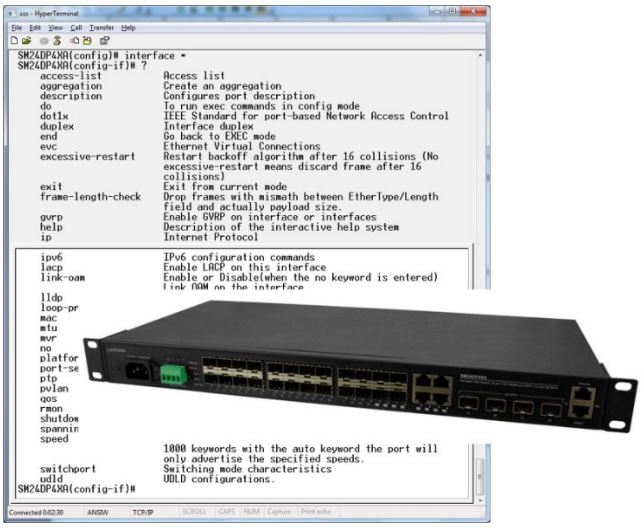

SM24DP4XA

Managed Gigabit Ethernet Fiber Switch

(20) 100/1000Base-X SFP Slots + (4) 100/1000Base SFP/RJ-45 Combo Ports + (4) 1G/10GBase-X SFP+ Slots

CLI Reference

Part Number 33771

Revision F March 2025

Intellectual Property

Warranty

For details on the Lantronix warranty policy, please go to http://www.lantronix.com/support/warranty.

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Revision History

Date	Rev	Description of Changes
10/16/20	C	FW v7.10.2679: fix Auto-logout, Rapid Ring disable, and VLAN 1 disabled issues; add RADIUS and TACACS Key encrypt on “show running-config” command, and fix API Device list table.
3/2/21	D	FW v7.20.0042: add SFTP support in CLI. Add API command for ACL. Add Gateway Address binding interface. Fix IGMP RV value under IPMC VLAN Configuration issue. Add Appendix B - G.8032 Major and Sub Rings Configuration. Have TLV IEEE802.3 MAC/ PHY configuration/status in LLDP packets. Fix download file via SolarWinds SFTP server error. Fix upgrade FW fail via SCP. Send an IEEE802.3 MAC/ PHY packet with two configuration/status TLVs when switch receives a packet with LLDP-MED.
10/7/24	E	FW v7.20.0206: • Initial Lantronix rebrand. • Add Percepxion and LPM support. • Add API commands. • Support DHCP per port VLAN. • Support DHCP option 229. • Encrypt Firmware file. • Add two public OIDs. • Change defaults for SNMP mode and Auth Method. • Add MRP commands. • Fix Cable Diagnostics function. See the Release Notes for details.
3/10/2025	F	FW v7.20.0215: • Add support for MAC Authentication Bypass (MAB) for port based access control. • Update Percepxion description. See the Release Notes for more information.

Safety Warnings and Cautions

These products are not intended for use in life support products where failure of a product could reasonably be expected to result in death or personal injury. Anyone using this product in such an application without express written consent of an officer of Lantronix does so at their own risk, and agrees to fully indemnify Lantronix for any damages that may result from such use or sale.

 **Attention**: This product, like all electronic products, uses semiconductors that can be damaged by ESD (electrostatic discharge). Always observe appropriate precautions when handling.

 **Note**: Emphasizes important information or calls your attention to related features or instructions.

 **Caution**: Alerts you to a potential hazard that could cause loss of data or damage the system or equipment.

 **Warning**: Alerts you to a potential hazard that could cause personal injury.

Contents

1. Introduction

Product Description

The SM24DP4XA is a next-generation Layer 2 managed switch with 128Gbps switching capacity.
It provides up to 24 dual speed fiber slots and (4) 10Gig aggregation ports; it's an ideal switch for fiber aggregation applications. Switch features include:

- Built-in DMS (Device Management System)
- L2+ features provide better manageability, security, QoS, and performance.
- Guest VLAN, voice VLAN, Port based, tag-based and Protocol based VLANs.
- 32K MAC address table
- IEEE 802.3ah OAM
- IEEE 802.1ag and Y.1731 CFM
- IEEE 1588v2 PTP
- L2/L3/L4 ACLs support MAC ACL, IP standard/extended ACL, 802.1p, Ethernet type
- ITU-T G.8031 Ethernet Linear Protection Switching (EPS)
- ITU-T G.8032 Ethernet Ring Protection Switching (ERPS)
- Percepxion and LPM support

About This Manual

This manual gives specific information on how to operate and use the CLI management functions of the switch. This manual is intended for use by network administrators who are responsible for operating and maintaining network equipment; consequently, it assumes a working knowledge of general Ethernet switch functions, the Internet Protocol (IP), and HTTP/HTTPS protocols.

Related Manuals

Other related manuals include:

- SM24DP4XA Quick Start Guide, 33768
- SM24DP4XA Install Guide, 33769
- SM24DP4XA Web User Guide, 33770
- SM24DP4XA API User Guide, 33836
- Release Notes (version specific)

For Lantronix Drivers, Firmware, Manuals, etc. go to the Lantronix Technical Resource Center. For SFP manuals see Lantronix SFP webpage. Note that this manual provides links to third party web sites for which Lantronix is not responsible.

2. Connection and Login

Default Configuration Settings

- IP address: 192.168.1.77
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.168.1.254
- Username: admin
- Password: admin

To prevent unauthorized access, change the default password on first use and periodically.
Serial settings:

- Baud rate=115200bps
- Data bits=8
- Parity=None
- Stop bits=1
- Flow control=none

Access the CLI through the Console Port

The switch can be accessed and configured using a direct serial connection between the switch and your computer and terminal emulation software on your computer. Use a standard serial cable (RJ-45 to DB9). You will need a USB to serial adapter if your computer doesn't have a serial port.
To access the CLI through the console port:

1. Connect the serial cable to the console port (RJ45) on the switch and to the serial port on the computer (DB9) or use a DB9 to USB adapter if your computer lacks a serial port.
2. Use a terminal emulator program such as PuTTY or Tera Term to start a serial session.
3. Select Serial connection type, select the COM port, and enter the speed.
    a. To find out which COM port to select, go to Device Manager > Ports to view the COM ports in use. (Windows)
4. At the terminal window, enter the factory default username (admin) and password (admin).
5. Perform initial switch configuration using the CLI.

Access the CLI using an SSH or Telnet Connection

The switch can be remotely accessed and configured through the Command Line Interface (CLI) using SSH or Telnet. Use a terminal emulator program such as PuTTY or Tera Term to establish the connection.
Your computer should have an IP address on the same network as the switch and be able to reach the switch's configured management IP address. SSH or Telnet service must be enabled on your switch. Telnet is disabled by default.

Note: *Telnet is not secure and can expose data to potential eavesdroppers. SSH should be used for more secure communication.*

To access the CLI using SSH or Telnet:

1. Launch the terminal emulator program on your computer .
2. Select SSH or Telnet as the session type.
3. Enter the hostname or IP address of the switch. SSH port = 22, Telnet port = 23.
4. At the terminal window, enter the factory default username (admin) and password (admin).
5. Perform switch configuration using the CLI.

Login to the CLI

Access the CLI through a direct serial connection to the device or using an SSH or Telnet session.
The default username and password are:

- Username: admin
- Password: admin

After you login successfully, the prompt displays as "<sys_name>**#**". The # prompt indicates that you have administrator privilege for setting the managed switch.
If you're logged in as other than the administrator, the prompt displays as "<sys_name>**>**". The > prompt indicates that you have guest privileges and are allowed only a subset of administrator privilege commands. Each CLI command has a particular privilege level.

Example:

```
Username: admin
Password: admin
SM12XPA#
```

You should change the password as soon as possible to prevent unauthorized access.

3. CLI Management

To display the commands in a mode, enter a "**?**" after the prompt, then all commands will be listed in the screen. Commands exist in several modes: Exec mode, Global commands, Config mode, and Interface Config mode.

Privilege Levels

Every command has a privilege level (0-15). You can run a command if the session's privilege level is greater than or equal to the command's privilege level. The session's privilege level initially comes from the login account's privilege level, though it is possible to change the session's privilege level after logging in.

Privilege Level	Types of Commands at this Privilege Level
0	Display basic system information.
13	Configure features except for login accounts, the authentication method sequence, multiple logins, and administrator and enable passwords.
15	Configure login accounts, the authentication method sequence, multiple logins, and administrator and enable passwords.

CLI Command Modes

The CLI is divided into several modes. If you have a high enough privilege to run a particular command, you can run the command in the correct mode. To see the commands within a mode, enter "**?**" after the system prompt, then all commands will be listed on the screen. The command modes are listed below.

Command Modes

Mode	Prompt	Command Function in this Mode
Exec	<sys_name>#	Display current configuration, diagnostics, maintenance
Config	<sys_name>(config)#	Configure features other than those below
Config-if	<sys_name>(config-interface)#	Configure ports
Config-if-vlan	<sys_name>(config-if-vlan)#	Configure static vlan
Config-line	<sys_name>(config-line)#	Line Configuration

Changing Between Command Modes

Commands residing in the corresponding modes can run only in that mode. If you want to run a particular command, you must change to the appropriate mode. The command modes are organized as a tree, starting in enable mode. The following table explains how to change from one mode to another.

Mode	Enter Mode	Leave Mode
exec	--	--
config	Configure terminal	exit
config-interface	Interface <port-type> <port-type-list>	exit
config-vlan	Interface vlan <vlan_list>	exit

Command Line Controls

To navigate the command line:

Control	Press	Description
more	-	Dash key
next page	space	Space bar
continue	g	g key
quit	^C	Control C
parameters	?	Single Question mark
syntax	??	Two Question marks
available commands in table format	Tab key	Show available commands in tabular format

4. Exec Mode Commands

At the Exec mode prompt, enter a ? and press Enter to display the available Exec mode commands.

Prompt: SM24DP4XA#

Command Set: Exec mode commands are described below. Other Exec mode commands are described elsewhere in this manual (e.g., in separate sections).

CableDiag	Cable Diagnostic keyword
configure	Enter configuration mode
debug	Debugging functions
dot1x	IEEE Standard for port-based Network Access Control
help	Description of the interactive help system
logout	Exit from EXEC mode
reload	Reload system.
traceroute	traceroute program

Command: **CableDiag**

Description: Cable Diagnostic keyword to run the cable diagnostics on a port.

Syntax**:** **CableDiag** interface <port_type> <port_type_id>

Parameters:		
	interface	Interface keyword
	GigabitEthernet	1 Gigabit Ethernet Port
	<port_type_id>	Port ID in 1/21-24,29

Example**:**

```
SM24DP4XA# CableDiag interface GigabitEthernet 1/21
Starting Cable Diagnostic - Please wait
Interface              Link Status    Test Result    Length
---------------------  -------------  -------------  -------------
GigabitEthernet 1/21    Link Down      detect error or check cable length is between 7-
120 meters
SM24DP4XA#
```

Messages: *% No such interface: GigabitEthernet 1/25*

Command: **configure**

Description: Enter Configuration mode. See section Config Mode Commands on page 29.

Syntax**:** **configure** terminal <cr>

Parameters: terminal Configure from the terminal

Example**:**

```
SM24DP4XA# configure terminal
SM24DP4XA(config)#
```

Command: **debug**

Description: Debugging functions. **WARNING**: The use of 'debug' commands may negatively impact system behavior. Do not enable unless instructed to. (Use '**platform debug deny**' to disable debug commands.) **Note**: 'debug' command syntax, semantics and behavior are subject to change without notice.

Command: **dot1x**

Description: IEEE Standard for port-based Network Access Control

Syntax**:** **dot1x** initialize [interface (<port_type> [<plist>])]

Parameters:

initialize	Force re-authentication immediately
interface	Interface
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<port_type_list>	Port list in 1/1-24,29
<cr>	

Example**:**

```
SM24DP4XA# dot1x initialize interface GigabitEthernet 1/4
SM24DP4XA# dot1x initialize interface GigabitEthernet 1/24
SM24DP4XA#
```

Command: **help**

Description: Description of the interactive help system.

Syntax: **help**

Parameters: None.

Example:

```
SM24DP4XA# help
Help may be requested at any point in a command by entering
a question mark '?'.  If nothing matches, the help list will
be empty and you must backup until entering a '?' shows the
available options.
Two styles of help are provided:
1. Full help is available when you are ready to enter a
   command argument (e.g. 'show ?') and describes each possible
   argument.
2. Partial help is provided when an abbreviated argument is entered
   and you want to know what arguments match the input
   (e.g. 'show pr?'.)

SM24DP4XA#
```

Command: **logout**

Description: Exit from EXEC mode.

Syntax: **logout** <Enter>

Parameters: none

Example:

```
SM24DP4XA# logout <enter>
Username:
Password:
```

Command: **reload**

Description: reload defaults.

Syntax: **reload** { { { warm } [sid <usid>] } | { defaults [keep-ip] } }

Parameters:		
	defaults	Reload defaults without rebooting.
	warm	Reload warm (CPU restart only).
	keep-ip	Attempt to keep VLAN1 IP setup.

Example:

```
SM24DP4XA# reload defaults keep-ip
% Reloading defaults, attempting to keep IP address. Please stand by.
SM24DP4XA#
```

Command: **traceroute**

Description: traceroute program

Syntax**:** **traceroute** { ip | ipv6 } <v_ip_addr> [protocol { icmp | udp | tcp }] [wait <v_wait_time>] [ttl <v_max_ttl>] [nqueries <v_nqueries>]

Parameters:		
	ip	IPv4
	ipv6	IPv6
	<word1-255>	destination address
	nqueries	Specify number of probe packets
	protocol	Specify protocol including icmp, udp and tcp
	ttl	Specify max TTL
	wait	Specify wait time
	icmp	Use ICMP protocol (default)
	tcp	Use TCP protocol
	udp	Use UDP protocol
	<1-255>	Time To Live; 1-255; Default is 30 seconds
	<1-60>	Wait; 1-60 sec; Default is 5 seconds

Example**:**

```
SM24DP4XA# traceroute ip 192.168.1.77 nqueries 4 protocol icmp ttl 60 wait 3
traceroute to 192.168.1.77 (192.168.1.77), 60 hops max, 140 byte packets
 1 192.168.1.77  (192.168.1.77)  1 ms  0 ms  0 ms  0 ms
SM24DP4XA#
```

5. Clear Commands

Table : Clear Commands

Command	Function
access	Access management
access-list	Access list
dot1x	IEEE Standard for port-based Network Access Control
eps	Ethernet Protection Switching.
erps	Ethernet Ring Protection Switching
evc	Ethernet Virtual Connections
ip	Interface Internet Protocol config commands
ipv6	IPv6 configuration commands
lacp	Clear LACP statistics
link-oam	Clear Link OAM statistics
lldp	Clears LLDP statistics.
logging	Syslog
mac	MAC Address Table
mep	Maintenance Entity Point
mvr	Multicast VLAN Registration configuration
port-security	Enable/disable port security globally.
ptp	Precision timing protocol
spanning-tree	STP Bridge
statistics	Clear statistics for a given interface

Command: **access**

Description: Clear Access management.

Syntax: **clear** <access> < management > < statistics > <cr>

Parameters: **management** Access management configuration.

statistics Statistics data.

Example:

```
SM24DP4XA# clear access management statistics
SM24DP4XA#
```

Command: **access-list**

Description: Clear Access list.

Syntax: **clear** < access-list >< ace >< statistics >

Parameters: **ace** Access list entry

statistics Traffic statistics

Example:

```
SM24DP4XA# clear access-list ace statistics
SM24DP4XA#
```

Command: **dot1x**

Description: Clear IEEE Standard for port-based Network Access Control.

Syntax: c**lear** <dot1x> < statistics >

clear <dot1x> < interface >< GigabitEthernet /10GigabitEthernet >< PORT_LIST >

Parameters: **statistics** Clears the statistics counters

interface Interface

GigabitEthernet 1 Gigabit Ethernet Port

10GigabitEthernet 10 Gigabit Ethernet Port

PORT_LIST Port list in 1/1-24 for Gigabitethernet, 1/4 for 10Gigabitethernet

Example:

```
SM24DP4XA# clear dot1x statistics interface GigabitEthernet 1/1-5
SM24DP4XA# clear dot1x statistics interface *
SM24DP4XA#
```

Command: **eps**

Description: Clear Ethernet Protection Switching.

Syntax: **clear** <eps>< Inst : uint >< wtr >

Parameters:

<Inst : uint>	The EPS instance number.
wtr	Clear active WTR.

Example:

```
SM24DP4XA# clear eps 1 wtr
SM24DP4XA#
```

Messages: *Not in WTR state*

Command: **erps**

Description: Clear Ethernet Ring Protection Switching.

Syntax: **clear** < erps >< statistics >

clear < erps > <1~64>< statistics >

Parameters:

1~64	Zero or more ERPS group numbers
statistics	Clear ERPS statistics

Example:

```
SM24DP4XA# clear erps 1 statistics
SM24DP4XA#
```

Messages: *% No such ERPS group: 1*

Command: **evc**

Description: Clear Ethernet Virtual Connections.

Syntax:

clear evc statistics { [<evc_id> | all] } [ece [<ece_id>]] [interface (<port_type> [<port_list>])] [pw <pw_num_list>]

clear < evc> < EvcId : 1-1024 / all > < ece >

clear < evc> < EvcId : 1-1024 / all > < ece >< EvcId : 1-1024>

clear < evc> < EvcId : 1-1024 / all > < ece >< EvcId : 1-1024> < interface > < GigabitEthernet /10GigabitEthernet >< PORT_LIST >

clear < evc> < interface > < GigabitEthernet /10GigabitEthernet >< PORT_LIST >

clear < evc> < interface > < GigabitEthernet /10GigabitEthernet >< PORT_LIST >< ece >

clear < evc> < interface > < GigabitEthernet /10GigabitEthernet >< PORT_LIST >< ece >< EvcId : 1-1024>

Parameters:		
	statistics	Statistic counters
	<EvcId : 1-1024>	EVC identifier
	all	Process all EVCs
	ece	EVC Control Entry
	interface	Interface
	GigabitEthernet	1 Gigabit Ethernet Port
	10GigabitEthernet	10 Gigabit Ethernet Port
	<1-4096>	ECE identifier
	<port_type_list>	Port list for all port types
	<port_type_list>	Port list in 1/1-4
	<port_type_list>	Port list in 1/1-24,29
	<port_type_list>	List of Port ID, ex, 1/1,3-5;2/2-4,6

Example:

```
SM24DP4XA# clear evc statistics 1 ece 1 interface *
SM24DP4XA# clear evc statistics interface GigabitEthernet 1/1-5 ece 1
SM24DP4XA# clear evc statistics all ece 20 interface GigabitEthernet  1/1-3
SM24DP4XA#
```

Messages: *% No valid port in wildcard, * 1/28*

Command: **ip**

Description: Clear Interface Internet Protocol config commands.

Syntax:

clear ip arp

clear ip dhcp detailed statistics { server | client | snooping | relay | helper | all } [interface (<port_type> [<in_port_list>])]

clear ip dhcp relay statistics

clear ip dhcp server binding <ip>

clear ip dhcp server binding type { automatic | manual | expired }

clear ip dhcp server statistics

clear ip dhcp snooping statistics [interface (<port_type> [<in_port_list>])]

clear ip igmp snooping [vlan <v_vlan_list>] statistics

clear ip statistics [system] [interface vlan <v_vlan_list>] [icmp] [icmp-msg <type>]

Parameters:		
	arp	Clear ARP cache
	dhcp	Dynamic Host Configuration Protocol
	igmp	Internet Group Management Protocol
	statistics	Traffic statistics
	relay	DHCP relay agent configuration
	snooping	DHCP snooping
	interface	Interface
	GigabitEthernet	1 Gigabit Ethernet Port
	10GigabitEthernet	10 Gigabit Ethernet Port
	vlan	Search by VLAN
	<vlan_list>	VLAN identifier(s): VID
	statistics	Running IGMP snooping counters
	icmp	IPv4 ICMP traffic
	icmp-msg	IPv4 ICMP traffic for designated message type
	interface	Select an interface to configure
	system	IPv4 system traffic
	<0~255>	ICMP message type ranges from 0 to 255
	vlan	IPv4 interface traffic
	all	Clear all DHCP related statistics
	client	DHCP client
	helper	DHCP normal L2 or L3 forward
	relay	DHCP relay
	server	DHCP server

snooping	DHCP snooping
interface	Select an interface to configure
<port_type_list>	Port list for all port types
binding	Clear DHCP binding
statistics	DHCP server statistics
<ipv4_ucast>	IP address of the binding
type	Type of bindings to clear
automatic	Clear automatic bindings to expired bindings
expired	Clear expired bindings for free
manual	Clear manual bindings to expired bindings

Example:

```
SM24DP4XA# clear ip dhcp snooping statistics interface *
SM24DP4XA# clear ip dhcp snooping statistics
SM24DP4XA# clear ip igmp snooping vlan 100-200 statistics
SM24DP4XA# clear ip statistics icmp icmp-msg 0 interface vlan 10 system
% Failed to clear IPv4 VLAN 10 statistics.
SM24DP4XA# clear ip dhcp detailed statistics all interface * 1/5
SM24DP4XA# clear ip dhcp relay statistics
SM24DP4XA#
```

Command: **ipv6**

Description: Clear IPv6 configuration commands.

Syntax: **clear ipv6** dhcp-client statistics [interface vlan <v_vlan_list>]

clear ipv6 mld snooping [vlan <v_vlan_list>] statistics

clear ipv6 neighbors

clear ipv6 statistics [system] [interface vlan <v_vlan_list>] [icmp] [icmp-msg <type>]

Parameters:		
	mld	Multicast Listener Discovery
	statistics	Traffic statistics
	snooping	Snooping MLD
	statistics	Running MLD snooping counters
	vlan	Search by VLAN
	<vlan_list>	VLAN identifier(s): VID
	icmp	IPv6 ICMP traffic
	icmp-msg	IPv6 ICMP traffic for designated message type
	interface	Select an interface to configure
	system	IPv6 system traffic
	< 0~255>	ICMP message type ranges from 0 to 255
	statistics	Traffic statistics
	vlan	VLAN of IPv6 interface
	<vlan_list>	IPv6 interface VLAN list

Example:

```
SM24DP4XA# clear ipv6 mld snooping vlan 100 statistics
SM24DP4XA# clear ipv6 statistics icmp-msg 200
SM24DP4XA# clear ipv6 dhcp-client statistics interface vlan 100
% Invalid DHCPv6 client interface Vlan100
SM24DP4XA#
```

Command: **lacp**

Description: Clear LACP statistics

Syntax: **clear**< lacp> statistics

Parameters		
	statistics	Clear all LACP statistics

Example:

```
SM24DP4XA# clear lacp statistics
SM24DP4XA#
```

Command: **link-oam**

Description: Clear Link OAM statistics.

Syntax: **clear** link-oam statistics [interface (<port_type> [<plist>])]

Parameters:

statistics	Clear all LACP statistics
interface	clear Link OAM statistic on a specific interface or all interfaces.
<port_type>	GigabitEthernet or 10GigabitEthernet
PORT_LIST	Port list in 1/1-24 for Gigabitethernet, 1/4 for 10Gigabitethernet

Example:

```
SM24DP4XA# clear link-oam statistics interface GigabitEthernet 1/1-5
SM24DP4XA#
```

Command: **lldp**

Description: Clear LLDP statistics.

Syntax: **clear lldp** statistics { [interface (<port_type> [<plist>])] | global }

Clear< lldp >< statistics>

Clear< lldp >< statistics><|>< begin / exclude / include >< LINE >

Parameters:

statistics	Clears LLDP statistics.
|	Output modifiers
begin	Begin with the line that matches
exclude	Exclude lines that match
include	Include lines that match
LINE	String to match output lines
global	Clear global counters
interface	Interface keyword.
<cr>	

Example:

```
SM24DP4XA# clear lldp statistics | include LINE
SM24DP4XA# clear lldp statistics
SM24DP4XA# clear lldp statistics interface *
SM24DP4XA# clear lldp statistics global
SM24DP4XA#
```

Command: **logging**

Description: Clear Syslog (System logging message).

Syntax:

clear logging [info] [warning] [error] [emerg] [alert] [crit] [notice] [debug] [switch <switch_list>]

Parameters:		
	alert	Severity 1: Action must be taken immediately
	crit	Severity 2: Critical conditions
	debug	Severity 7: Debug-level messages
	emerg	Severity 0: System is unusable
	error	Severity 3: Error conditions
	flash	Clear all logging messages on Flash
	info	Severity 6: Informational messages
	notice	Severity 5: Normal but significant condition
	warning	Severity 4: Warning conditions
	<cr>	

Example:

```
SM24DP4XA# clear logging error
SM24DP4XA# clear logging flash
Deleting syslog from flash...Done!
SM24DP4XA# clear logging debug info
SM24DP4XA#
```

Command: **mac**

Description: Clear MAC Address Table.

Syntax: **clear mac** address-table

Parameters: **address-table** Flush MAC Address table.

Example:

```
SM24DP4XA# clear mac address-table
SM24DP4XA#
```

Command: **mep**

Description: Clear Maintenance Entity Point.

Syntax: **clear mep** <inst> { lm | dm | tst | bfd }

Parameters:

<uint>	The MEP instance.
bfd	Clear G.8113.2 BFD CC/CV statistics counters.
dm	Clear DM measuring information.
lm	Clear LM measuring information.
tst	Clear TST measuring information.

Example:

```
SM24DP4XA# clear mep 1 dm
SM24DP4XA# clear mep 1 lm
SM24DP4XA# clear mep 1 tst
```

Messages: *Error: VTSS_RC_ERROR*

Command: **mvr**

Description: Clear Multicast VLAN Registration configuration. Clears the running MVR protocol counters.

Syntax : **clear mvr** [vlan <v_vlan_list> | name <mvr_name>] statistics

Parameters:

name	MVR multicast name
statistics	Running MVR protocol counters
vlan	MVR multicast vlan
< word16>	MVR multicast VLAN name
<vlan_list>	MVR multicast VLAN list

Example:

```
SM24DP4XA# clear  mvr vlan 10 statistics
SM24DP4XA#
```

Messages: *W mvr 12:20:53 58/_mvr_vlan_warning_handler#4034: Warning: Please adjust the management VLAN ports overlapped with MVR source ports!*

Command: **port-security**

Description: Enable/disable port security globally.

Syntax : **clear port-security** sticky { All | interface (<port_type> [<plist>]) }

Parameters:		
	All	clear all sticky mac at all ports
	interface	Choose port
	*	All switches or All ports
	GigabitEthernet	1 Gigabit Ethernet Port
	10GigabitEthernet	10 Gigabit Ethernet Port
	<port_type_list>	Port list for all port types
	<cr>	

Example:

```
SM24DP4XA# clear port-security sticky interface *
SM24DP4XA#
```

Command: **ptp**

Description: Clear the PTP clock servo configuration for a PTP clock instance.

Syntax: **clear ptp** <clockinst> servo

Parameters:		
	<clockinst>	0-3
	servo	

Example:

```
SM24DP4XA# clear ptp 0 servo
SM24DP4XA#
```

Command: **spanning-tree**

Description: Clear STP Bridge.

Syntax: **clear spanning-tree** { { statistics [interface (<port_type> [<v_port_type_list>])] } |
{ detected-protocols [interface (<port_type> [<v_port_type_list_1>])] } }

clear < spanning-tree>< detected-protocols >

clear < spanning-tree>< detected-protocols > < interface ><port_type> <port_type_list>

clear < spanning-tree> < statistics >< interface ><port_type> <port_type_list>

Parameters:		
	detected-protocols	Set the STP migration check
	statistics	STP statistics
	interface	Choose port
	<port_type>	GigabitEthernet or 10GigabitEthernet
	<port_type_list>	Port list in 1/1-24 for Gigabitethernet, 1/4 for 10Gigabitethernet
	*	All switches or All ports
	GigabitEthernet	1 Gigabit Ethernet Port
	10GigabitEthernet	10 Gigabit Ethernet Port
	<port_type_list>	Port list for all port types
	<port_type_list>	Port list in 1/1-24,29

Example:

```
SM24DP4XA# clear spanning-tree detected-protocols interface GigabitEthernet 1/1-3
SM24DP4XA# clear spanning-tree statistics interface *
SM24DP4XA#
```

Command: **statistics**

Description: Clear statistics for a given interface.

Syntax: **clear statistics** [interface] (<port_type> [<v_port_type_list>])

Parameters:		
	*	All switches or All ports
	GigabitEthernet	1 Gigabit Ethernet Port
	10GigabitEthernet	10 Gigabit Ethernet Port
	interface	Interface
	<port_type_list>	Port list for all port types

Example:

```
SM24DP4XA# clear statistics GigabitEthernet 1/1-3
SM24DP4XA#
```

6. Config Mode Commands

To enter Config mode from Exec mode enter:

```
SM24DP4XA# configure terminal
SM24DP4XA(config)#
```

Table : Configure Mode Commands

Command	Function
aaa	Authentication, Authorization and Accounting
access	Access management
access-list	Access list
aggregation	Aggregation mode
banner	Define a login banner
clock	Configure time-of-day clock
command-history-log	Enable to Save Command History to Flash
default	Set a command to its defaults
dms	Enable DMS Master
do	To run exec commands in config mode
dot1x	IEEE Standard for port-based Network Access Control
enable	Modify enable password parameters
end	Go back to EXEC mode
eps	Ethernet Protection Switching.
erps	Ethernet Ring Protection Switching
evc	Ethernet Virtual Connections
event	Trap event severity level
exec-timeout	Set autologout timeout period
exit	Exit from current mode
gvrp	Enable GVRP feature
help	Description of the interactive help system
hostname	Set system's network name
interface	Select an interface to configure
ip	Internet Protocol
ipmc	IPv4/IPv6 multicast configuration
ipv6	IPv6 configuration commands

lacp	LACP settings
line	Configure a terminal line
lldp	LLDP configurations.
logging	System logging message
loop-protect	Loop protection configuration
mac	MAC table entries/configuration
map-api-key	Set google map key string
mep	Maintenance Entity Point
monitor	Monitoring different system events
mrp	Media Redundancy Protocol configuration
mvr	Multicast VLAN Registration configuration
no	Negate a command or set its defaults
ntp	Configure NTP
percepxion	Configure Percepxion parameters
port-security	Enable/disable port security globally.
privilege	Command privilege parameters
ptp	Precision Time Protocol (1588)
qos	Quality of Service
radius-server	Configure RADIUS
rapid-ring	Set Rapid Ring's configurations
rmon	Remote Monitoring
smtp	Set email information
snmp-server	Set SNMP server's configurations
spanning-tree	Spanning Tree protocol
svl	Shared VLAN Learning
switchport	Set switching mode characteristics
system	Set Board Configuration
tacacs-server	Configure TACACS+
tzidx	Configure timezone city/area
udld	Enable UDLD in the aggressive or normal mode and to set the configurable message timer on all fiber-optic ports.
upnp	Set UPnP configuration
username	Establish User Name Authentication
vlan	VLAN commands
voice	Voice appliance attributes
web	Web

Command: **aaa**

Description: Configure Authentication, Authorization and Accounting.

Syntax: **aaa accounting** http tacacs [exec]

aaa accounting { console | telnet | ssh } tacacs { [commands <priv_lvl>] [exec] }*1

aaa authentication login telnet { { local | radius | tacacs } [{ local | radius | tacacs } [{ local | radius | tacacs }]] } [fallback]

aaa authentication login { console | ssh | https } { { local | radius | tacacs } [{ local | radius | tacacs } [{ local | radius | tacacs }]] } [fallback]

aaa authentication login { http } { { redirect | local | radius | tacacs } [{ redirect | local | radius | tacacs } [{ redirect | local | radius | tacacs } [{ redirect | local | radius | tacacs }]]] } [fallback]

aaa authorization http tacacs [fallback]

aaa authorization { console | telnet | ssh } tacacs commands <priv_lvl> [config-commands] [fallback]

Parameters:

accounting	Accounting
authentication	Authentication
authorization	Authorization
console	Configure Console command accounting
http	Configure HTTP command accounting
ssh	Configure SSH command accounting
telnet	Configure Telnet command accounting
login	Login
fallback	Configure local authentication fallback
local	Use local database for authentication
radius	Use RADIUS for authentication
tacacs	Use TACACS+ for authentication
commands	Enable command accounting
exec	Enable EXEC accounting
<0-15>	Command privilege level. Commands equal and above this level are accounted
tacacs	Use TACACS+ for accounting
console	Configure Console command authorization
http	Configure HTTP command authorization
ssh	Configure SSH command authorization
telnet	Configure Telnet command authorization
<0-15>	Command privilege level. Commands equal and above this level are authorized
config-commands	Include configuration commands

	fallback	Configure authorization fallback mode

Example:

```
SM24DP4XA(config)# aaa authentication login telnet local local local
Username:
Password:
SM24DP4XA(config)# aaa accounting console tacacs commands 0 exec
SM24DP4XA(config)# aaa accounting http tacacs exec
SM24DP4XA(config)# aaa authorization console tacacs commands 10 config-commands
fallback
SM24DP4XA(config)#
```

Command: **access**

Description: Configure access management.

Syntax:

access management

access management <access_id> <access_vid> <start_addr> [to <end_addr>] { [web] [snmp] [telnet] | all }

access management <access_id> <access_vid> <start_addr> [to <end_addr>] { [web] [snmp] [telnet] | all }

Parameters:	management	Access management configuration
	< 1-16>	ID of access management entry
	< 1-4094>	The VLAN ID for the access management entry
	< ipv4_addr>	Start IPv4 address
	< ipv6_addr>	Start IPv6 address
	all	All services
	snmp	SNMP service
	telnet	TELNET/SSH service
	to	End address of the range
	web	Web service

Example:

```
SM24DP4XA(config)# access management 1 1 192.168.1.77 all
SM24DP4XA(config)#
```

Command: **access-list**

Table : configure – access-list Commands

Command	Function
ace	Access list entry
rate-limiter	Rate limiter

Command: **access –list ace**

Description: Configure Access List ACE.

Syntax:

access-list ace [update] <ace_id> [next { <ace_id_next> | last }] [ingress { switch <ingress_switch_id> | switchport { <ingress_switch_port_id> | <ingress_switch_port_list> } | interface { <port_type> <ingress_port_id> | (<port_type> [<ingress_port_list>]) } | any }] [policy <policy> [policy-bitmask <policy_bitmask>]] [tag { tagged | untagged | any }] [vid { <vid> | any }] [tag-priority { <tag_priority> | 0-1 | 2-3 | 4-5 | 6-7 | 0-3 | 4-7 | any }] [dmac-type { unicast | multicast | broadcast | any }] [frame-type { any | etype [etype-value { <etype_value> | any }] [smac { <etype_smac> | any }] [dmac { <etype_dmac> | any }] | arp [sip { <arp_sip> | any }] [dip { <arp_dip> | any }] [smac { <arp_smac> | any }] [arp-opcode { arp | rarp | other | any }] [arp-flag [arp-request { <arp_flag_request> | any }] [arp-smac { <arp_flag_smac> | any }] [arp-tmac { <arp_flag_tmac> | any }] [arp-len { <arp_flag_len> | any }] [arp-ip { <arp_flag_ip> | any }] [arp-ether { <arp_flag_ether> | any }]] | ipv4 [sip { <sipv4> | any }] [dip { <dipv4> | any }] [ip-protocol { <ipv4_protocol> | any }] [ip-flag [ip-ttl { <ip_flag_ttl> | any }] [ip-options { <ip_flag_options> | any }] [ip-fragment { <ip_flag_fragment> | any }]] | ipv4-icmp [sip { <sipv4_icmp> | any }] [dip { <dipv4_icmp> | any }] [icmp -type { <icmpv4_type> | any }] [icmp-code { <icmpv4_code> | any }] [ip-flag [ip-ttl { <ip_flag_icmp_ttl> | any }] [ip-options { <ip_flag_icmp_options> | any }] [ip-fragment { <ip_flag_icmp_fragment> | any }]] | ipv4-udp [sip { <sipv4_udp> | any }] [dip { <dipv4_udp> | any }] [sport { <sportv4_udp_start> [to <sportv4_udp_end>] | any }] [dport { <dportv4_udp_start> [to <dportv4_udp_end>] | any }] [ip-flag [ip-ttl { <ip_flag_udp_ttl> | any }] [ip-options { <ip_flag_udp_options> | any }] [ip-fragment { <ip_flag_udp_fragment> | any }]] | ipv4-tcp [sip { <sipv4_tcp> | any }] [dip { <dipv4_tcp> | any }] [sport { <sportv4_tcp_start> [to <sportv4_tcp_end>] | any }] [dport { <dportv4_tcp_start> [to <dportv4_tcp_end>] | any }] [ip-flag [ip-ttl { <ip_flag_tcp_ttl> | any }] [ip-options { <ip_flag_tcp_options> | any }] [ip-fragment { <ip_flag_tcp_fragment> | any }]] [tcp-flag [tcp-fin { <tcpv4_flag_fin> | any }] [tcp-syn { <tcpv4_flag_syn> | any }] [tcp-rst { <tcpv4_flag_rst> | any}] [tcp-psh { <tcpv4_flag_psh> | any }] [tcp-ack { <tcpv4_flag_ack> | any }] [tcp-urg { <tcpv4_flag_urg> | any }]] | ipv6 [next-header { <next_header> | any }] [sip { <sipv6> [sip-bitmask <sipv6_bitmask>] | any }] [hop-limit { <hop_limit> | any }] | ipv6-icmp [sip { <sipv6_icmp> [sip-bitmask <sipv6_bitmask_icmp>] | any }] [icmp-type { <icmpv6_type> | any }] [icmp-code { <icm

pv6_code> | any }] [hop-limit { <hop_limit_icmp> | any }] | ipv6-udp [sip {<sipv6_udp> [sip-bitmask <sipv6_bitmask_udp>] | any }] [sport { <sportv6_udp_start> [to <sportv6_udp_end>] | any }] [dport { <dportv6_udp_start> [to <dportv6_udp_end>] | any }] [hop-limit { <hop_limit_udp> | any }] | ipv6-tcp [sip { <sipv6_tcp> [sip-bitmask <sipv6_bitmask_tcp>] | any }] [sport { <sportv6_tcp_start> [to <sportv6_tcp_end>] | any }] [dport { <dportv6_tcp_start> [to <dportv6_tcp_end>] | any }] [hop-limit { <hop_limit_tcp> | any }] [tcp-flag [tcp-fin { <tcpv6_flag_fin> | any }] [tcp-syn { <tcpv6_flag_syn> | any }] [tcp-rst { <tcpv6_flag_rst> | any }] [tcp-psh { <tcpv6_flag_psh> | any }] [tcp-ack { <tcpv6_flag_ack> | any }] [tcp-urg { <tcpv6_flag_urg> | any }]] }] [action { permit | deny | filter { switchport <filter_switch_port_list> | interface (<port_type> [<fliter_port_list>]) } }] [rate-limiter { <rate_limiter_id> | disable }] [evc-policer { <evc_policer_id> | disable }] [mirror [disable]] [logging [disable]] [shutdown [disable]] [lookup-second [disable]] [redirect { switchport { <redirect_switch_port_id> | <redirect_switch_port_list> } | interface { <port_type> <redirect_port_id> | (<port_type> [<redirect_port_list>]) } | disable }]

access-list rate-limiter [<rate_limiter_list>] { pps <pps_rate> | 10pps <pps10_rate> | 100pps <pps100_rate> | 25kbps <kpbs25_rate> | 100kbps <kpbs100_rate> }

Parameters:

action	Access list action
dmac-type	The type of destination MAC address
frame-type	Frame type
ingress	Ingress
logging	Logging frame information. Note: The logging feature only works when the packet length is less than 1518 (without VLAN tags) and the System Log memory size and logging rate is limited.
next	insert the current ACE before the next ACE ID
policy	Policy
rate-limiter	Rate limiter
redirect	Redirect frame to specific port
shutdown	Shutdown incoming port. The shutdown feature only works when the packet length is less than 1518 (without VLAN tags).
tag-priority	Tag priority
vid	VID field
<1-512>	The next ID
last	Place the current ACE to the end of access list
<0-255>	Policy ID
<1-16>	Rate limiter ID

disable	Disable rate-limiter
disable	Disable
interface	Select an interface to configure
action	Access list action
disable	Disable shutdown
dmac-type	The type of destination MAC address
0-1	The range of tag priority
0-3	The range of tag priority
2-3	The range of tag priority
4-5	The range of tag priority
4-7	The range of tag priority
6-7	The range of tag priority
<0-7>	The value of tag priority
any	Don't-care the value of tag priority field
<1-4095>	The value of VID field
any	Don't-care the value of VID field

Example:

```
SM24DP4XA(config)# access-list ace 1 action permit
SM24DP4XA(config)# access-list ace 1
SM24DP4XA(config)# access-list ace 1 vid any
SM24DP4XA(config)# access-list ace 1 tag-priority 4-5
SM24DP4XA(config)#
```

Command: **rate-limiter**

Description: Access list Rate limiter.

Syntax:

access-list rate-limiter [<rate_limiter_list>] { pps <pps_rate> | 10pps <pps10_rate> | 100pps <pps100_rate> | 25kbps <kpbs25_rate> | 100kbps <kpbs100_rate> }

Parameters:

<1~16>	Rate limiter ID
pps	Packets per second
<0-131071>	Rate value

Example:

```
SM24DP4XA(config)# access-list rate-limiter pps 6000
SM24DP4XA(config)# access-list rate-limiter 1 pps 6000
SM24DP4XA(config)#
```

Command: **aggregation**

Description: Configure Aggregation mode.

Syntax: **aggregation mode** { [smac] [dmac] [ip] [port] }*1

Parameters:

	mode	Traffic distribution mode
	dmac	Destination MAC affects the distribution
	ip	IP address affects the distribution
	port	IP port affects the distribution
	smac	Source MAC affects the distribution

Example:

```
SM24DP4XA(config)# aggregation mode ip port
SM24DP4XA(config)# aggregation mode ip
SM24DP4XA(config)# do show aggr mode
Aggregation Mode:
SMAC  : Enabled
DMAC  : Enabled
IP    : Enabled
Port  : Enabled
SM24DP4XA(config)#
```

Command: **banner**

Description: Define a login banner.

Syntax: **banner** [motd] <banner>

banner exec <banner>

banner login <banner>

Parameters:

	<line>	c banner-text c, where 'c' is a delimiting character
	exec	Set EXEC process creation banner
	login	Set login banner
	motd	Set Message of the Day (MOTD) banner

Example:

```
SM24DP4XA(config)# banner motd c happy today!
Enter TEXT message.  End with the character 'c'.
happy today! c
SM24DP4XA(config)# banner login c sm24DP4xa c
SM24DP4XA(config)#
```

Command: **clock**

Description: Configure time-of-day clock.

Syntax: **clock set** <icliDateWord> { <icliTimeWord24> | <icliTimeWord12> { AM | PM } }

clock summer-time <word16> date [<start_month_var> <start_date_var> <start_year_var> <start_hour_var> <end_month_var> <end_date_var> <end_year_var> <end_hour_var> [<offset_var>]]

clock summer-time <word16> recurring [<start_week_var> <start_day_var> <start_month_var> <start_hour_var> <end_week_var> <end_day_var> <end_month_var> <end_hour_var> [<offset_var>]]

clock timezone <word_var> <hour_var> [<minute_var> [<subtype_var>]]

Parameters:		
	set	set clock
	summer-time	Configure summer (daylight savings) time
	timezone	Configure time zone
	<word16>	name of time zone
	<-23-23>	Hours offset from UTC
	<0-59>	Minutes offset from UTC
	<1-12>	Month to start
	<1-31>	Date to start
	<2000-2097>	Year to start
	hh:mm	Time to start (hh:mm)
	<1-12>	Month to end
	<1-31>	Date to end
	<2000-2097>	Year to end
	hh:mm	Time to end (hh:mm)
	<1-1440>	Offset to add in minutes
	<1-5>	Week number to start
	<1-7>	Weekday to start
	<1-12>	Month to start

Example:

```
SM24DP4XA(config)# clock set 2018/10/18 03:41:30
2018-10-17T11:01:30+10:30
SM24DP4XA(config)# clock set timezone 10:10:10
Invalid date format (timezone--)
SM24DP4XA(config)#
```

Messages:

% Invalid word detected at '^' marker.

Invalid date format (timezone--)

Command: **command-history-log**

Description: Enable to Save Command History to Flash.

Syntax: **command-history-log** <cr>

Parameters: None.

Example:

```
SM24DP4XA(config)# command-history-log
SM24DP4XA(config)# do show history
  con t
  command-history-log
  exit
  show history
  con t
  command-history-log
  do show history
SM24DP4XA(config)#
```

Command: **default**

Description: Set a command to its defaults.

Syntax: **default** access-list rate-limiter [<rate_limiter_list>]

Parameters:

	access-list	Access list
	rate-limiter	Rate limiter
	<1~16>	Rate limiter ID
	<cr>	

Example:

```
SM24DP4XA(config)# default access-list rate-limiter 1
SM24DP4XA(config)# default access-list rate-limiter
SM24DP4XA(config)#
```

Command: **dms**

Description: Configure DMS (Device Management System) Master switch.

Syntax: **dms** service-mode { disabled | enabled [priority { high | mid | low | non }] }

Parameters:

service-mode	DMS mode
disabled	DMS mode is disabled
enabled	DMS mode is enabled
priority	DMS priority; choose the priority to change the DMS priority level of the switch.
high	DMS priority is high; this switch will become the DMS Master (Controller) switch.
low	DMS priority is lowest level
mid	DMS priority is mid-level
non	DMS priority is non; this switch will never become the DMS Master (Controller) switch.

Example:

```
SM24DP4XA(config)# dms service-mode enabled priority high
SM24DP4XA(config)#
```

Command: **do**

Description: To run Exec commands in Config mode.

Syntax: **do** <command>

Parameters: <line> Exec Command

Example:

```
SM24DP4XA(config)# do show vlan
VLAN  Name                            Interfaces
----  --------------------------------  ----------
1     default                         Gi 1/1-25 10G 1/1-4

SM24DP4XA(config)#
```

Command: **dot1x**

Description: Configure IEEE Standard for port-based Network Access Control.

