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Command Reference Guide for IBM 90Y3474

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Mellanox Technologies
350 Oakmead Parkway Suite 100
Sunnyvale, CA 94085
U.S.A.
www.mellanox.com
Tel: (408) 970-3400
Fax: (408) 970-3403

Mellanox Technologies, Ltd.
Beit Mellanox
PO Box 586 Yokneam 20692
Israel
www.mellanox.com
Tel: +972 (0)74 723 7200
Fax: +972 (0)4 959 3245

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Document Revision History

Table 1 - Document Revision History – Ethernet

Document Revision	Date	Description
Rev 1.6.9	Aug. 2013	Updated the command “destination interface” on page 396
Rev 1.6.8	Aug. 2013	No Ethernet changes.
Rev 1.6.7	Jul. 2013	Updated the command “file debug-dump” Updated the command “show interfaces ethernet” Updated the command “congestion”
Rev 1.6.6	Apr. 2013	Updated the command “ip arp timeout”
Rev 1.6.5	Apr. 2013	Added Section 4.2, “OSPF,” on page 448
Rev 1.6.4	Mar. 2013	Added Section 3.10, “Port Mirroring,” on page 402 Added Section 3.11, “sFlow,” on page 411 Updated the command “show ip route” under IP Routing
Rev 1.6.3	Jan. 2013	Added the command “load-interval” Added the command “snmp-server auto-refresh” Updated the output of the command “show interfaces ethernet”
Rev. 1.6.2	Jan. 2013	Added command “banner login-local” Added command “banner login-remote” Added “force” option to commands “dcb priority-flow-control mode on”, “flowcontrol”, and “mtu <size>”
Rev. 1.6.1	Nov. 2012	Updated interface port-channel command with range options Updated interface ethernet command with range option
Rev. 1.5.4	Sep. 2012	Added “boot next” command
Rev. 1.5.3	Aug. 2012	Removed “ip default-gateway” command
Rev 1.5.2	June 2012	Added command “igmp snooping unregistered multicast” Update command “switchport access”
Rev 1.5.1	May 2012	Added LLDP commands
Rev 1.5.0	May 2012	Initial version

About this Manual

This manual provides general information concerning MLNX-OS® Command Line Interface.

Intended Audience

This manual is intended for network administrators who are responsible for configuring and managing Mellanox Technologies' MLNX-OS Switch Platforms.

Related Documentation

The following table lists the documents referenced in this user's manual.

Table 2 - Reference Documents

Document Name	Description
InfiniBand Architecture Specification, Vol. 1, Release 1.2.1	The InfiniBand Architecture Specification that is provided by IBTA.
SwitchX® Hardware Installation Guide	Each Mellanox Technologies' switch platform is shipped with an *Installation Guide* document to bring-up and initialize the switch platform.
SwitchX® Hardware User Manual	This document contains hardware descriptions, LED assignments and hardware specifications among other things.
Switch Product Release Notes	Please look up the relevant SwitchX®-based switch system/series release note file
MX-OS Software WebUI User's Manual	WebUI user's manual for MX-OS.
Mellanox MLNX-OS SwitchX Software User Manual	This document contains information regarding configuring and managing Mellanox Technologies' SwitchX® Switch Platforms.
Mellanox MLNX-OS Software Configuration Guide	Configuration Guide for MLNX-OS displaying different configuration scenarios.

All of these documents can be found on the Mellanox website. They are available either through the product pages or through the support page with a login and password.

Documentation Conventions

Typographical Conventions

Table 3 - Typographical Conventions

Description	Convention	Example
File names	file.extension	
Directory names	directory	
Commands and their parameters	command param1	sx10xx-1 > show hosts
Required item	< >	
Optional item	[ ]	
Mutually exclusive parameters	{p1, p2, p3} or {p1 | p2 | p3}	
Optional mutually exclusive parameters	[p1 | p2 | p3]	
Prompt of a command in Standard mode	hostname >	sx10xx-1 >
Prompt of a command in Enable mode	hostname #	sx10xx-1 #
Prompt of a command in Config mode	hostname (config) #	sx10xx-1 (config) #
Comments to explain command examples	//	// This is a comment
Variables for which users supply specific values	Italic font	*enable*
Emphasized words	Italic font	*These are emphasized words*
Note	 <text>	 This is a note.
Warning	 <text>	 Make sure to connect to the RS-232 RJ-45 port of the switch and not to the MGT port.

Glossary

Table 4 - Glossary

Term	Description
AAA	Authentication, Authorization, and Accounting: • Authentication - verifies user credentials (username and password) • Authorization - grants or refuses privileges to a user/client for accessing specific services • Accounting - tracks network resources consumption by users
ARP	Address Resolution Protocol. A protocol that translates IP addresses into MAC addresses for communication over a local area network (LAN).
BOARD_MONITOR	Board temperature sensor for the selected Leaf or Spine module.
CA (Channel Adapter)	A device which terminates an Infiniband link, and executes transport level functions.
CLI	Command Line Interface. A user interface in which you type commands at the prompt.
DCB	Data Center Bridging.
DCBX	DCBX protocol is an extension of the Link Layer Discovery Protocol (LLDP). DCBX end points exchange request and acknowledgment messages. For flexibility, parameters are coded in a type-length-value (TLV) format.
DHCP	The Dynamic Host Configuration Protocol (DHCP) is an automatic configuration protocol used on IP networks.
Director Class Switch	A high density InfiniBand chassis switch system.
DMA (Direct Memory Access)	Allowing Hardware to move data blocks directly to the memory, bypassing the CPU.
DNS	Domain Name System. A hierarchical naming system for devices in a computer network.
Edge Switch	A switch system with a 1RU form factor.
ETS	ETS provides a common management framework for assignment of bandwidth to traffic classes.
Fabric Management	The use of a set of tools (APIs) to configure, discover, and manage and a group of devices organized as a connected fabric.
FTP	File Transfer Protocol (FTP) is a standard network protocol used to transfer files from one host to another over a TCP-based network, such as the Internet.
Gateway	A network node that interfaces with another network using a different network protocol.
GID (Global IDentifier)	A 128-bit number used to identify a Port on a network adapter (see below), a port on a Router, or a Multicast Group.
GUID (Globally Unique IDentifier)	A 64-bit number that uniquely identifies a device or component in a subnet.

Table 4 - Glossary

Term	Description
HA (High Availability)	A system design protocol that provides redundancy of system components, thus enables overcoming single or multiple failures in minimal downtime.
IB	InfiniBand.
LACP	Link Aggregation Control Protocol (LACP) provides a method to control the bundling of several physical ports together to form a single logical channel. LACP allows a network device to negotiate an automatic bundling of links by sending LACP packets to the peer (directly connected device that also implements LACP).
LDAP	The Lightweight Directory Access Protocol is an application protocol for reading and editing directories over an IP network.
LID (Local IDentifier)	A 16 bit address assigned to end nodes by the subnet manager Each LID is unique within its subnet.
LLDP	Link Layer Discovery Protocol (LLDP) is an industry standard protocol designed to supplant proprietary Link-Layer protocols such as Extreme's EDP (Extreme Discovery Protocol) and CDP (Cisco Discovery Protocol). The goal of LLDP is to provide an inter-vendor compatible mechanism to deliver Link-Layer notifications to adjacent network devices.
MAC	A Media Access Control address (MAC address) is a unique identifier assigned to network interfaces for communications on the physical network segment. MAC addresses are used for numerous network technologies and most IEEE 802 network technologies including Ethernet.
MTU (Maximum Transfer Unit)	The maximum size of a packet payload (not including headers) that can be sent /received from a port.
PFC/FC	Priority Based Flow Control applies pause functionality to traffic classes OR classes of service on the Ethernet link.
QoS or Quality of Service	Quality of service is the ability to manage different applications or users by priority such that a required bit rate, delay, packet dropping probability, and/or other measures may be guaranteed.
QSFP_AMBIENT_TEMP	Ambient temperature sensor of the QSFP cage for the selected Leaf or Spine module
RADIUS	Remote Authentication Dial In User Service. A networking protocol that enables AAA centralized management for computers to connect and use a network service.
RDMA (Remote Direct Memory Access)	Accessing memory in a remote side without involvement of the remote CPU.
RSTP	Rapid Spanning Tree Protocol. A spanning-tree protocol used to prevent loops in bridge configurations. RSTP is not aware of VLANs and blocks ports at the physical level.
SA (Subnet Administrator)	The interface for querying and manipulating subnet management data.

Table 4 - Glossary

Term	Description
SCP	Secure Copy or SCP is a means of securely transferring computer files between a local and a remote host or between two remote hosts. It is based on the Secure Shell (SSH) protocol.
SM (Subnet Manager)	An entity that configures and manages the subnet, discovers the network topology, assign LIDs, determines the routing schemes and sets the routing tables. There is only one master SM and possible several slaves (Standby mode) at a given time. The SM administers switch routing tables thereby establishing paths through the fabric.
SNMP	Simple Network Management Protocol. A network protocol for the management of a network and the monitoring of network devices and their functions.
SNTP	Network Time Protocol. A protocol for synchronizing computer clocks in a network.
SSH	Secure Shell. A protocol (program) for securely logging in to and running programs on remote machines across a network. The program authenticates access to the remote machine and encrypts the transferred information through the connection.
syslog	A standard for forwarding log messages in an IP network.
TACACS+	Terminal Access Controller Access-Control System Plus. A networking protocol that enables access to a network of devices via one or more centralized servers. TACACS+ provides separate AAA services.
TCA (Target Channel Adapter)	A Channel Adapter that is not required to support verbs, usually used in I/O devices.
WebUI	Web User Interface. A user interface in which you select commands from drop down menus or by clicking on icons.
XML Gateway	Extensible Markup Language Gateway. Provides an XML request-response protocol for setting and retrieving HW management information.

1 Using the Command Line Interface

This chapter explains how to use the command line interface (CLI) of MLNX-OS SwitchX®.

1.1 CLI Modes

The CLI can be in one of three modes, and each mode makes available a certain group (or level) of commands for execution. The different CLI configuration modes are:

Table 5 - CLI Modes and Config Context

Mode/Context	Description
Standard	When the CLI is launched, it begins in Standard mode. This is the most restrictive mode and only has commands to query a restricted set of state information. Users cannot take any actions that directly affect the system, nor can they change any configuration.
Enable	The “enable” command moves the user to Enable mode. This mode offers commands to view all state information and take actions like rebooting the system, but it does not allow any configuration to be changed. Its commands are a superset of those in Standard mode. To return to Standard mode, enter “disable”.
Config	The “configure terminal” command moves the user from Enable mode to Config mode. Config mode is allowed only for user accounts in the “admin” role (or capabilities) – see “User Roles (Capabilities)”. This mode has a full unrestricted set of commands to view anything, take any action, or change any configuration. Its commands are a superset of those in Enable mode. To return to Enable mode, enter “exit” or “no configure”. Note that moving directly from/to Standard mode to/from Config mode is not possible.
Config Interface Management	Configuration mode for management interface mgmt0, mgmt1 and loopback.
Config Interface Ethernet	Configuration mode for Ethernet interface.
Config Interface Port Channel	Configuration mode for Port channel (LAG).
Config Vlan	Configuration mode for VLAN.
Any Command Mode	Several commands such as “show” can be applied within any context.

1.2 Syntax Conventions

To help you identify the parts of a CLI command, this section uses conventions to show the syntax of commands.

Table 6 - Syntax Conventions

Syntax Convention	Description	Example
< > Angled brackets	Indicates a value/variable that must be replaced.	<1...65535> or <switch interface>
[ ] Square brackets	Encloses optional parameters. However, only one parameter out of the list of parameters listed can be used. You cannot have a combination of the parameters unless otherwise stated.	[destination-ip | destination-port | destination-mac]
{ } Braces	Encloses alternatives or variables that are required for the parameter in square brackets.	[mode {active | on | passive}]
| Vertical bar	Identifies mutually exclusive choices.	active | on | passive



Do not enter the angled or square brackets, vertical bar, or braces in command lines. This guide uses these symbols only to show the types of entries.



CLI commands and options are in lowercase and are case-sensitive.

For example, when you enter the `enable` command, enter it all in lowercase, not ENABLE or Enable. Text entries you create are also case-sensitive. For example, if you set a LAG name to Lag1, enter it exactly, not lag1 or LAG1.

1.3 Getting Help

You may request context-sensitive help at any time by pressing "?" on the command line. This will show a list of choices for the word you are on, or a list of top-level commands if you have not typed anything yet.

For example, if you are in Standard mode and you type "?" at the command line, then you will get the following list of available commands.

```
switch [standalone: master] > ?
cli             Configure CLI shell options
enable          Enter enable mode
```

```
exit            Log out of the CLI
help            View description of the interactive help system
no              Negate or clear certain configuration options
ping            Send ICMP echo requests to a specified host
show            Display system configuration or statistics
slogin          Log into another system securely using ssh
switch          Configure switch on system
telnet          Log into another system using telnet
terminal        Set terminal parameters
traceroute      Trace the route packets take to a destination
switch-11a596 [standalone: master] >
```

If you type a legal string and then you press "?" *without* a space character before it, then you will either get a description of the command that you have typed so far or the possible command/parameter completions. If you press "?" *after* a space character and "<cr>" is shown, this means that what you have entered so far is a complete command, and that you may press Enter (carriage return) to execute it.

Try the following to get started:

```
?
show ?
show c?
show clock?
show clock ?
show interfaces ?     (from enable mode)
```

You can also enter "help" to view a description of the interactive help system.

Note also that the CLI supports command and/or parameter tab-completions and their shortened forms. For example, you can enter "en" instead of the "enable" command, or "cli cl" instead of "cli clear-history". In case of ambiguity (more than one completion option is available, that is), then you can click double tabs to obtain the disambiguation options. Thus, if you are in Enable mode and you wish to learn which commands start with the letter "c", type "c" and click twice on the tab key to get the following:

```
switch [standalone: master] # c<tab>
clear       cli       configure
switch-1 [standalone: master] # c
```

(There are three commands that start with the letter "c": clear, cli and configure.)

1.4 Prompt and Response Conventions

The prompt always begins with the hostname of the system. What follows depends on what command mode the user is in. To demonstrate by example, and assuming the machine name is "`switch-1`", the prompts for each of the modes are:

```
switch [standalone: master] >             (Standard mode)
switch [standalone: master] #             (Enable mode)
```

```
switch [standalone: master] (config) #     (Config mode)
```

The following session shows how to move between command modes:

```
switch [standalone: master] >                          (You start in Standard mode)
switch [standalone: master] > enable                   (Move to Enable mode)
switch [standalone: master] #                          (You are in Enable mode)
switch [standalone: master] # configure terminal      (Move to Config mode)
switch [standalone: master] (config) #                 (You are in Config mode)
switch [standalone: master] (config) # exit            (Exit Config mode)
switch [standalone: master] #                          (You are back in Enable mode)
switch [standalone: master] # disable                  (Exit Enable mode)
switch [standalone: master] >                          (You are back in Standard mode)
```

Commands that succeed do not print any response and simply show the command prompt after you press <Enter>.

If an error is encountered in executing a command, the response will begin with “%”, followed by some text describing the error.

1.5 User Roles (Capabilities)

There are two user *roles* or account types: admin and monitor. As “admin”, the user is privileged to run *all* the available commands. As “monitor”, the user can run commands that show system configuration and status, or set terminal settings.

Table 7 - User Roles (Accounts) and Default Passwords

User Role	Default Password
admin	admin
monitor	monitor
USERID	PASSW0RD (0 = Zero)

1.6 Using the Negation Form

Several Config mode commands offer the negation form using the keyword “no”. This no form can be used to disable a function or to cancel certain command parameters or options. To re-enable a function or to set cancelled command parameters or options, enter the command without the “no” keyword (with parameter values if necessary).

The following example performs the following actions:

1. Displays the current CLI session options.
2. Disables auto-logout.
3. Displays the new CLI session options (auto-logout is disabled).
4. Re-enables auto-logout (after 15 minutes).

5. Displays the final CLI session options (auto-logout is enabled)

```
// 1. Display the current CLI session options
switch-1 [standalone: master] (config) # show cli
CLI current session settings:
  Maximum line size:        8192
  Terminal width:           157 columns
  Terminal length:          60 rows
  Terminal type:            xterm
  Auto-logout:              15 minutes
  Paging:                   enabled
  Progress tracking:        enabled
  Prefix modes:             enabled
  ...
// 2. Disable auto-logout
switch-1 [standalone: master] (config) # no cli session auto-logout
// 3. Display the new CLI session options
switch-1 [standalone: master] (config) # show cli
CLI current session settings:
  Maximum line size:        8192
  Terminal width:           157 columns
  Terminal length:          60 rows
  Terminal type:            xterm
  Auto-logout:              disabled
  Paging:                   enabled
  Progress tracking:        enabled
  Prefix modes:             enabled
  ...
// 4. Re-enable auto-logout after 15 minutes
switch-1 [standalone: master] (config) # cli session auto-logout 15
// 5. Display the final CLI session options
switch-1 [standalone: master] (config) # show cli
CLI current session settings:
  Maximum line size:        8192
  Terminal width:           157 columns
  Terminal length:          60 rows
  Terminal type:            xterm
  Auto-logout:              15 minutes
  Paging:                   enabled
  Progress tracking:        enabled
  Prefix modes:             enabled
  ...
```

1.7 Parameter Key

This section is a key to the meaning and format of all of the angle-bracketed parameters in all the commands that are listed in this document.

Table 8 - Parameter Key Table

Parameter	Description
<domain>	A domain name, e.g. “mellanox.com”.
<hostname>	A hostname, e.g. “`switch-1`”.
<ifname>	An interface name, e.g. “mgmt0”, “mgmt1”, “lo” (loopback), etc.
<index>	A number to be associated with aliased (secondary) IP addresses.
<IP address>	An IPv4 address, e.g. “192.168.0.1”.
<log level>	A syslog logging severity level. Possible values, from least to most severe, are: “debug”, “info”, “notice”, “warning”, “error”, “crit”, “alert”, “emerg”.
<GUID>	Globally Unique Identifier. A number that uniquely identifies a device or component.
<MAC address>	A MAC address. The segments may be 8 bits or 16 bits at a time, and may be delimited by “:” or “.”. So you could say “11:22:33:44:55:66”, “1122:3344:5566”, “11.22.33.44.55.66”, or “1122.3344.5566”.
<netmask>	A netmask (e.g. “255.255.255.0”) or mask length prefixed with a slash (e.g. “/24”). These two express the same information in different formats.
<network prefix>	An IPv4 network prefix specifying a network. Used in conjunction with a netmask to determine which bits are significant. e.g. “192.168.0.0”.
<regular expression>	An extended regular expression as defined by the “grep” in the man page. (The value you provide here is passed on to “grep -E”.)
<node id>	ID of a node belonging to a cluster. This is a numerical value greater than zero.
<cluster id>	A string specifying the name of a cluster.
<port>	TCP/UDP port number.
<TCP port>	A TCP port number in the full allowable range [0...65535].
<URL>	A normal URL, using any protocol that wget supports, including http, https, ftp, sftp, and tftp; or a pseudo-URL specifying an scp file transfer. The scp pseudo-URL format is scp://username:password@hostname/path/filename. Note that the path is an absolute path. Paths relative to the user's home directory are not currently supported. The implementation of ftp does not support authentication, so use scp or sftp for that. Note also that if you omit the “:password” part, you may be prompted for the password in a follow up prompt, where you can type it securely (without the characters being echoed). This prompt will occur if the “cli default prompt empty-password” setting is true; otherwise, the CLI will assume you do not want any password. If you include the “:” character, this will be taken as an explicit declaration that the password is empty, and you will not be prompted in any case.

2 System Management

2.1 Management Interfaces

2.1.1 Interface

This chapter describes the commands should be used to configure and monitor the management interface.

interface

interface {mgmt0 | mgmt1 | lo | vlan<id>}

Enters a management interface context.

Syntax Description	mgmt0	Management port 0 (out of band).
	mgmt1	Management port 1 (out of band).
	lo	Loopback interface.
	vlan<id>	In-band management interface (e.g. vlan10).
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # interface mgmt0` `switch (config interface mgmt0) #`	
Related Commands	show interfaces <ifname>	
Note		

interface vlan create

interface vlan <id> create
no interface vlan <id> create

Creates an in-band management interface.
The no form of the command deletes the in-band management interface.

Syntax Description	id	VLAN ID. Range is 1-4094.
Default	N/A	
Configuration Mode	Config	
History	3.3.3500	
Role	admin	
Example	`switch (config) # interface vlan 10 create` `switch (config) #`	
Related Commands	interface show interfaces <ifname>	
Note	• This command does not requires any license • If IP Proxy-ARP or IP Routing is enabled, the interface cannot be created • No more than 60 in-band management interfaces can be created • All management interface commands are applicable under this interface (ip address, mtu, dhcp, shutdown, zeroconf …) • To enter the interface VLAN configuration mode you need to use the command “interface vlan<id>” (e.g. interface vlan10)	

ip address

ip address <IP address> <netmask>
no ip address

Sets the IP address and netmask of this interface.
The no form of the command clears the IP address and netmask of this interface.

Syntax Description	IP address	IPv4 address
	netmask	Subnet mask of IP address
Default	0.0.0.0/0	
Configuration Mode	Config Interface Management	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # interface mgmt0
switch (config interface mgmt0) # ip address 10.10.10.10 255.255.255.0
switch (config interface mgmt0) # show interfaces mgmt0
Interface mgmt0 state
   Admin up:           yes
   Link up:            yes
   IP address:         10.10.10.10
   Netmask:            255.255.255.0
   IPv6 enabled:       yes
   Autoconf enabled:   no
   Autoconf route:     yes
   Autoconf privacy:   no
   IPv6 addresses:     1
   IPv6 address:       fe80:202:c9ff:fe5e:a5d8/64
   Speed:              1000Mb/s (auto)
   Duplex:             full (auto)
   Interface type:     ethernet
   Interface ifindex:  2
   Interface source:   physical
   MTU:                1500
   HW address:         00:02:C9:5E:A5:D8
   Comment:

   RX bytes:          2946769856          TX bytes:       467577486
   RX packets:        44866091            TX packets:     1385520
   RX mcast packets:  0                   TX discards:    0
   RX discards:       0                   TX errors:      0
   RX errors:         0                   TX overruns:    0
   RX overruns:       0                   TX carrier:     0
   RX frame:          0                   TX collisions:  0
                                          TX queue len:   1000
switch (config interface mgmt0) #
```

Related Commands	show interfaces <ifname>
Note	If DHCP is enabled on the specified interface, then the DHCP IP assignment will hold until DHCP is disabled.

alias

alias <index> ip address < IP address> <netmask>
no alias <index>

Adds an additional IP address to the specified interface. The secondary address will appear in the output of "show interface" under the data of the primary interface along with the alias.
The no form of the command removes the secondary address to the specified interface.

Syntax Description	index	A number that is to be aliased to (associated with) the secondary IP.
	IP address	Additional IP address.
	netmask	Subnet mask of the IP address.
Default	N/A	
Configuration Mode	Config Interface Management	
History	3.1.0000	
Role	admin	

Example

```
switch (config interface mgmt0) # alias 2 ip address 9.9.9.9
255.255.255.255
switch (config interface mgmt0) # show interfaces mgmt0
Interface mgmt0 state
   Admin up:           yes
   Link up:            yes
   IP address:         172.30.2.2
   Netmask:            255.255.0.0
   Secondary address:  9.9.9.9/32 (alias: 'mgmt0:2')
   IPv6 enabled:       yes
   Autoconf enabled:   no
   Autoconf route:     yes
   Autoconf privacy:   no
   IPv6 addresses:     1
   IPv6 address:       fe80::202:c9ff:fe5e:a5d8/64
   Speed:              1000Mb/s (auto)
   Duplex:             full (auto)
   Interface type:     ethernet
   Interface ifindex:  2
   Interface source:   physical
   MTU:                1500
   HW address:         00:02:C9:5E:A5:D8
   Comment:

   RX bytes:          2970074221          TX bytes:       468579522
   RX packets:        44983023            TX packets:     1390539
   RX mcast packets:  0                   TX discards:    0
   RX discards:       0                   TX errors:      0
   RX errors:         0                   TX overruns:    0
   RX overruns:       0                   TX carrier:     0
   RX frame:          0                   TX collisions:  0
                                          TX queue len:   1000
switch (config interface mgmt0) #
```

Related Commands	show interfaces <ifname>
Note	• If DHCP is enabled on the specified interface, then the DHCP IP assignment will hold until DHCP is disabled • More than one additional IP address can be added to the interface

mtu

mtu <bytes>
no mtu <bytes>

Sets the Maximum Transmission Unit (MTU) of this interface.
The no form of the command resets the MTU to its default.

Syntax Description	bytes The entry range is 68-1500.
Default	1500
Configuration Mode	Config Interface Management
History	3.1.0000
Role	admin
Example	

```
switch (config interface mgmt0) # mtu 1500
switch (config interface mgmt0) # show interfaces mgmt0
Interface mgmt0 state
   Admin up:           yes
   Link up:            yes
   IP address:         172.30.2.2
   Netmask:            255.255.0.0
   Secondary address:  9.9.9.9/32 (alias: 'mgmt0:2')
   IPv6 enabled:       yes
   Autoconf enabled:   no
   Autoconf route:     yes
   Autoconf privacy:   no
   IPv6 addresses:     1
   IPv6 address:       fe80:202:c9ff:fe5e:a5d8/64
   Speed:              1000Mb/s (auto)
   Duplex:             full (auto)
   Interface type:     ethernet
   Interface ifindex:  2
   Interface source:   physical
   MTU:                1500
   HW address:         00:02:C9:5E:A5:D8
   Comment:

   RX bytes:          2970074221          TX bytes:       468579522
   RX packets:        44983023            TX packets:     1390539
   RX mcast packets:  0                   TX discards:    0
   RX discards:       0                   TX errors:      0
   RX errors:         0                   TX overruns:    0
   RX overruns:       0                   TX carrier:     0
   RX frame:          0                   TX collisions:  0
                                          TX queue len:   1000
switch (config interface mgmt0) #
```

Related Commands	show interfaces <ifname>
Note	

duplex

duplex <duplex>
no duplex

Sets the interface duplex.
The no form of the command resets the duplex setting for this interface to its default value.

Syntax Description	duplex	Sets the duplex mode of the interface. The following are the possible values: • half - half duplex • full - full duplex • auto - auto duplex sensing (half or full)

Default	auto
Configuration Mode	Config Interface Management
History	3.1.0000
Role	admin

Example

```
switch (config interface mgmt0) # duplex auto
switch (config interface mgmt0) # show interfaces mgmt0
Interface mgmt0 state
   Admin up:           yes
   Link up:            yes
   IP address:         172.30.2.2
   Netmask:            255.255.0.0
   Secondary address:  9.9.9.9/32 (alias: 'mgmt0:2')
   IPv6 enabled:       yes
   Autoconf enabled:   no
   Autoconf route:     yes
   Autoconf privacy:   no
   IPv6 addresses:     1
   IPv6 address:       fe80::202:c9ff:fe5e:a5d8/64
   Speed:              1000Mb/s (auto)
   Duplex:             full (auto)
   Interface type:     ethernet
   Interface ifindex:  2
   Interface source:   physical
   MTU:                1500
   HW address:         00:02:C9:5E:A5:D8
   Comment:

   RX bytes:          2970074221          TX bytes:       468579522
   RX packets:        44983023            TX packets:     1390539
   RX mcast packets:  0                   TX discards:    0
   RX discards:       0                   TX errors:      0
   RX errors:         0                   TX overruns:    0
   RX overruns:       0                   TX carrier:     0
   RX frame:          0                   TX collisions:  0
                                          TX queue len:   1000
switch (config interface mgmt0) #
```

Related Commands	show interfaces <ifname>
Note	• Setting the duplex to “auto” also sets the speed to “auto” • Setting the duplex to one of the settings “half” or “full” also sets the speed to a manual setting which is determined by querying the interface to find out its current auto-detected state

speed

speed <speed>
no speed

Sets the interface speed.
The no form of the command resets the speed setting for this interface to its default value.

Syntax Description	speed	Sets the speed of the interface. The following are the possible values: • 10 - fixed to 10Mbps • 100 - fixed to 1000Mbps • 1000 - fixed to 1000Mbps • auto - auto speed sensing (10/100/1000Mbps)
Default	auto	
Configuration Mode	Config Interface Management	
History	3.1.0000	
Role	admin	

Example

```
switch (config interface mgmt0) # speed auto
switch (config interface mgmt0) # show interfaces mgmt0
Interface mgmt0 state
   Admin up:           yes
   Link up:            yes
   IP address:         172.30.2.2
   Netmask:            255.255.0.0
   Secondary address:  9.9.9.9/32 (alias: 'mgmt0:2')
   IPv6 enabled:       yes
   Autoconf enabled:   no
   Autoconf route:     yes
   Autoconf privacy:   no
   IPv6 addresses:     1
   IPv6 address:       fe80::202:c9ff:fe5e:a5d8/64
   Speed:              1000Mb/s (auto)
   Duplex:             full (auto)
   Interface type:     ethernet
   Interface ifindex:  2
   Interface source:   physical
   MTU:                1500
   HW address:         00:02:C9:5E:A5:D8
   Comment:

   RX bytes:          2970074221          TX bytes:       468579522
   RX packets:        44983023            TX packets:     1390539
   RX mcast packets:  0                   TX discards:    0
   RX discards:       0                   TX errors:      0
   RX errors:         0                   TX overruns:    0
   RX overruns:       0                   TX carrier:     0
   RX frame:          0                   TX collisions:  0
                                          TX queue len:   1000
switch (config interface mgmt0) #
```

Related Commands	show interfaces <ifname>
Note	• Setting the speed to “auto” also sets the duplex to “auto” • Setting the speed to one of the manual settings (generally “10”, “100”, or “1000”) also sets the duplex to a manual setting which is determined by querying the interface to find out its current auto-detected state

dhcp

dhcp [renew]
no dhcp

Enables DHCP on the specified interface.
The no form of the command disables DHCP on the specified interface.

Syntax Description	renew	Forces a renewal of the IP address. A restart on the DHCP client for the specified interface will be issued.
Default	Could be enabled or disabled (per part number) manufactured with 3.2.0500	
Configuration Mode	Config Interface Management	
History	3.1.0000	
Role	admin	

Example

```
switch (config interface mgmt0) # dhcp
switch (config) # show interfaces mgmt0 configured
Interface mgmt0 configuration
   Enabled:          yes
   DHCP:             yes
   Zeroconf:         no
   IP address:
   Netmask:
   IPv6 enabled:     yes
   Autoconf enabled: no
   Autoconf route:   yes
   Autoconf privacy: no
   IPv6 addresses:   0
   Speed:            auto
   Duplex:           auto
   MTU:              1500
   Comment:
```

Related Commands show interfaces <ifname> configured

Note

- When enabling DHCP, the IP address and netmask are received via DHCP hence, the static IP address configuration is ignored
- Enabling DHCP disables zeroconf and vice versa
- Setting a static IP address and netmask does not disable DHCP. DHCP is disabled by using the “no” form of this command, or by enabling zeroconf.

shutdown

shutdown
no shutdown

Disables the specified interface.
The no form of the command enables the specified interface.

Syntax Description	N/A
Default	no shutdown
Configuration Mode	Config Interface Management
History	3.1.0000
Role	admin

Example	`switch (config interface mgmt0) # no shutdown`
	`switch (config) # show interfaces mgmt0 configured`
	`Interface mgmt0 configuration`
	`Enabled: yes`
	`DHCP: yes`
	`Zeroconf: no`
	`IP address:`
	`Netmask:`
	`IPv6 enabled: yes`
	`Autoconf enabled: no`
	`Autoconf route: yes`
	`Autoconf privacy: no`
	`IPv6 addresses: 0`
	`Speed: auto`
	`Duplex: auto`
	`MTU: 1500`
	`Comment:`
	`switch (config) #`

Related Commands	show interfaces <ifname> configured
Note	

zeroconf

	zeroconf **no zeroconf** Enables zeroconf on the specified interface. It randomly chooses a unique link-local IPv4 address from the 169.254.0.0/16 block. This command is an alternative to DHCP. The no form of the command disables the use of zeroconf on the specified interface.
Syntax Description	N/A
Default	no zeroconf
Configuration Mode	Config Interface Management
History	3.1.0000
Role	admin

Example	`switch (config interface mgmt0) # zeroconf`
	`switch (config) # show interfaces mgmt0 configured`
	`Interface mgmt0 configuration`
	`Enabled: yes`
	`DHCP: no`
	`Zeroconf: yes`
	`IP address:`
	`Netmask:`
	`IPv6 enabled: yes`
	`Autoconf enabled: no`
	`Autoconf route: yes`
	`Autoconf privacy: no`
	`IPv6 addresses: 0`
	`Speed: auto`
	`Duplex: auto`
	`MTU: 1500`
	`Comment:`

Related Commands	show interfaces <ifname> configured
Note	Enabling zeroconf disables DHCP and vice versa.

comment

comment <comment>
no comment

Adds a comment for an interface.
The no form of the command removes a comment for an interface.

Syntax Description	comment	A free-form string that has no semantics other than being displayed when the interface records are listed.
Default	no comment	
Configuration Mode	Config Interface Management	
History	3.1.0000	
Role	admin	

Example

```
switch (config interface mgmt0) # comment my-interface
switch (config interface mgmt0) # show interfaces mgmt0
Interface mgmt0 state
   Admin up:           yes
   Link up:            yes
   IP address:         172.30.2.2
   Netmask:            255.255.0.0
   IPv6 enabled:       yes
   Autoconf enabled:   no
   Autoconf route:     yes
   Autoconf privacy:   no
   IPv6 addresses:     1
   IPv6 address:       fe80::202:c9ff:fe5e:a5d8/64
   Speed:              1000Mb/s (auto)
   Duplex:             full (auto)
   Interface type:     ethernet
   Interface ifindex:  2
   Interface source:   physical
   MTU:                1500
   HW address:         00:02:C9:5E:A5:D8
   Comment:            my-interface

   RX bytes:          962067812          TX bytes:       40658219
   RX packets:        3738865            TX packets:     142345
   RX mcast packets:  0                  TX discards:    0
   RX discards:       0                  TX errors:      0
   RX errors:         0                  TX overruns:    0
   RX overruns:       0                  TX carrier:     0
   RX frame:          0                  TX collisions:  0
                                         TX queue len:   1000
switch (config interface mgmt0) #
```

Related Commands	N/A
Note	

ipv6 address

ipv6 address {<IPv6 address/netmask> | autoconfig [default | privacy]}
no ipv6 {<IPv6 address/netmask> | autoconfig [default | privacy]}

Configures IPv6 address and netmask to this interface, static or autoconfig options are possible.
The no form of the command removes the given IPv6 address and netmask or disables the autoconfig options.

Syntax Description	IPv6 address/netmask	Configures a static IPv6 address and netmask. Format example: 2001:db8:1234::5678/64.
	autoconfig	Enables IPv6 stateless address auto configuration (SLAAC) for this interface. An address will be automatically added to the interface based on an IPv6 prefix learned from router advertisements, combined with an interface identifier.
	autoconfig default	Enables default learning routes. The default route will be discovered automatically, if the autoconfig is enabled.
	autoconfig privacy	Uses privacy extensions for SLAAC to construct the autoconfig address, if the autoconfig is enabled.
Default	No IP address available, auto config is enabled	
Configuration Mode	Config Interface Management	
History	3.1.0000	
Role	admin	

Example

```
switch (config interface mgmt0) # ipv6 fe80::202:c9ff:fe5e:a5d8/64
switch (config interface mgmt0) # show interfaces mgmt0
Interface mgmt0 state
   Admin up:           yes
   Link up:            yes
   IP address:         172.30.2.2
   Netmask:            255.255.0.0
   IPv6 enabled:       yes
   Autoconf enabled:   no
   Autoconf route:     yes
   Autoconf privacy:   no
   IPv6 addresses:     1
   IPv6 address:       fe80::202:c9ff:fe5e:a5d8/64
   Speed:              1000Mb/s (auto)
   Duplex:             full (auto)
   Interface type:     ethernet
   Interface ifindex:  2
   Interface source:   physical
   MTU:                1500
   HW address:         00:02:C9:5E:A5:D8
   Comment:            my-interface

   RX bytes:           962067812           TX bytes:       40658219
   RX packets:         3738865             TX packets:     142345
   RX mcast packets:   0                   TX discards:    0
   RX discards:        0                   TX errors:      0
   RX errors:          0                   TX overruns:    0
   RX overruns:        0                   TX carrier:     0
   RX frame:           0                   TX collisions:  0
                                           TX queue len:   1000
switch (config interface mgmt0) #
```

Related Commands

ipv6 enable
show interface <ifname>

Note

- Unlike IPv4, IPv6 can have multiple IPv6 addresses on a given interface
- For Ethernet, the default interface identifier is a 64-bit long modified EUI-64, which is based on the MAC address of the interface

show interface

show interface {<ifname> [configured | brief]}

Displays information about the specified interface, configuration status, and counters.

Syntax Description	ifname	The interface name e.g., “mgmt0”, “mgmt1”, “lo” (loopback), etc.
	configured	Displays the interface configuration.
	brief	Displays a brief info on the interface configuration and status.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example

