [2-474](#)

sending flow-control packets [2-86](#)

service password-recovery command [2-221](#)

service-policy command [2-223](#)

session command [2-225](#)

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

set command [2-226](#)

setup command [2-228](#)

setup express command [2-231](#)

show access-lists command [2-233](#)

show auto qos command [2-236](#)

show boot command [2-239](#)

show changes command [2-518](#)

show class-map command [2-245](#)

- show mls qos interface command [2-332](#)
- show mls qos maps command [2-335](#)
- show mls qos queue-set command [2-338](#)
- show monitor command [2-340](#)
- show mvr command [2-343](#)
- show mvr interface command [2-345](#)
- show mvr members command [2-347](#)
- show pagp command [2-349](#)
- show parser macro command [2-351](#)
- show platform acl command [C-2](#)
- show platform configuration command [C-3](#)
- show platform etherchannel command [C-4](#)
- show platform forward command [C-5](#)
- show platform igmp snooping command [C-7](#)
- show platform ipc trace command [C-12](#)
- show platform ip multicast command [C-9](#)
- show platform ip unicast command [C-10](#)
- show platform layer4op command [C-13](#)
- show platform mac-address-table command [C-14](#)
- show platform messaging command [C-15](#)
- show platform monitor command [C-16](#)
- show platform mvr table command [C-17](#)
- show platform pm command [C-18](#)
- show platform port-asic command [C-19](#)
- show platform port-security command [C-24](#)
- show platform qos command [C-25](#)
- show platform resource-manager command [C-26](#)
- show platform snmp counters command [C-28](#)
- show platform spanning-tree command [C-29](#)
- show platform stack-manager command [C-31](#)
- show platform stp-instance command [C-30](#)
- show platform tb command [C-33](#)
- show platform team command [C-35](#)
- show platform vlan command [C-38](#)
- show policy-map command [2-353](#)
- show port security command [2-355](#)
- show proposed command [2-518](#)
- show sdm prefer command [2-361](#)
- show setup express command [2-358, 2-364](#)
- show spanning-tree command [2-365](#)
- show storm-control command [2-371](#)
- show switch command [2-373](#)
- show system mtu command [2-376](#)
- show trust command [2-496](#)
- show uddl command [2-377](#)
- show version command [2-380](#)
- show vlan access-map command [2-386](#)
- show vlan command [2-382](#)
- show vlan command, fields [2-383](#)
- show vlan filter command [2-387](#)
- show vmps command [2-388](#)
- show vtp command [2-391](#)
- shutdown command [2-395](#)
- shutdown vlan command [2-396](#)
- SNMP host, specifying [2-400](#)
- SNMP informs, enabling the sending of [2-397](#)
- snmp-server enable traps command [2-397](#)
- snmp-server host command [2-400](#)
- snmp trap mac-notification command [2-404](#)
- SNMP traps
  - enabling MAC address notification trap [2-404](#)
  - enabling the MAC address notification feature [2-131](#)
  - enabling the sending of [2-397](#)
- software images
  - copying [2-5](#)
  - deleting [2-61](#)
  - downloading [2-8](#)
  - upgrading [2-5, 2-8](#)
  - uploading [2-14](#)
- software version, displaying [2-380](#)
- source ports, MVR [2-188](#)
- SPAN
  - configuring [2-180](#)
  - debug messages, display [B-17](#)
  - displaying [2-340](#)
  - filter SPAN traffic [2-180](#)