Syntax: **dot1x** authentication timer inactivity <v_10_to_100000>

dot1x authentication timer re-authenticate <v_1_to_3600>

dot1x feature { [guest-vlan] [radius-qos] [radius-vlan] }*1

dot1x guest-vlan <value>

dot1x guest-vlan supplicant

dot1x max-reauth-req <value>

dot1x re-authentication

dot1x system-auth-control

dot1x timeout quiet-period <v_10_to_1000000>

dot1x timeout tx-period <v_1_to_65535>

Parameters:

authentication	Authentication
feature	Globally enables/disables a dot1x feature functionality
guest-vlan	Guest VLAN
max-reauth-req	The number of times a Request Identity EAPoL frame is sent without response before considering entering the Guest VLAN
re-authentication	Set Re-authentication state
system-auth-control	Set the global NAS state
timeout	timeout
inactivity	Time in seconds between check for activity on successfully authenticated MAC addresses.
re-authenticate	The period between re-authentication attempts in seconds
<10-1000000>	seconds
<1-3600>	seconds – reauthenticate
guest-vlan	Globally enables/disables state of guest-VLAN
radius-qos	Globally enables/disables state of RADIUS-assigned QoS.
radius-vlan	Globally enables/disables state of RADIUS-assigned VLAN.
1-4095>	Guest VLAN ID used when entering the Guest VLAN.
supplicant	The switch remembers if an EAPoL frame has been received on the port for the life-time of the port. Once the switch considers whether to enter the Guest VLAN, it will first check if this option is enabled or disabled. If disabled (unchecked; default), the switch will only enter the Guest VLAN if an EAPOL frame has not been received on the port for the life-time of the port. If enabled (checked), the switch will consider entering the Guest VLAN even if an EAPOL frame has been received on the port for

	the life-time of the port.
<1-255>	number of times for dot1x max-reauth-req
quiet-period	Time in seconds before a MAC-address that failed authentication gets a new authentication chance.
tx-period	the time between EAPoL retransmissions.
<1-65535>	seconds for timeout tx-period

Example:

```
SM24DP4XA(config)# dot1x authentication timer re-authenticate 1000
SM24DP4XA(config)# dot1x guest-vlan supplicant
SM24DP4XA(config)# dot1x timeout tx-period 1000
SM24DP4XA(config)# dot1x feature guest-vlan radius-qos radius-vlan
SM24DP4XA(config)# dot1x guest-vlan 1
SM24DP4XA(config)# dot1x max-reauth-req 20
SM24DP4XA(config)# dot1x re-authentication
SM24DP4XA(config)# dot1x system-auth-control
SM24DP4XA(config)# dot1x timeout quiet-period 60000
SM24DP4XA(config)# dot1x timeout tx-period 45000
SM24DP4XA(config)#
```

Command: **enable**

Description: Modify enable password parameters.

Syntax: **enable password** [level <priv>] <password>

enable secret { 0 | 5 } [level <priv>] <password>

Parameters:

password	Assign the privileged level clear password
secret	Assign the privileged level secret
<word32>	The UNENCRYPTED (clear-text) password
level	Set exec level password
<1-15>	Level number
0	Specifies an UNENCRYPTED password will follow
5	Specifies an ENCRYPTED secret will follow
<word32>	Password
<cr>	

Example:

```
SM24DP4XA(config)# enable password level 15 admin
SM24DP4XA(config)# enable secret 0 level 15 admin
SM24DP4XA(config)# enable secret 5 level 15 abcd1234!@#$
SM24DP4XA(config)#
```

Command: **eps**

Description: Configure Ethernet Protection Switching.

Syntax:

eps <inst> 1plus1 { bidirectional | { unidirectional [aps] } }

eps <inst> command { lockout | forced | manualp | manualw | exercise | freeze |lockoutlocal }

eps <inst> domain { port | tunnel-tp | pw } architecture { 1plus1 | 1for1 } work-flow { <flow_w> | <port_type> <port_w> } protect-flow { <flow_p> | <port_type> <port_p> }

eps <inst> holdoff <hold>

eps <inst> mep-work <mep_w> mep-protect <mep_p> mep-aps <mep_aps>

eps <inst> revertive { 10s | 30s | 5m | 6m | 7m | 8m | 9m | 10m | 11m | 12m | {wtr-value <wtr_value> } }

Parameters:

<1-100>

1plus1	EPS 1+1 architecture.
command	EPS command.
domain	The domain of the EPS.
holdoff	Hold off timer.
mep-work	Working MEP instance.
revertive	Revertive EPS.
bidirectional	EPS 1+1 bidirectional protection type.
unidirectional	EPS 1+1 unidirectional protection type.
exercise	Exercise of the protocol - not traffic effecting. Only allowed in 'Bidirectional' protection type
forced	Force switch normal traffic to protection.
freeze	Local Freeze of EPS.
lockout	Lockout of protection.
lockoutlocal	Local lockout of EPS.
manualp	Manual switch normal traffic to protection.
manualw	Manual switch normal traffic to working. This is only allowed in 'non-revertive' mode.
port	This EPS is protecting in the Port domain.
pw	This EPS is protecting in the MPLS-TP Pseudo-Wire domain.
tunnel-tp	This EPS is protecting in the MPLS-TP tunnel domain.
architecture	The EPS architecture.
1for1	The architecture is 1 for 1.
1plus1	The architecture is 1 plus 1.
work-flow	The working flow instance that the EPS is related to.
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port

<uint>	The working flow instance number when not in the port domain.
<port_type_id>	Port ID in 1/1-25
<uint>	The hold off timer value in 100 ms. Max 10 sec.
mep-protect	Protecting MEP instance.
<uint>	Protecting MEP instance number.
mep-aps	APS MEP instance.
<uint>	APS MEP instance number.
10m	WTR is 10 min.
10s	WTR is 10 sec.
11m	WTR is 11 min.
12m	WTR is 12 min.
30s	WTR is 30 sec.
5m	WTR is 5 min.
6m	WTR is 6 min.
7m	WTR is 7 min.
8m	WTR is 8 min.
9m	WTR is 9 min.
wtr-value	WTR as value.

Example:

```
SM24DP4XA(config)# eps 1 1plus1 bidirectional
SM24DP4XA(config)#
```

Messages:

In Port domain, work-flow and protect-flow must be <port_type_id>

Error: EPS instance is not created

Command: **erps**

Description: Configure Ethernet Ring Protection Switching. See "G.8032 Major and Sub Rings Configuration" on page 278 for more information.

Syntax:

erps <group> guard <guard_time_ms>

erps <group> holdoff <holdoff_time_ms>

erps <group> major port0 interface <port_type> <port0> port1 interface <port_type> <port1> [interconnect]

erps <group> mep port0 sf <p0_sf> aps <p0_aps> port1 sf <p1_sf> aps <p1_aps>

erps <group> revertive <wtr_time_minutes>

erps <group> rpl { owner | neighbor } { port0 | port1 }

erps <group> sub port0 interface <port_type> <port0> { { port1 interface <port_type> <port1> } | { interconnect <major_ring_id> } } [virtual-channel]

erps <group> topology-change propagate

erps <group> version { 1 | 2 }

erps <group> vlan { none | [add | remove] <vlans> }

Parameters:

1-64	ERPS group number
guard	Guard
holdoff	Hold-off time
major	Major ring
mep	MEP
revertive	Revertive
rpl	Ring Protection Link
sub	Sub-ring
topology-change	Topology Change
version	Version
vlan	VLAN
10-2000	Guard time in 10 ms steps between 10 and 2000 ms
port0	ERPS Port 0 interface
interface	Ethernet interface
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<port_type_id>	Port ID in 1/1-25
port1	ERPS Port 1 interface
interface	Ethernet interface

interconnect	Major ring is interconnected
port0	ERPS Port 0 interface
sf	Signal Fail
1-100	Index of Port 0 SignalFail MEP
aps	Automatic Protection Switching
1-100	Index of Port 0 APS MEP
port1	ERPS Port 1 interface
sf	Signal Fail
1-100	Index of Port 1 SignalFail MEP
aps	Automatic Protection Switching
1-100	Index of Port 1 APS MEP
1-12	Wait-to-restore time in minutes
neighbor	Neighbor role
owner	Owner role
port0	ERPS Port 0 interface
port1	ERPS Port 1 interface
port0	ERPS Port 0 interface
interface	Ethernet interface
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<port_type_id>	Port ID in 1/1-25
interconnect	Sub-ring is interconnected
port1	ERPS Port 1 interface
1-64	Major ring group number
virtual-channel	Enable virtual channel for sub-ring
propagate	Propagate
1	ERPS version 1
2	ERPS version 2
<vlan_list>	List of VLANs
add	Add to set of included VLANs
none	Do not include any VLANs
remove	Remove from set of included VLANs
<vlan_list>	List of VLANs
<vlan_list>	List of VLANs
<cr>	

Example:

```
SM24DP4XA(config)# erps 1 guard 500
SM24DP4XA(config)# erps 1 holdoff 750
% Holdoff time rounded to 700 ms
SM24DP4XA(config)# erps 1 revertive 4
SM24DP4XA(config)# erps 1 rpl neighbor port0
SM24DP4XA(config)# erps 1 rpl neighbor port1
SM24DP4XA(config)# erps 1 topology-change propagate
SM24DP4XA(config)# erps 1 version 1
SM24DP4XA(config)# erps 1 version 2
SM24DP4XA(config)# erps 1 vlan 2-10
SM24DP4XA(config)# erps 1 vlan add 11-19
SM24DP4XA(config)# erps 1 vlan remove 3-6
SM24DP4XA(config)# erps 1 vlan none
SM24DP4XA(config)# erps 1 mep port0 sf 20 aps 20 port1 sf 50 aps 50
SM24DP4XA(config)# erps 1 topology-change propagate
SM24DP4XA(config)#
```

Messages:

% ERPS group 1: Given protection group already created

% ERPS group 1: Failed to disable RAPS forwarding

% Holdoff time rounded to 700 ms

% ERPS group 1: Could not enter forwarding state

SM24DP4XA(config)# erps 1 rpl neighbor port1

% ERPS group 1: Node is configured as neighbour for given group, can not set as RPL

% ERPS group 10: Given protection group does not exist

Command: **evc**

Description: Configure Ethernet Virtual Connections.

Syntax:

evc [update] <evc_id> { [vid <evc_vid>] } [ivid <ivid>] [interface (<port_type> [<port_list>])] { [leaf { [vid <leaf_vid>] [ivid <leaf_ivid>] [interface { (<port_type> [<leaf_port_list>]) | none }] }*1] } [learning[disable]] [policer { <policer_id> | none | discard }] [inner-tag add { [type { none | c-tag | s-tag | s-custom-tag }] [vid-mode { normal | tunnel }][vid <it_add_vid>] [preserve [disable]] [pcp <it_add_pcp>] [dei <it_add_dei>] }*1] [outer-tag add vid <ot_add_vid>] [pw [<pw_num_list>] [split-horizon <pw_num_list_split_horizon>]]

evc ece [update] <ece_id> [next { <ece_id_next> | last }] [lookup { basic | advanced }] [interface (<port_type> [<port_list>])] [smac { <smac> | any }] [dmac { <dmac> | unicast | multicast | broadcast | any }] [outer-tag {[match { [type { untagged | tagged | c-tagged | s-tagged | any }] [vid { <ot_match_vid> | any }] [pcp { <ot_match_pcp> | any }] [dei { <ot_match_dei> |any }] }*1] [add { [mode { enable | disable }] [vid <ot_add_vid>] [preserve [disable]] [pcp-mode { classified | fixed | mapped }] [pcp <ot_add_pcp>] [dei-mode { classified | fixed | dp }] [dei <ot_add_dei>] }*1] }*1] [inner-tag { [match { [type { untagged | tagged | c-tagged | s-tagged | any }] [vid { <it_match_vid> | any }] [pcp { <it_match_pcp> | any }] [dei { <it_match_dei> | any }] }*1] [add { [type { none | c-tag | s-tag | s-custom-tag }] [vid <it_add_vid>] [preserve [disable]] [pcp-mode { classified | fixed | mapped }] [pcp <it_add_pcp>] [dei-mode { classified | fixed | dp }] [dei <it_add_dei>] }*1] }*1] [frame-type { any | { ipv4 [proto { <pr4> | udp | tcp | any }] [dscp { <dscp4> | any }] [sip { <sip4> | any }] [dip { <dip4 > | any }] [fragment { yes | no | any }] [sport { <sp4> | any }] [dport {<dp4> | any }] } | { ipv6 [proto { <pr6> | udp | tcp | any }] [dscp { <dscp6> | any }] [sip { <sip6> | any }] [dip { <dip6> | any }] [sport { <sp6> |any }] [dport { <dp6> | any }] } | { etype [etype-value { <etype_value> | any }] [etype-data { <etype_data> | any } [<etype_mask>]] } | { llc [dsap {<dsap> | any }] [ssap { <ssap> | any }] [control { <control> | any }] [llc-data { <llc_data> | any } [<llc_mask>]] } | { snap [oui { <oui> | any }] [pid { <pid> | any }] } | { l2cp { stp | pause | lacp | lamp | loam | dot1x | elmi | pb | pb-gvrp | lldp | gmrp | gvrp | uld | pagp | pvst | cisco-vlan | cdp | vtp | dtp | cisco-stp | cisco-cfm } }] [direction { both | uni-to-nni | nni -to-uni }] [rule-type { both | rx | tx }] [tx-lookup { vid | pcp-vid | isdx}] [l2cp { [mode { tunnel | peer | forward | discard }] [tmac { cisco | custom }] }*1] [evc { <evc_id> | none }] [policer { <policer_id> | none | discard | evc }] [pop <pop>] [policy <policy_no>] [cos { <cos> | disable }] [dpl { <dpl> | disable }]

evc policer [update] <policer_id> [{ enable | disable }] [type { mef | single }] [mode { coupled | aware | blind }] [rate-type { line | data }] [cir<cir>] [cbs <cbs>] [eir <eir>] [ebs <ebs>]

Parameters:

<1-4096>	EVC identifier
ece	EVC Control Entry
policer	Policer (ingress bandwidth profile)
update	Update existing entry
interface	Setup NNI port list
ivid	Setup internal EVC VLAN ID
leaf	Setup E-tree leaf options
learning	Setup learning
vid	Setup EVC VLAN ID
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<vlan_id>	Internal VLAN ID
disable	Disable learning
<1-2048>	Policer ID
discard	Map to policer discarding all frames
none	Map to policer allowing all frames
learning	Setup learning
direction	Setup ECE direction
dmac	Setup matched DMAC
evc	EVC mapping
frame-type	Setup matched frame type
inner-tag	Setup inner tag options
interface	Setup UNI
next	Setup the ECE ID of the next entry
outer-tag	Setup outer tag options
policer	Policer (ingress bandwidth profile)
policy	Setup ACL policy
pop	Setup tag popping
dmac	Setup matched DMAC
evc	EVC mapping
frame-type	Setup matched frame type
inner-tag	Setup inner tag options
interface	Setup UNI
next	Setup the ECE ID of the next entry
outer-tag	Setup outer tag options

policer	Policer (ingress bandwidth profile)
policy	Setup ACL policy
pop	Setup tag popping
<mac_addr>	Matched DMAC
any	Match any DMAC
broadcast	Match broadcast DMAC
multicast	Match multicast DMAC
unicast	Match unicast DMAC
<1-4096>	EVC identifier
none	Map to no EVC ID
cbs	Setup CBS
cir	Setup CIR
disable	Disable policer
ebs	Setup EBS for MEF policer
eir	Setup EIR for MEF policer
enable	Enable policer
mode	Setup policer mode
rate-type	Setup rate type
type	Setup policer type

Example:

```
SM24DP4XA(config)# evc 1 policer none
SM24DP4XA(config)# evc policer 10 ebs 5000
SM24DP4XA(config)# evc update 1 ivid 2 learning
SM24DP4XA(config)#
```

Command: **event**

Description: Configure Trap event severity level.

Syntax:

event group { AC-Power | ACL | ACL-Log | Access-Mgmt | Auth-Failed | AUTO-SAVING | Cold-Start | Config-Info | Digital-Out | Firmware-Upgrade | Import-Export | LACP | Link-Status | Login | Logout | Mgmt-IP-Change | Module-Change | NAS | Password-Change | Port-Security | Spanning-Tree | Warm-Start | Battery-Power | BCS-Protection | DMS | Advanced | Dying-Gasp | PoE-Auto-Check | Poe-Auto-Power-Reset | FAN | ZTU-FAIL | Surveillance } { level <lvl> | syslog { enable | disable } |
trap { enable | disable } | smtp { enable | disable } | ipush { enable | disable } }

event group { PWR-1-On-Off | PWR-2-On-Off | DI-1-Abnormal | Loop-Protect | Temperature | Voltage | Rapid-Ring-Break | Rapid-Chain-Break | Rapid-Ring-Error | PoE-PD-Off | Over-Max-PoE-Power-Limitation | PoE-PD-Over-Current | OTP | MRP-Event} { level <lvl> | syslog { enable | disable } | trap { enable | disable } | smtp { enable | disable } | ipush { enable | disable } | digital-out { enable | disable } }

Parameters:

AC-Power	Group ID AC Power
ACL	Group ID ACL
ACL-Log	Group ID ACL Log
Access-Mgmt	Group ID Access Management
Auth-Failed	Group ID Auth Fail
Cold-Start	Group ID Cold Start
Config-Info	Group ID Config Info
DC-Power	Group ID DC Power
DMS	Group ID DMS
Dying-Gasp	Group ID Dying Gasp
FAN	Group ID FAN
Firmware-Upgrade	Group ID Firmware Upgrade
Import-Export	Group ID Import Export
LACP	Group ID LACP
Link-Status	Group ID Link Status
Login	Group ID Login
Logout	Group ID Logout
Loop-Protect	Group ID Loop Protect
MRP-Event	Group ID MRP Event
Mgmt-IP-Change	Group ID Management IP Change
Module-Change	Group ID Module Change
NAS	Group ID NAS

Password-Change	Group ID Password Change
Port-Security	Group ID Port Security
Rapid-Chain-Break	Group ID Rapid Chain Break
Rapid-Ring-Break	Group ID Rapid Ring Break
Rapid-Ring-Error	Group ID Rapid Ring Error
SCP-Fail	Group ID SCP Fail
SCP-Success	Group ID SCP Success
Spanning-Tree	Group ID Spanning Tree
Temperature	Group ID Temperature
Voltage	Group ID Voltage
Warm-Start	Group ID Warm Start
level	Severity level
smtp	smtp mode
syslog	syslog mode
trap	trap mode
disable	smtp mode disable
enable	smtp mode enable
disable	syslog mode disable
enable	syslog mode enable
disable	trap mode disable
enable	trap mode enable
<0-7>	<0> Emergency ,<1> Alert ,<2> Critical ,<3> Error ,<4> Warning,<5> Notice ,<6> Informationl ,<7> Debug

Example:

```
SM24DP4XA(config)# event group DMS level 3
SM24DP4XA(config)# event group acl smtp enable
SM24DP4XA(config)# event group acl syslog enable
SM24DP4XA(config)# event group acl trap enable
SM24DP4XA(config)# event group dms ?
   level     Severity level
   smtp      smtp mode
   syslog    syslog mode
   trap      trap mode
SM24DP4XA(config)# event group SCP-Success level 4
SM24DP4XA(config)#
```

Command: **exec-timeout**

Description: Set autologout inactivity timeout period.

Syntax: **exec-timeout** autologout { 0 | 1 | 2 | 3 | 4 | 5 | 10 | 20 | 30 | 40 | 50 | 60 }

Parameters:

autologout autologout timeout period

0 off (no timeout period)

1 1 minute

10 10 minutes (default)

2 2 minutes

20 20 minutes

3 3 minutes

30 30 minutes

4 4 minutes

40 40 minutes

5 5 minutes

50 50 minutes

60 60 minutes

Example:

```
SM24DP4XA(config)# exec-timeout autologout 60
SM24DP4XA(config)# exec-timeout autologout 0
SM24DP4XA(config)#
```

Command: **gvrp**

Description: Enable and configure GVRP (GARP VLAN Registration Protocol or Generic VLAN Registration Protocol) feature.

Syntax:

gvrp

gvrp max-vlans <maxvlans>

gvrp time { [join-time <jointime>] [leave-time <leavetime>] [leave-all-time <leavealltime>] }*1

Parameters:

gvrp	Enable and configure GVRP feature
gvrp max-vlans	<maxvlans>
join-time	Set GARP protocol parameter JoinTime.
leave-all-time	Set GARP protocol parameter LeaveAllTime.
leave-time	Set GARP protocol parameter LeaveTime.
<1-20>	join-time in units of centi seconds. Range is 1-20. Default is 20.
<1000-5000>	leave-all-time in units of centi seconds Range is 1000-5000. Default is 1000.
<60-300>	leave-time in units of centi seconds. Range is 60-300. Default is 60.

Example:

```
SM24DP4XA(config)# gvrp time join-time 12 leave-all-time 2000 leave-time 120
SM24DP4XA(config)#
```

Messages: *W xxrp 14:00:11 136/gvrp_global_enable#193: Warning: Operation failed. Try to disable GVRP first*

Command: **hostname**

Description: Set system's network name.

Syntax: **hostname** <hostname>

Parameters: <line128> This system's network name

Example:

```
SM24DP4XA(config)# hostname sm24dp4xa
sm24dp4xa(config)# hostname SM24DP4XA
SM24DP4XA(config)#
```

Command: **interface**

Description: Select an interface to configure. See section Interface Config Mode Commands on page 135 for more Interface Config mode commands.

Syntax: **interface** (<port_type> [<plist>])

interface vlan <vlist>

Parameters:

*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
vlan	VLAN interface configurations
interface	Select an interface to configure
<port_type_list>	Port list for all port types
<port_type_list>	Port list in 1/1-25
<port_type_list>	Port list in 1/1-4
<vlan_list>	List of VLAN interface numbers, 1~4095

Example:

```
SM24DP4XA(config)# interface vlan 10
SM24DP4XA(config-if-vlan)# ?
    do      To run exec commands in config mode
    end     Go back to EXEC mode
    exit    Exit from current mode
    help    Description of the interactive help system
    ip      Interface Internet Protocol config commands
    ipv6    IPv6 configuration commands
    no      Negate a command or set its defaults
SM24DP4XA(config-if-vlan)#
SM24DP4XA(config)# interface *
SM24DP4XA(config-if)# <tab>
access-list        aggregation        description
do                 dot1x              duplex
end                evc                excessive-restart
exit               frame-length-check  gvrp
help               ip                 ipv6
lacp               link-oam           lldp
loop-protect       mac                mtu
mvr                no                 platform
```

```
port-security       ptp                 pvlan
qos                 rmon                shutdown
spanning-tree       speed               switchport
udld
```

Command: **ip**

Description: Configure Internet Protocol.

Syntax:

ip arp inspection

ip arp inspection entry interface <port_type> <in_port_type_id> <vlan_var> <mac_var> <ipv4_var>

ip arp inspection translate [interface <port_type> <in_port_type_id> <vlan_var> <mac_var> <ipv4_var>]

ip arp inspection vlan <in_vlan_list>

ip arp inspection vlan <in_vlan_list> logging { deny | permit | all }

ip dhcp excluded-address <low_ip> [<high_ip>]

ip dhcp pool <pool_name>

ip dhcp relay

ip dhcp relay information option

ip dhcp relay information policy { drop | keep | replace }

ip dhcp snooping

ip dns proxy

ip domain name { <v_domain_name> | dhcp [ipv4 | ipv6] [interface vlan <v_vlan_id_dhcp>] }

ip gateway interface <ifc>

ip helper-address <v_ipv4_ucast>

ip http port <port>

ip http secure-certificate { upload <url_file> [pass-phrase <pass_phrase>] | generate }

ip http secure-server port <port>

ip igmp host-proxy [leave-proxy]

ip igmp snooping

ip igmp snooping vlan <v_vlan_list>

ip igmp ssm-range <v_ipv4_mcast> <ipv4_prefix_length>

ip igmp unknown-flooding

ip link-local interface <ifc>

ip name-server [<order>] { <v_ipv4_addr> | { <v_ipv6_addr> [interface vlan <v_vlan_id_static>] } | dhcp [ipv4 | ipv6] [interface vlan <v_vlan_id_dhcp>]}

ip route <v_ipv4_addr> <v_ipv4_netmask> <v_ipv4_gw>

ip routing

ip scp server { enable | disable }

ip source binding interface <port_type> <in_port_type_id> <vlan_var> <ipv4_var><mask_var>

ip ssh

ip ssh keyregen

ip ssh port <port>

ip telnet port <port>

ip verify source

ip verify source translate

Parameters:

arp	Address Resolution Protocol
dhcp	Dynamic Host Configuration Protocol
dns	Domain Name System
domain	IP DNS Resolver
gateway	Gateway address binding interface
helper-address	DHCP relay server
http	Hypertext Transfer Protocol
igmp	Internet Group Management Protocol
link-local	Link-Local address binding interface
name-server	Domain Name System
route	Add IP route
routing	Enable routing for IPv4 and IPv6
scp	Secure copy function
source	source command
ssh	Secure Shell
telnet	TELNET
verify	verify command

Example 1:

```
SM24DP4XA(config)# ip arp inspection
SM24DP4XA(config)# ip route 192.168.1.1 255.255.255.0 192.168.1.100
% Interface routes are automatically generated by system. Can not add interface
route manually.
SM24DP4XA(config)# ip http W ssh 00:01:30 48/SSH_thread#526: Warning: Key failed
 or size mismatch, Generating key
W ssh 00:01:30 48/SSH_thread#531: Warning: Key generation completed
```

```
SM24DP4XA(config)#
```

Example *2a*: Enable the SCP (Secure Copy Protocol) feature. After that, you can use a client to download config or upload config / firmware to the switch via SCP. See the related Download and Upload commands in Example 3 below.

```
SM24DP4XA(config)# ip scp ?
    server    support scp server
SM24DP4XA(config)# ip scp server ?
    disable    Set mode to scp Disable
    enable     Set mode to scp Enable
SM24DP4XA(config)# ip scp server enable
SM24DP4XA(config)#
```

Example *2b*: After you have enabled the SCP feature (Example 2 above), use an SCP client to download config or upload config / firmware to the switch via SCP.

```
Download Startup Config:
scp admin@192.168.1.77:config/startup.cfg admin.cfg

Upload Startup Config:
scp admin.cfg admin@192.168.1.77:config/startup.cfg

Upload firmware:
scp SM24DP4XA_v7.10.1721_201812038.imgs
admin@192.168.1.77:image/switch_firmware_upgrade
```

Example 3: **ip gateway address binding interface**

```
SM24DP4XA(config)# ip gateway interface 1
SM24DP4XA(config)# exit
SM24DP4XA# show ip gateway interface
Gateway Address binding interface: 1
SM24DP4XA#
```

Example 4: **ip dhcp pool**

```
M24DP4XA(config)# ip dhcp pool Poolx
SM24DP4XA(config-dhcp-pool)# ?
    bootfile              Boot file name
    broadcast             Broadcast address in use on the client's subnet
    client-identifier      Client identifier
```

```
    client-name           Client host name
    default-router        Default routers
    dns-server            DNS servers
    do                   To run exec commands in config mode
    domain-name           Domain name
    end                  Go back to EXEC mode
    exit                 Exit from current mode
    hardware-address      Client hardware address
    help                 Description of the interactive help system
    host                 Client IP address and mask
    lease                Address lease time
    netbios-name-server   NetBIOS (WINS) name servers
    netbios-node-type     NetBIOS node type
    netbios-scope         NetBIOS scope
    network              Network number and mask
    nis-domain-name       NIS domain name
    nis-server            Network information servers
    no                   Negate a command or set its defaults
    ntp-server            NTP servers
-- more --, next page: Space, continue: g, quit: ^C
SM24DP4XA(config-dhcp-pool)# exit
SM24DP4XA(config)#
```

Example 5: **ip http**

```
SM24DP4XA(config)# ip http secure-server port 1
SM24DP4XA(config)# ip http secure-certificate ?
    generate    Generate a new self-signed RSA certificate
    upload      Upload a certificate PEM file
SM24DP4XA(config)# ip http secure-certificate upload ?
    <url_file>    Uniform Resource Locator. It is a specific character string
                  that constitutes a reference to a resource. Syntax:
                  <protocol>://[<username>[:<password>]@]<host>[:<port>][/<path>
                  ]/<file_name>
                  If the following special characters: space
                  !"#$%&'()*+,/:;<=>?@[\]^`{|}~ need to be contained in the
                  input url string, they should have percent-encoded. A valid
```

```
                file name is a text string drawn from alphabet (A-Za-z),
                digits (0-9), dot (.), hyphen (-), under score(_). The
                maximum length is 63 and hyphen must not be first character.
                The file name content that only contains '.' is not allowed.
SM24DP4XA(config)# ip http secure-certificate generate
SM24DP4XA(config)# exit
M24DP4XA# show ip http
Switch HTTP web server is enabled
Switch HTTP web server port is 80
SM24DP4XA# show ip http server secure status
Switch secure HTTP web server is disabled
Switch secure HTTP web server port is 1
Switch secure HTTP web redirection is disabled
Switch secure HTTP certificate is presented
SM24DP4XA#
```

Example 5: **ip ssh**

```
SM24DP4XA(config)# ip ssh ?
    keyregen    Regenerate ssh key
    port        Service port number
    <cr>
M24DP4XA(config)# ip ssh keyregen
W ssh 17:31:34 140/ssh_change_key#503: Warning: It will take some time. Please wait for key
generating complete...

W ssh 17:31:51 140/ssh_change_key#538: Warning: ECDSA : Public key portion is:
 521 ecdsa-sha2-nistp521 AAAAE2VjZHNhLXNoYTItbmlzdHA1MjEAAAAIbmlzdHA1MjEAAACFBAA
qR1UGdBVRZW+JiZk7qMDJftZCN+bNnP7DQt/rBLItj7yMr35xSwJgtce9m2tlgPdBP059gNGr4gLXM3d
yEvOW+ACh7qhckppfk14rN13pUMGtpF8YcjbjLO2KFtW4OxXi7tMtlu/eUoUWqkdXUIDfu54tEjmQbb2
r4vExtASEURfgFQ==
ECDSA: md5 32:6d:60:72:74:da:3b:9f:0c:14:93:f1:d5:59:76:c0

W ssh 17:31:51 140/ssh_change_key#555: Warning: Key generation completed

SM24DP4XA(config)# exit
SM24DP4XA# show ip ssh
```

```
Switch SSH is enabled
Switch SSH port is 22
Switch scp is disabled
SM24DP4XA# show ip ssh key
ECDSA:
Public key portion is:
 521 ecdsa-sha2-nistp521 AAAAE2VjZHNhLXNoYTItbmlzdHA1MjEAAAAIbmlzdHA1MjEAAACFBAA
qR1UGdBVRZW+JiZk7qMDJftZCN+bNnP7DQt/rBLItj7yMr35xSwJgtce9m2tlgPdBP059gNGr4gLXM3d
yEvOW+ACh7qhckppfk14rN13pUMGtpF8YcjbjLO2KFtW4OxXi7tMtlu/eUoUWqkdXUIDfu54tEjmQbb2
r4vExtASEURfgFQ==
ECDSA: md5 32:6d:60:72:74:da:3b:9f:0c:14:93:f1:d5:59:76:c0

SM24DP4XA#
```

Command: **ipmc**

Description: Configure IPv4/IPv6 multicast.

Syntax:

ipmc profile

ipmc profile <profile_name>

ipmc range <entry_name> { <v_ipv4_mcast> [<v_ipv4_mcast_1>] | <v_ipv6_mcast> [<v_ipv6_mcast_1>] }

Parameters:		
	profile	IPMC profile configuration
	range	A range of IPv4/IPv6 multicast addresses for the profile
	< word16>	Range entry name in 16 char's
	<ipv4_mcast>	Valid IPv4 multicast address
	<ipv6_mcast>	Valid IPv6 multicast address
	profile	IPMC profile configuration
	range	A range of IPv4/IPv6 multicast addresses for the profile
	<word16>	Profile name in 16 characters.

Example 1:

```
SM24DP4XA(config)# ipmc profile IProfile1
SM24DP4XA(config-ipmc-profile)# ?
    default       Set a command to its defaults
    description   Additional description about the profile in 64 characters
    do            To run exec commands in config mode
    end           Go back to EXEC mode
    exit          Exit from current mode
    help          Description of the interactive help system
    no            Negate a command or set its defaults
    range         A range of IPv4/IPv6 multicast addresses for the profile
SM24DP4XA(config-ipmc-profile)# exit
SM24DP4XA(config)# ipmc range IProfile1 ?
    <ipv4_mcast>   Valid IPv4 multicast address
    <ipv6_mcast>   Valid IPv6 multicast address
SM24DP4XA(config)# ipmc range IProfile1 224.0.0.0 ?
    <ipv4_mcast>   Valid IPv4 multicast address that is not less than start address
    <cr>
SM24DP4XA(config)# ipmc range IProfile1 224.0.0.0
SM24DP4XA(config)#
```

Example 2:

```
SM24DP4XA(config-ipmc-profile)# range Range1 permit log next Range1
% Invalid range name Range1.

SM24DP4XA(config-ipmc-profile)# range Range1 permit log next Range1
% Range1 is not a rule set in profile Profile1.

SM24DP4XA(config-ipmc-profile)#
```

Command: **ipv6**

Description: IPv6 configuration commands

Syntax:

ipv6 mld host-proxy [leave-proxy]

ipv6 mld snooping

ipv6 mld snooping vlan <v_vlan_list>

ipv6 mld ssm-range <v_ipv6_mcast> <ipv6_prefix_length>

ipv6 mld unknown-flooding

ipv6 route <v_ipv6_subnet> { <v_ipv6_ucast> | interface vlan <v_vlan_id> <v_ipv6_addr> }

Parameters:		
	mld	Multicasat Listener Discovery
	route	Configure static routes
	host-proxy	MLD proxy configuration
	snooping	Snooping MLD
	ssm-range	IPv6 address range of Source Specific Multicast
	unknown-flooding	Flooding unregistered IPv6 multicast traffic
	leave-proxy	MLD proxy for leave configuration
	vlan	MLD VLAN
	<vlan_list>	VLAN identifier(s): VID
	<ipv6_mcast>	Valid IPv6 multicast address
	<8-128>	Prefix length ranges from 8 to 128

Example:

```
SM24DP4XA(config)# ipv6 mld host-proxy leave-proxy
SM24DP4XA(config)# ipv6 mld snooping vlan 23
SM24DP4XA(config)# ipv6 mld unknown-flooding
SM24DP4XA(config)# ipv6 mld ssm-range FF05:0:0:0:0:0:0:2 8
SM24DP4XA(config)#
```

Command: **lacp**

Description: Configure Link Aggregation Control Protocol settings. This command also provides LACP link aggregation via a wireless AP.

Syntax:

lacp on-air index <v_1_to_8> { { port <port_type> <in_port_type_id> } | { couple-ip <ip1> <ip2> } }

lacp system-priority <v_1_to_65535>

Parameters:		
	on-air	Lets you set up LACP on Air ports and the Couple IP address for access management.
	system-priority	System priority
	index	Index
	<1-8>	index 1-8
	couple-ip	Set couple ip address
	<ipv4_addr>	IPv4 Address 1
	<ipv4_addr>	IPv4 Address 2
	GigabitEthernet	1 Gigabit Ethernet Port
	10GigabitEthernet	10 Gigabit Ethernet Port
	<port_type_id>	Port ID in 1/1-25
	<1-65535>	Priority value, lower means higher priority
	lacp system-priority	<v_1_to_65535>
	port	Port
	GigabitEthernet	1 Gigabit Ethernet Port
	<port_type_id>	Port ID in 1/1-10

Example:

```
SM24DP4XA(config)# lacp on-air index 1 couple-ip 192.168.1.80 192.168.1.90
SM24DP4XA(config)# lacp on-air index 1 port GigabitEthernet 1/9
SM24DP4XA(config)# lacp system-priority 50000
SM24DP4XA(config)#
```

Command: **line**

Description: Configure a terminal line.

Syntax: **line** { <0~16> | console 0 | vty <0~15> }

Parameters**:**

<0~16>	List of line numbers
console	Console terminal line
vty	Virtual terminal
do	To run exec commands in config mode
editing	Enable command line editing
end	Go back to EXEC mode
exec-banner	Enable the display of the EXEC banner
exec-timeout	Set the EXEC timeout
exit	Exit from current mode
help	Description of the interactive help system
history	Control the command history function
length	Set number of lines on a screen
location	Enter terminal location description
motd-banner	Enable the display of the MOTD banner
no	Negate a command or set its defaults
privilege	Change privilege level for line
width	Set width of the display terminal
<0-1440>	Timeout in minutes
<cr>	

Example:

```
SM24DP4XA(config-line)# exec-timeout 1440
SM24DP4XA(config)# line vty 0
SM24DP4XA(config-line)# exit
SM24DP4XA(config)# line 0
SM24DP4XA(config-line)#
```

Command: **lldp**

Description: Configure LLDP settings.

Syntax:

lldp holdtime <val>

lldp med datum { wgs84 | nad83-navd88 | nad83-mllw }

lldp med fast <v_1_to_10>

lldp med location-tlv altitude { meters | floors } <v_word11>

lldp med location-tlv civic-addr { { country <country> } | { state | county | city | district | block | street | leading-street-direction | trailing-street-suffix | street-suffix | house-no | house-no-suffix | landmark | additional-info | name | zip-code | building | apartment | floor | room-number | place-type | postal-community-name | p-o-box | additional-code } <v_line> }

lldp med location-tlv elin-addr <v_word25>

lldp med location-tlv latitude { north | south } <v_word8>

lldp med location-tlv longitude { west | east } <v_word9>

lldp med media-vlan-policy <policy_index> { voice | voice-signaling | guest-voice-signaling | guest-voice | softphone-voice | video-conferencing | streaming-video | video-signaling } { untagged | tagged <v_vlan_id> [l2-priority <v_0_to_7>] } [dscp <v_0_to_63>]

lldp reinit <val>

lldp timer <val>

lldp transmission-delay <val>

Parameters:

holdtime	Sets LLDP hold time (the neighbor switch will discard the LLDP information after "hold time" multiplied by "timer" seconds).
<2-10>	2-10 seconds – holdtime.
med	Media Endpoint Discovery.
reinit	LLDP tx reinitialization delay in seconds.
timer	Sets LLDP TX interval (The time between each LLDP frame transmitted in seconds).
transmission-delay	Sets LLDP transmission-delay (the amount of time that the transmission of LLDP frames will delayed after LLDP configuration has changed) in seconds.)
<1-8192>	1-8192 seconds transmission delay.
datum	Datum (geodetic system) type.
fast	Number of times to repeat LLDP frame transmission at fast start.
location-tlv	LLDP-MED Location Type Length Value parameter.
media-vlan-policy	Used to create a policy, which can be assigned to an interface.
nad83-mllw	Mean lower low water datum 1983
nad83-navd88	North American vertical datum 1983

wgs84	World Geodetic System 1984
<1-10>	fast <v_1_to_10>
altitude	Altitude parameter.
civic-addr	Civic address information and postal information. The total number of characters for the combined civic address information must not exceed 250 characters. **Note**: 1) A non empty civic address location will use 2 extra characters in addtion to the civic address location text. 2) The 2 letter country code is not part of the 250 characters limitation.
elin-addr	Emergency Call Service ELIN identifier data format is defined to carry the ELIN identifier as used during emergency call setup to a traditional CAMA or ISDN trunk-based PSAP. This format consists of a numerical digit string, corresponding to the ELIN to be used for emergency calling. Emergency Location Identification Number, (e.g. E911 and others), such as defined by TIA or NENA.
latitude	Latitude parameter.
longitude	Longitude parameter.
floors	Specify the altitude in floor.
meters	Specify the altitude in meters.
additional-code	Additional code - Example: 1320300003.
additional-info	Additional location info - Example: South Wing.
apartment	Unit (Apartment, suite) - Example: Apt 42.
block	Neighborhood, block.
building	Building (structure) - Example: Low Library.
city	City, township, shi (Japan) - Example: Copenhagen.
country	The two-letter ISO 3166 country code in capital ASCII letters - Example: DK, DE or US.
county	County, parish, gun (Japan), district.
district	City division, borough, city district, ward, chou (Japan).
floor	Floor - Example: 4.
house-no	House number - Example: 21.
house-no-suffix	House number suffix - Example: A, 1/2.
landmark	Landmark or vanity address - Example: Columbia University.
leading-street-direction	Leading street direction - Example: N.
name	Name (residence and office occupant) - Example: John Doe.
p-o-box	Post office box (P.O. BOX) - Example: 12345.
place-type	Place type - Example: Office.
postal-community-name	Postal community name - Example: Leonia.
room-number	Room number - Example: 450F.
state	National subdivisions (state, canton, region, province, prefecture).

street Street - Example: Oxford Street.
street-suffix Street suffix - Example: Ave, Platz.
trailing-street-suffix Trailing street suffix - Example: SW.
zip-code Postal/zip code - Example: 2791.
<dword25> ELIN value
north Setting latitude direction to north.
south Setting latitude direction to south.
<word8> Latitude degrees (0.0000-90.0000).
east Setting longitude direction to east.
west Setting longitude direction to west.
<word9> Longitude degrees (0.0000-180.0000).
<5-32768> 5-32768 seconds.
<cr>
Example:

```
SM24DP4XA(config)# lldp holdtime 4
SM24DP4XA(config)# lldp med datum wgs84
SM24DP4XA(config)# lldp med fast 1
SM24DP4XA(config)# lldp med location-tlv elin-addr 100
SM24DP4XA(config)# lldp med location-tlv latitude north 48.5
SM24DP4XA(config)# lldp med location-tlv longitude west 100.0
SM24DP4XA(config)# lldp transmission-delay 3000
Note: According to IEEE 802.1AB-clause 10.5.4.2 the transmission-delay must not
be larger than LLDP timer * 0.25. LLDP timer changed to 12000
SM24DP4XA(config)# do show lldp
LLDP Configuration
------------------
TX Interval : 12000

TX Hold : 4

TX Delay : 3000

TX Reinit : 2

SM24DP4XA(config)#
```

Command: **logging**

Description: Syslog configuration.

logging host { <ipv4_addr> | <domain_name> | <ipv6> }

logging on

logging port <port_no>

Parameters:

host	host
on	Enable Switch logging host mode
port	Service port number
<1-65535>	Port number
<domain_name>	The domain name is to provide a mechanism for naming resources on the Internet. A complete domain name consists of one or more subdomain names which are separated by dots (.)
<ipv4_ucast>	The IPv4 address of the log server
<ipv6_ucast>	The IPv6 address of the log server

Example:

```
SM24DP4XA(config)# logging on
SM24DP4XA(config)#SM24DP4XA(config)# logging host 192.168.1.80
SM24DP4XA(config)# logging port 6514
SM24DP4XA(config)#
```

Command: **loop-protect**

Description: Loop protection configuration.

Syntax: **loop-protect**

loop-protect shutdown-time <t>

loop-protect transmit-time <t>

Parameters:

shutdown-time	Loop protection shutdown time interval
transmit-time	Loop protection transmit time interval
<1-10>	Transmit time in seconds
<0-604800>	Shutdown time in seconds

Example:

```
SM24DP4XA(config)# loop-protect shutdown-time 40000
SM24DP4XA(config)# loop-protect transmit-time 4
SM24DP4XA(config)# loop-protect
SM24DP4XA(config)#
```

Command: **mac**

Description: MAC table entries/configuration.

Syntax:

mac address-table aging-time <v_0_10_to_1000000>

mac address-table learning vlan <vlan_list>

mac address-table static <v_mac_addr> vlan <v_vlan_id> [interface (<port_type> [<v_port_type_list>])]

Parameters:		
	address-table	MAC table entries/configuration
	aging-time	Mac address aging time
	learning	Mac Learning
	static	Static MAC address
	mac address-table	
	<0,10-1000000>	Aging time in seconds, 0 disables aging
	vlan	VLAN
	<vlan_list>	
	<mac_addr>	48 bit MAC address: xx:xx:xx:xx:xx:xx
	vlan	VLAN keyword
	<vlan_id>	VLAN IDs 1-409
	interface	Select an interface to configure
	*	All switches or All ports
	GigabitEthernet	1 Gigabit Ethernet Port
	10GigabitEthernet	10 Gigabit Ethernet Port
	<port_type_list>	Port list in 1/1-25
	*	All switches or All ports
	<cr>	

Example:

```
SM24DP4XA(config)# mac address-table aging-time 5000
SM24DP4XA(config)# mac address-table learning vlan 10-50
SM24DP4XA(config)# mac address-table static 11:22:33:44:55:66 vlan 10 interface
GigabitEthernet 1/9
SM24DP4XA(config)#
```

Command: **map-api-key**

Description: You need a valid API key and a Google Cloud Platform billing account to access Google core product. If you do not have one, DMS Map View will not be able to load Google Maps correctly. Visit the Google website below and follow the directions to get an API key:
https://developers.google.com/maps/documentation/directions/get-api-key

Syntax: **map-api-key** <key_str>

Parameters: <word127>

Example:

```
SM24DP4XA(config)# map-api-key st34j87bbld)(*+
SM24DP4XA(config)# do show map-api-key
Key   : st34j87bbld)(*+
SM24DP4XA(config)#
```

Command: **mep**

Description: Configure Maintenance Entity End Points.