```
switch (config) #show interfaces mgmt0 configured
Interface mgmt0 configuration
   Enabled:          yes
   DHCP:             yes
   Zeroconf:         no
   IP address:
   Netmask:
   IPv6 enabled:     yes
   Autoconf enabled: no
   Autoconf route:   yes
   Autoconf privacy: no
   IPv6 addresses:   0
   Speed:            auto
   Duplex:           auto
   MTU:              1500
   Comment:          my-interface
switch (config) # show interfaces mgmt0 brief
Interface mgmt0 state
   Admin up:           yes
   Link up:            yes
   IP address:         172.30.2.2
   Netmask:            255.255.0.0
   IPv6 enabled:       yes
   Autoconf enabled:   no
   Autoconf route:     yes
   Autoconf privacy:   no
   IPv6 addresses:     1
   IPv6 address:       fe80::202:c9ff:fe5e:a5d8/64
   Speed:              1000Mb/s (auto)
   Duplex:             full (auto)
   Interface type:     ethernet
   Interface ifindex:  2
   Interface source:   physical
   MTU:                1500
   HW address:         00:02:C9:5E:A5:D8
   Comment:            my-interface
switch (config) #
```

Related Commands	N/A
Note	

2.1.2 Hostname Resolution

hostname

hostname <hostname>
no hostname

Sets a static system hostname.
The no form of the command clears the system hostname.

Syntax Description	hostname	A free-form string.
Default	Default hostname	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # hostname my-switch-hostname` `my-switch-hostname (config) #`	
Related Commands	show hosts	
Note	• Hostname may contain letters, numbers, and hyphens ('-'), in any combination • Hostname may not contain other letters, such as '%', '_', '.'etc • Hostname may not begin with a hyphen • Hostname may be 1-63 characters long • Changing hostname stamps a new HTTPS certificate	

ip name-server

ip name-server <IPv4/IPv6 address>
no name-server <IPv4/IPv6 address>

Sets the static name server.
The no form of the command clears the name server.

Syntax Description	IPv4/v6 address	IPv4 or IPv6 address.
Default	No server name	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # ip name-server 9.9.9.9`
	`switch (config) # show hosts`
	`Hostname: switch`
	`Name server: 9.9.9.9 (configured)`
	`Name server: 10.211.0.121 (dynamic)`
	`Name server: 172.30.0.126 (dynamic)`
	`Name server: 10.4.0.135 (dynamic)`
	`Domain name: lab.mtl.com (dynamic)`
	`Domain name: vmlab.mtl.com (dynamic)`
	`Domain name: yok.mtl.com (dynamic)`
	`Domain name: mtl.com (dynamic)`
	`IP 127.0.0.1 maps to hostname localhost`
	`IPv6 ::1 maps to hostname localhost6`
	`Automatically map hostname to loopback address: yes`
	`Automatically map hostname to IPv6 loopback address: no`
	`switch (config) #`	

Related Commands	show hosts	
Note		

ip domain-list

ip domain-list <domain-name>
no ip domain-list <domain-name>

Sets the static domain name.
The no form of the command clears the domain name.

Syntax Description	domain-name	The domain name in a string form. A domain name is an identification string that defines a realm of administrative autonomy, authority, or control in the Internet. Domain names are formed by the rules and procedures of the Domain Name System (DNS).
Default	No static domain name	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # ip domain-list mydomain.com`
	`switch (config) # show hosts`
	`Hostname: switch`
	`Name server: 10.211.0.121 (dynamic)`
	`Name server: 172.30.0.126 (dynamic)`
	`Name server: 10.4.0.135 (dynamic)`
	`Domain name: mydomain.com (configured)`
	`Domain name: lab.mtl.com (dynamic)`
	`Domain name: vmlab.mtl.com (dynamic)`
	`Domain name: yok.mtl.com (dynamic)`
	`Domain name: mtl.com (dynamic)`
	`IP 1.1.1.1 maps to hostname p`
	`IP 127.0.0.1 maps to hostname localhost`
	`IPv6 ::1 maps to hostname localhost6`
	`Automatically map hostname to loopback address: yes`
	`Automatically map hostname to IPv6 loopback address: no`
	`switch (config) #`	

Related Commands	show hosts	
Note		

ip/ipv6 host

{ip | ipv6} host <hostname> <IP Address>
no {ip | ipv6} host <hostname> <IP Address>

Configures the static hostname IPv4 or IPv6 address mappings.
The no form of the command clears the static mapping.

Syntax Description	hostname	The hostname in a string form.
	IP Address	The IPv4 or IPv6 address.
Default	No static domain name.	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # ip host my-host 2.2.2.2`
	`switch (config) # ipv6 host my-ipv6-host  2001::8f9`
	`switch (config) # show hosts`
	`Hostname: switch`
	`Name server: 9.9.9.9 (configured)`
	`Name server: 10.211.0.121 (dynamic)`
	`Name server: 172.30.0.126 (dynamic)`
	`Name server: 10.4.0.135 (dynamic)`
	`Domain name: mydomain.com (configured)`
	`Domain name: lab.mtl.com (dynamic)`
	`Domain name: vmlab.mtl.com (dynamic)`
	`Domain name: yok.mtl.com (dynamic)`
	`Domain name: mtl.com (dynamic)`
	`IP 1.1.1.1 maps to hostname p`
	`IP 127.0.0.1 maps to hostname localhost`
	`IP 2.2.2.2 maps to hostname my-host`
	`IPv6 2001::8f9 maps to hostname my-ipv6-host`
	`IPv6 ::1 maps to hostname localhost6`
	`Automatically map hostname to loopback address: yes`
	`Automatically map hostname to IPv6 loopback address: yes`
	`switch (config) #`	

Related Commands	show hosts	
Note		

ip/ipv6 map-hostname

{ip |ipv6} map-hostname
no {ip | ipv6} map-hostname

Maps between the currently-configured hostname and the loopback address 127.0.0.1.
The no form of the command clears the mapping.

Syntax Description	N/A
Default	IPv4 mapping is enabled by default IPv6 mapping is disabled by default
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # ip map-hostname`
	`switch (config) # # show hosts`
	`Hostname: switch`
	`Name server: 9.9.9.9 (configured)`
	`Name server: 10.211.0.121 (dynamic)`
	`Name server: 172.30.0.126 (dynamic)`
	`Name server: 10.4.0.135 (dynamic)`
	`Domain name: mydomain.com (configured)`
	`Domain name: lab.mtl.com (dynamic)`
	`Domain name: vmlab.mtl.com (dynamic)`
	`Domain name: yok.mtl.com (dynamic)`
	`Domain name: mtl.com (dynamic)`
	`IP 1.1.1.1 maps to hostname p`
	`IP 127.0.0.1 maps to hostname localhost`
	`IP 2.2.2.2 maps to hostname my-host`
	`IPv6 2001::8f9 maps to hostname my-ipv6-host`
	`IPv6 ::1 maps to hostname localhost6`
	`Automatically map hostname to loopback address: yes`
	`Automatically map hostname to IPv6 loopback address: yes`
	`switch (config) #`
	`switch (config) # ping my-host-name`
	`PING localhost (127.0.0.1) 56(84) bytes of data.`
	`64 bytes from localhost (127.0.0.1): icmp_seq=1 ttl=64 time=0.078 ms`
	`64 bytes from localhost (127.0.0.1): icmp_seq=2 ttl=64 time=0.052 ms`
	`64 bytes from localhost (127.0.0.1): icmp_seq=3 ttl=64 time=0.058 ms`

Related Commands	show hosts
Note	• If no mapping is configured, a mapping between the hostname and the IPv4 loopback address 127.0.0.1 will be added • The no form of the command maps the hostname to the IPv6 loopback address if there is no statically configured mapping from the hostname to an IPv6 address (disabled by default) • Static host mappings are preferred over DNS results. As a result, with this option set, you will not be able to look up your hostname on your configured DNS server; but without it set, some problems may arise if your hostname cannot be looked up in DNS.

show hosts

show hosts

Displays hostname, DNS configuration, and static host mappings.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.0000
Role	admin

Example	`switch (config) # show hosts`
	`Hostname: my-host-name`
	`Name server: 9.9.9.9 (configured)`
	`Name server: 10.211.0.121 (dynamic)`
	`Name server: 172.30.0.126 (dynamic)`
	`Name server: 10.4.0.135 (dynamic)`
	`Domain name: mydomain.com (configured)`
	`Domain name: lab.mtl.com (dynamic)`
	`Domain name: vmlab.mtl.com (dynamic)`
	`Domain name: yok.mtl.com (dynamic)`
	`Domain name: mtl.com (dynamic)`
	`IP 1.1.1.1 maps to hostname p`
	`IP 127.0.0.1 maps to hostname localhost`
	`IP 2.2.2.2 maps to hostname my-host`
	`IPv6 ::1 maps to hostname localhost6`
	`Automatically map hostname to loopback address: yes`
	`Automatically map hostname to IPv6 loopback address: no`
	`switch (config) #`

Related Commands	N/A
Note	

2.1.3 Routing

ip/ipv6 route

{ip | ipv6} route <network-prefix> <netmask> {<nexthop-address> | <ifname>}
no ip route <network-prefix> <netmask> {<nexthop-address> | <ifname>}

Sets a static route for a given IP.
The no form of the command deletes the static route.

Syntax Description	network-prefix	IPv4 or IPv6 network prefix.
	netmask	IPv4 netmask formats are: • /24 • 255.255.255.0 IPv6 netmask format is: • /48 (as a part of the network prefix)
	nexthop-address	The IPv4 or IPv6 address of the next hop router for this route.
	ifname	The interface name (e.g., mgmt0, mgmt1).
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # ip route 20.20.20.0 255.255.255.0 mgmt0`
	`switch (config) # show ip route`
	`Destination Mask Gateway Interface Source`
	`default 0.0.0.0 172.30.0.1 mgmt0 DHCP`
	`10.10.10.10 255.255.255.255 0.0.0.0 mgmt0 static`
	`20.10.10.10 255.255.255.255 172.30.0.1 mgmt0 static`
	`20.20.20.0 255.255.255.0 0.0.0.0 mgmt0 static`
	`172.30.0.0 255.255.0.0 0.0.0.0 mgmt0 interface`	

Related Commands	show ip route	
Note		

ipv6 default-gateway

ipv6 default-gateway {<ip-address> | <ifname>}
no ipv6 default-gateway

Sets a static default gateway.
The no form of the command deletes the default gateway.

Syntax Description	ip address	The default gateway IP address (IPv4 or IPv6).
	ifname	The interface name (e.g., mgmt0, mgmt1).
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	Initial version
	3.2.0500	removed IPv4 configuration option
Role	admin	

Example	`switch (config) # ip default-gateway ::1`
	`switch (config) # show ip default-gateway static`
	`Configured default gateways:`
	`  ::1`
	`switch (config) #`	

Related Commands	show ip route	
Note	• The configured default gateway will not be used if DHCP is enabled. • In order to configure ipv4 default-gateway use ‘ip route’ command.	

show ip/ipv6 route

show {ip | ipv6} route [static]

Displays the routing table in the system.

Syntax Description	static	Filters the table with the static route entries.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show ip route`
	`Destination Mask Gateway Interface Source`
	`default 0.0.0.0 172.30.0.1 mgmt0 DHCP`
	`10.10.10.10 255.255.255.255 0.0.0.0 mgmt0 static`
	`20.10.10.10 255.255.255.255 172.30.0.1 mgmt0 static`
	`20.20.20.0 255.255.255.0 0.0.0.0 mgmt0 static`
	`172.30.0.0 255.255.0.0 0.0.0.0 mgmt0 interface`
	`switch (config) # show ipv6 route`
	`Destination prefix`
	`Gateway Interface Source`
	`----------`
	`::/0`
	`:: mgmt0 static`
	`::1/128`
	`:: lo local`
	`2222:2222:2222::/64`
	`:: mgmt1 interface`
	`switch (config) #`	

Related Commands	show ip default-gateway	
Note		

show ip/ipv6 default-gateway

show {ip | ipv6} default-gateway [static]

Displays the default gateway.

Syntax Description	static	Displays the static configuration of the default gateway.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example	`switch (config) # ip default-gateway 10.10.10.10`
	`switch (config) # show ip default-gateway`
	`Active default gateways:`
	`   172.30.0.1 (interface: mgmt0)`
	`switch (config) # show ip default-gateway static`
	`Configured default gateway: 10.10.10.10`	

Related Commands	show ip default-gateway	
Note	The configured IPv4 default gateway will not be used if DHCP is enabled.	

2.1.4 Network to Media Resolution (ARP & NDP)

IPv4 network use Address Resolution Protocol (ARP) to resolve IP address to MAC address, while IPv6 network uses Network Discovery Protocol (NDP) that performs basically the same as ARP.

ip arp

ip arp <IP address> <MAC address>
no ip arp <IP address> <MAC address>

Sets a static ARP entry.
The no form of the command deletes the static ARP.

Syntax Description	IP address	IPv4 address.
	MAC address	MAC address.
Default	N/A	
Configuration Mode	Config Interface Management	
History	3.2.0500	
Role	admin	
Example		

```
switch (config interface mgmt0) #ip arp 20.20.20.20 aa:aa:aa:aa:aa:aa
switch (config interface mgmt0) # show ip arp
ARP Timeout: 1500

Total number of entries: 6

  Address              Type            MAC Address          Interface
  10.209.1.103         Dynamic         00:02:C9:11:A1:78    mgmt0
  10.209.1.168         Dynamic         00:02:C9:5E:C3:28    mgmt0
  10.209.1.104         Dynamic         00:02:C9:11:A1:E6    mgmt0
  10.209.1.153         Dynamic         00:02:C9:11:A1:86    mgmt0
  10.209.1.105         Dynamic         00:02:C9:5E:0B:56    mgmt0
  10.209.0.1           Dynamic         00:00:5E:00:01:01    mgmt0
  20.20.20.20          Static          AA:AA:AA:AA:AA:AA    mgmt0

switch (config interface mgmt0) #
```

Related Commands	show ip arp ip route
Note	

ip arp timeout

ip arp timeout <timeout-value>
no ip arp timeout

Sets the dynamic ARP cache timeout.
The no form of the command sets the timeout to default.

Syntax Description	timeout-value	Time (in seconds) that an entry remains in the ARP cache. Valid values are from 240 to 28800.

Default	1500 seconds
Configuration Mode	Config
History	3.2.0230
Role	admin

Example	`switch (config) # ip arp timeout 2000`
	`switch (config) # show ip arp`
	
	`ARP Timeout: 2000`
	
	`Total number of entries: 55`
	`IP Address  MAC Address  Interface`
	`1.0.0.2  00:02:c9:5c:30:40  Vlan11`
	`1.0.0.3  00:11:22:33:44:55  Vlan11`
	`2.0.0.2  00:02:c9:5c:30:40  Vlan12`
	`3.0.0.2  00:02:c9:5c:30:40  Vlan13`
	`4.0.0.2  00:02:c9:5c:30:40  Vlan14`
	`switch (config) #`

Related Commands	ip arp show ip arp
Note	This value is used as the ARP timeout whenever a new IP interface is created.

show ip arp

show ip arp [interface <type>| <ip-address> | count]

Displays ARP table.

Syntax Description	interface type	Filters the table according to a specific interface (i.e. mgmt0)
	ip-address	Filters the table to the specific ip-address
	count	Shows ARP statistics
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.3.3000	
Role	admin	
Example		

```
switch-626a54 [standalone: master] (config) # show ip arp

Total number of entries: 3

  Address             Type           Hardware Address          Interface
  ------------------------------------------------------------------------
---
  10.209.0.1           Dynamic ETH     00:00:5E:00:01:01          mgmt0
  10.209.1.120         Dynamic ETH     00:02:C9:62:E8:C2          mgmt0
  10.209.1.121         Dynamic ETH     00:02:C9:62:E7:42          mgmt0
switch (config) # show ip arp count
ARP Table size: 3 (inband: 0, out of band: 3)
switch (config) #
```

Related Commands	
Note	

ipv6 neighbor

ipv6 neighbor <IPv6 address> <ifname> <MAC address>
no ipv6 neighbor <IPv6 address> <ifname> <MAC address>

Adds a static neighbor entry.
The no form of the command deletes the static entry.

Syntax Description	IPv6 address	The IPv6 address.
	ifname	The management interface (i.e. mgmt0, mgmt1).
	MAC address	The MAC address.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # ipv6 neighbor 2001:db8:701f::8f9 mgmt0 00:11:22:33:44:55` `switch (config) #`	
Related Commands	show ipv6 neighbor ipv6 route arp clear ipv6 neighbors	
Note	• ARP is used only with IPv4. In IPv6 networks, Neighbor Discovery Protocol (NDP) is used similarly. • Use The no form of the command to remove static entries. Dynamic entries can be cleared via the “clear ipv6 neighbors” command.	

clear ipv6 neighbors

clear ipv6 neighbors

Clears the dynamic neighbors cache.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin
Example	`switch (config) # clear ipv6 neighbors` `switch (config) #`
Related Commands	ipv6 neighbor show ipv6 neighbor arp
Note	• Clearing Neighbor Discovery Protocol (NDP) cache removes only the dynamic entries learned and not the static entries configured • Use the no form of the ipv6 neighbor command to remove static entries

show ipv6 neighbors

show ipv6 neighbors [static]

Displays the Neighbor Discovery Protocol (NDP) table.

Syntax Description	static	Filters only the table of the static entries.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show ipv6 neighbors`
	`IPv6 Address Age MAC Address State Interf`
	`------------------------------------ ----- ----------------- ---------- ---`
	`2001::2 9428 AA:AA:AA:AA:AA:AA permanent mgmt0`
	`switch (config) #`	

Related Commands	ipv6 neighbor clear ipv6 neighbor show ipv6	
Note		

2.1.5 DHCP

ip dhcp

ip dhcp {default-gateway yield-to-static| hostname <hostname>| primary-intf <ifname> | send-hostname }
no ip dhcp {default-gateway yield-to-static| hostname | | primary-intf | send-hostname}

Sets global DHCP configuration.
The no form of the command deletes the DHCP configuration.

Syntax Description	yield-to-static|	Does not allow you to install a default gateway from DHCP if there is already a statically configured one.
	hostname	Specifies the hostname to be sent during DHCP client negotiation if send-hostname is enabled.
	primary-intf <ifname>	Sets the interface from which a non-interface-specific configuration (resolver and routes) will be accepted via DHCP.
	send-hostname	Enables the DHCP client to send a hostname during negotiation.
Default	no ip dhcp yield-to-static no ip dhcp hostname ip ip dhcp primary-intf mgmt0 no ip dhcp send-hostname	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # ip dhcp default-gateway yield-to-static`
	`switch (config) # show ip dhcp`
	`DHCP primary interface:`
	`  Configured: mgmt0`
	`  Active:  mgmt0`
	
	`DHCP: yield default gateway to static configuration: yes`
	
	`DHCP Client Options:`
	`  Send Hostname:  no`
	`  Client Hostname:  switch (using system hostname)`
	`switch (config) #`	

Related Commands	show ip dhcp dhcp [renew]	
Note	DHCP is supported for IPv4 networks only.	

show ip dhcp

show ip dhcp

Displays the DHCP configuration and status.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.0000
Role	admin

Example	`switch (config) # show ip dhcp`
	`DHCP primary interface:`
	`  Configured: mgmt0`
	`  Active:  mgmt0`
	
	`DHCP: yield default gateway to static configuration: yes`
	
	`DHCP Client Options:`
	`  Send Hostname:  no`
	`  Client Hostname:  switch (using system hostname)`
	`switch (config) #`

Related Commands	ip dhcp dhcp [renew]
Note	

2.1.6 IP Diagnostic Tools

ping

ping [-LRUbdfnqrvVaA] [-c count] [-i interval] [-w deadline] [-p pattern] [-s packetsize] [-t ttl] [-I interface or address] [-M mtu discovery hint] [-S sndbuf] [-T timestamp option] [-Q tos] [hop1 ...] destination

Sends ICMP echo requests to a specified host.

Syntax Description	Linux Ping options	http://linux.about.com/od/commands/l/blcmdl8_ping.htm
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # ping 172.30.2.2`
	`PING 172.30.2.2 (172.30.2.2) 56(84) bytes of data.`
	`64 bytes from 172.30.2.2: icmp_seq=1 ttl=64 time=0.703 ms`
	`64 bytes from 172.30.2.2: icmp_seq=2 ttl=64 time=0.187 ms`
	`64 bytes from 172.30.2.2: icmp_seq=3 ttl=64 time=0.166 ms`
	`64 bytes from 172.30.2.2: icmp_seq=4 ttl=64 time=0.161 ms`
	`64 bytes from 172.30.2.2: icmp_seq=5 ttl=64 time=0.153 ms`
	`64 bytes from 172.30.2.2: icmp_seq=6 ttl=64 time=0.144 ms`
	`^C`
	`--- 172.30.2.2 ping statistics ---`
	`6 packets transmitted, 6 received, 0% packet loss, time 5004ms`
	`rtt min/avg/max/mdev = 0.144/0.252/0.703/0.202 ms`
	`switch (config) #`	

Related Commands	traceroutes	
Note		

traceroute

traceroute [-46dFITUnrAV] [-f first_ttl] [-g gate,...] [-i device] [-m max_ttl] [-N squeries] [-p port] [-t tos] [-l flow_label] [-w waittime] [-q nqueries] [-s src_addr] [-z sendwait] host [packetlen]

Traces the route packets take to a destination.

Syntax Description	-4	Uses IPv4.
	-6	Uses IPv6.
	-d	Enables socket level debugging.
	-F	Sets DF (do not fragment bit) on.
	-I	Uses ICMP ECHO for tracerouting.
	-T	Uses TCP SYN for tracerouting.
	-U	Uses UDP datagram (default) for tracerouting.
	-n	Does not resolve IP addresses to their domain names.
	-r	Bypasses the normal routing and send directly to a host on an attached network.
	-A	Performs AS path lookups in routing registries and print results directly after the corresponding addresses.
	-V	Prints version info and exit.
	-f	Starts from the first_ttl hop (instead from 1).
	-g	Routes packets throw the specified gateway (maximum 8 for IPv4 and 127 for IPv6).
	-i	Specifies a network interface to operate with.
	-m	Sets the max number of hops (max TTL to be reached). Default is 30.
	-N	Sets the number of probes to be tried simultaneously (default is 16).
	-p	Uses destination port. It is an initial value for the UDP destination port (incremented by each probe, default is 33434), for the ICMP seq number (incremented as well, default from 1), and the constant destination port for TCP tries (default is 80).
	-t	Sets the TOS (IPv4 type of service) or TC (IPv6 traffic class) value for outgoing packets.
	-l	Uses specified flow_label for IPv6 packets.
	-w	Sets the number of seconds to wait for response to a probe (default is 5.0). Non-integer (float point) values allowed too.
	-q	Sets the number of probes per each hop. Default is 3.
	-s	Uses source src_addr for outgoing packets.
	-z	Sets minimal time interval between probes (default is 0). If the value is more than 10, then it specifies a number in milliseconds, else it is a number of seconds (float point values allowed too).

Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # traceroute 192.168.10.70`
	`traceroute to 192.168.10.70 (192.168.10.70), 30 hops max, 40 byte pack-ets`
	`1 172.30.0.1 (172.30.0.1) 3.632 ms 2.849 ms 3.544 ms`
	`2 10.222.128.46 (10.222.128.46) 3.176 ms 3.289 ms 3.656 ms`
	`3 10.158.128.30 (10.158.128.30) 15.331 ms 15.819 ms 16.388 ms`
	`4 10.158.128.65 (10.158.128.65) 20.468 ms 7.893 ms 12.27 ms`
	`5 10.7.34.115 (10.7.34.115) 16.405 ms 11.985 ms 12.264 ms`
	`6 192.168.10.70 (192.168.10.70) 16.377 ms 16.091 ms 20.475 ms`
	`switch (config) #`

Related Commands	
Note	

tcpdump

tcpdump [-aAdDeflLnNOpqRStuUvxX] [-c count] [-C file_size]
[-E algo:secret] [-F file] [-i interface] [-M secret]
[-r file] [-s snaplen] [-T type] [-w file]
[-W filecount] [-y datalinktype] [-Z user]
[expression]

Invokes standard binary, passing command line parameters straight through. Runs in foreground, printing packets as they arrive, until the user hits Ctrl+C.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # tcpdump`
	`......`
	`09:37:38.678812 IP 192.168.10.7.ssh > 192.168.10.1.54155: P`
	`1494624:1494800(176) ack 625 win 90`
	`<nop,nop,timestamp 5842763 858672398>`
	`09:37:38.678860 IP 192.168.10.7.ssh > 192.168.10.1.54155: P`
	`1494800:1495104(304) ack 625 win 90`
	`<nop,nop,timestamp 5842763 858672398>`
	`...`
	`9141 packets captured`
	`9142 packets received by filter`
	`0 packets dropped by kernel`
	`switch (config) #`

Related Commands	N/A
Note	

clear counters

clear counters [all | interface <type> <number>]

Clears switch counters.

Syntax Description	all	Clears all switch counters.
	type	A specific interface type
	number	The interface number.
Default	N/A	
Configuration Mode	Config Interface Ethernet Config Interface Port Channel	
History	3.2.3000	
Role	admin	
Example	`switch (config) # clear counters` `switch (config) #`	
Related Commands		
Note		

2.2 License Keys

license

license {delete <license number> | install <license key>}
no license install <license key>

Activates features using license keys.
The no form of the command uninstalls an existing license key. If the key specified was not already installed, an error is returned.

Syntax Description	delete	Uninstalls an existing license key. Note that this has the same effect as the "no license install", except that you specify the license by its ID instead of by repeating the license key.
	install	Installs a new license key. If the key is invalid (i.e. it could never have been a valid license), an error message is printed and it is not added. If the license is valid but there is something else wrong with it (i. e. it names a nonexistent feature, it is expired, etc.) a warning message is printed but it is added.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # license install <license key>`
	`switch (config) # show licenses`
	`License 1: <license key>`
	`Feature: SX_CONFIG`
	`Valid: yes`
	`Active: yes`
	`switch (config) #`	

Related Commands	show licenses	
Note		

show licenses

show licenses

Displays a list of all installed licenses. For each license, the following is displayed:
- a unique ID which is a small integer
- the text of the license key as it was added
- whether or not it is valid and active
- which feature(s) it is activating
- a list of all licensable features specifying whether or not it is currently activated by a license

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	monitor/admin

Example	`switch (config) # show licenses`
	`License 1: <license key>`
	`Feature: SX_CONFIG`
	`Valid: yes`
	`Active: yes`
	`switch (config) #`

Related Commands	license
Note	

2.3 NTP, Clock & Time Zones

clock set

clock set <hh:mm:ss> [<yyyy/mm/dd>]

Sets the time and date.

Syntax Description	hh:mm:ss	Time.
	yyyy/mm/dd	Date.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # clock set 23:23:23 2010/08/19`
	`switch (config) # show clock`
	`Time:  23:23:26`
	`Date:  2010/08/19`
	`Time zone:  UTC`
	`(Etc/UTC)`
	`UTC offset: same as UTC`
	`switch (config) #`	

Related Commands	show clock	
Note	If not specified, the date will be left the same.	

clock timezone

clock timezone [<zone word> [<zone word> [<zone word>] [<zone word>]]]

Sets the system time zone. The time zone may be specified in one of three ways:

- A nearby city whose time zone rules to follow. The system has a large list of cities which can be displayed by the help and completion system. They are organized hierarchically because there are too many of them to display in a flat list. A given city may be required to be specified in two, three, or four words, depending on the city.
- An offset from UTC. This will be in the form UTC-offset UTC, UTC-offset UTC+<0-14>, UTC-offset UTC-<1-12>.
- UTC (Universal Time, which is almost identical to GMT), and this is the default time zone

The no form of the command resets time zone to its default (GMT).

Syntax Description	zone word	The possible forms this could take include: continent, city, continent, country, city, continent, region, country, city, ocean, and/or island.
Default	GMT	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # clock timezone America North United_States Other New_York`
	`switch (config) # show clock`
	`Time: 04:21:44`
	`Date: 2012/02/26`
	`Time zone: America North United_States Other New_York`
	`switch (config) #`	

Related Commands	show clock	
Note		

ntp

ntp {disable | enable | {peer | server} <IP address> [version <number> | disable]}
no ntp {disable | enable | {peer | server} <IP address> [disable]}

Configures NTP.
The no form of the command negates NTP options.

Syntax Description	disable	Disables NTP.
	enable	Enables NTP.
	peer or server	Configures an NTP peer or server node.
	IP address	IPv4 or IPv6 address.
	version <number>	Specifies the NTP version number of this peer. Possible values are 3 or 4.
Default	NTP is enabled. NTP version number is 4.	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # no ntp peer 192.168.10.24 disable` `switch (config) #`	
Related Commands	N/A	
Note		

ntpdate

ntpdate <IP address>

Sets the system clock using the specified SNTP server.

Syntax Description	IP address IP.
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # ntpdate 192.168.10.10`
	`26 Feb 17:25:40 ntpdate[15206]: adjust time server 192.168.10.10 offset -0.000092 sec`
	`switch (config) #`

Related Commands	N/A
Note	This is a one-time operation and does not cause the clock to be kept in sync on an ongoing basis. It will generate an error if SNTP is enabled since the socket it requires will already be in use.

show clock

show clock

Displays the current system time, date and time zone.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show clock`
	`Time: 04:21:44‘`
	`Date: 2012/02/26`
	`Time zone: America North United_States Other New_York`
	`switch (config) #`

Related Commands	N/A
Note	

show ntp

show ntp

Displays the current NTP settings.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show ntp`
	`NTP is enabled.`
	`Clock is unsynchronized.`
	`No NTP peers or servers configured.`
	`switch (config) #`

Related Commands	N/A
Note	

2.4 Software Management

This chapter displays all the relevant commands used to manage the system software image.

image boot

image boot {location <location ID> | next}

Specifies the default location where the system should be booted from.

Syntax Description	location ID	Specifies the default destination location. There can be up to 2 images on the system. The possible values are 1 or 2.
	next	Sets the boot location to be the next once after the one currently booted from, thus avoiding a cycle through all the available locations.
Default	N/A	
Configuration Mode	enable/config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # image boot location 2` `switch (config) #`	
Related Commands	show images	
Note		

boot next

boot next fallback-reboot enable
no boot next fallback-reboot enable

Sets the default setting for next boot. Normally, if the system fails to apply the configuration on startup (after attempting upgrades or downgrades, as appropriate), it will reboot to the other partition as a fallback.
The no form of the command tells the system not to do that, only for the next boot.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.2.0506
Role	admin
Example	`switch (config) # boot fallback-reboot enable` `switch (config) #`
Related Commands	show images
Note	• Normally, if the system fails to apply the configuration on startup (after attempting upgrades or downgrades, as appropriate) it reboots to the other partition as a fallback. • The no form of this command tells the system not to do that **only** for the next boot. In other words, this setting is not persistent, and goes back to enabled automatically after each boot. • When downgrading to an older software version which has never been run yet on a system, the "fallback reboot" **always** happens, unless the command "no boot next fallback-reboot enable" is used. However, this also happens when the older software version *has* been run before, but the configuration file has been switched since upgrading. In general, a downgrade only works (without having the fallback reboot forcibly disabled) if the process can find a snapshot of the configuration file (by the same name as the currently active one) which was taken before upgrading from the older software version. If that is not found, a fallback reboot is performed in preference to falling back to the initial database because the latter generally involves a loss of network connectivity, and avoiding that is of paramount importance.

image default-chip-fw

image default-chip-fw <file name>

Sets the default firmware package to be installed.

Syntax Description	filename	Specifies the firmware filename.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # image default-chip-fw image-SX_PPC_M460EX-ppc-m460ex-20120122-084759.img` `switch (config) #`	
Related Commands	image install-chip fw show images	
Note		

image delete

image delete <image name>

Deletes the specified image file.

Syntax Description	image name	Specifies the image name.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # image delete image-MLXNX-OS-201140526-010145.img` `switch (config) #`	
Related Commands	show images	
Note		

image fetch

image fetch <URL> [<filename>]

Downloads an image from the specified URL or via SCP.

Syntax Description	URL	HTTP, HTTPS, FTP, TFTP, SCP and SFTP are supported. Example: scp://username[:password]@hostname/path/filename.
	filename	Specifies a filename for this image to be stored as locally.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # image fetch scp://<username>@192.168.10.125/var/www/html/<image_name>`
	`Password  ******`
	`100.0%[##########################################################]`
	`switch (config) #`	

Related Commands	show images	
Note	• Please delete the previously available image, prior to fetching the new image • See section “Upgrading MLNX-OS SX Software,” in the *Mellanox SwitchX® User Manual* for a full upgrade example	

image install

image install <image filename> [location <location ID>] | [progress <prog-options>] [verify <ver-options>]

Installs the specified image file.

Syntax Description	image filename	Specifies the image name.
	location ID	Specifies the image destination location.
	prog-options	• "no-track" overrides CLI default and does not track the installation progress • "track" overrides CLI default and tracks the installation progress
	ver-options	• "check-sig" requires an image to have either a valid signature or no signature • "ignore-sig" allows unsigned or invalidly signed images to be installed • "require-sig" requires from the installed image to have a valid signature. If a valid signature is not found on the image, the image cannot be installed.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # image install SX_PPC_M460EX 3.0.0000-dev-HA 2012-01-22 08:47:59 ppc`
	`Step 1 of 4: Verify Image`
	`100.0%`
	`[##########################################################]`
	`Step 2 of 4: Uncompress Image`
	`100.0%`
	`[##########################################################]`
	`Step 3 of 4: Create Filesystems`
	`100.0%`
	`[##########################################################]`
	`Step 4 of 4: Extract Image`
	`100.0%`
	`[##########################################################]`
	`switch (config) #`	

Related Commands	show images	
Note	• The image cannot be installed on the "active" location (the one which is currently being booted) • On a two-location system, the location is chosen automatically if no location is specified	

image move

image move <src image name> <dest image name>

Renames the specified image file.

Syntax Description	src image name	Specifies the old image name.
	dest image name	Specifies the new image name.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # image move image1.img image2.img` `switch (config) #`	
Related Commands	show images	
Note		

image options

image options require-sig
no image options require-sig

Requires from all the installed images a valid signature.
The no form of the command does not require a signature. However if one is present, it must be valid.

Syntax Description	require-sig	Requires images to be signed by a trusted signature.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # image options require-sig` `switch (config) #`	
Related Commands	show images	
Note		

show bootvar

show bootvar

Displays the installed system images and the boot parameters.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show bootvar`
	`Installed images:`
	`  Partition 1:`
	`  SX_PPC_M460EX 3.0.0000-dev-HA 2012-01-22 08:47:59 ppc`
	`  Last dobincp: 2012/01/23 14:54:23`
	
	`  Partition 2:`
	`  SX_PPC_M460EX 3.0.0000-dev-HA 2012-01-18 09:52:41 ppc`
	`  Last dobincp: 2012/01/19 16:48:23`
	
	`Last boot partition: 1`
	`Next boot partition: 1`
	
	`Boot manager password is set.`
	
	`No image install currently in progress.`
	
	`Image signing: trusted signature always required`
	`Admin require signed images: yes`
	
	`Settings for next boot only:`
	`   Fallback reboot on configuration failure: yes (default)`
	`switch (config) #`

Related Commands	N/A
Note	

show images

show image

Displays information about the system images and boot parameters.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.0000
Role	admin

Example	`switch (config) # show images`
	`Images available to be installed:`
	`  image-SX_PPC_M460EX-ppc-m460ex-20120122-084759.img`
	`  SX_PPC_M460EX 3.0.0000-dev-HA 2012-01-22 08:47:59 ppc`
	
	`Installed images:`
	`  Partition 1:`
	`  SX_PPC_M460EX 3.0.0000-dev-HA 2012-01-22 08:47:59 ppc`
	`  Last dobincp: 2012/01/23 14:54:23`
	
	`  Partition 2:`
	`  SX_PPC_M460EX 3.0.0000-dev-HA 2012-01-18 09:52:41 ppc`
	`  Last dobincp: 2012/01/19 16:48:23`
	
	`Last boot partition: 1`
	`Next boot partition: 1`
	
	`Boot manager password is set.`
	
	`No image install currently in progress.`
	
	`Image signing: trusted signature always required`
	`Admin require signed images: yes`
	
	`Settings for next boot only:`
	`   Fallback reboot on configuration failure: yes (default)`
	`switch (config) #`

Related Commands	N/A
Note	

2.5 File Management

2.5.1 File System

debug generate dump

debug generate dump

Generates a debug dump.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # debug generate dump`
	`Generated dump sysdump-switch-112104-201140526-091707.tgz`
	`switch (config) #`

Related Commands	file debug-dump
Note	The dump can then be manipulated using the “file debug-dump...” commands.

file debug-dump

file debug-dump {delete {<filename> | latest} | email {<filename> | latest} | upload {{<filename> | latest} <URL>}}

Manipulates debug dump files.

Syntax Description	delete {<filename> | latest}	Deletes a debug dump file.
	email {<filename> | latest}	Emails a debug dump file to pre-configured recipients for "informational events", regardless of whether they have requested to receive "detailed" notifications or not.
	upload {{<filename> | latest} <URL>}}	Uploads a debug dump file to a remote host. The URL to the remote host: HTTP, HTTPS, FTP, TFTP, SCP and SFTP are supported. Example: scp://username[:password]@hostname/path/filename.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	Initial release
	3.3.4000	Added "latest" parameter
Role	admin	
Example	`switch (config) # file debug-dump email sysdump-switch-112104-20114052-091707.tgz` `switch (config) #`	
Related Commands	show files debug-dump	
Note		

file stats

file stats {delete <filename> | move {<source filename> | <destination filename>} | upload <filename> <URL>}

Manipulates statistics report files.

Syntax Description	delete <filename>	Deletes a stats report file.
	move <source filename> <destination filename>	Renames a stats report file.
	upload <filename> <URL>	Uploads a stats report file. URL - HTTP, HTTPS, FTP, TFTP, SCP and SFTP are supported. Example: scp://username[:password]@host-name/path/filename.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # file stats move memory-1.csv memory-2.csv` `switch (config) #`	
Related Commands	show files stats show files stats <filename>	
Note		

file tcpdump

file tcpdump {delete <filename> | upload <filename> <URL>}

Manipulates tcpdump output files.

Syntax Description	delete <filename>	Deletes the specified tcpdump output file.
	upload <filename> <URL>	Uploads the specified tcpdump output file to the specified URL. URL - HTTP, HTTPS, FTP, TFTP, SCP and SFTP are supported. Example: scp://username[:password]@hostname/path/filename.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # file tcmpdump delete my-tcpdump-file.txt` `switch (config) #`	
Related Commands	show files stats tcpdump	
Note		

show files debug-dump

show files debug-dump [<filename>]

Displays a list of debug dump files.

Syntax Description	filename	Displays a summary of the contents of a particular debug dump file.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show files debug-dump sysdump-switch-112104-20114052-091707.tgz`
	`System information:`
	
	`Hostname: switch-112104`
	`Version:  SX_PPC 3.1.0000 2011-05-25 13:59:00 ppc`
	`Date:     2012-01-26 09:17:07`
	`Uptime:   0d 18h 47m 48s`
	
	`================================================`
	`Output of 'uname -a':`
	
	`Linux switch-112104 2.6.27-MELLANOXuni-m405ex SX_PPC 3.1.0000 #1 2012-01-25 13:59:00 ppc ppc`
	`ppc GNU/Linux`
	
	`================================================`
	
	`.....................................................`
	`switch (config) #`	

Related Commands	file debug-dump	
Note		

show files stats

show files stats <filename>

Displays a list of statistics report files.

Syntax Description	filename	Display the contents of a particular statistics report file.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show files stats`
	`memory-201140524-111745.csv`
	`switch (config) #`	

Related Commands	file stats	
Note		

show files system

show files system [detail]

Displays usage information of the file systems on the system.

Syntax Description	detail	Displays more detailed information on file-system.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example		

```
switch (config) # show files system
Statistics for /config filesystem:
  Bytes Total          100 MB
  Bytes Used           3 MB
  Bytes Free           97 MB
  Bytes Percent Free   97%
  Bytes Available      97 MB
  Inodes Total         0
  Inodes Used          0
  Inodes Free          0
  Inodes Percent Free  0%