- sessions
  - add interfaces to [2-180](#)
  - displaying [2-340](#)
  - start new [2-180](#)
- spanning-tree backbonefast command [2-406](#)
- spanning-tree bpduguard command [2-407](#)
- spanning-tree bpduguard command [2-409](#)
- spanning-tree cost command [2-411](#)
- spanning-tree etherchannel command [2-413](#)
- spanning-tree extend system-id command [2-415](#)
- spanning-tree guard command [2-417](#)
- spanning-tree link-type command [2-419](#)
- spanning-tree loopguard default command [2-421](#)
- spanning-tree mode command [2-423](#)
- spanning-tree mst configuration command [2-425](#)
- spanning-tree mst cost command [2-427](#)
- spanning-tree mst forward-time command [2-429](#)
- spanning-tree mst hello-time command [2-430](#)
- spanning-tree mst max-age command [2-431](#)
- spanning-tree mst max-hops command [2-432](#)
- spanning-tree mst port-priority command [2-434](#)
- spanning-tree mst priority command [2-436](#)
- spanning-tree mst root command [2-437](#)
- spanning-tree portfast (global configuration) command [2-441](#)
- spanning-tree portfast (interface configuration) command [2-443](#)
- spanning-tree port-priority command [2-439](#)
- Spanning Tree Protocol
  - See STP
- spanning-tree uplinkfast command [2-445](#)
- spanning-tree vlan command [2-447](#)
- speed command [2-450](#)
- srr-queue bandwidth limit command [2-452](#)
- srr-queue bandwidth shape command [2-454](#)
- srr-queue bandwidth share command [2-456](#)
- SSH, configuring version [2-116](#)
- stack member
  - access [2-225](#)
  - number [2-373, 2-461](#)
  - priority value [2-460](#)
  - reloading [2-213](#)
- stacks, switch
  - reloading [2-213](#)
  - stack member access [2-225](#)
  - stack member number [2-373, 2-461](#)
  - stack member priority value [2-373, 2-460](#)
- static-access ports, configuring [2-465](#)
- statistics, Ethernet group [2-217](#)
- sticky learning, enabling [2-473](#)
- storm-control command [2-458](#)
- STP
  - BackboneFast [2-406](#)
  - counters, clearing [2-42](#)
  - debug messages, display
    - BackboneFast events [B-67](#)
    - MSTP [B-70](#)
    - optimized BPDUs handling [B-69](#)
    - spanning-tree activity [B-65](#)
    - switch shim [B-72](#)
    - transmitted and received BPDUs [B-68](#)
    - UplinkFast [B-74](#)
  - detection of indirect link failures [2-406](#)
  - EtherChannel misconfiguration [2-413](#)
  - extended system ID [2-415](#)
  - path cost [2-411](#)
  - protocol modes [2-423](#)
  - root port
    - accelerating choice of new [2-445](#)
    - loop guard [2-417](#)
    - preventing from becoming designated [2-417](#)
    - restricting which can be root [2-417](#)
    - root guard [2-417](#)
    - UplinkFast [2-445](#)

root switch
 

- affects of extended system ID [2-415, 2-448](#)
- hello-time [2-447](#)
- interval between BPDU messages [2-447](#)
- interval between hello BPDU messages [2-447](#)
- max-age [2-447](#)
- port priority for selection of [2-439](#)
- primary or secondary [2-447](#)
- switch priority [2-447](#)

 state changes
 

- blocking to forwarding state [2-443](#)
- enabling BPDU filtering [2-407, 2-441](#)
- enabling BPDU guard [2-409, 2-441](#)
- enabling Port Fast [2-441, 2-443](#)
- enabling timer to recover from error state [2-84](#)
- forward-delay time [2-447](#)
- length of listening and learning states [2-447](#)
- shutting down Port Fast-enabled ports [2-441](#)

 state information display [2-365](#)
  
 VLAN options [2-436, 2-447](#)

SVIs

- creating [2-93](#)

Switched Port Analyzer

- See SPAN

switching characteristics

- modifying [2-463, 2-471](#)
- returning to interfaces [2-463, 2-471](#)

switchport access command [2-465](#)

switchport block command [2-467](#)

switchport command [2-463](#)

switchport host command [2-468](#)

switchport mode command [2-469](#)

switchport nonegotiate command [2-471](#)

switchport port-security aging command [2-477](#)

switchport port-security command [2-473](#)

switchport priority extend command [2-479](#)

switchport protected command [2-481](#)

switchports, displaying [2-283](#)

switchport trunk command [2-483](#)

switchport voice vlan command [2-486](#)
  
 switch priority command [2-460](#)
  
 switch renumber command [2-461](#)
  
 system message logging [2-122](#)
  
 system message logging, save message to Flash [2-123](#)
  
 system mtu command [2-488](#)
  
 system resource templates [2-218](#)

---

## T

tar files, creating, listing, and extracting [2-11](#)

TDR

- running [2-490](#)

Telnet, using to communicate to cluster switches [2-211](#)

temperature information, displaying [2-270](#)

templates, system resources [2-218](#)

test cable-diagnostics tdr command [2-490](#)

traceroute mac command [2-491](#)

traceroute mac ip command [2-494](#)

trunking, VLAN mode [2-469](#)

trunk mode [2-469](#)

trunk ports [2-469](#)

trunks, to non-DTP device [2-470](#)

trusted boundary for QoS [2-178](#)

trusted port states for QoS [2-178](#)

type (boot loader) command [A-24](#)