Syntax:

mep <inst> [mip] { up | down } domain { port | evc | vlan | tp-link | tunnel-tp | pw | lsp } [vid <vid>] [flow <flow>] level <level> [interface <port_type> <port>]

mep <inst> ais [fr1s | fr1m] [protect]

mep <inst> aps <prio> [multi | uni] { laps | { raps [octet <octet>] } }

mep <inst> cc <prio> [fr300s | fr100s | fr10s | fr1s | fr6m | fr1m | fr6h]

mep <inst> ccm-tlv

mep <inst> client domain { evc | vlan | lsp } flow <cflow> [level <level>] [ais-prio [<aisprio> | ais-highest]] [lck-prio [<lckprio> | lck-highest]] mep <inst> dm <prio> [multi | { uni mep-id <mepid> }] [single | dual] [rdtrp | flow] interval <interval> last-n <lastn>

mep <inst> dm bin fd <num_fd_var>

mep <inst> dm bin ifdv <num_ifdv_var>

mep <inst> dm bin threshold <threshold_var>

mep <inst> dm ns

mep <inst> dm overflow-reset

mep <inst> dm proprietary

mep <inst> dm synchronized

mep <inst> lb <prio> [dei] [multi | { uni { { mep-id <mepid> } | { mac <mac> } } } | mpls ttl <mpls_ttl>] count <count> size <size> interval <interval>

mep <inst> lck [fr1s | fr1m]

mep <inst> level <level>

mep <inst> link-state-tracking

mep <inst> lm <prio> [multi | uni] [single | dual] [fr10s | fr1s | fr6m | fr1m | fr6h] [flr <flr>] [threshold <loss_th>]

mep <inst> lm flow-counting

mep <inst> lm oam-counting { [y1731 | all] }

mep <inst> lm-avail interval <interval> flr-threshold <flr_th>

mep <inst> lm-avail maintenance

mep <inst> lm-hli flr-threshold <flr_th> interval <interval>

mep <inst> lm-notif los-int-cnt-holddown <los_int_cnt_holddown> los-th-cnt-holddown <los_th_cnt_holddown> hli-cnt-holddown <hli_cnt_holddown>

mep <inst> lm-sdeg tx-min <tx_min> flr-threshold <flr_th> bad-threshold <bad_th> good-threshold <good_th>

mep <inst> lt <prio> { { mep-id <mepid> } | { mac <mac> } } ttl <ttl>

mep <inst> meg-id <megid> { itu | itu-cc | { ieee [name <name>] } }

mep <inst> mep-id <mepid>

mep <inst> peer-mep-id <mepid> [mac <mac>]

mep <inst> performance-monitoring

mep <inst> syslog

mep <inst> tst <prio> [dei] mep-id <mepid> [sequence] [all-zero | all-one | one-zero] rate <rate> size <size>

mep <inst> tst rx

mep <inst> tst tx

mep <inst> vid <vid>

mep <inst> voe

mep os-tlv oui <oui> sub-type <subtype> value <value>

Parameters:

<1-100>	The MEP instance number.
os-tlv	Organization-Specific TLV
oui	Organizationally Unique Identifier.
<0-0xFFFFFF>	OUI
sub-type	Sub-Type
<0-0xFF>	Sub-Type value - one octet.
value	Value
<0-0xFF>	Value value - one octet
ais	Alarm Indication Signal
aps	Automatic Protection Switching protocol.
cc	Continuity Check.
ccm-tlv	The CCM TLV enable/disable
client	
dm	Delay Measurement.
down	This MEP is a Down-MEP.
lb	Loop Back.
lck	Locked Signal.
level	The MEG level of the MEP.
link-state-tracking	Link State Tracking. When LST is enabled in an instance, Local SF or received 'isDown' in CCM Interface Status TLV, will bring down the residence port. Only valid in Up-MEP. The CCM rate must be 1 f/s or faster.
lm	Loss Measurement.
lm-avail	Availability for Loss Measurement

lm-hli	High Loss Interval for Loss Measurement
lm-sdeg	Signal Degrade for Loss Measurement
lt	Link Trace.
meg-id	The ITU/IEEE MEG-ID.
mep-id	The MEP-ID.
mip	This MEP instance is a half-MIP.
peer-mep-id	The peer MEP-ID.
performance-monitoring	Performance monitoring Data Set collection (MEF35).
syslog	Enable syslog.
tst	Test Signal
up	This MEP is a UP-MEP.
vid	The MEP VID.
voe	MEP is VOE based.
fr1m	Frame rate is 1 f/min.
fr1s	Frame rate is 1 f/s.
protect	The AIS can be used for protection. At the point of state change three AIS PDU is transmitted as fast as possible.
<0-7>	Priority in case of tagged OAM. In the MPLS and EVC domain this is the COS-ID.
<0-7>	Priority in case of tagged OAM. In the MPLS and EVC domain this is the COS-ID.
domain	Client flow domain.
evc	EVC client flow.
lsp	MPLS-TP LSP client flow.
vlan	VLAN client flow.
flow	Client flow instance.
<uint>	Client flow instance number value.
ais-prio	AIS injection priority.
lck-prio	LCK injection priority.
level	The MEG level on the client layer.
<0-7>	AIS injection priority value.
ais-highest	Request the highest possible AIS priority.
lck-prio	LCK injection priority.
level	The MEG level on the client layer.
<0-7>	Priority in case of tagged OAM. In the MPLS and EVC domain this is the COS-ID.
bin	Delay Measurement Binning.
ns	Nano Seconds
overflow-reset	Reset all Delay Measurement results on total delay counter overflow.

proprietary	Proprietary Delay Measurement.
synchronized	Near enad and far end is real time synchronized.
domain	The domain of the MEP.
evc	This MEP is a EVC domain MEP.
lsp	This MIP is an MPLS-TP LSP domain MIP.
port	This MEP is a Port domain MEP.
pw	This MEP is an MPLS-TP Pseudo-Wire domain MEP.
tp-link	This MEP is an MPLS-TP link domain MEP.
tunnel-tp	This MEP is an MPLS-TP tunnel domain MEP.
vlan	This MEP is a VLAN domain MEP.
flow	In case the MEP is a VLAN, EVC, MPLS-TP link, tunnel, LSP or Pseudo-Wire domain MEP, the flow instance that the MEP is related to must be given.
level	The MEG level of the MEP.
vid	In case the MEP is a Port domain Up-MEP or a EVC domain customer MIP (on the UNI), the VID must be given.
<0-7>	Priority in case of tagged OAM. In the MPLS and EVC domain this is the COS-ID.
fr1m	Frame rate is 1 f/min.
fr1s	Frame rate is 1 f/s.
<0-7>	The MEG level value.
<0-7>	Priority in case of tagged OAM. In the MPLS and EVC domain this is the COS-ID.
flow-counting	Loss Measurement is counting service frames per flow – all priority in one.
oam-counting	Loss Measurement is counting OAM frames either as Y1731 or all
interval	Availability interval
maintenance	Availability Maintenance indicator.
flr-threshold	High Loss Interval FLR Threshold
tx-min	Minimum number of frames that must be transmitted in a measurement before FLR is tested against the SDEG FLR threshold.
<0-7>	Priority in case of tagged OAM. In the EVC domain this is the COS-ID.
<word>	The MEG-ID string. This is either the ITU MEG-ID or the IEEE Short MA, depending on the selected MEG-ID format. The ITU max. is 13 characters. The ITU-CC max. is 15 characters. The IEEE max. is 16 characters.
<uint>	The MEP-ID value.
<uint>	The peer MEP-ID value.
mac	The peer MAC. this will be overwritten by any learned MAC – through CCM reception.
<mac_addr>	The peer MAC string.
<0-7>	Priority in case of tagged OAM. In the MPLS and EVC domain this is the COS-ID.

rx	Receive Test Signal.
tx	Transmit Test Signal.
dei	Drop Eligible Indicator in case of tagged OAM.
mep-id	Peer MEP-ID for unicast TST. The MAC is taken from peer MEP MAC database.
domain	The domain of the MEP.
<vlan_id>	The MEP VID value.

Example:

```
SM24DP4XA(config)# mep os-tlv oui 0 sub-type 0 value 0
SM24DP4XA(config)# mep 1 link-state-tracking
SM24DP4XA(config)# mep 1 mep-id 1
SM24DP4XA(config)# mep 1 performance-monitoring
SM24DP4XA(config)# mep 1 performance-monitoring
SM24DP4XA(config)# mep 1 syslog
SM24DP4XA(config)# mep 1 tst rx
SM24DP4XA(config)# mep 1 vid 10
SM24DP4XA(config)# mep 1 voe
SM24DP4XA(config)#
```

Messages:

This MEP is not enabled

Error: Invalid parameter error returned from MEP

This MEP is not enabled

Error: Invalid parameter error returned from MEP

Error: No VOE available

Command: **monitor**

Description: Set monitor configuration.

Syntax: **monitor** session <session_number> [destination { interface (<port_type> [<di_list>]) | remote vlan <drvid> reflector-port <port_type> <rportid> } | source { interface (<port_type> [<si_list>]) [both | rx | tx] | remote vlan <srvid> | vlan <source_vlan_list> } | intermediate { interface (<port_type> [<ii_list>]) | remote vlan <irvid> }]

Parameters:

session	Configure a MIRROR session
<1>	MIRROR session number
destination	MIRROR destination interface or VLAN
intermediate	MIRROR intermediate interface, VLAN
source	MIRROR source interface, VLAN
interface	MIRROR destination interface
remote	MIRROR destination Remote
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<port_type_list>	Port list in 1/1-25
vlan	MIRROR intermediate Remote number
<vlan_id>	Remote MIRROR intermediate RMIRROR VLAN number
interface	MIRROR source interface
remote	MIRROR source Remote
vlan	MIRROR source VLAN
<port_type_list>	Port list in 1/1-4
vlan	Remote MIRROR source RMIRROR VLAN
<vlan_id>	Remote MIRROR source RMIRROR VLAN number
<vlan_list>	MIRROR source VLAN

Example:

```
SM24DP4XA(config)# monitor session 1 destination interface GigabitEthernet 1/9
SM24DP4XA(config)# monitor session 1 intermediate remote vlan 10
SM24DP4XA(config)# monitor session 1 source remote vlan 20
SM24DP4XA(config)# monitor session 1 source vlan 30
SM24DP4XA(config)#
```

Messages: *% No such interface: 10GigabitEthernet 1/8*

% Interface GigabitEthernet 1/9 already configured as destination port.

% No such interface: 10GigabitEthernet 1/10

% No such interface: 10GigabitEthernet 1/26

Command: **mrp**

Description: Configure MRP (Media Redundancy Protocol).

Syntax:

mrp <domainId> client blocked-state { enable | disable }

mrp <domainId> client link-interval <downInterval> <upInterval> [<linkChangeCount>]

mrp <domainId> diag-clear

mrp <domainId> manager link-change-react { enable | disable }

mrp <domainId> manager media-redundancy { enable | disable }

mrp <domainId> manager nonblocking-supported { enable | disable }

mrp <domainId> manager priority <priority>

mrp <domainId> manager test-interval <testInterval> [<shortTestInterval>]

mrp <domainId> manager test-monitoring <count> [<extendedCount>]

mrp <domainId> manager topology-change <topoChangeInterval> [<topoChangeRepeatCount>]

mrp <domainId> name <domainName>

mrp <domainId> ringport { primary | secondary } <port_type> <mrp_port>

mrp <domainId> ringport-delete { primary | secondary }

mrp <domainId> role { manager | client }

mrp <domainId> status { enable | disable }

mrp <domainId> uuid <domainUUID>

mrp <domainId> vlan <vlanId>

mrp domain delete <domainId>

mrp domain new <domainId>

Parameters:

<1-2>	DomainID of Domain to modify
domain	Create/Delete MRP Domain
client	Operate on an MRP Client
diag-clear	Clear Diagnostic stats for MRP Domain
manager	Operate on an MRP Manager
name	Set name for Domain
ringport	Set/Add Ringport
ringport-delete	Delete Ringport
role	Set role in Domain to manager or client
status	Enable/Disable a domain
uuid	Set UUID for Domain
vlan	Set VLAN for Domain

blocked-state	Enable/Disable Blocked State support for MRP Client
link-interval	Set Client Link Intervals and Count for MRP Client
disable	Disable Client Blocked State support
enable	Enable Client Blocked State support (default)
<1-50>	Client Link Down Interval in ms (default=20)
<1-50>	Client Link Up Interval in ms (default=20)
<1-10>	Client Link Change Count (default=4)
link-change-react	Enable/Disable Manager Link Change Reaction
media-redundancy	Enable/Disable Manager Media Redundancy Mode (MRM)
nonblocking-supported	Enable/Disable Manager Non-blocking support
priority	Set Manager Priority
test-interval	Set Manager Test Intervals
test-monitoring	Set Manager Test Monitoring values
topology-change	Set Manager Topology Change settings
disable	Disable Manager link change reaction (default)
enable	Enable Manager link change reaction
disable	Disable Manager Monitor mode
enable	Enable Manager Monitor mode (default)
disable	Disable Manager Non-blocking support (default)
enable	Enable Manager Non-blocking support
<0-15>	New Manager Priority (0 is highest, default=8)
<1-50>	New Manager Test Interval in ms (default=20)
<1-30>	New Manager Short Test Interval in ms (default=10)
<1-15>	Set Manager Test Monitoring Count (default=3)
<1-30>	Set Manager Test Monitoring Extended Count (default=15)
<1-20>	New Manager Topology Change Interval in ms (default=10)
<1-5>	New Manager Topology Change Repeat Count (default=3)
<word32>	Updated Domain name
primary	Set primary Ringport
secondary	Set secondary Ringport
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<port_type_id>	Port ID in 1/1-24,29
<port_type_id>	Port ID in 1/1-4
primary	Delete the primary Ringport

secondary	Delete the secondary Ringport
client	Set role in Domain to client
manager	Set role in Domain to manager
disable	Disable Domain
enable	Enable Domain
disable	Disable Domain
enable	Enable Domain
<word64>	Updated Domain UUID
<0-4094>	VLAN ID to apply to Domain (VLAN 0 means disable vlan)
delete	Delete an MRP Domain
new	Create a new MRP Domain
<1-2>	Domain ID of Domain to be deleted
<1-2>	Domain ID of new Domain

Example:

```
SM24DP4XA(config)# mrp domain new 1
SM24DP4XA(config)# mrp 1 manager topology-change 2 1
SM24DP4XA(config)# mrp 1 name BobB
SM24DP4XA(config)# mrp 1 ringport-delete primary
SM24DP4XA(config)# mrp 1 role manager
SM24DP4XA(config)# mrp 1 status enable
W  mrp  146/mrp_icli_domain_status#306: Warning: MRP Domain Status: unable to modify
domain with Id 1, Invalid ring port

SM24DP4XA(config)#
```

Messages:

W mrp 142/mrp_icli_client_blocked_state#501: Warning: MRP Client Blocked State: unable to modify domain with Id 1, Invalid parameter

W mrp 142/mrp_icli_client_link_interval#486: Warning: MRP Client Link Change Count: unable to modify domain with Id 1, Invalid parameter

W mrp 146/mrp_icli_domain_ringport_delete#275: Warning: MRP Domain Ringport Delete: unable to modify domain with Id 1, Invalid parameter

W mrp 144/mrp_icli_domain_delete#192: Warning: MRP Domain Delete: unable to delete domain with Id 1, Domain is enabled

Command: **mvr**

Description: Multicast VLAN Registration configuration.

Syntax: **mvr**

mvr name <mvr_name> channel <profile_name>

mvr name <mvr_name> frame priority <cos_priority>

mvr name <mvr_name> frame tagged

mvr name <mvr_name> igmp-address <v_ipv4_ucast>

mvr name <mvr_name> last-member-query-interval <ipmc_lmqi>

mvr name <mvr_name> mode { dynamic | compatible }

mvr vlan <v_vlan_list> [name <mvr_name>]

mvr vlan <v_vlan_list> channel <profile_name>

mvr vlan <v_vlan_list> frame priority <cos_priority>

mvr vlan <v_vlan_list> frame tagged

mvr vlan <v_vlan_list> igmp-address <v_ipv4_ucast>

mvr vlan <v_vlan_list> last-member-query-interval <ipmc_lmqi>

mvr vlan <v_vlan_list> mode { dynamic | compatible }

Parameters:

name	MVR multicast name
vlan	MVR multicast vlan
<word16>	MVR multicast VLAN name
channel	MVR channel configuration
frame	MVR control frame in TX
igmp-address	MVR address configuration used in IGMP
last-member-query-interval	Last Member Query Interval in tenths of seconds
mode	MVR mode of operation
<word16>	Profile name in 16 char's
priority	Interface CoS priority
tagged	Tagged IGMP/MLD frames will be sent
<0-7>	CoS priority ranges from 0 to 7
<ipv4_ucast>	A valid IPv4 unicast address
<ipv4_ucast>	A valid IPv4 unicast address
<vlan_list>	MVR multicast VLAN list
name	MVR multicast name
<0-31744>	0 - 31744 tenths of seconds
compatible	Compatible MVR operation mode
dynamic	Dynamic MVR operation mode
<word16>	MVR multicast VLAN name

Example:

```
SM24DP4XA(config)# mvr vlan 10 name MvrVlan1
SM24DP4XA(config)# mvr vlan 10 mode dynamic
SM24DP4XA(config)#
```

Messages :

% Invalid MVR VLAN Mvrmcvid10.

% Failed to set MVR interface channel.

% Invalid MVR VLAN Mvrmcvid10.

% Failed to set MVR interface priority settings.

% Failed to set MVR frame tagged settings.

% Invalid MVR VLAN Mvrmcvid10.

% Failed to set MVR IGMP address settings for IGMP.

% Invalid word detected at '^' marker.

Command: **no**

Negate a command or set its defaults.

Table : Configure no Commands:

Command	Function
aaa	Authentication, Authorization and Accounting
access	Access management
access-list	Access list
aggregation	Aggregation mode
banner	Define a login banner
clock	Configure time-of-day clock
command-history-log	Disable to Save Command History to Flash
debug	Debugging functions
dot1x	IEEE Standard for port-based Network Access Control
enable	Modify enable password parameters
eps	Ethernet Protection Switching.
erps	Ethernet Ring Protection Switching
evc	Ethernet Virtual Connections
exec-timeout	autologout timeout
gvrp	Enable GVRP feature
hostname	Set system's network name
interface	Select an interface to configure
ip	Internet Protocol
ipmc	IPv4/IPv6 multicast configuration
ipv6	IPv6 configuration commands
lacp	LACP settings
lldp	LLDP configurations.
logging	System logging message
loop-protect	Loop protection configuration
mac	MAC table entries/configuration
map-api-key	Google Map API key
mep	Maintenance Entity Point
monitor	Monitoring different system events
mvr	Multicast VLAN Registration configuration
ntp	Configure NTP
port-security	Enable/disable port security globally.
privilege	Command privilege parameters
ptp	Precision time Protocol (1588)
qos	Quality of Service
radius-server	Configure RADIUS
rmon	Remote Monitoring
snmp-server	Enable SNMP server
spanning-tree	STP Bridge
svl	Unmap Shared VLAN Learning for a range or all FIDs
switchport	VLAN
system	Set the system description
tacacs-server	Configure TACACS+
udld	Disable UDLD configurations on all fiber-optic ports.
upnp	Set UPnP configuration
username	Establish User Name Authentication
vlan	VLAN commands
voice	Voice appliance attributes
web	Web

Example:

```
SM24DP4XA(config)# no aaa accounting telnet
SM24DP4XA(config)# no banner motd
SM24DP4XA(config)#
```

Command: **ntp**

Description: Configure Network Time Protocol.

Syntax: **ntp**

ntp automatic

ntp interval <interval>

ntp server <index_var> ip-address { <ipv4_var> | <ipv6_var> | <name_var> }

Parameters:		
	automatic	Configure Automatic
	interval	Configure NTP Time-Sync Interval
	server	Configure NTP server
	<5,10,15,30,60,120>	ntp interval
	<1-5>	index number
	ip-address	ip address
	<domain_name>	domain name
	<ipv4_ucast>	ipv4 address
	<ipv6_ucast>	ipv6 address
	<cr>	

Example:

```
SM24DP4XA(config)# ntp automatic
SM24DP4XA(config)# ntp interval 15
SM24DP4XA(config)# ntp server 3 ip-address 192.168.1.1
SM24DP4XA(config)#
```

Command: **percepxion**

Description: Percepxion configuration; enter Percepxion Config mode and set Percepxion parameters.

Percepxion is a cloud or on-premise portal for the centralized management of multiple Lantronix switches. A browser-based interface allows an administrator to view status, send commands, view logs and charts, and update firmware. Each Lantronix device can communicate with the cloud server or on-premise server, sending status updates and responding to commands sent by the server.

The switch requires a unique Device ID to communicate with the Percepxion portal. The ID is viewable in the Percepxion settings by running the 'show' command at the 'config-percepxion' command mode. If a device is not already pre-configured with the ID, the ID must be provisioned using Lantronix Provisioning Manager (LPM).

The Percepxion client follows a sequence of steps to connect to the Percepxion server, send status updates, check for firmware and configuration updates, and respond to commands from the server. This series of steps is the same each time the client starts - at boot, or if the client is enabled. Any changes to the Percepxion Device ID, or registration settings require the Percepxion client to be disabled and re-enabled for the changes to take effect.

Percepxion client registration

The client will attempt to register to the Host using the project tag and device ID. If registration fails, the client will wait and retry. The client will retry until it is successful, or the client is disabled. Registration may fail if the Project Tag is invalid, the Device ID is invalid, the Host name cannot be resolved, or the Host is not reachable. Once registration is successful, the **Client State** will display **Registered** with the date and time of registration.

Telemetry

After registration, the client will connect to the Telemetry Host (the hostname is the same as the registration host provided during registration) and perform a telemetry handshake. This handshake may request that the client publish a set of statistics at regular intervals.

Messaging and Status Updates

After the telemetry handshake, the Percepxion client will connect to the messaging host to receive messages and publish status updates. If the connection fails, the client will wait and retry. The connection may fail if the messaging host name cannot be resolved, or the messaging host is not reachable. The client publishes status update messages (changes to the device attributes) at the interval defined by **Status Update Interval**. Each time a status update is published, the **Last status update** will be updated to indicate the elapsed time since the status was sent. The client also accepts command messages from the Percepxion server to perform actions, such as reboot.

Firmware updates and Configuration updates

The Percepxion client checks for firmware and configuration updates at the interval defined by the **Content Check Interval**. When the client checks for firmware or configuration updates, the **Last content check** will

be updated to indicate the elapsed time since the check was made. The **Available Firmware updates** and **Available Configuration updates** will indicate if an update was found on the server, or show *Not available*, if no updates were found.

Subcommands:

```
SM24DP4X4A(config-percepxion)# ?

    active       Sets active connection to Connection <number>

    apply        Sets the mode on firmware updates

    connection    Sets the connection 1 or connection 2

    content      Sets the firmware and configuration check interval

    device       Sets the device attributes

    do           To run exec commands in config mode

    end          Go back to EXEC mode

    exit         Exit from current mode

    help         Description of the interactive help system

    no           Removes

    show         Displays the current configuration

    state        Percepxion state

    status       Sets the status update interval
```

Syntax and Parameters:

```
active connection connection <1|2>
```

- connection - sets the active connection

```
apply configuration updates <enable|disable>
```

- configuration updates - enables or disables configuration updates

```
apply firmware updates <enable|disable>
```

- firmware updates - enables or disables firmware updates

```
connection <1|2> connect to <cloud|on premise>

connection <1|2> host <host name>

connection <1|2> port <number>

connection <1|2> secure port <enable|disable>

connection <1|2> validate certificates <enable|disable>
```

- Sets the connection 1 or 2 settings.

- <1|2> - Indicates which connection to configure.
- connect to - sets the connect mode to cloud or on-premise
- host - sets the host name or IP address of the Percepxion server
- port - sets the port number of the Percepxion server. Default is 443.
- secure port - enables or disables secure port.
- validate certificates - If enabled use a certificate authority to validate the HTTPS certificate. Disabled by default.

```
content check interval <1-56160>
```

- check interval - sets the interval of time in minutes that the agent waits between checks for firmware or configuration updates. Valid values are 1 to 56160 minutes.

```
device description <device_desp>
device id <device_id>
device key <device_key>
device name <device_name>
```

- Sets the device attributes.
- device_desp - sets the description
- device_id – sets the device id
- device_key – sets the device key. After it is set, the key is displayed as <Configured>.
- device_name – sets the device name as it will be shown in Percepxion UI.

```
do <command>
```

- Run exec commands in the configuration mode

```
end
```

- Go back to exec mode

```
exit
```

- Exit from the current mode

```
help
```

- Shows description of the interactive help system

```
no device description
no device id
no device key
no device name
```

- Removes the value of a configuration setting

- description – removes the description
- id – removes the device id
- key – removes the device key
- name – removes the device name

```
show connection <1|2>
```

- Displays the current configuration of the specified connection

```
show statistics
```

- Displays the Percepxion statistics

```
state <disable|enable>
```

- Sets the Percepxion client state. Enabled by default.

```
status update interval <1-1440>
```

- update interval <1-1440> Sets the interval of time in minutes that the agent waits between sending its status to the Percepxion server. Valid values are 1 to 1440 minutes.

- **EXAMPLE 1**

```
SM24DP4X4A(config-percepxion)# active connection connection 1
SM24DP4X4A(config-percepxion)# apply configuration updates enable
SM24DP4X4A(config-percepxion)# apply firmware updates disable
SM24DP4X4A(config-percepxion)# connection 1 connect to on premise
SM24DP4X4A(config-percepxion)# connection 1 connect to cloud
SM24DP4X4A(config-percepxion)# connection 2 host 1.2.3.4
SM24DP4X4A(config-percepxion)# connection 1 port 445
SM24DP4X4A(config-percepxion)# connection 2 secure port enable
SM24DP4X4A(config-percepxion)# connection 2 validate certificates enable
SM24DP4X4A(config-percepxion)# content check interval 7500
SM24DP4X4A(config-percepxion)# device name B234
SM24DP4X4A(config-percepxion)# device id MidRow
SM24DP4X4A(config-percepxion)# do show version brief
Version      : SM24DP4X4A (standalone) v7.20.0215
Build Date   : 2025-02-14T18:05:02+08:00
SM24DP4X4A(config-percepxion)# exit
SM24DP4X4A(config)# percepxion
SM24DP4X4A(config-percepxion)# end
```

```
SM24DP4X4A# configure terminal
SM24DP4X4A(config)# percepxion
SM24DP4X4A(config-percepxion)# no device name
SM24DP4X4A(config-percepxion)# no device key
SM24DP4X4A(config-percepxion)# show connection 1
Percepxion Connection 1 Configuration:
Connect To : Cloud
Host : api.percepxion.ai
Port : 445
Secure Port : Enabled
Validate Certificates: Enabled
SM24DP4X4A(config-percepxion)#
```

- **EXAMPLE 2**

```
SM24DP4X4A(config-percepxion)# show <cr>
Percepxion Configuration:
State : Enabled
Device ID :
Device Key : (Configured)
Device Name :
Device Description : Lantronix SM24DP4X4A
Status Update Interval : 1 minutes
Content Check Interval : 7500 minutes
Apply Firmware Updates : Disabled
Apply Configuration Updates : Enabled
Active Connection : Connection 1
Connection 1 Host : api.percepxion.ai
Connection 1 Port : 445
Connection 1 Secure Port : Enabled
Connection 1 Validate Certificates: Enabled

Connection 2 Host : 1.2.3.4
Connection 2 Port : 443
Connection 2 Secure Port : Enabled
```

```
Connection 2 Validate Certificates: Enabled
SM24DP4X4A(config-percepxion)#
```

- **EXAMPLE 3**

```
SM24DP4X4A(config-percepxion)# show statistics
Client Status : Running
Not registered -
Last Status Update : Not available
Last Content Check : Not available
Available Firmware Updates: Not available
Available Configuration Updates: Not available
SM24DP4X4A(config-percepxion)# state enable
SM24DP4X4A(config-percepxion)# status update interval 990
SM24DP4X4A(config-percepxion)# exit
SM24DP4X4A(config)#
```

Command: **port-security**

Description: Enable/disable port security globally.

Syntax: **port-security**

port-security aging

port-security aging time <v_10_to_10000000>

Parameters: aging Enable/disable port security aging.

time Time in seconds between check for activity on learned MAC addresses.

port-security aging time <v_10_to_10000000>

<10-10000000> seconds

<cr>

Example:

```
SM24DP4XA(config)# port-security aging time 50000
SM24DP4XA(config)#
```

Command: **privilege**

Description: Command privilege parameters

Syntax: **privilege** <mode_name> level <privilege> <cmd>

Parameters:

<cword> Valid words are 'config-vlan' 'configure' 'dhcp-pool' 'exec' 'if-vlan' 'interface' 'ipmc-profile' 'line' 'snmps-host' 'stp-aggr'.

level Set privilege level of command

<0-15> Privilege level

<line128> Initial valid words and literals of the command to modify, in 128 characters

<cr>

Example:

```
SM24DP4XA(config)# privilege dhcp-pool level 15 d
SM24DP4XA(config)#
```

Messages: *% Fail to set privilege as command "anyone" is invalid.*

Command: **ptp**

Description: Configure Precision Time Protocol parameters.

Syntax:

ptp <clockinst> clk sync <threshold> ap <ap>

ptp <clockinst> domain <domain>

ptp <clockinst> filter [delay <delay>] [filter-type { basic | ms-pdv }] [period <period>] [dist <dist>]

ptp <clockinst> ho [filter <ho_filter>] [adj-threshold <adj_threshold>]

ptp <clockinst> log <debug_mode>

ptp <clockinst> mode { boundary | e2etransparent | p2ptransparent | master | slave | bcfrontend }

[onestep | twostep] [ethernet | ethernet-mixed | ip4multi | ip4mixed | ip4unicast | oam | onepps]

[oneway | twoway] [id <v_clock_id>] [vid <vid> [<prio>] [tag]] [mep <mep_id>] [profile { ieee1588 |

g8265.1 | g8275.1 }] [clock-domain 0] [dscp <dscp_id>]

ptp <clockinst> priority1 <priority1>

ptp <clockinst> priority2 <priority2>

ptp <clockinst> servo ad <ad>

ptp <clockinst> servo ai <ai>

ptp <clockinst> servo ap <ap>

ptp <clockinst> servo displaystates

ptp <clockinst> servo phase-mode

ptp <clockinst> slave-cfg [stable-offset <stable_offset>] [offset-ok <offset_ok>] [offset-fail <offset_fail>]

ptp <clockinst> time-property [utc-offset <utc_offset>] [valid] [leap-59 |leap-61] [time-traceable]

[freq-traceable] [ptptimescale] [time-source <time_source>]

ptp <clockinst> uni <idx> [duration <duration>] <ip>

ptp ext [output | input | out-in] [ext <clockfreq>] [vcxo | ltc-freq | osc | ltc-phase]

ptp ref-clock { mhz125 | mhz156p25 | mhz250 }

ptp system-time { get | set }

ptp tc-internal [mode <mode>]

Parameters:

<0-3>	Clock instance [0-3]
ext	Update the 1PPS and External clock output configuration and vcxo frequency rate adjustment option
system-time	Enable synchronization between PTP time and system time
tc-internal	Define the internal mode used in TC's
clk	Set PTP slave clock options
domain	Clock domain for PTP
filter	Set filter parameters

ho	Set PTP Servo holdover parameters
log	Set the PTP debug mode
<1-4>	1-4 Debug log mode, 1 => log offset from master, 2 => log sync packets, 3 => log Delay_req, 4 => log both
mode	Enable a PTP instance
priority1	Clock priority 1 for PTP BMC algorithm (0 is highest priority)
priority2	Clock priority 2 for PTP BMC algorithm (0 is highest priority)
servo	Set Servo parameters
slave-cfg	Set PTP clock Slave Configuration
time-property	Set time properties
uni	Set a Unicast Slave configuration entry
<1-1000>	[1..1000] Threshold in ns for offsetFromMaster defines when the offset increment/decrement mode is entered
ap	Set the adjustment factor
<1-40>	[1..40] The offset increment/decrement adjustment factor
<0-127>	PTP domain: range = 0-127
delay	Set delay filter parameter
dist	Set offset filter dist parameter
filter-type	Define offset filter type
period	Set offset filter period parameter
<0-6>	Log2 of timeconstant in delay lowpass filter, valid range: 1-6, Setting the value to 0 means use the same filter function as for the offset measurement, in this case the delay filter uses the 'period' and 'dist' parameters.
dist	Set offset filter dist parameter
filter-type	Define offset filter type
period	Set offset filter period parameter
<1-10>	Distance between servo update n number of measurement periods, valid range: 1-10
filter-type	Define offset filter type
period	Set offset filter period parameter
basic	Basic offset filter
ms-pdv	MS-PDV (packet delay variation)
period	Set offset filter period parameter
<1-10000>	Measurement period in number of sync events, valid range: 1-10000
adj-threshold	Set adjustment threshold
filter	Set stabilization period

<1-1000>	[1..1000] max frequency adjustment change within the holdover stabilization period (in units of 0.1 ppb)
filter	Set stabilization period
<10-86400>	[10..86400] Holdover filter and stabilization period
host	host
on	Enable Switch logging host mode
port	Service port number
<domain_name>	The domain name is to provide a mechanism for naming resources on the Internet. A complete domain name consists of one or more subdomain names which are separated by dots(.)
<ipv4_ucast>	The IPv4 address of the log server
clock-domain	Define clock domain used by this instance. Instances with different clock domain can have different time.
dscp	Define DSCP field used in IPv4 enacpaulation
ethernet	Ethernet protocol encapsulation
ethernet-mixed	Ethernet protocol encapsulation using mix of unicast and multicast
id	define PTP clock instance identifier
ip4mixed	IPv4 mixed multicast/unicast protocol encapsulation
ip4multi	IPv4 multicast protocol encapsulation
ip4unicast	IPv4 unicast protocol encapsulation
mep	Define MEP id used in OAM based PTP
oam	OAM encapsulation (only used in Serval based Distributed TC)
onepps	1PPS master slave synchronization(only used with Gen2 1588 PHY's)
onestep	One-step mode
oneway	Oneway slave mode (no Delay_req)
profile	Indication that clock has an associated profile
twostep	Two-step mode
twoway	Twoway slave mode
vid	define VLAN ID
clock-domain	Define clock domain used by this instance. Instances with different clock domain can have different time.
dscp	Define DSCP field used in IPv4 enacpaulation
ethernet	Ethernet protocol encapsulation
ethernet-mixed	Ethernet protocol encapsulation using mix of unicast and multicast
id	define PTP clock instance identifier

ip4mixed	IPv4 mixed multicast/unicast protocol encapsulation
ip4multi	IPv4 multicast protocol encapsulation
ip4unicast	IPv4 unicast protocol encapsulation
mep	Define MEP id used in OAM based PTP
oam	OAM encapsulation (only used in Serval based Distributed TC)
onepps	1PPS master slave synchronization(only used with Gen2 1588 PHY's)
onestep	One-step mode
oneway	Oneway slave mode (no Delay_req)
profile	Indication that clock has an associated profile
twostep	Two-step mode
twoway	Twoway slave mode
vid	define VLAN ID
0	Clock domain used. The Clock domain may be HW based or SW based. Jaguar2 has 3 hw clock domains, other switches have 1 hw clock domain.
<0-63>	DSCP field value used in IPv4 enacpaulation
clock-domain	Define clock domain used by this instance. Instances with different clock domains can have different times.
<0-255>	PTP clock priority1: range = 0-255
|	Output modifiers
<0-255>	PTP clock priority2: range = 0-255
ad	Set 'D' parameter in the servo
ai	Set 'I' parameter in the servo
ap	Set 'P' parameter in the servo
displaystates	Enable logging of servo parameters on the console
phase-mode	Enable phase mode in the servo
<1-10000>	[1..10000] 'D' component in PID servo regulator
<1-10000>	[1..10000] 'I' component in PID servo regulator.
<1-1000>	[1..1000] 'P' component in PID servo regulator
offset-fail	set the offset-fail threshold
offset-ok	set the offset-ok threshold
stable-offset	set the stable-offset threshold
<0-1000000>	offset-fail threshold in ns
<0-1000000>	offset-ok threshold in ns
<0-1000000>	stable-offset threshold in ns.
freq-traceable	frequency is traceable

leap-59	leap59 in current day
leap-61	leap61 in current day
ptptimescale	timing is a PTP time scale
time-source	set timesource
time-traceable	timing is traceable
utc-offset	set utc offset
valid	UTC offset is valid
<0-4>	[0..4] Index in the slave table
<ipv4_ucast>	IPv4 address of requested master clock
duration	Set the Duration parameter
<10-1000>	Duration [10..1000]. Number of seconds for which the Announce/Sync messages are requested
<ipv4_ucast>	IPv4 address of requested master clock
ext	Enable external clock frequency output
input	Enable 1PPS input
ltc-freq	Select Local Time Counter (LTC) frequency control
out-in	Enable 1PPS output and input (Jaguar1 only)
output	Enable 1PPS output
vcxo	Enable VCXO frequency control
<1-25000000>	[1..25.000.000] External Clock output frequency in Hz
get	Get (update) the PTP time from the system time
set	Set (update) the system time from the PTP time
mode	Set mode
<0-3>	mode [0-3] (0 = MODE_30BIT, 1 = MODE_32BIT, 2 = MODE_44BIT, 3 = MODE_48BIT)
<0-3>	Clock instance [0-3]
ext	Update the 1PPS and External clock output configuration and vcxo frequency rate adjustment option
system-time	Enable synchronization between PTP time and system time
tc-internal	Define the internal mode used in TC's

Example:

```
SM24DP4XA(config)# ptp 0 clk sync 50 ap 20
SM24DP4XA(config)# ptp 0 filter delay 5 dist 3 filter-type basic period 500
SM24DP4XA(config)# ptp 0 ho adj-threshold 500 filter 7000
SM24DP4XA(config)# log host domain
SM24DP4XA(config)# log host on
SM24DP4XA(config)# log host port
```

```
SM24DP4XA(config)# ptp 0 priority1 67
SM24DP4XA(config)# ptp 0 servo displaystates
SM24DP4XA(config)# ptp 0 servo phase-mode
SM24DP4XA(config)# ptp 0 uni 0 192.168.1.1
SM24DP4XA(config)# ptp 0 uni 0 duration 500 200.20.20.200
SM24DP4XA(config)# ptp system-time set
System clock synch mode (Set System time from PTP time)
```

Messages:

Clock instance 0 : does not exist

Error setting system clock synch mode (cannot get system time if ptp BC/Slave is enabled)

W tod 03:37:05 23.251,861 137/tod_ref_clock_freg_set#302: Warning: The 1588 reference clock freq set is not supported

Error setting ref clock frequency

Successfully set the TC internal mode...

Internal TC mode Configuration has been set, you need to reboot to activate the changed conf.

Command: **qos**

Table : Configure – QoS Commands

Command	Function
map	Global QoS Map/Table
qce	QoS Control Entry
storm	Storm policer
wred	Weighted Random Early Discard

map

Global QoS Map/Table.

SYNTAX

qos map cos-dscp <cos> dpl <dpl> dscp { <dscp_num> | { be | af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3| cs4 | cs5 | cs6 | cs7 | ef | va } }

qos map dscp-classify { <dscp_num> | { be | af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef | va } }

qos map dscp-cos { <dscp_num> | { be | af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef | va } } cos <cos> dpl <dpl>

qos map dscp-egress-translation { <dscp_num> | { be | af11 | af12 | af13 | af21| af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3 | cs4| cs5 | cs6 | cs7 | ef | va } } <dpl> to { <dscp_num_tr> | { be | af11 | af12 |af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2| cs3 | cs4 | cs5 | cs6 | cs7 | ef | va } }

qos map dscp-ingress-translation { <dscp_num> | { be | af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef | va } } to { <dscp_num_tr> | { be | af11 | af12 | af13| af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef | va } }

qos qce refresh

qos qce { [update] } <qce_id> [{ next <qce_id_next> } | last] [interface (<port_type> [<port_list>])] [smac { <smac> | <smac_24> | any }] [dmac { <dmac> | unicast | multicast | broadcast | any }] [tag { [type { untagged | tagged | c-tagged | s-tagged | any }] [vid { <ot_vid> | any }] [pcp { <ot_pcp> | any }] [dei { <ot_dei> | any }] }*1] [inner-tag { [type { untagged | tagged | c-tagged | s-tagged | any }]

[vid { <it_vid> | any }] [pcp { <it_pcp> | any }] [dei { <it_dei> | any }] }*1] [frame-type { any | { etype [{ <etype_type> | any }] } | { llc [dsap { <llc_dsap> | any }] [ssap { <llc_ssap>| any }] [control { <llc_control> | any }] } | { snap [{ <snap_data> | any }] } | { ipv4 [proto { <pr4> | tcp | udp | any }] [sip { <sip4> | any }] [dip { <dip4> | any }] [dscp { <dscp4> | { be | af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3 | cs4 | cs5| cs6 | cs7 | ef | va } | any }] [fragment { yes | no | any }] [sport { <sp4> | any }] [dport { <dp4> | any }] } | { ipv6 [proto { <pr6> | tcp | udp | any }] [sip { <sip6> | any }] [dip { <dip6> | any }] [dscp { <dscp6> | { be | af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 |af43 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef | va } | any }] [sport { <sp6> | any }] [dport { <dp6> | any }] } }] [action { [cos { <action_cos> | default }] [dpl { <action_dpl> | default }] [pcp-dei { <action_pcp> <action_dei> | default }] [dscp { <action_dscp_dscp> | { be | af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef | va } | default }] [policy { <action_policy> | default }] }*1]

qos wred queue <queue> min-th <min_th> mdp-1 <mdp_1> mdp-2 <mdp_2> mdp-3 <mdp_3>

Parameters

map	Global QoS Map/Table
qce	QoS Control Entry
wred	Weighted Random Early Discard
cos-dscp	Map for CPS to DSCP
dscp-classify	Map for DSCP classify enable
dscp-cos	Map for DSCP to COS
dscp-egress-translation	Map for DSCP egress translation
dscp-ingress-translation	Map for DSCP ingress translation
<0~7>	Specific class of service or range
<0~63>	Specific DSCP or range
af11	Assured Forwarding PHB AF11(DSCP 10)
af12	Assured Forwarding PHB AF12(DSCP 12)
af13	Assured Forwarding PHB AF13(DSCP 14)
af21	Assured Forwarding PHB AF21(DSCP 18)
af22	Assured Forwarding PHB AF22(DSCP 20)
af23	Assured Forwarding PHB AF23(DSCP 22)
af31	Assured Forwarding PHB AF31(DSCP 26)
af32	Assured Forwarding PHB AF32(DSCP 28)
af33	Assured Forwarding PHB AF33(DSCP 30)
af41	Assured Forwarding PHB AF41(DSCP 34)
af42	Assured Forwarding PHB AF42(DSCP 36)

af43 Assured Forwarding PHB AF43(DSCP 38)
be Default PHB(DSCP 0) for best effort traffic
cs1 Class Selector PHB CS1 precedence 1(DSCP 8)
cs2 Class Selector PHB CS2 precedence 2(DSCP 16)
cs3 Class Selector PHB CS3 precedence 3(DSCP 24)
cs4 Class Selector PHB CS4 precedence 4(DSCP 32)
cs5 Class Selector PHB CS5 precedence 5(DSCP 40)
cs6 Class Selector PHB CS6 precedence 6(DSCP 48)
cs7 Class Selector PHB CS7 precedence 7(DSCP 56)
ef Expedited Forwarding PHB(DSCP 46)
va Voice Admit PHB(DSCP 44)
cos-dscp Map for CPS to DSCP
dscp-classify Map for DSCP classify enable
dscp-cos Map for DSCP to COS
dscp-egress-translation Map for DSCP egress translation
dscp-ingress-translation Map for DSCP ingress translation
map Global QoS Map/Table
qce QoS Control Entry
wred Weighted Random Early Discard
<1-256> QCE ID
refresh Refresh QCE tables in hardware
update Update an existing QCE
action Setup action
dmac Setup matched DMAC
frame-type Setup matched frame type
interface Interfaces
last Place QCE at the end
next Place QCE before the next QCE ID
smac Setup matched SMAC
tag Setup tag options
cos Setup class of service action
dpl Setup drop precedence level action
dscp Setup DSCP action
any Match any DMAC
broadcast Match broadcast DMAC
multicast Match multicast DMAC

unicast	Match unicast DMAC
any	Match any frame type
etype	Match EtherType frames
ipv4	Match IPv4 frames
ipv6	Match IPv6 frames
llc	Match LLC frames
snap	Match SNAP frames
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
action	Setup action
dmac	Setup matched DMAC
frame-type	Setup matched frame type
interface	Interfaces
smac	Setup matched SMAC
tag	Setup tag options
<oui>	Matched SMAC OUI (XX-XX-XX)
any	Match any SMAC
dei	Setup matched DEI
pcp	Setup matched PCP
type	Setup matched tag type
vid	Setup matched VLAN ID
<1-256>	QCE ID

EXAMPLE

```
SM24DP4XA(config)# qos qce refresh
SM24DP4XA(config)# qos map cos-dscp 5 dscp ef
SM24DP4XA(config)# qos wred queue 0 min-th 20 mdp-1 30 mdp-2 40 mdp-3 50
SM24DP4XA(config)# qos qce 1 action cos default dmac broadcast tag type any
SM24DP4XA(config)#
```

qce

QoS Control Entry.

SYNTAX

qos qce refresh

qos qce { [update] } <qce_id> [{ next <qce_id_next> } | last] [interface (<port_type> [<port_list>])] [smac { <smac> | <smac_24> | any }] [dmac { <dmac> | unicast | multicast | broadcast | any }] [tag { [type { untagged | tagged | c-tagged | s-tagged | any }] [vid { <ot_vid> | any }] [pcp { <ot_pcp> | any }] [dei { <ot_dei> | any }] }*1] [inner-tag { [type { untagged | tagged | c-tagged | s-tagged | any }] [vid { <it_vid> | any }] [pcp { <it_pcp> | any }] [dei { <it_dei> | any }] }*1] [frame-type { any | { etype [{ <etype_type> | any }] } | { llc [dsap { <llc_dsap> | any }] [ssap { <llc_ssap> | any }] [control { <llc_control> | any }] } | { snap [{ <snap_data> | any }] } | { ipv4 [proto { <pr4> | tcp | udp | any }] [sip { <sip4> | any }] [dip { <dip4> | any }] [dscp { <dscp4> | { be | af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef | va } | any }] [fragment { yes | no | any }] [sport { <sp4> | any }] [dport { <dp4> | any }] } | { ipv6 [proto { <pr6> | tcp | udp | any }] [sip { <sip6> | any }] [dip { <dip6> | any }] [dscp { <dscp6> | { be | af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 |af43 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef | va } | any }] [sport { <sp6> | any }] [dport { <dp6> | any }] } }] [action { [cos { <action_cos> | default }] [dpl { <action_dpl> | default }] [pcp-dei { <action_pcp> <action_dei> | default }] [dscp { <action_dscp_dscp> | { be | af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef | va } | default }] [policy { <action_policy> | default }] }*1]

Parameters

<1-256>	QCE ID
refresh	Refresh QCE tables in hardware
update	Update an existing QCE
action	Setup action
dmac	Setup matched DMAC
frame-type	Setup matched frame type
interface	Interfaces
last	Place QCE at the end
next	Place QCE before the next QCE ID
smac	Setup matched SMAC
tag	Setup tag options
cos	Setup class of service action
dpl	Setup drop precedence level action
dscp	Setup DSCP action

any Match any DMAC
broadcast Match broadcast DMAC
multicast Match multicast DMAC
unicast Match unicast DMAC
any Match any frame type
etype Match EtherType frames
ipv4 Match IPv4 frames
ipv6 Match IPv6 frames
llc Match LLC frames
snap Match SNAP frames
* All switches or All ports
GigabitEthernet 1 Gigabit Ethernet Port
10GigabitEthernet 10 Gigabit Ethernet Port
action Setup action
dmac Setup matched DMAC
frame-type Setup matched frame type
interface Interfaces
smac Setup matched SMAC
tag Setup tag options
<oui> Matched SMAC OUI (XX-XX-XX)
any Match any SMAC
dei Setup matched DEI
pcp Setup matched PCP
type Setup matched tag type
vid Setup matched VLAN ID
<0-1> Matched DEI
any Match any DEI
<pcp> Matched PCP value/range
any Match any PCP
any Match tagged and untagged frames
tagged Match tagged frames
untagged Match untagged frames
<vcap_vr> Matched VLAN ID value/range
any Match any VLAN ID

EXAMPLE

```
SM24DP4XA(config)# qos qce 1 action cos default dmac broadcast tag type any
SM24DP4XA(config)# qos qce refresh
SM24DP4XA(config)#
```

wred

Configure Weighted Random Early Discard.