Statistics for /var filesystem:
  Bytes Total          860 MB
  Bytes Used           209 MB
  Bytes Free           651 MB
  Bytes Percent Free   75%
  Bytes Available      651 MB
  Inodes Total         0
  Inodes Used          0
  Inodes Free          0
  Inodes Percent Free  0%
switch (config) #
```

Related Commands	N/A
Note	

show files tcpdump

show files tcpdump

Displays a list of statistics report files.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show files stats`
	`test`
	`dump3`
	`switch (config) #`

Related Commands	file tcpdump tcpdump
Note	

2.5.2 Configuration File

configuration audit

configuration audit max-changes <number>

Chooses settings related to configuration change auditing.

Syntax Description	max-changes	Set maximum number of audit messages to log per change.
Default	1000	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # configuration audit max-changes 100`
	`switch (config) # show configuration audit`
	`Maximum number of changes to log: 100`
	`switch (config) #`	

Related Commands	show configuration	
Note	N/A	

configuration copy

configuration copy <source name> <dest name>

Copies a configuration file.

Syntax Description	source name	Name of source file.
	dest name	Name of destination file. If the file of specified file-name does not exist a new file will be created with said filename.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # configuration copy initial.bak example` `switch (config) #`	
Related Commands		
Note	• This command does not affect the current running configuration • The active configuration file may not be the target of a copy. However, it may be the source of a copy in which case the original remains active.	

configuration delete

configuration delete <filename>

Deletes a configuration file.

Syntax Description	filename	Name of file to delete.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show configuration files`
	`example  initial  initial.bak  initial.prev`
	`switch (config) # configuration delete example`
	`switch (config) # show configuration files`
	`initial  initial.bak  initial.prev`
	`switch (config) #`	

Related Commands	show configuration	
Note	• This command does not affect the current running configuration • The active configuration file may not be deleted	

configuration fetch

configuration fetch <URL or scp or sftp://username:password@ hostname[:port]/path/filename> [<name>]

Downloads a configuration file from a remote host.

Syntax Description	name	The configuration file name.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # configuration fetch scp://root:password@ 192.168.10.125/tmp/conf1` `switch (config) #`	
Related Commands	configuration switch-to	
Note	• The downloaded file should not override the active configuration file, using the <name> parameter • If no name is specified for a configuration fetch, it is given the same name as it had on the server • No configuration file may have the name “active”	

configuration jump-start

configuration jump-start

Runs the initial-configuration wizard.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # configuration jump-start`
	`Mellanox configuration wizard`
	`Step 1: Hostname? [switch-3cc29c]`
	`Step 2: Use DHCP on mgmt0 interface? y`
	`Step 3: Admin password (Enter to leave unchanged)?`
	`You have entered the following information:`
	`1. Hostname: switch-3cc29c`
	`2. Use DHCP on mgmt0 interface: yes`
	`3. Enable IPv6: yes`
	`4. Enable IPv6 autoconfig (SLAAC) on mgmt0 interface: yes`
	`53. Admin password (Enter to leave unchanged): (unchanged)`
	`To change an answer, enter the step number to return to.`
	`Otherwise hit <enter> to save changes and exit.`
	`Choice:`
	`Configuration changes saved.`
	`switch (config) #`

Related Commands	N/A
Note	• The wizard is automatically invoked whenever the CLI is launched when the active configuration file is fresh (i.e. not modified from its initial contents) • This command invokes the wizard on demand – see chapter “Initializing the Switch for the First Time” in the Mellanox *MLNX-OS SwitchX User Manual*

configuration merge

configuration merge <filename>

Merges the “shared configuration” from one configuration file into the running configuration.

Syntax Description	filename	Name of file from which to merge settings.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # configuration merge new-config-file` `switch (config) #`	
Related Commands		
Note	• No configuration files are modified during this process • The configuration name must be a non-active configuration file	

configuration move

configuration move <source name> <dest name>

Moves a configuration file.

Syntax Description	source name	Old name of file to move.
	dest name	New name for moved file.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show configuration files`
	`example1 initial initial.bak initial.prev`
	`switch (config) # configuration move example1 example2`
	`switch (config) # show configuration files`
	`example2 initial initial.bak initial.prev`
	`switch (config) #`	

Related Commands	show configuration	
Note	• This command does not affect the current running configuration • The active configuration file may not be the target of a move	

configuration new

configuration new <filename> [factory [keep-basic] [keep-connect]]

Creates a new configuration file under the specified name. The parameters specify what configuration, if any, to carry forward from the current running configuration.

Syntax Description	filename	Names for new configuration file.
	factory	Creates new file with only factory defaults.
	keep-basic	Keeps licenses and host keys.
	keep-connect	Keeps configuration necessary for connectivity (interfaces, routes, and ARP).
Default	Keeps licenses and host keys	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show configuration files`
	`initial  initial.bak  initial.prev`
	`switch (config) # configuration new example2`
	`switch (config) # show configuration files`
	`example2  initial  initial.bak  initial.prev`
	`switch (config) #`	

Related Commands	show configuration	
Note		

configuration switch-to

configuration switch-to <filename>

Loads the configuration from the specified file and makes it the active configuration file.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show configuration files`
	`initial (active)`
	`newcon`
	`initial.prev`
	`initial.bak`
	`switch (config) # configuration switch-to newcon`
	`switch (config) # show configuration files`
	`initial`
	`newcon (active)`
	`initial.prev`
	`initial.bak`
	`switch (config) #`

Related Commands	show configuration files
Note	The current running configuration is lost and not automatically saved to the previous active configuration file.

configuration text fetch

configuration text fetch <URL> [apply [discard | fail-continue | filename | overwrite | verbose] | filename <filename> | overwrite [apply | filename <filename>]]

Fetches a text configuration file (list of CLI commands) from a specified URL.

Syntax Description	apply	Applies the file to the running configuration (i.e. executes the commands in it). This option has the following parameters: • discard: Does not keep downloaded configuration text file after applying it to the system • fail-continue: If applying commands, continues execution even if one of them fails • overwrite: If saving the file and the filename already exists, replaces the old file • verbose: Displays all commands being executed and their output instead of just those that get errors
	filename	Specifies filename for saving downloaded text file.
	overwrite	Downloads the file and saves it using the same name it had on the server. This option has the following parameters: • apply: Applies the downloaded configuration to the running system • filename: Specifies filename for saving downloaded text file
Default	N/A	
Configuration Mode	Config	
History	3.2.1000	Initial version
	3.2.3000	Updated command
Role	admin	
Example	`switch (config) # configuration fetch text scp://username[:password]@hostname/path/filename`	
Related Commands	N/A	
Note		

configuration text file

configuration text file <filename> {apply [fail-continue] [verbose] | delete | rename <filename> | upload < URL>}

Performs operations on text-based configuration files.

Syntax Description	filename <file>	Specifies the filename.
	apply	Applies the configuration on the system.
	fail-continue	Continues execution of the commands even if some commands fail.
	verbose	Displays all commands being executed and their output, instead of just those that get errors.
	delete	Deletes the file.
	rename <filename>	Renames the file.
	upload <URL>	Supported types are HTTP, HTPPS, FTP, TFTP, SCP and SFTP. For example: scp://username[:password]@hostname/path/filename.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # configuration text file my-config-file delete` `switch (config) #`	
Related Commands	show configuration files	
Note		

configuration text generate

configuration text generate {active {running | saved} | file <filename> } {save <filename> | upload <URL>}

Generates a new text-based configuration file from this system's configuration.

Syntax Description	active	Generates from currently active configuration.
	running	Uses running configuration.
	saved	Uses saved configuration.
	file <filename>	Generates from inactive saved configuration.
	save	Saves new file to local persistent storage.
	upload <URL>	Supported types are HTTP, HTPPS, FTP, TFTP, SCP and SFTP. For example: scp://username[:password]@hostname/path/filename.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # configuration text generate file initial.prev save example`
	`switch (config) # show configuration files`
	`initial (active)`
	`initial.prev`
	`initial.bak`
	`Active configuration: initial`
	`Unsaved changes:  yes`
	`switch (config) #`	

Related Commands	show configuration files	
Note		

configuration upload

configuration upload {active | <name>} <URL or scp or sftp://username:password@hostname[:port]/path/filename>

Uploads a configuration file to a remote host.

Syntax Description	active	Upload the active configuration file.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # configuration upload active scp://root:password@192.168.10.125/tmp/conf1` `switch (config) #`	
Related Commands	N/A	
Note	No configuration file may have the name “active”.	

write

write {memory [local] | terminal}

Saves or displays the running configuration.

Syntax Description	memory	Saves running configuration to the active configuration file. It is the same as “configuration write”.
	local	Saves the running configuration only on the local node. It is the same as “configuration write local”.
	terminal	Displays commands to recreate current running configuration. It is the same as “show running-config”.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # write terminal`
	`##`
	`## Running database "initial"`
	`## Generated at 20114/05/27 10:05:16 +0000`
	`## Hostname: switch`
	`##`
	`##`
	`## Network interface configuration`
	`##`
	`interface mgmt0 comment ""`
	`interface mgmt0 create`
	`interface mgmt0 dhcp`
	`interface mgmt0 display`
	`interface mgmt0 duplex auto`
	`interface mgmt0 mtu 1500`
	`no interface mgmt0 shutdown`
	`interface mgmt0 speed auto`
	`no interface mgmt0 zeroconf`
	`##`
	`## Local user account configuration`
	`##`
	`username a** capability admin`
	`no username a** disable`
	`username a** disable password`
	`......`
	`switch (config) #`	

Related Commands	show running-config configuration write	
Note		

show configuration

show configuration [audit | | files [<filename>] | full | running [full] | text files]

Displays a list of CLI commands that will bring the state of a fresh system up to match the current persistent state of this system.

Syntax Description	audit	Displays settings for configuration change auditing.
	files [<filename>]	Displays a list of configuration files in persistent storage if no filename is specified. If a filename is specified, it displays the commands to recreate the configuration in that file. In the latter case, only non-default commands are shown, as for the normal "show configuration" command.
	full	Does not exclude commands that set default values.
	running	Displays commands to recreate current running configuration. Same as "show configuration" except that it applies to the currently running configuration, rather than the current persisted configuration.
	text files	Displays names of available text-based configuration files.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	monitor/admin	

Example

```
switch (config) # show configuration
##
## Active saved database "newcon"
## Generated at 20114/05/25 10:18:52 +0000
## Hostname: switch-3cc29c
##
##
## Network interface configuration
##
interface mgmt0 comment ""
interface mgmt0 create
interface mgmt0 dhcp
interface mgmt0 display
interface mgmt0 duplex auto
interface mgmt0 mtu 1500
no interface mgmt0 shutdown
interface mgmt0 speed auto
no interface mgmt0 zeroconf
switch (config) #
```

Related Commands	N/A
Note	

show running-config

show running-config [full]

Displays commands to recreate current running configuration.

Syntax Description	full	Does not exclude commands that set default values.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	monitor/admin	

Example

```
switch (config) # show running-config
##
## Running database "initial"
## Generated at 2012/02/28 14:59:02 +0000
## Hostname: switch-5ea5d8
##

##
## License keys
##
   license install LK2-EFM_SX-5M11-5K11-5HGL-0KAL-64QK-8C2Q-60Q3-6C1G-
88A1-F5DF-
2KGK-8
   license install LK2-RESTRICTED_CMDS-88A0-RFD7-W4CF-Y

##
## Network interface configuration
##
   interface mgmt0 create
   interface mgmt0 comment ""
   interface mgmt0 dhcp
   interface mgmt0 display
   interface mgmt0 duplex auto
   interface mgmt0 mtu 1500
no interface mgmt0 shutdown
...
switch (config) #
```

Related Commands	show configuration running
Note	Same as “show configuration running” except that it applies to the currently running configuration, rather than the current persisted configuration.

2.6 Local and Remote Logging

logging local

logging local <log-level>
no logging local

Sets the minimum severity of log messages to be saved in log files on local persistent storage.
The no form disables the ability to log messages locally and remotely.

Syntax Description	log-level	• alert - alert notification, action must be taken immediately • crit - critical condition • debug - debug level messages • emerg - system is unusable (emergency) • err - error condition • info - informational condition • none - disables the logging locally and remotely • notice - normal, but significant condition • warning - warning condition
Default	info	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # logging local info`
	`switch (config) # show logging`
	`Local logging level: info`
	`Default remote logging level: notice`
	`No remote syslog servers configured.`
	`Allow receiving of messages from remote hosts: no`
	`Number of archived log files to keep: 10`
	`Log rotation size threshold: 5.000% of partition (43 megabytes)`
	`Log format: standard`
	`Subsecond timestamp field: disabled`
	`Levels at which messages are logged:`
	`  CLI commands: notice`
	`  Audit messages: notice`
	`switch (config) #`	

Related Commands	show logging logging local override	
Note	The commands “logging local none” and “no logging local” have the same effect. Disabling the logging messages will disable all logging: • Local logging • Logging messages sent from hosts to be logged in the system • Remote logging (syslog)	

logging local override

logging local override [class <class> priority <log-level>]
no logging local override [class <class> priority <log-level>]

Enables class-specific overrides to the local log level.
The no form of the command disables all class-specific overrides to the local log level without deleting them from the configuration, but disables them so that the logging level for all classes is determined solely by the global setting.

Syntax Description	override	Enables class-specific overrides to the local log level.
	class	Sets or removes a per-class override on the logging level. All classes which do not have an override set will use the global logging level set with "logging local <log level>". Classes that do have an override will do as the override specifies. If "none" is specified for the log level, MLNX-OS will not log anything from this class. Classes available: • iss-modules - protocol stack • mgmt-back - system management back-end • mgmt-core - system management core • mgmt-front - system management front-end • mlx-daemons - management daemons • sx-sdk - switch SDK
	log-level	• alert - alert notification, action must be taken immediately • crit - critical condition • debug - debug level messages • emerg - system is unusable (emergency) • err - error condition • info - informational condition • none - disables the logging locally and remotely • notice - normal, but significant condition • warning - warning condition
Default	Override is disabled.	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # logging local override class mgmt-front priority
warning
switch (config) # show logging
Local logging level: info
  Override for class mgmt-front: warning
Default remote logging level: notice
No remote syslog servers configured.
Allow receiving of messages from remote hosts: no
Number of archived log files to keep: 10
Log rotation size threshold: 5.000% of partition (43 megabytes)
Log format: standard
Subsecond timestamp field: disabled
Levels at which messages are logged:
  CLI commands: notice
  Audit messages: notice
switch (config) #
```

Related Commands

show logging
logging local

Note

logging <syslog IP address>

logging <syslog IP address> [trap {<log-level> | override class <class> priority <log-level>}]
no logging <syslog IP address> [trap {<log-level> | override class <class> priority <log-level>}]

Enables (by setting the IP address) sending logging messages, with ability to filter the logging messages according to their classes.
The no form of the command stops sending messages to the remote syslog server.

Syntax Description	syslog IP address	IPv4 address of the remote syslog server.
	log-level	• alert - alert notification, action must be taken immediately • crit - critical condition • debug - debug level messages • emerg - system is unusable (emergency) • err - error condition • info - informational condition • none - disables the logging locally and remotely • notice - normal, but significant condition • warning - warning condition
	class	Sets or removes a per-class override on the logging level. All classes which do not have an override set will use the global logging level set with “logging local <log level>”. Classes that do have an override will do as the override specifies. If “none” is specified for the log level, MLNX-OS will not log anything from this class. Classes available: • iss-modules - protocol stack • mgmt-back - system management back-end • mgmt-core - system management core • mgmt-front - system management front-end • mlx-daemons - management daemons • sx-sdk - switch SDK
	log-level	• alert - alert notification, action must be taken immediately • crit - critical condition • debug - debug level messages • emerg - system is unusable (emergency) • err - error condition • info - informational condition • none - disables the logging locally and remotely • notice - normal, but significant condition • warning - warning condition
Default	Remote logging is disabled	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # logging local info
switch (config) # show logging
Local logging level: info
Default remote logging level: notice
No remote syslog servers configured.
Allow receiving of messages from remote hosts: no
Number of archived log files to keep: 10
Log rotation size threshold: 5.000% of partition (43 megabytes)
Log format: standard
Subsecond timestamp field: disabled
Levels at which messages are logged:
  CLI commands: notice
  Audit messages: notice
switch (config) #
```

Related Commands

show logging
logging local override

Note

logging receive

logging receive
no logging receive

Enables receiving logging messages from a remote host.
The no form of the command disables the option of receiving logging messages from a remote host.

Syntax Description	N/A
Default	Receiving logging is disabled
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # logging receive`
	`switch (config) # show logging`
	`Local logging level: info`
	`Default remote logging level: notice`
	`No remote syslog servers configured.`
	`Allow receiving of messages from remote hosts: yes`
	`Number of archived log files to keep: 10`
	`Log rotation size threshold: 5.000% of partition (43 megabytes)`
	`Log format: standard`
	`Subsecond timestamp field: disabled`
	`Levels at which messages are logged:`
	`  CLI commands: notice`
	`  Audit messages: notice`
	`switch (config) #`

Related Commands	show logging logging local logging local override
Note	• This does not log to the console TTY port • In-band management should be enabled in order to open a channel from the host to the CPU • If enabled, only log messages matching or exceeding the minimum severity specified with the “logging local” command will be logged, regardless of what is sent from the remote host

logging format

logging format {standard | welf [fw-name <hostname>]}
no logging format {standard | welf [fw-name <hostname>]}

Sets the format of the logging messages.
The no form of the command resets the format to its default.

Syntax Description	standard	Standard format.
	welf	WebTrends Enhanced Log file (WELF) format.
	hostname	Specifies the firewall hostname that should be associated with each message logged in WELF format. If no firewall name is set, the hostname is used by default.
Default	standard	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # logging format standard`
	`switch (config) # show logging`
	`Local logging level: info`
	`Default remote logging level: notice`
	`No remote syslog servers configured.`
	`Allow receiving of messages from remote hosts: yes`
	`Number of archived log files to keep: 10`
	`Log rotation size threshold: 5.000% of partition (43 megabytes)`
	`Log format: standard`
	`Subsecond timestamp field: disabled`
	`Levels at which messages are logged:`
	`  CLI commands: notice`
	`  Audit messages: notice`
	`switch (config) #`	

Related Commands	show logging	
Note		

logging fields

logging fields seconds {enable | fractional-digits <f-digit> | whole-digits <w-digit>}
no logging fields seconds {enable | fractional-digits <f-digit> | whole-digits <w-digit>}

Specifies whether to include an additional field in each log message that shows the number of seconds since the Epoch or not.
The no form of the command disallows including an additional field in each log message that shows the number of seconds since the Epoch.

Syntax Description	enable	Specifies whether to include an additional field in each log message that shows the number of seconds since the Epoch or not.
	f-digit	The fractional-digits parameter controls the number of digits to the right of the decimal point. Truncation is done from the right. Possible values are: 1, 2, 3, or 6.
	w-digit	The whole-digits parameter controls the number of digits to the left of the decimal point. Truncation is done from the left. Except for the year, all of these digits are redundant with syslog's own date and time. Possible values: 1, 6, or all.
Default	disabled	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # logging fields seconds enable
switch (config) # logging fields seconds whole-digits 1
switch (config) # show logging
Local logging level: info
  Override for class mgmt-front: warning
Default remote logging level: notice
No remote syslog servers configured.
Allow receiving of messages from remote hosts: no
Number of archived log files to keep: 10
Log rotation size threshold: 5.000% of partition (43 megabytes)
Log format: standard
Subsecond timestamp field: enabled
Subsecond timestamp precision: 1 whole digit; 3 fractional digits
Levels at which messages are logged:
  CLI commands: notice
  Audit messages: notice
switch (config) #
```

Related Commands	show logging
Note	This is independent of the standard syslog date and time at the beginning of each message in the format of “July 15 18:00:00”. Aside from indicating the year at full precision, its main purpose is to provide subsecond precision.

logging level

logging level {cli commands <log-level> | audit mgmt <log-level>}

Sets the severity level at which CLI commands or the management audit message that the user executes are logged. This includes auditing of both configuration changes and actions.

Syntax Description	cli commands	Sets the severity level at which CLI commands which the user executes are logged.
	audit mgmt	Sets the severity level at which all network management audit messages are logged.
	log-level	• alert - alert notification, action must be taken immediately • crit - critical condition • debug - debug level messages • emerg - system is unusable (emergency) • err - error condition • info - informational condition • none - disables the logging locally and remotely • notice - normal, but significant condition • warning - warning condition
Default	CLI commands and audit message are set to notice logging level	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # logging level cli commands info`
	`switch (config) # show logging`
	`Local logging level: info`
	`  Override for class mgmt-front: warning`
	`Default remote logging level: notice`
	`No remote syslog servers configured.`
	`Allow receiving of messages from remote hosts: no`
	`Number of archived log files to keep: 10`
	`Log rotation size threshold: 5.000% of partition (43 megabytes)`
	`Log format: standard`
	`Subsecond timestamp field: enabled`
	`Subsecond timestamp precision: 1 whole digit; 3 fractional digits`
	`Levels at which messages are logged:`
	`  CLI commands: info`
	`  Audit messages: notice`
	`switch (config) #`	

Related Commands	show logging	
Note		

logging files delete

logging files delete {current | oldest [<number of files>]}

Deletes the current or oldest log files.

Syntax Description	current	Deletes current log file.
	oldest	Deletes oldest log file.
	number of files	Sets the number of files to be deleted.
Default	CLI commands and audit message are set to notice logging level	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # logging files delete current` `switch (config) #`	
Related Commands	show logging show log files	
Note		

logging files rotation

logging files rotation {criteria { frequency <freq> | size <size-mb>| size-pct <size-percentage>} | force | max-number <number-of-files>}

Sets the rotation criteria of the logging files.

Syntax Description	freq	Sets rotation criteria according to time. Possible options are: • Daily • Weekly • Monthly
	size-mb	Sets rotation criteria according to size in mega bytes. The range is 1-9999.
	size-percentage	Sets rotation criteria according to size in percentage of the partition where the logging files are kept in. The percentage given is truncated to three decimal points (thousandths of a percent).
	force	Forces an immediate rotation of the log files. This does not affect the schedule of auto-rotation if it was done based on time: the next automatic rotation will still occur at the same time for which it was previously scheduled. Naturally, if the auto-rotation was based on size, this will delay it somewhat as it reduces the size of the active log file to zero.
	number-of-files	The number of log files will be kept. If the number of log files ever exceeds this number (either at rotation time, or when this setting is lowered), the system will delete as many files as necessary to bring it down to this number, starting with the oldest.
Default	10 files are kept by default with rotation criteria of 5% of the log partition size	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # logging files rotation criteria size-pct 6`
	`switch (config) # show logging`
	`Local logging level: info`
	`  Override for class mgmt-front: warning`
	`Default remote logging level: notice`
	`No remote syslog servers configured.`
	`Allow receiving of messages from remote hosts: no`
	`Number of archived log files to keep: 10`
	`Log rotation size threshold: 6.000% of partition (51.60 megabytes)`
	`Log format: standard`
	`Subsecond timestamp field: enabled`
	`Subsecond timestamp precision: 1 whole digit; 3 fractional digits`
	`Levels at which messages are logged:`
	`  CLI commands: info`
	`  Audit messages: notice`
	`switch (config)`

Related Commands	show logging show log files
Note	

logging files upload

logging files upload {current | <file-number>} <url>

Uploads a log file to a remote host.

Syntax Description	current	The current log file. The current log file will have the name “messages” if you do not specify a new name for it in the upload URL.
	file-number	An archived log file. The archived log file will have the name “messages<n>.gz” (while “n” is the file number) if you do not specify a new name for it in the upload URL. The file will be compressed with gzip.
	url	Uplaods URL path. FTP, TFTP, SCP, and SFTP are supported. For example: scp://username[:password]@hostname/path/filename.
Default	10 files are kept by default with rotation criteria of 5% of the log partition size	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # logging files uplaod 1 scp://admin@scpserver`	
Related Commands	show logging show log files	
Note		

logging monitor

logging monitor <facility> <priority-level>
no logging monitor <facility> <priority-level>

Sets monitor log facility and level to print to the terminal.
The no form of the command disables printing logs of facilities to the terminal.

Syntax Description	facility	• mgmt-front • mgmt-back • mgmt-core • events • sx-sdk • mlnx-daemons • iss-modules
	priority-level	• none • emerg • alert • crit • err • warming • notice • info • debug
Default	no logging monitor	
Configuration Mode	Config	
History	3.3.4000	
Role	admin	
Example	`switch (config) # logging monitor events notice` `switch (config) #`	
Related Commands		
Note		

show logging

show logging

Displays the logging configurations.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.0000
Role	admin

Example	`switch (config) # show logging`
	`Local logging level: info`
	`  Override for class mgmt-front: warning`
	`Default remote logging level: notice`
	`No remote syslog servers configured.`
	`Allow receiving of messages from remote hosts: no`
	`Number of archived log files to keep: 10`
	`Log rotation size threshold: 5.000% of partition (43 megabytes)`
	`Log format: standard`
	`Subsecond timestamp field: enabled`
	`Subsecond timestamp precision: 1 whole digit; 3 fractional digits`
	`Levels at which messages are logged:`
	`  CLI commands: info`
	`  Audit messages: notice`
	`switch (config) #`

Related Commands	logging fields logging files rotation logging level logging local logging receive logging <syslog IP address>
Note	

show log

show log [continues | files [<file-number>]] [[not] matching <reg-exp>]

Displays the log file with optional filter criteria.

Syntax Description	continues	Displays the last few lines of the current log file and then continues to display new lines as they come in until the user hits Ctrl+C, similar to LINUX “tail” utility.
	files	Displays the list of log files.
	<file-number>	Displays an archived log file, where the number may range from 1 up to the number of archived log files available.
	[not] matching <reg-exp>	The file is piped through a LINUX “grep” utility to only include lines either matching, or not matching, the provided regular expression.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # show log matching INFO
Feb  1 10:57:04 switch clusterd[2659]: [4.193] [clusterd.INFO]: master
browse reply: add service 0x20000 mxyzzy--0002c95ea5d8
_tms_cluster._tcp. local.
Feb  1 10:57:04 switch clusterd[2659]: [4.199] [clusterd.INFO]: master
resolve reply via browse: name mxyzzy--0002c95ea5d8 type
_tms_cluster._tcp. domain local. addr 172.30.2.2 port 60102 ifindex 1
31072
Feb  1 10:57:07 switch SX[2785]: TID 1208106288: [7.746] [hwd.INFO]:
hwd_kernel_interrupt_sim: Entry
Feb  1 10:57:07 switch SX[2785]: TID 1208106288: [7.747] [hwd.INFO]:
hwd_kernel_interrupt_sim: err=0
Feb  1 10:57:07 switch mgmtd[2599]: [7.748] [mgmtd.INFO]: Handling
EVENT request (session 26)
Feb  1 10:57:07 switch mgmtd[2599]: [7.749] [mgmtd.INFO]: EVENT:  /sys-
tem/chassis/events/hw-isr-event
Feb  1 10:57:07 switch mgmtd[2599]: [7.750] [mgmtd.INFO]: EVENT: [0]
mask = 0 (uint32)
Feb  1 10:57:07 switch health[2900]: TID 1208104656: [7.751]
[health.INFO]: Received ISR event with mask 0
Feb  1 10:57:07 switch mgmtd[2599]: [7.754] [mgmtd.INFO]: Sending
externally: type event session 36 id 1732128
Feb  1 10:57:07 switch mgmtd[2599]: [7.755] [mgmtd.INFO]: Event sent by
user i:2785-0-0 has been handled
switch (config) #
```

Related Commands	logging fields logging files rotation logging level logging local logging receive logging <syslog IP address> show logging
Note	

2.7 Maintenance Tools

reload

reload [force | halt [noconfirm] | noconfirm]

Reboots or shuts down the system.

Syntax Description	force	Forces an immediate reboot of the system even if the system is busy.
	halt	Shuts down the system.
	noconfirm	Reboots the system without asking about unsaved changes.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # reload`
	`Configuration has been modified; save first? [yes] yes`
	`Configuration changes saved.`
	`...`
	`switch (config) #`	

Related Commands	reset factory	
Note		

2.8 mDNS

ha dns enable

ha dns enable
no ha dns enable

Allows mDNS traffic.
The no form of the command blocks mDNS traffic from being sent from mgmt0.

Syntax Description	N/A
Default	Enabled.
Configuration Mode	Config
History	3.3.4000
Role	admin
Example	`switch (config) # no ha dns enable` `switch (config) #`
Related Commands	
Note	

2.9 User Management and AAA

2.9.1 User Accounts

username

username <username> [capability <cap> | disable [login | password] | full-name <name> | nopassword | password [0 | 7] <password>]
no username <username> [capability | disable [login | password] | full-name]

Creates a user and sets its capabilities, password and name.
The no form of the command deletes the user configuration.

Syntax Description	username	Specifies a username and creates a user account. New users are created initially with admin privileges but is disabled.
	cap	User capabilities: • admin - full administrative capabilities • monitor - read only capabilities and actions, can not change the running configuration
	disable [login | password]	• Disable - disable this account • Disable login - disable all logins to this account • Disable password - disable login to this account using a local password
	name	Full name of the user.
	nopassword	The next login of the user will not require password.
	0 | 7	• 0: specifies a login password in cleartext • 7: specifies a login password in encrypted text
	password	Specifies a password for the user in string form. If [0 | 7] was not specified then the password is in cleartext.
Default	The following usersnames are available by default: • admin • monitor • xmladmin • xmluser	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # username monitor full-name smith`
	`switch (config) # show usernames`
	`USERNAME FULL NAME CAPABILITY ACCOUNT STATUS`
	`USERID System Administrator admin Password set`
	`admin System Administrator admin Password set`
	`monitor smith monitor Password set`
	`xmladmin XML Admin User admin No password required`
	`xmluser XML Monitor User monitor No password required`
	`switch (config) #`	

Related Commands	show usernames show users
Note	• To enable a user account, just set a password on it (or use the "... nopassword" command to enable it with no password required for login) • Removing a user account does not terminate any current sessions that user has open; it just prevents new sessions from being established • Encrypted password is useful for the "show configuration" command, since the cleartext password cannot be recovered after it is set

show usernames

show usernames

Displays list of users and their capabilities.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.0000
Role	admin

Example	`switch (config) # show usernames`
	`USERNAME FULL NAME CAPABILITY ACCOUNT STATUS`
	`USERID System Administrator admin Password set`
	`admin System Administrator admin Password set`
	`monitor smith monitor Password set`
	`xmladmin XML Admin User admin No password required`
	`xmluser XML Monitor User monitor No password required`
	`switch (config) #`

Related Commands	username show users
Note	

show users

show users [history]

Displays logged in users and related information such as idle time and what host they have connected from.

Syntax Description	history	Displays current and historical sessions.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show users`
	`USERNAME  FULL NAME  LINE  HOST  IDLE`
	`admin  System Administrator  pts/0  172.22.237.174  0d0h34m4s`
	`admin  System Administrator  pts/1  172.30.0.127  1d3h30m49s`
	`admin  System Administrator  pts/3  172.22.237.34  0d0h0m0s`
	`switch (config) #show users history`
	`admin  pts/3 172.22.237.34  Wed Feb  1 11:56  still logged in`
	`admin  pts/3 172.22.237.34  Wed Feb  1 11:42 - 11:46  (00:04)`
	
	`wtmp begins Wed Feb  1 11:38:10 2012`
	`switch (config) #`	

Related Commands	username show usernames	
Note		

show whoami

show whoami

Displays username and capabilities of user currently logged in.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.0000
Role	admin

Example	`switch (config) # show whoami`
	`Current user: admin`
	`Capabilities: admin`
	`switch (config) #`

Related Commands	username show usernames show users
Note	

2.9.2 AAA Methods

aaa accounting

aaa accounting changes default stop-only tacacs+
no aaa accounting changes default stop-only tacacs+

Enables logging of system changes to an AAA accounting server.
The no form of the command disables the accounting.

Syntax Description	N/A	
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	Initial version
	3.2.3000	Removed 'time' parameter from the command.
Role	admin	

Example

```
switch (config) # aaa accounting changes default stop-only tacacs+
switch (config) # show aaa
AAA authorization:
   Default User: admin
   Map Order: local-only
Authentication method(s):
   local
   radius
   tacacs+
   ldap
Accounting method(s):
   tacacs+
switch (config) #
```

Related Commands: show aaa

Note

- TACACS+ is presently the only accounting service method supported
- Change accounting covers both configuration changes and system actions that are visible under audit logging, however this feature operates independently of audit logging, so it is unaffected by the "logging level audit mgmt" or "configuration audit" commands
- Configured TACACS+ servers are contacted in the order in which they appear in the configuration until one accepts the accounting data, or the server list is exhausted
- Despite the name of the "stop-only" keyword, which indicates that this feature logs a TACACS+ accounting "stop" message, and in contrast to configuration change accounting, which happens after configuration database changes, system actions are logged when the action is started, not when the action has completed

aaa authentication login

aaa authentication login default <auth method> [<auth method> [<auth method> [<auth method> [<auth method>]]]]
no aaa authentication login

Sets a sequence of authentication methods. Up to four methods can be configured. The no form of the command resets the configuration to its default.

Syntax Description	auth-method	• local • radius • tacacs+ • ldap
Default	local	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example	`switch (config) # aaa authentication login default local radius tacacs+ ldap`
	`switch (config) # show aaa`
	`AAA authorization:`
	`  Default User: admin`
	`  Map Order: local-only`
	`Authentication method(s):`
	`  local`
	`  radius`
	`  tacacs+`
	`  ldap`
	`Accounting method(s):`
	`  tacacs+`
	`switch (config) #`	

Related Commands	show aaa	
Note	The order in which the methods are specified is the order in which the authentication is attempted. It is required that “local” is one of the methods selected. It is recommended that “local” be listed first to avoid potential problems logging in to local accounts in the face of network or remote server issues.	

aaa authentication attempts track enable

aaa authentication attempts track enable
no aaa authentication attempts track enable

Enables tracking of authentication failures.
The no form of the command disables tracking of authentication failures.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.2.3000
Role	admin
Example	`switch (config) # aaa authentication attempts track enable`
Related Commands	N/A
Note	• This is required for the lockout functionality described below, but can also be used on its own for informational purposes. • Disabling tracking does not clear any records of past authentication failures, or the locks in the database. However, it does prevent any updates to this database from being made: no new failures are recorded. It also disables lockout, preventing new lockouts from being recorded and existing lockouts from being enforced.

aaa authentication attempts lockout

aaa authentication attempts lockout {enable | lock-time | max-fail | unlock-time}
no aaa authentication attempts lockout {enable | lock-time | max-fail | unlock-time}

Configures lockout of accounts based on failed authentication attempts.
The no form of the command clears configuration for lockout of accounts based on failed authentication attempts.

Syntax Description	enable	Enables locking out of user accounts based on authentication failures. This both suspends enforcement of any existing lockouts, and prevents any new lockouts from being recorded. If lockouts are later re-enabled, any lockouts that had been recorded previously resume being enforced; but accounts which have passed the max-fail limit in the meantime are NOT automatically locked at this time. They would be permitted one more attempt, and then locked, because of how the locking is done: lockouts are applied after an authentication failure, if the user has surpassed the threshold at that time. Lockouts only work if tracking is enabled. Enabling lockouts automatically enables tracking. Disabling tracking automatically disables lockouts.
	lock-time	Sets maximum permitted consecutive authentication failures before locking out users. Unlike the “max-fail” setting, this does take effect immediately for all accounts If both unlock-time and lock-time are set, the unlock-time must be greater than the lock-time This is not based on the number of consecutive failures, and is therefore divorced from most of the rest of the tally feature, except for the tracking of the last login failure
	max-fail	Sets maximum permitted consecutive authentication failures before locking out users. This setting only impacts what lockouts are imposed while the setting is active; it is not retroactive to previous logins. So if max-fail is disabled or changed, this does not immediately cause any users to be changed from locked to unlocked or vice-versa.
	unlock-time	Enables the auto-unlock of an account after a specified number of seconds if a user account is locked due to authentication failures, counting from the last valid login attempt. Unlike the “max-fail” setting, this does take effect immediately for all accounts. If both unlock-time and lock-time are set, the unlock-time must be greater than the lock-time. Careful with disabling the unlock-time, particularly if you have max-fail set to something, and have not overridden the behavior for the admin (i.e. they are subject to lockouts also). If the admin account gets locked out, and there are no other administrators who can aid, the user may be forced to boot single-user and use the pam_tallybyname command-line utility to unlock your account manually. Even if one is careful not to incur this many authentication failures, it makes the system more subject to DOS attacks.

Default	N/A
Configuration Mode	Config
History	3.2.3000
Role	admin
Example	`switch (config) # aaa authentication attempts lockout enable`
Related Commands	N/A
Note	

aaa authentication attempts class-override

aaa authentication attempts class-override {admin [no-lockout] | unknown {no-track | hash-username}}
no aaa authentication attempts class-override {admin | unknown {no-track | hash-username}}

Overrides the global settings for tracking and lockouts for a type of account.
The no form of the command removes this override and lets the admin be handled according to the global settings.

Syntax Description	admin	Overrides the global settings for tracking and lockouts for the admin account. This applies only to the single account with the username "admin". It does not apply to any other users with administrative privileges.
	no-lockout	Prevents the admin user from being locked out, though the authentication failure history is still tracked (if tracking is enabled overall).
	unknown	Overrides the global settings for tracking and lockouts for unknown accounts. The "unknown" class here contains the following categories: • Real remote usernames which simply failed authentication • Mis-typed remote usernames • Passwords accidentally entered as usernames • Bogus usernames made up as part of an attack on the system
	hash-username	Applies a hash function to the username, and stores the hashed result in lieu of the original.
	no-track	Does not track authentication for such users (which of course also implies no-lockout).
Default	N/A	
Configuration Mode	Config	
History	3.2.3000	
Role	admin	
Example	`switch (config) # aaa authentication attempts class-override admin no-lockout`	
Related Commands	N/A	
Note		

aaa authentication attempts reset

aaa authentication attempts reset {all | user <username>} [{no-clear-history | no-unlock}]

Clears the authentication history for and/or unlocks specified users.

Syntax Description	all	Applies function to all users.
	user	Applies function to specified user.
	no-clear-history	Leaves the history of login failures but unlocks the account.
	no-unlock	Leaves the account locked but clears the history of login failures.
Default	N/A	
Configuration Mode	Config	
History	3.2.3000	
Role	admin	
Example	`switch (config) # aaa authentication attempts reset user admin all`	
Related Commands	N/A	
Note		

clear aaa authentication attempts

clear aaa authentication attempts {all | user <username>} [no-clear-history | no-unlock]

Clears the authentication history for and/or unlocks specified users

Syntax Description	all	Applies function to all users.
	user	Applies function to specified user.
	no-clear-history	Clears the history of login failures.
	no-unlock	Unlocks the account.
Default	N/A	
Configuration Mode	Config	
History	3.2.3000	
Role	admin	
Example	`switch (config) # aaa authentication attempts reset user admin no-clear-history`	
Related Commands	N/A	
Note		

aaa authorization

aaa authorization map [default-user <username> | order <policy>]
no aaa authorization map [default-user | order]

Sets the mapping permissions of a user in case a remote authentication is done. The no form of the command resets the attributes to default.

Syntax Description	username	Specifies what local account the authenticated user will be logged on as when a user is authenticated (via RADIUS or TACACS+) and does not have a local account. If the username is local, this mapping is ignored.
	policy	Sets the user mapping behavior when authenticating users via RADIUS or TACACS+ to one of three choices. The order determines how the remote user mapping behaves. If the authenticated username is valid locally, no mapping is performed. The setting has the following three possible behaviors: • remote-first - If a local-user mapping attribute is returned and it is a valid local username, it maps the authenticated user to the local user specified in the attribute. Otherwise, it uses the user specified by the default-user command. • remote-only - Maps a remote authenticated user if the authentication server sends a local-user mapping attribute. If the attribute does not specify a valid local user, no further mapping is tried. • local-only - Maps all remote users to the user specified by the “aaa authorization map default-user <user name>” command. Any vendor attributes received by an authentication server are ignored.
Default	Default user - admin. Map order - remote-first.	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # aaa authorization map default-user admin`
	`switch (config) # show aaa`
	`AAA authorization:`
	`  Default User: admin`
	`  Map Order: remote-first`
	`Authentication method(s):`
	`  local`
	`Accounting method(s):`
	`  tacacs+`
	`switch (config) #`	

Related Commands	show aaa username
Note	If, for example, the user is locally defined to have admin permission, but in a remote server such as RADIUS the user is authenticated as monitor and the order is remote-first, then the user will be given monitor permissions.

show aaa

show aaa

Displays the AAA configuration.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.0000
Role	admin

Example	`switch (config) # show aaa`
	`AAA authorization:`
	`  Default User: admin`
	`  Map Order: remote-first`
	`Authentication method(s):`
	`  local`
	`Accounting method(s):`
	`  tacacs+`
	`switch (config) #`

Related Commands	aaa accounting aaa authentication aaa authorization show aaa show usernames username
Note	

show aaa authentication attempts

show aaa authentication attempts [configured | status user <username>]]

Shows the current authentication, authorization and accounting settings.

Syntax Description	authentication attempts	Displays configuration and history of authentication failures.
	configured	Displays configuration of authentication failure tracking.
	status user	Displays status of authentication failure tracking and lockouts for specific user.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.2.1000	
Role	admin	

Example

```
switch (config) # show aaa authentication attempts
Configuration for authentication failure tracking and locking:
   Track authentication failures:                   yes
   Lock accounts based on authentication failures:  yes
   Override treatment of 'admin' user:              (none)
   Override treatment of unknown usernames:         hash-usernames

Configuration for lockouts based on authentication failures:
   Lock account after consecutive auth failures:    5
   Allow retry on locked accounts (unlock time):    after 15 second(s)
   Temp lock after each auth failure (lock time):   none

Username         Known  Locked  Failures  Last fail time      Last fail
from
--------          -----  ------  --------  --------------       -------
-------
0Q72B43EHBKT8CB5AF5PGRX3U3B3TUL4CYJP93N(*) no     no         1     2012/
08/20 14:29:19  ttyS0

(*) Hashed for security reasons
switch-627d3c [standalone: master] (config) #
switch (config) #
```

Related Commands	N/A
Note	

2.9.3 RADIUS

radius-server

radius-server {key <secret>| retransmit <retries> | timeout <seconds>}
no radius-server {key | retransmit | timeout}

Sets global RADIUS server attributes.
The no form of the command resets the attributes to their default values.

Syntax Description	secret	Sets a secret key (shared hidden text string), known to the system and to the RADIUS server.
	retries	Number of retries (0-5) before exhausting from the authentication.
	seconds	Timeout in seconds between each retry (1-60).
Default	3 seconds, 1 retry	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) #radius-server retransmit 3`
	`switch (config) # show radius`
	`RADIUS defaults:`
	`  Key:  3333`
	`  Timeout:  3`
	`  Retransmit:  1`
	`No RADIUS servers configured.`
	`switch (config) #`	

Related Commands	aaa authorization radius-server host show radius	
Note	Each RADIUS server can override those global parameters using the command “radius-server host”.	

radius-server host

radius-server host <IP address> {enable | auth-port <port> | key <secret>| retransmit <retries> | timeout <seconds>}
no radius-server host <IP address> {enable | auth-port }

Configures RADIUS server attributes.
The no form of the command resets the attributes to their default values and deletes the RADIUS server.

Syntax Description	IP address	RADIUS server IP address.
	enable	Administrative enable of the RADIUS server.
	port	RADIUS server UDP port number.
	secret	Sets a secret key (shared hidden text string), known to the system and to the RADIUS server.
	retries	Number of retries (0-5) before exhausting from the authentication.
	seconds	Timeout in seconds between each retry (1-60).
Default	3 seconds, 1 retry Default UDP port is 1812	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # radius-server host 40.40.40.40
switch (config) # show radius
RADIUS defaults:
    Key:             3333
    Timeout:         3
    Retransmit:      1
RADIUS servers:
   40.40.40.40:1812
      Enabled:         yes
      Key:             3333 (default)
      Timeout:         3 (default)
      Retransmit:      1 (default)
switch (config) #
```

Related Commands

aaa authorization
radius-server
show radius

Note

- RADIUS servers are tried in the order they are configured
- If you do not specify a parameter for this configured RADIUS server, the configuration will be taken from the global RADIUS server configuration. Refer to “radius-server” command.

show radius

show radius

Displays RADIUS configurations.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.0000
Role	admin

Example	`switch (config) # show radius`
	`RADIUS defaults:`
	`  Key:  3333`
	`  Timeout:  3`
	`  Retransmit:  1`
	`RADIUS servers:`
	`  40.40.40.40:1812`
	`  Enabled:  yes`
	`  Key:  3333 (default)`
	`  Timeout:  3 (default)`
	`  Retransmit:  1 (default)`
	`switch (config) #`

Related Commands	aaa authorization radius-server radius-server host
Note	

2.9.4 TACACS+

tacacs-server

tacacs-server {key <secret>| retransmit <retries> | timeout <seconds>}
no tacacs-server {key | retransmit | timeout}

Sets global TACACS+ server attributes.
The no form of the command resets the attributes to default values.