---

## U

UDLD

- aggressive mode [2-498, 2-500](#)
- debug messages, display [B-82](#)
- enable globally [2-498](#)
- enable per interface [2-500](#)
- error recovery timer [2-84](#)
- message timer [2-498](#)
- normal mode [2-498, 2-500](#)

reset a shutdown interface [2-502](#)  
 status [2-377](#)  
 uddld command [2-498](#)  
 uddld port command [2-500](#)  
 uddld reset command [2-502](#)  
 unicast storm control [2-458](#)  
 unicast traffic counters [2-289](#)  
 UniDirectional Link Detection  
   See UDLD  
 unknown multicast traffic, preventing [2-467](#)  
 unknown unicast traffic, preventing [2-467](#)  
 unset (boot loader) command [A-25](#)  
 upgrading, software images [2-5, 2-8](#)  
 upgrading information  
   See release notes [xvii](#)  
 UplinkFast, for STP [2-445](#)  
 user EXEC mode [1-2, 1-3](#)

## V

version (boot loader) command [A-27](#)  
 version mismatch mode [2-374](#)  
 vlan (global configuration) command [2-503](#)  
 vlan (VLAN configuration) command [2-509](#)  
 vlan access-map command [2-515](#)  
 VLAN access map configuration mode [2-515](#)  
 VLAN access maps  
   actions [2-3](#)  
   displaying [2-386](#)  
 VLAN configuration  
   rules [2-507, 2-511](#)  
   saving [2-503, 2-513](#)  
 VLAN configuration mode  
   commands  
     VLAN [2-509](#)  
     VTP [2-531](#)  
   description [1-5](#)  
   entering [2-517](#)  
   summary [1-3](#)  
   vlan database command [2-517](#)  
   vlan filter command [2-520](#)  
   VLAN filters, displaying [2-387](#)  
   VLAN ID range [2-503, 2-509](#)  
   VLAN maps  
     applying [2-520](#)  
     creating [2-515](#)  
     defining [2-141](#)  
     displaying [2-386](#)  
   VLAN Query Protocol  
     See VQP  
   VLANs  
     adding [2-503](#)  
     configuring [2-503, 2-509](#)  
     debug messages, display  
       ISL [B-78](#)  
       VLAN IOS file system error tests [B-77](#)  
       VLAN manager activity [B-75](#)  
       VTP [B-80](#)  
     displaying configurations [2-382](#)  
     extended-range [2-503](#)  
     MAC addresses  
       displaying [2-326](#)  
       number of [2-314](#)  
     media types [2-506, 2-511](#)  
     normal-range [2-503, 2-509](#)  
     restarting [2-396](#)  
     saving the configuration [2-503](#)  
     shutting down [2-396](#)  
     SNMP traps for VTP [2-398, 2-401](#)  
     suspending [2-396](#)  
     variables [2-509](#)  
   VLAN Trunking Protocol  
     See VTP  
   VM mode [2-374](#)  
   VMPS  
     configuring servers [2-525](#)  
     displaying [2-388](#)



- error recovery timer [2-84](#)
- reconfirming dynamic VLAN assignments [2-522](#)
- vmmps reconfirm (global configuration) command [2-523](#)
- vmmps reconfirm (privileged EXEC) command [2-522](#)
- vmmps retry command [2-524](#)
- vmmps server command [2-525](#)
- voice VLAN
  - configuring [2-486](#)
  - setting port priority [2-479](#)
- VQP
  - and dynamic-access ports [2-466](#)
  - clearing client statistics [2-44](#)
  - displaying information [2-388](#)
  - per-server retry count [2-524](#)
  - reconfirmation interval [2-523](#)
  - reconfirming dynamic VLAN assignments [2-522](#)
- VTP
  - changing characteristics [2-527](#)
  - clearing pruning counters [2-45](#)
  - configuring
    - domain name [2-527, 2-531](#)
    - file name [2-527](#)
    - mode [2-527, 2-531](#)
    - password [2-527, 2-531](#)
  - counters display fields [2-392](#)
  - displaying information [2-391](#)
  - enabling
    - pruning [2-527, 2-531](#)
    - version 2 [2-527, 2-531](#)
  - mode [2-527, 2-531](#)
  - pruning [2-527, 2-531](#)
  - saving the configuration [2-503, 2-513](#)
  - statistics [2-391](#)
  - status [2-391](#)
  - status display fields [2-393](#)
- vtp (global configuration) command [2-527](#)
- vtp (VLAN configuration) command [2-531](#)