SYNTAX

qos wred queue <0~5> min_fl <0-100> max <1-100> [fill-level]

qos wred queue <queue> min-th <min_th> mdp-1 <mdp_1> mdp-2 <mdp_2> mdp-3 <mdp_3>

Parameters

queue	Specify queue
0~5	Specific queue or range
min-th	Specify minimum threshold
<0-100>	Specific minimum threshold in percent
mdp-1	Specify drop probability for drop precedence level 1
<0-100>	Specific drop probability in percent
mdp-2	Specify drop probability for drop precedence level 2
<0-100>	Specific drop probability in percent
mdp-3	Specify drop probability for drop precedence level 3
<0-100>	Specific drop probability in percent
<0-100>	Specific drop probability in percent

EXAMPLE

```
SM24DP4XA(config)# qos wred queue 0 min-th 20 mdp-1 30 mdp-2 40 mdp-3 50
SM24DP4XA(config)#
```

Command: **radius-server**

Description: Configure RADIUS Server parameters.

Syntax:

radius-server attribute 32 <id>

radius-server attribute 4 <ipv4>

radius-server attribute 95 <ipv6>

radius-server deadtime <minutes>

radius-server host <host_name> [auth-port <auth_port>] [acct-port <acct_port>] [timeout <seconds>] [retransmit <retries>] [key { [unencrypted] <unencrypted_key> | encrypted <encrypted_key> }]

radius-server key { [unencrypted] <unencrypted_key> | encrypted <encrypted_key> }

radius-server retransmit <retries>

radius-server timeout <seconds>

Parameters:

attribute	NAS attributes
deadtime	Time to stop using a RADIUS server that doesn't respond
host	Specify a RADIUS server
key	Set RADIUS encryption key
retransmit	Specify the number of retries to active server
timeout	Time to wait for a RADIUS server to reply
32	attribute number 32 = NAS-Identifier
4	attribute number 4 = NAS-IP-Address
95	attribute number 95 = NAS-IPv6-Address
<1-1440>	Time in minutes
<word1-255>	Hostname or IP address
<line1-63>	The shared key
<1-1000>	Number of retries for a transaction
<1-1000>	Wait time in seconds
acct-port	UDP port for RADIUS accounting server
auth-port	UDP port for RADIUS authentication server
key	Server specific key (overrides default)
retransmit	Specify the number of retries to active server (overrides default)
timeout	Time to wait for this RADIUS server to reply (overrides default)
<0-65535>	UDP port number or 0 to disable accounting
<0-65535>	UDP port number or 0 to disable authentication
<line1-63>	The shared key

<line1-253>	NAS-Identifier
<ipv4_ucast>	NAS-IP-Address
<ipv6_ucast>	<NAS-IPv6-Address>
<word1-63>	The UNENCRYPTED (Plain Text) secret key. Notice that you have no chance to get the Plain Text secret key after this command. The system will always display the ENCRYPTED password.
encrypted	Specifies an ENCRYPTED secret key will follow
unencrypted	Specifies an ENCRYPTED secret key will follow
<word96-224>	The ENCRYPTED (hidden) secret key. Notice the ENCRYPTED secret key will be decoded by system internally. You cannot directly use it as same as the Plain Text and it is not human-readable text normally.

Example:

```
SM24DP4XA(config)# radius-server attribute 4 192.100.10.20
SM24DP4XA(config)# radius-server retransmit 500
SM24DP4XA(config)# radius-server attribute 32 NasId1
SM24DP4XA(config)# radius-server deadtime 300
SM24DP4XA(config)# radius-server host 192.168.1.9 acct-port 567 auth-port 789 key admin
retransmit 1 timeout 1
SM24DP4XA(config)# radius-server key admin
SM24DP4XA(config)# do show radius-server
Global RADIUS Server Timeout      : 5 seconds
Global RADIUS Server Retransmit   : 3 times
Global RADIUS Server Deadtime     : 300 minutes
Global RADIUS Server Key          : daa38f4425468682e0cfd1fd073a7c2586b39b34145f
7f379613c87f313e2ea6dab1cb50c2f88c91037a1e00ac6cad13a1229bee85d3ca7ba588a337e5f2
f119
Global RADIUS Server Attribute 4  : 192.168.1.3
Global RADIUS Server Attribute 95 : 2001:db8:85a3::8a2e:370:7334
Global RADIUS Server Attribute 32 : NasId1
RADIUS Server #1:
  Host name  : RadSrvr1
  Auth port  : 1812
  Acct port  : 1813
  Timeout    : 60 seconds
  Retransmit : 350 times
  Key        : 8a84a2e836d2702027e9cfd6b0aaed759304e4b16bfa0b8ee10c69077dc4a1de1
```

```
e5944d5607c4193414c3350ce02963eae0ffac6fd48e3bba708173e5193df96
RADIUS Server #2:
  Host name  : Radrvr2
  Auth port  : 1812
  Acct port  : 1813
  Timeout    : 45 seconds
-- more --, next page: Space, continue: g, quit: ^C
```

Command: **rapid-ring**

Description: Set Rapid Ring configurations. **Note** that other ring technologies (e.g., STP) must be disabled.

Syntax: **rapid-ring entry** <entryindex> role disabled
rapid-ring entry <entryindex> role master
rapid-ring entry <entryindex> role member

Parameters:

entry	Set entry index
<uint8>	Index
role	Set role value
disabled	Role value disabled
master	Role value master
member	Role value member

Example:

```
SM24DP4XA(config)# rapid-ring entry 1 role master
SM24DP4XA(config)# rapid-ring entry 1 role member
SM24DP4XA(config)# rapid-ring entry 1 role disabled
SM24DP4XA(config)# rapid-ring entry 1 role master
SM24DP4XA(config)# do show rapid-ring
Entry Index              : 1
Rapid Ring Role          : Master
Rapid Ring Port 1        : 1
Rapid Ring Port 2        : 2
Rapid Ring Port 1 State   : Discarding
Rapid Ring Port 2 State   : Discarding

-- more --, next page: Space, continue: g, quit: ^C
SM24DP4XA(config)#
```

Messages: *R_RING_ICLI_system_set error in port 1, STP is enable*

Command: **rmon**
Description: Configure Remote Monitoring.
Syntax:
rmon alarm <id> { ifInOctets | ifInUcastPkts | ifInNUcastPkts | ifInDiscards | ifInErrors | ifInUnknownProtos | ifOutOctets | ifOutUcastPkts | ifOutNUcastPkts | ifOutDiscards | ifOutErrors } <ifIndex> <interval> { absolute | delta } rising-threshold <rising_threshold> [<rising_event_id>] falling-threshold <falling_threshold> [<falling_event_id>] { [rising | falling | both] }
rmon event <id> [log] [trap <community>] { [description <description>] }
Parameters:

<1-65535>	Alarm entry ID
ifInDiscards	The number of inbound packets that are discarded even the packets are normal
ifInErrors	The number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol
ifInNUcastPkts	The number of broad-cast and multi-cast packets delivered to a higher-layer protocol
ifInOctets	The total number of octets received on the interface, including framing characters
ifInUcastPkts	The number of uni-cast packets delivered to a higher-layer protocol
ifInUnknownProtos	The number of the inbound packets that were discarded because of the unknown or unsupported protocol
ifOutDiscards	The number of outbound packets that are discarded event the packets is normal
ifOutErrors	The The number of outbound packets that could not be transmitted due to errors
ifOutNUcastPkts	The number of broad-cast and multi-cast packets that request to transmit
ifOutOctets	The number of octets transmitted out of the interface, including framing characters
ifOutUcastPkts	The number of uni-cast packets that request to transmit
<uint>	Interface index
<1-2147483647>	Sample interval
absolute	Test each sample directly
delta	Test delta between samples
rising-threshold	Configure the rising threshold
<-2147483648-2147483647>	rising threshold value
<0-65535>	Event to fire on rising threshold crossing
falling-threshold	Configure the falling threshold
<-2147483648-2147483647>	falling threshold value
<0-65535>	Event to fire on falling threshold crossing
both	Trigger alarm when the first value is larger than the rising threshold or less than the falling threshold (default)
falling	Trigger alarm when the first value is less than the falling threshold

rising	Trigger alarm when the first value is larger than the rising threshold
<1-65535>	Event entry ID
description	Specify a description of the event
log	Generate RMON log when the event fires
trap	Generate SNMP trap when the event fires
<line127>	Event description
description	Specify a description of the event
<word127>	SNMP community string
description	Specify a description of the event
log	Generate RMON log when the event fires
<cr>	

Example:

```
SM24DP4XA(config)# rmon alarm 900 ifInDiscards 10 5000 absolute rising-threshold
 675000 falling-threshold -9800 falling
SM24DP4XA(config)# rmon event 1 log description I10o
SM24DP4XA(config)# rmon event 1 trap Sdb50
SM24DP4XA(config)# rmon alarm 10000 ifInErrors 10 9999 absolute rising-threshold
 1 falling-threshold 0 both
SM24DP4XA(config)#
```

Messages: *% Invalid: rising threshold must be larger than falling threshold*

Command: **snmp**

Description: Set SNMP server parameters.

Table : configure snmp-server Commands

Command	Function
access	access configuration
community	Set the SNMP community
contact	Set the SNMP server's contact string
engine-id	Set SNMP engine ID
host	Set SNMP host's configurations
location	Set the SNMP server's location string
security-to-group	security-to-group configuration
trap	Set trap's configurations
user	Set the SNMPv3 user's configurations
version	Set the SNMP server's version
view	MIB view configuration

access

SNMP server access configuration.

SYNTAX

snmp-server access <word32> model { v1 | v2c | v3 | any } level { auth | noauth | priv } [read <word255>] [write <word255>]

Parameters

<word32>	group name
model	security model
any	any security model
v1	v1 security model
v2c	v2c security model
v3	v3 security model
level	security level
auth	authNoPriv Security Level
noauth	noAuthNoPriv Security Level
priv	authPriv Security Level
read	specify a read view for the group
write	specify a write view for the group

<word32>	write view name
read	specify a read view for the group
<cr>	

EXAMPLE

```
SM24DP4XA(config)# snmp-server access snmpsrvr1 model v3 level noauth write name 1
SM24DP4XA(config)# snmp-server access Grp1 model any level auth read Rdr1 write BBB
The group name 'Grp1' is not exist
SM24DP4XA(config)#
```

Messages*: The group name 'snmpsrvr1' is not exist*

community

Set the SNMP community.

SYNTAX

snmp-server community v2c <comm> [ro | rw]

snmp-server community v2c readcommunity { enable | disable }

snmp-server community v2c writecommunity { enable | disable }

snmp-server community v3 <v3_comm> [<v_ipv4_addr> <v_ipv4_netmask>]

snmp-server community writecommunity { enable | disable }

Parameters

v2c	SNMPv2c
v3	SNMPv3
<word255>	Community word
ro	Read only
rw	Read write
<word32>	Community word
<ipv4_addr>	IPv4 address
<ipv4_netmask>	IPv4 netmask

EXAMPLE

```
SM24DP4XA(config)# snmp community v2c scomm1 rw
SM24DP4XA(config)# snmp community v3 scomm2 192.168.1.77 255.255.255.0
SM24DP4XA(config)#
```

contact

Set the SNMP server's contact string.

SYNTAX

snmp-server contact <line255>

Parameters

contact	Set the SNMP server's contact string
<line255>	contact string

EXAMPLE

```
SM24DP4XA(config)# snmp contact EngTestLab1 555-323-8827
SM24DP4XA(config)#
```

engine-id

Set SNMP engine ID.

SYNTAX

snmp-server engine-id local <word10-32>

Parameters

local	Set SNMP local engine ID
<word10-32>	local engine ID

EXAMPLE

```
SM24DP4XA(config)# snmp-server engine-id local 1234567891
SM24DP4XA(config)#
```

host

Set SNMP host's configuration.

SYNTAX

snmp-server host <conf_name>

do <command>

end

exit

help

host <v_ipv6_ucast> [<udp_port>] [traps | informs]

host { <v_ipv4_ucast> | <v_word> } [<tcp_udp_port>] [traps | informs]

informs retries <retries> timeout <timeout>

no host

no informs

no shutdown

no trapmode { disable | udp | tcp }

no version

shutdown

trapmode { disable | udp | tcp }

version { v1 [<v1_comm>] | v2 [<v2_comm>] | v3 [probe | engineID <v_word10_to_64>]

[<securtyname>] }

Parameters

<word32>	Name of the host configuration.
disable	Disable trap mode
tcp	Use TCP trap mode
udp	Use UDP trap mode
host	Set SNMP host's configurations
<domain_name>	hostname of SNMP trap host
<ipv4_ucast>	IP address of SNMP trap host
<ipv6_ucast>	IP address of SNMP trap host
<1-65535>	TCP/UDP port of the trap messges
informs	Send Inform messages to this host
traps	Send Trap messages to this host

EXAMPLE

```
SM24DP4XA(config)# snmp-server host Sserver1
SM24DP4XA(config-snmps-host)# ?
    do          To run exec commands in config mode
```

```
    end         Go back to EXEC mode
    exit        Exit from current mode
    help        Description of the interactive help system
    host        host configuration
    informs     Send Inform messages to this host
    no          Negate a command or set its defaults
    shutdown    Disable the trap configuration
    trapmode    Configure trap mode
    version     Set SNMP trap version
SM24DP4XA(config-snmps-host)# trapmode udp
SM24DP4XA(config-snmps-host)# host Domain1 informs 9000
SM24DP4XA(config-snmps-host)# host Domain1 traps 777
SM24DP4XA(config-snmps-host)# host 1.2.3.4 654 traps
SM24DP4XA(config-snmps-host)#
```

location

Set the SNMP server's location string.

SYNTAX

snmp-server location <v_line255>

Parameters

location Set the SNMP server's location string

EXAMPLE

```
SM24DP4XA(config)# snmp-server location MplsEng
SM24DP4XA(config)#
```

security-to-group

Set the SNMP server's security-to-group configuration.

SYNTAX

snmp-server security-to-group model { v1 | v2c | v3 } name <security_name> <word32>

Parameters

model	security model
v1	v1 security model
v2c	v2c security model
v3	v3 security model
name	security user
<word32>	security user name
group	security group
<word32>	security group name

EXAMPLE

```
SM24DP4XA(config)# snmp-server security-to-group model v3 name bob group grp1
SM24DP4XA(config)#
```

trap

Set trap's configurations.

SYNTAX

snmp-server trap

EXAMPLE

```
SM24DP4XA(config)# snmp-server trap
SM24DP4XA(config)#
```

user

Set the SNMPv3 user's configurations.

SYNTAX

snmp-server user <username> engine-id <engineID> [{ md5 { <md5_passwd> | { encrypted <md5_passwd_encrypt> } } | sha { <sha_passwd> | { encrypted <sha_passwd_encrypt> } } } [priv { des | aes } { <priv_passwd> | { encrypted <priv_passwd_encrypt> } }]]

Parameters

<word32>	Username
engine-id	engine ID
<word10-32>	Engine ID octet string
md5	Set MD5 protocol
encrypted	Specifies an ENCRYPTED password will follow.
<word8-32>	MD5 password
sha	Set SHA protocol
<word8-40>	SHA password
priv	Set Privacy
des	Set DES protocol
aes	Set AES protocol
<word8-32>	Set privacy password
<word8-32>	Privacy unencrypted password
encrypted	Specifies an ENCRYPTED password will follow.

EXAMPLE

```
SM24DP4XA(config)# snmp-server user text engine-id 1234567891 md5 12345678 priv
aes 12345678
SM24DP4XA(config)# snmp-server user JSssss engine-id 123456789111111111 md5 admin11111
priv des admin123456
SM24DP4XA(config)# snmp-server user JSssss engine-id 123456789111111111 md5 admin11111
priv aes encrypted 123456788
% The UNENCRYPTED password is not accepted
SM24DP4XA(config)#
```

version

Set the SNMP server's version.

SYNTAX

snmp-server version { v1 | v2c | v3 }

Parameters

v1	SNMPv1
v2c	SNMPv2c
v3	SNMPv3

EXAMPLE

```
SM24DP4XA(config)# snmp-server version v3
SM24DP4XA(config)#
```

view

SNMP MIB view configuration.

SYNTAX

snmp-server view <view_name> <oid_subtree> { include | exclude }

Parameter

<word32>	MIB view name
<word255>	MIB view OID
include	Ixcluded type from the view
exclude	Excluded type from the view

EXAMPLE

```
SM24DP4XA(config)# snmp-server view text .1 include
SM24DP4XA(config)# snmp-server view text .12 include
SM24DP4XA(config)# snmp-server view text .123 exclude
SM24DP4XA(config)#
```

Command: spanning-tree

Configure Spanning Tree protocol.

Table : configure –spanning-tree Commands

Command	Function
aggregation	Aggregation mode
edge	Edge ports
mode	STP protocol mode
mst	STP bridge instance
recovery	The error recovery timeout
transmit	BPDUs to transmit

aggregation

Aggregation mode.

SYNTAX

spanning-tree aggregation

PARAMETERS

do	To run exec commands in config mode
end	Go back to EXEC mode
exit	Exit from current mode
help	Description of the interactive help system
no	Negate a command or set its defaults
spanning-tree	Spanning Tree protocol
auto-edge	Auto detect edge status
bpdu-guard	Enable/disable BPDU guard
edge	Edge port
link-type	Port link-type
mst	STP bridge instance
restricted-role	Port role is restricted (never root port)
restricted-tcn	Restrict topology change notifications
auto	Auto detect
point-to-point	Forced to point-to-point
shared	Forced to Shared
cost	STP Cost of this port
port-priority	STP priority of this port

<1-200000000>	Cost range
auto	Use auto cost
<0-240>	Range (lower higher priority)

EXAMPLE

```
SM24DP4XA(config)# spanning-tree aggregation
SM24DP4XA(config-stp-aggr)# ?
    do              To run exec commands in config mode
    end             Go back to EXEC mode
    exit            Exit from current mode
    help            Description of the interactive help system
    no              Negate a command or set its defaults
    spanning-tree    Spanning Tree protocol
SM24DP4XA(config-stp-aggr)# spanning-tree auto-edge
SM24DP4XA(config-stp-aggr)# spanning-tree bpdu-guard
SM24DP4XA(config-stp-aggr)# spanning-tree edge
SM24DP4XA(config-stp-aggr)# spanning-tree link-type ?
SM24DP4XA(config-stp-aggr)# spanning-tree link-type auto
SM24DP4XA(config-stp-aggr)# spanning-tree mst 0 port-priority 50
Could not set MSTP port conf
SM24DP4XA(config-stp-aggr)# spanning-tree mst 0 cost auto
SM24DP4XA(config-stp-aggr)# spanning-tree restricted-tcn
SM24DP4XA(config-stp-aggr)# spanning-tree restricted-tcn
SM24DP4XA(config-stp-aggr)#
```

edge

Edge ports.

SYNTAX

spanning-tree edge bpdu-filter

spanning-tree edge bpdu-guard

Parameters

bpdu-filter	Enable BPDU filter (stop BPDU tx/rx)
bpdu-guard	Enable BPDU guard

EXAMPLE

```
SM24DP4XA(config)# spanning-tree edge bpdu-filter
SM24DP4XA(config)# spanning-tree edge bpdu-guard
SM24DP4XA(config)#
```

mode

STP protocol mode.

SYNTAX

spanning-tree mode { stp | rstp | mstp }

Parameters

mstp	Multiple Spanning Tree protocol (802.1s)
rstp	Rapid Spanning Tree protocol (802.1w)
stp	802.1D Spanning Tree protocol

EXAMPLE

```
SM24DP4XA(config)# spanning-tree mode stp
SM24DP4XA(config)# spanning-tree mode rstp
SM24DP4XA(config)# spanning-tree mode mstp
SM24DP4XA(config)#
```

mst

STP bridge instance.

SYNTAX

spanning-tree mst <0-7> priority <0-61440>

spanning-tree mst <0-7> vlan <vlan_list>

spanning-tree mst forward-time <4-30>

spanning-tree mst max-age <6-40> [forward-time <4-30>]

spanning-tree mst max-hops <6-40>

spanning-tree mst name <word32> revision <0-65535>

Parameters

<Instance : 0-7>	instance 0-7 (CIST=0, MST2=1...)
forward-time	Delay between port states
max-age	Max bridge age before timeout
max-hops	MSTP bridge max hop count
name	Name keyword
priority	Priority of the instance
vlan	VLAN keyword
<0-61440>	Range in seconds
<vlan_list>	Range of VLANs
<4-30>	Range in seconds
<6-40>	Range in seconds
<word32>	Name of the bridge
revision	Revision keyword
<0-65535>	Revision number
<6-40>	Hop count range

EXAMPLE

```
SM24DP4XA(config)# spanning-tree mst 7 vlan 10
SM24DP4XA(config)# spanning-tree mst 0 priority 9
STP bridge priority must be one of  0/4096/8192/12288/.../53248/57344/61440 i.e.
 divisable by 4096
SM24DP4XA(config)# spanning-tree mst forward-time 10
Could not set MSTP bridge parameters
SM24DP4XA(config)# spanning-tree mst max-hops 9
SM24DP4XA(config)#
```

recovery

The error recovery timeouts.

SYNTAX

spanning-tree recovery interval <interval>

Parameters

interval	The interval
<30-86400>	Range in seconds

EXAMPLE

```
SM24DP4XA(config)# spanning-tree recovery interval 50
SM24DP4XA(config)# spanning-tree recovery interval 6000
SM24DP4XA(config)#
```

transmit

BPDUs to transmit.

SYNTAX

spanning-tree transmit hold-count <1-10>

Parameters

hold-count	Max number of transmit BPDUs per sec
<1-10>	1-10 per sec, 6 is default

EXAMPLE

```
SM24DP4XA(config)# spanning-tree transmit hold-count 5
SM24DP4XA(config)#
```

Command: **svl**

Description: Shared VLAN Learning.

Syntax: **svl** fid <fid> vlan <vlan_list>

Parameters:		
	fid	Filter ID keyword
	<1-4095>	Filter ID
	fid	Filter ID keyword
	vlan	VLAN keyword
	<vlan_list>	VLAN List

Example:

```
SM24DP4XA(config)# svl fid 1 vlan 10
SM24DP4XA(config)# svl fid 333 vlan 1
SM24DP4XA(config)#
```

Command: **switchport**

Description: Set switching mode characteristics.

Syntax: **switchport** vlan mapping <gid> <vlan_list> <tvid>

Parameters:		
	vlan	VLAN
	mapping	Add VLAN translation entry into a group.
	<1-29>	Group id (GID)
	<vlan_list>	Original vlan-list
	<vlan_id>	Translated vlan-id
	<cr>	

Example:

```
SM24DP4XA(config)# switchport vlan mapping 5 10 1000
SM24DP4XA(config)# switchport vlan mapping 1 199-299 3
SM24DP4XA(config)#
```

Messages: *%% Failed to add VLAN Translation mapping.*

Command: **system**

Description: Set board configuration.

Syntax:

system contact <v_line128>

system description <sys_desc>

system location <v_line128>

system name <v_line128>

system reboot mode { enable | disable }

system reboot { [Sun <hour_v00_0_to_23> <min_v00_0_to_55>] [Mon <hour_v10_0_to_23> <min_v10_0_to_55>] [Tue <hour_v20_0_to_23> <min_v20_0_to_55>] [Wed <hour_v30_0_to_23> <min_v30_0_to_55>] [Thr <hour_v40_0_to_23> <min_v40_0_to_55>] [Fri <hour_v50_0_to_23> <min_v50_0_to_55>] [Sat <hour_v60_0_to_23> <min_v60_0_to_55>] }

Parameters:		
	contact	Set the SNMP server's contact string
	description	Configure System Description
	location	Set the SNMP server's location string
	name	Set the SNMP server's system model name string
	reboot	Set the Switch Reboot configurations
	<line128>	contact string
	<line128>	System Description string
	<line128>	location string
	<line128>	name string
	Fri	Configure Switch Reboot scheduling on Friday
	Mon	Configure Switch Reboot scheduling on Monday
	Sat	Configure Switch Reboot scheduling on Saturday
	Sun	Configure Switch Reboot scheduling on Sunday
	Thr	Configure Switch Reboot scheduling on Thursday
	Tue	Configure Switch Reboot scheduling on Tuesday
	Wed	Configure Switch Reboot scheduling on Wednesday
	mode	Switch reboot mode
	<0-23>	start hour
	<0-55>	start miniute, value must be multiples of 5
	disable	Disable Switch Reboot
	enable	Enable Switch Reboot

Example:

```
SM24DP4XA(config)# system location 2nd floor - Engineering
SM24DP4XA(config)# system reboot mode enable
```

```
SM24DP4XA(config)# system reboot Sat 23 30
SM24DP4XA(config)# system name SM24DP3XA-D4P
SM24DP3XA-D4P(config)# system contact APerters
SM24DP3XA-D4P(config)# system description Managed Gb EthFibeSwitch
SM24DP3XA-D4P(config)#
```

Command: **tacacs-server**

Description: Configure TACACS+.

Syntax:

tacacs-server deadtime <minutes>

tacacs-server host <host_name> [port <port>] [timeout <seconds>] [key { [unencrypted] <unencrypted_key> | encrypted <encrypted_key> }]

tacacs-server key { [unencrypted] <unencrypted_key> | encrypted <encrypted_key> }

tacacs-server timeout <seconds>

Parameters:

deadtime	Time to stop using a TACACS+ server that doesn't respond
host	Specify a TACACS+ server
key	Set TACACS+ encryption key
timeout	Time to wait for a TACACS+ server to reply
<1-1440>	Time in minutes
<word1-255>	Hostname or IP address
<line1-63>	The shared key
<1-1000>	Wait time in seconds
key	Server specific key (overrides default)
port	TCP port for TACACS+ server
timeout	Time to wait for this TACACS+ server to reply (overrides default)
<word1-63>	The UNENCRYPTED (Plain Text) secret key. Notice that you have no chance to get the Plain Text secret key after this command. The system will always display the ENCRYPTED password.
encrypted	Specifies an ENCRYPTED secret key will follow
unencrypted	Specifies an UNENCRYPTED secret key will follow
<word4-224>	The ENCRYPTED (hidden) secret key. Notice the ENCRYPTED secret key will be decoded by system internally. You cannot directly use it as same as the Plain Text and it is not human-readable text normally.

Example:

```
SM24DP4XA(config)# tacacs-server deadtime 600
SM24DP4XA(config)# tacacs-server key sTeM60o
SM24DP4XA(config)# tacacs-server host BobB key admin port 789 timeout 350
SM24DP4XA(config)# tacacs-server key encrypted admin1234567!@#$%^&<>"}+
SM24DP4XA(config)# do show tacacs-server
Global TACACS+ Server Timeout      : 5 seconds
Global TACACS+ Server Deadtime     : 0 minutes
Global TACACS+ Server Key          : c6575929eeb06775daa8fcd02807c8f9707b9d3fc1d
e2cac64d289cfc7031bcfceb11c7883d5aafe036bf4382b59637e9758d9d120be8a871a77f7c8e70
7e4be
TACACS+ Server #1:
  Host name  : BobB
  Port       : 789
  Timeout    : 350 seconds
  Key        : e778cbb7d19c8e008941c2aac6d6b6b53d8bd4ecc1e007dc9d72b88014584baab
5303d243b5bfa623b9115eca7cc501a338240f740d02efd88ed5fbfead04627
SM24DP4XA(config)#
```

Command: **tzidx**

Description: Configure timezone city/area. See the IANA Time Zone Database.

Syntax: **tzidx** <idx_var>

Parameters: <int>

<cr>

Example:

```
SM24DP4XA(config)# tzidx 1
SM24DP4XA(config)# tzidx 10
SM24DP4XA(config)# tzidx 100
SM24DP4XA(config)#
```

Command: **udld**

Description: Enable UDLD in the aggressive or normal mode and set the configurable message timer on all fiber optic ports. UniDirectional Link Detection protocol is a lightweight protocol used to detect and disable one-way connections before they create Spanning Tree loops or other protocol malfunctions.

Syntax: **udld** { aggressive | enable | message time-interval <v_interval> }

Parameters:

aggressive Enables UDLD in aggressive mode on all fiber-optic ports.

enable Enables UDLD in normal mode on all fiber-optic ports.

message Configures the period of time between UDLD probe messages on ports that are in the advertisement phase and are determined to be bidirectional. The range is 7 - 90 seconds (currently default message time interval 7 sec is supported).

udld Enable UDLD in the aggressive or normal mode and to set the configurable message timer on all fiber-optic ports.

Example:

```
SM24DP4XA(config)# udld aggressive
SM24DP4XA(config)# udld enable
SM24DP4XA(config)# udld message time-interval 40
SM24DP4XA(config)#
```

Command: **upnp**

Description: Set Universal Plug and Play parameters.

Syntax: **upnp**

upnp advertising-duration <v_66_to_86400>

upnp ttl <v_1_to_255>

Parameters:

advertising-duration	Set advertising duration
ttl	Set TTL value

Example:

```
SM24DP4XA(config)# upnp
SM24DP4XA(config)# upnp ttl 25
SM24DP4XA(config)# upnp advertising-duration 5000
SM24DP4XA(config)#
```

Command: **username**

Description: Establish User Name Authentication.

Syntax: **username** <username> privilege <priv> password encrypted <encry_password>

username <username> privilege <priv> password none

username <username> privilege <priv> password unencrypted <password>

Parameters:

<word31>	User name allows letters, numbers and underscores
privilege	Set user privilege level
password	Specify the password for the user
encrypted	Specifies an ENCRYPTED password will follow
none	NULL password
unencrypted	Specifies an UNENCRYPTED password will follow
<line31>	The UNENCRYPTED (Plain Text) user password. Any printable characters including space is accepted. Notice that you have no chance to get the Plain Text password after this command. The system will always display the ENCRYPTED password.
<word4-44>	The ENCRYPTED (hidden) user password. Notice the ENCRYPTED password will be decoded by system internally. You cannot directly use it as same as the Plain Text and it is not human-readable text normally.

Example:

```
SM24DP4XA(config)# username JAS privilege 15 password unencrypted admin
SM24DP4XA(config)# username tomT privilege 14 password none
SM24DP4XA(config)# username tomT privilege 14 password encrypted aAbBcC1!2@3#4$
% The UNENCRYPTED password is not accepted
SM24DP4XA(config)#
```

Command: **vlan**

Description: Configure VLAN parameters and enter vlan-config mode.

Syntax: **vlan** <vlist>

vlan ethertype s-custom-port <etype>

vlan protocol { { eth2 { <etype> | arp | ip | ipx | at } } | { snap { <oui> | rfc-1042 | snap-8021h } <pid> } | { llc <dsap> <ssap> } } group <grp_id>

Parameters:		
	<vlan_list>	ISL VLAN IDs 1~4095
	ethertype	EtherType for Custom S-ports
	protocol	Protocol-based VLAN commands
	s-custom-port	Custom S-ports configuration
	<0x0600-0xffff>	EtherType (Range: 0x0600-0xffff)
	eth2	Ethernet-based VLAN commands
	llc	LLC based VLAN group
	snap	SNAP-based VLAN group
	<0x600-0xffff>	Ether Type (Range: 0x600 - 0xFFFF)
	arp	Ether Type is ARP
	at	Ether Type is AppleTalk
	ip	Ether Type is IP
	ipx	Ether Type is IPX
	group	Protocol-based VLAN group commands
	<word16>	Group Name (Range: 1 - 16 characters)
	<0x0-0xff>	DSAP (Range: 0x00 - 0xFF)
	<0x0-0xff>	SSAP (Range: 0x00 - 0xFF)
	group	Protocol-based VLAN group commands
	<0x0-0xffffff>	SNAP OUI (Range 0x000000 - 0XFFFFFF)
	rfc-1042	SNAP OUI is rfc-1042
	snap-8021h	SNAP OUI is 8021h
	<0x0-0xffff>	PID (Range: 0x0 - 0xFFFF)
	<word16>	Group Name (Range: 1 - 16 characters)
	do	To run exec commands in config mode
	end	Go back to EXEC mode
	exit	Exit from current mode
	help	Description of the interactive help system
	name	ASCII name of the VLAN
	no	

Example 1:

```
SM24DP4XA(config)# vlan protocol eth2 ip group Vid2
SM24DP4XA(config)# vlan protocol llc 0x24 0x43 group 20
SM24DP4XA(config)# vlan protocol snap snap-8021h 0x77 group VidSnap1
SM24DP4XA(config)# vlan ethertype s-custom-port 0x0800
```

Example 2:

```
SM24DP4XA(config-vlan)# name Vid0001
SM24DP4XA(config-vlan)# ?
    do      To run exec commands in config mode
    end     Go back to EXEC mode
    exit    Exit from current mode
    help    Description of the interactive help system
    name    ASCII name of the VLAN
    no
SM24DP4XA(config-vlan)# name VID-1
SM24DP4XA(config-vlan)# exit
SM24DP4XA(config)#
```

Messages:

Adding Protocol to Group mapping Failed

% (VCL Error - The provided Group name was invalid. Only characters and digits are allowed)

Command: **voice**

Description: Configure Voice appliance attributes.

Syntax: **voice** vlan

voice vlan aging-time <aging_time>

voice vlan class { <traffic_class> | low | normal | medium | high }

voice vlan oui <oui> [description <description>]

voice vlan vid <vid>

Parameters:		
	aging-time	Set secure learning aging time
	class	Set traffic class
	oui	Organizationallu Unique Identifier configuration
	vid	Set VLAN ID
	<10-10000000>	Aging time, 10-10000000 seconds
	<0-7>	Traffic class value
	<oui>	OUI value
	<vlan_id>	VLAN ID, 1-4095
	<cr>	

Example:

```
SM24DP4XA(config)# voice vlan vid 20
SM24DP4XA(config)# voice vlan aging-time 5000
SM24DP4XA(config)# voice vlan class 5
```

Messages: *% The Voice VLAN ID should not equal MVR VLAN ID.*

Command: **web**

Description: Configure web privilege groups.

Syntax:

web privilege group <group_name> level { [cro <configRoPriv>] [crw <configRwPriv>] [sro <statusRoPriv>] [srw <statusRwPriv>] }*1

Parameters:

privilege	Web privilege			
group	Web privilege group			
<cword>	Group Name. Valid words are			
Aggregation	DHCP	DHCPv6_Client	DMS_client	DMS_server
Debug	Diagnostics	EPS	ERPS	ETH_LINK_OAM
EVC	IP	IPMC_Snooping	Install_Wizard	LACP
LLDP	Loop_Protect	MAC_Table	MEP	MRP
MVR	Maintenance	NTP	PTP	Ports
Private_VLANs	QoS	RMirror	R_RING	SMTP
Security	Spanning_Tree	System	TS_client	TS_server
Trap_Event	Trouble_Shooting	UDLD	UPnP	VCL
VLAN_Translation	VLANs	VTUN	Voice_VLAN	XXRP
percepxion				
level	Web privilege group level			
cro	Configuration Read-only level			
crw	Configuration Read-write level			
sro	Status/Statistics Read-only level			
srw	Status/Statistics Read-write level			
<0-15>	Privilege level			
<cr>				

Example:

```
SM24DP4XA(config)# web privilege group DHCP level crw 15
SM24DP4XA(config)# web privilege group ptp level sro 10
SM24DP3XA-D4P(config)# web privilege group upnp level cro 15
% The privilege level of 'Configuration Read-only' should be less than or equal to
'Configuration Read-write'
SM24DP3XA-D4P(config)# web privilege group upnp level cro 10
SM24DP3XA-D4P(config)#
```

7. Interface Config Mode Commands

To view the configurable interfaces, type `interface ?` at the config mode prompt.

```
SM24DP4XA(config)# interface ?
    *                  All switches or All ports
    GigabitEthernet      1 Gigabit Ethernet Port
    10GigabitEthernet    10 Gigabit Ethernet Port
    vlan                VLAN interface configurations
SM24DP4XA(config)# interface *
SM24DP4XA(config-if)#
```

To enter Interface Config mode, type `interface <interface>` at the config mode prompt.

Example:

```
SM24DP4XA(config)# interface GigabitEthernet 1/2
SM24DP4XA(config-if)#
```

Interface Mode Command List

access-list	Access list
aggregation	Create an aggregation
debug	Debugging functions
description	Configures port description
do	To run exec commands in config mode
dot1x	IEEE Standard for port-based Network Access Control
duplex	Interface duplex
end	Go back to EXEC mode
evc	Ethernet Virtual Connections
excessive-restart	Restart backoff algorithm after 16 collisions
exit	Exit from current mode
frame-length-check	Drop frames with mismatch of EtherType/Length field and actually payload size.
gvrp	Enable GVRP on interface or interfaces
help	Description of the interactive help system
ip	Internet Protocol
ipv6	IPv6 configuration commands
lacp	Enable LACP on this interface
link-oam	Enable or Disable(when the no keyword is entered) Link OAM on the interface
lldp	LLDP configurations.

loop-protect	Loop protection configuration on port
mac	MAC keyword
mtu	Maximum transmission unit
mvr	Multicast VLAN Registration configuration
no	Negate a command or set its defaults
platform	Platform debug commands
port-security	Enable/disable port security per interface.
ptp	Precision time Protocol (1588)
pvlan	Private VLAN
qos	Quality of Service
rmon	Configure Remote Monitoring on an interface
shutdown	Shutdown of the interface.
spanning-tree	Spanning Tree protocol
speed	Configures interface speed.
switchport	Switching mode characteristics
udld	UDLD configurations.

Command: **access-list**

Description: Configure Access list for an interface.

Syntax:

access-list action { permit | deny }

access-list logging

access-list policy <policy_id>

access-list port-state

access-list rate-limiter <rate_limiter_id>

access-list shutdown

access-list { redirect } interface { <port_type> <port_type_id> | (<port_type> [<port_type_list>]) }

Parameters:

action	Access list action
logging	Logging frame information. Note: Logging only works when the packet length is less than 1518 (without VLAN tags) and the System Log memory size and logging rate is limited.
policy	Policy
port-state	Re-enable shutdown port that was shutdown by access-list module
rate-limiter	Rate limiter
redirect	Redirect frame to specific port

shutdown	Shutdown incoming port. The shutdown feature only works when the packet length is less than 1518 (without VLAN tags).
deny	Deny
permit	Permit
<0-255>	Policy ID
<1-16>	Rate limiter ID
interface	Select an interface to configure
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<port_type_id>	Port ID in 1/1-24,29
<port_type_id>	Port ID in 1/1-4

Example:

```
SM24DP4XA(config-if)# access-list action permit
SM24DP4XA(config-if)# access-list logging
SM24DP4XA(config-if)# access-list policy 1
SM24DP4XA(config-if)# access-list port-state
SM24DP4XA(config-if)# access-list rate-limiter 1
SM24DP4XA(config-if)# access-list redirect interface 10GigabitEthernet 1/3
% Port redirect cannot be configured while permitted action on GigabitEthernet 1/1.
% Port redirect cannot be configured while permitted action on GigabitEthernet 1/2.
SM24DP4XA(config-if)#
```

Command: **aggregation**

Description: Create an aggregation for an interface.

Syntax: **aggregation** group <v_uint>

Parameters:	group	Create an aggregation group
	<uint>	The aggregation group id

Example:

```
SM24DP4XA(config-if)# aggregation group 1
The aggregation cannot include more than 8 ports
SM24DP4XA(config-if)#
```

Command: **description**

Description: Configures port description for an interface.

Syntax: **description** <description>

Parameters: <line47> Up to 47 characters describing this interface

Example:

```
SM24DP4XA(config-if)# description intrfce-all
SM24DP4XA(config-if)#
```

Command: **do**

Description: To run exec commands in Config Interface mode.

Syntax: **do** <command>

Parameters: <line> Exec Command

Example:

```
SM24DP4XA(config-if)# do show version brief
Version      : SM24DP4XA (standalone) v7.20.0208
Build Date   : 2024-08-14T11:41:34+08:00
SM24DP4XA(config-if)#
```

Command: **debug**

Description: Debugging functions. **WARNING**: The use of 'debug' commands may negatively impact system behavior. Do not enable unless instructed to. (Use '**platform debug deny**' to disable debug commands.) **Note**: 'debug' command syntax, semantics and behavior are subject to change without notice.

Parameters:

clear	clear keyword.
kr-conf	Show or set the 10GBASE-KR parameters.
link-oam	Link OAM configuration
mode	
no	Negate a command or set its defaults
phy	Physical layer (Remember to use the interface with the PHY which contains the GPIO)
phy-10g	10g Phy debug commands
show	Show keyword
tod	Time Of Day management
trace	Trace setting

Example:

```
SM24DP4XA(config-if)# debug mode
Type               Switch ID  Port ID  Port Cnt  Usid  Uport  Isid  Iport
=================  =========  =======  ========  ====  =====  ====  =====
```

```
GigabitEthernet          1       1       24     1      1     1      0
GigabitEthernet          1       29       1     1      29    1      28
10GigabitEthernet        1       1        4     1      25    1      24
SM24DP4XA(config-if)#
```

Command: **dot1x**

Description: Configure IEEE Standard for port-based Network Access Control for an interface.

Syntax:

dot1x guest-vlan

dot1x port-control { force-authorized | force-unauthorized | auto | single | multi | mac-based |mac-auth-bypass}

dot1x radius-qos

dot1x radius-vlan

dot1x re-authenticate

Parameters:		
	guest-vlan	Enables/disables guest VLAN
	port-control	Sets the port security state.
	radius-qos	Enables/disables per-port state of RADIUS-assigned QoS.
	radius-vlan	Enables/disables per-port state of RADIUS-assigned VLAN.
	re-authenticate	Refresh (restart) 802.1X authentication process.
	auto	Port-based 802.1X Authentication
	force-authorized	Port access is allowed
	force-unauthorized	Port access is not allowed
	mac-based	Switch authenticates on behalf of the client
	multi	Multiple Host 802.1X Authentication
	single	Single Host 802.1X Authentication
	mac-auth-bypass	MAC authentication bypass

Example:

```
SM24DP4XA(config-if)# dot1x port-control force-authorized
SM24DP4XA(config-if)#
```

Command: **duplex**

Description: Configure duplex mode for an interface.

Syntax: **duplex** { half | full | auto [half | full] }

Parameters:

	auto	Auto negotiation of duplex mode.
	full	Forced full duplex.
	half	Forced half duplex.

Example:

```
SM24DP4XA(config-if)# duplex full
SM24DP4XA(config-if)# duplex auto
SM24DP4XA(config-if)#
```

Messages: *10GigabitEthernet 1/1 does only support half duplex in 10 and 100 Mbit mode, duplex changed to full duplex*

Command: **end**

Description: Go back to EXEC mode.

Syntax: **end** <cr>

Parameters:

Example:

```
SM24DP4XA(config-if)# end
SM24DP4XA#
```

Command: **evc**

Description: Configure Ethernet Virtual Connections for an interface.

Syntax:

evc [update] [dei { colored | fixed }] [tag { inner | outer }] [key { double-tag | normal | ip-addr | mac-ip-addr }] [key-advanced { double-tag | normal | ip-addr | mac-ip-addr }] [addr { source | destination }] [addr-advanced { source | destination }] [l2cp { [peer <l2cp_peer_list>] [forward <l2cp_fo rward_list>] [discard <l2cp_discard_list>] }*1]

Parameters:

	dei	Setup DEI mode
	l2cp	Setup L2CP forwarding
	update	Update existing entry
	colored	Allow policer to set DEI
	fixed	Use classified DEI
	discard	Discard L2CP frames

forward	Allow forwarding of L2CP frames
peer	Redirect L2CP frames to local protocol entity
<cr>	

Example:

```
SM24DP4XA(config-if)# evc l2cp forward 5 peer 18
SM24DP4XA(config-if)# evc dei colored
SM24DP4XA(config-if)#
```

Command: **excessive-restart**

Description: Restart backoff algorithm after 16 collisions. No excessive-restart means discard frame after 16 collisions).

Syntax: excessive-restart <cr>

Parameters: None.

Example:

```
SM24DP4XA(config-if)# excessive-restart
GigabitEthernet 1/1 does not support this mode/speed
GigabitEthernet 1/2 does not support this mode/speed
GigabitEthernet 1/3 does not support this mode/speed
GigabitEthernet 1/4 does not support this mode/speed
GigabitEthernet 1/5 does not support this mode/speed
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
GigabitEthernet 1/20 does not support this mode/speed
10GigabitEthernet 1/1 does not support this mode/speed
10GigabitEthernet 1/2 does not support this mode/speed
-- more --, next page: Space, continue: g, quit: ^C
```

Command: **exit**

Description: Exit from current mode.

Syntax: **exit** <cr>

Parameters: None.

Example:

```
SM24DP4XA(config-if)# exit
SM24DP4XA(config)#
```

Command: **frame-length-check**

Description: Drop frames with mismatch of EtherType/Length field and actual payload size.

Syntax: **frame-length-check** <cr>

Parameters: None.

Example:

```
SM24DP4XA(config-if)# frame-length-check
SM24DP4XA(config-if)#
```

Command: **gvrp**

Description: Enable GVRP on interface or interfaces.

Syntax: **gvrp** <cr>

Parameters: None.

Example:

```
SM24DP4XA(config-if)# gvrp
SM24DP4XA(config-if)#
```

Command: **help**

Description: Description of the interactive help system.

Syntax: **help** <cr>

Parameters: None.

Example:

```
SM24DP4XA(config-if)# help
Help may be requested at any point in a command by entering a question mark '?'.  If
nothing matches, the help list will be empty and you must backup until entering a '?'
shows the
available options. Two styles of help are provided:
1. Full help is available when you are ready to enter a command argument (e.g.
'show ?') and describes each possible  argument.
2. Partial help is provided when an abbreviated argument is entered and you want to
know what arguments match the input (e.g. 'show pr?'.)
SM24DP4XA(config-if)#
```

Command: **ip**

Description: Configure Internet Protocol for an interface.

Syntax: **ip** arp inspection check-vlan

ip arp inspection logging { deny | permit | all }

ip arp inspection trust

ip dhcp snooping trust

ip igmp snooping filter <profile_name>

ip igmp snooping immediate-leave

ip igmp snooping max-groups <throttling>

ip igmp snooping mrouter

ip verify source

ip verify source limit <cnt_var>

Parameters:

arp	Address Resolution Protocol
dhcp	Dynamic Host Configuration Protocol
igmp	Internet Group Management Protocol
verify	verify command
inspection	ARP inspection
check-vlan	ARP inspection VLAN mode configuration
logging	ARP inspection logging mode configuration
trust	ARP inspection trust configuration
all	log all entries
deny	log denied entries
permit	log permitted entries
snooping	DHCP snooping
trust	DHCP Snooping trust configuration
filter	Access control on IGMP multicast group registration
immediate-leave	Immediate leave configuration
max-groups	IGMP group throttling configuration
mrouter	Multicast router port configuration
<word16>	Profile name in 16 char's
<1-10>	Maximum number of IGMP group registration

Example:

```
SM24DP4XA(config-if)# ip arp inspection check-vlan
SM24DP4XA(config-if)# ip dhcp snooping trust
SM24DP4XA(config-if)# ip verify source
SM24DP4XA(config-if)# ip arp inspection logging all
```

```
SM24DP4XA(config-if)# ip arp inspection trust
SM24DP4XA(config-if)# ip dhcp snooping trust
SM24DP4XA(config-if)# ip igmp snooping immediate-leave
SM24DP4XA(config-if)# ip igmp snooping max-groups 1
SM24DP4XA(config-if)# ip igmp snooping mrouter
SM24DP4XA(config-if)#
```

Command: **ipv6**

Description: IPv6 configuration commands for an interface.