Syntax Description	secret	Set a secret key (shared hidden text string), known to the system and to the TACACS+ server.
	retries	Number of retries (0-5) before exhausting from the authentication.
	seconds	Timeout in seconds between each retry (1-60).
Default	3 seconds, 1 retry	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) #tacacs-server retransmit 3`
	`switch (config) # show tacacs`
	`TACACS+ defaults:`
	`  Key:  3333`
	`  Timeout:  3`
	`  Retransmit:  1`
	`No TACACS+ servers configured.`
	`switch (config) #`	

Related Commands	aaa authorization show radius show tacacs tacacs-server host	
Note	Each TACACS+ server can override those global parameters using the command “tacacs-server host”.	

tacacs-server host

tacacs-server host <IP address> {enable | auth-port <port> | auth-type <type> | key <secret> | retransmit <retries> | timeout <seconds>}
no tacacs-server host <IP address> {enable | auth-port}

Configures TACACS+ server attributes.
The no form of the command resets the attributes to their default values and deletes the TACACS+ server.

Syntax Description	IP address	TACACS+ server IP address.
	enable	Administrative enable for the TACACS+ server.
	port	TACACS+ server UDP port number.
	type	Authentication type. Possible values are: • ASCII • PAP (Password Authentication Protocol)
	secret	Sets a secret key (shared hidden text string), known to the system and to the TACACS+ server.
	retries	Number of retries (0-5) before exhausting from the authentication.
	seconds	Timeout in seconds between each retry (1-60).
Default	3 seconds, 1 retry Default TCP port is 49 Default auth-type is PAP	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # tacacs-server host 40.40.40.40
switch (config) # show tacacs
TACACS+ defaults:
    Key:              3333
    Timeout:          3
    Retransmit:       1
TACACS+ servers:
   40.40.40.40:49
      Enabled:          yes
      Auth-type          PAP
      Key:              3333 (default)
      Timeout:          3 (default)
      Retransmit:       1 (default)
switch (config) #
```

Related Commands	aaa authorization show tacacs tacacs-server
Note	• TACACS+ servers are tried in the order they are configured • A PAP auth-type similar to an ASCII login, except that the username and password arrive at the network access server in a PAP protocol packet instead of being typed in by the user, so the user is not prompted • If the user does not specify a parameter for this configured TACACS+ server, the configuration will be taken from the global TACACS+ server configuration. Refer to “tacacs-server” command.

show tacacs

show tacacs

Displays TACACS+ configurations.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.0000
Role	admin

Example	`switch (config) # show tacacs`
	`TACACS+ defaults:`
	`  Key:  3333`
	`  Timeout:  3`
	`  Retransmit:  1`
	`TACACS+ servers:`
	`  40.40.40.40:49`
	`  Enabled:  yes`
	`  Auth-type  PAP`
	`  Key:  3333 (default)`
	`  Timeout:  3 (default)`
	`  Retransmit:  1 (default)`
	`switch (config) #`

Related Commands	aaa authorization tacacs-server tacacs-server host
Note	

2.9.5 LDAP

ldap base-dn

ldap base-dn <string>
no ldap base-dn

Sets the base distinguished name (location) of the user information in the schema of the LDAP server.
The no form of the command resets the attribute to its default values.

Syntax Description	string	A case-sensitive string that specifies the location in the LDAP hierarchy where the server should begin searching when it receives an authorization request. For example: “ou=users,dc=example,dc=com”, with no spaces. when: ou - Organizational unit dc - Domain component cn - Common name sn - Surname
Default	ou=users,dc=example,dc=com	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # ldap base-dn ou=department,dc=example,dc=com
switch (config) # show ldap
User base DN      : ou=department,dc=example,dc=com
User search scope : subtree
Login attribute   : sAMAccountName
Bind DN           :
Bind password     :
Group base DN     :
Group attribute   : member
LDAP version      : 3
Referrals         : yes
Server port       : 389
Search Timeout    : 5
Bind Timeout      : 5
SSL mode          : none
Server SSL port   : 636 (not active)
SSL cert verify   : yes

LDAP servers:
  1: 10.10.10.10
  2: 10.10.10.12
switch (config) #
```

Related Commands	show ldap
Note	

ldap bind-dn/bind-password

ldap {bind-dn | bind-password} <string>
no ldap {bind-dn | bind-password}

Gives the distinguished name or password to bind to on the LDAP server. This can be left empty for anonymous login (the default).
The no form of the command resets the attribute to its default values.

Syntax Description	string	A case-sensitive string that specifies distinguished name or password to bind to on the LDAP server.
Default	“”	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # ldap bind-dn my-dn
switch (config) # ldap bind-password my-password
switch (config) # show ldap
User base DN      : ou=department,dc=example,dc=com
User search scope : subtree
Login attribute   : sAMAccountName
Bind DN           : my-dn
Bind password     : my-password
Group base DN     :
Group attribute   : member
LDAP version      : 3
Referrals         : yes
Server port       : 389
Search Timeout    : 5
Bind Timeout      : 5
SSL mode          : none
Server SSL port   : 636 (not active)
SSL cert verify   : yes

LDAP servers:
  1: 10.10.10.10
  2: 10.10.10.12
switch (config) #
```

Related Commands	show ldap
Note	For anonymous login, bind-dn and bind-password should be empty strings “”.

ldap group-attribute/group-dn

ldap {group-attribute {<group-att> |member | uniqueMember} | group-dn <group-dn>}
no ldap {group-attribute | group-dn}

Sets the distinguished name or attribute name of a group on the LDAP server. The no form of the command resets the attribute to its default values.

Syntax Description	group-att	Specifies a custom attribute name.
	member	groupOfNames or group membership attribute.
	uniqueMember	groupOfUniqueNames membership attribute.
	group-dn	DN of group required for authorization.
Default	group-att: member group-dn: “”	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # ldap group-attribute member
switch (config) # ldap group-dn my-group-dn
switch (config) # show ldap
User base DN      : ou=department,dc=example,dc=com
User search scope : subtree
Login attribute   : sAMAccountName
Bind DN           : my-dn
Bind password     : my-password
Group base DN     : my-group-dn
Group attribute   : member
LDAP version      : 3
Referrals         : yes
Server port       : 389
Search Timeout    : 5
Bind Timeout      : 5
SSL mode          : none
Server SSL port   : 636 (not active)
SSL cert verify   : yes

LDAP servers:
  1: 10.10.10.10
  2: 10.10.10.12
switch (config) #
```

Related Commands show ldap

Note

- The user's distinguished name must be listed as one of the values of this attribute, or the user will not be authorized to log in
- After login authentication, if the group-dn is set, a user must be a member of this group or the user will not be authorized to log in. If the group is not set (“” - the default) no authorization checks are done.

ldap host

ldap host <IP Address> [order <number> last]
no ldap host <IP Address>

Adds an LDAP server to the set of servers used for authentication.
The no form of the command deletes the LDAP host.

Syntax Description	IP Address	IPv4 or IPv6 address.
	number	The order of the LDAP server.
	last	The LDAP server will be added in the last location.
Default	No hosts configured	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # ldap host 10.10.10.10
switch (config) # show ldap
User base DN      : ou=department,dc=example,dc=com
User search scope : subtree
Login attribute   : sAMAccountName
Bind DN           : my-dn
Bind password     : my-password
Group base DN     : my-group-dn
Group attribute   : member
LDAP version      : 3
Referrals         : yes
Server port       : 389
Search Timeout    : 5
Bind Timeout      : 5
SSL mode          : none
Server SSL port   : 636 (not active)
SSL cert verify   : yes

LDAP servers:
  1: 10.10.10.10
  2: 10.10.10.12
switch (config) #
```

Related Commands

show aaa
show ldap

Note

- The system will select the LDAP host to try according to its order
- New servers are by default added at the end of the list of servers

ldap login-attribute

ldap login-attribute {<string> | uid | sAMAccountName}
no ldap login-attribute

Sets the attribute name which contains the login name of the user.
The no form of the command resets this attribute to its default.

Syntax Description	string	Custom attribute name.
	uid	LDAP login name is taken from the user login user-name.
	sAMAccountName	SAM Account name, active directory login name.
Default	sAMAccountName	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example		

```
switch (config) # ldap login-attribute uid
switch (config) # show ldap
User base DN      : ou=department,dc=example,dc=com
User search scope : subtree
Login attribute   : uid
Bind DN           : my-dn
Bind password     : my-password
Group base DN     : my-group-dn
Group attribute   : member
LDAP version      : 3
Referrals         : yes
Server port       : 389
Search Timeout    : 5
Bind Timeout      : 5
SSL mode          : none
Server SSL port   : 636 (not active)
SSL cert verify   : yes

LDAP servers:
  1: 10.10.10.10
  2: 10.10.10.12
switch (config) #
```

Related Commands	show aaa show ldap
Note	

ldap port

ldap port <port>
no ldap port

Sets the TCP port on the LDAP server to connect to for authentication.
The no form of the command resets this attribute to its default value.

Syntax Description	port	TCP port number.
Default	389	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # ldap port 1111
switch (config) # show ldap
User base DN      : ou=department,dc=example,dc=com
User search scope : subtree
Login attribute   : uid
Bind DN           : my-dn
Bind password     : my-password
Group base DN     : my-group-dn
Group attribute   : member
LDAP version      : 3
Referrals         : yes
Server port       : 1111
Search Timeout    : 5
Bind Timeout      : 5
SSL mode          : none
Server SSL port   : 636 (not active)
SSL cert verify   : yes

LDAP servers:
  1: 10.10.10.10
  2: 10.10.10.12
switch (config) #
```

Related Commands

show aaa
show ldap

Note

ldap referrals

ldap referrals
no ldap referrals

Enables LDAP referrals.
The no form of the command disables LDAP referrals.

Syntax Description	N/A
Default	LDAP referrals are enabled
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # no ldap referrals`
	`switch (config) # show ldap`
	`User base DN : ou=department,dc=example,dc=com`
	`User search scope : subtree`
	`Login attribute : uid`
	`Bind DN : my-dn`
	`Bind password : my-password`
	`Group base DN : my-group-dn`
	`Group attribute : member`
	`LDAP version : 3`
	`Referrals : no`
	`Server port : 1111`
	`Search Timeout : 5`
	`Bind Timeout : 5`
	`SSL mode : none`
	`Server SSL port : 636 (not active)`
	`SSL cert verify : yes`
	
	`LDAP servers:`
	`1: 10.10.10.10`
	`2: 10.10.10.12`
	`switch (config) #`

Related Commands	show aaa show ldap
Note	Referral is the process by which an LDAP server, instead of returning a result, will return a referral (a reference) to another LDAP server which may contain further information.

ldap scope

ldap scope <scope>
no ldap scope

Specifies the extent of the search in the LDAP hierarchy that the server should make when it receives an authorization request.
The no form of the command resets the attribute to its default value.

Syntax Description	scope	• one-level - searches the immediate children of the base dn • subtree - searches at the base DN and all its children
Default	subtree	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # ldap scope subtree
switch (config) # show ldap
User base DN      : ou=department,dc=example,dc=com
User search scope : subtree
Login attribute   : uid
Bind DN           : my-dn
Bind password     : my-password
Group base DN     : my-group-dn
Group attribute   : member
LDAP version      : 3
Referrals         : no
Server port       : 1111
Search Timeout    : 5
Bind Timeout      : 5
SSL mode          : none
Server SSL port   : 636 (not active)
SSL cert verify   : yes

LDAP servers:
  1: 10.10.10.10
  2: 10.10.10.12
switch (config) #
```

Related Commands

show aaa
show ldap

Note

ldap ssl

ldap ssl {ca-list <options> | cert-verify | mode <mode>| port <port-number>}
no ldap ssl {cert-verify | mode | port}

Sets SSL parameter for LDAP.
The no form of the command resets the attribute to its default value.

Syntax Description	options	This command specifies the list of supplemental certificates of authority (CAs) from the certificate configuration database that is to be used by LDAP for authentication of servers when in TLS or SSL mode. The options are: • default-ca-list - uses default supplemental CA certificate list • none - no supplemental list, uses the built-in one only CA certificates are ignored if "ldap ssl mode" is not configured as either "tls" or "ssl", or if "no ldap ssl cert-verify" is configured. The default-ca-list is empty in the factory default configuration. Use the command: "crypto certificate ca-list default-ca-list name" to add trusted certificates to that list. The "default-ca-list" option requires LDAP to consult the system's configured global default CA-list for supplemental certificates.
	cert-verify	Enables verification of SSL/TLS server certificates. This may be required if the server's certificate is self-signed, or does not match the name of the server.
	mode	Sets the security mode for connections to the LDAP server. • none - requests no encryption for the LDAP connection • ssl - the SSL-port configuration is used, an SSL connection is made before LDAP requests are sent (LDAP over SSL) • tls - the normal LDAP port is used, an LDAP connection is initiated, and then TLS is started on this existing connection
	port-number	Sets the port on the LDAP server to connect to for authentication when the SSL security mode is enabled (LDAP over SSL).
Default	cert-verify is enabled mode is none (LDAP SSL is not activated) port-number is 636	
Configuration Mode	Config	

History	3.1.0000	Initial version
	3.2.3000	Added ca-list argument.
Role	admin	
Example		

```
switch (config) # ldap ssl mode ssl
switch (config) # show ldap
User base DN      : ou=department,dc=example,dc=com
User search scope : subtree
Login attribute   : uid
Bind DN           : my-dn
Bind password     : my-password
Group base DN     : my-group-dn
Group attribute   : member
LDAP version      : 3
Referrals         : no
Server port       : 1111
Search Timeout    : 5
Bind Timeout      : 5
SSL mode          : ssl
Server SSL port   : 636
SSL cert verify   : yes

LDAP servers:
  1: 10.10.10.10
  2: 10.10.10.12
switch (config) #
```

Related Commands	show aaa show ldap
Note	• If available, the TLS mode is recommended, as it is standardized, and may also be of higher security • The port number is used only for SSL mode. In case the mode is TLS, the LDAP port number will be used.

ldap timeout

ldap {timeout-bind | timeout-search} <seconds>
no ldap {timeout-bind | timeout-search}

Sets a global communication timeout in seconds for all LDAP servers to specify the extent of the search in the LDAP hierarchy that the server should make when it receives an authorization request.
The no form of the command resets the attribute to its default value.

Syntax Description	timeout-bind	Sets the global LDAP bind timeout for all LDAP servers.
	timeout-search	Sets the global LDAP search timeout for all LDAP servers.
	seconds	1-60 seconds.
Default	5 seconds	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # ldap timeout-bind 10
switch (config) # show ldap
User base DN      : ou=department,dc=example,dc=com
User search scope : subtree
Login attribute   : uid
Bind DN           : my-dn
Bind password     : my-password
Group base DN     : my-group-dn
Group attribute   : member
LDAP version      : 3
Referrals         : no
Server port       : 1111
Search Timeout    : 5
Bind Timeout      : 10
SSL mode          : none
Server SSL port   : 636 (not active)
SSL cert verify   : yes

LDAP servers:
  1: 10.10.10.10
  2: 10.10.10.12
switch (config) #
```

Related Commands
show aaa
show ldap

Note

ldap version

ldap version <version>
no ldap version

Sets the LDAP version.
The no form of the command resets the attribute to its default value.

Syntax Description	version	Sets the LDAP version. Possible values are 2 and 3.
Default	3	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # ldap version 3`
	`switch (config) # show ldap`
	`User base DN : ou=department,dc=example,dc=com`
	`User search scope : subtree`
	`Login attribute : uid`
	`Bind DN : my-dn`
	`Bind password : my-password`
	`Group base DN : my-group-dn`
	`Group attribute : member`
	`LDAP version : 3`
	`Referrals : no`
	`Server port : 1111`
	`Search Timeout : 5`
	`Bind Timeout : 10`
	`SSL mode : none`
	`Server SSL port : 636 (not active)`
	`SSL cert verify : yes`
	
	`LDAP servers:`
	`1: 10.10.10.10`
	`2: 10.10.10.12`
	`switch (config) #`	

Related Commands	show aaa show ldap	
Note		

show ldap

show ldap

Displays LDAP configurations.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.0000
Role	admin

Example	`switch (config) # show ldap`
	`User base DN : ou=department,dc=example,dc=com`
	`User search scope : subtree`
	`Login attribute : uid`
	`Bind DN : my-dn`
	`Bind password : my-password`
	`Group base DN : my-group-dn`
	`Group attribute : member`
	`LDAP version : 3`
	`Referrals : no`
	`Server port : 1111`
	`Search Timeout : 5`
	`Bind Timeout : 10`
	`SSL mode : none`
	`Server SSL port : 636 (not active)`
	`SSL cert verify : yes`
	
	`LDAP servers:`
	`1: 10.10.10.10`
	`2: 10.10.10.12`
	`switch (config) #`

Related Commands	show aaa show ldap
Note	

2.10 Cryptographic (X.509, IPSec)

This chapter displays X.509 and IPSec related commands.

crypto ipsec peer local

crypto ipsec peer <IPv4 or IPv6 address> local <IPv4 or IPv6 address> {enable | keying {ike [auth {hmac-md5 | hmac-sha1 | hmac-sha256 | null} | dh-group | disable | encrypt | exchange-mode | lifetime | local | mode | peer-identity | pfs-group | preshared-key | prompt-preshared-key | transform-set] | manual [auth | disable | encrypt | local-spi | mode | remote-spi]}}

Configures ipsec in the system.

Syntax Description	enable	Enables IPSec peering.
	ike	Configures IPSec peering using IKE ISAKMP to manage SA keys. It has the following optional parameters: • auth: Configures the authentication algorithm for IPSec peering • dh-group: Configures the phase1 Diffie-Hellman group proposed for secure IKE key exchange • disable: Configures this IPSec peering administratively disabled • encrypt: Configures the encryption algorithm for IPSec peering • exchange-mode: Configures the IKE key exchange mode to propose for peering • lifetime: Configures the SA lifetime to propose for this IPSec peering • local-identity: Configures the ISAKMP payload identification value to send as local endpoint's identity • mode: Configures the peering mode for this IPSec peering • peer-identity: Configures the identification value to match against the peer's ISAKMP payload identification • pfs-group: Configures the phase2 PFS (Perfect Forwarding Secrecy) group to propose for Diffie-Hellman exchange for this IPSec peering • preshared-key: Configures the IKE pre-shared key for the IPSec peering • prompt-preshared-key: Prompts for the pre-shared key, rather than entering it on the command line • transform-set: Configures transform proposal parameters
	keying	Configures key management for this IPSec peering: • auth: Configures the authentication algorithm for this IPSec peering • disable: Configures this IPSec peering administratively disabled • encrypt: Configures the encryption algorithm for this IPSec peering • local-spi: Configures the local SPI for this manual IPSec peering • mode: Configures the peering mode for this IPSec peering • remote-spi: Configures the remote SPI for this manual IPSec peering
	manual	Configures IPSec peering using manual keys.
Default	N/A	
Configuration Mode	Config	
History	3.2.3000	
Role	admin	
Example	`switch (config)# crypto ipsec peer 10.10.10.10 local 10.7.34.139 enable` `switch (config)#`	

Related Commands	N/A
Note	

crypto certificate ca-list

crypto certificate ca-list [default-ca-list name {<cert-name> | system-self-signed}]
no crypto certificate ca-list [default-ca-list name {<cert-name> | system-self-signed}]

Adds the specified CA certificate to the default CA certificate list.
The no form of the command removes the certificate from the default CA certificate list.

Syntax Description	cert-name	The name of the certificate.
Default	N/A	
Configuration Mode	Config	
History	3.2.3000	
Role	admin	
Example	`switch (config) # crypto certificate default-cert name test`	
Related Commands	N/A	
Note	• Two certificates with the same subject and issuer fields cannot both be placed onto the CA list • The no form of the command does not delete the certificate from the certificate database • Unless specified otherwise, applications that use CA certificates will still consult the well-known certificate bundle before looking at the default-ca-list	

crypto certificate default-cert

crypto certificate default-cert name {<cert-name> | system-self-signed}
no crypto certificate default-cert name {<cert-name> | system-self-signed}

Designates the named certificate as the global default certificate role for authentication of this system to clients.
The no form of the command reverts the default-cert name to “system-self-signed” (the “cert-name” value is optional and ignored).

Syntax Description	cert-name	The name of the certificate.
Default	N/A	
Configuration Mode	Config	
History	3.2.3000	
Role	admin	
Example	`switch (config) # crypto certificate default-cert name test`	
Related Commands	N/A	
Note	• A certificate must already be defined before it can be configured in the default-cert role • If the named default-cert is deleted from the database, the default-cert automatically becomes reconfigured to the factory default, the “system-self-signed” certificate	

crypto certificate generation

crypto certificate generation default {country-code | days-valid | email-addr | key-size-bits | locality | org-unit | organization | state-or-prov}

Configures default values for certificate generation.

Syntax Description	country-code	Configures the default certificate value for country code with a two-alphanumeric-character code or -- for none.
	days-valid	Configures the default certificate value for days valid.
	email-addr	Configures the default certificate value for email address.
	key-size-bits	Configures the default certificate value for private key size. (Private key length in bits - at least 1024 but 2048 is strongly recommended.)
	locality	Configures the default certificate value for locality.
	org-unit	Configures the default certificate value for organizational unit.
	organization	Configures the default certificate value for the organization name.
	state-or-prov	Configures the default certificate value for state or province.
Default	N/A	
Configuration Mode	Config	
History	3.2.1000	
Role	admin	
Example	`switch (config) # crypto certificate generation default organization Mellanox`	
Related Commands	N/A	
Note		

crypto certificate name

crypto certificate name {<cert-name> | system-self-signed} {comment <new comment> | generate self-signed | private-key pem <PEM string> | public-cert [comment <comment string> | pem <PEM string>] | regenerate days-valid <days> | rename <new name>}
no crypto certificate name <cert-name>

Configures default values for certificate generation.
The no form of the command clears/deletes certain certificate settings.

Syntax Description	cert-name	Unique name by which the certificate is identified.
	comment	Specifies a certificate comment.
	generate	Generates certificates. This option has the following parameters: • comment: Includes a certificate comment (free string) • common-name: Specifies the common name of the issuer and subject (e.g. a domain name) • country-code: Specifies the country code (a two-alphanumeric-character country code, or "--" for none) • days-valid: Specifies the number of days the certificate is valid • email-addr: Specifies the email address • key-size-bits: Specifies the size of the private key in bits (private key length in bits - at least 1024 but 2048 is strongly recommended) • locality: Specifies the locality name • org-unit: Specifies the organizational unit name • organization: Specifies the organization name • serial-num: Specifies the serial number for the certificate (a lower-case hexadecimal serial number prefixed with "0x") • state-or-prov: Specifies the state or province name
	pem	Specifies certificate contents in PEM format.
	private-key	Adds a certificate private key in PEM format.
	public-cert	Installs a certificate.
	regenerate	Regenerates the named certificate using configured certificate generation default values for the specified validity period
	rename	Renames the certificate.
Default	N/A	
Configuration Mode	Config	
History	3.2.3000	
Role	admin	

Example	`switch (config) # crypto certificate name system-self-signed comment test`
Related Commands	N/A
Note	The certificate parameter of the no form of this command deletes the comment on the certificate.

crypto certificate system-self-signed

crypto certificate system-self-signed regenerate [days-valid <days>]

Configures default values for certificate generation.

Syntax Description	days-valid	Specifies the number of days the certificate is valid
Default	N/A	
Configuration Mode	Config	
History	3.2.1000	
Role	admin	
Example	`switch (config) # crypto certificate system-self-signed regenerate days-valid 3`	
Related Commands	N/A	
Note		

show crypto certificate

show crypto certificate [detail | public-pem | default-cert [detail | public-pem] | [name <cert-name> [detail | public-pem] | ca-list [default-ca-list]]

Displays information about all certificates in the certificate database.

Syntax Description	ca-list	Displays the list of supplemental certificates configured for the global default system CA certificate role.
	default-ca-list	Displays information about the currently configured default certificates of the CA list.
	default-cert	Displays information about the currently configured default certificate.
	detail	Displays all attributes related to the certificate.
	name	Displays information about the certificate specified.
	public-pem	Displays the uninterpreted public certificate as a PEM formatted data string
Default	N/A	
Configuration Mode	Config	
History	3.2.1000	
Role	admin	

Example

```
switch (config)# show crypto certificate
Certificate with name 'system-self-signed' (default-cert)
    Comment:                        system-generated self-signed certif-
icate
    Private Key:                    present
    Serial Number:                  0x546c935511bcafc21ac0e8249fbe0844
    SHA-1 Fingerprint:
fe6df38dd26801971cb2d44f62dbe492b6063c5f

    Validity:
        Starts:                     2012/12/02 13:45:05
        Expires:                    2013/12/02 13:45:05

    Subject:
        Common Name:                IBM-DEV-Bay4
        Country:                    IS
        State or Province:
        Locality:
        Organization:
        Organizational Unit:
        E-mail Address:

    Issuer:
        Common Name:                IBM-DEV-Bay4
        Country:                    IS
        State or Province:
        Locality:
        Organization:
        Organizational Unit:
        E-mail Address:
switch (config)#
```

Related Commands N/A

Note

show crypto ipsec

show crypto ipsec [brief | configured | ike | policy | sa]

Displays information ipsec configuration.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.2.1000
Role	admin

Example	`switch (config)# show crypto ipsec`
	`IPSec Summary`
	`-------------`
	`Crypto IKE is using pluto (Openswan) daemon.`
	`Daemon process state is stopped.`
	
	`No IPSec peers configured.`
	
	`IPSec IKE Peering State`
	`----------------------`
	`Crypto IKE is using pluto (Openswan) daemon.`
	`Daemon process state is stopped.`
	
	`No active IPSec IKE peers.`
	
	`IPSec Policy State`
	`------------------`
	`No active IPSec policies.`
	
	`IPSec Security Association State`
	`--------------------------------`
	`No active IPSec security associations.`
	`switch (config)#`

Related Commands	N/A
Note	

2.11 CLI Session

This chapter displays all the relevant commands used to manage CLI session terminal.

cli clear-history

cli clear-history

Clears the command history of the current user.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin
Example	`switch (config) # cli clear-history` `switch (config) #`
Related Commands	N/A
Note	

cli default

cli default {auto-logout <minutes> | paging enable | prefix-modes {enable | show-config} | progress enable | prompt {confirm-reload | confirm-reset | confirm-unsaved | empty-password}
no cli default {auto-logout | paging enable | prefix-modes {enable | show-config} | progress enable prompt {confirm-reload | confirm-reset | confirm-unsaved | empty-password}

Configures default CLI options for all future sessions.
The no form of the command deletes or disables the default CLI options.

Syntax Description	minutes	Configures keyboard inactivity timeout for automatic logout. Range is 0-35791 minutes. Setting the value to 0 or using the no form of the command disables the auto-logout.
	paging enable	Enables text viewing one screen at a time.
	prefix-modes {enable | show-config}	Configures the prefix modes feature of CLI. • "prefix-modes enable" enables prefix modes for current and all future sessions • "prefix-modes show-config" uses prefix modes in "show configuration" output for current and all future sessions
	progress enable	Enables progress updates.
	prompt confirm-reload	Prompts for confirmation before rebooting.
	prompt confirm-reset	Prompts for confirmation before resetting to factory state.
	prompt confirm-unsaved	Confirms whether or not to save unsaved changes before rebooting.
	prompt empty-password	Prompts for a password if none is specified in a pseudo-URL for SCP.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # cli default prefix-modes enable
switch (config) # show cli
CLI current session settings:
  Maximum line size:        8192
 Terminal width:           171 columns
  Terminal length:          38 rows
  Terminal type:            xterm
  X display setting:        (none)
  Auto-logout:              disabled
  Paging:                   enabled
  Progress tracking:        enabled
  Prefix modes:             disabled

CLI defaults for future sessions:
  Auto-logout:              disabled
  Paging:                   enabled
  Progress tracking:        enabled
  Prefix modes:             enabled (and use in 'show configuration')

Settings for both this session and future ones:
  Show hidden config:        yes
  Confirm losing changes:    yes
  Confirm reboot/shutdown:   no
  Confirm factory reset:     yes
  Prompt on empty password:  yes
switch (config) #
```

Related Commands show cli

Note

cli session

cli session {auto-logout <minutes> | paging enable | prefix-modes {enable | show-config} | progress enable | terminal {length <size> | resize | type <terminal-type> | width} | x-display full <display>}
no cli session {auto-logout | paging enable | prefix-modes {enable | show-config} | progress enable | terminal type | x-display}

Configures default CLI options for all future sessions.
The no form of the command deletes or disables the CLI sessions.

Syntax Description	minutes	Configures keyboard inactivity timeout for automatic logout. Range is 0-35791 minutes. Setting the value to 0 or using the no form of the command disables the auto logout.
	paging enable	Enables text viewing one screen at a time.
	prefix-modes enable | show-config	Configures the prefix modes feature of CLI. • "prefix-modes enable" enables prefix modes for current and all future sessions • "prefix-modes show-config" uses prefix modes in "show configuration" output for current and all future sessions
	progress enable	Enables progress updates.
	terminal length	Sets the number of lines for the current terminal. Valid range is 5-999.
	terminal resize	Resizes the CLI terminal settings (to match the actual terminal window).
	terminal-type	Sets the terminal type. Valid options are: • ansi • console • dumb • linux • unknown • vt52 • vt100 • vt102 • vt220 • vt320 • xterm
	terminal width	Sets the width of the terminal in characters. Valid range is 34-999.
	x-display full <display>	Specifies the display as a raw string, e.g localhost:0.0.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # cli session auto-logout` `switch (config) #`
Related Commands	show terminal
Note	

show cli

show cli

Displays the CLI configuration and status.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show cli`
	`CLI current session settings:`
	`  Maximum line size:  8192`
	`  Terminal width:  171 columns`
	`  Terminal length:  38 rows`
	`  Terminal type:  xterm`
	`  X display setting:  (none)`
	`  Auto-logout:  disabled`
	`  Paging:  enabled`
	`  Progress tracking:  enabled`
	`  Prefix modes:  disabled`
	
	`CLI defaults for future sessions:`
	`  Auto-logout:  disabled`
	`  Paging:  enabled`
	`  Progress tracking:  enabled`
	`  Prefix modes:  enabled (and use in 'show configuration')`
	
	`Settings for both this session and future ones:`
	`  Show hidden config:  yes`
	`  Confirm losing changes:  yes`
	`  Confirm reboot/shutdown:  no`
	`  Confirm factory reset:  yes`
	`  Prompt on empty password:  yes`
	`switch (config) #`

Related Commands	cli default
Note	

2.12 Banner

banner login

banner {login | login-remote | login-local} <string>
no banner login

Sets the CLI welcome banner message. The login-remote refers to the SSH connections banner, while the login-local refers to the serial connection banner.
The no form of the command resets the system login banner to its default.

Syntax Description	string Text string.
Default	"Mellanox MLNX-OS Switch Management"
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # banner login example`
	`switch (config) # show banner`
	`Banners:`
	`  MOTD:`
	`Mellanox Switch`
	
	`  Login: example`
	`switch (config) #`

Related Commands	show banner
Note	If more then one word is used (there is a space) quotation marks should be added (i.e. "xxxx xxxx").

banner login-local

banner login-local <string>
no banner login-local

Sets system login local banner.
The no form of the command resets the banner.

Syntax Description	string	Text string.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # banner login-local Testing` `switch (config) #`	
Related Commands	show banner	
Note	If more then one word is used (there is a space) quotation marks should be added (i.e. “xxxx xxxx”).	

banner login-remote

banner login-remote <string>
no banner login-remote

Sets system login remote banner.
The no form of the command resets the banner.

Syntax Description	string	Text string.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # banner login-remote Testing` `switch (config) #`	
Related Commands	show banner	
Note	If more then one word is used (there is a space) quotation marks should be added (i.e. “xxxx xxxx”).	

banner motd

banner motd <string>
no banner motd

Sets the contents of the /etc/motd file.
The no form of the command resets the system Message of the Day banner.

Syntax Description	string	Text string.
Default	“Mellanox Switch”	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # banner motd Testing`
	`switch (config) # show banner`
	`Banners:`
	`  MOTD: Testing`
	`  Login:`
	`Mellanox MLNX-OS Switch Management`
	`switch (config) #`	

Related Commands	show banner	
Note	If more then one word is used (there is a space) quotation marks should be added (i.e. "xxxx xxxx").	

show banner

show banner

Displays configured banners.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	unpriv/monitor/admin

Example	`switch (config) # show banner`
	`Banners:`
	`    MOTD: Testing`
	`    Login:`
	`Mellanox MLNX-OS Switch Management`
	`switch (config) #`

Related Commands	banner login banner motd
Note	

2.13 SSH

ssh server enable

ssh server enable
no ssh server enable

Enables the SSH server.
The no form of the command disables the SSH server.

Syntax Description	N/A
Default	SSH server is enabled
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # ssh server enable`
	`switch (config) # show ssh server`
	`SSH server configuration:`
	`  SSH server enabled:  yes`
	`  Minimum protocol version: 2`
	`  X11 forwarding enabled:  no`
	`  SSH server ports:  22`
	
	`  Interface listen enabled: yes`
	`  No Listen Interfaces.`
	
	`Host Key Finger Prints:`
	`   RSA v1 host key: a0:63:db:96:e2:95:5a:5a:fd:a8:d0:f4:ab:e3:5f:f8`
	`   RSA v2 host key: 1e:b7:8b:ec:ab:35:98:be:6b:d6:12:c2:18:72:12:d6`
	`   DSA v2 host key: 7c:4a:f7:72:51:67:b5:0b:cd:a2:d2:b9:f3:be:3e:68`
	`switch (config) #`

Related Commands	show ssh server
Note	Disabling SSH server does not terminate existing SSH sessions, it only prevents new ones from being established.

ssh server host-key

ssh server host-key {<key type> {private-key <private-key>| public-key <public-key>} | generate}

Manipulates host keys for SSH.

Syntax Description	key type	• rsa1 - RSAv1 • rsa2 - RSAv2 • dsa2 - DSAv2
	private-key	Sets new private-key for the host keys of the specified type.
	public-key	Sets new public-key for the host keys of the specified type.
	generate	Generates new RSA and DSA host keys for SSH.
Default	SSH keys are locally generated	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # ssh server host-key dsa2 private-key
Key: *********************************************
Confirm: *********************************************
switch (config) # show ssh server host-keys
SSH server configuration:
   SSH server enabled:       yes
   Minimum protocol version: 2
   X11 forwarding enabled:   no
   SSH server ports:         22

   Interface listen enabled: yes
   No Listen Interfaces.

Host Key Finger Prints:
    RSA v1 host key: a0:63:db:96:e2:95:5a:5a:fd:a8:d0:f4:ab:e3:5f:f8
    RSA v2 host key: 1e:b7:8b:ec:ab:35:98:be:6b:d6:12:c2:18:72:12:d6
    DSA v2 host key: 7c:4a:f7:72:51:67:b5:0b:cd:a2:d2:b9:f3:be:3e:68

Host Keys:
    RSA v1 host key: "switch-5ea5d8 1024 35
124574979953740101054914168679199879767768820169843759428319155849627969
993754065960858042722190424504565987058666581448544931321723650687895171
357050942086433695183304670045135426946775837928884896262416533072451 2
160918999830386915710362193855779785962822146445334448137121056286541583
022982220576029771297093"
    RSA v2 host key: "switch-5ea5d8 ssh-rsa
AAAAB3NzaC1yc2EAAAABIwAAAIEArB9i5OnukAHNUOkwpCmEl0m88kJgBzL22+F5tfaSn+S
0pVYxrceZeyuzXsoZ1VtFTk2Fydwy0YvMS0Kcv2PuCrPZV/
GYd31QEnn22rEmrlPrKCrMl1XlUy6DFlr3OgwWm1baobmDlG/gSziWz/
gc4Jgqf2CyXFq4pzaR1jar1Vk="
    DSA v2 host key: "switch-5ea5d8 ssh-dss
AAAAB3NzaC1kc3MAAACBAMeJ3S+nyaHhRbwv3tJqlWttDC35RZVC5iG4ZEvMMHp28VL94Oc
yyuGh39VCdM9pEVaI7hzZrsgHrNqakb/YLD/
7anGH3wpl9Fx8lfe0RH3bloJzG+mJ6R5momdoPCrKwEKiKABKE00jLzlVznpP0IHxjwF+Tb
R3dK5HwVzQYw/
bAAAAFQCBoDPqBZZa+2KylKlzUsbZ2pKhgQAAAIAJK+StiQdtORw1B5UCMzTrTef5L07DSf
VreMEYtTRnBBtgVSNqQFWpSQIYbVDHQr9T6qCM4VO39DuHUGQ1TMDIX7t+9mfbB87YyUu5a
/ndbf3GhNhxHWwbzlr9hgLL7FSHA7DYH7bVOZRlqxH64eQKGZqy1ps/
F4E31lyn7GC4EQAAAIA/2osHipXf+NRjplgfmHROVVf/mGE9Vzc9/
AMUxlJJn5VhvEJ5CZW9cI+LxMOJojhOj3YW3B1czGxRObDA9vUbKXTNc8bkgoUrxySAH1rH
N0PqJgeT4L009AItSp3m1mxHqdS7jixfTvOTEKWXrgpczlmTB8+zjhUah/YuuBl2H
g=="
switch (config) #
```

Related Commands show ssh server

Note

ssh server listen

ssh server listen {enable | interface <inf>}
no ssh server listen {enable | interface <inf>}

Enables the listen interface restricted list for SSH. If enabled, and at least one non-DHCP interface is specified in the list, the SSH connections are only accepted on those specified interfaces.
The no form of the command disables the listen interface restricted list for SSH. When disabled, SSH connections are not accepted on any interface.

Syntax Description	enable	Enables SSH interface restrictions on access to this system.
	interface <inf>	Adds interface to SSH server access restriction list. Possible interfaces are “lo”, and “mgmt0”.
Default	SSH listen is enabled	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # ssh server listen enable`
	`switch (config) # show ssh server`
	`SSH server configuration:`
	`SSH server enabled: yes`
	`Minimum protocol version: 2`
	`X11 forwarding enabled: no`
	`SSH server ports: 22`
	
	`Interface listen enabled: yes`
	`No Listen Interfaces.`
	
	`Host Key Finger Prints:`
	`RSA v1 host key: a0:63:db:96:e2:95:5a:5a:fd:a8:d0:f4:ab:e3:5f:f8`
	`RSA v2 host key: 1e:b7:8b:ec:ab:35:98:be:6b:d6:12:c2:18:72:12:d6`
	`DSA v2 host key: 7c:4a:f7:72:51:67:b5:0b:cd:a2:d2:b9:f3:be:3e:68`
	`switch (config) #`	

Related Commands	show ssh server	
Note		

ssh server min-version

ssh server min-version <version>
no ssh server min-version

Sets the minimum version of the SSH protocol that the server supports.
The no form of the command resets the minimum version of SSH protocol supported.

Syntax Description	version	Possible versions are 1 and 2.
Default	2	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # ssh server min-version 2`
	`switch (config) # show ssh server`
	`SSH server configuration:`
	`  SSH server enabled:  yes`
	`  Minimum protocol version: 2`
	`  X11 forwarding enabled:  no`
	`  SSH server ports:  22`
	
	`  Interface listen enabled: yes`
	`  No Listen Interfaces.`
	
	`Host Key Finger Prints:`
	`  RSA v1 host key: a0:63:db:96:e2:95:5a:5a:fd:a8:d0:f4:ab:e3:5f:f8`
	`  RSA v2 host key: 1e:b7:8b:ec:ab:35:98:be:6b:d6:12:c2:18:72:12:d6`
	`  DSA v2 host key: 7c:4a:f7:72:51:67:b5:0b:cd:a2:d2:b9:f3:be:3e:68`
	`switch (config) #`	

Related Commands	show ssh server	
Note		

ssh server ports

ssh server ports {<port1> [<port2>...]}

Specifies which ports the SSH server listens on.

Syntax Description	port	Port number in [1...65535].
Default	22.	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # ssh server ports 22`
	`switch (config) # show ssh server`
	`SSH server configuration:`
	`  SSH server enabled:  yes`
	`  Minimum protocol version: 2`
	`  X11 forwarding enabled:  no`
	`  SSH server ports:  22`
	
	`  Interface listen enabled: yes`
	`  No Listen Interfaces.`
	
	`Host Key Finger Prints:`
	`  RSA v1 host key: a0:63:db:96:e2:95:5a:5a:fd:a8:d0:f4:ab:e3:5f:f8`
	`  RSA v2 host key: 1e:b7:8b:ec:ab:35:98:be:6b:d6:12:c2:18:72:12:d6`
	`  DSA v2 host key: 7c:4a:f7:72:51:67:b5:0b:cd:a2:d2:b9:f3:be:3e:68`
	`switch (config) #`	

Related Commands	show ssh server	
Note	• Multiple ports can be specified by repeating the <port> parameter • The command will remove any previous ports if not listed in the command	

ssh server x11-forwarding

ssh server x11-forwarding enable
no ssh server x11-forwarding enable

Enables X11 forwarding on the SSH server.
The no form of the command disables X11 forwarding.

Syntax Description	N/A
Default	X11-forwarding is disabled.
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # ssh server x11-forwarding enable`
	`switch (config) # show ssh server`
	`SSH server configuration:`
	`  SSH server enabled:  yes`
	`  Minimum protocol version: 2`
	`  X11 forwarding enabled:  yes`
	`  SSH server ports:  22`
	
	`  Interface listen enabled: yes`
	`  No Listen Interfaces.`
	
	`Host Key Finger Prints:`
	`  RSA v1 host key: a0:63:db:96:e2:95:5a:5a:fd:a8:d0:f4:ab:e3:5f:f8`
	`  RSA v2 host key: 1e:b7:8b:ec:ab:35:98:be:6b:d6:12:c2:18:72:12:d6`
	`  DSA v2 host key: 7c:4a:f7:72:51:67:b5:0b:cd:a2:d2:b9:f3:be:3e:68`
	`switch (config) #`

Related Commands	N/A
Note	

ssh client global

ssh client global {host-key-check <policy>} | known-host <known-host-entry>}
no ssh client global {host-key-check | known-host localhost}

Configures global SSH client settings.
The no form of the command negates global SSH client settings.

Syntax Description	host-key-check <policy>	Sets SSH client configuration to control how host key checking is performed. This parameter may be set in 3 ways. • If set to "no" it always permits connection, and accepts any new or changed host keys without checking • If set to "ask" it prompts user to accept new host keys, but does not permit a connection if there was already a known host entry that does not match the one presented by the host • If set to "yes" it only permits connection if a matching host key is already in the known hosts file
	known-host	Adds an entry to the global known-hosts configuration file.
	known-host-entry	Adds/removes an entry to/from the global known-hosts configuration file. The entry consist of "<IP> <key-type> <key>".
Default	host-key-check - ask, no keys are configured by default	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # ssh client global host-key-check no
switch (config) # ssh client global known-host "72.30.2.2 ssh-rsa
AAAAB3NzaC1yc2EAAAABIwAAAIEArB9i5OnukAHNUOkwpCmEl0m88kJgBzL22+F5tfaSn+S
0pVYxrceZeyuzXsoZ1VtFTk2Fydwy0YvMS0Kcv2PuCrPZV/
GYd31QEnn22rEmrlPrKCrMl1XlUy6DFlr3OgwWm1baobmDlG/gSziWz/
gc4Jgqf2CyXFq4pzaR1jar1Vk="

switch (config) # show ssh client
SSH client Strict Hostkey Checking: ask

SSH Global Known Hosts:
    Entry 1: 72.30.2.2
          Finger Print: 1e:b7:8b:ec:ab:35:98:be:6b:d6:12:c2:18:72:12:d6

No SSH user identities configured.

No SSH authorized keys configured.

switch (config) #
```

Related Commands	show ssh client
Note	

ssh client user

ssh client user <username> {authorized-key sshv2 <public key> | identity <key type> {generate | private-key [<private key>] | public-key [<public key>]} | known-host <known host> remove}
no ssh client user admin {authorized-key sshv2 <public key ID> | identity <key type>}

Adds an entry to the global known-hosts configuration file, either by generating new key, or by adding manually a public or private key.
The no form of the command removes a public key from the specified user's authorized key list, or changes the key type.

Syntax Description	username	The specified user must be a valid account on the system. Possible values for this parameter are “admin”, “monitor”, “xmladmin”, and “xmluser”.
	authorized-key sshv2 <public key>	Adds the specified key to the list of authorized SSHv2 RSA or DSA public keys for this user account. These keys can be used to log into the user's account.
	identity <key type>	Sets certain SSH client identity settings for a user, dsa2 or rsa2.
	generate	Generates SSH client identity keys for specified user.
	private-key	Sets private key SSH client identity settings for the user.
	public-key	Sets public key SSH client identity settings for the user.
	known-host <known host> remove	Removes host from user's known host file.
Default	No keys are created by default	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # ssh client user admin known-host 172.30.1.116 remove` `switch (config) #`	
Related Commands	show ssh client	
Note	If a key is being pasted from a cut buffer and was displayed with a paging program, it is likely that newline characters have been inserted, even if the output was not long enough to require paging. One can specify “no cli session paging enable” before running the “show” command to prevent the newlines from being inserted.	

slogin

slogin [<slogin options>] <hostname>

Invokes the SSH client. The user is returned to the CLI when SSH finishes.

Syntax Description	slogin options	usage: slogin [-1246AaCfgkNnqsTtVvXxY] [-b bind_address] [-c cipher_spec] [-D port] [-e escape_char] [-F configfile] [-i identity_file] [-L port:host:hostport] [-l login_name] [-m mac_spec] [-o option] [-p port] [-R port:host:hostport] [user@]host-name [command]
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	monitor/admin	

Example	`switch (config) # slogin 192.168.10.70`
	`The authenticity of host '192.168.10.70 (192.168.10.70)' can't be estab-lished.`
	`RSA key fingerprint is 2e:ad:2d:23:45:4e:47:e0:2c:ae:8c:34:f0:1a:88:cb.`
	`Are you sure you want to continue connecting (yes/no)? yes`
	`Warning: Permanently added '192.168.10.70' (RSA) to the list of known hosts.`
	
	`Mellanox MLNX-OS Switch Management`
	
	`Last login: Sat Feb 28 22:55:17 2009 from 10.208.0.121`
	
	`Mellanox Switch`
	
	`switch (config) #`	

Related Commands	N/A	
Note		

show ssh client

show ssh client

Displays the client configuration of the SSH server.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show ssh client`
	`SSH client Strict Hostkey Checking: ask`
	
	`SSH Global Known Hosts:`
	`  Entry 1: 72.30.2.2`
	`  Finger Print: 1e:b7:8b:ec:ab:35:98:be:6b:d6:12:c2:18:72:12:d6`
	
	`No SSH user identities configured.`
	
	`No SSH authorized keys configured.`
	
	`switch (config) #`

Related Commands	N/A
Note	

show ssh server

show ssh server

Displays SSH server configuration.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show ssh server`
	`SSH server configuration:`
	`  SSH server enabled:  yes`
	`  Minimum protocol version: 2`
	`  X11 forwarding enabled:  no`
	`  SSH server ports:  22`
	
	`  Interface listen enabled: yes`
	`  No Listen Interfaces.`
	
	`Host Key Finger Prints:`
	`  RSA v1 host key: a0:63:db:96:e2:95:5a:5a:fd:a8:d0:f4:ab:e3:5f:f8`
	`  RSA v2 host key: 1e:b7:8b:ec:ab:35:98:be:6b:d6:12:c2:18:72:12:d6`
	`  DSA v2 host key: 7c:4a:f7:72:51:67:b5:0b:cd:a2:d2:b9:f3:be:3e:68`
	`switch (config) #`

Related Commands	ssh server
Note	

2.14 Remote Login

telnet-server enable

telnet-server enable
no telnet-server enable

Enables the telnet server.
The no form of the command disables the telnet server.

Syntax Description	N/A
Default	Telnet server is disabled
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # telnet-server enable`
	`switch (config) # show telnet-server`
	`Telnet server enabled: yes`

Related Commands	show telnet-server
Note	

show telnet-server

show telnet-server

Displays telnet server settings.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show telnet-server`
	`Telnet server enabled:  yes`
	`switch (config) #`

Related Commands	telnet-server enable
Note	

2.15 XML Gateway

xml-gw enable

xml-gw enable
no xml-gw enable

Enables the XML gateway.
The no form of the command disables the XML gateway.

Syntax Description	N/A
Default	XML Gateway is enabled
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # xml-gw enable`
	`switch (config) # show xml-gw`
	`XML Gateway enabled:  yes`
	`switch (config) #`

Related Commands	show xml-gw
Note	

show xml-gw

show xml-gw

Displays the XML gateway setting.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show xml-gw`
	`XML Gateway enabled:  yes`
	`switch (config) #`

Related Commands	xml-gw enable
Note	

2.16 Web Server

web auto-logout

web auto-logout <number of minutes>
no web auto-logout <number of minutes>

Configures length of user inactivity before auto-logout of a web session.
The no form of the command disables the web auto-logout (web sessions will never logged out due to inactivity).

Syntax Description	number of minutes	The length of user inactivity in minutes. 0 will disable the inactivity timer (same as a "no web auto-logout" command).
Default	60 minutes	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # web auto-logout 60
switch (config) # show web
Web-based management console enabled: yes

   HTTP enabled:           yes
   HTTP port:              80
   HTTP redirect to HTTPS: no
   HTTPS enabled:          yes
   HTTPS port:             443

   Listen enabled:         yes
   No Listen Interfaces.

   Inactivity timeout:     1 hr
   Session timeout:        2 hr 30 min
   Session renewal:        30 min

Web proxy enabled: yes
   Proxy address:          10.10.10.10
   Proxy port:             1080
   Authentication type:    basic
   Basic auth username:    web-user
   Basic auth password:    web-password
switch (config) #
```

Related Commands	show web
Note	The no form of the command does not automatically log users out due to inactivity.

web client cert-verify

	web client cert-verify **no web client cert-verify** Enables verification of server certificates during HTTPS file transfers. The no form of the command disables verification of server certificates during HTTPS file transfers.
Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.2.3000
Role	admin
Example	`switch (config) # web client cert-verify`
Related Commands	N/A
Note	

web client ca-list

web client ca-list {<ca-list-name> | default-ca-list | none}
no web client ca-list

Configures supplemental CA certificates for verification of server certificates during HTTPS file transfers.
The no form of the command uses no supplemental certificates.

Syntax Description	ca-list-name	Specifies CA list to configure.
	default-ca-list	Configures default supplemental CA certificate list.
	none	Uses no supplemental certificates.
Default	default-ca-list	
Configuration Mode	Config	
History	3.2.3000	
Role	admin	
Example	`switch (config) # web client ca-list default-ca-list`	
Related Commands	N/A	
Note		

web enable

web enable
no web enable

Enables the web-based management console.
The no form of the command disables the web-based management console.

Syntax Description	N/A
Default	enable
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # web enable`
	`switch (config) # show web`
	`Web-based management console enabled: yes`
	
	`   HTTP enabled:           yes`
	`   HTTP port:              80`
	`   HTTP redirect to HTTPS: no`
	`   HTTPS enabled:          yes`
	`   HTTPS port:             443`
	
	`   Listen enabled:         yes`
	`   No Listen Interfaces.`
	
	`   Inactivity timeout:     1 hr`
	`   Session timeout:        2 hr 30 min`
	`   Session renewal:        30 min`
	
	`Web proxy enabled: yes`
	`   Proxy address:          10.10.10.10`
	`   Proxy port:             1080`
	`   Authentication type:    basic`
	`   Basic auth username:    web-user`
	`   Basic auth password:    web-password`
	`switch (config) #`

Related Commands	show web
Note	

web http

web http {enable | port <port number> | redirect}
no web http {enable | port | redirect}

Configures HTTP access to the web-based management console.
The no form of the command negates HTTP settings for the web-based management console.

Syntax Description	enable	Enables HTTP access to the web-based management console.
	port number	Sets a port for HTTP access.
	redirect	Enables redirection to HTTPS. If HTTP access is enabled, this specifies whether a redirect from the HTTP port to the HTTPS port should be issued to mandate secure HTTPS access.
Default	HTTP is enabled HTTP TCP port is 80 HTTP redirect to HTTPS is disabled	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # web http enable
switch (config) # show web
Web-based management console enabled: yes

   HTTP enabled:           yes
   HTTP port:              80
   HTTP redirect to HTTPS: no
   HTTPS enabled:          yes
   HTTPS port:             443

   Listen enabled:         yes
   No Listen Interfaces.

   Inactivity timeout:     1 hr
   Session timeout:        2 hr 30 min
   Session renewal:        30 min

Web proxy enabled: yes
   Proxy address:          10.10.10.10
   Proxy port:             1080
   Authentication type:    basic
   Basic auth username:    web-user
   Basic auth password:    web-password
switch (config) #
```

Related Commands	show web web enable
Note	Enabling HTTP is meaningful if the WebUI as a whole is enabled.

web httpd

web httpd listen {enable | interface <ifName> }
no web httpd listen {enable | interface <ifName> }

Enables the listen interface restricted list for HTTP and HTTPS.
The no form of the command disables the HTTP server listen ability.

Syntax Description	enable	Enables Web interface restrictions on access to this system.
	interface <ifName>	Adds interface to Web server access restriction list (i.e. mgmt0, mgmt1)
Default	Listening is enabled. all interfaces are permitted.	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # web httpd enable
switch (config) # show web
Web-based management console enabled: yes

   HTTP enabled:           yes
   HTTP port:              80
   HTTP redirect to HTTPS: no
   HTTPS enabled:          yes
   HTTPS port:             443

   Listen enabled:         yes
   No Listen Interfaces.

   Inactivity timeout:     1 hr
   Session timeout:        2 hr 30 min
   Session renewal:        30 min

Web proxy enabled: yes
   Proxy address:          10.10.10.10
   Proxy port:             1080
   Authentication type:    basic
   Basic auth username:    web-user
   Basic auth password:    web-password
switch (config) #
```

Related Commands	N/A
Note	If enabled, and if at least one of the interfaces listed is eligible to be a listen interface, then HTTP/HTTPS requests will only be accepted on those interfaces. Otherwise, HTTP/HTTPS requests are accepted on any interface.

web https

web https {certificate {regenerate | name | default-cert} | enable | port <port number>}
no web https {enable | port <port number>}

Configures HTTPS access to the web-based management console.
The no form of the command negates HTTPS settings for the web-based management console.

Syntax Description	certificate regenerate	Re-generates certificate to use for HTTPS connections.
	certificate name	Configure the named certificate to be used for HTTPS connections
	certificate default-cert	Configure HTTPS to use the configured default certificate
	enable	Enables HTTPS access to the web-based management console.
	port	Sets a TCP port for HTTPS access.
Default	HTTPS is enabled Default port is 443	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # web https enable
switch (config) # show web
Web-based management console enabled: yes

   HTTP enabled:           yes
   HTTP port:              80
   HTTP redirect to HTTPS: no
   HTTPS enabled:          yes
   HTTPS port:             443

   Listen enabled:         yes
   No Listen Interfaces.

   Inactivity timeout:     1 hr
   Session timeout:        2 hr 30 min
   Session renewal:        30 min

Web proxy enabled: yes
   Proxy address:          10.10.10.10
   Proxy port:             1080
   Authentication type:    basic
   Basic auth username:    web-user
   Basic auth password:    web-password
switch (config) #
```

Related Commands	show web web enable
Note	• Enabling HTTPS is meaningful if the WebUI as a whole is enabled. • See the command “crypto certificate default-cert name” for how to change the default certificate if inheriting the configured default certificate is preferred

web session

web session {renewal <minutes> | timeout <minutes>}
no web session {renewal | timeout}

Configures session settings.
The no form of the command resets session settings to default.

Syntax Description	renewal <minutes>	Configures time before expiration to renew a session.
	timeout <minutes>	Configures time after which a session expires.
Default	timeout - 2.5 hours renewal - 30 min	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example		

```
switch (config) # web session renewal 60
switch (config) # show web
Web-based management console enabled: yes

   HTTP enabled:           yes
   HTTP port:              80
   HTTP redirect to HTTPS: no
   HTTPS enabled:          yes
   HTTPS port:             443

   Listen enabled:         yes
   No Listen Interfaces.

   Inactivity timeout:     1 hr
   Session timeout:        2 hr 30 min
   Session renewal:        60 min

Web proxy enabled: yes
   Proxy address:          10.10.10.10
   Proxy port:             1080
   Authentication type:    basic
   Basic auth username:    web-user
   Basic auth password:    web-password
switch (config) #
```

Related Commands	N/A
Note	

web proxy auth

web proxy auth {authtype <type>| basic [password <password> | username <username>]}
no web proxy auth {authtype | basic {password | username }

Configures authentication settings for web proxy authentication.
The no form of the command resets the attributes to their default values.

Syntax Description	type	Configures the type of authentication to use with web proxy. The possible values are: • basic - HTTP basic authentication • none - No authentication
	basic	Configures HTTP basic authentication settings for proxy. The password is accepted and stored in plaintext.
	password	A password used for HTTP basic authentication with the web proxy.
	username	A username used for HTTP basic authentication with the web proxy.
Default	Web proxy is disabled.	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # web proxy auth authtype basic
switch (config) # web proxy auth basic username web-user
switch (config) # web proxy auth basic password web-password
switch (config) # show web
Web-based management console enabled: yes

   HTTP enabled:           yes
   HTTP port:              80
   HTTP redirect to HTTPS: no
   HTTPS enabled:          yes
   HTTPS port:             443

   Listen enabled:         yes
   No Listen Interfaces.

   Inactivity timeout:     1 hr
   Session timeout:        2 hr 30 min
   Session renewal:        30 min

Web proxy enabled: yes
   Proxy address:          10.10.10.11
   Proxy port:             40
   Authentication type:    basic
   Basic auth username:    web-user
   Basic auth password:    web-password
switch (config) #
```

Related Commands	show web web proxy host
Note	

web proxy host

web proxy host <IP address> [port <port number>]
no web proxy

Adds and enables a proxy to be used for any HTTP or FTP downloads.
The no form of the command disables the web proxy.

Syntax Description	IP address	IPv4 or IPv6 address.
	port number	Sets the web proxy default port.
Default	1080	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # web proxy host 10.10.10.10 port 1080
switch (config) # show web
Web-based management console enabled: yes

   HTTP enabled:           yes
   HTTP port:              80
   HTTP redirect to HTTPS: no
   HTTPS enabled:          yes
   HTTPS port:             443

   Listen enabled:         yes
   No Listen Interfaces.

   Inactivity timeout:     1 hr
   Session timeout:        2 hr 30 min
   Session renewal:        30 min

Web proxy enabled: yes
   Proxy address:          10.10.10.10
   Proxy port:             1080
   Authentication type:    basic
   Basic auth username:    web-user
   Basic auth password:    web-password
switch (config) #
```

Related Commands	web proxy auth
Note	

show web

show web

Displays the web configuration.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show web`
	`Web-based management console enabled: yes`
	
	`   HTTP enabled:           yes`
	`   HTTP port:              80`
	`   HTTP redirect to HTTPS: no`
	`   HTTPS enabled:          yes`
	`   HTTPS port:             443`
	
	`   Listen enabled:         yes`
	`   No Listen Interfaces.`
	
	`   Inactivity timeout:     1 hr`
	`   Session timeout:        2 hr 30 min`
	`   Session renewal:        30 min`
	
	`Web proxy enabled: yes`
	`   Proxy address:          10.10.10.10`
	`   Proxy port:             1080`
	`   Authentication type:    basic`
	`   Basic auth username:    web-user`
	`   Basic auth password:    web-password`
	`switch (config) #`

Related Commands	show web web proxy auth
Note	

2.17 SNMP

The commands in this section are used to manage the SNMP server.

snmp-server auto-refresh

snmp-server auto-refresh {enable | interval}
no snmp-server auto-refresh enable

Configures SNMPD refresh settings.
The no form of the command disables SNMPD refresh mechanism.

Syntax Description	enable	Enables SNMPD refresh mechanism.
	interval	Sets SNMPD refresh interval.
Default	Enabled. Interval: 60 secs	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch(config) # snmp-server community private rw`
	`switch (config) # show snmp`
	`SNMP enabled:  yes`
	`SNMP port:  161`
	`System contact:`
	`System location:`
	`Read-only community:  public`
	`Read-write community: private`
	
	`Interface listen enabled: yes`
	`No Listen Interfaces.`
	
	`Traps enabled:  yes`
	`Default trap community:  public`
	`Default trap port:  162`
	
	`No trap sinks configured.`
	`switch(config) #`	

Related Commands	show snmp	
Note	•	

snmp-server community

snmp-server community <community> [ro | rw]
no snmp-server community <community>

Sets a community name for either read-only or read-write SNMP requests.
The no form of the command sets the community string to default.

Syntax Description	community	Community name.
	ro	Sets the read-only community string.
	rw	Sets the read-write community string.
Default	Read-only community: “public” Read-write community: “”	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch(config) # snmp-server community private rw
switch (config) # show snmp
SNMP enabled:         yes
SNMP port:            161
System contact:
System location:
Read-only community:  public
Read-write community: private

Interface listen enabled: yes
No Listen Interfaces.

Traps enabled:            yes
Default trap community:   public
Default trap port:        162

No trap sinks configured.
switch(config) #
```

Related Commands show snmp

Note

- If neither the “ro” or the “rw” parameters are specified, the read-only community is set as the default community
- If the read-only community is specified, only queries can be performed
- If the read-write community is specified, both queries and sets can be performed

snmp-server contact

snmp-server contact <contact name>
no snmp-server contact

Sets a value for the sysContact variable in MIB-II.
The no form of the command resets the parameter to its default value.

Syntax Description	contact name	Contact name.
Default	“”	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # snmp-server contact my-name`
	`switch (config) # show snmp`
	`SNMP enabled: yes`
	`SNMP port: 161`
	`System contact: my-name`
	`System location:`
	`Read-only community: public`
	`Read-write community: private`
	
	`Interface listen enabled: yes`
	`No Listen Interfaces.`
	
	`Traps enabled: yes`
	`Default trap community: public`
	`Default trap port: 162`
	
	`No trap sinks configured.`
	`switch (config) #`	

Related Commands	show snmp	
Note		

snmp-server enable

snmp-server enable [communities | mult-communities | notify]
no snmp-server enable [communities | mult-communities | notify]

Enables SNMP-related functionality.
The no form of the command disables the SNMP server.

Syntax Description	enable	Enables SNMP-related functionality: • SNMP engine • SNMP traps
	communities	Enables community-based authentication on this system.
	mult-communities	Enables multiple communities to be configured.
	notify	Enables sending of SNMP traps and informs from this system.
Default	SNMP is enabled by default SNMP server communities are enabled by default SNMP notifies are enabled by default SNMP server multi-communities are disabled by default	
Configuration Mode	Config	
History	3.1.0000	Initial version.
	3.2.1050	Change traps to notify.
Role	admin	

Example

```
switch (config) # snmp-server enable
switch (config) # show snmp
SNMP enabled:         yes
SNMP port:            161
System contact:       my-name
System location:
Read-only community:  public
Read-write community: private

Interface listen enabled: yes
No Listen Interfaces.

Traps enabled:            yes
Default trap community:   public
Default trap port:        162

No trap sinks configured.
switch (config) #
```

Related Commands	show snmp
Note	SNMP traps are only sent if there are trap sinks configured with the “snmp-server host...” command, and if these trap sinks are themselves enabled.

snmp-server host

snmp-server host <IP address> {disable | {traps | informs} [<community> | <port> | version <snmp version>]}
no snmp-server host <IPv4 or IPv6 address> {disable | {traps| informs} [<community> | <port>]}

Configures hosts to which to send SNMP traps.
The no form of the commands removes a host from which SNMP traps should be sent.

Syntax Description	IP address	IPv4 or IPv6 address.
	disable	Temporarily disables sending of traps to this host.
	community	Specifies trap community string.
	port	Overrides default UDP port for this trap sink.
	snmp version	Specifies the SNMP version of traps to send to this host.
Default	No hosts are configured Default community is “public” Default UDP port is 162 Default SNMP version is 2c	
Configuration Mode	Config	
History	3.1.0000	Initial version.
	3.2.1050	Add inform option.
Role	admin	

Example

```
switch (config) # snmp-server host 10.10.10.10 traps version 1
switch (config) # show snmp
SNMP enabled:         yes
SNMP port:            161
System contact:
System location:

Read-only communities:
   public

Read-write communities:
   (none)

Interface listen enabled: yes
No Listen Interfaces.

Traps enabled:            yes
Default trap community:   public
Default trap port:        162

Trap sinks:
   10.10.10.10
      Enabled: yes
      Type: traps version 1
      Port: 162 (default)
      Community: public (default)
switch (config) #
```

Related Commands

show snmp
snmp-server enable

Note

This setting is only meaningful if traps are enabled, though the list of hosts may still be edited if traps are disabled. Refer to “snmp-server enable” command.

snmp-server listen

snmp-server listen {enable | interface <ifName>}
no snmp-server listen {enable | interface <ifName> }

Configures SNMP server interface access restrictions.
The no form of the command disables the listen interface restricted list for SNMP server.

Syntax Description	enable	Enables SNMP interface restrictions on access to this system.
	ifName	Adds an interface to the "listen" list for SNMP server. For example: "mgmt0", "mgmt1".
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # snmp listen enable
switch (config) # show snmp
SNMP enabled:          yes
SNMP port:             161
System contact:
System location:
Read-only community:  public
Read-write community: private

Interface listen enabled: yes
No Listen Interfaces.

Traps enabled:             yes
Default trap community:    public
Default trap port:         162

Trap sinks:
   10.10.10.10
      Enabled: yes
      Type: traps version 1
      Port: 3
      Community: public (default)
switch (config) #
```

Related Commands	show snmp
Note	If enabled, and if at least one of the interfaces listed is eligible to be a listen interface, then SNMP requests will only be accepted on those interfaces. Otherwise, SNMP requests are accepted on any interface.

snmp-server location

snmp-server location <system location>
no snmp-server location

Sets a value for the sysLocation variable in MIB-II.
The no form of the command clears the contents of the sysLocation variable.

Syntax Description	system location String.
Default	“”
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # snmp-server location lab`
	`switch (config) # show snmp`
	`SNMP enabled: yes`
	`SNMP port: 161`
	`System contact: my-name`
	`System location: lab`
	`Read-only community: public`
	`Read-write community: private`
	
	`Interface listen enabled: yes`
	`No Listen Interfaces.`
	
	`Traps enabled: yes`
	`Default trap community: public`
	`Default trap port: 162`
	
	`No trap sinks configured.`
	`switch (config) #`

Related Commands	show snmp
Note	

snmp-server notify

snmp-server notify {community <community> | event <event name> | port <port> | send-test}
no snmp-server notify {community | event <event name> | port}

Configures SNMP notifications (traps and informs).
The no form of the commands negate the SNMP notifications.

Syntax Description	community	Sets the default community for traps sent to hosts which do not have a custom community string set.
	event	Specifies which events will be sent as traps.
	port	Sets the default port to which traps are sent.
	send-test	Sends a test trap.
Default	Community: public All informs and traps are enabled Port: 162	
Configuration Mode	Config	
History	3.1.0000	Initial version.
	3.2.1050	Change traps to notify.
Role	admin	

Example

```
switch (config) # snmp-server community public
switch (config) # show snmp
SNMP enabled:         yes
SNMP port:            1000
System contact:       my-name
System location:      lab
Read-only community:  public
Read-write community: private

Interface listen enabled: yes
No Listen Interfaces.

Traps enabled:            yes
Default trap community:   public
Default trap port:        162