Syntax: **ipv6** mld snooping filter <profile_name>

ipv6 mld snooping immediate-leave

ipv6 mld snooping max-groups <throttling>

ipv6 mld snooping mrouter

Parameters:

mld	Multicasat Listener Discovery
snooping	Snooping MLD
filter	Access control on MLD multicast group registration
immediate-leave	Immediate leave configuration
max-groups	MLD group throttling configuration
mrouter	Multicast router port configuration
<word16>	Profile name in 16 char's
<1-10>	Maximum number of MLD group registration

Example:

```
SM24DP4XA(config-if)# ipv6 mld snooping max-groups 4
SM24DP4XA(config-if)# ipv6 mld snooping filter MldProf1
% Please specify correct filter profile name.
% Failed to set filtering profile MldProf1.
SM24DP4XA(config-if)# ipv6 mld snooping immediate-leave
SM24DP4XA(config-if)# ipv6 mld snooping max-groups 1
SM24DP4XA(config-if)# ipv6 mld snooping mrouter
SM24DP4XA(config-if)#
```

Command: **lacp**

Description: Configure Link Aggregation Control Protocol on this interface.

Syntax: **lacp**

lacp key { <v_1_to_65535> | auto }

lacp port-priority <v_1_to_65535>

lacp role { active | passive }

lacp timeout { fast | slow }

Parameters:

key	Key of the LACP aggregation
port-priority	LACP priority of the port
role	Active / Passive (speak if spoken to) role
timeout	The period between BPDU transmissions
<1-65535>	Key value
auto	Choose a key based on port speed
<1-65535>	Priority value, lower means higher priority
active	Transmit LACP BPDUs continuously
passive	Wait for neighbor LACP BPDUs before transmitting
fast	Transmit BPDU each second (fast timeout)
slow	Transmit BPDU each 30th second (slow timeout)

Example:

```
SM24DP4XA(config-if)# lacp key 1
SM24DP4XA(config-if)# lacp key auto
SM24DP4XA(config-if)# lacp port-priority 50
SM24DP4XA(config-if)# lacp role active
SM24DP4XA(config-if)# lacp timeout fast
SM24DP4XA(config-if)#
```

Command: **link-oam**

Description: Enable or Disable Link OAM on the interface (when the no keyword is entered).

Syntax:

link-oam

link-oam link-monitor frame { [window <error_window>] [threshold <error_threshold>] }*1

link-oam link-monitor frame-seconds { [window <error_window>] [threshold <error_threshold>] }*1

link-oam link-monitor supported

link-oam link-monitor symbol-period { [window <error_window>] [threshold <error_threshold>] }*1

link-oam mib-retrieval supported

link-oam mode { active | passive }

link-oam remote-loopback supported

link-oam variable-retrieve { local-info | remote-info }

Parameters:

link-monitor	Configure link monitoring
mib-retrieval	Set MIB retrieval support
mode	Set Link OAM mode Active or Passive on this interface
remote-loopback	Link OAM remote loopback support
variable-retrieve	Set mib variable retrieve local info or remote info
frame	Configure frame error event thresholds and window for error frames that trigger an error-frame link event
frame-seconds	Configure frame seconds summary
supported	Enable or Disable (when the no keyword is entered) link monitor on the interface
symbol-period	Configure window and thresholds for an error-symbol period that triggers an error-symbol period link event
supported	Enable or Disable (when the no keyword is entered) MIB retrieval support on the interface
threshold	Set a threshold in number of frames
window	Set the a window of time during which error frames are counted
<0-4294967295>	Number of permissible errors frames in the period defined by error_window
<1-60>	Duration of the monitoring period in terms of seconds
active	Enable Link OAM Active mode on this interface
passive	Enable Link OAM Passive mode on this interface
supported	Enable or Disable(when the no keyword is entered) remote loopback on the interface
local-info	Set mib retrieve local info
remote-info	Set mib retrieve remote info

Example:

```
SM24DP4XA(config-if)# link-oam mode active
SM24DP4XA(config-if)# link-oam link-monitor supported
SM24DP4XA(config-if)# link-oam mib-retrieval supported
SM24DP4XA(config-if)# link-oam remote-loopback supported
SM24DP4XA(config-if)# link-oam link-monitor frame window 1 threshold 55555
SM24DP4XA(config-if)# link-oam mode active
SM24DP4XA(config-if)# link-oam variable-retrieve local-info
% This feature is not supported yet.
SM24DP4XA(config-if)# link-oam variable-retrieve remote-info
% This feature is not supported yet.
SM24DP4XA(config-if)#
```

Command: **lldp**

Description: Configure Link Level Discovery Protocol parameters on a selected interface..

Syntax:

lldp cdp-aware

lldp med media-vlan policy-list <v_range_list>

lldp med transmit-tlv [capabilities] [location] [network-policy] [poe]

lldp med type { connectivity | end-point }

lldp receive

lldp tlv-select { management-address | port-description | system-capabilities |system-description | system-name }

lldp transmit

Parameters:

cdp-aware	Configures the interface to be CDP aware (CDP discovery information is added to the LLDP neighbor table)
med	Media Endpoint Discovery.
receive	Enable/Disable decoding of received LLDP frames.
tlv-select	Which optional TLVs to transmit.
transmit	Enable/Disabled transmission of LLDP frames.
media-vlan	Media VLAN assignment.
transmit-tlv	LLDP-MED Location Type Length Value parameter.
type	Select if the interface is working as "Network Connectivity Device" or an "Endpoint Device". The difference between working as "Network Connectivity Device" and an "Endpoint Device" is a question of who is initializing the LLDP-MED TVLs transmission. A "Network Connectivity Device" is not starting LLDP-MED TLVs transmission until it has detected an "Endpoint Device" as link partner. An "Endpoint Device" will start LLDP-MED TLVs transmission at once.
policy-list	Assignment of policies.
<range_list>	Policies to assign to the interface.
capabilities	Enable transmission of the optional capabilities TLV.
location	Enable transmission of the optional location TLV.
network-policy	Enable transmission of the optional network-policy TLV.
connectivity	Work as connectivity device.
end-point	Work as end-point device.
management-address	Enable/Disable transmission of management address.
port-description	Enable/Disable transmission of port description.
system-capabilities	Enable/Disable transmission of system capabilities.

system-description	Enable/Disable transmission of system description.
system-name	Enable/Disable transmission of system name.

Example:

```
SM24DP4XA(config-if)# lldp cdp-aware
SM24DP4XA(config-if)# lldp receive
SM24DP4XA(config-if)# lldp transmit
SM24DP4XA(config-if)# lldp med media-vlan policy-list 1
Ignoring policy 1 for GigabitEthernet 1/1, because no such policy is defined
Ignoring policy 1 for GigabitEthernet 1/2, because no such policy is defined
SM24DP4XA(config-if)# lldp med transmit-tlv capabilities location network-policy
SM24DP4XA(config-if)# lldp med type connectivity
SM24DP4XA(config-if)# lldp med type end-point
SM24DP4XA(config-if)# lldp tlv-select management-address
SM24DP4XA(config-if)# lldp tlv-select port-description
SM24DP4XA(config-if)# lldp tlv-select system-description
SM24DP4XA(config-if)# lldp tlv-select system-name
SM24DP4XA(config-if)#
```

Command: **loop-protect**

Description: Configure Loop protection on an interface.

Syntax: **loop-protect**

loop-protect action { [shutdown] [log] }*1

loop-protect tx-mode

Parameters:		
	action	Action if loop detected
	tx-mode	Actively generate PDUs
	log	Generate log
	shutdown	Shutdown port

Example:

```
SM24DP4XA(config-if)# loop-protect action log
SM24DP4XA(config-if)# loop-protect tx-mode
SM24DP4XA(config-if)# loop-protect action log shutdown
SM24DP4XA(config-if)#
```

Command: **mac**

Description: Configure MAC keyword

Syntax: **mac** address-table learning [secure]

Parameters:		
	address-table	MAC table configuration
	learning	Port learning mode
	secure	Port Secure mode

Example:

```
SM24DP4XA(config-if)# mac address-table learning secure
SM24DP4XA(config-if)#
```

Command: **mtu**

Description: Configure Maximum transmission units for an interface.

Syntax: **mtu** <max_length>

Parameters:		
	1518-4776	Maximum frame size in bytes.

Example:

```
SM24DP4XA(config-if)# mtu 2000
SM24DP4XA(config-if)#
```

Command: **mvr**

Description: Configure Multicast VLAN Registration of an interface.

Syntax: **mvr** immediate-leave

mvr name <mvr_name> type { source | receiver }

mvr vlan <v_vlan_list> type { source | receiver }

Parameters:		
	immediate-leave	Immediate leave configuration
	name	MVR multicast name
	vlan	MVR multicast vlan
	<word16>	MVR multicast VLAN name
	type	MVR port role configuration
	receiver	MVR receiver port
	source	MVR source port
	<vlan_list>	MVR multicast VLAN list

Example:

```
SM24DP4XA(config-if)# mvr immediate-leave
SM24DP4XA(config-if)# mvr name Bob type receiver
SM24DP4XA(config-if)# mvr vlan 10-30 type source
```

Messages:

% Failed to set MVR port role.

% Invalid MVR VLAN Bob.

Command: **no**

Description: Negate a command or set its defaults

Syntax:

Parameters:				
access-list	aggregation	debug	description	dot1x
duplex	excessive-restart	flowcontrol	frame-length-check	gvrp
ip	ipv6	lacp	link-oam	lldp
loop-protect	mac	mtu	mvr	platform
port-security	ptp	pvlan	qos	rmon
shutdown	spanning-tree	speed	switchport	udld

Example:

```
SM24DP4XA(config-if)# no description
SM24DP4XA(config-if)# no shutdown
SM24DP4XA(config-if)#
```

Command: **platform**

Description: Platform debug commands for an interface.

Syntax: **platform** phy mode { wan | 1g }

Parameters: phy

mode

1g	1G mode
wan	WAN mode
<cr>	

Example:

```
SM24DP4XA(config-if)# platform phy mode 1g
% Note: Feature  is only supported on 10G PHYs on port: 1
% Note: Feature  is only supported on 10G PHYs on port: 2
% Note: Feature  is only supported on 10G PHYs on port: 3
SM24DP4XA(config-if)# platform phy mode wan
% Note: Feature  is only supported on 10G PHYs on port: 1
% Note: Feature  is only supported on 10G PHYs on port: 2
% Note: Feature  is only supported on 10G PHYs on port: 3
-- more --, next page: Space, continue: g, quit: ^C
```

Command: **port-security**

Description: Configure port security per interface.

Syntax: **port-security**

port-security maximum [<v_1_to_1024>]

port-security sticky

port-security sticky <v_mac_addr> vlan <v_vlan_id>

port-security violation { protect | trap | trap-shutdown | shutdown }

Parameters:

maximum	Maximum number of MAC addresses that can be learned on this set of interfaces.
sticky	Enable/disable port security sticky function per interface.
violation	The action involved with exceeding the limit.
<1-1024>	Number of addresses
<mac_addr>	48 bit MAC address: xx:xx:xx:xx:xx:xx
protect	Don't do anything
shutdown	Shutdown the port
trap	Send an SNMP trap
trap-shutdown	Send an SNMP trap and shut down the port
<cr>	

Example:

```
SM24DP4XA(config-if)# port-security maximum 500
SM24DP4XA(config-if)# port-security sticky
SM24DP4XA(config-if)# port-security violation trap
SM24DP4XA(config-if)# port-security
SM24DP4XA(config-if)#
```

Command: **ptp**

Description: Configure PrecisionTtime Protocol (1588) for an interface. Note that PTP commands exist in other modes.

Syntax:

ptp <clockinst> [internal]

ptp <clockinst> announce { [interval <interval>] [timeout <timeout>] }*1

ptp <clockinst> delay-asymmetry <delay_asymmetry>

ptp <clockinst> delay-mechanism { e2e | p2p }

ptp <clockinst> delay-req interval <interval>

ptp <clockinst> egress-latency <egress_latency>

ptp <clockinst> ingress-latency <ingress_latency>

ptp <clockinst> sync-interval <interval>

ptp pps-delay { { auto master-port interface <port_type> <v_port_type_id> } | {man cable-delay <cable_delay> } }

ptp pps-sync { main-auto | main-man | sub } [pps-phase <pps_phase>] [cable-asy <cable_asy>] [ser-man | ser-auto]

Parameters:

<0-3>	[0-3] Clock instance
pps-delay	Set the internal 1PPS cable delay, with optional closed loop delay measurement.
pps-sync	Set 1 PPS synchronization mode for the Gen2 1588 PHY's
announce	Set announce interval and timeout
delay-asymmetry	Set path delay asymmetry
delay-mechanism	Set delay mechanism
delay-req	Set pdelay req interval
egress-latency	Set port egress latency
ingress-latency	Set port ingress latency
internal	enable as an internal interface
sync-interval	Set sync interval
interval	Set announce interval
timeout	Set Announce timeout
<-3-4>	announce interval
<1-10>	Announce timeout (* announce interval)
<-100000-100000>	Delay asymmetry in ns.
e2e	End to End Delay mechanism
p2p	Peer to Peer Delay mechanism
interval	Define Path-Delay request interval

<-7-5>	Path-Delay request intervalPath-Delay request interval
<-100000-100000>	Egress latency in ns
<-100000-100000>	Ingress latency in ns
auto	Enable automatic closed loop cable delay measurement.
man	Set manually cable delay.
master-port	Define the port that is 1 PPS master.
interface	Define master port interface
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<port_type_id>	Port ID in 1/1-25
main-auto	Set the mode to main with automatic cable delay measurement
main-man	Set the mode to main with manual cable delay configuration
sub	Set the mode to sub (slave)
cable-asy	Set cable asymmetry (used in main-auto mode)
pps-phase	Set cable delay manually (used in main-man mode)
ser-auto	Set Serial TOD auto mode (i.e. the phase adjustment is done in hardware, and frequency adjustment is done in software)
ser-man	Set Serial TOD manual mode (i.e. both phase and frequency adjustment is done in SW)
<-10000-10000>	The cable asymmetry in ns. (Tms = mean delay + asy, Tsm = mean delay - asy)
<0-999999999>	The cable delay in ns.
cable-asy	Set cable asymmetry (used in main-auto mode)
pps-phase	Set cable delay manually (used in main-man mode)
<cr>	

Example:

```
SM24DP4XA(config-if)# ptp 0
SM24DP4XA(config-if)# ptp 0 egress-latency 50
SM24DP4XA(config-if)# ptp 0 ingress-latency 900
SM24DP4XA(config-if)#
```

Messages:

Error setting port data instance 0 port 1

Error getting port data instance 0 port 1

Error setting 1pps delay for port 3 (No timestamp engine is available in the PHY)

Command: **pvlan**

Description: Configure Private VLAN for an interface.

Syntax: **pvlan** <pvlan_list>

pvlan isolation

Parameters: <range_list> list of PVLANs. Range is from 1 to number of ports.

isolation Port isolation

Example:

```
SM24DP4XA(config-if)# pvlan 4-9
SM24DP4XA(config-if)# pvlan isolation
SM24DP4XA(config-if)#
```

Command: **qos**

Description: Configure Quality of Service for an interface.

Syntax: **qos** cos <cos>

qos dei <dei>

qos dpl <dpl>

qos dscp-classify { zero | selected | any }

qos dscp-remark { rewrite | remap | remap-dp }

qos dscp-translate

qos map cos-tag cos <cos> dpl <dpl> pcp <pcp> dei <dei>

qos map tag-cos pcp <pcp> dei <dei> cos <cos> dpl <dpl>

qos pcp <pcp>

qos policer <rate> [kbps | mbps | fps | kfps] [flowcontrol]

qos queue-policer queue <queue> <rate> [kbps | mbps]

qos queue-shaper queue <queue> <rate> [kbps | mbps] [excess] [rate-type { line | data }]

qos shaper <rate> [kbps | mbps] [rate-type { line | data }]

qos storm { unicast | broadcast | unknown } <rate> [fps | kfps | kbps | mbps]

qos tag-remark { pcp <pcp> dei <dei> | mapped }

qos trust dscp

qos trust tag

qos wrr <w0> <w1> <w2> <w3> <w4> <w5>

Parameters:

cos	Class of service configuration
dei	Drop Eligible Indicator configuration
dpl	Drop precedence level configuration
dscp-classify	DSCP ingress classification

dscp-remark	DSCP egress remarking
dscp-translate	DSCP ingress translation
map	QoS Map/Table configuration
pcp	Priority Code Point configuration
policer	Policer configuration
queue-policer	Queue policer configuration
queue-shaper	Queue shaper configuration
shaper	Shaper configuration
storm	Storm policer
broadcast	Police broadcast frames
unicast	Police unicast frames
unknown	Police unknown (flooded) frames
<1-13128072>	Policer rate (default kbps). Internally rounded up to the nearest value supported by the storm policer.
fps	Unit is frames per second
kbps	Unit is kilobits per second (default)
kfps	Unit is kiloframes per second
mbps	Unit is Megabits per second
tag-remark	Tag remarking configuration
trust	Trust configuration
wrr	Weighted round robin configuration
<0-1>	Specific Drop Eligible Indicator
<0-3>	Specific drop precedence level
any	Classify to new DSCP always
selected	Classify to new DSCP if classify is enabled for specific DSCP value in global dscp-classify map
zero	Classify to new DSCP if DSCP is 0

Example:

```
SM24DP4XA(config-if)# qos cos 5
SM24DP4XA(config-if)# qos dei 1
SM24DP4XA(config-if)# qos dpl 2
SM24DP4XA(config-if)# qos dscp-classify zero
SM24DP4XA(config-if)# qos queue-policer queue 3 50000 kbps
SM24DP4XA(config-if)# qos storm broadcast 256 kfps
SM24DP4XA(config-if)# qos storm broadcast 60000
SM24DP4XA(config-if)# qos wrr 10 20 30 40 50 60
```

```
SM24DP4XA(config-if)# qos trust tag
SM24DP4XA(config-if)# qos trust dscp
SM24DP4XA(config-if)#
```

Command: **rmon**

Description: Configure Remote Monitoring on an interface.

Syntax: **rmon** collection history <id> [buckets <buckets>] [interval <interval>]

rmon collection stats <id>

Parameters:		
	collection	Configure Remote Monitoring Collection on an interface.
	history	Configure history.
	stats	Configure statistics.
	<1-65535>	History entry ID.
	buckets	Requested buckets of intervals. Default is 50 buckets.
	interval	Interval to sample data for each bucket. Default is 1800 seconds.
	<1-65535>	Requested buckets of intervals.
	interval	Interval to sample data for each bucket. Default is 1800 seconds.
	<1-3600>	Interval in seconds to sample data for each bucket.
	<cr>	

Example:

```
SM24DP4XA(config-if)# rmon collection history 1 buckets 5000 interval 360
SM24DP4XA(config-if)# rmon collection stats 1
SM24DP4XA(config-if)#
```

Command: **shutdown**

Description: Shutdown of the specified interface.

Syntax: **shutdown** <cr>

Parameters: None.

Example:

```
SM24DP4XA(config-if)# shutdown
```

Command: **spanning-tree**

Description: Configures Spanning Tree Protocol of the interface.

Syntax: **spanning-tree**

spanning-tree auto-edge

spanning-tree bpdu-guard

spanning-tree edge

spanning-tree link-type { point-to-point | shared | auto }

spanning-tree mst <instance> cost { <cost> | auto }

spanning-tree mst <instance> port-priority <prio>

spanning-tree restricted-role

spanning-tree restricted-tcn

Parameters:		
	auto-edge	Auto detect edge status
	bpdu-guard	Enable/disable BPDU guard
	edge	Edge port
	link-type	Port link-type
	mst	STP bridge instance
	restricted-role	Port role is restricted (never root port)
	restricted-tcn	Restrict topology change notifications
	auto	Auto detect
	point-to-point	Forced to point-to-point
	shared	Forced to Shared
	<0-7>	instance 0-7 (CIST=0, MST2=1...)
	cost	STP Cost of this port
	port-priority	STP priority of this port
	<1-200000000>	Cost range
	auto	Use auto cost

Example:

```
SM24DP4XA(config-if)# spanning-tree auto-edge
SM24DP4XA(config-if)# spanning-tree bpdu-guard
SM24DP4XA(config-if)# spanning-tree edge
SM24DP4XA(config-if)# spanning-tree link-type auto
SM24DP4XA(config-if)# spanning-tree link-type point-to-point
SM24DP4XA(config-if)# spanning-tree link-type shared
SM24DP4XA(config-if)# spanning-tree restricted-role
SM24DP4XA(config-if)# spanning-tree restricted-tcn
SM24DP4XA(config-if)# spanning-tree
```

Command: **speed**

Description: Configures interface speed of the interface. If you use 10, 100, or 1000 keywords with the auto keyword the port will only advertise the specified speeds.

Syntax: **speed** 10 100 1000 auto

Parameters:

10	10Mbps
100	100Mbps
1000	1Gbps
auto	Auto negotiation

Example:

```
SM24DP4XA(config-if)# speed auto
SM24DP4XA(config-if)# speed 10G
SM24DP4XA(config-if)# speed 1000
SM24DP4XA(config-if)# speed 2500
                          ^
% Invalid word detected at '^' marker.
SM24DP4XA(config-if)# speed 10
Illegal speed for the current mode
SM24DP4XA(config-if)#
SM24DP4XA(config-if)# speed 10
                          ^
% Ambiguous word detected at '^' marker.

SM24DP4XA(config-if)#
```

Command: **switchport**

Description: Configure Switching mode characteristics of the interface.

Syntax:

switchport access vlan <pvid>

switchport forbidden vlan { add | remove } <vlan_list>

switchport hybrid acceptable-frame-type { all | tagged | untagged }

switchport hybrid allowed vlan { all | none | [add | remove | except] <vlan_list> }

switchport hybrid egress-tag { none | all [except-native] }

switchport hybrid ingress-filtering

switchport hybrid native vlan <pvid>

switchport hybrid port-type { unaware | c-port | s-port | s-custom-port }

switchport mode { access | trunk | hybrid }

switchport trunk allowed vlan { all | none | [add | remove | except] <vlan_list> }

switchport trunk native vlan <pvid>

switchport trunk vlan tag native

switchport vlan ip-subnet [id <1-128>] <ipv4> vlan <vid>

switchport vlan mac <mac_addr> vlan <vid>

switchport vlan mapping <gid>

switchport vlan protocol group <grp_id> vlan <vid>

switchport voice vlan discovery-protocol { oui | lldp | both }

switchport voice vlan mode { auto | force | disable }

switchport voice vlan security

Parameters:

access	Set access mode characteristics of the interface forbidden VLANs
hybrid	Change PVID for hybrid port
mode	Set mode of the interface
trunk	Change PVID for trunk port
vlan	VLAN commands
voice	Voice appliance attributes
vlan	Set VLAN when interface is in access mode
<vlan_id>	VLAN ID of the VLAN when this port is in access mode
vlan	Add or modify VLAN entry in forbidden table.
add	Add to existing list.
remove	Remove from existing list.
<vlan_list>	VLAN IDs
acceptable-frame-type	Set acceptable frame type on a port
allowed	Set allowed VLAN characteristics when interface is in hybrid mode

egress-tag	Egress VLAN tagging configuration
ingress-filtering	VLAN Ingress filter configuration
native	Set native VLAN
port-type	Set port type
access	Set mode to ACCESS unconditionally
hybrid	Set mode to HYBRID unconditionally
trunk	Set mode to TRUNK unconditionally
allowed	Set allowed VLAN characteristics when interface is in trunk mode
native	Set native VLAN
vlan	VLAN commands
ip-subnet	VCL IP Subnet-based VLAN configuration.
mac	MAC-based VLAN commands
mapping	Maps an interface to a VLAN translation group..
protocol	Protocol-based VLAN commands
vlan	VLAN for voice traffic
ip-subnet	VCL IP Subnet-based VLAN configuration.
mac	MAC-based VLAN commands
mapping	Maps an interface to a VLAN translation group..
protocol	Protocol-based VLAN commands
<ipv4_subnet>	Source IP address and mask (Format: xx.xx.xx.xx/mm.mm.mm.mm).
id	Specify an index for the IP subnet entry (deprecated)
<mac_ucast>	48 bit unicast MAC address: xx:xx:xx:xx:xx:xx
<1-29>	Group id
group	Protocol-based VLAN group commands
<word16>	Group Name (Range: 1 - 16 characters)
vlan	VLAN keyword
<vlan_id>	VLAN ID required for the group to VLAN mapping (Range: 1-4095)

Example:

```
SM24DP4XA(config-if)# switchport access vlan 1
SM24DP4XA(config-if)# switchport mode access
SM24DP4XA(config-if)# switchport mode hybrid
SM24DP4XA(config-if)# switchport mode trunk
SM24DP4XA(config-if)# switchport trunk allowed vlan 1
SM24DP4XA(config-if)# switchport vlan protocol group Grp1 vlan 10
SM24DP4XA(config-if)#
```

Command: **udld**

Description: Configure UDLD (Unidirectional Link Detection) protocol parameters for the interface.

Syntax: **udld** port [aggressive] [message time-interval <v_interval>]

Parameters:

port	UDLD configuration on the interface
aggressive	Enable UDLD in the aggressive mode on an interface
message	Configures the period of time between UDLD probe messages on ports that are in the advertisement phase and are determined to be bidirectional. The range is 7 - 90 seconds (currently default message time interval 7 sec is supported).
time-interval	Configures the period of time between UDLD probe messages on ports that are in the advertisement phase and are determined to be bidirectional. The range is 7 - 90 seconds (currently default message time interval 7 sec is supported).
<7-90>	Configures the period of time between UDLD probe messages on ports that are in the advertisement phase and are determined to be bidirectional. The range is 7 - 90 seconds (currently default message time interval 7 sec is supported).

Example:

```
SM24DP4XA(config-if)# udld port aggressive message time-interval 10
SM24DP4XA(config-if)# udld port message time-interval 7 aggressive
SM24DP4XA(config-if)#
```

Command: **interface vlan**

Description: Configure vlans for an interface.

Syntax: **interface vlan** <vlist>

Parameters:

*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
vlan	VLAN interface configurations
<vlan_list>	List of VLAN interface numbers, 1~4095
do	To run exec commands in config mode
end	Go back to EXEC mode
exit	Exit from current mode
help	Description of the interactive help system
ip	Interface Internet Protocol config commands
ipv6	IPv6 configuration commands
no	Negate a command or set its defaults
address	Address configuration
dhcp	Configure DHCP server parameters
igmp	Internet Group Management Protocol
<ipv4_addr>	IP address
dhcp	Enable DHCP
fallback	DHCP fallback settings
<ipv4_netmask>	IP netmask
server	Enable DHCP server per VLAN
snooping	Snooping IGMP
compatibility	Interface compatibility
last-member-query-interval	Last Member Query Interval in tenths of seconds
priority	Interface CoS priority
querier	IGMP Querier configuration
query-interval	Query Interval in seconds
query-max-response-time	Query Response Interval in tenths of seconds
robustness-variable	Robustness Variable
unsolicited-report-interval	Unsolicited Report Interval in seconds
auto	Compatible with IGMPv1/IGMPv2/IGMPv3
v1	Forced IGMPv1
v2	Forced IGMPv2
v3	Forced IGMPv3

<0-31744>	0 - 31744 tenths of seconds
<0-7>	CoS priority ranges from 0 to 7
address	IGMP Querier address configuration
election	Act as an IGMP Querier to join Querier-Election
<ipv4_ucast>	A valid IPv4 unicast address
<1-31744>	1 - 31744 seconds
<0-31744>	0 - 31744 tenths of seconds
<1-255>	Packet loss tolerance count from 1 to 255
address	Configure the IPv6 address of an interface
mld	Multicasat Listener Discovery
<ipv6_subnet>	IPv6 prefix x:x::y/z
dhcp	Enable DHCPv6 client function

Example:

```
SM24DP4XA(config)# interface vlan 10
SM24DP4XA(config-if-vlan)# ip address 192.168.1.77 255.255.255.0
% Failed to add IPv4 address to VLAN = 10.
SM24DP4XA(config-if-vlan)# ip dhcp server
SM24DP4XA(config-if-vlan)# ip igmp snooping compatibility auto
% Invalid IGMP VLAN 10!
SM24DP4XA(config-if-vlan)# ip igmp snooping querier election
SM24DP4XA(config-if-vlan)# ip igmp snooping robustness-variable 150
SM24DP4XA(config-if-vlan)#
```

8. Copy Commands

Copy from source to destination.

Syntax :

copy { startup-config | running-config | <source_path> } { startup-config | running-config | <destination_path> } [syntax-check] [save-host-key] [ftp-active] [{ merge | replace }]

Parameters:

<url_file>	File in FLASH or on TFTP server. Syntax: *<flash:filename | tftp://server/path-and-filename>.* A valid file name is a text string drawn from alphabet (A-Za-z), digits (0-9), dot (.), hyphen (-), under score (_). The maximum length is 255 and hyphen must not be first character. The file name content that only contains '.' is not allowed.
running-config	Currently running configuration
startup-config	Startup configuration
<line>	String to match output lines
|	Output modifiers
merge	merge source file with running-config
replace	replace running-config with source file, default action
syntax-check	Perform syntax check on source configuration

Example:

```
SM24DP4XA# copy startup-config running-config syntax-check | include mmmmm
SM24DP4XA# copy startup-config running-config syntax-check
SM24DP4XA# copy startup-config running-config merge
SM24DP4XA# copy running-config startup-config merge syntax-check
Building configuration...
% Saving 1788 bytes to flash:startup-config
SM24DP4XA#
```

FW 7.20.0042 added merge and replace options for the "copy" command. (The default value is "replace".)

Syntax: **copy** { startup-config | running-config | } { startup-config | running-config | } [syntax-check] [save-host-key] [ftp-active] [{merge | replace}]

Example :

```
copy sftp://root:ruby@192.168.1.248/running_192.168.1.203_20110101 running-config save-host-key replace
```

9. Delete Commands

Delete one file in flash: file system.

Syntax: **delete** <flash:filename>

Parameters: <Path : word> Name of file to delete.

<url_file> File in FLASH. Syntax: <flash:filename>. A valid file name is a text string drawn from alphabet (A-Za-z), digits (0-9), dot (.), hyphen (-), under score (_). The maximum length is 57 and hyphen must not be first character. The file name content that only contains '.' is not allowed.

Example:

```
SM24DP4XA# delete 192.168.1.77 text
                  ^
% Invalid word detected at '^' marker.


SM24DP4XA#
```

10. DIR Commands

Show Directory of all files in flash: file system.

Syntax:

dir [| < begin / exclude / include > LINE]

Parameters:

|	Output modifiers
begin	Begin with the line that matches
exclude	Exclude lines that match
include	Include lines that match
LINE	String to match output lines

Example:

```
SM24DP4XA# dir
Directory of flash:
    r- 2010-12-31 23:59:59      716 default-config
1 file, 716 bytes total.
SM24DP4XA# dir
Directory of flash:
    r- 2010-12-31 23:59:59      716 default-config
    rw 2011-01-01 00:29:33     1814 startup-config
2 files, 2530 bytes total.
SM24DP4XA#
```

12. Disable Commands

Turn off privileged commands.

Syntax: **disable** <0-15>

Parameters: <0-15>

Example:

```
SM24DP4XA# disable 10
SM24DP4XA#
```

13. Do Commands

To run exec commands in config mode.

Syntax: **do** <LINE>[LINE]

Parameters: **LINE** Exec Command

Example:

```
SM24DP4XA# do show clock
System Time     : 2011-01-01T00:01:59+00:00

SM24DP4XA# con ter
SM24DP4XA(config)# show clock
                  ^
% Invalid word detected at '^' marker.

SM24DP4XA(config)# do show clock
System Time     : 2011-01-01T00:02:23+00:00

SM24DP4XA(config)# do show version brief
Version      : SM24DP4XA (standalone) v7.20.0208
Build Date   : 2021-01-19T11:41:34+08:00
SM24DP4XA(config)#
```

14. Enable Commands

Turn on privileged commands

Syntax: **enable** <0-15>

Parameters: <0-15> Choose privileged level

Example:

```
SM24DP4XA# enable 10
SM24DP4XA#
```

15. ERPS Commands

Ethernet Ring Protection Switching.

Syntax: **erps** <1-64> command { force | manual | clear } { port0 | port1 }

Parameters:		
	1-64	ERPS group number
	command	Administrative Command
	clear	Clear command
	force	Force command
	manual	Manual command
	port0	ERPS Port 0 interface
	port1	ERPS Port 1 interface

Example:

```
SM24DP4XA# erps 1 command clear port0
SM24DP4XA# erps 1 command clear port1
SM24DP4XA# erps 1 command force port0
SM24DP4XA# erps 1 command force port1
SM24DP4XA# erps 1 command manual port0
SM24DP4XA# erps 1 command manual port1
SM24DP4XA#
```

16. Firmware Commands

Firmware upgrade/swap commands. Do not restart or power off the device at this time or the switch may fail to function afterwards.

Syntax:

firmware swap

firmware upgrade <url_file> [save-host-key]

Parameters:

swap	Swap between Active and Alternate firmware image.
upgrade	Firmware upgrade
<url_file>	Uniform Resource Locator. It is a specific character string that constitutes a reference to a resource. Syntax: <protocol>://[<username>[:<password>]@]<host>[:<port>][/<path>]/<file_name> If the following special characters: space !"#$%&'()*+,/:;<=>?@[\]^`{|}~ need to be contained in the input url string, they should have percent-encoded. A valid file name is a text string drawn from alphabet (A-Za-z), digits (0-9), dot (.), hyphen (-), or under score (_). The maximum length is 63 and hyphen must not be first character. The file name content that only contains '.' is not allowed.
save-host-key	Save the current host key.

Example:

```
SM24DP4XA# firmware upgrade 192.168.1.77:SM24DP4XA_v7.20.0039_CM_201908032 ?
                           ^
% Invalid word detected at '^' marker.
SM24DP4XA# firmware upgrade sftp ?
                           ^
% Incomplete word detected at '^' marker.
SM24DP4XA# firmware upgrade tftp://admin : admin @ 192.168.1.77:1/4 ?
                           ^
% Incomplete word detected at '^' marker.
SM24DP4XA# firmware swap
Alternate image activated, now rebooting.
SM24DP4XA#
Username:
Password:
```

17. IPv4 Commands

IPv4 commands

Syntax: **ip** dhcp retry interface vlan <vlan_id>

Parameters:

	dhcp	Dhcp commands
	retry	Restart the DHCP query process
	interface	Interface
	vlan	Vlan interface
	<vlan_id>	Vlan ID

Example:

```
SM24DP4XA# ip dhcp retry interface vlan 10
% Failed to restart DHCP client on VLAN = 10.
SM24DP4XA#
```

18. IPv6 Commands

IPv6 configuration commands.

Syntax: **ipv6** dhcp-client restart [interface vlan <v_vlan_list>]

Parameters:		
	dhcp-client	Manage DHCPv6 client service
	restart	Retart DHCPv6 client service
	interface	Select an interface to configure
	vlan	VLAN of IPv6 interface
	<vlan_list>	IPv6 interface VLAN list

Example:

```
SM24DP4XA# ipv6 dhcp-client restart interface vlan 10
% Invalid DHCPv6 client interface Vlan10

SM24DP4XA# ipv6 dhcp-client restart
SM24DP4XA#
```

19. Link OAM Commands

Link OAM configuration.

Syntax: **link-oam** remote-loopback { start | stop } interface (<port_type> [<v_port_type_list>])

Parameters:		
	remote-loopback	Configure remote loopback on interface
	start	Start remote loopback test on interface
	stop	Stop remote loopback test on interface
	interface	Start/Stop remote loopback test on a specific interface or interfaces.
	<port_type_list>	Port list for all port types
	*	All switches or All ports
	GigabitEthernet	1 Gigabit Ethernet Port
	10GigabitEthernet	10 Gigabit Ethernet Port
	<cr>	

Example:

```
SM24DP4XA# link-oam remote-loopback start interface GigabitEthernet 1/7
% Requested configuration is not supported with the current OAM mode for Gigabit
Ethernet 1/7
SM24DP4XA# link-oam remote-loopback start interface 10GigabitEthernet 1/2
% Requested configuration is not supported with the current OAM mode for 10Gigab
itEthernet 1/2
SM24DP4XA#
```

20. More Commands

Display file.

Syntax: **more** <path>

Parameters:

<url_file> File in FLASH or on TFTP server. Syntax: <flash:filename |tftp://server/path-and-filename>. A valid file name is a text string drawn from alphabet (A-Za-z), digits (0-9), dot (.), hyphen (-), and under score (_). The maximum length is 57 and hyphen must not be first character. File name content that only contains '.' is not allowed.

Example:

```
SM24DP4XA# more?
more <path>
SM24DP4XA# more tftp ?
               ^
% Incomplete word detected at '^' marker.

SM24DP4XA# more SM24DP4XA_v7.20.0039_CM_201908032 ?
               ^
% Invalid word detected at '^' marker.
SM24DP4XA#
```

Messages: *% text.txt: Load failed: Cannot read file status.*

21. No Commands

Negate a command or set its defaults.

Syntax:

no debug interrupt-monitor source <source>

no debug ipv6 nd

no debug misc busydeadlock

no debug trace hunt

no port-security shutdown [interface (<port_type> [<v_port_type_list>])]

no ptp <clockinst> wireless mode interface (<port_type> [<v_port_type_list>])

no terminal editing

no terminal exec-timeout

no terminal history size

no terminal length

no terminal width

Parameters:	debug	Debugging functions
	port-security	Port security (MAC limit)
	ptp	Misc non persistent 1588 settings.
	terminal	Set terminal line parameters

Example:

```
SM24DP4XA# no port-security shutdown interface GigabitEthernet 1/1-3
SM24DP4XA# no debug ipv6 nd
  IPv6 Neighbor Discovery events debugging is off
SM24DP4XA# no debug trace hunt
SM24DP4XA#
```

22. Ping Commands

Send ICMP echo messages.

Syntax:

ping ip { <v_ip_addr> | <v_ip_name> } [repeat <count>] [size <size>] [interval <seconds>]

ping ipv6 { <v_ipv6_addr> | <v_ipv6_name> } [repeat <count>] [size <size>] [interval <seconds>]

[interface vlan <v_vlan_id>]

Parameters:

ip	IP (ICMP) echo
ipv6	IPv6 (ICMPv6) echo
<domain_name>	ICMP destination IP domain name
<ipv4_addr>	ICMP destination IPv4 address
<domain_name>	ICMPv6 destination IP domain name
<ipv6_addr>	ICMPv6 destination IPv6 address
<domain_name>	ICMP destination IP domain name
<ipv4_addr>	ICMP destination IPv4 address
interval	Specify repeat interval
repeat	Specify repeat count
size	Specify datagram size
<0-30>	0-30; Default is 0
repeat	Specify repeat count
size	Specify datagram size
<1-60>	1-60; Default is 5
size	Specify datagram size
<2-1452>	2-1452; Default is 56 (excluding MAC, IP and ICMP headers)

Example:

```
SM24DP4XA# ping ip 192.158.1.77 interval 3 repeat 3 size 3
PING server 192.168.1.77, 3 bytes of data.
11 bytes from 192.168.1.77: icmp_seq=0, time<10ms
11 bytes from 192.168.1.77: icmp_seq=1, time<10ms
11 bytes from 192.168.1.77: icmp_seq=2, time<10ms
Sent 3 packets, received 3 OK, 0 bad
SM24DP4XA#
```

23. Platform Debug Commands

Platform debug configuration. **WARNING**: The use of 'debug' commands may negatively impact system behavior. Do not enable unless instructed to. Use 'platform debug deny' to disable debug commands.

NOTE: 'debug' command syntax, semantics and behavior are subject to change without notice.

Syntax: **platform** debug { allow | deny }

Parameters:	debug	Debug command setting
	allow	Allow debug commands
	deny	Deny debug commands

Example:

```
SM24DP4XA# platform debug deny
SM24DP4XA# platform debug allow

WARNING: The use of 'debug' commands may negatively impact system behavior.
Do not enable unless instructed to. (Use 'platform debug deny' to disable debug
commands.)

NOTE: 'debug' command syntax, semantics and behavior are subject to change
without notice.

SM24DP4XA#
```

Note: When platform debug is set to allow, additional debug commands become available in Exec mode. These commands are no longer available when platform debug is set to deny.

Debug Mode Commands (see Warning and Note above)

aaa	acl	afi
api	assert	auto-failover
board	chip	clear
conf	critd	dhcp
evc	file	firmware
frame	gvrp	heap
i2c	icfg	icli
init-modules	interrupt-monitor	ip
ipstack	ipv6	irq
led	lldp	logging
memory	misc	module
monitor	msg	no
ntp	packet	phy
phy-10g	prompt	psec
ptp	pvlan	qos
resume	scheduler	sfp
sgpio	show	snmp
snmp-server	spi-transfer	stp
suspend	sym	system
testing-script	thread	time
timer	trace	vlan
voice	vtss-ifindex-getnext	vtss-ifindex-iterate
wait	wis	

24. PTP Commands

Miscellaneous non-persistent Precision Time Protocol (1588) settings for a clock instance in Exec mode.

Note that PTP commands exist in other modes.

Syntax:

ptp <clockinst> local-clock { update | ratio <ratio> }

ptp <clockinst> wireless delay <base_delay> [<incr_delay>] interface (<port_type> [<v_port_type_list>])

ptp <clockinst> wireless mode interface (<port_type> [<v_port_type_list>])

ptp <clockinst> wireless pre-notification interface (<port_type> [<v_port_type_list>])

Parameters:

<0-3>	PTP Clock instance [0-3]
local-clock	Update local clock current time, or set clock ratio
wireless	Enable wireless mode for one or more interfaces.
ratio	Set the local master clock frequency ratio.
update	The local clock is synchronized to the system clock
<-10000000-10000000>	Ratio in units of 0,1 PPB, (ratio > 0 => faster clock, ratio < 0 => slower clock).
delay	Base wireless transmission delay (in pico seconds.
mode	Enable wireless mode for an interface.
pre-notification	Issue a pre notification that the wireless modem is going to change.
<0-1000000000>	Base wireless transmission delay (in pico seconds)
interface	Interface
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<port_type_list>	Port list for all port types
interface	
<port_type_list>	Port list in 1/1-25

Example:

```
SM24DP4XA# ptp 2 local-clock ratio 10000
SM24DP4XA# ptp 2 local-clock update
SM24DP4XA# ptp 0 wireless pre-notification interface GigabitEthernet 1/25
Wireless mode not available for ptp instance 0, port 25
SM24DP4XA# ptp 0 wireless pre-notification interface 10GigabitEthernet 1/4
Wireless mode not available for ptp instance 0, port 28
SM24DP4XA# ptp 0 wireless pre-notification interface 10GigabitEthernet 1/28
```

```
% No such interface: 10GigabitEthernet 1/28


SM24DP4XA#
```

Messages:

Wireless mode not available for ptp instance 0, port 9

W web 00:05:24 74/handler_config_ptp#367: Warning: The preferred adjust method is not supported

25. Send Commands

Send a message to other tty lines.

Syntax: **send** { * | <session_list> | console 0 | vty <vty_list> } <message>

Parameters:		
	*	All tty lines
	<0~16>	Send a message to multiple lines
	console	Primary terminal line
	vty	Virtual terminal
	*	All tty lines
	<0~16>	Send a message to multiple lines
	console	Primary terminal line
	vty	Virtual terminal
	<line128>	Message to be sent to lines, in 128 characters
	0	Send a message to a specific line
	<0~15>	Send a message to multiple lines
	<line128>	Message to be sent to lines, in 128 characters
	<line128>	Message to be sent to lines, in 128 characters

Example:

```
SM24DP4XA# send * yes,i do
Enter TEXT message.  End with the character 'y'.
y


---------------------------------------
*** Message from line 1:
es,i do


---------------------------------------
SM24DP4XA#
```

26. Show Commands

Show running system information.

Table : Show Commands

aaa	access	access-list	aggregation
clock	command-history-log	dms	dot1x
eps	erps	evc	event
history	interface	ip	ipmc
ipv6	lacp	line	link-oam
lldp	logging	loop-protect	mac
map-api-key	mep	monitor	mrp
mvr	ntp	platform	port-security
privilege	process	ptp	pvlan
qos	radius-server	rapid-ring	rmon
running-config	smtp	snmp	spanning-tree
svl	switchport	system	tacacs-server
terminal	udld	upnp	user-privilege
users	version	vlan	voice
web			

Each of the show commands is described below.

Command: **aaa**

Description: Show Login methods.

Syntax: **show** aaa [| {begin | exclude | include } LINE]

Parameters: | Output modifiers

<cr>

EXAMPLE

```
SM24DP4XA# show aaa
Authentication :
  console : local, fallback disabled
  telnet  : local, fallback disabled
  ssh     : local, fallback disabled
  http    : local, fallback disabled
  https   : no, fallback disabled
Authorization :
  console : no, commands disabled, fallback disabled
  telnet  : no, commands disabled, fallback disabled
  ssh     : no, commands disabled, fallback disabled
  http    : no, commands disabled, fallback disabled
  https   : no, commands disabled, fallback disabled
Accounting :
  console : no, commands disabled, exec disabled
  telnet  : no, commands disabled, exec disabled
  ssh     : no, commands disabled, exec disabled
  http    : no, commands disabled, exec disabled
  https   : no, commands disabled, exec disabled
SM24DP4XA#
```

Command: **access**

Description: Show Access management.

Syntax: **show** access management [statistics | <1~16>]

Parameters:		
	management	Access management configuration
	statistics	Statistics data
	<1~16>	ID of access management entry
	|	Output modifiers
	statistics	Statistics data
	<cr>	

Example:

```
SM24DP4XA# show access management statistics

Access Management Statistics:
-----------------------------
HTTP     Receive:          0    Allow:          0    Discard:          0
HTTPS    Receive:          0    Allow:          0    Discard:          0
SNMP     Receive:          0    Allow:          0    Discard:          0
TELNET   Receive:          0    Allow:          0    Discard:          0
SSH      Receive:          0    Allow:          0    Discard:          0
SM24DP4XA# show access management
Switch access management mode is disabled

W: WEB/HTTPS
S: SNMP
T: TELNET/SSH

Idx VID  Start IP Address               End IP Address                W S T
--- ---  ------------------------------ ------------------------------ - - -
SM24DP4XA#
```

Command: **access-list**

Description: Show Access list.