No trap sinks configured.
switch (config) #
```

Related Commands

show snmp
show snmp events

Note

- This setting is only meaningful if traps are enabled, though the list of hosts may still be edited if traps are disabled
- Refer to Mellanox MIB file for the list of supported traps

snmp-server port

snmp-server port <port>
no snmp-server port

Sets the UDP listening port for the SNMP agent.
The no form of the command resets the parameter to its default value.

Syntax Description	port UDP port.
Default	161
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # snmp-server port 1000`
	`switch (config) # show snmp`
	`SNMP enabled: yes`
	`SNMP port: 1000`
	`System contact: my-name`
	`System location: lab`
	`Read-only community: public`
	`Read-write community: private`
	
	`Interface listen enabled: yes`
	`No Listen Interfaces.`
	
	`Traps enabled: yes`
	`Default trap community: public`
	`Default trap port: 162`
	
	`No trap sinks configured.`
	`switch (config) #`

Related Commands	show snmp
Note	

snmp-server user

snmp-server user {admin | <username> } v3 {[encrypted] auth <hash-type> <password> [priv <privacy-type> [<password>]] | capability <cap> | enable <sets> | prompt auth <hash-type> [priv <privacy-type>]}
no snmp-server user {admin | <username> } v3 {[encrypted] auth <hash-type> <password> [priv <privacy-type> [<password>]] | capability <cap> | enable <sets> | prompt auth <hash-type> [priv <privacy-type>]}

Specifies an existing username, or a new one to be added.
The no form of the command disables access via SNMP v3 for the specified user.

Syntax Description	v3	Configures SNMP v3 users.
	auth	Configures SNMP v3 security parameters, specifying passwords in plaintext on the command line (note: passwords are always stored encrypted).
	capability	Sets capability level for SET requests.
	enable	Enables SNMP v3 access for this user.
	encrypted	Configures SNMP v3 security parameters, specifying passwords in encrypted form.
	prompt	Configures SNMP v3 security parameters, specifying passwords securely in follow-up prompts, rather than on the command line.
Default	No SNMP v3 users defined	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # snmp-server user admin v3 enable`
	`switch (config) # show snmp user`
	`User name: admin`
	`  Enabled overall:  yes`
	`  Authentication type:  sha`
	`  Privacy type:  aes-128`
	`  Authentication password:  (NOT SET; user disabled)`
	`  Privacy password:  (NOT SET; user disabled)`
	`  SET access:`
	`  Enabled:  yes`
	`  Capability level:  admin`
	`switch (config) #`	

Related Commands	show snmp user	
Note		

show snmp

show snmp [auto-refresh | engineID | events | host | user]

Displays SNMP-server configuration and status.

Syntax Description	auto-refresh	SNMP refreshed mechanism status.
	engineID	SNMP Engine ID.
	events	SNMP events.
	host	List of notification sinks.
	user	SNMP users.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show snmp user`
	`User name: Hendrix`
	`  Enabled overall:  yes`
	`  Authentication type:  sha`
	`  Privacy type:  des`
	`  Authentication password: (set)`
	`  Privacy password:  (set)`
	`  Require privacy: yes`
	`  SET access:`
	`  Enabled:  yes`
	`  Capability level:  admin`
	`switch (config) #`	

Related Commands	show snmp	
Note		

show snmp auto-refresh

show snmp auto-refresh

Displays SNMPD refresh mechanism status.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch(config) # show snmp auto-refresh`
	`==========`
	`SNMP auto refresh`
	`==========`
	`Auto-refresh enabled: yes`
	`Refresh interval (sec): 60`
	
	`==========`
	`Auto-Refreshed tables`
	`==========`
	`entPhysicalTable`
	`ifTable`
	`ifXTable`
	
	`switch(config) #`

Related Commands	snmp-server auto-refresh
Note	

2.18 Scheduled Jobs

Use the commands in this section to manage and schedule the execution of jobs.

job

job <job ID>
no job <job ID>

Creates a job.
The no form of the command deletes the job.

Syntax Description	job ID	An integer.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # job 100` `switch (config job 100) #`	
Related Commands	show jobs	
Note	Job state is lost on reboot.	

command

command <sequence #> | <command>
no command <sequence #>

Adds a CLI command to the job.
The no form of the command deletes the command from the job.

Syntax Description	sequence #	An integer that controls the order the command is executed relative to other commands in this job. The commands are executed in an ascending order.
	command	A CLI command.
Default	N/A	
Configuration Mode	Config job	
History	3.1.0000	
Role	admin	

Example	`switch (config)# job 100`
	`switch (config job 100) # command 10 "show power"`
	`switch (config job 100) #`	

Related Commands	show jobs	
Note	• The command must be defined with inverted commas ("") • The command must be added as it was executed from the "config" mode. For example, in order to change the interface description you need to add the command: "interface <type> <number> description my-description".	

comment

comment <comment>
no comment

Adds a comment to the job.
The no form of the command deletes the comment.

Syntax Description	comment	The comment to be added (string).
Default	“”	
Configuration Mode	Config job	
History	3.1.0000	
Role	admin	

Example	`switch (config)# job 100`
	`switch (config job 100) # comment Job_for_example`
	`switch (config job 100) #`	

Related Commands	show jobs	
Note		

enable

	enable **no enable** Enables the specified job. The no form of the command disables the specified job.
Syntax Description	N/A
Default	N/A
Configuration Mode	Config job
History	3.1.0000
Role	admin

Example	`switch (config)# job 100`
	`switch (config job 100) # enable`
	`switch (config job 100) #`

Related Commands	show jobs
Note	If a job is disabled, it will not be executed automatically according to its schedule; nor can it be executed manually.

execute

execute

Forces an immediate execution of the job.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config job
History	3.1.0000
Role	admin

Example	`switch (config)# job 100`
	`switch (config job 100) # execute`
	`switch (config job 100) #`

Related Commands	show jobs
Note	• The job timer (if set) is not canceled and the job state is not changed: i.e. the time of the next automatic execution is not affected • The job will not be run if not currently enabled

fail-continue

	fail-continue **no fail-continue** Continues the job execution regardless of any job failures. The no form of the command returns fail-continue to its default.
Syntax Description	N/A
Default	A job will halt execution as soon as any of its commands fails
Configuration Mode	Config job
History	3.1.0000
Role	admin

Example	`switch (config)# job 100`
	`switch (config job 100) # fail-continue`
	`switch (config job 100) #`

Related Commands	show jobs
Note	

name

name <job name>
no name

Configures a name for this job.
The no form of the command resets the name to its default.

Syntax Description	name	Specifies a name for the job (string).
Default	“”.	
Configuration Mode	Config job	
History	3.1.0000	
Role	admin	

Example	`switch (config)# job 100`
	`switch (config job 100) # name my-job`
	`switch (config job 100) #`	

Related Commands	show jobs	
Note		

schedule type

schedule type <recurrence type>
no schedule type

Sets the type of schedule the job will automatically execute on.
The no form of the command resets the schedule type to its default.

Syntax Description	recurrence type	The available schedule types are: • daily - the job is executed every day at a specified time • weekly - the job is executed on a weekly basis • monthly - the job is executed every month on a specified day of the month • once - the job is executed once at a single specified date and time • periodic - the job is executed on a specified fixed time interval, starting from a fixed point in time.
Default	once	
Configuration Mode	Config job	
History	3.1.0000	
Role	admin	

Example	`switch (config)# job 100`
	`switch (config job 100) # schedule type once`
	`switch (config job 100) #`	

Related Commands	show jobs	
Note	A schedule type is essentially a structure for specifying one or more future dates and times for a job to execute.	

schedule <recurrence type>

schedule <recurrence type> <interval and date>
no schedule

Sets the type of schedule the job will automatically execute on.
The no form of the command resets the schedule type to its default.

Syntax Description	recurrence type	The available schedule types are: • daily - the job is executed every day at a specified time • weekly - the job is executed on a weekly basis • monthly - the job is executed every month on a specified day of the month • once - the job is executed once at a single specified date and time • periodic - the job is executed on a specified fixed time interval, starting from a fixed point in time.
	interval and date	Interval and date, per recurrence type.
Default	once	
Configuration Mode	Config job	
History	3.1.0000	
Role	admin	

Example	`switch (config)# job 100`
	`switch (config job 100) # schedule monthly interval 10`
	`switch (config job 100) #`	

Related Commands	show jobs	
Note	A schedule type is essentially a structure for specifying one or more future dates and times for a job to execute.	

show jobs

show jobs [<job-id>]

Displays configuration and state (including results of last execution, if any exist) of all jobs, or of one job if a job ID is specified.

Syntax Description	job-id Job ID.
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show jobs 10`
	`Job 10:`
	`  Status: inactive`
	`  Enabled: yes`
	`  Continue on failure: no`
	`  Schedule Type: once`
	`  Time and date: 1970/01/01 00:00:00 +0000`
	`  Last Exec Time: Thu 2012/04/05 13:11:42 +0000`
	`  Next Exec Time: N/A`
	`  Commands:`
	`  Command 10: show power`
	`  Last Output:`
	`====================`
	`Module Status`
	`====================`
	`PS1 OK`
	`PS2 NOT PRESENT`
	
	`switch (config) #`

Related Commands	show jobs
Note	

2.19 Event Notification

email autosupport

email autosupport {enable | event <event name>}
no email autosupport enable

Enables the support of the email notification and specifies which events will be sent as email notifications.
The no form of the command disables sending of email notifications globally or per event.

Syntax Description	enable	Enables the sending of email to vendor autosupport when certain failures occur.
	event <event name>	Specifies events for which to send autosupport notification emails.
Default	Email autosupport is disabled	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # email autosupport enable` `switch (config) #`	
Related Commands	show email	
Note	Refer to “show email event” command for full event list.	

email autosupport ssl mode

email autosupport ssl mode {none | tls | tls-none}
no email autosupport ssl mode

Configures type of security to use for auto-support email.
The no form of the command resets auto-support email security mode to its default.

Syntax Description	none	Does not use TLS to secure auto-support email.
	tls	Uses TLS over the default server port to secure auto-support email and does not send an email if TLS fails.
	tls-none	Attempts TLS over the default server port to secure auto-support email, and falls back on plaintext if this fails.
Default	tls-none	
Configuration Mode	Config	
History	3.2.3000	
Role	admin	
Example	`switch (config) # email autosupport ssl mode tls`	
Related Commands	N/A	
Note		

email autosupport ssl cert-verify

email autosupport ssl cert-verify
no email autosupport ssl cert-verify

Verifies server certificates.
The no form of the command does not verify server certificates.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.2.3000
Role	admin
Example	`switch (config) # email autosupport ssl cert-verify`
Related Commands	N/A
Note	

email autosupport ssl ca-list

email autosupport ssl ca-list {<ca-list-name> | default_ca_list | none}
no email autosupport ssl ca-list

Configures supplemental CA certificates for verification of server certificates. The no form of the command removes supplemental CA certificate list.

Syntax Description	default_ca_list	Default supplemental CA certificate list.
	none	No supplemental list; uses built-in list only.
Default	default_ca_list	
Configuration Mode	Config	
History	3.2.3000	
Role	admin	
Example	`switch (config) # email autosupport ssl ca-list default_ca_list`	
Related Commands	N/A	
Note		

email dead-letter

email dead-letter {cleanup max-age <duration> | enable}
no email dead-letter

Configures settings for saving undeliverable emails.
The no form of the command disables sending of emails to vendor auto-support upon certain failures.

Syntax Description	duration	Example: “5d4h3m2s” for 5 days, 4 hours, 3 minutes, 2 seconds.
	enable	Saves dead-letter files for undeliverable emails.
Default	Save dead letter is enabled The default duration is 14 days	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # email dead-letter enable` `switch (config) #`	
Related Commands	show email	
Note		

email domain

email domain <hostname or IP address>
no email domain

Sets the domain name from which the emails will appear to come from (provided that the return address is not already fully-qualified). This is used in conjunction with the system hostname to form the full name of the host from which the email appears to come.
The no form of the command clears email domain override.

Syntax Description	hostname or IP address IP address.
Default	No email domain
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # email domain mellanox`
	`switch (config) # show email`
	`Mail hub: 10.0.8.11`
	`Mail hub port: 125`
	`Domain: mellanox`
	`Return address: do-not-reply`
	`Include hostname in return address: yes`
	`...`
	`switch (config) #`

Related Commands	show emails
Note	

email mailhub

email mailhub <hostname or IP address>
no email mailhub

Sets the mail relay to be used to send notification emails.
The no form of the command clears the mail relay to be used to send notification emails.

Syntax Description	hostname or IP address Hostname or IP address.
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # email mailhub 10.0.8.11`
	`switch (config) # show email`
	`Mail hub: 10.0.8.11`
	`Mail hub port: 25`
	`Domain: (not specified)`
	`Return address: do-not-reply`
	`Include hostname in return address: yes`
	`...`
	`switch (config) #`

Related Commands	show email [events]
Note	

email mailhub-port

email mailhub-port <hostname or IP address>
no email mailhub-port

Sets the mail relay port to be used to send notification emails.
The no form of the command resets the port to its default.

Syntax Description	hostname or IP address hostname or IP address.
Default	25
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # email mailhub-port 125`
	`switch (config) # show email`
	`Mail hub: 10.0.8.11`
	`Mail hub port: 125`
	`Domain: (system domain name)`
	`Return address: do-not-reply`
	`Include hostname in return address: yes`
	`...`
	`switch (config) #`

Related Commands	show email
Note	

email notify event

email notify event <event name>
no email notify event <event name>

Enables sending email notifications for the specified event type.
The no form of the command disables sending email notifications for the specified event type.

Syntax Description	event name	Example event names would include “process-crash” and “cpu-util-high”.
Default	No events are enabled	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # email notify event process-crash`
	`switch (config) # show email events`
	`Failure events for which emails will be sent:`
	`process-crash: A process in the system has crashed`
	`unexpected-shutdown: Unexpected system shutdown`
	
	`Informational events for which emails will be sent:`
	`liveness-failure: A process in the system was detected as hung`
	`process-exit: A process in the system unexpectedly exited`
	`cpu-util-ok: CPU utilization has fallen back to normal levels`
	`cpu-util-high: CPU utilization has risen too high`
	`disk-io-ok: Disk I/O per second has fallen back to acceptable levels`
	`...`
	`temperature-too-high: Temperature has risen too high`
	
	`All events for which autosupport emails will be sent:`
	`process-crash: A process in the system has crashed`
	`liveness-failure: A process in the system was detected as hungswitch (config) #`
	`switch (config) #`	

Related Commands	show email	
Note	This does not affect auto-support emails. Auto-support can be disabled overall, but if it is enabled, all auto-support events are sent as emails.	

email notify recipient

email notify recipient <email addr> [class {info | failure} | detail]
no email notify recipient <email addr> [class {info | failure} | detail]

Adds an email address from the list of addresses to which to send email notifications of events.
The no form of the command removes an email address from the list of addresses to which to send email notifications of events.

Syntax Description	email addr	Email address of intended recipient.
	class	Specifies which types of events are sent to this recipient.
	info	Sends informational events to this recipient.
	failure	Sends failure events to this recipient.
	detail	Sends detailed event emails to this recipient.
Default	No recipients are added	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # email notify recipient user2@autosupport.mellanox.com`
	`switch (config) # show email`
	`Mail hub:`
	`Mail hub port: 25`
	`Domain: (not specified)`
	`Return address: user1`
	`Include hostname in return address: no`
	`Dead letter settings:`
	`Save dead.letter files: yes`
	`Dead letter max age: (none)`
	`Email notification recipients:`
	`user2@autosupport.mellanox.com (all events, in detail)`
	`Autosupport emails`
	`Enabled: no`
	`Recipient: autosupport@autosupport.mellanox.com`
	`Mail hub: autosupport.mellanox.com`
	`switch (config) #`	

Related Commands	show email	
Note		

email return-addr

email return-addr <username>
no email domain

Sets the username or fully-qualified return address from which email notifications are sent.

- If the string provided contains an "@" character, it is considered to be fully-qualified and used as-is.
- Otherwise, it is considered to be just the username, and we append "@<host-name>.<domain>". The default is "do-not-reply", but this can be changed to "admin" or whatnot in case something along the line does not like fictitious addresses.

The no form of the command resets this attribute to its default.

Syntax Description	username	Username.
Default	do-not-reply	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # email return-addr user1`
	`switch (config) # show email`
	`Mail hub:`
	`Mail hub port: 25`
	`Domain: (not specified)`
	`Return address: user1`
	`Include hostname in return address: yes`
	`...`
	`switch (config) #`	

Related Commands	show email	
Note		

email return-host

email return-host
no email return-host

Includes the hostname in the return address for emails.
The no form of the command does not include the hostname in the return address for emails.

Syntax Description	N/A
Default	No return host
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # no email return-host`
	`switch (config) # show email`
	`Mail hub:`
	`Mail hub port:    25`
	`Domain:           (system domain name)`
	`Return address:   my-address`
	`Include hostname in return address: no`
	
	`Current reply address: host@localdomain`
	
	`Dead letter settings:`
	`  Save dead.letter files: yes`
	`  Dead letter max age:    5 days`
	
	`No recipients configured.`
	
	`Autosupport emails`
	`  Enabled:      no`
	`  Recipient:    autosupport@autosupport.mellanox.com`
	`  Mail hub:     autosupport.mellanox.com`
	`switch (config) #`

Related Commands	show email
Note	This only takes effect if the return address does not contain an “@” character.

email send-test

email send-test

Sends test-email to all configured event and failure recipients.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin
Example	`switch (config) # email autosupport enable` `switch (config) #`
Related Commands	show email [events]
Note	

email ssl mode

email ssl mode {none | tls | tls-none}
no email ssl mode

Sets the security mode(s) to try for sending email.
The no form of the command resets the email SSL mode to its default.

Syntax Description	none	No security mode, operates in plaintext.
	tls	Attempts to use TLS on the regular mailhub port, with STARTTLS. If this fails, it gives up.
	tls-none	Attempts to use TLS on the regular mailhub port, with STARTTLS. If this fails, it falls back on plaintext.
Default	default-cert	
Configuration Mode	Config	
History	3.2.3000	
Role	admin	
Example	`switch (config) # email ssl mode tls-none`	
Related Commands	N/A	
Note		

email ssl cert-verify

email ssl cert-verify
no email ssl cert-verify

Enables verification of SSL/TLS server certificates for email.
The no form of the command disables verification of SSL/TLS server certificates for email.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.2.3000
Role	admin
Example	`switch (config) # email ssl cert-verify`
Related Commands	N/A
Note	This command has no impact unless TLS is used.

email ssl ca-list

email ssl ca-list {<ca-list-name> | default-ca-list | none}
no email ssl ca-list

Specifies the list of supplemental certificates of authority (CA) from the certificate configuration database that is to be used for verification of server certificates when sending email using TLS, if any.
The no form of the command uses no list of supplemental certificates.

Syntax Description	ca-list-name	Specifies CA list name.
	default-ca-list	Uses default supplemental CA certificate list.
	none	Uses no list of supplemental certificates.
Default	default-ca-list	
Configuration Mode	Config	
History	3.2.3000	
Role	admin	
Example	`switch (config) # email ssl ca-list none`	
Related Commands	N/A	
Note	This command has no impact unless TLS is used, and certificate verification is enabled.	

show email

show email [events]

Shows email configuration or events for which email should be sent upon.

Syntax Description	events	show event list
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show email`
	`Mail hub:`
	`Mail hub port:  25`
	`Domain:  (system domain name)`
	`Return address:  my-address`
	`Include hostname in return address: no`
	
	`Current reply address: host@localdomain`
	
	`Dead letter settings:`
	`  Save dead.letter files: yes`
	`  Dead letter max age:  5 days`
	
	`No recipients configured.`
	
	`Autosupport emails`
	`  Enabled:  no`
	`  Recipient:  autosupport@autosupport.mellanox.com`
	`  Mail hub:  autosupport.mellanox.com`
	`switch (config) #`	

Related Commands	show email	
Note		

2.20 Statistics and Alarms

stats alarm <alarm-id> clear

stats alarm <alarm ID> clear

Clears alarm state.

Syntax Description	alarm ID	Alarms supported by the system, for example: • cpu_util_indiv - Average CPU utilization too high: percent utilization • disk_io - Operating System Disk I/O per second too high: kilobytes per second • fs_mnt - Free filesystem space too low: percent of disk space free • intf_util - Network utilization too high: bytes per second • memory_pct_used - Too much memory in use: percent of physical memory used • paging - Paging activity too high: page faults • temperature - Temperature is too high: degrees
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # stats alarm cpu_util_indiv clear` `switch (config) #`	
Related Commands	show stats alarm	
Note		

stats alarm <alarm-id> enable

stats alarm <alarm-id> enable
no stats alarm <alarm-id> enable

Enables the alarm.
The no form of the command disables the alarm, notifications will not be received.

Syntax Description	alarm ID	Alarms supported by the system, for example: • cpu_util_indiv - Average CPU utilization too high: percent utilization • disk_io - Operating System Disk I/O per second too high: kilobytes per second • fs_mnt - Free filesystem space too low: percent of disk space free • intf_util - Network utilization too high: bytes per second • memory_pct_used - Too much memory in use: percent of physical memory used • paging - Paging activity too high: page faults • temperature - Temperature is too high: degrees
Default	The default is different per alarm-id	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # stats alarm cpu_util_indiv enable` `switch (config) #`	
Related Commands	show stats alarm	
Note		

stats alarm <alarm-id> event-repeat

stats alarm <alarm ID> event-repeat {single | while-not-cleared}
no stats alarm <alarm ID> event-repeat

Configures repetition of events from this alarm.

Syntax Description	alarm ID	Alarms supported by the system, for example: • cpu_util_indiv - Average CPU utilization too high: percent utilization • disk_io - Operating System Disk I/O per second too high: kilobytes per second • fs_mnt - Free filesystem space too low: percent of disk space free • intf_util - Network utilization too high: bytes per second • memory_pct_used - Too much memory in use: percent of physical memory used • paging - Paging activity too high: page faults • temperature - Temperature is too high: degrees
	single	Does not repeat events: only sends one event whenever the alarm changes state.
	while-not-cleared	Repeats error events until the alarm clears.
Default	single	
Configuration Mode	Config	
History	3.1.0000	
Role	monitor/admin	
Example	`switch (config) # stats alarm cpu_util_indiv event-repeat single` `switch (config) #`	
Related Commands	show stats alarm	
Note		

stats alarm <alarm-id> {rising | falling}

stats alarm <alarm ID> {rising | falling} {clear-threshold | error-threshold} <threshold-value>

Configure alarms thresholds.

Syntax Description	alarm ID	Alarms supported by the system, for example: • cpu_util_indiv - Average CPU utilization too high: percent utilization • disk_io - Operating System Disk I/O per second too high: kilobytes per second • fs_mnt - Free filesystem space too low: percent of disk space free • intf_util - Network utilization too high: bytes per second • memory_pct_used - Too much memory in use: percent of physical memory used • paging - Paging activity too high: page faults • temperature - Temperature is too high: degrees
	falling	Configures alarm for when the statistic falls too low.
	rising	Configures alarm for when the statistic rises too high.
	error-threshold	Sets threshold to trigger falling or rising alarm.
	clear-threshold	Sets threshold to clear falling or rising alarm.
	threshold-value	The desired threshold value, different per alarm.
Default	Default is different per alarm-id	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # stats alarm cpu_util_indiv falling clear-threshold 10` `switch (config) #`	
Related Commands	show stats alarm	
Note	Not all alarms support all four thresholds.	

stats alarm <alarm-id> rate-limit

stats alarm <alarm ID> rate-limit {count <count-type> <count> | reset | window <window-type> <duration>}

Configures alarms rate limit.

Syntax Description	alarm ID	Alarms supported by the system, for example: • cpu_util_indiv - Average CPU utilization too high: percent utilization • disk_io - Operating System Disk I/O per second too high: kilobytes per second • fs_mnt - Free filesystem space too low: percent of disk space free • intf_util - Network utilization too high: bytes per second • memory_pct_used - Too much memory in use: percent of physical memory used • paging - Paging activity too high: page faults • temperature - Temperature is too high: degrees
	count-type	Long medium, or short count (number of alarms).
	reset	Set the count and window durations to default values for this alarm.
	window-type	Long medium, or short count, in seconds.
Default	Short window: 5 alarms in 1 hour Medium window: 20 alarms in 1 day Long window: 50 alarms in 7 days	
Configuration Mode	Config	
History	3.1.0000	
Role	monitor/admin	
Example	`switch (config) # stats alarm paging rate-limit window long 2000` `switch (config) #`	
Related Commands	show stats alarm	
Note		

stats chd <chd-id> clear

stats chd <CHD ID> clear

Clears CHD counters.

Syntax Description	CHD ID	CHD supported by the system, for example: • cpu_util - CPU utilization: percentage of time spent • cpu_util_ave - CPU utilization average: percentage of time spent • cpu_util_day - CPU utilization average: percentage of time spent • disk_device_io_hour - Storage device I/O read/write statistics for the last hour: bytes • disk_io - Operating system aggregate disk I/O average: KB/sec • eth_day • eth_hour • fs_mnt_day - Filesystem system usage average: bytes • fs_mnt_month - Filesystem system usage average: bytes • fs_mnt_week - Filesystem system usage average: bytes • ib_day • ib_hour • intf_day - Network interface statistics aggregation: bytes • intf_hour - Network interface statistics (same as “interface” sample) • intf_util - Aggregate network utilization across all interfaces • memory_day - Average physical memory usage: bytes • memory_pct - Average physical memory usage • paging - Paging activity: page faults • paging_day - Paging activity: page faults
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # stats chd memory_day clear` `switch (config) #`	
Related Commands	show stats chd	
Note		

stats chd <chd-id> enable

stats chd <chd-id> enable
no stats chd <chd-id> enable

Enables the CHD.
The no form of the command disables the CHD.

Syntax Description	chd-id	CHD supported by the system, for example: • cpu_util - CPU utilization: percentage of time spent • cpu_util_ave - CPU utilization average: percentage of time spent • cpu_util_day - CPU utilization average: percentage of time spent • disk_device_io_hour - Storage device I/O read/write statistics for the last hour: bytes • disk_io - Operating system aggregate disk I/O average: KB/sec • eth_day • eth_hour • fs_mnt_day - Filesystem system usage average: bytes • fs_mnt_month - Filesystem system usage average: bytes • fs_mnt_week - Filesystem system usage average: bytes • ib_day • ib_hour • intf_day - Network interface statistics aggregation: bytes • intf_hour - Network interface statistics (same as “interface” sample) • intf_util - Aggregate network utilization across all interfaces • memory_day - Average physical memory usage: bytes • memory_pct - Average physical memory usage • paging - Paging activity: page faults • paging_day - Paging activity: page faults
Default	Enabled	
Configuration Mode	Config	
History	3.1.0000	
Role	monitor/admin	
Example	`switch (config) # stats chd memory_day enable` `switch (config) #`	
Related Commands	show stats chd	
Note		

stats chd <chd-id> compute time

stats chd <CHD ID> compute time {interval | range} <number of seconds>

Sets parameters for when this CHD is computed.

Syntax Description	CHD ID	Possible IDs: • cpu_util - CPU utilization: percentage of time spent • cpu_util_ave - CPU utilization average: percentage of time spent • cpu_util_day - CPU utilization average: percentage of time spent • disk_device_io_hour - Storage device I/O read/write statistics for the last hour: bytes • disk_io - Operating system aggregate disk I/O average: KB/sec • eth_day • eth_hour • fs_mnt_day - Filesystem system usage average: bytes • fs_mnt_month - Filesystem system usage average: bytes • fs_mnt_week - Filesystem system usage average: bytes • ib_day • ib_hour • intf_day - Network interface statistics aggregation: bytes • intf_hour - Network interface statistics (same as "interface" sample) • intf_util - Aggregate network utilization across all interfaces • memory_day - Average physical memory usage: bytes • memory_pct - Average physical memory usage • paging - Paging activity: page faults • paging_day - Paging activity: page faults
	interval	Specifies calculation interval (how often to do a new calculation) in number of seconds.
	range	Specifies calculation range, in number of seconds.
	number of seconds	Number of seconds.
Default	Different per CHD	
Configuration Mode	Config	
History	3.1.0000	
Role	monitor/admin	

Example	`switch (config) # stats chd memory_day compute time interval 120`
	`switch (config) # show stats chd memory_day`
	`CHD "memory_day" (Average physical memory usage: bytes):`
	`Source dataset: sample "memory"`
	`Computation basis: time`
	`Interval: 120 second(s)`
	`Range: 1800 second(s)`
	`switch (config) #`	

Related Commands	show stats chd
Note	

stats sample <sample-id> clear

stats sample <sample ID> clear

Clears sample history.

Syntax Description	sample ID	Possible sample IDs are: • congested • cpu_util - CPU utilization: milliseconds of time spent • disk_device_io - Storage device I/O statistics • disk_io - Operating system aggregate disk I/O: KB/sec • eth • fan - Fan speed • fs_mnt_bytes - Filesystem usage: bytes • fs_mnt_inodes - Filesystem usage: inodes • ib • interface - Network interface statistics • intf_util - Network interface utilization: bytes • memory - System memory utilization: bytes • paging - Paging activity: page faults • power - Power supply usage • power-consumption • temperature - Modules temperature
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # stats sample temperature clear` `switch (config) #`	
Related Commands	show stats sample	
Note		

stats sample <sample-id> enable

stats sample <sample-id> enable
no states sample <sample-id> enable

Enables the sample.
The no form of the command disables the sample.

Syntax Description	sample-id	Possible sample IDs are: • congested • cpu_util - CPU utilization: milliseconds of time spent • disk_device_io - Storage device I/O statistics • disk_io - Operating system aggregate disk I/O: KB/sec • eth • fan - Fan speed • fs_mnt_bytes - Filesystem usage: bytes • fs_mnt_inodes - Filesystem usage: inodes • ib • interface - Network interface statistics • intf_util - Network interface utilization: bytes • memory - System memory utilization: bytes • paging - Paging activity: page faults • power - Power supply usage • power-consumption • temperature - Modules temperature
Default	Enabled	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # stats sample temperature enable` `switch (config) #`	
Related Commands	show stats sample	
Note		

stats sample <sample-id> interval

stats sample <sample ID> interval <number of seconds>

Sets the amount of time between samples for the specified group of sample data.

Syntax Description	sample ID	Possible sample IDs are: • congested • cpu_util - CPU utilization: milliseconds of time spent • disk_device_io - Storage device I/O statistics • disk_io - Operating system aggregate disk I/O: KB/sec • eth • fan - Fan speed • fs_mnt_bytes - Filesystem usage: bytes • fs_mnt_inodes - Filesystem usage: inodes • ib • interface - Network interface statistics • intf_util - Network interface utilization: bytes • memory - System memory utilization: bytes • paging - Paging activity: page faults • power - Power supply usage • power-consumption • temperature - Modules temperature
	number of seconds	Interval in seconds.
Default	Different per sample	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # stats sample temperature interval 1`
	`switch (config) # show stats sample temperature`
	`Sample "temperature" (Modules temperature):`
	`  Enabled:  yes`
	`  Sampling interval: 1 second`
	`switch (config) #`	

Related Commands	show stats sample	
Note		

stats clear-all

stats clear all

Clears data for all samples, CHDs, and status for all alarms.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin
Example	`switch (config) # stats clear-all` `switch (config) #`
Related Commands	N/A
Note	

stats export

stats export <format> <report name> [{after | before} <yyyy/mm/dd> <hh:mm:ss>] [filename <filename>]

Exports statistics to a file.

Syntax Description	format	Currently the only supported value for <format> is "csv" (comma-separated value).
	report name	Determines dataset to be exported. Possible report names are: • memory - Memory utilization • paging - Paging I/O • cpu_util - CPU utilization
	after | before	Only includes stats collected after or before a specific time.
	yyyy/mm/dd	Date: It must be between 1970/01/01 and 2038/01/19.
	hh:mm:ss	Time: It must be between 00:00:00 and 03:14:07 UTC and is treated as local time.
	filename	Specifies filename to give new report. If a filename is specified, the stats will be exported to a file of that name; otherwise a name will be chosen automatically and will contain the name of the report and the time and date of the export. Any automatically-chosen name will be given a .csv extension.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # stats export csv memory filename mellanoxexample before 2000/08/14 15:59:50 after 2000/08/14 15:01:50`
	`Generated report file: mellanoxexample.csv`
	`switch (config) # show files stats`
	`mellanoxexample.csv`
	`switch (config) #`	

Related Commands	show files stats	
Note		

show stats alarm

show stats alarm [<Alarm ID> [rate-limit]]

Displays status of all alarms or the specified alarm.

Syntax Description	Alarm ID	May be: • cpu_util_indiv - Average CPU utilization too high: percent utilization • disk_io - Operating System Disk I/O per second too high: kilobytes per second • fs_mnt - Free filesystem space too low: percent of disk space free • intf_util - Network utilization too high: bytes per second • memory_pct_used - Too much memory in use: percent of physical memory used • paging - Paging activity too high: page faults • temperature - Temperature is too high: degrees
	rate-limit	Displays rate limit parameters.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show stats alarm`
	`Alarm cpu_util_indiv (Average CPU utilization too high):  ok`
	`Alarm disk_io (Operating System Disk I/O per second too high): (disabled)`
	`Alarm fs_mnt (Free filesystem space too low):  ok`
	`Alarm intf_util (Network utilization too high):  (disabled)`
	`Alarm memory_pct_used (Too much memory in use):  (disabled)`
	`Alarm paging (Paging activity too high):  ok`
	`Alarm temperature (Temperature is too high):  ok`
	`switch (config) #`	

Related Commands	stats alarm	
Note		

show stats chd

show stats chd [<CHD ID>]

Displays configuration of all statistics CHDs.

Syntax Description	CHD ID	May be: • cpu_util_indiv - Average CPU utilization too high: percent utilization • disk_io - Operating System Disk I/O per second too high: kilobytes per second • fs_mnt - Free filesystem space too low: percent of disk space free • intf_util - Network utilization too high: bytes per second • memory_pct_used - Too much memory in use: percent of physical memory used • paging - Paging activity too high: page faults • temperature - Temperature is too high: degrees
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show stats chd disk_device_io_hour`
	
	`CHD "disk_device_io_hour" (Storage device I/O read/write statistics for the last`
	` hour: bytes):`
	`  Enabled:  yes`
	`  Source dataset:  sample "disk_device_io"`
	`  Computation basis: data points`
	`  Interval:  1 data point(s)`
	`  Range:  1 data point(s)`
	`switch (config) #`	

Related Commands	stats chd	
Note		

show stats cpu

show stats cpu

Displays some basic stats about CPU utilization:
- the current level
- the peak over the past hour
- the average over the past hour

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show stats cpu`
	
	`CPU 0`
	`  Utilization:  6%`
	`  Peak Utilization Last Hour: 16% at 2012/02/28 08:47:32`
	`  Avg. Utilization Last Hour: 8%`
	`switch (config) #`

Related Commands	N/A
Note	

show stats sample

show stats sample [<sample ID>]

Displays sampling interval for all samples, or the specified one.

Syntax Description	sample ID	Possible sample IDs are: • congested • cpu_util - CPU utilization: milliseconds of time spent • disk_device_io - Storage device I/O statistics • disk_io - Operating system aggregate disk I/O: KB/sec • eth • fan - Fan speed • fs_mnt_bytes - Filesystem usage: bytes • fs_mnt_inodes - Filesystem usage: inodes • ib • interface - Network interface statistics • intf_util - Network interface utilization: bytes • memory - System memory utilization: bytes • paging - Paging activity: page faults • power - Power supply usage • power-consumption • temperature - Modules temperature
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show stats sample fan`
	`Sample "fan" (Fan speed):`
	`  Enabled:  yes`
	`  Sampling interval: 1 minute 11 seconds`
	`switch (config) #`	

Related Commands	N/A	
Note		

2.21 Chassis Management

health

health {max-report-len <length> | re-notif-cntr <counter> | report-clear}

Configures health daemon settings.

Syntax Description	max-report-len <length>	Sets the length of the health report - number of line entries. Possible values: 10-2048.
	re-notif-cntr <counter>	Health control changes notification counter, in seconds. Possible values: 120-7200 seconds.
	report-clear	Clears the health report.
Default	max-report-len: 50 re-notif-cntr:	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # health re-notif-cntr 125` `switch (config) #`	
Related Commands	show health-report	
Note		

power enable

power enable <module name>
no power enable <module name>

Powers on the module.
The no form of the command shuts down the module.

Syntax Description	module name	Enables power for selected module.
Default	Power is enabled on all modules.	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # power enable L01` `switch (config) #`	
Related Commands	show power show power consumers	
Note	This command is not applicable for 1U systems.	

usb eject

usb eject

Gracefully turns off the USB interface.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin
Example	`switch (config) # usb eject` `switch (config) #`
Related Commands	N/A
Note	Applicable only for systems with USB interface.

system profile

system profile <profile> [force]

Sets the profile of the system to either InfiniBand, Ethernet or VPI.
In ib-single-switch profile, all network interfaces link protocol set to InfiniBand.
In eth-single-switch profile, all network interfaces link protocol set to Ethernet.
In vpi-single-switch profile, some ports can be defined as Ethernet while some other as InfiniBand.

Syntax Description	profile	• eth-single-swich • ib-single-switch • vpi-single-switch
	force	Force operation, without the need for user confirmation.
Default	The default system profile depends on the system: SX6xxx systems have “ib-single-switch” as default SX1xxx systems have “eth-single-switch” as default	
Configuration Mode	Config	
History	3.1.0000	Initial version
	3.2.1100	Added “vpi-single-switch” option
Role	admin	
Example	`switch (config) # system profile eth-single-switch` `switch (config) #`	
Related Commands	show system profile port type show ports type	
Note	• This command requires a license. Refer to “Licenses” section in the *MLNX-OS SwitchX User Manual.* • This command deletes all switch configuration (keeping IP connectivity) and resets the system. • Refer to the ‘port type’ command in order to change the link protocol.	

show fan

show fan

Displays fans status.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show fan`
	`switch (config) # show fan`
	`==========`
	`Module Device Fan Speed Status`
	`(RPM)`
	`==========`
	`FAN FAN F1 5340.00 OK`
	`FAN FAN F2 5340.00 OK`
	`FAN FAN F3 5640.00 OK`
	`FAN FAN F4 5640.00 OK`
	`PS1 FAN F1 5730.00 OK`
	`PS2 FAN - - NOT PRESENT`
	`switch (config) #`

Related Commands	N/A
Note	

show version

show version [concise]

Displays version information for the currently running system image.

Syntax Description	concise	The concise variant fits the description onto one line.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show version`
	`Product name:  SX_PPC_M460EX`
	`Product release:  3.0.0000-dev-HA`
	`Build ID:  #1-dev`
	`Build date:  2012-02-26 08:47:51`
	`Target arch:  ppc`
	`Target hw:  m460ex`
	`Built by:  root@r-fit16`
	
	`Uptime:  1d 3h 32m 24.656s`
	
	`Product model:  ppc`
	`Host ID:  0002c911a15e`
	`System memory:  110 MB used / 1917 MB free / 2027 MB total`
	`Swap:  0 MB used / 0 MB free / 0 MB total`
	`Number of CPUs:  1`
	`CPU load averages: 0.18 / 0.19 / 0.16`
	`switch (config) #`	

Related Commands	N/A	
Note		

show cpld

show cpld

Displays status of all CPLDs in the system.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show cpld`
	`==================================`
	`Name  Type  Version`
	`==================================`
	`Cpld1  SW  18`
	`switch (config) #`

Related Commands	N/A
Note	

show inventory

show inventory

Displays system inventory.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show inventory`
	`================================================================================`
	`Module Type Part number Serial Number Asic revision`
	`================================================================================`
	`CHASSIS SX1036 MSX1036B-1SFR MT1205X01549 N/A`
	`MGMT SX1036 MSX1036B-1SFR MT1205X01549 0`
	`FAN SXX0XX_FAN MSX60-FF MT1206X07209 N/A`
	`PS1 SXX0XX_PS MSX60-PF MT1206X06697 N/A`
	`CPU CPU SA000203-B MT1220X01231 N/A`
	`switch (config) #`

Related Commands	N/A
Note	

show module

show module

Displays modules status.

Syntax Description	N/A	
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	Initial version
	3.3.0000	Added “Is Fatal” column
Role	admin	
Example		

```
switch (config) # show module
=================================================
 Module   Type               Present Power Is Fatal
=================================================
 MGMT     SX1036             1       N/A   Not Fatal
 FAN      SXX0XX_FAN         1       N/A   Not Fatal
 PS1      SXX0XX_PS          1       N/A   Not Fatal
 PS2      SXX0XX_PS          0       N/A   Not Fatal
 CPU      CPU                1       N/A   Not Fatal
switch (config) #
```

Related Commands	N/A
Note	

show memory

show memory

Displays memory status.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show memory`
	`Total Used Free Used+B/C Free-B/C`
	`Physical 2027 MB 761 MB 1266 MB 1214 MB 813 MB`
	`Swap 0 MB 0 MB 0 MB`
	
	`Physical Memory Borrowed for System Buffers and Cache:`
	`Buffers: 0 MB`
	`Cache: 452 MB`
	`Total Buffers/Cache: 452 MB`
	`switch (config) #`

Related Commands	N/A
Note	

show asic-version

show asic-version

Displays firmware ASIC version.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show asic-version`
	`==========================`
	`SX module           Version`
	`==========================`
	`SX                  9.1.1260`
	`switch (config) #`

Related Commands	N/A
Note	

show power

show power

Displays power supplies and power usage.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin
Example	

```
switch (config) # show power
=================================================================
Module          Power    Voltage  Current  Capacity  Grid   Status
                (Watts)           (Amp)    (Watts)   Group
=================================================================
PS1             0.00     47.11    0.00     1008      A      OK
PS2             248.82   48.05    5.18     1008      A      OK
PS3             0.00     46.88    0.00     1008      A      OK
PS4             -        -        -        NOT PRESENT
PS5             46.72    47.82    0.98     1008      A      OK
PS6             -        -        -        NOT PRESENT
PS7             -        -        -        NOT PRESENT
PS8             -        -        -        NOT PRESENT
PS9             -        -        -        NOT PRESENT
PS10            -        -        -        NOT PRESENT

Total power used : 295.54 W
Total power capacity : 4032.00 W
Total power budget : 4032.00 W
Total power available : 3736.46 W
Redundancy mode: combined
Redundancy status: OK
switch (config) #
```

Related Commands	N/A
Note	

show power consumers

show power consumers

Displays power consumers.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin
Example	

```
switch (config) # show power consumers
================================================
Module          Power    Voltage  Current  Status
                (Watts)           (Amp)
================================================
MGMT            17.47    48.00    0.36     OK
S01             33.26    48.00    0.69     OK
S02             33.50    48.00    0.70     OK
L01             31.73    48.00    0.66     OK
L02             29.76    48.00    0.62     OK
L30             28.61    48.00    0.60     OK
FAN5            14.91    48.00    0.31     OK
FAN2            13.70    48.00    0.29     OK
FAN1            14.21    48.00    0.30     OK
FAN6            15.10    48.00    0.31     OK
FAN4            14.53    48.00    0.30     OK
FAN7            15.04    48.00    0.31     OK
FAN3            15.17    48.00    0.32     OK
FAN8            14.98    48.00    0.31     OK

Total power used : 291.97 W
Max power : 1636.00 W
switch (config) #
```

Related Commands	N/A
Note	

show temperature

show temperature

Displays the system's temperature sensors status.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show temperature`
	`==================================================`
	`Module  Component             Reg  CurTemp   Status`
	`                                    (Celsius)`
	`==================================================`
	`MGMT    BOARD_MONITOR         T1   25.00     OK`
	`MGMT    CPU_BOARD_MONITOR     T1   26.00     OK`
	`MGMT    CPU_BOARD_MONITOR     T2   41.00     OK`
	`MGMT    QSFP_TEMP1            T1   23.00     OK`
	`MGMT    QSFP_TEMP2            T1   22.50     OK`
	`MGMT    QSFP_TEMP3            T1   23.00     OK`
	`MGMT    SX                    T1   37.00     OK`
	`switch (config) #`

Related Commands	N/A
Note	

show voltage

show voltage

Displays power supplies voltage level.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin
Example	

```
switch (config) # show voltage
================================================================================
Module  Power Meter           Reg  Expected  Actual   Status  High   Low
                                   Voltage   Voltage          Range  Range
================================================================================
MGMT    BOARD_MONITOR         V1   5.00      5.15     OK      5.55   4.45
MGMT    BOARD_MONITOR         V2   2.27      2.11     OK      2.55   1.99
MGMT    BOARD_MONITOR         V3   1.80      1.79     OK      2.03   1.57
MGMT    BOARD_MONITOR         V4   3.30      3.28     OK      3.68   2.92
MGMT    BOARD_MONITOR         V5   0.90      0.93     OK      1.04   0.76
MGMT    BOARD_MONITOR         V6   1.20      1.19     OK      1.37   1.03
MGMT    CPU_BOARD_MONITOR     V1   12.00     11.67    OK      13.25  10.75
MGMT    CPU_BOARD_MONITOR     V2   2.50      2.46     OK      2.80   2.20
MGMT    CPU_BOARD_MONITOR     V3   3.30      3.26     OK      3.68   2.92
MGMT    CPU_BOARD_MONITOR     V4   3.30      3.24     OK      3.68   2.92
MGMT    CPU_BOARD_MONITOR     V5   1.80      1.79     OK      2.03   1.57
MGMT    CPU_BOARD_MONITOR     V6   1.20      1.24     OK      1.37   1.03
switch (config) #
```

Related Commands	N/A
Note	

show health-report

	show health-report Displays health report.	
Syntax Description	N/A	
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	Initial version
	3.3.0000	Output update
Role	admin	

Example	`switch (config) # show health-report`
	`=========================`
	`| ALERTS CONFIGURATION |`
	`=========================`
	`Re-notification counter (sec):[3600]`
	`Report max counter:           [50]`
	`=========================`
	`|    HEALTH REPORT     |`
	`=========================`
	`No Health issues file`
	`switch (config) #`	

Related Commands	N/A	
Note		

show resources

show resources

Displays system resources.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show resources`
	`Total Used Free`
	`Physical 2027 MB 761 MB 1266 MB`
	`Swap 0 MB 0 MB 0 MB`
	
	`Number of CPUs: 1`
	`CPU load averages: 0.11 / 0.23 / 0.23`
	
	`CPU 1`
	`Utilization: 5%`
	`Peak Utilization Last Hour: 19% at 2012/02/15 13:26:19`
	`Avg. Utilization Last Hour: 7%`
	`switch (config) #`

Related Commands	N/A
Note	

show system profile

show system profile

Displays system profile.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.2.0000
Role	admin

Example	`switch (config) # show system profile`
	`eth-single-switch`
	`switch (config) #`

Related Commands	system profile
Note	

show system capabilities

show system capabilities

Displays system capabilities.

Syntax Description	N/A	
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	Initial version.
	3.3.0000	Added gateway support.
Role	admin	

Example	`switch (config) # show system capabilities`
	`IB: Supported`
	`Ethernet: Supported, Full L2`
	`GW: Supported`
	`Max number of GW ports: 0`
	`Max SM nodes: 648`
	`IB Max licensed speed: FDR`
	`Ethernet Max licensed speed: 56Gb`
	
	`switch (config) #`	

Related Commands	show system profile	
Note		

show system mac

show system mac

Displays system MAC address.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config) # show system mac`
	`00:02:C9:5E:AF:18`
	`switch (config) #`

Related Commands	N/A
Note	

show protocols

show protocols

Displays all protocols enabled in the system.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.2.3000
Role	admin

Example	`switch (config) # show protocols`
	`Ethernet enabled`
	`spanning-tree enabled`
	`lacp disabled`
	`lldp disabled`
	`igmp-snooping disabled`
	`ets enabled`
	`priority-flow-control disabled`
	
	`IP routing enabled`
	`ospf enabled`
	`switch (config) #`

Related Commands	N/A
Note	

3 Ethernet Switching

3.1 Interface

interface ethernet

interface ethernet <slot>/<port>[/<subport>]-[<slot>/<port>[/<subport>]]

Enters the Ethernet interface or Ethernet interface range configuration mode.

Syntax Description	<slot>/<port>	Ethernet port number.
	subport	Ethernet subport number. to be used in case of split port.
Default	N/A	
Configuration Mode	Config	
History	3.1.0000	Initial version.
	3.2.1100	Added range support.
Role	admin	

Example	`switch (config) # interface ethernet 1/1`
	`switch (config interface ethernet 1/1) # exit`
	`switch (config) # interface ethernet 1/1-1/10`
	`switch (config interface ethernet 1/1-1/10) #`	

Related Commands	show interfaces ethernet	
Note		

flowcontrol

flowcontrol {receive | send} {off | on} [force]

Enables or disables IEEE 802.3x link-level flow control per direction for the specified interface.

Syntax Description	receive | send	receive - ingresses direction send - egresses direction
	off | on	on - enables IEEE 802.3x link-level flow control for the specified interface on receive or send. off - disables IEEE 802.3x link-level flow control for the specified interface on receive or send
	force	Forces command implementation.
Default	receive off, send off	
Configuration Mode	Config Interface Ethernet Config Interface Port Channel	
History	3.1.0000	
Role	admin	
Example	`switch (config interface ethernet 1/1) # flowcontrol receive off` `switch (config interface ethernet 1/1) #`	
Related Commands	show interfaces ethernet	
Note	N/A	

mtu

mtu <frame-size>

Configures the Maximum Transmission Unit (MTU) frame size for the interface.

Syntax Description	frame-size	This value may be 1518-9216 bytes.
Default	1522 bytes	
Configuration Mode	Config Interface Ethernet Config Interface Port Channel	
History	3.1.0000	
Role	admin	
Example	`switch (config interface ethernet 1/1) # mtu 9216` `switch (config interface ethernet 1/1) #`	
Related Commands	show interfaces ethernet	
Note		

shutdown

	shutdown **no shutdown** Disables the interface. The no form of the command enables the interface.
Syntax Description	N/A
Default	The interface is enabled.
Configuration Mode	Config Interface Ethernet Config Interface Port Channel
History	3.1.0000
Role	admin
Example	`switch (config interface ethernet 1/1) # shutdown` `switch (config interface ethernet 1/1) #`
Related Commands	show interfaces ethernet
Note	

description

description <string>
no description

Sets an interface description.
The no form of the command returns the interface description to its default value.

Syntax Description	string 40 bytes
Default	“”
Configuration Mode	Config Interface Ethernet Config Interface Port Channel
History	3.1.0000
Role	admin
Example	`switch (config interface ethernet 1/1) # description my-interface` `switch (config interface ethernet 1/1) #`
Related Commands	show interfaces ethernet
Note	

speed

speed <port speed> [force]
no speed

Sets the speed of the interface.
The no form of the command sets the speed of the interface to its default value.

Syntax Description	port speed	1000 - 1GbE 10000 - 10GbE 40000 - 40GbE auto - auto negotiates link speed
	force	force changing the speed.
Default	Depends on the port module type, see the "Notes" section below.	
Configuration Mode	Config Interface Ethernet	
History	3.1.0000	
	3.3.3500	Added auto negotiation option
Role	admin	
Example	`switch (config interface ethernet 1/1) # speed 40000` `switch (config interface ethernet 1/1) #`	
Related Commands	show interfaces ethernet	
Note	• 56Gbps port speed requires a license (LIC-6036F-56GE) • The default speed depends on the interface capabilities, interface capable with 40Gbps will have 40Gbps speed by default • Not all interfaces support all speed options	

load-interval

load-interval <time>
no load-interval

Sets the interface counter interval.
The no form of the command resets the interval to its default value.

Syntax Description	time	In seconds.
Default	300 seconds.	
Configuration Mode	Config Interface Ethernet	
History	3.3.0000	
Role	admin	
Example	`switch (config interface ethernet 1/1) # load-interval 30` `switch (config interface ethernet 1/1) #`	
Related Commands	show interfaces ethernet	
Note	This interval is used for the ingress rate and egress rate counters.	

clear counters

clear counters

Clears the interface counters.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config Interface Ethernet Config Interface Port Channel
History	3.1.0000
Role	admin
Example	`switch (config interface ethernet 1/1) # clear counters` `switch (config interface ethernet 1/1) #`
Related Commands	show interfaces ethernet
Note	

show interfaces ethernet

show interfaces ethernet <inf> [counters [priority]]

Displays the configuration and status for the interface.

Syntax Description	inf	Interface number: <slot>/<port>.
	counters	Displays interface extended counters.
	priority	Displays interface extended counters, per priority (0-7).
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example