Syntax:

show access-list [interface [(<port_type> [<v_port_type_list>])]] [rate-limiter [<rate_limiter_list>]] [ace statistics [<ace_list>]]

show access-list ace-status [static] [link-oam] [loop-protect] [dhcp] [ptp] [upnp] [arp-inspection] [evc] [mep] [ipmc] [ip-source-guard] [ip-mgmt] [tt-loop] [y1564] [dms-client] [dms-server] [dms-ssdp] [dms-onvif] [agv-car] [dms-mdns] [ztp] [rapid-ring] [lacp-on-air] [conflicts] [switch <switch_list>]

Parameterss

ace	Access list entry
ace-status	The local ACEs status
interface	Select an interface to configure
rate-limiter	Rate limiter
<1~512>	ACE ID
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
rate-limiter	Rate limiter

Example:

```
SM24DP4XA# show access-list ace statistics interface

Switch access-list ace number: 0

GigabitEthernet 1/1 :
---------------------
GigabitEthernet 1/1 access-list action is permit
GigabitEthernet 1/1 access-list policy ID is 0
GigabitEthernet 1/1 access-list rate limiter ID is disabled
GigabitEthernet 1/1 access-list redirect is disabled
GigabitEthernet 1/1 access-list logging is disabled
GigabitEthernet 1/1 access-list shutdown is disabled
GigabitEthernet 1/1 access-list port-state is enabled
GigabitEthernet 1/1 access-list counter is 0

-- more --, next page: Space, continue: g, quit: ^C
```

aggregation

Show Aggregation port configuration.

Syntax:

show aggregation [mode]

Parameters:

mode Traffic distribution mode

EXAMPLE

```
SM24DP4XA# show aggregation mode
Aggregation Mode:

SMAC  : Enabled
DMAC  : Disabled
IP    : Enabled
Port  : Enabled
SM24DP4XA#
```

clock

Show time-of-day clock.

SYNTAX:

show clock [detail]

Parameters:

detail Display detailed information

EXAMPLE

```
SM24DP4XA# show clock
System Time     : 2011-01-03T16:41:57+00:00
SM24DP4XA#
SM24DP4XA# show clock detail
System Time     : 2011-01-01T01:00:05+00:00

Timezone : Timezone Offset : 0 ( 0 minutes)
Timezone Acronym :

Daylight Saving Time Mode : Disabled.
Daylight Saving Time Start Time Settings :
       Week: 1
       Day: 1
       Month: 1
       Date: 1
       Year: 2014
       Hour: 0
       Minute: 0
Daylight Saving Time End Time Settings :
       Week: 1
       Day: 1
       Month: 1
       Date: 1
       Year: 2097
       Hour: 0
       Minute: 0
-- more --, next page: Space, continue: g, quit: ^C
```

command-history-log

Show Command History List.

SYNTAX:

show command-history-log status

Parameters:

status Enable/Disable to Save Command History to Flash

| Output modifiers

<cr>

EXAMPLE

```
SM24DP4XA# show command-history-log status
The status of termal for Command History Feature : Disable
SM24DP4XA#
```

dms

Show Device Manangement System settings.

SYNTAX: **show** dms <cr>

Parameters:

EXAMPLE

```
SM24DP4XA# show dms
DMS Controller Capability : On
Discovery : Arp->On, UPNP->On, NBNS->On, LLDP->On, Onvif->On, Bonjour->On
DMS total device: 2

======= DMS Entry Information Start ============================
(001),MAC(00-c0-f2-49-3c-55),PA_MAC(00-00-00-00-00-00),port(0),p_port(0),C_IP(19
2.168.1.77),C_sub(255.255.255.0),C_gw(192.168.1.254),http_port(80),IP1(192.168.1
.77),IP2(169.254.173.12),IP1_U(3),UM(0),vid(1),prio(99),manufacturers( SM24DP4XA
),d_name(SM24DP4XA),type(1001)(29),status(1),PoE(NoN),group(0)(0),app_fw(0)(0)(0
)(0),time(8723)

(002),MAC(00-1b-11-b2-6d-4b),PA_MAC(00-c0-f2-49-3c-55),port(29),p_port(0),up_lin
k_MAC(00-00-00-00-00-00),up_link_port(0),C_IP(192.168.1.99),C_sub(0.0.0.0),C_gw(
0.0.0.0),http_port(80),IP1(192.168.1.99),IP2(0.0.0.0),IP1_U(3),UM(0),vid(1),prio
(99),manufacturers( ),d_name(),auth(/),type(2001)(0),status(1)(0)(0),PoE(NoN),ac
count(),pwd(),media(),profile(),strim(),info/auth(0/0),group(0)(0)(1),app_fw(0)(
0)(0)(0),ver(),time(8722)

======= DMS Entry Information end ==============================

======= DMS Grouping Information start ==============================
Grouping Entry Cnt(0)

======= DMS Grouping Information end ==============================
SM24DP4XA#
```

dot1x

Show IEEE Standard for port-based Network Access Control.

SYNTAX

show dot1x statistics { eapol | radius | all } [interface (<port_type> [<v_port_type_list>])]

show dot1x status [interface (<port_type> [<v_port_type_list>])] [brief

Parameters

statistics	Shows statistics for either eapol or radius.
status	Shows dot1x status, such as admin state, port state and last source.
all	Show all dot1x statistics
eapol	Show EAPOL statistics
radius	Show Backend Server statistics
<port_type >	GigabitEthernet or 10GigabitEthernet
<port_type_list>	Port list in 1/1-24 for Gigabitethernet, 1/4 for 10Gigabitethernet
|	Output modifiers
brief	Show status in a brief format
interface	Interface
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port

EXAMPLE 1

```
SM24DP4XA# show dot1x status interface 10 1/3-6
% No such interface: 10GigabitEthernet 1/5

SM24DP4XA# show dot1x status interface 10 1/3-4
10GigabitEthernet 1/3 :
-----------------------
Admin State        Port State            Last Source       Last ID
-----------------  --------------------  -----------------  -------------
Force Authorized    Link Down             -                -

Current Radius QOS    Current Radius VLAN   Current Guest VLAN
--------------------  --------------------  --------------------
-                     -                    -
10GigabitEthernet 1/4 :
-----------------------
```

```
Admin State        Port State            Last Source       Last ID
-----------------  --------------------  ----------------  -------------
Force Authorized   Link Down             -                 -

Current Radius QOS    Current Radius VLAN   Current Guest VLAN
--------------------  --------------------  --------------------
-                     -                     -
SM24DP4XA#
```

EXAMPLE 2

```
SM24DP4XA# show dot1x statistics all
GigabitEthernet 1/1 EAPOL Statistics:

Rx Total:                            0   Tx Total:
    0
Rx Response/Id:                       0   Tx Request/Id:
    0
Rx Response:                         0   Tx Request:
    0
Rx Start:                            0
Rx Logoff:                           0
Rx Invalid Type:                      0
Rx Invalid Length:                    0

GigabitEthernet 1/1 Backend Server Statistics:

Rx Access Challenges:                 0   Tx Responses:
    0
Rx Other Requests:                    0
Rx Auth. Successes:                   0
Rx Auth. Failures:                    0

GigabitEthernet 1/2 EAPOL Statistics:

Rx Total:                            0   Tx Total:
    0
```

```
Rx Response/Id:                       0   Tx Request/Id:
    0
Rx Response:                          0   Tx Request:
    0
Rx Start:                            0
Rx Logoff:                           0
Rx Invalid Type:                      0
Rx Invalid Length:                    0

GigabitEthernet 1/2 Backend Server Statistics:

Rx Access Challenges:                 0   Tx Responses:
    0
Rx Other Requests:                    0
Rx Auth. Successes:                   0
Rx Auth. Failures:                    0

GigabitEthernet 1/3 EAPOL Statistics:

-- more --, next page: Space, continue: g, quit: ^C
```

EXAMPLE 3

```
SM24DP4XA# show dot1x statistics eapol interface * 1/3-7
                     Rx      Tx      Rx      Tx      Rx      Tx      Rx      Rx      Rx
Interface             Total   Total   RespId  ReqId   Resp    Req     Start   Logoff  Error
--------------------  ------  ------  ------  ------  ------  ------  ------  ------  -----
GigabitEthernet 1/3    0       0       0       0       0       0       0       0       0
GigabitEthernet 1/4    0       0       0       0       0       0       0       0       0
GigabitEthernet 1/5    0       0       0       0       0       0       0       0       0
GigabitEthernet 1/6    0       0       0       0       0       0       0       0       0
GigabitEthernet 1/7    0       0       0       0       0       0       0       0       0
10GigabitEthernet 1/3  0       0       0       0       0       0       0       0       0
10GigabitEthernet 1/4  0       0       0       0       0       0       0       0       0
```

EXAMPLE 4

```
SM24DP4XA# show dot1x statistics radius interface 10GigabitEthernet 1/1-4
                     Rx Access   Rx Other    Rx Auth.    Rx Auth.    Tx MAC
Interface            Challenges  Requests    Successes   Failures    Responses   Address
-------------------- ----------  ----------  ----------  ----------  ----------  -------
10GigabitEthernet 1/1  0         0          0          0          0   -
10GigabitEthernet 1/2  0         0          0          0          0   -
10GigabitEthernet 1/3  0         0          0          0          0   -
10GigabitEthernet 1/4  0         0          0          0          0   -
SM24DP4XA#
```

eps

Show Ethernet Protection Switching.

SYNTAX:

show eps [<range_list>] [detail]

Parameters:

<Inst : range_list>	The range of EPS instances.
detail	Show detailed state including configuration information.

EXAMPLE

```
SM24DP4XA# show eps

EPS state is:
    Inst       State    Wstate    Pstate    TxAps r b    RxAps r b    Fop
Pm    FopCm    FopNr    FopNoAps
       1     Disable       Ok        Ok       NR 0 0       NR 0 0    Fal
se    False    False      False
       2     Disable       Ok        Ok       NR 0 0       NR 0 0    Fal
se    False    False      False
       3     Disable       Ok        Ok       NR 0 0       NR 0 0    Fal
se    False    False       True

SM24DP4XA# show eps detail

EPS state is:
    Inst       State    Wstate    Pstate    TxAps r b    RxAps r b    Fop
Pm    FopCm    FopNr    FopNoAps
       1     Disable       Ok        Ok       NR 0 0       NR 0 0    Fal
se    False    False      False
       2     Disable       Ok        Ok       NR 0 0       NR 0 0    Fal
se    False    False      False
       3     Disable       Ok        Ok       NR 0 0       NR 0 0    Fal
se    False    False       True
```

```
EPS Configuration is:
    Inst     Dom     Archi     Wflow     Pflow     Wmep     Pmep     APSmep
 Direct     Revert     Wtr     Hold     Aps
       1    Port    1plus1        1        2        3        4         1
 Unidir      False     w5m       0   False
       2    Port    1plus1        5        6        7        8         9
 Unidir      False     w5m       0   False
       3    Port     1for1        2        3        4        5         6
  Bidir      False     w5m       0    True

EPS Command is:
    Inst         Command
       1            none
       2            none
       3            none

SM24DP4XA#
```

erps

Show Ethernet Ring Protection Switching.

SYNTAX

show erps [<1-64>] [detail | statistics]

Parameter

1~64	Zero or more ERPS group numbers
detail	Show detailed information
statistics	Show statistics

EXAMPLE

```
SM24DP4XA# show erps
(L=Link Up/Down; B=Blocked/Unblocked)      Maj RPL  RPL   RPL  FSM   R-APS
Gr Typ V Rev Port 0     L B Port 1     L B Grp Role Port  Blck State TX RX FOP
--+---+-+---+----------+-+-+----------+-+-+---+----+-----+----+-----+--+--+---
 1 M-I 2 Rev Gi 1/1     U B Gi 1/2     U B -   -    -     -    FS    Y     N
 2 S-I 2 Rev Gi 1/6     U B -          U U 1   -    -     -    PEND  Y     N
SM24DP4XA#
```

evc

Show Ethernet Virtual Connections.

SYNTAX

show evc statistics { [<uint> | all] } [ece [<uint>]] [interface <port_type> <port_type_list>] [green | yellow | red | discard] [frames | bytes]

show evc { [<uint> | all] } [ece [<uint>]]

Parameters

<EvcId : 1-1024>	EVC identifier
all	Process all EVCs
ece	EVC Control Entry
statistics	Statistic counters
bytes	Byte counters
discard	Discard counters
frames	Frame counters
green	Green counters
interface	Interface
red	Red counters
yellow	Yellow counters
<port_type >	GigabitEthernet or 10GigabitEthernet
<port_type_list>	Port list in 1/1-24 for Gigabitethernet, 1/4 for 10Gigabitethernet

EXAMPLE

```
SM24DP4XA# show evc ece



    Ingress Matching                                  Actions
                        Egress Outer Tag
    ------------------------------------------------- ------------------------
------------------------- -------------------------------------
ID   UNI Ports Tag Type VID      PCP DEI Frame Type    Direction  EVC ID Tag Po
p Count Policy ID Class    Mode     PCP/DEI Preservation PCP DEI Conflict
---- --------- -------- --------- --- --- ------------- ---------- ------ ------
------- --------- -------- -------- -------------------- --- --- --------
1    4,10-12,14 C-Tagged 0        5   Any IPv4          Both      1      1
        1         Enabled  Fixed              0   0   No
SM24DP4XA#
```

Command: **event**

Description: Show trap event configuration.

Syntax: **show** event

show event port

Parameters: port Show event port configuration

Example:

```
SM24DP4XA# show event
Group Name                      Severity Level    Syslog Mode   Trap Mode  SMTP Mode
------------------------------  ---------------  ------------  -------------------------
AC-Power                        Info             enable        disable      disable
ACL                             Info             enable        disable      disable
ACL-Log                         Info             enable        disable      disable
Access-Mgmt                     Info             enable        disable      disable
Auth-Failed                     Warning          enable        disable      disable
Cold-Start                      Warning          enable        disable      disable
Config-Info                     Info             enable        disable      disable
DC-Power                        Info             enable        disable      disable
DMS                             Info             enable        disable      disable
-- more --, next page: Space, continue: g, quit: ^C
SM24DP4XA# show event port
SM24DP4XA#
```

Command: **format**

Description: Display the current format of date, time and port description.

Syntax: **show format** <cr>

Parameters: None

Example:

```
SM24DP4XA# show format
formatDateTime : disable
dateTime       : yyyy-mm-dd
timeFormat     : 24 hour
formatPortDesc : disable
SM24DP4XA#
```

Command: **history**

Description: Display the session command history.

SYNTAX **show** history

EXAMPLE

```
SM24DP4XA# show history
  ptp 0 wireless pre-notification interface GigabitEthernet 1/25
  ptp 2 local-clock ratio 10000
  show access management statistics
  show access-list ace statistics interface
  show dot1x status
  show dot1x statistics
  show dot1x statistics all
  show eps
-- more --, next page: Space, continue: g, quit: ^C
```

Command: **interface**

Description: Show Interface status and configuration.

SYNTAX

show interface (<port_type> [<in_port_list>]) switchport [access | trunk |hybrid]

show interface (<port_type> [<v_port_type_list>]) CableDiag

show interface (<port_type> [<v_port_type_list>]) capabilities [detail]

show interface (<port_type> [<v_port_type_list>]) description

show interface (<port_type> [<v_port_type_list>]) statistics [{ packets | bytes | errors | discards | filtered | { priority [<priority_v_0_to_7>] } }] [{ up | down }]

show interface (<port_type> [<v_port_type_list>]) status

show interface vlan [<vlist>]

Parameters		
	*	All switches or All ports
	GigabitEthernet	1 Gigabit Ethernet Port
	10GigabitEthernet	10 Gigabit Ethernet Port
	vlan	VLAN status
	<port_type_list>	Port list for all port types
	CableDiag	Display the latest cable diagnostic results.
	capabilities	Display capabilities.
	detail	Display capabilities in detail.
	description	Show port description.

statistics	Display statistics counters.
status	Display status.
switchport	Show interface switchport information
<vlan_list>	VLAN list

EXAMPLE

```
SM24DP4XA# show interface vlan
VLAN1
  LINK: 00-c0-f2-49-3a-99 Mtu:1500 <UP BROADCAST RUNNING MULTICAST>
  IPv4: 192.168.1.77/24 192.168.1.255
  IPv4: 169.254.34.108/16 169.254.255.255
  IPv6: fe80::2c0:f2ff:fe49:3a99/64 <UP RUNNING>
VLAN4096
  LINK: 00-c0-f2-49-3a-99 Mtu:1500 <BROADCAST MULTICAST>
VLAN4097
  LINK: 00-c0-f2-49-3a-99 Mtu:1500 <BROADCAST MULTICAST>
SM24DP4XA# show interface 10GigabitEthernet 1/3-4 status
Interface              Mode     Speed & Duplex  Flow Control  Max Frame  Excessive  Link
---------------------  -------  --------------  ------------  ---------  ---------  ----
10GigabitEthernet 1/3   enabled  10Gfdx          disabled      4776       Discard    Down
10GigabitEthernet 1/4   enabled  10Gfdx          disabled      4776       Discard    Down
SM24DP4XA# show interface 10GigabitEthernet 1/3-4 statistics
10GigabitEthernet 1/3 Statistics:
Rx Packets:                          0   Tx Packets:         0
Rx Octets:                           0   Tx Octets:          0
Rx Unicast:                          0   Tx Unicast:         0
Rx Multicast:                        0   Tx Multicast:       0
Rx Broadcast:                        0   Tx Broadcast:       0
Rx Pause:                            0   Tx Pause:           0

Rx 64:                               0   Tx 64:              0
Rx 65-127:                           0   Tx 65-127:          0
Rx 128-255:                          0   Tx 128-255:         0
-- more --, next page: Space, continue: g, quit: ^C
SM24DP4XA# show interface 10GigabitEthernet 1/3-4 switchport
Name: 10GigabitEthernet 1/3
Administrative mode: access
```

```
Access Mode VLAN: 1
Trunk Native Mode VLAN: 1
Administrative Native VLAN tagging: disabled
Allowed VLANs: 1-4095
Hybrid port configuration
-------------------------
Port Type: C-Port
Acceptable Frame Type: All
Ingress filter: Disabled
Egress tagging: All except-native
Hybrid Native Mode VLAN: 1
Hybrid VLANs Enabled: 1-4095

Name: 10GigabitEthernet 1/4
Administrative mode: access
Access Mode VLAN: 1
Trunk Native Mode VLAN: 1
Administrative Native VLAN tagging: disabled
Allowed VLANs: 1-4095
Hybrid port configuration
-- more --, next page: Space, continue: g, quit: ^C
SM24DP4XA# show interface GigabitEthernet 1/3 capabilities

GigabitEthernet 1/3 Capabilities:
     Tx Central                                  Mon1      Mon2         Mon3
Port Wavelength  Bit Rate   Temperature   Vcc   (Bias)   (Tx PWR)     (Rx PWR)
---- ---------- ----------- ----------- ------- ------ ------------ ------------

  3        850   1000 Mbps     46.56 C  3.26 V   4 mA    -6.51 dBm        none

  Name/Model:           Transition      TN-SFP-SXD
  Type:                 1000BASE_SX
  Speed:                100,1000,auto
  Duplex:               full,auto
  Trunk encap. type:     802.1Q
  Trunk mode:           access,hybrid,trunk
```

```
  Channel:              yes
  Broadcast suppression: no
  Flowcontrol:          no
  Fast Start:           no
  QoS scheduling:       tx-(8q)
  CoS rewrite:          yes
  ToS rewrite:          yes
  UDLD:                 no
  Inline power:         no
  RMirror:              yes
  PortSecure:           yes
  Dot1x:                yes
SM24DP4XA# show interface GigabitEthernet 1/3 capabilities detail
GigabitEthernet 1/3 Capabilities:
Connector Type      : SFP or SFP Plus - LC
Fiber Type          : Multi-mode (MM)
TX Central Wavelength: 850
Bit Rate            : 1000 Mbps
Vendor OUI          : 00-c0-f2
Vendor name         : Transition
Vendor PN           : TN-SFP-SXD
Vendor revision     : 0000
Vendor Serial Number : 8672322
Data Code           : 110908
Temperature         : 46.50 C
Vcc                 : 3.26 V
Mon1(Bias)          : 4 mA
Mon2(TX PWR)        : -6.50 dBm
Mon3(RX PWR)        : none
  Name/Model:           Transition     TN-SFP-SXD
  Type:                 1000BASE_SX
  Speed:                100,1000,auto
  Duplex:               full,auto
  Trunk encap. type:     802.1Q
  Trunk mode:           access,hybrid,trunk
  Channel:              yes
```

```
  Broadcast suppression: no
  Flowcontrol:           no
  Fast Start:            no
  QoS scheduling:        tx-(8q)
  CoS rewrite:           yes
  ToS rewrite:           yes
  UDLD:                 no
  Inline power:          no
  RMirror:              yes
  PortSecure:            yes
  Dot1x:                yes
SM24DP4XA#
```

ip

Show Internet Protocol parameters.

SYNTAX

show ip arp

show ip arp inspection [interface (<port_type> [<in_port_type_list>]) | vlan <in_vlan_list>]

show ip arp inspection entry [dhcp-snooping | static] [interface (<port_type> [<in_port_type_list>])]

show ip dhcp detailed statistics { server | client | snooping | relay | normal-forward | combined }
[interface (<port_type> [<in_port_list>])]

show ip dhcp excluded-address

show ip dhcp pool [<pool_name>]

show ip dhcp relay [statistics]

show ip dhcp server

show ip dhcp server binding <ip>

show ip dhcp server binding [state { allocated | committed | expired }] [type { automatic | manual | expired }]

show ip dhcp server declined-ip

show ip dhcp server declined-ip <declined_ip>

show ip dhcp server statistics

show ip dhcp snooping [interface (<port_type> [<in_port_list>])]

show ip dhcp snooping table

show ip domain

show ip gateway address binding interface

show ip http

show ip http server secure status

show ip igmp snooping [vlan <v_vlan_list>] [group-database [interface (<port_type> [<v_port_type_list>])] [sfm-information]] [detail]

show ip igmp snooping mrouter [detail]

show ip interface brief

show ip link-local interface

show ip name-server

show ip route

show ip source binding [dhcp-snooping | static] [interface (<port_type> [<in_port_type_list>])]

show ip ssh

show ip ssh key

show ip statistics [system] [interface vlan <v_vlan_list>] [icmp] [icmp-msg <type>]

show ip telnet

show ip verify source [interface (<port_type> [<in_port_type_list>])]

Parameters

arp	Address Resolution Protocol
inspection	ARP inspection
interface	arp inspection entry interface config
<port_type>	Port type in Fast, Giga or Tengiga ethernet
<port_type_list>	List of Port ID, ex, 1/1,3-5;2/2-4,6
vlan	VLAN configuration
<vlan_list>	Select a VLAN id to configure
entry	arp inspection entries
dhcp-snooping	learn from dhcp snooping
static	setting from static entries
dhcp	Dynamic Host Configuration Protocol
relay	DHCP relay agent configuration
statistics	Traffic statistics
snooping	DHCP snooping
http	Hypertext Transfer Protocol
server	HTTP web server
secure	Secure
status	Status
igmp	Internet Group Management Protocol

snooping	Snooping IGMP
vlan	Search by VLAN
<vlan_list>	VLAN identifier(s): VID
group-database	Multicast group database from IGMP
sfm-information	Including source filter multicast information from IGMP
detail	Detail running information/statistics of IGMP snooping
mrouter	Multicast router port status in IGMP
detail	Detail running information/statistics of IGMP snooping
interface	IP interface status and configuration
brief	Brief IP interface status
name-server	Domain Name System
route	Display the current ip routing table
binding	ip source binding
dhcp-snooping	learn from dhcp snooping
ssh	Secure Shell
system	IPv4 system traffic
icmp	IPv4 ICMP traffic
icmp-msg	IPv4 ICMP traffic for designated message type
<0~255>	ICMP message type ranges from 0 to 255
verify	verify command
source	verify source
link-local	Link-Local address binding interface
interface	show Link-Local address binding interface

EXAMPLE 1

```
SM24DP4XA# show ip statistics system

IPv4 statistics:

  Rcvd:  2636402 total in 314176892 bytes
         1338090 local destination, 0 forwarding
         0 header error, 3342 address error, 0 unknown protocol
         0 no route, 0 truncated, 19668 discarded
  Sent:  1996424 total in 281473796 bytes
         1335746 generated, 0 forwarded
         0 no route, 0 discarded
```

```
  Frags: 0 reassemble (0 reassembled, 0 couldn't reassemble)
         0 fragment (0 fragmented, 0 couldn't fragment)
         0 fragment created
  Mcast: 637634 received in 33548184 bytes
         617966 sent in 29954634 bytes
  Bcast: 621308 received, 617966 sent
SM24DP4XA# show ip arp
192.168.1.77 via VLAN1:00-c0-f2-49-3a-99 Permanent
192.168.1.99 via VLAN1:00-1b-11-b2-6d-4b
192.168.1.254 (Incomplete)
SM24DP4XA#
```

EXAMPLE 2

```
SM24DP4XA# show ip dhcp server
DHCP server is globally enabled.
  Enabled VLANs are 10.
  DHCP server per port is disabled.
SM24DP4XA# show ip gateway interface
Gateway Address binding interface: 1
SM24DP4XA# show ip gateway interface
Gateway Address binding interface: 10
SM24DP4XA# show ip http
Switch HTTP web server is enabled
Switch HTTP web server port is 80
SM24DP4XA# show ip http server secure status
Switch secure HTTP web server is disabled
Switch secure HTTP web server port is 1
Switch secure HTTP web redirection is disabled
Switch secure HTTP certificate is presented
SM24DP4XA# show ip link-local interface
Link-Local Address binding interface: 1
SM24DP4XA#
```

EXAMPLE 3

```
SM24DP4XA# show ip igmp snooping vlan 1 group-database sfm-information
IGMP Snooping is enabled to start snooping IGMP control plane.
IGMP Group Database
Switch-1 IGMP Group Count: 0
SM24DP4XA#
SM24DP4XA# show ip igmp snooping vlan 10 detail

IGMP Snooping is enabled to start snooping IGMP control plane.
(IGMP proxy for JOIN/LEAVE mechanism is active)
Multicast streams destined to unregistered IGMP groups will be flooding.

Switch-1 IGMP Interface Status

IGMP snooping VLAN 10 interface is enabled.
Querier status is ACTIVE (Administrative Control: Join Querier-Election)
Querier Up time: 2440 seconds; Query Interval: 60 seconds
Querier address is not set and will use system's IP address of this interface.
Active IGMP Querier Address is 192.168.1.77
PRI:0 / RV:150 / QI:125 / QRI:100 / LMQI:10 / URI:1
RX IGMP Query:0 V1Join:0 V2Join:0 V3Join:0 V2Leave:0
TX IGMP Query:0 / (Source) Specific Query:0
IGMP RX Errors:0; Group Registration Count:0
Compatibility:IGMP-Auto / Querier Version:Default / Host Version:Default
Older Version Querier Present Timeout: 0 second
Older Version Host Present Timeout: 0 second
SM24DP4XA#
SM24DP4XA# show ip igmp snooping vlan 10 group-database interface * sfm-information
detail

IGMP Snooping is enabled to start snooping IGMP control plane.
(IGMP proxy for JOIN/LEAVE mechanism is active)
Multicast streams destined to unregistered IGMP groups will be flooding.
Groups in range 232.0.0.0/16 follow IGMP SSM registration service model.

IGMP Group Database
```

```
Switch-1 IGMP Group Count: 0
SM24DP4XA# show ip igmp snooping group-database vlan 1 detail

IGMP Snooping is disabled to stop snooping IGMP control plane.
Multicast streams destined to unregistered IGMP groups will be flooding.
Groups in range 232.0.0.0/8 follow IGMP SSM registration service model.

IGMP Group Database

Switch-1 IGMP Group Count: 0
SM24DP4XA#
```

EXAMPLE 4

```
SM24DP4XA# show ip igmp snooping vlan 1-100

IGMP Snooping is enabled to start snooping IGMP control plane.

Switch-1 IGMP Interface Status

IGMP snooping VLAN 1 interface is enabled.
Querier status is ACTIVE
RX IGMP Query:0 V1Join:0 V2Join:0 V3Join:0 V2Leave:0
TX IGMP Query:0 / (Source) Specific Query:0
Compatibility:Forced IGMPv3 / Querier Version:Version 3 / Host Version:Version 3

IGMP snooping VLAN 20 interface is enabled.
Querier status is ACTIVE
RX IGMP Query:0 V1Join:0 V2Join:0 V3Join:0 V2Leave:0
TX IGMP Query:0 / (Source) Specific Query:0
Compatibility:Forced IGMPv2 / Querier Version:Version 2 / Host Version:Version 2

SM24DP4XA# show ip link-local interface
Link-Local Address binding interface: 1
SM24DP4XA#
```

ipmc

Show IPv4/IPv6 multicast configuration.

SYNTAX

show ipmc profile [<word16>] [detail]

show ipmc range [<word16>]

Parameters

profile	IPMC profile configuration
range	A range of IPv4/IPv6 multicast addresses for the profile
< word16>	Profile name in 16 char's
detail	Detail information of a profile

EXAMPLE 1

```
SM24DP4XA# show ipmc profile
IPMC Profile is now enabled to start filtering.
Profile: Prof1 (In VER-INI Mode)
Description: firstProfile in IPMC Profile Table
Profile: Prof2 (In VER-INI Mode)
Description: secondProfile in IPMC Profile Table

SM24DP4XA# show ipmc range
Range Name   : a
Start Address: 233.20.20.2
End Address  : 233.20.20.20
Range Name   : b
Start Address: 233.20.20.60
End Address  : 233.20.20.80

SM24DP4XA# show ipmc profile range
IPMC Profile is now enabled to start filtering.
% Invalid profile name range.
SM24DP4XA# show ipmc profile


IPMC Profile is now enabled to start filtering.


Profile: IProfile1 (In IGMP Mode)
Description: ProilefM.1
HEAD-> Range1 (Permit the following range and log the matched entry)
```

```
Start Address: 233.20.20.60
End Address  : 233.20.20.80

Profile: Profile1 (In VER-INI Mode)
Description: ProfileN.2
SM24DP4XA# show ipmc profile detail ?
    |          Output modifiers
    <word16>    Profile name in 16 char's
    <cr>
SM24DP4XA# show ipmc profile detail

IPMC Profile is now enabled to start filtering.

Profile: IProfile1 (In IGMP Mode)
Description: ProilefM.1
HEAD-> Range1 (Permit the following range and log the matched entry)
Start Address: 233.20.20.60
End Address  : 233.20.20.80

IGMP will deny matched address between [224.0.0.0 <-> 233.20.20.59]
IGMP will permit and log matched address between [233.20.20.60 <-> 233.20.20.80]

IGMP will deny matched address between [233.20.20.81 <-> 239.255.255.255]
MLD will deny matched address between [ff00:: <-> ffff:ffff:ffff:ffff:ffff:ffff:
ffff:ffff]

Profile: Profile1 (In VER-INI Mode)
Description: ProfileN.2

IGMP will deny matched address between [224.0.0.0 <-> 239.255.255.255]
MLD will deny matched address between [ff00:: <-> ffff:ffff:ffff:ffff:ffff:ffff:
ffff:ffff]
SM24DP4XA#
```

EXAMPLE 2

```
SM24DP4XA# show ipmc range

Range Name   : Range1
Start Address: 233.20.20.60
End Address  : 233.20.20.80

Range Name   : Range2
Start Address: 233.20.20.80
End Address  : 233.20.20.88
SM24DP4XA#
```

Messages:

IPMC Profile is currently disabled, please enable profile to start filtering.

ipv6

Show IPv6 configuration parameters.

SYNTAX

show ipv6 interface [vlan <vlan_list> { brief | statistics }]

show ipv6 mld snooping [vlan <vlan_list>] [group-database [interface <port_type> <port_type_list>] [sfm-information]] [detail]

show ipv6 mld snooping mrouter [detail]

show ipv6 neighbor [interface vlan <vlan_list>]

show ipv6 route [interface vlan <vlan_list>]

show ipv6 statistics [system] [interface vlan <vlan_list>] [icmp] [icmp-msg <0~255>]

Parameters

1~64	Zero or more ERPS group numbers
interface	Select an interface to configure
vlan	VLAN of IPv6 interface
<vlan_list>	IPv6 interface VLAN list
brief	Brief summary of IPv6 status and configuration
statistics	Traffic statistics
mld	Multicasat Listener Discovery
snooping	Snooping MLD
vlan	Search by VLAN
<vlan_list>	VLAN identifier(s): VID
group-database	Multicast group database from MLD
interface	Search by port
<port_type>	Port type in Fast, Giga or Tengiga ethernet
<port_type_list>	List of Port ID, ex, 1/1,3-5;2/2-4,6
sfm-information	Including source filter multicast information from MLD
detail	Detail running information/statistics of MLD snooping
mrouter	Multicast router port status in MLD
neighbor	IPv6 neighbors
route	IPv6 routes
statistics	Traffic statistics
system	IPv6 system traffic
icmp	IPv6 ICMP traffic
icmp-msg	IPv6 ICMP traffic for designated message type
<0~255>	ICMP message type ranges from 0 to 255

EXAMPLE 1

```
SM24DP4XA# show ipv6 interface
IPv6 Vlan1 interface is up.
  Internet address is fe80::2c0:f2ff:fe49:3c55
  Static address is not set
  IP stack index (IFID) is 5
  Routing is disabled on this interface
  MTU is 1500 bytes
  IPv6 Statistics on Interface VLAN: 1
  Rcvd:  0 total in 0 byte
         0 local destination, 0 forwarding
         0 header error, 0 address error, 0 unknown protocol
         0 no route, 0 truncated, 0 discarded
  Sent:  10 total in 656 bytes
         10 generated, 0 forwarded
         0 discarded
  Frags: 0 reassemble (0 reassembled, 0 couldn't reassemble)
         0 fragment (0 fragmented, 0 couldn't fragment)
         0 fragment created
  Mcast: 0 received in 0 byte
         10 sent in 656 bytes
  Bcast: 0 received, 0 sent
IPv6 Vlan4097 interface is down.
  Internet address is not available
  Static address is not set
  IP stack index (IFID) is 4
  Routing is disabled on this interface
  MTU is 1500 bytes
SM24DP4XA# show ipv6 interface vlan 1-10 brief
IPv6 Vlan1 interface is up.
  Internet address is fe80::2c0:f2ff:fe49:3c55
  Static address is not set
SM24DP4XA#
```

EXAMPLE 2

```
SM24DP4XA# show ipv6 statistics system

IPv6 statistics:

  Rcvd:  0 total in 0 byte
         0 local destination, 0 forwarding
         0 header error, 0 address error, 0 unknown protocol
         0 no route, 0 truncated, 0 discarded
  Sent:  10 total in 656 bytes
         14 generated, 0 forwarded
         0 no route, 0 discarded
  Frags: 0 reassemble (0 reassembled, 0 couldn't reassemble)
         0 fragment (0 fragmented, 0 couldn't fragment)
         0 fragment created
  Mcast: 0 received in 0 byte
         10 sent in 656 bytes
  Bcast: 0 received, 0 sent
SM24DP4XA# show ipv6 neighbor
fe80::2c0:f2ff:fe49:3c55 via VLAN1: 00-c0-f2-49-3c-55 Permanent/REACHABLE
SM24DP4XA# show ipv6 route
::1/128 via ::1 <UP HOST>
SM24DP4XA# show ipv6 statistics icmp

IPv6 ICMP statistics:

  Rcvd: 0 Message, 0 Error
  Sent: 36 Messages, 0 Error
SM24DP4XA#
```

lacp

Show Link Aggreggation Control Protocol configuration/status.

SYNTAX

show lacp on-air

show lacp { internal | statistics | system-id | neighbor }

Parameters

internal	Internal LACP configuration
neighbor	Neighbor LACP status
on-air	LACP On Air configuration
statistics	Internal LACP statistics
system-id	LACP system id

EXAMPLE

```
SM24DP4XA# show lacp internal
Port                Mode      Key   Role    Timeout  Priority
-------------------  --------  ----  ------  -------  --------
Gi 1/1              disabled   Auto  Active  Fast     32768
Gi 1/2              disabled   Auto  Active  Fast     32768
Gi 1/3              disabled   Auto  Active  Fast     32768
Gi 1/4              disabled   Auto  Active  Fast     32768
-- more --, next page: Space, continue: g, quit: ^C
```

line

Show TTY line information.

SYNTAX

show line [alive]

Parameters

alive Display information about alive lines

EXAMPLE

```
SM24DP4XA# show line
Line is con 0.
    Not alive.
    Default privileged level is 2.
    Command line editing is disabled
    Display EXEC banner is enabled.
    Display Day banner is enabled.
    Terminal width is 80.
            length is 24.
            history size is 32.
            exec-timeout is 10 min 0 second.

    Current session privilege is 0.
    Elapsed time is 0 day 0 hour 0 min 0 sec.
    Idle time is 0 day 0 hour 0 min 0 sec.

Line is vty 0.
    * You are at this line now.
    Alive from Telnet.
    Default privileged level is 2.
    Command line editing is disabled
    Display EXEC banner is enabled.
    Display Day banner is enabled.
-- more --, next page: Space, continue: g, quit: ^C
```

link-oam

Show Link OAM configuration.

SYNTAX

show link-oam { [status] [link-monitor] [statistics] } [interface (<port_type> [<plist>])]

Parameters

|	Output modifiers
interface	Interface status and configuration
link-monitor	Display link-monitor status parameters
statistics	Display statistics parameters
status	Display local and remote node status parameters
internal	Internal LACP configuration
<port_type>	Port type in Fast, Giga or Tengiga ethernet
<port_type_list>	List of Port ID, ex, 1/1,3-5;2/2-4,6
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port

EXAMPLE

```
SM24DP4XA# show link-oam
    Interface            Control    Mode        Status
--------------------     ---------  -------   -----------
GigabitEthernet    1/1    disabled  passive   non operational
GigabitEthernet    1/2    disabled  passive   non operational
GigabitEthernet    1/3    disabled  passive   non operational
GigabitEthernet    1/4    disabled  passive   non operational
GigabitEthernet    1/5    disabled  passive   non operational
GigabitEthernet    1/6    disabled  passive   non operational
GigabitEthernet    1/7    disabled  passive   non operational
-- more --, next page: Space, continue: g, quit: ^C
SM24DP4XA# show link-oam link-monitor status

GigabitEthernet 1/1
----------------------------------------
Admin state:                        Disabled
PDU permission:                      Receive only
```

```
Discovery state:                    Fault state
Remote MAC Address:                  -

                                 Local client         Remote Client
                                 -------------        --------------

port status:                      non operational        -------
Mode:                            passive                -------
Unidirectional operation support:    disabled               -------
Remote loopback support:          disabled               -------
Link monitoring support:          enabled                -------
MIB retrieval support:            disabled               -------
OAM PDU Size:                     1500                  -------
Multiplexer state:                 Forwarding             -------
Parser state:                     Forwarding             -------
OUI:                             00-c0-f2               -------
PDU revision:                        0                   -------
-- more --, next page: Space, continue: g, quit: ^C
```

lldp

Display LLDP neighbors information.

SYNTAX

show lldp [interface (<port_type> [<v_port_type_list>])]

show lldp med media-vlan-policy [<v_0_to_31>]

show lldp med remote-device [interface (<port_type> [<port_list>])]

show lldp neighbors [interface (<port_type> [<v_port_type_list>])]

show lldp statistics [interface (<port_type> [<v_port_type_list>])]

Parameters

interface	Interface to display.
med	Display LLDP-MED neighbors information.
neighbors	Display LLDP neighbors information.
statistics	Display LLDP statistics information.
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
media-vlan-policy	Display media VLAN policies.
remote-device	Display remote device LLDP-MED neighbors information.
interface	Interface to display.

EXAMPLE 1

```
SM24DP4XA# show lldp
LLDP Configuration
------------------
TX Interval : 30
TX Hold : 4
TX Delay : 2
TX Reinit : 2
SM24DP4XA#
SM24DP4XA# show lldp med remote-device
No LLDP-MED entries found
SM24DP4XA# show lldp neighbors
No LLDP entries found
SM24DP4XA#
```

EXAMPLE 2

```
SM24DP4XA# show lldp neighbors
Local Interface     : GigabitEthernet 1/23
Chassis ID          : 18-7A-3B-38-8E-8A
Port ID             : 78
Port Description    : 2/25
System Name         : MINNW-0001
System Description  : Aruba JL256A 2930F-48G-PoE+-4SFP+ Switch, revision WC.16.11.0005,
ROM WC.16.01.0010
(/ws/swbuildm/rel_beluru_qaoff/code/build/lvm(swbuildm_rel_beluru_qaoff_rel_beluru))
System Capabilities : Bridge(+), Router(+)
Management Address  : 172.27.100.1 (IPv4)
Management Address  : fe80::1a7a:3bff:fe38:8e8a (IPv6)

Local Interface     : GigabitEthernet 1/29
Chassis ID          : PLYNB-W11-00053
Port ID             : 38-F3-AB-EF-83-92
Port Description    :
System Name         :
System Description  :
System Capabilities :

SM24DP4XA# show lldp interface GigabitEthernet 1/23
LLDP Configuration
------------------
TX Interval : 30
TX Hold : 4
TX Delay : 2
TX Reinit : 2
LLDP Port Configuration, Ena : Enabled, Dis : Disabled
-----------------------------------------------------
Port     TX/RX Mode      CDP Aware      Port Descr      Sys Name     Sys Descr     Sys
Capa     Mgmt Addr
-------------------------------------------------------------------------------------
 23      TX/RX           Dis            Ena           Ena          Ena           Ena
SM24DP4XA#
```

logging

Show Syslog.

SYNTAX

show logging <log_id> [switch <switch_list>]

show logging [info] [warning] [error] [emerg] [alert] [crit] [notice] [debug] [switch <switch_list>] [reverse]

show logging flash [category { debug | system | application }] [level { informational | notice | warning | error }]

Parameters

<1-4294967295>	Logging ID
|	Output modifiers
alert	Severity 1: Action must be taken immediately
crit	Severity 2: Critical conditions
debug	Severity 7: Debug-level messages
emerg	Severity 0: System is unusable
error	Severity 3: Error conditions
flash	Logging message on Flash
info	Severity 6: Informational messages
notice	Severity 5: Normal but significant condition
warning	Severity 4: Warning conditions
exclude	Exclude lines that match
include	Include lines that match
switch	Switch
category	Category of logging message
level	Severity level
application	Application category
debug	Debug category
system	System category
<line>	String to match output lines
<switch_list>	Switch ID list in 1

EXAMPLE 1

```
SM24DP4XA# show logging 1
Switch : 1
ID     : 1
Level  : Notice
Time   : 2011-01-01T00:00:12+00:00
```

```
Message:
LINK-UPDOWN: Interface Vlan 1, changed state to down.
SM24DP4XA# show logging alert
Switch logging host mode is disabled
Switch logging host address is null
Switch logging host port is 514
Number of entries on Switch 1:
Emerg       : 0
Alert       : 0
Crit        : 0
Error       : 0
Warning     : 9
Notice      : 2
Info        : 13
Debug       : 0
All         : 24

SM24DP4XA#
```

EXAMPLE 2

```
SM24DP4XA# show logging flash category application level error
No entries found
SM24DP4XA# show logging flash category application level warning
Category    | Level   | Time                      | Message
--------------------------------------------------------------------------------

Application | Warning     | 2011-01-01T00:00:13+00:00 | SFP module inserted on
port 4 Connector Type: SFP or SFP Plus - LC Fiber Type    : Reserved Tx Waveleng
th : 850 Baud Rate     : 10 Gbps Vendor OUI    : 00-c0-f2 Vendor Name   : Transi
tion       Vendor PN     : TN-10GSFP-SR     Vendor Rev    : 0001 Vendor SN     :
 8801306          Date Code     : 130114
Application | Warning     | 2011-01-01T00:00:14+00:00 | SFP module inserted on
port 1 Connector Type: SFP or SFP Plus - LC Fiber Type    : Multi-mode (MM) Tx W
avelength : 850 Baud Rate     : 1000 Mbps Vendor OUI    : 00-c0-f2 Vendor Name
 : Transition       Vendor PN     : TN-SFP-SXD       Vendor Rev    : 0000 Vendor
 SN     : 8672105          Date Code     : 091027
```

```
Application | Warning     | 2011-01-01T00:00:14+00:00 | Switch just made a cold boot
Application | Warning     | 2011-01-01T00:00:15+00:00 | SFP module inserted on port 3
Connector Type: SFP or SFP Plus - LC Fiber Type    : Reserved Tx Waveleng
th : 1310 Baud Rate     : 100 Mbps Vendor OUI    : 00-c0-f2 Vendor Name   : Transition
Vendor PN     : TN-SFP-OC3M      Vendor Rev    : 0001 Vendor SN
 : 8630439          Date Code     : 090625
-- more --, next page: Space, continue: g, quit: ^C
```

EXAMPLE 3

```
SM24DP4XA# show logging 23 include cpu
Switch : 1
ID     : 23
Level  : Info
Time   : 2011-01-01T01:09:42+00:00
Message:
Management IP address was changed by user 'admin' from 192.168.1.99:50031
SM24DP4XA# show logging 14 switch 1
Switch : 1
ID     : 14
Level  : Info
Time   : 2011-01-01T00:00:42+00:00
Message:
DMS: New Device(192.168.1.99) add in topology
SM24DP4XA#
```

Messages:

% No such switch ID: 2

Cannot find syslog ID 99 on Switch 1.

loop-protect

Show Loop protection configuration.

SYNTAX

show loop-protect [interface (<port_type> [<plist>])]

Parameters

interface	Interface status and configuration
<port_type >	GigabitEthernet or 10GigabitEthernet
<port_type_list>	Port list in 1/1-24 for Gigabitethernet, 1/4 for 10Gigabitethernet
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port

EXAMPLE

```
SM24DP4XA# show loop-protect

Loop Protection Configuration

====================================

Loop Protection   : Disable

Transmission Time : 5 sec

Shutdown Time     : 180 sec

GigabitEthernet 1/1

------------------------------

    Loop protect mode is enabled.

    Action is shutdown.

    Transmit mode is enabled.

    No loop.

    The number of loops is 0.

    Status is down.

-- more --, next page: Space, continue: g, quit: ^C
```

Messages: *% No such interface type: 8*

mac

Show MAC Address Table information.

SYNTAX

show mac address-table [conf | static | aging-time | { { learning | count } [interface (<port_type> [<v_port_type_list>]) | vlan <v_vlan_id_2>] } | { address <v_mac_addr> [vlan <v_vlan_id>] } | vlan <v_vlan_id_1> | interface (<port_type> [<v_port_type_list_1>])]

Parameters

|	Output modifiers
address	MAC address lookup
aging-time	Aging time
conf	User added static mac addresses
count	Total number of mac addresses
interface	Select an interface to configure
learning	Learn/disable/secure state
static	All static mac addresses
vlan	Addresses in this VLAN
<mac_addr>	48 bit MAC address: xx:xx:xx:xx:xx:xx
vlan	VLAN lookup
<vlan_id>	VLAN IDs 1-4095
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<port_type_list>	Port list in 1/1-24,29

EXAMPLE

```
SM24DP4XA# show mac address-table static
Type    VID  MAC Address       Ports
Static  1    33:33:00:00:00:01  GigabitEthernet 1/1-25 10GigabitEthernet 1/1-4 CPU
Static  1    33:33:00:00:00:02  GigabitEthernet 1/1-25 10GigabitEthernet 1/1-4 CPU
Static  1    33:33:ff:49:3a:99  GigabitEthernet 1/1-25 10GigabitEthernet 1/1-4 CPU
Static  1    ff:ff:ff:ff:ff:ff  GigabitEthernet 1/1-25 10GigabitEthernet 1/1-4 CPU
SM24DP4XA# show mac address-table aging-time
MAC Age Time: 300
SM24DP4XA# show mac address-table count vlan 1
Mac entry count for Vlan 1:
```

```
---------------------------
Dynamic address count  : 1
Static address count   : 4
Total entry count      : 5
SM24DP4XA# show mac address-table vlan 10
SM24DP4XA# show mac address-table interface GigabitEthernet 1/3
Type    VID  MAC Address       Ports
Static  1    33:33:00:00:00:01  GigabitEthernet 1/1-24,29 10GigabitEthernet 1/1-4 CPU
Static  1    33:33:00:00:00:02  GigabitEthernet 1/1-24,29 10GigabitEthernet 1/1-4 CPU
Static  1    33:33:ff:49:3c:55  GigabitEthernet 1/1-24,29 10GigabitEthernet 1/1-4 CPU
Static  1    ff:ff:ff:ff:ff:ff  GigabitEthernet 1/1-24,29 10GigabitEthernet 1/1-4 CPU
SM24DP4XA# show mac address-table learning vlan 10
Vlan 10 learning is enabled
SM24DP4XA#
```

Command: **map-api-key**

Description: Show Google Maps key configuration.

Sysntax: **show** map-api-key

Parameters: None.

Example:

```
SM24DP4XA# show map-api-key

Key    :

SM24DP4XA#
```

mep

Show Maintenance Entity Point.

SYNTAX **show mep** [<inst>] [peer | cc | lm | dm | lt | lb | tst | aps | client | ais | lck | pm | syslog | tlv | bfd | rt | lst | lm-avail] [lm-hli] [detail]

Parameters

<range_list>	The range of MEP instances
ais	Show AIS state
aps	Show APS state
bfd	show BFD state
cc	Show CC state
client	Show Client state
detail	Show detailed state including configuration information.
dm	Show DM state
lb	Show LB state
lck	Show LCK state
lm	Show LM state
lm-avail	show Availability state
lm-hli	show LM HLI state
lst	show LST state
lt	Show LT state
peer	Show peer mep state
pm	Show PM state
rt	show RT state
syslog	Show Syslog state
tlv	show TLV state
tst	Show TST state

EXAMPLE

```
SM24DP4XA# show mep
MEP state is:
  Inst  cLevel  cMeg  cMep  cAis  cLck cLoop cConf  cDeg  cSsf  aBlk  aTsd  aTsf
  Peer MEP  cLoc  cRdi cPeriod cPrio
     1   False False False False False False False False  True False False  True
     2   False False False False False False False False  True False False  True
     3   False False False False False False False False  True False False  True
SM24DP4XA#
```

monitor

Show Monitoring mirror session(s).

SYNTAX

show monitor [session { <session_number> | all | remote }]

Parameters

session	MIRROR session
<1>	MIRROR session number
all	Show all MIRROR sessions
remote	Show only Remote MIRROR sessions

EXAMPLE

```
SM24DP4XA# show monitor session all
Session 1
---------
Mode                    : Disabled
Type                    : Mirror
Source VLAN(s)           :
SM24DP4XA#
```

mrp

Show MRP (Media Redundancy Protocol) status

SYNTAX

show mrp <domainId>

show mrp <domainId> diag

show mrp <domainId> ringport [{ primary | secondary }]

Parameters

<1-2>	DomainID to display status of
|	Output modifiers
diag	Diagnostic output for MRP Domain
ringport	Ringport status for MRP Domain
primary	Show status for primary Ringport
secondary	Show status for secondary Ringport

EXAMPLE

```
SM24DP4XA# show mrp 1 ringport primary
Primary Ring Port ID:      Undefined
SM24DP4XA# show mrp 1 ringport secondary
Secondary Ring Port ID:    Undefined
SM24DP4XA# show mrp 1 diag
Status                          : 0x01(Disabled)
Error                           : 0x00()
Transitions                      :           0
MRP Transmitted Frames           :           0
MRP Received Frames              :           0
MRP Received Errors              :           0
MRP Received Unrecognized        :           0
Tx Error Total                  :           0
Rx Vlan Frames Total             :           0
Rx Test Frames Total             :           0
Rx Topology Change Frames Total  :           0
Rx Link Change Frames Total      :           0
ACL counter 0                   :           0
ACL counter 1                   :           0
Round Trip Delay Minimum, ms     :           0
```

```
Round Trip Delay Average, ms     :           0
Round Trip Delay Maximum, ms     :           0
Ring Open Count                 :          0
Lost frames by sequence id       :           0
Mixed frames by sequence id      :           0
Received with different UUID     :           0
Loop detected                   :          0
SM24DP4XA#
```

mvr

Show Multicast VLAN Registration configuration.

SYNTAX

show mvr [vlan <v_vlan_list> | name <mvr_name>] [group-database [interface (<port_type> [<v_port_type_list>])] [sfm-information]] [detail]

Parameters

detail	Detail information/statistics of MVR group database
group-database	Multicast group database from MVR
name	Search by MVR name
vlan	Search by VLAN
interface	Search by port
sfm-information	Including source filter multicast information from MVR
<word16>	MVR multicast VLAN name
<vlan_list>	MVR multicast VLAN list
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<port_type_list>	Port list in 1/1-24,29
<port_type_list>	Port list in 1/1-4
|	Output modifiers
<port_type_list>	Port list for all port types
sfm-information	Including source filter multicast information from MVR

EXAMPLE 1

```
M24DP4XA# show mvr
MVR is now enabled to start group registration.

Switch-1 MVR-IGMP Interface Status
IGMP MVR VLAN 10 (Name is MCVID10) interface is enabled.
Querier status is IDLE
RX IGMP Query:0 V1Join:0 V2Join:0 V3Join:0 V2Leave:0
TX IGMP Query:0 / (Source) Specific Query:0
Interface Channel Profile: <No Associated Profile>

Switch-1 MVR-MLD Interface Status
MLD MVR VLAN 10 (Name is MCVID10) interface is enabled.
Querier status is IDLE
```

```
RX MLD Query:0 V1Report:0 V2Report:0 V1Done:0
TX MLD Query:0 / (Source) Specific Query:0
Interface Channel Profile: <No Associated Profile>
```

EXAMPLE 2

```
SM24DP4XA# show mvr group-database
MVR is now enabled to start group registration.
MVR Group Database
Switch-1 MVR Group Count: 0
SM24DP4XA#
```

Messages: *MVR is currently disabled, please enable MVR to start group registration.*

ntp

Show Network Time Protocol status.

SYNTAX

show ntp status

Parameters

status status

EXAMPLE

```
SM24DP4XA# show ntp status
NTP Mode : enabled
Automatic: enabled
Idx   Server IP host address (a.b.c.d)
---   --------------------------------------------------
1


Idx   Server IP host address (a.b.c.d) or a host name string
---   --------------------------------------------------
1     132.163.97.2
2     129.6.15.28
3
4
5
SM24DP4XA#
```

port-security

Show Port Security status. Port Security is a module with no direct configuration.

SYNTAX

show port-security port [interface (<port_type> [<v_port_type_list>])]

show port-security switch [interface (<port_type> [<v_port_type_list>])]

Parameters

port	Show MAC Addresses learned by Port Security
switch	Show Port Security status.
Interface	none
<port_type >	GigabitEthernet or 10GigabitEthernet
<port_type_list>	Port list in 1/1-24 for Gigabitethernet, 1/4 for 10Gigabitethernet
port	Show MAC Addresses learned by Port Security
switch	Show Port Security status.
|	Output modifiers
interface	Specify an interface
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<port_type_list>	Port list for all port types
<cr>	

EXAMPLE

```
SM24DP4XA# show port-security switch
Users:
L = Limit Control
8 = 802.1X
V = Voice VLAN
Interface               Users  State         MAC Cnt
----------------------  -----  ------------  -------
GigabitEthernet 1/1      ---    No users            0
GigabitEthernet 1/2      ---    No users            0
GigabitEthernet 1/3      ---    No users            0
GigabitEthernet 1/4      ---    No users            0
GigabitEthernet 1/5      ---    No users            0
-- more --, next page: Space, continue: g, quit: ^C
```

privilege

Display command privilege.

SYNTAX

show privilege <cr>

Parameters:

| Output modifiers

<cr>

EXAMPLE

```
SM24DP4XA# show priv
SM24DP4XA#
```

process

Display process load or process list.

SYNTAX

show process list [detail]

show process load

Parameters

list	list
load	load
detail	optionally show thread call stack

EXAMPLE

```
SM24DP4XA# show process load
Load average(100ms, 1s, 10s):   0%,   6%,   4%
SM24DP4XA# show process list
ID  State SetPrio CurPrio Name                1sec Load 10sec Load Stack Base Size  Used
--- ----- ------- ------- --------------------- --------- ---------- ---------- ----- -----
DSR N/A      N/A     N/A DSR Context               N/A       N/A       N/A   N/A   N/A
134 Sleep      7       7 SSH CLI Main              N/A       N/A 0x8344dca8  8192  1104
  3 Sleep      6       6 Network alarm support      N/A       N/A 0x84179280  4096  2008
  4 Sleep      7       7 Network support            N/A       N/A 0x84176fc0  8192  2624
  5 Susp      15      15 pthread.00000800           N/A       N/A 0x8418df78  7828   292
  6 Sleep      7       7 Main                      N/A       N/A 0x82eb1b8c 16384   644


-- more --, next page: Space, continue: g, quit: ^C
```

ptp

Show Precision time Protocol (1588).

SYNTAX

show ptp <clockinst> local-clock

show ptp <clockinst> slave-cfg

show ptp <clockinst> slave-table-unicast

show ptp <clockinst> { default | current | parent | time-property | filter | servo | servo-extended | clk | ho | uni | master-table-unicast | slave | { { port-state | port-ds | wireless | foreign-master-record } [interface (<port_type> [<v_port_type_list>])] } }

show ptp ext

show ptp system-time

Parameters

<0-3>	Show various PTP data
ext	Show the 1PPS and External clock output configuration and vcxo frequency rate adjustment option.
system-time	Show the PTP <-> system time synchronization mode.
clk	Show PTP slave clock options parameters.
current	Show PTP current data set (IEEE1588 paragraph 8.2.2).
default	Show PTP default data set (IEEE1588 paragraph 8.2.1).
filter	Show PTP filter parameters.
foreign-master-record	Show PTP port foreign masters.
ho	Show PTP slave holdover parameters.
local-clock	Show local clock current time
master-table-unicast	Show PTP master list of connected unicast slaves.
parent	Show PTP parent data set (IEEE1588 paragraph 8.2.3).
port-ds	Show PTP port data set (IEEE1588 paragraph 8.2.5).
port-state	Show PTP port state.
servo	Show PTP servo parameters.
servo-extended	Show PTP servo extended parameters.
slave	Show PTP slave clock lock threshold parameters.
slave-cfg	Show slave lock configuration
slave-table-unicast	Show the Unicast slave table of the requested unicast masters
time-property	Show PTP time properties data set (IEEE1588 paragraph 8.2.4).
uni	Show PTP slave unicast configuration parameters.

wireless Show PTP port wireless parameters.

EXAMPLE

```
SM24DP4XA# show ptp 0 ho
Holdover filter  Adj threshold (ppb)
---------------  --------------------
SM24DP4XA# show ptp ext
PTP External One PPS mode: Disable, Clock output enabled: False, frequency : 1,
Preferred adj method: LTC frequency
SM24DP4XA# show ptp system-time
System clock synch mode (No System clock to PTP Sync)
SM24DP4XA# show ptp 0 local-clock
PTP Time (0)    : 1970-01-01T01:55:14+00:00 004,502,168
Clock Adjustment method: Internal Timer
SM24DP4XA# show ptp 0 clk
Option  threshold  'P'constant
------  ---------  -----------
free     1000       2
SM24DP4XA# show ptp 0 current
stpRm  OffsetFromMaster    MeanPathDelay
-----  ------------------  ------------------
0       0.000,000,000       0.000,000,000
SM24DP4XA# show ptp 0 default
ClockInst  DeviceType  2StepFlag  Ports  vtss_appl_clock_identity     Dom
---------  ----------  ---------  -----  --------------------------  ---
0          Ord-Bound   False      29     00:c0:f2:ff:fe:49:3a:99     0

vtss_appl_clock_quality        Pri1  Pri2
-----------------------------  ----  ----
Cl:006 Ac:Unknwn Va:65535      128   128

Protocol       One-Way    VLAN Tag Enable    VID    PCP  DSCP
-------------  ---------  -----------------  -----  ---  ----
Ethernet       False      False              1      0    0
SM24DP4XA#
```

pvlan

Show Private VLAN status.

SYNTAX

pvlan PVLAN configuration

<cr>

Parameters

<range_list> PVLAN ID to show configuration for

isolation show isolation configuration

<cr>

EXAMPLE

```
SM24DP4XA# show pvlan
PVLAN ID  Ports
--------  --------------------------------------------------------------------------------
1         GigabitEthernet 1/1, GigabitEthernet 1/2, GigabitEthernet 1/3,
          GigabitEthernet 1/4, GigabitEthernet 1/5, GigabitEthernet 1/6,
          GigabitEthernet 1/7, GigabitEthernet 1/8, GigabitEthernet 1/9,
          GigabitEthernet 1/10, GigabitEthernet 1/11, GigabitEthernet 1/12,
          GigabitEthernet 1/13, GigabitEthernet 1/14, GigabitEthernet 1/15,
          GigabitEthernet 1/16, GigabitEthernet 1/17, GigabitEthernet 1/18,
          GigabitEthernet 1/19, GigabitEthernet 1/20, GigabitEthernet 1/21,
          GigabitEthernet 1/22, GigabitEthernet 1/23, GigabitEthernet 1/24,
          GigabitEthernet 1/25, 10GigabitEthernet 1/1, 10GigabitEthernet 1/2,
          10GigabitEthernet 1/3, 10GigabitEthernet 1/4
SM24DP4XA#
```

qos

Show Quality of Service.

SYNTAX

show qos [{ interface [(<port_type> [<port>])] } | wred | { maps [dscp-cos] [dscp-ingress-translation] [dscp-classify] [cos-dscp] [dscp-egress-translation] } | storm | { qce [<qce>] }]

Parameters

|	Output modifiers
interface	Interface
maps	Global QoS Maps/Tables
qce	QoS Control Entry
wred	Weighted Random Early Discard
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
cos-dscp	Map for cos to dscp
dscp-classify	Map for dscp classify enable
dscp-cos	Map for dscp to cos
dscp-egress-translation	Map for dscp egress translation
dscp-ingress-translation	Map for dscp ingress translation
<1-256>	QCE ID
<cr>	

EXAMPLE

```
SM24DP4XA# show qos wred
qos wred:
=========
Queue  Mode      Min Th  Mdp 1  Mdp 2  Mdp 3
-----  --------  ------  -----  -----  -----
    0  disabled      0      1      5     10
    1  disabled      0      1      5     10
    2  disabled      0      1      5     10
    3  disabled      0      1      5     10
    4  disabled      0      1      5     10
    5  disabled      0      1      5     10

SM24DP4XA#
```

radius-server

Show RADIUS configuration.

SYNTAX

show radius-server [statistics]

Parameters

radius-server	RADIUS configuration
|	Output modifiers
statistics	RADIUS statistics
<cr>	

EXAMPLE 1

```
SM24DP4XA# show radius-server
Global RADIUS Server Timeout      : 5 seconds
Global RADIUS Server Retransmit   : 3 times
Global RADIUS Server Deadtime     : 500 minutes
Global RADIUS Server Key          : b40b1aacb8cc9c4d28e0ac04f7b22e65aeafc6962ade
76127eedbf7cca85adc498cd62768b411dd43315fb9b2ba43bd312fff842642a5ceea16659f5e98acb13
Global RADIUS Server Attribute 4  : 192.168.1.3
Global RADIUS Server Attribute 95 :
Global RADIUS Server Attribute 32 : 4 95
RADIUS Server #1:
  Host name  : RadSrvr1
  Auth port  : 1812
  Acct port  : 1813
  Timeout    : 60 seconds
  Retransmit : 350 times
  Key        : 5dffafb07053519ac4741532f4bec6b5b01eaf83fe50a942cc699719391aa7a4b
d16d3dcec678e8fdc6606a30b37bec8ad357252de1a9cdc6dc7aa5953bdde21
RADIUS Server #2:
  Host name  : Radrvr2
  Auth port  : 1812
  Acct port  : 1813
  Timeout    : 45 seconds
  Retransmit : 222 times
  Key        : dbf59a9050e8e62265684d6e535f3979e7f88fad4c32d2d622e1ba2a17bdaf051
```

```
dc1e88e58db19b9aa5fa89c0bd6945f776ce23068a080df2697b98fb9658754
RADIUS Server #3:
  Host name  : radius3
  Auth port  : 1645
  Acct port  : 1646
  Timeout    : 1 seconds
  Retransmit : 99 times
  Key        : d6d2c2c6a1ea8dce1ac4fa0c7396fd6ea1cbd636fac894002997310b39516100e
3b5203f8426ee6073fc3528473d7442c24a385703b2a3b682cde5b619d15a30
SM24DP4XA#
```

EXAMPLE 2

```
SM24DP4XA# show radius-server statistics
Global RADIUS Server Timeout      : 5 seconds
Global RADIUS Server Retransmit   : 3 times
Global RADIUS Server Deadtime     : 500 minutes
Global RADIUS Server Key          : b40b1aacb8cc9c4d28e0ac04f7b22e65aeafc6962ade
76127eedbf7cca85adc498cd62768b411dd43315fb9b2ba43bd312fff842642a5ceea16659f5e98acb13
Global RADIUS Server Attribute 4  : 192.168.1.3
Global RADIUS Server Attribute 95 :
Global RADIUS Server Attribute 32 : 4 95
RADIUS Server #1:
  Host name  : RadSrvr1
  Auth port  : 1812
  Acct port  : 1813
  Timeout    : 60 seconds
  Retransmit : 350 times
  Key        : 5dffafb07053519ac4741532f4bec6b5b01eaf83fe50a942cc699719391aa7a4b
d16d3dcec678e8fdc6606a30b37bec8ad357252de1a9cdc6dc7aa5953bdde21
RADIUS Server #2:
  Host name  : Radrvr2
-- more --, next page: Space, continue: g, quit: ^C
```

Messages:

No servers configured!

rapid-ring

Show Rapid Ring configuration.

SYNTAX

show rapid-ring <cr>

Parameters

| Output modifiers

<cr>

EXAMPLE

```
SM24DP4XA# show rapid-ring
Entry Index              : 1
Rapid Ring Role          : Master
Rapid Ring Port 1        : 1
Rapid Ring Port 2        : 2
Rapid Ring Port 1 State   : Discarding
Rapid Ring Port 2 State   : Discarding

Entry Index              : 2
Rapid Ring Role          : Member
Rapid Ring Port 1        : 3
Rapid Ring Port 2        : 4
Rapid Ring Port 1 State   : Discarding
Rapid Ring Port 2 State   : Discarding

Entry Index              : 3
Rapid Ring Role          : Member
Rapid Ring Port 1        : 5
Rapid Ring Port 2        : 6
Rapid Ring Port 1 State   : Discarding
Rapid Ring Port 2 State   : Discarding

Entry Index              : 4
-- more --, next page: Space, continue: g, quit: ^C
```

rmon

Show Remote Monitoring statistics, history, alarm, events.

SYNTAX

show rmon alarm [<id_list>]

show rmon event [<id_list>]

show rmon history [<id_list>]

show rmon statistics [<id_list>]

Parameters

alarm	Display the RMON alarm table
event	Display the RMON event table
history	Display the RMON history table
statistics	Display the RMON statistics table

EXAMPLE

```
SM24DP4XA# show rmon alarm
SM24DP4XA# show rmon event

Event ID :     1
----------------
     Description     : one
     Type           : log
     Community       : public
     LastSent        : Never
SM24DP4XA# show rmon history

History ID :     1
------------------
    Data Source         : .1.3.6.1.2.1.2.2.1.1.1
    Data Bucket Request : 50
    Data Bucket Granted : 50
    Data Interval       : 1800
SM24DP4XA# show rmon statistics

Statistics ID :     1
---------------------
    Data Source : .1.3.6.1.2.1.2.2.1.1.2
```

```
    etherStatsDropEvents          : 0
    etherStatsOctets             : 0
    etherStatsPkts               : 0
    etherStatsBroadcastPkts       : 0
    etherStatsMulticastPkts       : 0
    etherStatsCRCAlignErrors      : 0
    etherStatsUndersizePkts       : 0
    etherStatsOversizePkts        : 0
    etherStatsFragments           : 0
    etherStatsJabbers             : 0
    etherStatsCollisions          : 0
    etherStatsPkts64Octets        : 0
    etherStatsPkts65to127Octets   : 0
    etherStatsPkts128to255Octets  : 0
    etherStatsPkts256to511Octets  : 0
    etherStatsPkts512to1023Octets : 0
    etherStatsPkts1024to1518Octets: 0
SM24DP4XA#
```

running-config

Show running system information.

SYNTAX

show running-config [all-defaults]

show running-config feature <feature_name> [all-defaults]

show running-config interface (<port_type> [<list>]) [all-defaults]

show running-config interface vlan <list> [all-defaults]

show running-config line { console | vty } <list> [all-defaults]

show running-config vlan { [<vlan_list>] } [all-defaults]

Parameters

|	Output modifiers
all-defaults	Include most/all default values
feature	Show configuration for specific feature
interface	Show specific interface or interfaces
line	Show line settings
vlan	VLAN
<cword>	Valid words are 'GVRP' 'R-Ring' 'access' 'access-list' 'aggregation' 'arp-inspection' 'auth' 'cli_telnet' 'clock' 'dhcp' 'dhcp-snooping' 'dhcp6_client_interface' 'dhcp_server' 'dms-server' 'dns' 'dot1x' 'eps' 'erps' 'evc' 'green-ethernet' 'http' 'icli' 'ip-igmp-snooping' 'ip-igmp-snooping-port' 'ip-igmp-snooping-vlan' 'ipmc-profile' 'ipmc-profile-range' 'ipv4' 'ipv6' 'ipv6-mld-snooping' 'ipv6-mld-snooping-port' 'ipv6-mld-snooping-vlan' 'lacp' 'link-oam' 'lldp' 'logging' 'loop-protect' 'mac' 'mep' 'mstp' 'mvr' 'mvr-port' 'ntp' 'phy' 'port' 'port-security' 'ptp' 'push_notification' 'pvlan' 'qos' 'rmon' 'smtp' 'snmp' 'source-guard' 'ssh' 'sysutil' 'trap_event' 'udld' 'upnp' 'user' 'vlan' 'voice-vlan' 'vtss-rmirror' 'vtun' 'web' 'web-privilege-group-level'
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
vlan	VLAN
console	Console
vty	VTY
<vlan_list>	List of VLAN numbers
all-defaults	Include most/all default values
<range_list>	List of console/VTYs
<cr>	

EXAMPLE 1

```
SM24DP4XA# show running-config
Building configuration...
username admin privilege 15 password encrypted
bbe8414a638514a4008be2da3dc4788a30d5405a827fa9711695d351a6eeaca55dd049a924e039a58da0bddd0f1e4f29c
811a32e24be2cb90e6a6bef6b8514aa
!
vlan 1
!
!
!
!
ip route 0.0.0.0 0.0.0.0 192.168.1.254
tzidx 0
exec-timeout autologout 0
system description Managed Gigabit Ethernet Fiber Switch (20) 100/1000Base-X SFP Slots + (4)
100/1000Base SFP/RJ-45 Combo Ports + (4) 1G/10GBase-X
!
interface GigabitEthernet 1/1
!
interface GigabitEthernet 1/2
!
interface GigabitEthernet 1/3
!
!
!
interface GigabitEthernet 1/29
 no pvlan 1
!
interface 10GigabitEthernet 1/1
!
interface 10GigabitEthernet 1/2
!
interface 10GigabitEthernet 1/3
!
interface 10GigabitEthernet 1/4
```

```
!
interface vlan 1
 ip address 192.168.1.77 255.255.255.0
!
!
spanning-tree aggregation
 spanning-tree link-type point-to-point
!
!
line console 0
!
line vty 0
!
line vty 1
!
line vty 2
!
!
!
line vty 13
!
line vty 14
!
line vty 15
!
!
end
```

EXAMPLE 2

```
SM24DP4XA# show running-config line vty 0
Building configuration...
line vty 0
 exec-timeout 1440 0
!
end
SM24DP4XA#
```

EXAMPLE 3

```
SM24DP4XA# show running-config all-defaults
Building configuration...
hostname SM24DP4XA
no logging on
command-history-log
no logging host
logging port 514
username admin privilege 15 password encrypted b154aab6df93ac2c12a61fdf6a585ee3e
dbe83bed7a1bd8cf01c12058da824151a03ea1d2b32f83251c47b08d976fe9f69aca43f1bc6a96b5
14b4e5d6deb3b89
no access management
no loop-protect
loop-protect transmit-time 5
loop-protect shutdown-time 180
no ip dhcp server per-port
! evc: 2048 disabled policers not shown
!
vlan 1
 name default
!
!
!
no ipmc profile
!
no ip routing
ip route 0.0.0.0 0.0.0.0 192.168.1.254
ip name-server 0 8.8.8.8
ip name-server 1 8.8.8.8
ip name-server 2 8.8.8.8
ip name-server 3 8.8.8.8
no ip domain name
no ip dns proxy
no mvr
no ip igmp host-proxy leave-proxy
no ip igmp host-proxy
```

```
ip igmp unknown-flooding
no ip igmp snooping
ip igmp ssm-range 232.0.0.0 8
no ip igmp snooping vlan
no ipv6 mld host-proxy leave-proxy
no ipv6 mld host-proxy
ipv6 mld unknown-flooding
no ipv6 mld snooping
ipv6 mld ssm-range ff3e:: 96
no ipv6 mld snooping vlan
vlan ethertype s-custom-port 0x88a8
-- more --, next page: Space, continue: g, quit: ^C
```

Messages: *% No such con, this system only has con 0*

smtp

Show email information.

SYNTAX

show smtp <cr>

Parameters

None

EXAMPLE

```
SM24DP4XA# show smtp
Mail Server     : 192.168.1.77
User Name       : admin
Password        : ********
Sender          : 362-LRT
Return Path     : support@lantronix.com
Email Adress 1  : jeffs@lantronix.com
Email Adress 2  :
Email Adress 3  :
Email Adress 4  :
Email Adress 5  :
Email Adress 6  :
SM24DP4XA#
```

snmp

Display SNMP parameters.

SYNTAX

show snmp

show snmp access [<group_name> { v1 | v2c | v3 | any } { auth | noauth | priv }]

show snmp community v3 [<community>]

show snmp host [<conf_name>] [system] [switch] [interface] [aaa]

show snmp info

show snmp mib context

show snmp mib ifmib ifIndex

show snmp security-to-group [{ v1 | v2c | v3 } <security_name>]

show snmp user [<username> <engineID>]

show snmp view [<view_name> <oid_subtree>]

Parameters

access	access configuration
community	Community
host	Set SNMP host's configurations
info	
mib	MIB(Management Information Base)
security-to-group	security-to-group configuration
user	User
view	MIB view configuration
|	Output modifiers
<word32>	group name
v3	SNMPv3
<word32>	Name of the host configuration
aaa	AAA event group
interface	Interface event group
switch	Switch event group
system	System event group
context	MIB context
ifmib	IF-MIB
v1	v1 security model
v2c	v2c security model
v3	v3 security model

<word32>	Security user name
<word32>	MIB view name
<cr>	

EXAMPLE

```
SM24DP4XA# show snmp
SNMP Configuration
SNMP Mode                    : enabled
SNMP Version                 : 2c
Read Community               : public
Write Community              : private
Trap Mode                    : disabled
SNMPv3 Communities Table:
Community   : public
Source IP   : 0.0.0.0
Source Mask : 0.0.0.0
Community   : private
Source IP   : 0.0.0.0
Source Mask : 0.0.0.0
SNMPv3 Users Table:
User Name              : default_user
Engine ID              : 800007e5017f000001
Security Level         : NoAuth, NoPriv
-- more --, next page: Space, continue: g, quit: ^C

SM24DP4XA# show snmp info
SNMP Info:
EngineID: 800007e5017f000001
config.mk oid :1.3.6.1.4.1.5205.2.115, length:9
Using    oid :1.3.6.1.4.1.868.2.77.3, length:10
Conf: EnterpriseId:868, SwitchId:2, ProductId:77, snmp-oid:868.2.77.3
SM24DP4XA#
```

spanning-tree

Show STP Bridge.

SYNTAX

show spanning-tree [summary | active | { interface (<port_type> [<v_port_type_list>]) } | { detailed [interface (<port_type> [<v_port_type_list_1>])] } | { mst [configuration | { <instance> [interface (<port_type> [<v_port_type_list_2>])] }] }]

Parameters

active	STP active interfaces
detailed	STP statistics
interface	Choose port
mst	Configuration
summary	STP summary
interface	List of port type and port ID, ex, Fast 1/1 Gigabit 2/3-5 Gigabit 3/2-4 Tengigabit 4/6
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<port_type_list>	Port list for all port types
<0-7>	Choose port
configuration	STP bridge instance no (0-7, CIST=0, MST2=1...)
interface	List of port type and port ID, ex, Fast 1/1 Gigabit 2/3-5, or Gigabit 3/2-4 Tengigabit 4/6
<cr>	

EXAMPLE

```
SM24DP4XA# show spanning-tree summary
Protocol Version: MSTP
Hello Time      : 2
Max Age         : 20
Forward Delay   : 15
Tx Hold Count   : 6
Max Hop Count   : 20
BPDU Filtering  : Disabled
BPDU Guard      : Disabled
Error Recovery  : Disabled
CIST Bridge is active
SM24DP4XA#
```

```
SM24DP4XA# show spanning-tree
CIST Bridge STP Status
Bridge ID    : 32768.00-C0-F2-49-3C-55
Root ID      : 32768.00-C0-F2-49-3C-55
Root Port    : -
Root PathCost: 0
Regional Root: 32768.00-C0-F2-49-3C-55
Int. PathCost: 0
Max Hops     : 20
TC Flag      : Steady
TC Count     : 0
TC Last      : -
Port       Port Role       State       Pri  PathCost  Edge  P2P  Uptime
---------  --------------  ----------  ---  --------  ----  ---  -------------
SM24DP4XA#
```

svl

Show Shared VLAN Learning configuration.

SYNTAX

show svl { [fid [<fid_list>]] | [vlan [<vlan_list>]] }

Parameters

|	Output modifiers
fid	Show a given FID
vlan	Show a given VLAN ID
<1~4095>	List of FIDs to show
<vlan_list>	List of VIDs to show
<cr>	

EXAMPLE

```
SM24DP4XA# show svl
FID   VLANs
----  ------------------------------
None
SM24DP4XA# configure terminal
SM24DP4XA(config)# svl fid 1 vlan 10
```

```
SM24DP4XA(config)# svl fid 333 vlan 1
SM24DP4XA(config)# end
SM24DP4XA# show svl
FID   VLANs
----  ----------------------------
   1  10
 333  1,333
SM24DP4XA#
```

switchport

Display switching mode characteristics.

SYNTAX

show switchport forbidden [{ vlan <vlan_list> } | { name <name> }]

Parameters

forbidden	Lookup VLAN Forbidden port entry.
|	Output modifiers
name	Forbidden VLANs by VLAN name
vlan	Forbidden VLAN by VLAN ID
<cr>	
<word31>	VLAN name
<vlan_list>	VLAN IDs 1-4095
<cr>	

EXAMPLE

```
SM24DP4XA# show switchport forbidden vlan 10
VLAN  Name                            Interfaces
----  ------------------------------  ----------
10    VLAN0010

SM24DP4XA# show switchport forbidden
% No forbidden VLANs found
SM24DP4XA#
```

system

Show system information.

SYNTAX

show system

show system cpu status

show system reboot

Parameters

cpu	CPU
reboot	Switch reboot scheduling
<cr>	

EXAMPLE 1

```
SM24DP4XA# show system
Model Name                  : SM24DP4XA
System Description          : Managed Gb EthFibeSwitch
Location                    : HEE
Contact                     : XXXXXXXX
System Name                 : SM24DP4XA
System Date                 : 2011-01-02T18:14:01+00:00
System Uptime               : 1d 18:14:01
Bootloader Version          : v1.15f
Firmware Version            : v7.20.0208 2024-08-14
Hardware Version            : v1.01.1
Mechanical Version          : v1.01
Serial Number               : A062118AR3700004
MAC Address                 : 00-c0-f2-49-3c-55
Memory                      : Total=59861 KBytes, Free=27137 KBytes, Max=26442 KBytes
FLASH                       : 0x40000000-0x41ffffff, 512 x 0x10000 blocks
Fan Speed                   : 4218(rpm)/0(rpm)
Powers                      : AC:11.72 V; DC1:0.0 V; DC2:0.0 V
Temperature 1               : 42(C) ; 107(F)
Temperature 2               : 46(C) ; 114(F)
SM24DP4XA#
```

EXAMPLE 2

```
SM24DP4XA# show system cpu status
    Average load in 100 ms  : 13%
    Average load in   1 sec : 7%
    Average load in  10 sec : 8%
SM24DP4XA# show system reboot
Switch Reboot Mode: Disable
Switch Reboot Entry:
            Reboot Time
  Week Day     HH : MM
 ----------    -------
  Monday        -  -
  Tuesday       -  -
  Wednesday     -  -
  Thursday      -  -
  Friday        -  -
  Saturday      -  -
  Sunday        -  -
SM24DP4XA#
```

tacacs-server

Show TACACS+ configuration.

SYNTAX

show tacacs-server

EXAMPLE

```
SM24DP4XA# show tacacs-server
Global TACACS+ Server Timeout      : 8 seconds
Global TACACS+ Server Deadtime     : 1 minutes
Global TACACS+ Server Key          :
TACACS+ Server #1:
  Host name  : TacSrvr1
  Port       : 49
  Timeout    : 60 seconds
  Key        :
c8eca52a07820058ea6dc9e39ae4db159b1bc59080183dfebc9e96222f17503fbc878236d5460110ee5e142
6e5ed0e67c9b001042fcdb2d85afa69bf2d3467cc
SM24DP4XA#
```

terminal

Show terminal configuration parameters.

SYNTAX

show terminal

EXAMPLE

```
SM24DP4XA# show terminal
Line is vty 0.
    * You are at this line now.
    Alive from Telnet.
    Default privileged level is 2.
    Command line editing is disabled
    Display EXEC banner is enabled.
    Display Day banner is enabled.
    Terminal width is 80.
            length is 24.
            history size is 32.
            exec-timeout is 10 min 0 second.
    Current session privilege is 15.
    Elapsed time is 0 day 3 hour 59 min 52 sec.
    Idle time is 0 day 0 hour 0 min 0 sec.
SM24DP4XA#
```

udld

Show Uni Directional Link Detection (UDLD) configurations, statistics and status.

SYNTAX

show udld [interface (<port_type> [<plist>])]

Parameters

interface	Choose port
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEtherne	10 Gigabit Ethernet Port
<port_type_list>	Port list for all port types

EXAMPLE

```
SM24DP4XA# show udld interface GigabitEthernet 1/1-2

GigabitEthernet 1/1
--------------------------------------------------------------------
UDLD Mode               : Disable
Admin State             : Disable
Message Time Interval(Sec): 7
Device ID(local)         : 00-C0-F2-49-3A-99
Device Name(local)       : SM24DP4XA
Bidirectional state      : Indeterminant
No neighbor cache information stored
--------------------

GigabitEthernet 1/2
--------------------------------------------------------------------
UDLD Mode               : Disable
Admin State             : Disable
Message Time Interval(Sec): 7
Device ID(local)         : 00-C0-F2-49-3A-99
Device Name(local)       : SM24DP4XA
Bidirectional state      : Indeterminant


-- more --, next page: Space, continue: g, quit: ^C
```

upnp

Display Universal Plug and Play configuration.

SYNTAX

show upnp

EXAMPLE

```
SM24DP4XA# show upnp
UPnP Mode                : disabled
UPnP TTL                 : 4
UPnP Advertising Duration : 100
SM24DP4XA#
```

user-privilege

Display Users privilege configuration.

SYNTAX

show user-privilege

EXAMPLE

```
SM24DP4XA# show user-privilege
username admin privilege 15 password encrypted YWRtaW4=
SM24DP4XA#

SM24DP4XA# show user-privilege
username admin privilege 15 password encrypted 253b5114d6089b31e8da931e413ab282a
b97ac420022f48b04df30764f71c5141fc2f83f6fc48be12dbc1568280fc3a4242ab3be53ac4bd3a
0a4bc3e89e3ee27
SM24DP4XA#
```

users

Display information about terminal lines.

SYNTAX

show users [myself]

Parameters

|	Output modifiers
myself	Display information about mine
<cr>	

EXAMPLE

```
SM24DP4XA# show users
Line is vty 0.
    * You are at this line now.
    Connection is from 192.168.1.99:57307 by Telnet.
    User name is admin.
    Privilege is 15.
    Elapsed time is 0 day 4 hour 10 min 24 sec.
    Idle time is 0 day 0 hour 0 min 0 sec.
```

version

Display System hardware and software information.

SYNTAX

show version [brief]

Parameters

brief

EXAMPLE

```
SM24DP4XA# show version brief
Version      : SM24DP4XA (standalone) v7.20.0208
Build Date   : 2024-08-14T17:59:51+08:00
SM24DP4XA# show version

MEMORY          : Total=59861 KBytes, Free=27135 KBytes, Max=26442 KBytes
FLASH           : 0x40000000-0x41ffffff, 512 x 0x10000 blocks
MAC Address     : 00-c0-f2-49-3c-55
Previous Restart : Warm

System Contact   : XXXXXXXX
System Name      : SM24DP4XA
System Location  : HRE!
System Time      : 2011-01-02T18:42:08+00:00
System Uptime    : 1d 18:42:08

Active Image
------------
Image           : managed
Version         : SM24DP4XA (standalone) v7.20.0208
Date            : 2023-09-14T17:59:51+08:00

Alternate Image
---------------
Image           : managed.bk
Version         : SM24DP4XA (standalone) v7.20.0190
Date            : 2023-08-18T15:37:28+08:00

SM24DP4XA#
```

vlan

Display VLAN status.

SYNTAX

show vlan membership [id <vlan_list> | name <name>] [admin | combined | erps | evc | gvrp | mep | mstp | mvr | nas | rmirror | vcl | voice-vlan | forbidden]

show vlan protocol [eth2 { <etype> | arp | ip | ipx | at }] [snap { <oui> | rfc-1042 | snap-8021h } <pid>] [llc <dsap> <ssap>]

show vlan status [interface (<port_type> [<plist>])] [admin | all | combined | conflicts | erps | evc | gvrp | mep | mstp | mvr | nas | rmirror | vcl | voice-vlan]

Parameters

all	Show all VLANs (if left out only access VLANs are shown)
brief	VLAN summary information
id	VLAN status by VLAN id
ip-subnet	Show VCL IP Subnet entries.
mac	Show VLAN MAC entries.
membership	VLAN membership
name	VLAN status by VLAN name
protocol	Protocol-based VLAN status
status	Show the VLANs configured for each interface.
<vlan_list>	VLAN IDs 1-4095
<ipv4_subnet>	Specify a specific IP Subnet.
address	Show a specific MAC entry.
<mac_ucast>	The specific MAC entry to show.
admin	Show the VLANs configured by administrator.
combined	Show the combined set of configured VLANs.
evc	Show the VLANs configured by EVC.
forbidden	Show VLANs configurations that has forbidden.
gvrp	Show the VLANs configured by GVRP.
id	VLAN membership by VLAN id
mep	Show the VLANs configured by MEP.
mrp	Show the VLANs configured by MRP.
mvr	Show the VLANs configured by MVR.
name	VLAN membership by VLAN name
nas	Show the VLANs configured by NAS.

rmirror	Show the VLANs configured by Remote mirroring.
voice-vlan	Show the VLANs configured by Voice VLAN.
<word31>	VLAN name
eth2	Ethernet protocol based VLAN status
llc	LLC based VLAN status
snap	SNAP-based VLAN status
admin	Show the VLANs configured by administrator.
all	Show VLANs configured VLANs for all VLAN users.
combined	Show the combined set of configured VLANs.
conflicts	Show VLAN configurations that have conflicts.
erps	Show the VLANs configured by ERPS.
gvrp	Show the VLANs configured by GVRP.
interface	Show the VLANs configured for a specific interface or interfaces.
mep	Show the VLANs configured by MEP.
mstp	Show the VLANs configured by MSTP.
mvr	Show the VLANs configured by MVR.
nas	Show the VLANs configured by NAS.
rmirror	Show the VLANs configured by Remote mirroring.
vcl	Show the VLANs configured by VCL.
voice-vlan	Show the VLANs configured by Voice VLAN.
<0x600-0xffff>	Ether Type (Range: 0x600 - 0xFFFF)
arp	Ether Type is ARP
at	Ether Type is AppleTalk
ip	Ether Type is IP
ipx	Ether Type is IPX
<0x0-0xff>	DSAP (Range: 0x00 - 0xFF)
<0x0-0xffffff>	SNAP OUI (Range 0x000000 - 0XFFFFFF)
rfc-1042	SNAP OUI is rfc-1042
snap-8021h	SNAP OUI is 8021h
<0x0-0xffff>	PID (Range: 0x0 - 0xFFFF)

EXAMPLE

```
SM24DP4XA# show vlan
VLAN  Name                            Interfaces
----  --------------------------------  ----------
1     default                         Gi 1/1-25 10G 1/1-4
```

```
SM24DP4XA#


SM24DP4XA# show vlan ip-subnet
SM24DP4XA# show vlan status
GigabitEthernet 1/1 :
---------------------
VLAN User   PortType       PVID  Frame Type     Ing Filter  Tx Tag            UVID  Conflicts
----------  -------------  ----  -------------  ----------  -----------------  ----  ---------
Combined    C-Port         1     All            Enabled     None               1       No
Admin       C-Port         1     All            Enabled     None               1
NAS                                                                                    No
GVRP                                                                                   No
MVR                                                                                    No
Voice VLAN                                                                             No
MSTP                                                                                   No
ERPS                                                                                   No
-- more --, next page: Space, continue: g, quit: ^C
SM24DP4XA# show vlan protocol eth2  ip
The requested protocol was not found
% (VCL Error - The requested entry was not found in the switch)
SM24DP4XA#
```

voice

Display Voice appliance attributes.

SYNTAX

show voice vlan [oui <oui> | interface (<port_type> [<port_list>])]

Parameters

vlan	VLAN for voice traffic
|	Output modifiers
interface	Select an interface to configure
oui	OUI configuration
*	All switches or All ports
GigabitEthernet	1 Gigabit Ethernet Port
10GigabitEthernet	10 Gigabit Ethernet Port
<port_type_list>	Port list for all port types
<oui>	OUI value
<port_type_list>	Port list in 1/1-25
<port_type_list>	Port list in 1/1-4

EXAMPLE

```
SM24DP4XA# show voice vlan
Switch voice vlan is enabled
Switch voice vlan ID is 1000
Switch voice vlan aging-time is 86400 seconds
Switch voice vlan traffic class is 7

Telephony OUI  Description
-------------  -----------

Voice VLAN switchport is configured on following:

GigabitEthernet 1/1 :
---------------------
GigabitEthernet 1/1 switchport voice vlan mode is disabled
GigabitEthernet 1/1 switchport voice security is disabled
GigabitEthernet 1/1 switchport voice discovery protocol is oui

GigabitEthernet 1/2 :
```

```
---------------------
GigabitEthernet 1/2 switchport voice vlan mode is auto
GigabitEthernet 1/2 switchport voice security is enabled
GigabitEthernet 1/2 switchport voice discovery protocol is lldp

-- more --, next page: Space, continue: g, quit: ^C
```

web

Show web privilege group Privilege Levels, which are:

CRO (Configuration Read-only),

CRW (Configuration/Execute Read/write),

SRO (Status/Statistics Read-only) and

SRW (Status/Statistics Read/write).

SYNTAX

show web privilege group [<group_name>] level

Parameters

privilege	Web privilege			
group	Web privilege group			
<cword>	Valid words are:			
	Aggregation	DHCP	DHCPv6_Client	DMS_client
	DMS_server	Debug	Diagnostics	EPS
	ERPS	ETH_LINK_OAM	EVC	IP
	IPMC_Snooping	Install_Wizard	LACP	LLDP
	Loop_Protect	MAC_Table	MEP	MRP
	MVR	Maintenance	NTP	PTP
	Ports	Private_VLANs	QoS	RMirror
	R_RING	SMTP	Security	Spanning_Tree
	System	TS_client	TS_server	Trap_Event
	Trouble_Shooting	UDLD	UPnP	VCL
	VLAN_Translation	VLANs	VTUN	Voice_VLAN
	XXRP	level	percepxion	
level	Web privilege group level			
|	Output modifiers			
<cr>				

EXAMPLE

```
SM24DP4XA# show web privilege group level
Group Name                      Privilege Level
                               CRO CRW SRO SRW
------------------------------ --- --- --- ---
Aggregation                      5  10   5  10
Debug                           15  15  15  15
DHCP                             5  10   5  10
```

```
DHCPv6_Client                     5  10   5  10
Diagnostics                       5  10   5  10
DMS_client                        5  10   5  10
DMS_server                        5  10   5  10
EPS                               5  10   5  10
ERPS                              5  10   5  10
ETH_LINK_OAM                      5  10   5  10
EVC                               5  10   5  10
Install_Wizard                    5  10   5  10
IP                                5  10   5  10
IPMC_Snooping                     5  10   5  10
LACP                              5  10   5  10
LLDP                              5  10   5  10
Loop_Protect                      5  10   5  10
MAC_Table                         5  10   5  10
Maintenance                      15  15  15  15
SM24DP4XA# show web privilege group percepxion level
Group Name                     Privilege Level
                              CRO CRW SRO SRW
------------------------------ --- --- --- ---
percepxion                      5  10   5  10
SM24DP4XA#
```

27. Terminal Commands

Set terminal line parameters.