```
switch (config) # show interfaces ethernet 1/1

Eth1/1

Admin state: Enabled
  Operational state: Up
  Description: N\A
  Mac address: 00:02:c9:71:ed:2d
  MTU: 1500 bytes(Maximum packet size 1522 bytes)
  Flow-control: receive off send off
  Actual speed: 40 Gbps
  Width reduction mode: Not supported
  Switchport mode: access
  Last clearing of "show interface" counters 00:20:39
  60 seconds Ingress rate: 0 bits/sec, 0 bytes/sec, 0 packets/sec
  60 seconds Egress rate: 0 bits/sec, 0 bytes/sec, 0 packets/sec

Rx
  0                   packets
  0                   unicast packets
  0                   multicast packets
  0                   broadcast packets
  0                   bytes
  0                   error packets
  0                   discard packets

Tx
  63                  packets
  0                   unicast packets
  63                  multicast packets
  0                   broadcast packets
  4032                bytes
  0                   discard packets

switch (config) #
```

Related Commands	
Note	

show interfaces ethernet [<inf>] capabilities

show interfaces ethernet [<inf>] capabilities

Displays the interface capabilities.

Syntax Description	inf	shows only one interface capabilities. Interface number: <slot>/<port>.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show interfaces ethernet 1/1 capabilities`
	`Eth1/1`
	`Speed       : 10000,40000`
	`FlowControl : Send, Receive`
	`switch (config) #`	

Related Commands		
Note		

show interfaces ethernet [<inf>] description

show interfaces ethernet [<inf>] description

Displays the admin status and protocol status for the specified interface.

Syntax Description	inf	Interface number: <slot>/<port>.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show interfaces ethernet 0/1 description`
	`Interface Status Protocol`
	`--------- ------ --------`
	`Ethernet 1/1 Enables up`
	`switch (config) #`	

Related Commands		
Note		

show interfaces ethernet [<inf>] status

show interfaces ethernet [<inf>] status

Displays the status, speed and negotiation mode of the specified interface.

Syntax Description	inf	Interface number: <slot>/<port>.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show interfaces ethernet status`
	
	`Port Operational state Speed Negotiation`
	
	`Eth1/1 Up 40 Gbps No-Negotiation`
	`Eth1/2 Up 10 Gbps No-Negotiation`
	`Eth1/3 Up 40 Gbps No-Negotiation`
	`...`
	`switch (config) #`	

Related Commands		
Note		

show interfaces ethernet [<inf>] transceiver

show interfaces ethernet [<inf>] transceiver

Displays the transceiver info.

Syntax Description	inf	interface number: <slot>/<port>
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show interfaces ethernet 1/1 transceiver`
	`Port 1/1 state`
	`identifier : QSFP+`
	`cable/ module type : Optical cable/ module`
	`ethernet speed and type: 40GBASE - SR4`
	`vendor : Mellanox`
	`cable_length : 50 m`
	`part number : MC2210411-SR4`
	`revision : A1`
	`serial number : TT1151-00006`
	`switch (config) #`	

Related Commands		
Note		

3.1.1 Brake-Out Cables

module-type

module-type <type> [force]

Splits or un-splits the interface, as desired.

Syntax Description	type	qsfp - Port runs at 40000/56000Mbps. qsfp-split-2 - Port is split and runs at 2X10000Mbps. qsfp-split-4 - Port is split and runs at 4X10000Mbps.
	force	force the split operation without asking for user confirmation.
Default	interface module type is qsfp (if the interface supports 40Gbps speed)	
Configuration Mode	Config Interface Ethernet	
History	3.1.1400	
Role	admin	

Example	`switch (config interface ethernet 1/4) # module-type qsfp-split-4`
	`the following interfaces will be unmapped: 1/4 1/1`
	`Type 'yes' to confirm split: yes`
	`switch (config interface ethernet 1/4) #`	

Related Commands	switchport mode switchport [trunk | hybrid] allowed-vlan show vlan	
Note	• The affected interfaces should be disabled prior to the operation • in order to un-split the interface - used the command with “qsfp”, the speed is set to 40Gbps “module-type qsfp”. • This command is applicable only on 40Gbps Ethernet ports	

3.2 Link Aggregation Group (LAG) and LACP

interface port-channel

interface port-channel <1-4096>[-<2-4096>]
no interface port-channel <1-4096>[-<2-4096>]

Creates a port channel and enters the port-channel configuration mode. There is an option to create a range of port-channel interfaces.
The no form of the command deletes the port-channels, or range of port-channels.

Syntax Description	1-4096 / 2-4096	Port channel number.
Default	Port channels are not created by default.	
Configuration Mode	Config	
History	3.1.1400	Initial version.
	3.2.1100	Added range support.
Role	admin	

Example	`switch (config)# interface port-channel 1`
	`switch (config interface port-channel 1) # exit`
	`switch (config)# interface port-channel 1-10`
	`switch (config interface port-channel 1-10) #`	

Related Commands		
Note		

lacp

	lacp **no lacp** Enables LACP in the switch. The no form of the command disables LACP in the switch.
Syntax Description	N/A
Default	LACP is disabled.
Configuration Mode	Config
History	3.1.1400
Role	admin
Example	`switch (config)# lacp` `switch (config)#`
Related Commands	
Note	

lacp system-priority

lacp system-priority <1-65535>
no lacp system-priority

Configures the LACP system priority.
The no form of the command sets the LACP system-priority to default.

Syntax Description	1-65535	LACP system-priority.
Default	32768	
Configuration Mode	Config	
History	3.1.1400	
Role	admin	

Example	`switch (config)# lacp system-priority 1`
	`switch (config)# show lacp interfaces port-channel`
	`Port-channel Module Admin Status is enabled`
	`Port-channel System Identifier is 00:02:c9:5c:61:70`
	`LACP System Priority: 3`
	`switch (config)#`	

Related Commands		
Note		

lacp (interface)

lacp {rate fast | port-priority <1-65535>}
no lacp {rate fast | port-priority}

Configures the LACP interface parameters.
The no form of the command sets the LACP interface configuration to default.

Syntax Description	rate fast	Sets LACP PDUs on the port to be in fast (1 second) or slow rate. (30 seconds).
	1-65535	LACP port-priority.
Default	rate - slow (30 seconds) port-priority 32768	
Configuration Mode	Config	
History	3.1.1400	
Role	admin	

Example

```
switch (config)# lacp rate fast
switch (config)# show lacp interfaces ethernet 1/7
Port : 1/7
-------------

Port State = Down
Channel Group : 1
Pseudo port-channel = Po1
LACP port-priority = 32768
LACP Rate = Slow
LACP Activity : Passive
LACP Timeout : Short

Aggregation State : Aggregation, Defaulted,

                LACP Port  Admin   Oper  Port       Port
Port     State   Priority  Key     Key   Number     State
-----------------------------------------------------------------
1/7      Down       128        1      1      0x7        0x0
switch (config)#
```

Related Commands

Note Configuring LACP rate (fast or slow) will configure the peer port to send (fast or slow), it does not make any affect on the local port LACP rate.

port-channel load-balance

port-channel load-balance <method>
no port-channel load-balance <method>

Configures the port-channel load balancing distribution function method.
The no form of the command sets the distribution function method to default.

Syntax Description	method	Possible load balance methods: • destination-ip • destination-mac • destination-port • source-destination-ip • source-destination-mac • source-destination-port • source-ip • source-mac • source-port
Default	source-destination-mac	
Configuration Mode	Config	
History	3.1.1400	
Role	admin	

Example	`switch (config)# port-channel load-balance ethernet destination-ip source-port source-mac`
	`switch (config)# show interfaces port-channel load-balance`
	`destination-ip,source-mac,source-port`
	`switch (config)#`	

Related Commands		
Note	Several load balance methods can be configured (refer to the example)	

channel-group

channel-group <1-4096> [mode {on | active | passive}]
no channel-group

Assigns and configures a physical interface to a port channel.
The no form of the command removes a physical interface from the port-channel.

Syntax Description	1-4096	The port channel number.
	mode on	Static assignment the port to LAG. LACP will not be enabled on this port.
	mode active/passive	Dynamic assignment of the port to LAG. LACP will be enabled in either passive or active mode.
Default	N/A	
Configuration Mode	Config Interface Ethernet	
History	3.1.1400	
Role	admin	

Example

```
switch (config interface 1/7)# channel-group 1 mode active
switch (config interface 1/7)# show interfaces port-channel summary
Flags: D- Down P - Up in port-channel (members)
I - Individual H - Hot-standby (LACP only)
s - Suspended r - Module-removed
U - Up (port-channel)

--------------------------------------------------------------------------
Group Port-      Type       Member Ports
Channel
--------------------------------------------------------------------------
1 Po1(D)         LACP       Eth1/7(D)

switch (config interface 1/7)#
```

Related Commands

show interfaces port-channel summary
show interfaces port-channel compatibility-parameters
show lacp interfaces ethernet

Note

- Setting the mode to active/passive is possible only in LACP is enabled.
- The first port in the LAG decide if the LAG will be static (“on”) or LACP (“active” , “pasive”).
- All the ports in the LAG must have the same configuration, determines by the first port added to the LAG. The port with a different configuration will be rejected, for the list of dependencies refer to ‘show interfaces port-channel compatibility-parameters’

show lacp system-identifier

show lacp system-identifier

Displays the system identifier of LACP.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.1400
Role	admin

Example	`switch (config)# show lacp system-identifier`
	`00:02:c9:5c:61:70`
	`switch (config)#`

Related Commands	show lacp interface port-channel
Note	

show lacp counters

show lacp counters

Displays the LACP PDUs counters.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.1400
Role	admin

Example	`switch (config)# show lacp counters`
	`LACPDUs Marker Marker Response LACPDUs`
	`Port Sent Recv Sent Recv Sent Recv Illegal Unknown`
	`---------------------------------------------------------------------`
	`Port-channel: 1`
	`------------------`
	`1/7 0 0 0 0 0 0 0 0 0`
	
	`switch (config) # switch (config)#`

Related Commands	
Note	

show lacp interface ethernet

show lacp interface etherent <inf>

Displays the LACP interface configuration and status.

Syntax Description	inf	Interface number, for example “1/1”.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.1400	
Role	admin	
Example		

```
switch (config) # show lacp interfaces ethernet 1/4
Port : 1/4
-------------

Port State = Down
Channel Group : 1
Pseudo port-channel = Po1
LACP port-priority = 128
LACP Rate = Slow
LACP Activity : Passive
LACP Timeout : Short

Aggregation State : Aggregation, Defaulted,

                LACP Port  Admin   Oper  Port       Port
Port     State   Priority  Key     Key   Number     State
-----------------------------------------------------------------------
1/4      Down    128        1      1      0x4        0x0
switch (config) #
```

Related Commands	
Note	

show lacp interface neighbor

show lacp interface neighbor

Displays the LACP interface neighbor status.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.1400
Role	admin

Example	`switch (config) # show lacp interfaces neighbor`
	`Flags:`
	`A - Device is in Active mode`
	`P - Device is in Passive mode`
	
	`Channel group 1 neighbors`
	
	`Port 1/4`
	`----------`
	`Partner System ID : 00:00:00:00:00:00`
	`Flags : A`
	`LACP Partner Port Priority : 0`
	`LACP Partner Oper Key : 0`
	`LACP Partner Port State : 0x0`
	
	`Port State Flags Decode`
	`------------------------`
	`Activity : Active`
	`Aggregation State : Aggregation, Sync, Collecting, Distributing,`
	`Expired, Defaulted,`
	
	`switch (config) #`

Related Commands	
Note	

show lacp interfaces port-channel

show lacp interfaces port-channel

Displays the LACP global parameters.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.1400
Role	admin

Example	`switch (config) # show lacp interfaces port-channel`
	`Port-channel Module Admin Status is enabled`
	`Port-channel System Identifier is 00:01:02:03:04:05`
	`LACP System Priority: 32768`
	`switch (config) #`

Related Commands	
Note	

show interfaces port-channel

show interfaces port-channel {compatibility-parameters | load-balance | summary}

Displays port-channel parameters.

Syntax Description	compatibility-parameters	Displays the parameters that must be the same among the member ports of the port-channel interface.
	load-balance	Displays the type of load-balancing in use for port-channels.
	summary	Displays a summary of the port-channel interfaces.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.3.4000	
Role	admin	

Example

```
switch (config) # show interfaces port-channel compatibility-parameters
* Port-mode
* Speed
* MTU
* Flow Control
* Access VLAN
* Allowed VLAN list
* Flowcontrol & PFC
* Channel-group mode
* CoS parameters

Static configuration on the port should be removed:
* ACL port binding
* Static mrouter
* Static mac address
switch (config) #show interfaces port-channel load-balance
source-destination-mac
switch (config) #show interfaces port-channel summary
Flags: D- Down P - Up in port-channel (members)
I - Individual H - Hot-standby (LACP only)
s - Suspended r - Module-removed
U - Up (port-channel)

--------------------------------------------------------------------------------
Group Port-      Type       Member Ports
Channel
--------------------------------------------------------------------------------
switch (config) #
```

Related Commands

Note

3.3 VLANs

vlan

vlan {<vlan-id> | <vlan-range>}
no vlan {<vlan-id> | <vlan-range>}

Creates a VLAN or range of VLANs, and enters a VLAN context.
The no form of the command deletes the VLAN or VLAN range.

Syntax Description	vlan-id	1-4094.
	vlan-range	Any range of VLANs.
Default	VLAN 1 is enabled by default.	
Configuration Mode	Config	
History	3.1.1400	
Role	admin	

Example	`switch (config) # vlan 10`
	`switch (config vlan 10) # show vlan`
	
	`VLAN  Name  Ports`
	`----  ----------  ----------`
	`1  default  Eth1/2, Eth1/3, Eth1/4/1, Eth1/4/2 ...`
	`10`
	`switch (config vlan 10) #`	

Related Commands	show vlan switchport mode switchport [trunk | hybrid] allowed-vlan	
Note	Interfaces are not added automatically to VLAN unless configured with trunk or hybrid mode with “all” option turned on.	

name

name <vlan-name>
no name

Adds VLAN name.
The no form of the command deletes the VLAN name.

Syntax Description	vlan-name 40-character long string.
Default	No name available.
Configuration Mode	Config Vlan
History	3.1.1400
Role	admin

Example	`switch (config) # vlan 10`
	`switch (config vlan 10) # name my-vlan-name`
	`switch (config vlan 10) # show vlan`
	
	`VLAN Name Ports`
	`---- ---------- ----------`
	`1 default Eth1/2, Eth1/3, Eth1/4/1, Eth1/4/2, Eth1/5,`
	`Eth1/6, Eth1/7, Eth1/8, Eth1/9, Eth1/10,`
	`Eth1/11, Eth1/12, Eth1/13, Eth1/14, Eth1/15,`
	`Eth1/16, Eth1/17, Eth1/18, Eth1/19, Eth1/20,`
	`Eth1/21, Eth1/22, Eth1/23, Eth1/24, Eth1/25,`
	`Eth1/26, Eth1/27, Eth1/28, Eth1/29, Eth1/30,`
	`Eth1/31, Eth1/32, Eth1/33, Eth1/34, Eth1/35,`
	`Eth1/36, Po34, Po4096`
	`10 my-vlan-name`

Related Commands	show vlan switchport mode switchport [trunk | hybrid] allowed-vlan
Note	Name can not be added to a range of VLANs.

show vlan

show vlan [id <vlan-id>]

Displays the VLAN table.

Syntax Description	vlan-id 1-4094.
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.1400
Role	admin

Example	`switch (config vlan 10) # show vlan`
	
	`VLAN Name Ports`
	`---- ---------- ----------`
	`1 default Eth1/2, Eth1/3, Eth1/4/1, Eth1/4/2 ...`
	`10 my-vlan-name`

Related Commands	show vlan switchport mode switchport [trunk | hybrid] allowed-vlan vlan
Note	

switchport mode

switchport mode {access | trunk | hybrid | access-dcb}
no switchport mode

Sets the switch port mode.
The no form of the command sets the switch port mode to access.

Syntax Description	access	Un-tagged port. 802.1q tagged traffic will be filtered. egress traffic is un-tagged.
	trunk	802.1q tagged port, un-tagged traffic will be filtered.
	hybrid	Both 802.1q tagged and un-tagged traffic is allowed on the port.
	access-dcb	Un-tagged port, egress traffic is priority tagged.
Default	access.	
Configuration Mode	Config Interface Ethernet Config Interface Port Channel	
History	3.1.1400	
Role	admin	

Example	`switch (config) # interface ethernet 1/7`
	`switch (config interface ethernet 1/7) # switchport mode access`
	`switch (config interface ethernet 1/7) # show interfaces switchport`
	`Interface  |    Mode    | Access vlan |        Allowed vlans`
	`----------|------------|-------------|--------------------------`
	`Eth1/2      access          1`
	`Eth1/3      access          1`
	`Eth1/4/1    access          1`
	`Eth1/4/2    access          1`
	`Eth1/5      access          1`
	`Eth1/6      access          1`
	`....`
	`Po34        access          1`
	`Po4096      access          1`
	`switch (config interface ethernet 1/7) #`	

Related Commands	show vlan show interfaces switchport switchport access vlan switchport [trunk | hybrid] allowed-vlan vlan	
Note		

switchport access

switchport access vlan <vlan-id>
no switchport access vlan

Sets the port access VLAN.
The no form of the command sets the port access VLAN to 1.

Syntax Description	vlan-id	1-4094.
Default	1	
Configuration Mode	Config Interface Ethernet Config Interface Port Channel	
History	3.1.1400	Initial version
	3.2.0500	Format change (removed hybrid and access-dcb options). Previous command format was: “switchport {hybrid | access-dcb | access} vlan <vlan-id>”
Role	admin	

Example

```
switch (config) # interface ethernet 1/7
switch (config interface ethernet 1/7) # switchport access vlan 10
switch (config interface ethernet 1/7) # show interfaces switchport
Interface  |    Mode    | Access vlan |        Allowed vlans
-----------|------------|-------------|--------------------------
Eth1/2      access          1
Eth1/3      access          1
Eth1/4/1    access          1
Eth1/4/2    access          1
Eth1/5      access          1
Eth1/6      access          1
Eth1/7      access          10
....
Po4096      access          1
switch (config interface ethernet 1/7) #
```

Related Commands	show vlan show interfaces switchport switchport mode switchport [trunk | hybrid] allowed-vlan vlan
Note	This command is not applicable for interfaces with port mode trunk. only one option (“access”, “access-dcb” or “hybrid”) is applicable to configure on the port, depends on the switchport mode of the port.

switchport {hybrid, trunk} allowed vlan

switchport {hybrid, trunk} allowed vlan {<vlan> | add <vlan> | remove <vlan> all | except <vlan> | none}

Sets the port allowed VLANs.

Syntax Description	vlan	VLAN ID (1-4094) or VLAN range.
	add	Add VLAN or range of VLANs.
	remove	Remove VLANs or range of VLANs.
	all	Add all VLANs in available in the VLAN table. New vlans that will be added to the vlan table will be added automatically.
	except	Add all VLANs expect this VLAN or VLAN range.
	none	Remove all VLANs.
Default	N/A	
Configuration Mode	Config Interface Ethernet Config Interface Port Channel	
History	3.1.1400	
Role	admin	

Example

```
switch (config) # interface ethernet 1/7
switch (config interface ethernet 1/7) # switchport hybrid allowed-vlan
all
switch (config interface ethernet 1/7) #show interfaces switchport
Interface  |    Mode    | Access vlan |        Allowed vlans
-----------|------------|-------------|--------------------------
Eth1/2      access          1
Eth1/3      access          1
Eth1/4/1    access          1
Eth1/4/2    access          1
Eth1/5      access          1
Eth1/6      access          1
Eth1/7      hybrid          1           1, 10
....
Po34        access          1
Po4096      access          1
switch (config interface ethernet 1/7) #
```

Related Commands	show vlan show interfaces switchport switchport access vlan switchport mode vlan
Note	This command is not applicable for interfaces with port mode access or access-dcb.

show interface switchport

show interface switchport

Displays all interface switch port configurations.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.1400
Role	admin

Example	`switch (config) #show interfaces switchport`
	`Interface  |    Mode    | Access vlan |        Allowed vlans`
	`-----------|------------|-------------|---------------------------`
	`Eth1/2      access          1`
	`Eth1/3      access          1`
	`Eth1/4/1    access          1`
	`Eth1/4/2    access          1`
	`Eth1/5      access          1`
	`Eth1/6      access          1`
	`Eth1/7      hybrid          1           1, 10`
	`....`
	`Po34        access          1`
	`Po4096      access          1`
	`switch (config)#`

Related Commands	show vlan switchport access vlan switchport mode vlan
Note	

3.4 MAC Address Table

mac-address-table aging-time

mac-address-table aging-time <age>
no mac-address-table aging-time

Sets the maximum age of a dynamically learnt entry in the MAC address table. The no form of the command resets the aging time of the MAC address table to its default.

Syntax Description	age	10-1000000 seconds.
Default	300	
Configuration Mode	Config	
History	3.1.0600	
Role	admin	

Example	`switch (config) # mac-address-table aging-time 50`
	`switch (config) # show mac-address-table aging-time`
	
	`Mac Address Aging Time: 50`
	
	`switch (config) #`	

Related Commands	show mac-address-table show mac-address-table aging time	
Note		

mac-address-table static

mac-address-table static <mac address> vlan <vlan> interface <if-type> <if-number>
no mac-address-table static <mac address> vlan <vlan> interface <if-type> <if-number>

Configures a static MAC address in the forwarding database.
The no form of the command deletes a configured static MAC address from the forwarding database.

Syntax Description	mac address	Destination MAC address.
	vlan	VLAN ID or VLAN range.
	if-type	Ethernet or port-channel interface type.
	if-number	The interface number (i.e. 1/1, 3).
Default	No static MAC addresses available in default.	
Configuration Mode	Config	
History	3.1.0600	
Role	admin	

Example

```
switch (config) # mac-address-table static aa:aa:aa:aa:aa:aa vlan 1
interface ethernet 1/7
switch (config) # show mac-address-table

Switch ethernet-default

Vlan    Mac Address          Type     Interface
----    -----------          ----     ------------
1       aa:aa:aa:aa:aa:aa   static     Eth1/7
Number of unicast:      1
Number of multicast:    0
switch (config) #
```

Related Commands
show mac-address-table
mac-address-table aging time

Note
The no form of the command will not clear a dynamic MAC address. Dynamic MAC addresses are cleared using the “clear mac-address-table dynamic” command.

clear mac-address-table dynamic

clear mac-address-table dynamic

Clear the dynamic entries in the MAC address table.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0600
Role	admin
Example	`switch (config) # clear mac-address-table dynamic` `switch (config) #`
Related Commands	mac-address-table aging-time mac-address-table static show mac-address-table
Note	This command does not clear the MAC addresses learned on the mgmt0 port. Static entries are deleted using the “no mac-address-table static” command.

show mac-address-table

show mac-address-table [address <mac-address> | interface ethernet <if-number> | vlan [<vlan> | range <range>] | unicast | multicast]

Displays the static and dynamic unicast and multicast MAC addresses for the switch. Various of filter options available.

Syntax Description	mac-address	Filter the table to a specific MAC address.
	if-number	Filter the table to a specific interface.
	vlan	Filter the table to a specific VLAN number (1-4094).
	range	Filter the table to a range of VLANs.
	unicast	Filter the table to a unicast addresses only.
	multicast	Filter the table to a multicast addresses only.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0600	
Role	admin	

Example	`switch (config) # show mac-address-table`
	
	`Switch ethernet-default`
	
	`Vlan Mac Address Type Interface`
	`---- ----------- ---- ------------`
	`1 00:02:c9:06:97:36 dynamic Eth1/36`
	`1 00:02:c9:10:d7:c0 static Eth1/35`
	`Number of unicast: 2`
	`Number of multicast: 0`
	`switch (config) #`	

Related Commands	mac-address-table static clear mac-address-table	
Note		

show mac-address-table aging-time

show mac-address-table aging-time

Displays the MAC address table aging time.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.0600
Role	admin

Example	`switch (config) # mac-address-table aging-time 300`
	`switch (config) # show mac-address-table aging-time`
	
	`Mac Address Aging Time: 300`
	
	`switch (config) #`

Related Commands	mac-address-table aging-time mac-address-table static clear mac-address-table
Note	MAC addresses learned on the mgmt0 is not shown by this command.

3.5 Spanning Tree

spanning-tree

	spanning-tree **no spanning-tree** Globally enables the spanning tree feature. The no form disables the spanning tree feature.
Syntax Description	N/A
Default	Spanning tree is enabled.
Configuration Mode	Config
History	3.1.0000
Role	admin
Example	switch (config) # no spanning-tree switch (config) #
Related Commands	show spanning-tree
Note	

spanning-tree (timers)

spanning-tree [forward-time <time in secs> | hello-time <time in secs> | max-age <time in secs>]
no spanning-tree [forward-time | hello-time | max-age]

Sets the spanning tree timers.
The no form of the command sets the timer to default.

Syntax Description	forward-time	Controls how fast a port changes its spanning tree state from Blocking state to Forwarding state. Parameter range: 4-30 seconds.
	hello-time	Determines how often the switch broadcasts its hello message to other switches when it is the root of the spanning tree. Parameter range: 1-2 seconds.
	max-age	Sets the maximum age allowed for the Spanning Tree Protocol information learnt from the network on any port before it is discarded. Parameter range: 6-40 seconds.
Default	forward-time: 15 seconds hello-time:2 seconds max-age: 20 seconds	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # spanning-tree forward-time` `switch (config) #`	
Related Commands	show spanning-tree	
Note	The following formula applies on the spanning tree timers: 2*(ForwardTime -1)>=MaxAgeTime >= 2*(Hello Time + 1)	

spanning-tree port type (default global)

spanning-tree port type <port-type> default
no spanning-tree port type default

Configures all switch interfaces as edge/network/normal ports. These ports can be connected to any type of device.
The no form of the command disables the spanning tree operation.

Syntax Description	port-type	• Edge - Assumes all ports are connected to hosts/servers. • Network - Assumes all ports are connected to switches and bridges. • Normal - the port type (Edge or Network) determines according to the spanning tree operational mode.
Default	Normal	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # spanning-tree port type edge default` `switch (config) #`	
Related Commands	show spanning-tree	
Note		

spanning-tree priority

spanning-tree priority <bridge-priority>
no spanning-tree priority

Sets the spanning tree bridge priority.
The no form of the command sets the bridge priority to default.

Syntax Description	bridge-priority	Sets the bridge priority for the spanning tree. Its value must be in steps of 4096, starting from 0. Only the following values are applicable: 0, 4096, 8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152, 53248, 57344, 61440.
Default	32786	
Configuration Mode	Config	
History	3.1.0000	
Role	admin	
Example	`switch (config) # spanning-tree priority 4096` `switch (config) #`	
Related Commands	show spanning-tree	
Note		

spanning-tree port-priority

spanning-tree port-priority <priority>
no spanning-tree port-priority

Configures the spanning-tree interface priority.
The no form of the command returns configuration to its default.

Syntax Description	priority	Spanning tree interface priority. The possible values are: 0, 16, 32,48, 64, 80, 96, 112, 128,144, 160, 176, 192, 208, 224, 240.
Default	128	
Configuration Mode	Config Interface Ethernet	
History	3.1.0000	
Role	admin	

Example	`switch (config) # interface ethernet 1/1`
	`switch (config interface ethernet 1/1) # spanning-tree port-priority 16`
	`switch (config interface ethernet 1/1) #`	

Related Commands	show spanning-tree	
Note		

spanning-tree cost

spanning-tree cost <port cost>
no spanning-tree cost

Configures the interface cost of the spanning tree.
The no form of the command returns configuration to its default.

Syntax Description	port cost	Sets the spanning tree cost of an interface. Value range is 0-200000000.
Default	The default cost is derived from the speed. 1Gbps 20000 10Gbps 2000 40Gbps 500 56Gbps 357	
Configuration Mode	Config Interface Ethernet	
History	3.1.0000	
Role	admin	

Example	`switch (config) # interface ethernet 1/1`
	`switch (config interface ethernet 1/1) # spanning-tree cost 1000`
	`switch (config interface ethernet 1/1) #`	

Related Commands	show spanning-tree	
Note	• LAG default cost is calculated by dividing the port speed by the number of active links in UP state. For example: if there were 4 links in the LAG out of which only two are in UP state, assuming the port speed is 10Gbps, the LAG cost will be 2000/2 = 1000. • When configuring the cost for a LAG, the cost will be fixed to this configuration, no matter what the number of active links (UIP state) in the LAG is • Unstable network may cause the LAG cost to change dynamically assuming the cost parameter is not configured for anything else other than default	

spanning-tree port type

spanning-tree port type <port type>
no spanning-tree port type

Configures spanning-tree port type
The no form of the command returns configuration to default.

Syntax Description	port type	Sets the spanning-tree port type. The port type parameter has four options: • Default (globally defined) • Edge • Normal • Network In case there is no change of this parameter, the configuration will be taken from the global default port type.
Default	Globally defined by the command “spanning-tree port type <port-type> default”	
Configuration Mode	Config Interface Ethernet	
History	3.1.0000	
Role	admin	

Example	`switch (config) # interface ethernet 1/1`
	`switch (config interface ethernet 1/1) # spanning-tree port type edge`
	`switch (config interface ethernet 1/1) #`	

Related Commands	show spanning-tree	
Note		

spanning-tree guard

spanning-tree guard {loop | root}
no spanning-tree guard {loop | root}

Configures spanning-tree guard.
The no form of the command returns configuration to default.

Syntax Description	loop	Enables loop-guard on the interface. If the loop-guard is enabled, upon a situation where the interface fails to receive BPDUs the switch will not egress data traffic on this interface.
	root	Enables root-guard on the interface. If root-guard is enabled on the interface, the interface will never be selected as root port.
Default	loop-guard and loop-guard are disabled.	
Configuration Mode	Config Interface Ethernet	
History	3.1.0000	
Role	admin	

Example	`switch (config) # interface ethernet 1/1`
	`switch (config interface ethernet 1/1) # spanning-tree guard root`
	`switch (config interface ethernet 1/1) #`	

Related Commands	show spanning-tree	
Note		

spanning-tree bpdufilter

spanning tree bpdufilter {disable | enable}
no spanning tree bpdufilter

Configures spanning-tree BPDU filter on the interface. The interface will ignore any BPDU that it receives and will not send PDBUs, The STP state on the port will move to the forwarding state.
The no form of the command returns the configuration to default.

Syntax Description	disable	Disables the BPDU filter on this port.
	enable	Enables the BPDU filter on this port.
Default	BPDU filter is disabled.	
Configuration Mode	Config Interface Ethernet	
History	3.1.0000	
Role	admin	

Example	`switch (config) # interface ethernet 1/1`
	`switch (config interface ethernet 1/1) # spanning-tree bpdufilter enable`
	`switch (config interface ethernet 1/1) #`	

Related Commands	show spanning-tree	
Note	This command can be used when the switch is connected to hosts.	

clear spanning-tree counters

clear spanning-tree counters

Clears the spanning-tree counters.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.1.0000
Role	admin
Example	`switch (config) # clear panning-tree counters` `switch (config) #`
Related Commands	show spanning tree
Note	

show spanning-tree

show spanning-tree [detail | interface <type> <number>]

Displays spanning tree information.

Syntax Description	detail	Displays detailed spanning-tree configuration and statistics.
	interface <type> <number>	Displays the running state for a specific interface. Options for "type": ethernet or port-channel. Options for "number": <slot/port> or <number>.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example	`switch (config) # show spanning-tree`
	
	`Switch ethernet-default`
	
	`Spanning tree protocol is enabled rstp`
	
	`Spanning tree force version:2`
	`Root ID`
	`  Priority 32768`
	`  Address 00:02:c9:5c:61:70`
	`  This bridge is the root`
	`  Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec`
	`Bridge ID`
	`  Priority 32768`
	`  Address  00:02:c9:5c:61:70`
	`  Hello Time 2 sec Max Age 20 sec Forward Delay  15 sec`
	
	`Interface  Role  Sts  Cost  Prio  Type`
	`----  ----  -----  ----  ----  ----`
	`switch (config) #`	

Related Commands	clear spanning-tree counters spanning-tree	
Note		

3.6 IGMP Snooping

ip igmp snooping (admin)

ip igmp snooping
no ip igmp snooping

Enables IGMP snooping globally or per VLAN.
The no form of the command disables IGMP snooping globally or per VLAN.

Syntax Description	N/A
Default	IGMP snooping is disabled, globally and per VLAN.
Configuration Mode	Config Config Vlan
History	3.1.1400
Role	admin

Example	`switch (config) # ip igmp snooping`
	`switch (config) # vlan 10`
	`switch (config vlan 10) # ip igmp snooping`
	`switch (config vlan 10) # exit`
	`switch (config) # show ip igmp snooping`
	
	`IGMP snooping global configuration:`
	
	`IGMP snooping globally enabled`
	`IGMP snooping operationally enabled`
	`Proxy-reporting globally disabled`
	`Last member query interval is 1 seconds`
	`Mrouter timeout is 125 seconds`
	`Port purge timeout is 260 seconds`
	`Report suppression interval is 5 seconds`
	
	`switch (config vlan 10) # show ip igmp snooping vlan 10`
	
	`Vlan 10 configuration parameters:`
	`IGMP snooping is enabled`
	`IGMP version is V2`
	`Snooping switch is acting as Non-Querier`
	`mrouter static port list: none`
	`mrouter dynamic port list: none`
	`switch (config vlan 10) # vlan 10`
	`switch (config vlan 10) #`

Related Commands	show ip igmp snooping
Note	IGMP snooping has global admin state, and per VLAN admin state. Both states need to be enabled in order to enable the IGMP snooping on a specific VLAN.

ip igmp snooping (config)

ip igmp snooping {last-member-query-interval <1-25> | proxy reporting mrouter-timeout <60-600> | port-purge-timeout <130-1225> | report-suppression-interval <1-25>}

no ip igmp snooping {last-member-query-interval | proxy reporting | mrouter-timeout | report-suppression-interval}

Configures IGMP global parameters.
The no form of the command resets the IGMP global parameters to default.

Syntax Description	last-member-query-interval <1-25>	Sets the time period (in seconds) with which the general queries are sent by the IGMP quarrier. After time-out expiration the port will be removed from the multicast group.
	proxy reporting	Enables proxy reporting
	mrouter-timeout <60-600>	Sets the IGMP snooping router port purge time-out after which the port gets deleted if no IGMP router control packets are received. The default value is 125 seconds.
	port-purge-timeout <130-1225>	Sets the IGMP snooping port purge time interval after which the port gets deleted if no IGMP reports are received.
	report-suppression-interval <1-25>	Sets the IGMP snooping report-suppression time interval for which the IGMPv2 report messages for the same group will not get forwarded onto the router ports. The default value is 5 seconds.
Default	last-member-query-interval - 1 second. proxy reporting is disabled mrouter-timout - 125 port-purge-timeout - 260 seconds report-suppression-interval - 5 seconds.	
Configuration Mode	Config	
History	3.1.1400	
Role	admin	

Example

```
switch (config) # ip igmp snooping report-suppression-interval 3
switch (config) # show ip igmp snooping

IGMP snooping global configuration:

IGMP snooping globally enabled
IGMP snooping operationally enabled
Proxy-reporting globally disabled
Last member query interval is 1 seconds
Mrouter timeout is 125 seconds
Port purge timeout is 260 seconds
Report suppression interval is 3 seconds

switch (config) #
```

Related Commands

ip igmp snooping (admin)
show ip igmp snooping

Note

ip igmp snooping fast-leave

ip igmp snooping fast-leave
no ip igmp snooping fast-leave

Enables fast leave processing on a specific interface.
The no form of the command disables fast leave processing on a specific interface.

Syntax Description	N/A
Default	Normal-leave is enabled.
Configuration Mode	Config Interface Ethernet Config Interface Port Channel
History	3.1.1400
Role	admin

Example	`switch (config interface ethernet 1/1) # ip igmp snooping fast-leave`
	`switch (config interface ethernet 1/1) # show ip igmp snooping inter-faces`
	`interface leave-mode`
	`--- ---`
	`Eth1/1 Fast`
	`Eth1/2 Normal`
	`Eth1/3 Normal`
	`...`
	`switch (config interface ethernet 1/1) #`

Related Commands	show ip igmp snooping interfaces
Note	

ip igmp snooping static-group

ip igmp snooping static-group <IP address> interface <type> <number>
no ip igmp snooping static-group <IP address> interface <type> <number>

Creates a static multicast group and attaches a port to a specified group.
The no form of the command deletes the interface from the multicast group.

Syntax Description	Ip address	Multicast IP address <224.x.x.x - 239.255.255.255>
	interface <type> <number>	Attach the group to a specific interface. type - ethernet or port-channel
Default	No static groups are configured.	
Configuration Mode	Config Vlan	
History	3.1.1400	
Role	admin	

Example	`switch (config)# vlan 1`
	`switch (config vlan 1) # ip igmp snooping static-group 230.0.0.1 interface ethernet 1/1`
	`switch (config vlan 1) # show ip igmp snooping groups`
	`Vlan ID  Group  St/Dyn  Ports`
	`--------  ------------  -------  -------`
	`1  230.0.0.1  St  Eth1/1`
	`Total Num of Dynamic Group Addresses 0`
	`Total Num of Static Group Addresses 1`
	`switch (config vlan 1) #`	

Related Commands	show ip igmp snooping groups	
Note	If the deleted interface is the last port, it deletes the entire multicast group.	

ip igmp snooping mrouter

ip igmp snooping mrouter interface <type> <number>
no ip igmp snooping mrouter interface <type> <number>

Creates a static multicast router port on a specific VLAN, on a specific interface. The no form of the command removes the static multicast router port from a specific VLAN.

Syntax Description	interface <type> <number>	Attaches the group to a specific interface. type - ethernet or port-channel.
Default	No static mrouters are configured.	
Configuration Mode	Config Vlan	
History	3.1.1400	
Role	admin	

Example	`switch (config)# vlan 1`
	`switch (config vlan 1) # ip igmp snooping mrouter interface ethernet 1/1`
	`switch (config vlan 1) # show ip igmp snooping mrouter`
	`Vlan Ports`
	`-------- ------------`
	`1 Eth1/1(static)`
	`switch (config vlan 1) #`	

Related Commands	show ip igmp snooping mrouter	
Note	The multicast router port can be created only if IGMP snooping is enabled both globally and on the VLAN.	

ip igmp snooping unregistered multicast

ip igmp snooping unregistered multicast <options>
no ip igmp snooping unregistered multicast

Sets the behavior of the snooping switch for unregistered multicast traffic. The no form of the command sets it default.

Syntax Description	options	• flood • forward-to-mrouter-ports
Default	flood	
Configuration Mode	Config	
History	3.2.0500	
Role	admin	

Example	`switch (config) # ip igmp snooping unregisted multicast flood`
	`switch (config) # show ip igmp snooping`
	
	`IGMP snooping global configuration:`
	
	`IGMP snooping globally enabled`
	`IGMP snooping operationally enabled`
	`Proxy-reporting globally disabled`
	`Last member query interval is 1 seconds`
	`Mrouter timeout is 125 seconds`
	`Port purge timeout is 260 seconds`
	`Report suppression interval is 5 seconds`
	`IGMP snooping unregistered multicast: flood`
	`switch (config) #`	

Related Commands	show ip igmp snooping	
Note		

show ip igmp snooping

show ip igmp snooping

Displays IGMP snooping information for all VLANs or a specific VLAN.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.1400
Role	admin

Example	`switch (config) # show ip igmp snooping`
	
	`IGMP snooping global configuration:`
	
	`IGMP snooping globally enabled`
	`IGMP snooping operationally enabled`
	`Proxy-reporting globally disabled`
	`Last member query interval is 1 seconds`
	`Mrouter timeout is 125 seconds`
	`Port purge timeout is 260 seconds`
	`Report suppression interval is 3 seconds`
	`IGMP snooping unregistered multicast: flood`
	
	`switch (config) #`

Related Commands	
Note	

show ip igmp snooping groups

show ip igmp snooping groups

Displays per VLAN the list of multicast groups attached (static or dynamic allocated) per port.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.1400
Role	admin

Example	`switch (config) # show ip igmp snooping groups`
	`Vlan ID  Group  St/Dyn  Ports`
	`--------  ------------  -------  -------`
	`1  230.0.0.1  St  Eth1/1`
	`Total Num of Dynamic Group Addresses 0`
	`Total Num of Static Group Addresses 1`
	`switch (config) #`

Related Commands	
Note	

show ip igmp snooping vlan

show ip igmp snooping vlan {<vlan/vlan-range> | all}

Displays IGMP configuration per VLAN or VLAN range.

Syntax Description	vlan/vlan range	Displays IGMP VLAN configuration per specific VLAN or VLAN range.
	all	Display IGMP VLAN configuration on all VLAN.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.1400	
Role	admin	

Example	`switch (config) # show ip igmp vlan 1`
	`Vlan 1 configuration parameters:`
	`  IGMP snooping is enabled`
	`  IGMP version is V2`
	`  Snooping switch is acting as Non-Querier`
	`  mrouter static port list: Eth1/1`
	`  mrouter dynamic port list: none`
	`switch (config) #`	

Related Commands		
Note		

show ip igmp snooping mrouter

show ip igmp snooping mrouter

Displays IGMP snooping multicast router information.

Syntax Description	
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.1400
Role	admin

Example	`switch (config) # show ip igmp snooping mrouter`
	`Vlan Ports`
	`-------- ------------`
	`1 Eth1/1(static)`
	`switch (config) #`

Related Commands	
Note	

show ip igmp snooping interfaces

show ip igmp snooping interfaces

Displays IGMP snooping interface information.

Syntax Description	
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.1400
Role	admin

Example	`switch (config) # show ip igmp snooping interfaces`
	`interface  leave-mode`
	`-----------  ------------`
	`1/1  Normal`
	`1/2  Normal`
	`1/3  Normal`
	`1/4  Fast`
	`...`
	`switch (config) #`

Related Commands	
Note	

show ip igmp snooping statistics

show ip igmp snooping statistics

Displays IGMP snooping statistical counters.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.1.1400
Role	admin

Example	`switch (config) # show ip igmp snooping statistics`
	`Snooping Statistics for VLAN 1`
	`  General queries received : 0`
	`  Group specific queries received : 0`
	`  V1/V2 reports received : 0`
	`  V1/V2 reports transmitted : 0`
	`  Leave messages received : 0`
	`  Group specific queries transmitted: 0`
	`  Leave messages transmitted: 0`
	`  Unsuccessful joins received count Per Vlan: 0`
	`  Active/Successful joins received count Per Vlan: 0`
	`  Active Groups count: 0`
	`  Packets dropped: 0`
	`switch (config) #`

Related Commands	
Note	

3.7 Link Layer Discovery Protocol (LLDP)

lldp

lldp
no lldp

Enables LLDP globally.
The no form of the command disables the LLDP.

Syntax Description	N/A
Default	Disabled
Configuration Mode	Config
History	3.2.0300
Role	admin
Example	`switch (config)# lldp` `switch (config)#`
Related Commands	show lldp local
Note	

lldp reinit

lldp reinit <seconds>
no lldp reinit

Sets the delay in seconds from enabling the LLDP on the port until re-initialization will be attempted.
The no form of the command sets the parameter to default.

Syntax Description	seconds 1-10
Default	2
Configuration Mode	Config
History	3.2.0300
Role	admin
Example	`switch (config)# lldp reinit 10` `switch (config)#`
Related Commands	show lldp timers
Note	

lldp timer

lldp timer <seconds>
no lldp timer

Sets the LLDP interval at which LLDP frames are transmitted. (lldpMessageTxInterval)
The no form of the command sets the parameter to default.

Syntax Description	seconds	5-32768
Default	30	
Configuration Mode	Config	
History	3.2.0300	
Role	admin	
Example	`switch (config)# lldp timer 10` `switch (config)#`	
Related Commands	show lldp timers	
Note		

lldp tx-delay

lldp tx-delay <seconds>
no lldp tx-delay

Indicates the delay in seconds between successive LLDP frame transmissions
The no form of the command sets the parameter to default.

Syntax Description	seconds	1-8192
Default	2	
Configuration Mode	Config	
History	3.2.0300	
Role	admin	
Example	`switch (config)# lldp tx-delay 10` `switch (config)#`	
Related Commands	show lldp timers	
Note	The recommended value for the tx-delay is set by the following formula: 1 <= lldp tx-delay <= (0.25 * lldp timer)	

lldp tx-hold-multiplier

lldp tx-hold-multiplier <seconds>
no lldp tx-hold-multiplier

The time-to-live value expressed as a multiple of the lldpMessageTxInterval object. The no form of the command sets the parameter to default.

Syntax Description	seconds 1-8192
Default	2
Configuration Mode	Config
History	3.2.0300
Role	admin
Example	`switch (config)# lldp tx-hold-multiplier 10` `switch (config)#`
Related Commands	show lldp timers
Note	The actual time-to-live value used in LLDP frames, can be expressed by the following formula: TTL = min(65535, (lldpMessageTxInterval * lldpMessageTxHoldMultiplier)) For example, if the value of lldpMessageTxInterval is '30', and the value of lldpMessageTxHoldMultiplier is '4', then the value '120' is encoded in the TTL field in the LLDP header.

lldp {receive | transmit}

	lldp {receive | transmit} **no lldp {receive | transmit}** Enables LLDP to be received or transmitted on this port. The no form of the command disables the LLDP to be received or transmitted on this port.
Syntax Description	N/A
Default	Enabled for receive and Trasmit.
Configuration Mode	Config Interface Ethernet
History	3.2.0300
Role	admin

Example	`switch (config interface ethernet 1/1)# lldp receive`
	`switch (config interface ethernet 1/1)# lldp transmit`
	`switch (config interface ethernet 1/1)#`

Related Commands	show lldp interface
Note	The LLDP is disabled by default (globally)

lldp tlv-select

lldp tlv-select { [port-description] [sys-name] [sys-description] [sys-capababilities] [management-address] [none] all}

Sets the LLDP basic TLVs to be transmitted on this port.

Syntax Description	port-description	LLDP port description TLV
	sys-name	LLDP system name TLV
	sys-description	LLDP system description TLV
	sys-capabilities	LLDP system capabilities TLV
	management-address	LLDP management address TLV
	all	all above TLVs
	none	None of the above TLVs
Default	all	
Configuration Mode	Config Interface Ethernet	
History	3.2.0300	Initial revision
	3.3.0000	Added `none` argument
Role	admin	
Example	`switch (config interface ethernet 1/1)# lldp tlv-select port-description sys-name` `switch (config interface ethernet 1/1)#`	
Related Commands	show lldp interface	
Note		

show lldp local

	show lldp local Shows LLDP local information.
Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.2.0300
Role	admin

Example	`switch (config)# show lldp local`
	
	`LLDP is Enabled`
	
	`Local global configuration`
	
	`Chassis sub type: macAddress (4)`
	`Chassis id: 0002C9030046AF00`
	`System Name: my-switch`
	`System Description: SX1036`
	`Supported capabilities: B,R`
	`Supported capabilities enabled: B`
	
	`switch (config)#`

Related Commands	
Note	

show lldp interface

show lldp interface [ethernet <inf>]

Shows LLDP local interface table information.

Syntax Description	inf	Interface number, for example 1/1.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.2.0300	
Role	admin	

Example	`switch (config)# show lldp interface ethernet 1/1`
	
	`TLV flags:`
	`PD: port-description, SN: sys-name, SD: sys-description, SC: sys-capa-bilities, MA: management-address`
	
	`Interface Receive Transmit TLVs`
	`----------------------------------------------------------`
	`Eth1/1 Enabled Enabled PD,SN,SD,SC,MA`
	`switch (config)#`	

Related Commands		
Note		

show lldp interfaces ethernet <inf> remote

show lldp interfaces ethernet <inf> remote

Shows LLDP remote interface table information.

Syntax Description	inf	Local interface number, for example 1/1.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.2.0300	
Role	admin	

Example	`switch (config)# show lldp interfaces ethernet 1/1`
	
	`Ethernet 1/1`
	
	`Remote Index:1`
	`Remote chassis id: 0002C903005C8DB0 ; chassis id subtype: Local(7)`
	`Remote port-id: Eth1/1 ; port id subtype: ifName(5)`
	`Remote port description: Ethernet 1/1`
	`Remote system name: remote-system-name`
	`Remote system description: remote-system-description`
	`Remote system capabilities supported: B; enabled B`
	
	`switch (config)#`	

Related Commands		
Note		

show lldp timers

show lldp timers

Shows LLDP timers configuration

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.2.0300
Role	admin

Example	`switch (config)# show lldp timers`
	`msg-tx-interval:30`
	`tx-delay:2`
	`tx-hold:4`
	`tx-reinit-delay:2`
	`switch (config)#`

Related Commands	
Note	

show lldp statistics global

show lldp statistics global

Shows LLDP global statistics

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.2.0300
Role	admin

Example	`switch (config)# show lldp timers`
	`Remote Table Last Change Time : 10300`
	`Remote Table Inserts : 5`
	`Remote Table Deletes : 0`
	`Remote Table Drops : 0`
	`Remote Table Ageouts : 0`
	`switch (config)#`

Related Commands	
Note	

show lldp statistics [interface ethernet <inf>]

show lldp statistics [interface ethernet <inf>]

Shows LLDP interface statistics

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.2.0300
Role	admin

Example	`switch (config)# show lldp statistics ethernet 1/1`
	`Interface Frames In In TLVs TLVs Ageout Out`
	`Discarded Errors Total Discarded Unrecognize Frames`
	`---`
	`Eth 1/1 0 0 10 0 0 0 0`
	`switch (config)#`

Related Commands	
Note	

3.8 Quality of Service

3.8.1 Enhanced Transmission Selection (ETS)

dcb ets enable

	dcb ets enable **no dcb ets enable** Sets the switch egress scheduling mode to be weighted round robin. The no form of the command sets the switch egress scheduling mode to be strict priority.
Syntax Description	N/A
Default	ETS is enabled.
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config)# dcb ets enable`
	`switch (config)# show dcb ets`
	
	`ETS enabled`
	
	`TC  Bandwidth`
	`--------------------------`
	`0  25%`
	`1  25%`
	`2  25%`
	`3  25%`
	
	`Number of Traffic Class: 4`
	
	`switch (config) #`

Related Commands	show dcb ets
Note	

dcb ets tc bandwidth

dcb ets tc bandwidth <tc-0> <tc-1> <tc-2> <tc-3>
no dcb ets tc bandwidth

Configures the bandwidth limit of the traffic class.
The no form of the command sets the bandwidths per traffic class back to its default.

Syntax Description	`tc-i` 0-100.
Default	25% per traffic class.
Configuration Mode	Config
History	3.1.0000
Role	admin

Example	`switch (config)# dcb ets tc bandwidth 20 20 30 30`
	`switch (config) # show dcb ets`
	
	`ETS enabled`
	
	`TC Bandwidth`
	`--------------------------`
	`0 20%`
	`1 20%`
	`2 30%`
	`3 30%`
	
	`Number of Traffic Class: 4`
	
	`switch (config) #`

Related Commands	show dcb ets
Note	The sum of all traffic class bandwidth must be equal to 100.

vlan map-priority

vlan map priority <priority> traffic-class <tc>
no vlan map priority <priority>

Maps an VLAN user priority to a traffic class.
The no form of the command sets the mapping back to default.

Syntax Description	N/A
Default	Priority 0,1 mapped to tc 0. Priority 2,3 mapped to tc 1. Priority 4,5 mapped to tc 2. Priority 6,7 mapped to tc 3.
Configuration Mode	Config Interface Ethernet
History	3.1.0000
Role	admin
Example	`switch (config interface ethernet 1/1) # vlan map-priority 1 traffic-class 2` `switch (config interface ethernet 1/1) #`
Related Commands	`show dcb ets interface`
Note	

show dcb ets

show dcb ets

Displays ETS configuration and operational data.

Syntax Description	
Default	ETS is enabled.
Configuration Mode	Any Command Mode
History	3.1.0000
Role	admin

Example	`switch (config)# show dcb ets`
	
	`ETS enabled`
	
	`TC Bandwidth`
	`--------------------------`
	`0 25%`
	`1 25%`
	`2 25%`
	`3 25%`
	
	`Number of Traffic Class: 4`
	
	`switch (config) #`

Related Commands	
Note	

show dcb ets interface

show dcb ets interface <type> <number>

Displays ETS configuration and operational data, per interface.

Syntax Description	type	ethernet or port-channel
	number	interface number, i.e. 1/1
Default	ETS is enabled.	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	

Example

```
switch (config)# show dcb ets interface ethernet 1/1

ETS Port Mode             :ON MODE
ETS Oper State            :INIT STATE
ETS State Machine Type    :Assymetric
-----------------------------------------------
ETS Local Port Info
-----------------------------------------------
TC bandwidth table
-----------------------------------------------
TC        Bandwidth        RecomBandwidth
-----------------------------------------------
0         25%         25%
1         25%         25%
2         25%         25%
3         25%         25%

priority assignment table
--------------------------------------
Priority     TC
--------------------------------------
0          0
1          0
2          1
3          1
4          2
5          2
6          3
7          3

Number of Traffic Class: 4


Willing Status:  Disable
-----------------------------------------------
ETS Admin Port Info
-----------------------------------------------
TC        Bandwidth        RecomBandwidth
-----------------------------------------------
0         30%         30%
1         30%         30%
2         30%         30%
3         10%         10%

-----------------------------------------------
ETS Remote Port Info
-----------------------------------------------
No Remote Entry is Present
-----------------------------------------------
switch (config) #
```

Related Commands

Note

3.8.2 Priority Flow Control (PFC)

dcb priority-flow-control enable

dcb priority-flow-control enable
no dcb priority-flow-control enable

Enables PFC globally on the switch.
The no form of the command globally disables PFC on the switch.

Syntax Description	N/A
Default	PFC is disabled.
Configuration Mode	Config
History	3.1.0000 Initial revision 3.3.0000 Output update
Role	admin

Example	`switch (config)# dcb priority-flow-control enable`
	`This action might cause traffic loss while shutting down a port with priority-flow-control mode on`
	`Type 'yes' to confirm enable pfc globally: yes`
	`switch (config)# show dcb priority-flow-control`
	
	`PFC enabled`
	`Priority Enabled List    :`
	`Priority Disabled List   :0 1 2 3 4 5 6 7`
	
	`TC     Lossless`
	`---    ----------`
	`0           N`
	`1           Y`
	`2           Y`
	`3           N`
	
	`Interface      PFC admin        PFC oper`
	`------------   --------------   -------------`
	`1/1              Disabled         Disabled`
	`1/2              Disabled         Disabled`
	`1/3              Disabled         Disabled`
	`1/4              Disabled         Disabled`
	`...`
	`switch (config) #`

Related Commands	show dcb priority-flow-control
Note	This command asks the user to approve traffic loss because there might be interfaces with dcb mode on, that will be shutdown.

dcb priority-flow-control priority

dcb priority-flow-control priority <prio> enable
no dcb priority-flow-control priority <prio> enable

Enables PFC per priority on the switch.
The no form of the command disables PFC per priority on the switch.

Syntax Description	prio 0-7.
Default	PFC is disabled for all priorities.
Configuration Mode	Config
History	3.1.0000
Role	admin
Example	

```
switch (config)# dcb priority-flow-control priority 0 enable
switch (config)# show dcb priority-flow-control

PFC enabled
Priority Enabled List    : 0
Priority Disabled List   : 1 2 3 4 5 6 7

TC     Lossless
---    ----------
0           N
1           Y
2           Y
3           N


Interface      PFC admin        PFC oper
------------   --------------   -------------
1/1              Disabled         Disabled
1/2              Disabled         Disabled
1/3              Disabled         Disabled
1/4              Disabled         Disabled
...
switch (config) #
```

Related Commands	show dcb priority-flow-control
Note	

dcb priority-flow-control mode on

dcb priority-flow-control mode on [force]
no dcb priority-flow-control mode

Enables PFC per interface.
The no form of the command disables PFC per interface.

Syntax Description	force — Force command implementation.
Default	PFC is disabled for all interfaces.
Configuration Mode	Config Interface Ethernet Config Interface Port Channel
History	3.1.0000
Role	admin

Example	`switch (config interface ethernet 1/1) # dcb priority-flow-control mode on`
	`switch (config interface ethernet 1/1) # show dcb priority-flow-control`
	
	`PFC enabled`
	`Priority Enabled List    : 0`
	`Priority Disabled List   : 1 2 3 4 5 6 7`
	
	`TC     Lossless`
	`---    ----------`
	`0           N`
	`1           Y`
	`2           Y`
	`3           N`
	
	`Interface      PFC admin        PFC oper`
	`------------   --------------   -------------`
	`1/1              On               Enabled`
	`1/2              Disabled         Disabled`
	`1/3              Disabled         Disabled`
	`1/4              Disabled         Disabled`
	`...`
	`switch (config) #`

Related Commands	show dcb priority-flow-control
Note	

show dcb priority-flow-control

show dcb priority-flow-control [interface <type> <inf>] [detail]

Displays DCB priority flow control configuration and status.

Syntax Description	type	• ethernet • port-channel
	inf	The interface number.
	detail	Adds details information to the show output.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.0000	
Role	admin	
Example		

```
switch (config interface ethernet 1/1) # show dcb priority-flow-control

PFC enabled
Priority Enabled List    : 0
Priority Disabled List   : 1 2 3 4 5 6 7

TC     Lossless
---    ----------
0           N
1           Y
2           Y
3           N


Interface      PFC admin        PFC oper
------------   --------------   -------------
1/1              On               Enabled
1/2              Disabled         Disabled
1/3              Disabled         Disabled
1/4              Disabled         Disabled
...
switch (config) #
```

Related Commands	
Note	

3.9 Access Control List (ACL)

ipv4/mac access-list

{ipv4 | mac} access-list <acl-name>
no {ipv4 | mac} access-list <acl-name>

Creates a MAC or IPv4 ACL and enter the ACL configuration mode.
The no form of the command deletes the ACL.

Syntax Description	ipv4 | mac	IPv4 or MAC - access list.
	acl-name	User defined string for the ACL.
Default	No ACL available by default.	
Configuration Mode	Config	
History	3.1.1400	
Role	admin	
Example	`switch (config)# mac access-list my-mac-list` `switch (config mac access-list my-mac-list)#`	
Related Commands	ipv4/port access-group	
Note		

ipv4/mac port access-group

{ipv4 | mac} port access-list <acl-name>
no {ipv4 | mac} port access-list <acl-name>

Binds an ACL to the interface.
The no form of the command unbinds the ACL from the interface.

Syntax Description	`ipv4 | mac`	IPv4 or MAC - access list.
	`acl-name`	ACL name.
Default	No ACL is bind by default.	
Configuration Mode	Config Interface Ethernet Config Interface Port Channel	
History	3.1.1400	
Role	admin	
Example	`switch (config interface ethernet 1/1) # mac port access-group my-list` `switch (config interface ethernet 1/1) #`	
Related Commands	ipv4/mac access-list	
Note	The access control list should be defined prior to the binding action.	

deny/permit (MAC ACL rule)

[seq-number <sequence-number>] {deny|permit } {any | <source-mac> [mask <mac>]} {any |<destination-mac> [mask <mac>]} [protocol <protocol>] [cos <cos-value>] [vlan <vlan-id>] [action <action-id>]
no <sequence-number>

Creates a rule for MAC ACL.
The no form of the command deletes a rule from the MAC ACL.

Syntax Description	sequence-number	Optional parameter to set a specific sequence number for the rule. The range is:1-500.
	deny | permit	Determines the type of the rule, denies or permits action.
	{any | <source-mac> [mask <mac>]}	Sets source MAC and optionally sets a mask for that MAC. The “any” option will cause the rule not to check the source MAC.
	{any | <destination-mac> [mask <mac>]}	Sets destination MAC and optionally sets a mask for that MAC. The “any” option will cause the rule not to check the destination MAC.
	protocol	Sets the Ethertype filed value from the MAC address. Possible range is: 0x0000-0xffff.
	cos-value	Sets the COS (priority bits) field, possible range is: 0-7.
	vlan-id	Sets the VLAN ID field, possible range is 0-4095.
Default	No rule is added by default to access control list. Default sequence number is in multiple of 10.	
Configuration Mode	Config MAC ACL	
History	3.1.1400	
Role	admin	
Example	`switch (config mac access-list my-list) # seq-number 10 deny 0a:0a:0a:0a:0a:0a mask ff:ff:ff:ff:ff:ff any vlan 6 cos 2 protocol 80` `switch (config mac access-list my-list) #`	
Related Commands	ipv4/mac access-list ipv4/mac port access-group	
Note		

deny/permit (IPv4 ACL rule)

[seq-number <sequence-number>] {permit | deny} ip {<source-ip> [mask <ip>] | [any]} {<dest-ip> [mask <ip>] | [any]} [action <action-id>]
no <sequence-number>

Creates a rule for IPv4 ACL.
The no form of the command deletes a rule from the IPv4 ACL.

Syntax Description	sequence-number	Optional parameter to set a specific sequence number for the rule. The range is:1-500.
	deny | permit	Determines the type of the rule, deny or permit action.
	{any | <source-ip> [mask <ip>]}	Sets source IP and optionally sets a mask for that IP address. The “any” option will cause the rule not to check the source IP.
	{any | <destination-ip> [mask <ip>]}	Sets destination IP and optionally sets a mask for that MAC. The “any” option will cause the rule not to check the destination MAC.
Default	No rule is added by default to access control list. Default sequence number is in multiple of 10.	
Configuration Mode	Config IPv4 ACL	
History	3.1.1400	
Role	admin	
Example	`switch (config ipv4 access-list my-list) # seq-number 10 deny ip any any` `switch (config ipv4 access-list my-list) #`	
Related Commands	ipv4/mac access-list ipv4/mac port access-group	
Note		

deny/permit (IPv4 TCP/UDP ACL rule)

[seq-number <sequence-number>] {permit | deny} {tcp | udp} {<source-ip> [mask <ip>] | [any]} {<dest-ip> [mask <ip>]| [any]} [eq-source <port-number>] [eq-destination <port-number>] [action <action-id>]
no <sequence-number>

Creates a rule for IPv4 UDP/TCP ACL.
The no form of the command deletes a rule from the ACL.

Syntax Description	sequence-number	Optional parameter to set a specific sequence number for the rule. The range is:1-500.
	deny | permit	Determines the type of the rule, deny or permit action.
	tcp | udp	UDP or TCP rule transport type.
	{any | <source-ip> [mask <ip>]}	Sets source IP and optionally sets a mask for that IP address. The “any” option will cause the rule not to check the source IP.
	{any | <destination-ip> [mask <ip>]}	Sets destination IP and optionally sets a mask for that MAC. The “any” option will cause the rule not to check the destination MAC.
	[eq-source <port-number>]	TCP/UDP source port number. Range is 0-65535.
	[eq-destination <port-number>]	TCP/UDP destination port number. Range is 0-65535.
Default	No rule is added by default to access control list. Default sequence number is in multiple of 10.	
Configuration Mode	Config IPv4 ACL	
History	3.1.1400	
Role	admin	
Example	`switch (config ipv4 access-list my-list) # seq-number 10 deny tcp any any eq-source 1200` `switch (config ipv4 access-list my-list) #`	
Related Commands	ipv4/mac access-list ipv4/mac port access-group	
Note		

access-list action

access-list action <action-profile-name>
no access-list action <action-profile-name>

Creates access-list action profile and entering the action profile configuration mode. The no form of the command deletes the action profile.

Syntax Description	action-profile-name given name for the profile.
Default	N/A
Configuration Mode	Config
History	3.2.0230
Role	admin

Example	`switch (config)# access-list action my-action`
	`switch (config access-list action my-action)# show access-list action my-action`
	`Access-list Action my-action`
	`Mapped_Vlan_ID |Mapped_port |Counter_set |Policer_ID |`
	`==========`
	`N/A |N/A |N/A |N/A |`
	`switch (config access-list action my-action)#`

Related Commands	
Note	

vlan-map

vlan-map <vlan-id>
no vlan-map

Adds action to map a new VLAN to the packet (in the ingress port or VLAN).
The no form of the command removes the action to map a new VLAN.

Syntax Description	vlan-id 0-4095.
Default	N/A
Configuration Mode	Config
History	3.2.0230
Role	admin

Example	`switch (config access-list action my-action)# vlan-map 10`
	`switch (config access-list action my-action)# show access-list action my-action`
	`Access-list Action my-action`
	`Mapped_Vlan_ID |Mapped_port |Counter_set |Policer_ID |`
	`==========================================================`
	`10 |N/A |N/A |N/A |`
	`switch (config access-list action my-action)#`

Related Commands	
Note	

show access-list action

show access-list action {<action-profile-name> | summary}

Displays the access-list action profiles summary.

Syntax Description	action-profile-name	Filter the table according to the action profile name.
	summary	Display summary of the action list.
Default	N/A	
Configuration Mode	Config	
History	3.2.0230	
Role	admin	
Example	witch (config access-list action my-action)# show access-list action my-action Access-list Action my-action Mapped_Vlan_ID |Mapped_port |Counter_set |Policer_ID | ========== 10 |N/A |N/A |N/A | switch (config access-list action my-action)#	
Related Commands		
Note		

show mac/ipv4 access-lists

show [mac |ipv4 |] access-lists <access-list-name>

Displays the list of rules for the MAC/IPv4 ACL.

Syntax Description	ipv4 | mac	IPv4 or MAC - access list.
	access-list-name	ACL name.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.1400	
Role	admin	

Example	`switch (config mac access-list my-list) # show mac access-lists my-list`
	`mac access-list my-list`
	`seq-number|p/d  |smac |dmac |protocol|cos  |vlan |`
	`==========`
	`10  |deny  |any |any |0800  |3  |3  |`
	`20  |deny  |any |any |80  |2  |6  |`
	`switch (config mac access-list my-list) #`	

Related Commands	deny/permit (MAC ACL rule) deny/permit (IPv4 ACL rule) deny/permit (IPv4 TCP/UDP ACL rule) ipv4/mac access-list ipv4/mac port access-group	
Note		

show mac/ipv4 access-lists summary

show [mac |ipv4 |] access-lists summary

Displays the summary of number of rules per ACL, and the interfaces attached.

Syntax Description	ipv4 | mac	IPv4 or MAC - Access list
	access-list-name	ACL name
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.1.1400	
Role	admin	

Example	`switch (config) # show mac access-lists summary`
	`mac access-list my-list`
	`  Total ACEs Configured: 2`
	`  Configured on interfaces:`
	`  Ethernet 1/1`
	`  Ethernet 1/2`
	`switch (config) #`	

Related Commands	deny/permit (MAC ACL rule) deny/permit (IPv4 ACL rule) deny/permit (IPv4 TCP/UDP ACL rule) ipv4/mac access-list ipv4/mac port access-group	
Note		

3.10 Port Mirroring

3.10.1 Config

monitor session

monitor session <session-id>
no monitor session <session-id>

Creates session and enters monitor session configuration mode upon using this command for the first time.
The no form of the command deletes the session.

Syntax Description	session-id	The monitor session ID. The range is 1-7.
Default	N/A	
Configuration Mode	Config	
History	3.3.3500	
Role	admin	
Example	`switch (config)# monitor session 1` `switch (config monitor session 1)#`	
Related Commands		
Note		

3.10.2 Config Monitor Session

destination interface

destination interface <type> <number> [force]
no destination interface

Sets the egress interface number.
The no form of the command deletes the destination interface.

Syntax Description	interface <type> <number>	Sets the interface type and number (e.g. ethernet 1/2)
	force	The user does not need to shutdown the port prior the operation.
Default	no destination interface	
Configuration Mode	Config Monitor Session	
History	3.3.3500	Initial version
	3.3.4100	Added force argument
Role	admin	
Example	`switch (config monitor session 1) # destination interface ethernet 1/2` `switch (config monitor session 1)#`	
Related Commands		
Note		

shutdown

	shutdown **no shutdown** Disables the session. The no form of the command enables the session.
Syntax Description	N/A
Default	Disabled
Configuration Mode	Config Monitor Session
History	3.3.3500
Role	admin
Example	`switch (config monitor session 1) # no shutdown` `switch (config monitor session 1)#`
Related Commands	
Note	

add source interface

add source interface <type> <number> direction <d-type>
no source interface <type> <number>

Adds a source interface to the mirrored session.
The no form of the command deletes the source interface.

Syntax Description	interface <type> <number>	Configures interface as “ethernet” or “port-channel”.
	direction <d-type>	Configures the direction of the mirrored traffic. The options are as follows: • egress – sets the egress traffic to be monitored • ingress – sets the ingress traffic to be monitored • both – sets egress and ingress traffic to be monitored
Default	N/A	
Configuration Mode	Config Monitor Session	
History	3.3.3500	
Role	admin	
Example	`switch (config monitor session 1) # add source interface ethernet 1/1 direction both` `switch (config monitor session 1)#`	
Related Commands		
Note	If mirroring is configured in one direction (e.g. ingress) on an interface and then is configured in the other direction (e.g. egress), then the ultimate setting is “both”.	

header-format

header-format {local [traffic-class <tc>] | add-vlan <vlan-id> [priority <prio>] [traffic-class <tc>] | add-ethernet-header destination-mac <mac-address> [add-vlan <vlan-id> [priority <prio>]] [traffic-class <tc>]}
no header-format

Sets the header format of the mirrored traffic.
The no form of the command resets the parameter values back to default.

Syntax Description	local	The mirrored header of the frame is not changed.
	traffic-class <tc>	Changes the egress traffic class of the frame. Range is 0-3.
	add-vlan <vlan-id>	An 802.1q VLAN tag is added to the frame.
	priority <prio>	The priority to be added to the Ethernet header. Range is 0-7.
	add-ethernet-header	Adds an Ethernet header to the mirrored frame.
	destination-mac	The destination MAC address of the added Ethernet frame.
Default	no-change vlan 1 priority 0 traffic-class 0	
Configuration Mode	Config Monitor Session	
History	3.3.3500	
Role	admin	
Example	`switch (config monitor session 1) # header-format add-ethernet-header destination-mac 00:0d:ec:f1:a9:c8 add-vlan 10 priority 5 traffic-class 2` `switch (config monitor session 1)#`	
Related Commands		
Note	If add-ethernet-header is used, the source MAC address is the one attached to the switch.	

truncate

	truncate **no truncate** Truncates the mirrored frames to 64-byte packets. The no form of the command disables truncation.
Syntax Description	N/A
Default	no truncate
Configuration Mode	Config Monitor Session
History	3.3.3500
Role	admin
Example	`switch (config monitor session 1) # truncate` `switch (config monitor session 1)#`
Related Commands	
Note	This command applies for all sessions on the same analyzer port.

congestion

congestion [drop-excessive-frames | pause-excessive-frames]
no congestion

Sets the system's behavior when congested
The no form of the command disables truncation.

Syntax Description	drop-excessive-frames	Drops excessive frames.
	pause-excessive-frames	Pauses excessive frames.
Default	drop-excessive-frames	
Configuration Mode	Config Monitor Session	
History	3.3.3500	
	3.3.4000	Added Syntax Description.
Role	admin	
Example	`switch (config monitor session 1) # congestion pause-excessive-frames` `switch (config monitor session 1)#`	
Related Commands		
Note	This command applies for all sessions on the same analyzer port.	

3.10.3 Show

show monitor session

show monitor session <session-id>

Displays monitor session configuration and status.

Syntax Description	session-id	The monitor session ID. Range is 1-7.
Default	N/A	
Configuration Mode	Any Command Mode	
History	3.3.3500	
Role	admin	

Example	`switch (config) # show monitor session 1`
	`Admin: Enable`
	`Status: Up`
	`Truncate: Enable`
	`Destination interface: eth1/2`
	`Congestion type: pause-excessive-frames`
	`Header format: add-ethernet-header`
	`- traffic class 2`
	`- vlan 10`
	`- priority 5`
	`- destination-mac 00:0d:ec:f1:a9:c8`
	`Source interfaces`
	`Interface direction`
	`------------------------`
	`eth1/1 both`
	`switch (config) #`	

Related Commands		
Note		

show monitor session summary

show monitor session summary

Displays monitor session configuration and status summary.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.3.3500
Role	admin

Example	`switch (config) # show monitor session summary`
	`Session  Admin  Status  Mode  Destination  Source`
	`1  Enable  Up  add-eth  eth1/2  eth1/1(b)`
	`2  Disable  Down  add-vlan  eth1/2  eth1/8(i), po1(e)`
	`3  Enable  Up  add-eth  eth1/5  eth1/18(e)`
	`7  Disable  Down  local`
	`switch (config) #`

Related Commands	
Note	

3.11 sFlow

3.11.1 Config

protocol sflow

	protocol sflow **no protocol sflow** Unhides the sFlow commands. The no form of the command deletes sFlow configuration and hides the sFlow commands.
Syntax Description	N/A
Default	Disabled
Configuration Mode	Config
History	3.3.3500
Role	admin
Example	`switch (config) # protocol sflow` `switch (config) #`
Related Commands	
Note	

sflow enable

sflow enable
no sflow enable

Enables sFlow in the system.
The no form of the command disables sFlow without deleting the configuration.

Syntax Description	N/A
Default	Disabled
Configuration Mode	Config
History	3.3.3500
Role	admin
Example	`switch (config) # sflow enable` `switch (config) #`
Related Commands	
Note	

sflow

sflow

Enters sFlow configuration mode.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config
History	3.3.3500
Role	admin
Example	`switch (config) # sflow` `switch (config sflow) #`
Related Commands	
Note	

3.11.2 Config sFlow

sampling-rate

sampling-rate <rate>
no sampling-rate

Sets sFlow sampling ratio.
The no form of the command resets this parameter to its default value.

Syntax Description	rate	Sets the number of packets passed before selecting one for sampling. The range is 4000-16777215. Zero disables sampling.
Default	16000	
Configuration Mode	Config sFlow	
History	3.3.3500	
Role	admin	
Example	`switch (config sflow) # sampling-rate 16111` `switch (config sflow) #`	
Related Commands		
Note		

max-sample-size

max-sample-size <packet-size>
no max-sample-size

Sets the maximum size of sampled packets by sFlow.
The no form of the command resets the parameter to its default value.

Syntax Description	packet-size	The sampled packet size. The range is 64-256 bytes.
Default	128 bytes	
Configuration Mode	Config sFlow	
History	3.3.3500	
Role	admin	
Example	`switch (config sflow) # max-sample-size 165` `switch (config sflow) #`	
Related Commands		
Note	Sampled payload beyond the configured size is discarded.	

counter-poll-interval

counter-poll-interval <seconds>
no counter-poll-interval

Sets the sFlow statistics polling interval.
The no form of the command resets the parameter to its default value.

Syntax Description	seconds	The sFlow statistics polling interval in seconds. Range is 5-3600 seconds. Zero disables the statistic polling.
Default	20 seconds	
Configuration Mode	Config sFlow	
History	3.3.3500	
Role	admin	
Example	`switch (config sflow) # counter-poll-interval 30` `switch (config sflow) #`	
Related Commands		
Note		

max-datagram-size

max-datagram-size <packet-size>
no max-datagram-size

Sets the maximum sFlow packet size to be sent to the collector.
The no form of the command resets the parameter to its default value.

Syntax Description	packet-size	The packet size of the packet being sent to the collector. The range is 200-9216 bytes.
Default	1400 bytes	
Configuration Mode	Config sFlow	
History	3.3.3500	
Role	admin	
Example	`switch (config sflow) # max-datagram-size 9216` `switch (config sflow) #`	
Related Commands		
Note	This packet contains the data sample as well as the statistical counter data.	

collector-ip

collector-ip <ip-address> [udp-port <udp-port-number>]
no collector-ip [<ip-address> udp-port]

Sets the collector's IP.
The no form of the command resets the parameters to their default values.

Syntax Description	ip-address	The collector IP address.
	udp-port <udp-port-number>	Sets the collector UDP port number.
Default	ip-address: 0.0.0.0 udf-port-number: 6343	
Configuration Mode	Config sFlow	
History	3.3.3500	
Role	admin	
Example	`switch (config sflow) # collector-ip 10.10.10.10` `switch (config sflow) #`	
Related Commands		
Note		

agent-ip

agent-ip {<ip-address> | interface {<if-name> | vlan <id> | loopback <number>}}
no agent-ip

Sets the IP address associated with this agent.
The no form of the command resets the parameters to their default values.

Syntax Description	loopback <number>	Loopback interface. The range is 1-32.
	if-name	Interface name (e.g. mgmt0, mgmt1).
	vlan <id>	Interface VLAN. Range is 1-4094
	ip-address	The sFlow agent's IP address (i.e. the source IP of the packet).
Default	ip-address: 0.0.0.0	
Configuration Mode	Config sFlow	
History	3.3.3500	
Role	admin	
Example	`switch (config sflow) # agent-ip 20.20.20.20` `switch (config sflow) #`	
Related Commands		
Note	The IP address here is used in the sFlow header.	

clear counters

clear counters

Clears sFlow counters.

Syntax Description	N/A
Default	N/A
Configuration Mode	Config sFlow
History	3.3.3500
Role	admin
Example	`switch (config sflow) # clear counters` `switch (config sflow) #`
Related Commands	
Note	

sflow enable

sflow enable [view-port-channel members]
no sflow enable [view-port-channel members]

Enables sflow on this interface.
The no form of the command disables sFlow on the interface.

Syntax Description	view-port-channel members	Reports sFlow samples and statistics per LAG member. This option is applicable only on LAG interfaces.
Default	disable no view-port-channel member	
Configuration Mode	Config Interface Ethernet Config Interface Port Channel	
History	3.3.3500	
Role	admin	

Example	`switch(config interface ethernet 1/1)# sflow enable`
	`...`
	`switch(config interface port-channel 1)# sflow enable`	

Related Commands		
Note		

3.11.3 Show

show sflow

show sflow

Displays sFlow configuration and counters.

Syntax Description	N/A
Default	N/A
Configuration Mode	Any Command Mode
History	3.3.3500
Role	admin

Example	`switch (config)# show sflow`
	`sflow protocol enabled`
	`sflow enabled`
	`sampling-rate 16000`
	`max-sampled-size 156`
	`counter-poll-interval 19`
	`max-datagram-size 1500`
	`collector-ip 10.10.10.10`
	`collector-port 6343`
	`agent-ip 20.20.20.20`
	`Interfaces`
	`Ethernet: eth1/1`
	`Port-channel: po1`
	`Statistics:`
	`Total Packets: 2000`
	`Number of flow samples: 1200`
	`Number of samples discarded: 0`
	`Number of statistic samples: 800`
	`Number of datagrams: 300`

Related Commands	
Note	