Syntax

terminal editing

terminal exec-timeout <min> [<sec>]

terminal help

terminal history size <history_size>

terminal length <lines>

terminal width <width>

Parameters

editing	Enable command line editing
exec-timeout	Set the EXEC timeout
help	Description of the interactive help system
history	Control the command history function
length	Set number of lines on a screen
width	Set width of the display terminal
size	Set history buffer size
<0-32>	Number of history commands, 0 means disable
<0,3-512>	Number of lines on screen (0 for no pausing)
<0,40-512>	Number of characters on a screen line (0 for unlimited width)
size	Set history buffer size
<0-32>	Number of history commands, 0 means disable
<0,3-512>	Number of lines on screen (0 for no pausing)
<0,40-512>	Number of characters on a screen line (0 for unlimited width)

EXAMPLE

```
SM24DP4XA# terminal exec-timeout 1440
SM24DP4XA# terminal help
Help may be requested at any point in a command by entering
a question mark '?'.  If nothing matches, the help list will
be empty and you must backup until entering a '?' shows the
available options.
Two styles of help are provided:
1. Full help is available when you are ready to enter a
   command argument (e.g. 'show ?') and describes each possible
```

```
   argument.
2. Partial help is provided when an abbreviated argument is entered
   and you want to know what arguments match the input
   (e.g. 'show pr?'.)
SM24DP4XA#
```

Appendix A. DHCP Per Port

You can configure DHCP Per Port via the CLI and Web UI. The DHCP Per Port factory default mode is Disabled. See the *SM24DP4XA Web User Guide* for web UI mode operation.

The switch's DHCP server assigns IP addresses. Clients get IP addresses in sequence and the switch assigns IP addresses to on a per-port basis starting from the configured IP range. For example, if the IP address range is configured as 192.168.10.20 - 192.168.10.37 with one DHCP device connected to port 1, the client will always get IP address 192.168.10.20, then port 3 is always distributed IP address 192.168.10.22, even if port 2 is an empty port (because port 2 is always distributed IP address 192.168.10.21).

The switch does not allow a DHCP per Port pool to include the switch's address.
IP address assigned range and VLAN 1 should stay in the same subnet mask.
The configurable IP address range is allowed to configure over 18 IP addresses, but the switch always assigns one IP address per port connecting device.

When the DHCP Per Port function is enabled, the switch software will automatically create the related DHCP pool named "DHCP_Per _Port".

Once the DHCP Per Port function is enabled on one switch, IPv4 DHCP client at VLAN1 mode (DMS DHCP mode), DHCP server mode are all limited to be enabled at the same time (an error message displays if attempted).

If the DHCP server pool has been configured, once you enable the DHCP Per port function that DHCP server pool configuration will be overwritten.

Only for VLAN 1, clients issued DHCP packets will not be broadcast/forwarded to other ports. DHCP packets in others VLANs will be broadcast/forwarded to others ports.

The DHCP Per Port function allows the switch to connect only one DHCP client device.

The DHCP Per Port function is configured and shown using these CLI commands:

```
# show ip dhcp server
(config)# ip dhcp server per-port
(config)# no ip dhcp server per-port
```

The CLI commands to configure and show DHCP Per Port are described below.

Command: Show the current DHCP Server and DHCP Per Port configuration

Syntax: **show ip dhcp server** <cr>

Description: Show if DHCP server is globally enabled or disabled, if all VLANs are disabled or enabled, and if the DHCP server Per Port function is disabled or enabled.

Example: Display the current DHCP Server and Per Port configuration, change the config, and display the results:

```
SM24DP4XA(config)# do show ip dhcp server

DHCP server is globally enabled.
  Enabled VLANs are 1.
  DHCP server per port is disabled.

SM24DP4XA(config)# ip dhcp server per-port
SM24DP4XA(config)# do show ip dhcp server

DHCP server is globally enabled.
  Enabled VLANs are 1.
  DHCP server per port is enabled.

SM24DP4XA(config)# no ip dhcp server per-port
SM24DP4XA(config)# do show ip dhcp server

DHCP server is globally enabled.
  Enabled VLANs are 1.
  DHCP server per port is disabled.

SM24DP4XA(config)#
```

Command: Configure the DHCP Per Port function.

Syntax: **ip dhcp server per-port** <cr>

ip dhcp server per-port [vlan { <pertPortVLAN> }]

Description: Toggle the DHCP Per Port function from Disabled (default) to Enabled.

Example: Toggle the DHCP Per Port function and show the resulting config:

```
SM24DP4XA# show ip dhcp server
DHCP server is globally disabled.
  All VLANs are disabled.
  DHCP server per port is disabled.
SM24DP4XA# con ter
SM24DP4XA(config)# ip dhcp ?
    excluded-address    Prevent DHCP from assigning certain addresses
    pool                Configure DHCP address pools
    relay               DHCP relay agent configuration
    server              Enable DHCP server
    snooping            DHCP snooping
SM24DP4XA(config)# ip dhcp server
SM24DP4XA(config)# end
SM24DP4XA# show ip dhcp server

DHCP server is globally enabled.
  All VLANs are disabled.

SM24DP4XA#
```

DHCP Per Port VLAN

DHCP Per Port VLAN: The VLAN associated with the IP interface. Only ports in this VLAN will be able to access the IP interface. This field is only available for input when creating a new interface. This 'DHCP IP per Port' function lets you assign a static IP address from a DHCP pool to a switch port such that it will always be assigned that specific IP address. The IP address is configured in the Interface Config settings. Note that this is binding an IP address to an interface, not to a MAC address, which is the typical binding method used on this and most other switches. (Added at FW v7.20.0106.)

Example:

```
SM24DP4XA#(config)# ip dhcp server per-port vlan 100
SM24DP4XA#(config)# do show ip dhcp server
DHCP server is globally disabled.
  All VLANs are disabled.
  DHCP server per port is disabled.


SM24DP4XA#(config)#
```

Appendix B. G.8032 Major and Sub Rings Configuration

Introduction

Ethernet Ring Protection Switching (ERPS) is a protocol defined by the International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) to prevent loops at Layer 2. With the standard number is ITU-T G.8032, and ERPS is also called G.8032. Generally, redundant links are used on a network to provide link backup and enhance network reliability. The use of redundant links, however, may produce loops, causing broadcast storms and rendering the MAC address table unstable. These can affect the network, where the communication quality is not good enough, and communication services might be interrupted.

ERPS provides advantages of traditional ring network technologies such as STP/RSTP/MSTP and optimizes detection mechanism to provide faster convergence. For example, the ERPS-enabled switch provides 50-ms convergence for broadcast packets.

Basic Concepts

There are some basic concepts that support ERPS Ring:

- **Ring Protection Link (RPL)** – Link designated by mechanism that is blocked during Idle state to prevent loop on Bridged ring.
- **RPL Owner node** – Node connected to RPL that blocks traffic on RPL during Idle state and unblocks during Protection state.
- **RPL Neighbor node** – Node connected to RPL that blocks traffic on RPL during Idle state and unblocks during Protection state (v2).
- **Link Monitoring** – Links of ring are monitored using standard ETH CC OAM messages (CFM) • Signal Fail (SF) – Signal Fail is declared when signal fail condition is detected.
- **No Request (NR)** – No Request is declared when there are no outstanding conditions (e.g., SF, etc.) on the node.
- **Ring APS (R-APS) Messages** – Protocol messages defined in Y.1731 and G.8032.
- **Automatic Protection Switching (APS) Channel** - Ring-wide VLAN used exclusively for transmission of OAM messages including R-APS messages.

IP Addresses

SM24DP4XA : 192.168.1.85

SISPM1040-384-LRT-C : 192.168.1.95

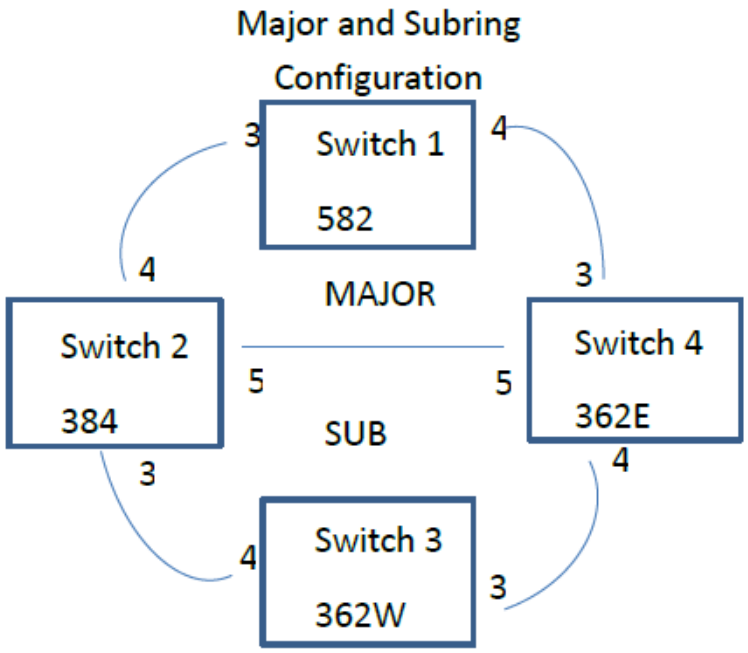
362W : 192.168.1.125

362E : 192.168.1.135

Sample Configuration

Major Ring and Sub Ring : 4 Switches

Major : SW#1, SW#2, SW#4; **Sub** : SW#2, SW#3, SW#4



VLANs	APS	Data
	10,20	5

RPL Mode	Major	Sub	Major	Sub	Major	Sub
	Owner Switch #1	Owner Switch #3	Neighbor Switch #2	Neighbor Switch #2	None Switch #4	None Switch #4

Switch 1 Configuration (SISPM1040-582-LRT)

VLANs	Port 3	Trunk	Tag All	5,10
	Port 4	Trunk	Tag All	5,10
STP	Port 3	Disable		
	Port 4	Disable		

MEPs	Instance	Port	VLAN	MAC	MEP ID	Peer MAC	Peer MEP ID
	1	3	10	00-C0-F2-49-39-5F	1	00-40-C7-1C-C7-30	4
	2	4	10	00-C0-F2-49-39-60	5	00-C0-F2-53-EF-FC	5

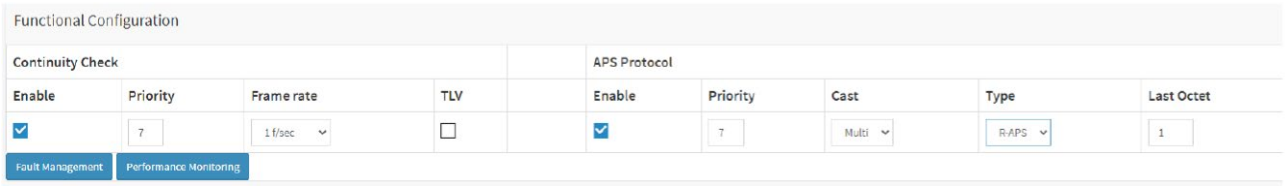
Note: All MEPs are programed the same under the Functional Configuration

Continuity Check

Check Enable – Priority: 7 – Frame rate: 1f/sec

APS Protocol

Check Enable – Priority: 7 – Cast: Multi – Type: R-APS



ERPS

ERPS ID Port 0 Port 1 Port 0 SF Port 1 SF Port 0 APS Port 1 APS Ring RPL Port VLAN

1 1 2 1 2 1 2 Major Owner 0 5

Switch 2 Configuration (SISPM1040-384-LRT-C)

VLANs	Port 3	Trunk	Tag All	5,20
	Port 4	Trunk	Tag All	5,10
	Port 5	Trunk	Tag All	5,10,20
STP	Port 3	Disable		
	Port 4	Disable		
	Port 5	Disable		

MEPs	Instance	Port	VLAN	MAC	MEP ID	Peer MAC	Peer MEP ID
	1	3	20	00-40-C7-1C-C7-2F	3	00-C0-F2-53-F0-BA	8
	2	4	10	00-C0-F2-49-39-60	4	00-C0-F2-49-39-5F	1
	3	5	10	00-40-C7-1C-C7-31	9	00-C0-F2-53-EF-FE	10

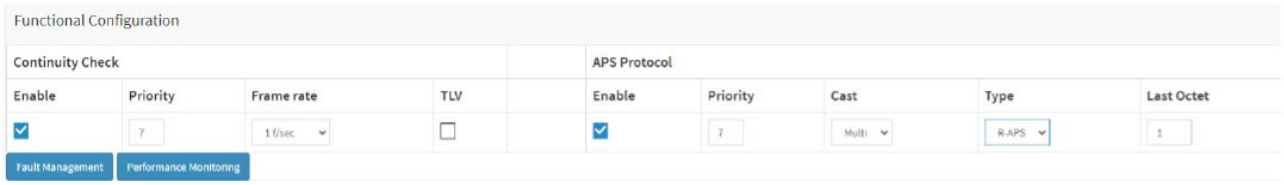
Note: All MEPs are programed the same under the Functional Configuration

Continuity Check

Check Enable – Priority: 7 – Frame rate: 1f/sec

APS Protocol

Check Enable – Priority: 7 – Cast: Multi – Type: R-APS



ERPS

ERPS ID	Port 0 Port	Port 1 VLAN	Port 0 SF	Port 1 SF	Port 0 APS	Port 1 APS	Ring	RPL
1	3	2	3	2	3	2	Major	Neighbor 1 5
2	1	0	1	0	1	0	Sub	Neighbor 0 5

Interconnect Yes, Major 1

Switch 3 Configuration (SISPM1040-362-LRT[W])

VLANs	Port 3	Trunk	Tag All	5,20

Port 4 Trunk Tag All 5,20

STP Port 3 Disable

Port 4 Disable

MEPs	Instance	Port	VLAN	MAC	MEP ID	Peer MAC	Peer MEP ID
	1	3	20	00-C0-F2-53-F0-B9	7	00-C0-F2-53-EF-FD	6
	2	4	20	00-C0-F2-53-F0-BA	8	00-40-C7-1C-C7-2F	3

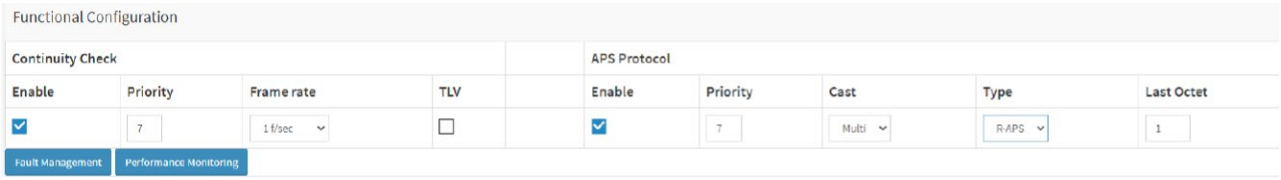
Note: All MEPs are programed the same under the Functional Configuration

Continuity Check

Check Enable – Priority: 7 – Frame rate: 1f/sec

APS Protocol

Check Enable – Priority: 7 – Cast: Multi – Type: R-APS



ERPS

ERPS ID	Port 0	Port 1	Port 0 SF	Port 1 SF	Port 0 APS	Port 1 APS	Ring	RPL Port	RPL VLAN
1	1	2	1	2	1	2	Sub	Owner	1	5

Switch 4 Configuration (SISPM1040-362-LRT[E])

VLANs	Port 3	Trunk	Tag All	5,10
	Port 4	Trunk	Tag All	5,20
	Port 5	Trunk	Tag All	5,10,20
STP	Port 3	Disable		
	Port 4	Disable		
	Port 5	Disable		

MEPs	Instance	Port	VLAN	MAC	MEP ID	Peer MAC	Peer MEP ID
	1	3	10	00-C0-F2-53-EF-FC	5	00-C0-F2-49-39-60	2
	2	4	20	00-C0-F2-53-EF-FD	6	00-C0-F2-53-F0-B9	7
	3	5	10	00-C0-F2-53-EF-FE	10	00-40-C7-1C-C7-31	9

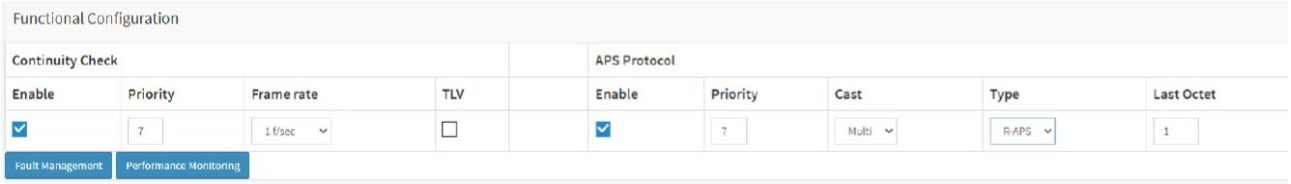
Note: All MEPs are programed the same under the Functional Configuration

Continuity Check

Check Enable – Priority: 7 – Frame rate: 1f/sec

APS Protocol

Check Enable – Priority: 7 – Cast: Multi – Type: R-APS



ERPS

ERPS ID	Port 0	Port 1	Port 0 SF	Port 1 SF	Port 0 APS	Port 1 APS	Ring	RPL	Port VLAN
1	1	3	1	3	1	3	Major	None	5
2	2	0	2	0	2	0	Sub	None	5

Interconnect Yes, Major 1

Testing

Testing Pings from Switch 4 to Switch 1 – Major Ring

Failing Major ring, No lost pings

C:\Users\dennist>ping 192.168.1.85 -t

Pinging 192.168.1.85 with 32 bytes of data:
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time=1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64
Reply from 192.168.1.85: bytes=32 time<1ms TTL=64

Reply from 192.168.1.85: bytes=32 time<1ms TTL=64

Reply from 192.168.1.85: bytes=32 time<1ms TTL=64

Reply from 192.168.1.85: bytes=32 time=5ms TTL=64 ←----------

Reply from 192.168.1.85: bytes=32 time<1ms TTL=64 **Cable Disconnect**

Reply from 192.168.1.85: bytes=32 time=3ms TTL=64 ←----------

Reply from 192.168.1.85: bytes=32 time<1ms TTL=64

Reply from 192.168.1.85: bytes=32 time=1ms TTL=64

Reply from 192.168.1.85: bytes=32 time<1ms TTL=64

Reply from 192.168.1.85: bytes=32 time<1ms TTL=64

Reply from 192.168.1.85: bytes=32 time=1ms TTL=64

Reply from 192.168.1.85: bytes=32 time<1ms TTL=64

Reply from 192.168.1.85: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.1.85:

Packets: Sent = 45, Received = 45, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 5ms, Average = 0ms

Testing Pings from Switch 4 to Switch 3 – Sub Ring

Fail Subring, No lost pings

C:\Users\dennist>ping 192.168.1.125 -t

Pinging 192.168.1.125 with 32 bytes of data:
Reply from 192.168.1.125: bytes=32 time=1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time=1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time=7ms TTL=64 ←----------
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64 Cable Disconnect
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64
Reply from 192.168.1.125: bytes=32 time<1ms TTL=64

Reply from 192.168.1.125: bytes=32 time<1ms TTL=64

Reply from 192.168.1.125: bytes=32 time=1ms TTL=64

Reply from 192.168.1.125: bytes=32 time<1ms TTL=64

Reply from 192.168.1.125: bytes=32 time=1ms TTL=64

Reply from 192.168.1.125: bytes=32 time<1ms TTL=64

Reply from 192.168.1.125: bytes=32 time<1ms TTL=64

Reply from 192.168.1.125: bytes=32 time<1ms TTL=64

Reply from 192.168.1.125: bytes=32 time<1ms TTL=64

Reply from 192.168.1.125: bytes=32 time<1ms TTL=64

Reply from 192.168.1.125: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.1.125:

Packets: Sent = 41, Received = 41, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 7ms, Average = 0ms

Config files

running-config_192.168.1

```
hostname SISPM1040-362-LRT-E
username admin privilege 15 password encrypted
feec1d1085ff075fd03b1d2d5ab4c0befbff0917079c8abb3a77338041bf5d6e1771bdbbd1a317ea
2f42fc2aacc8c50a8e667456d7c04099f74f8ef9dcc0fbd4
!
vlan 1
!
!
!
!
ip route 0.0.0.0 0.0.0.0 192.168.1.254
tzidx 0
exec-timeout autologout 0
snmp-server location DT Lab Ring
system name SISPM1040-362-LRT-E
system location DT Lab Ring
system description Managed Hardened PoE+ Switch, (4) 10/100/1000Base-T PoE+
Ports + (2) 10/100/1000Base-T Ports + (2) 100/1000Base-X SFP Ports
!
interface GigabitEthernet 1/1
!
interface GigabitEthernet 1/2
!
interface GigabitEthernet 1/3
 no spanning-tree
 switchport trunk allowed vlan 5,10
 switchport trunk vlan tag native
 switchport mode trunk
 poe mode disable
!
interface GigabitEthernet 1/4
```

```
 no spanning-tree
 switchport trunk allowed vlan 5,20
 switchport trunk vlan tag native
 switchport mode trunk
 poe mode disable
!
interface GigabitEthernet 1/5
 no spanning-tree
 switchport trunk allowed vlan 5,10,20
 switchport trunk vlan tag native
 switchport mode trunk
!
interface GigabitEthernet 1/6
!
interface GigabitEthernet 1/7
!
interface GigabitEthernet 1/8
!
interface vlan 1
 ip address 192.168.1.135 255.255.255.0
 ip dhcp server
!
mep 1 down domain port level 4 interface GigabitEthernet 1/3
mep 1 mep-id 5
mep 1 vid 10
mep 1 peer-mep-id 2 mac 00-C0-F2-49-39-60
mep 1 cc 7
mep 1 aps 7 raps
mep 2 down domain port level 4 interface GigabitEthernet 1/4
mep 2 mep-id 6
mep 2 vid 20
mep 2 peer-mep-id 7 mac 00-C0-F2-53-F0-B9
mep 2 cc 7
```

```
mep 2 aps 7 raps
mep 3 down domain port level 4 interface GigabitEthernet 1/5
mep 3 mep-id 10
mep 3 vid 10
mep 3 peer-mep-id 9 mac 00-40-C7-1C-C7-31
mep 3 cc 7
mep 3 aps 7 raps
erps 1 major port0 interface GigabitEthernet 1/3 port1 interface GigabitEthernet
1/5
erps 1 mep port0 sf 1 aps 1 port1 sf 3 aps 3
erps 1 vlan 5
erps 2 sub port0 interface GigabitEthernet 1/4 interconnect 1
erps 2 mep port0 sf 2 aps 2
erps 2 vlan 5
!
spanning-tree aggregation
 spanning-tree link-type point-to-point
!
!
line console 0
!
line vty 0
!
line vty 1
!
line vty 2
!
line vty 3
!
line vty 4
!
line vty 5
!
```

```
line vty 6
!
line vty 7
!
line vty 8
!
line vty 9
!
line vty 10
!
line vty 11
!
line vty 12
!
line vty 13
!
line vty 14
!
line vty 15
!
!
end
```

running-config_192.168.1

```
hostname SM24DP4XA
logging on
logging host 192.168.1.253
username admin privilege 15 password encrypted
7073dec86c15b8a9907bb4106ef783adde46bd5b5969cc68fb55b430336bd7c80d5ded65d2fdb39a
be81cc9caa5a93620f270c21bca86e776cee9c5588bfb8c7
username superuser privilege 15 password encrypted
4643fdc71f39fd4cb955943fcaf89faca81bc650fbaeebe25a796662d5c225bf0d5ded65d2fdb39a
be81cc9c514497e27799560e488713aabaac4f167e7732ca
!
vlan 1
!
!
!
!
ip route 0.0.0.0 0.0.0.0 192.168.1.254
ntp automatic
ntp server 1 ip-address ntp1.transition.com
ntp server 2 ip-address ntp2.transition.com
clock timezone '' 9
tzidx 0
exec-timeout autologout 0
poe ping-check enable
snmp-server contact DTroxel
snmp-server location DT Office
system contact DTroxel
system name SM24DP4XA
system location DT Office
system description Managed Hardened PoE++ Switch (8) 10/100/1000Base-T PoE++
Ports + (2) 100/1000Base-X SFP Slot
!
interface GigabitEthernet 1/1
```

```
 no spanning-tree
 poe ping-ip-addr 192.168.1.70
 poe failure-action reboot-Remote-PD
!
interface GigabitEthernet 1/2
 no spanning-tree
 switchport forbidden vlan add 3,5
!
interface GigabitEthernet 1/3
 no spanning-tree
 switchport trunk allowed vlan 5,10
 switchport trunk vlan tag native
 switchport mode trunk
 poe mode disable
!
interface GigabitEthernet 1/4
 no spanning-tree
 switchport trunk allowed vlan 5,10
 switchport trunk vlan tag native
 switchport mode trunk
 poe mode disable
 poe ping-ip-addr 192.168.1.200
!
interface GigabitEthernet 1/5
 no spanning-tree
!
interface GigabitEthernet 1/6
 no spanning-tree
!
interface GigabitEthernet 1/7
!
interface GigabitEthernet 1/8
 poe mode disable
```

```
!
interface GigabitEthernet 1/9
 no spanning-tree
!
interface GigabitEthernet 1/10
 no spanning-tree
!
interface vlan 1
 ip address 192.168.1.85 255.255.255.0
 ip dhcp server
!
mep 1 down domain port level 4 interface GigabitEthernet 1/3
mep 1 vid 10
mep 1 peer-mep-id 4 mac 00-40-C7-1C-C7-30
mep 1 cc 7
mep 1 aps 7 raps
mep 2 down domain port level 4 interface GigabitEthernet 1/4
mep 2 mep-id 2
mep 2 vid 10
mep 2 peer-mep-id 5 mac 00-C0-F2-53-EF-FC
mep 2 cc 7
mep 2 aps 7 raps
erps 1 major port0 interface GigabitEthernet 1/3 port1 interface GigabitEthernet
1/4
erps 1 mep port0 sf 1 aps 1 port1 sf 2 aps 2
erps 1 rpl owner port0
erps 1 vlan 5
!
spanning-tree aggregation
 no spanning-tree
 spanning-tree link-type point-to-point
!
!
```

```
line console 0
!
line vty 0
!
line vty 1
!
line vty 2
!
line vty 3
!
line vty 4
!
line vty 5
!
line vty 6
!
line vty 7
!
line vty 8
!
line vty 9
!
line vty 10
!
line vty 11
!
line vty 12
!
line vty 13
!
line vty 14
!
line vty 15
```

```
!
map-api-key AIzaSyBItuM0hDtK6nJeZPEk7jnrcoGGi92EpFM
!
end
```

running-config_192.168.1

```
hostname SISPM1040-384-LRT-C
username admin privilege 15 password encrypted
6593186b999f348becd63b8612ac561c114250a1a00bd38f6afb5378acb6d08c1864c59b092b0e2b
29ba4f1d559166800846cbc52c4558a90e4cdf95d3cfcbf4
username dennis privilege 5 password encrypted
a92a5dbf4fcd2e13d35adb36d2418476e907de19a641fa7baf80b1abb2bacd8ee5dbdd44e246b88b
e1636df6b8769af790aa8721622481085e33c32e6e119dbd
!
vlan 1
!
!
!
!
ip route 0.0.0.0 0.0.0.0 192.168.1.254
tzidx 0
exec-timeout autologout 0
poe ping-check enable
access-list ace 2 ingress interface GigabitEthernet 1/2 action deny
access-list ace 1 next 2 ingress interface GigabitEthernet 1/2 frame-type ipv4-
tcp dport 443
system name SISPM1040-384-LRT-C
system description Managed Hardened PoE+ Switch, (8) 10/100/1000Base-T PoE+
Ports + (4) 100/1000Base-X SFP
!
interface GigabitEthernet 1/1
 no spanning-tree
 lldp cdp-aware
 poe ping-ip-addr 192.168.1.100
 poe failure-action reboot-Remote-PD
!
interface GigabitEthernet 1/2
 no spanning-tree
 lldp cdp-aware
 speed 1000
```

```
 duplex full
!
interface GigabitEthernet 1/3
 no spanning-tree
 switchport trunk allowed vlan 5,20
 switchport trunk vlan tag native
 switchport mode trunk
 lldp cdp-aware
 poe mode disable
!
interface GigabitEthernet 1/4
 no spanning-tree
 switchport trunk allowed vlan 5,10
 switchport trunk vlan tag native
 switchport mode trunk
 lldp cdp-aware
 poe mode disable
!
interface GigabitEthernet 1/5
 no spanning-tree
 switchport trunk allowed vlan 5,10,20
 switchport trunk vlan tag native
 switchport mode trunk
 lldp cdp-aware
 poe mode disable
!
interface GigabitEthernet 1/6
 no spanning-tree
 lldp cdp-aware
!
interface GigabitEthernet 1/7
 lldp cdp-aware
!
interface GigabitEthernet 1/8
 lldp cdp-aware
!
```

```
interface GigabitEthernet 1/9
 no spanning-tree
 switchport trunk allowed vlan 1,50,100
 switchport trunk vlan tag native
 lldp cdp-aware
!
interface GigabitEthernet 1/10
 no spanning-tree
 lldp cdp-aware
!
interface GigabitEthernet 1/11
 no spanning-tree
 lldp cdp-aware
!
interface GigabitEthernet 1/12
 no spanning-tree
 lldp cdp-aware
!
interface vlan 1
 ip address 192.168.1.95 255.255.255.0
 ip dhcp server
!
mep 1 down domain port level 4 interface GigabitEthernet 1/3
mep 1 mep-id 3
mep 1 vid 20
mep 1 peer-mep-id 8 mac 00-C0-F2-53-F0-BA
mep 1 cc 7
mep 1 aps 7 raps
mep 2 down domain port level 4 interface GigabitEthernet 1/4
mep 2 mep-id 4
mep 2 vid 10
mep 2 peer-mep-id 1 mac 00-C0-F2-49-39-5F
mep 2 cc 7
mep 2 aps 7 raps
mep 3 down domain port level 4 interface GigabitEthernet 1/5
mep 3 mep-id 9
```

```
mep 3 vid 10
mep 3 peer-mep-id 10 mac 00-C0-F2-53-EF-FE
mep 3 cc 7
mep 3 aps 7 raps
erps 1 major port0 interface GigabitEthernet 1/5 port1 interface GigabitEthernet
1/4
erps 1 mep port0 sf 3 aps 3 port1 sf 2 aps 2
erps 1 rpl neighbor port1
erps 1 vlan 5
erps 2 sub port0 interface GigabitEthernet 1/3 interconnect 1
erps 2 mep port0 sf 1 aps 1
erps 2 rpl neighbor port0
erps 2 vlan 5
!
spanning-tree aggregation
 no spanning-tree
 spanning-tree link-type point-to-point
!
!
line console 0
!
line vty 0
!
line vty 1
!
line vty 2
!
line vty 3
!
line vty 4
!
line vty 5
!
line vty 6
!
line vty 7
```

```
!
line vty 8
!
line vty 9
!
line vty 10
!
line vty 11
!
line vty 12
!
line vty 13
!
line vty 14
!
line vty 15
!
map-api-key AIzaSyBItuM0hDtK6nJeZPEk7jnrcoGGi92EpFM
!
end
```

running-config_192.168.1

```
hostname SISPM1040-362-LRT-W
username admin privilege 15 password encrypted
6158ed7daf39d06ded0e7c4828c3b15bb4c40673bd445afcd643295925ae425d9611d1cbe872708237571aacc
7b9237f33b01ae6866e2484009edfe1fa0bf56f
!
vlan 1
!
!
!
!
ip route 0.0.0.0 0.0.0.0 192.168.1.254
tzidx 0
exec-timeout autologout 0
snmp-server location DT Lab Ring
system name SISPM1040-362-LRT-W
system location DT Lab Ring
system description Managed Hardened PoE+ Switch, (4) 10/100/1000Base-T PoE+ Ports + (2)
10/100/1000Base-T Ports + (2) 100/1000Base-X SFP Ports
!
interface GigabitEthernet 1/1
!
interface GigabitEthernet 1/2
!
interface GigabitEthernet 1/3
 no spanning-tree
 switchport trunk allowed vlan 5,20
 switchport trunk vlan tag native
 switchport mode trunk
 poe mode disable
!
interface GigabitEthernet 1/4
 no spanning-tree
 switchport trunk allowed vlan 5,20
 switchport trunk vlan tag native
```

```
 switchport mode trunk
 poe mode disable
!
interface GigabitEthernet 1/5
!
interface GigabitEthernet 1/6
!
interface GigabitEthernet 1/7
!
interface GigabitEthernet 1/8
!
interface vlan 1
 ip address 192.168.1.125 255.255.255.0
 ip dhcp server
!
mep 1 down domain port level 4 interface GigabitEthernet 1/3
mep 1 mep-id 7
mep 1 vid 20
mep 1 peer-mep-id 6 mac 00-C0-F2-53-EF-FD
mep 1 cc 7
mep 1 aps 7 raps
mep 2 down domain port level 4 interface GigabitEthernet 1/4
mep 2 mep-id 8
mep 2 vid 20
mep 2 peer-mep-id 3 mac 00-40-C7-1C-C7-2F
mep 2 cc 7
mep 2 aps 7 raps
erps 1 sub port0 interface GigabitEthernet 1/3 port1 interface GigabitEthernet 1/4
erps 1 mep port0 sf 1 aps 1 port1 sf 2 aps 2
erps 1 rpl owner port1
erps 1 vlan 5
!
spanning-tree aggregation
 spanning-tree link-type point-to-point
!
!
```

```
line console 0
!
line vty 0
!
line vty 1
!
line vty 2
!
line vty 3
!
line vty 4
!
line vty 5
!
line vty 6
!
line vty 7
!
line vty 8
!
line vty 9
!
line vty 10
!
line vty 11
!
line vty 12
!
line vty 13
!
line vty 14
!
line vty 15
!
!
End
```

Appendix C. SFTP Setup

Switch settings for RADIUS Authentication Using SSH Putty Port 22

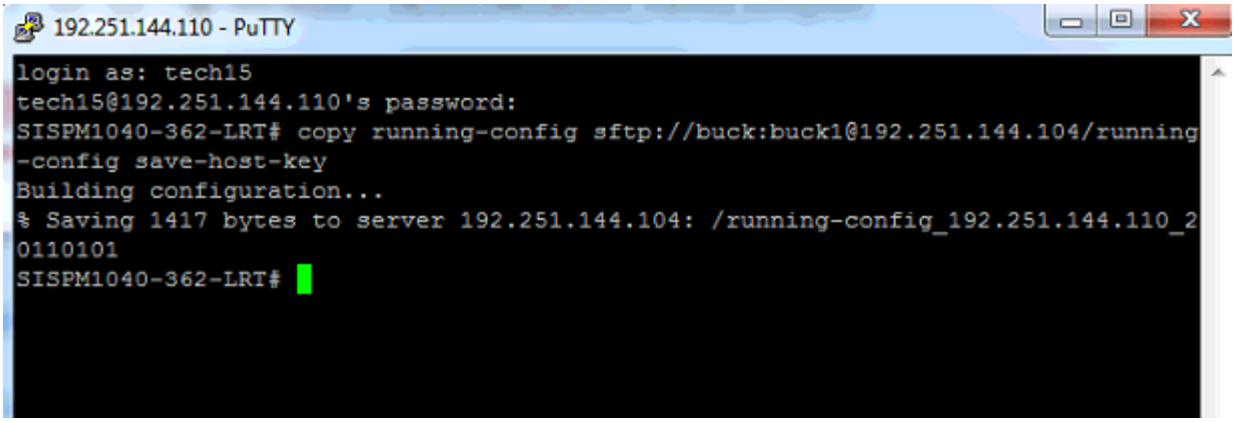
Warning: When setting first method for 'ssh' to other than 'local', you may lose connectivity unless you set a later method for'ssh' to 'local'. At the prompt *Do you want to continue?* click OK to continue or click Cancel to quit.

1. CLI Command:

```
copy running-config sftp://buck:buck1@192.251.144.104/running-config save-host-key
```

Description: Transfer running-config from switch to SolarWinds, using SFTP protocol.

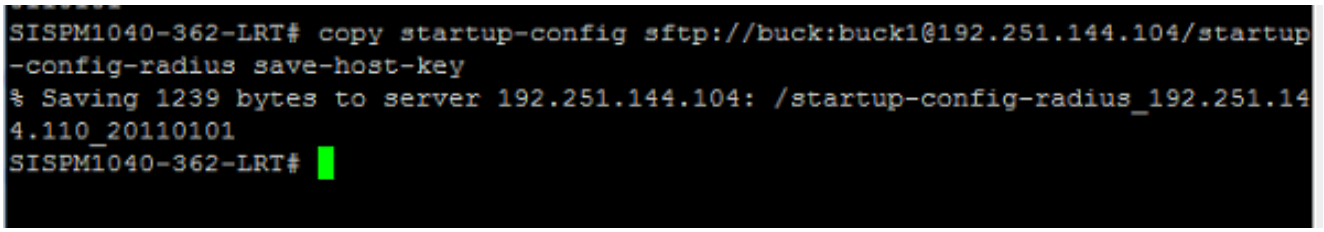
Example:



CLI Command: `copy startup-config sftp://buck:buck1@192.251.144.104/startup-config-radius save-host-key`

Description: Transfer startup-config from switch to SolarWinds, using SFTP protocol.

Example:



CLI Command: `copy sftp://tech15:15tech@192.251.144.104/startup-config_192.251.144.110_20110101 startup-config save-host-key`

Description: Transfer startup-config from SolarWinds to switch, using SFTP protocol

Example:

```
SISPM1040-362-LRT# copy sftp://tech15:15tech@192.251.144.104/startup-config_192.
251.144.110_20110101 startup-config save-host-key
% Loading /startup-config_192.251.144.110_20110101 from SFTP server 192.251.144.
104
% Saving 1004 bytes to flash:startup-config
SISPM1040-362-LRT#
```

CLI Command: `copy running-config sftp://tech15:15tech@192.251.144.104/running-config save-host-key`

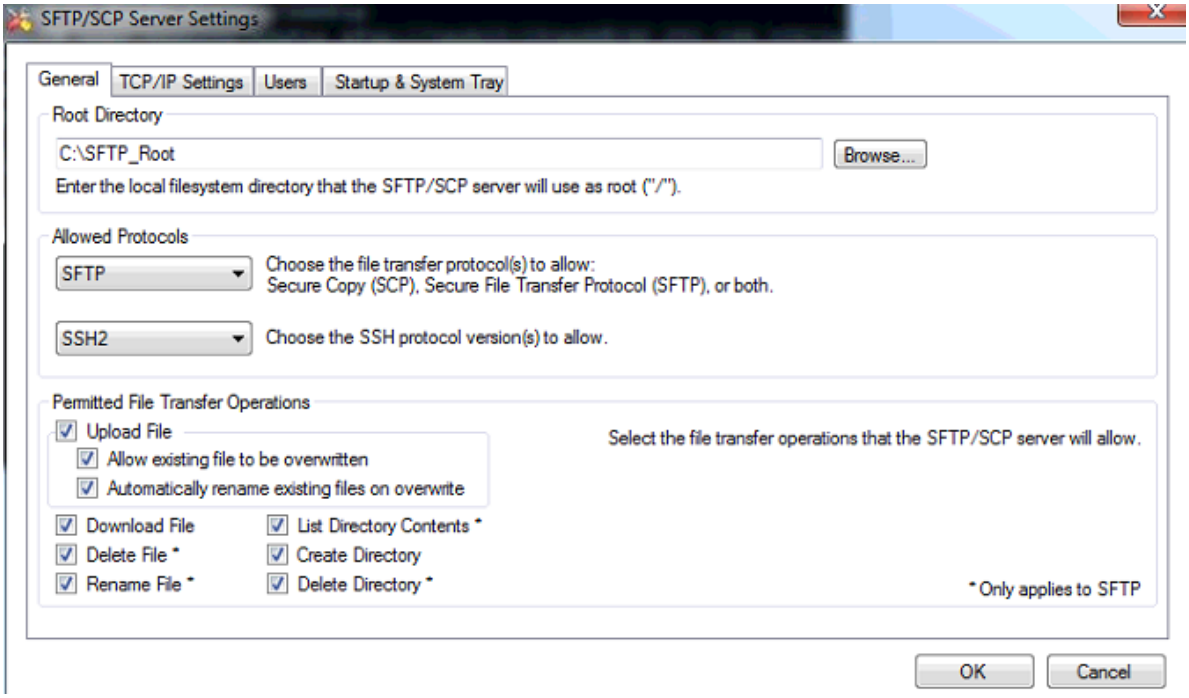
Description: Transfer running-config from SolarWinds to switch using SFTP protocol

Example:

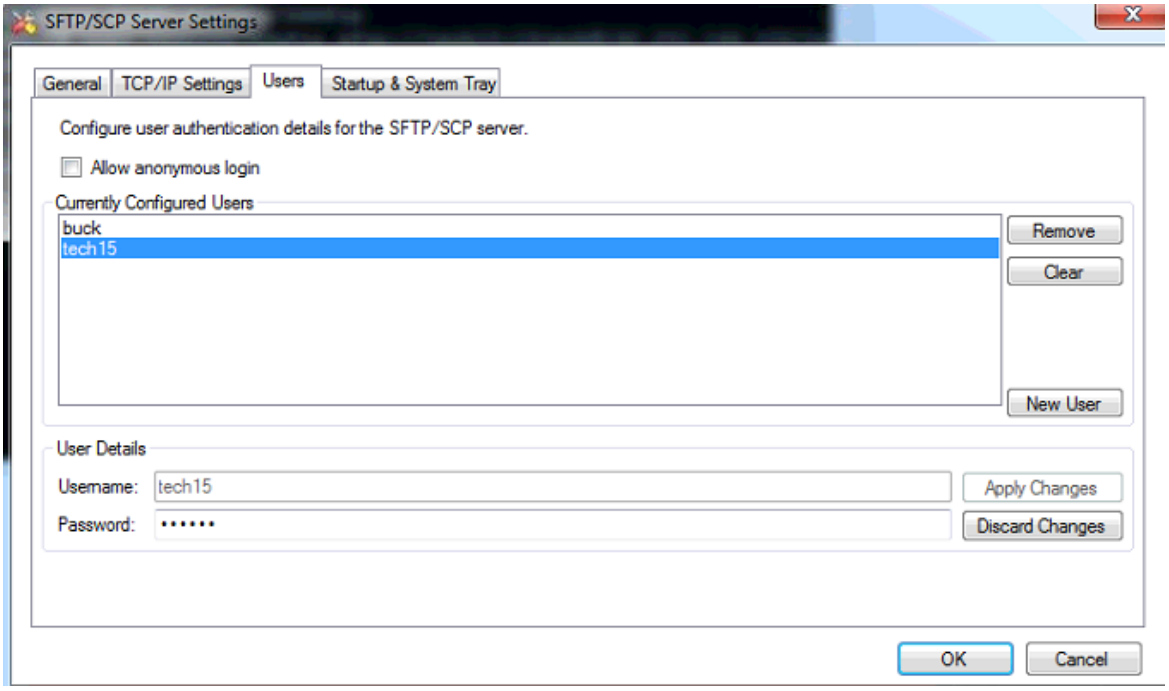
```
SISPM1040-362-LRT# copy running-config sftp://tech15:15tech@192.251.144.104/runn
ing-config save-host-key
Building configuration...
% Saving 1417 bytes to server 192.251.144.104: /running-config_192.251.144.110_2
0110101
SISPM1040-362-LRT#
```

Solar Winds Settings

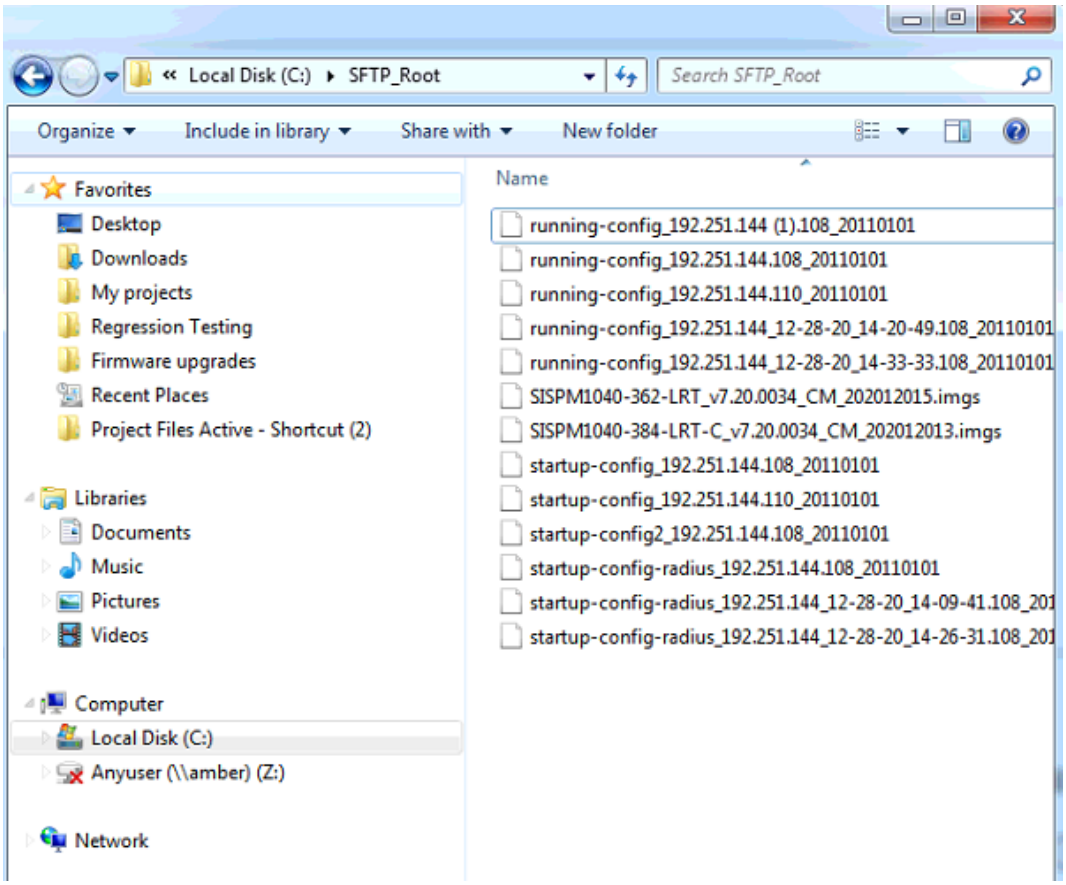
General tab



Users tab



Windows Explorer



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