SECURE. **NETWORKS.**

GS-2300 series

CLI Reference

LANCOM
Systems

Contents

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1 Operation of CLI Management

Initial Configuration

This chapter instructs you how to configure and manage the switch through the CLI interface. With this facility, you can easily access and monitor through console port of the switch all the status of the switch, including MIBs status, each port activity, Spanning tree status, port aggregation status, multicast traffic, VLAN and priority status, even illegal access record and so on.

The serial port's configuration requirements are as follows:

- Default Baud rate: 115,200 bps
- Character Size: 8 Characters
- Parity: None
- Stop bit: One
- Data bits: 8
- Flow control: none

About Null Console Cable identity

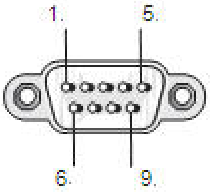


Figure 1: Serial Port Pin Definition (DB-9 DTE)

The DB-9 cable is used for connecting a terminal or terminal emulator to the Managed Switch's RS-232 port to access the command-line interface. The table below shows the pin assignments for the DB-9 cable.

Function	Mnemonic	Pin
Carrier	CD	1
Receive Data	RXD	2
Transmit Data	TXD	3
Data Terminal Ready	DTR	4
Signal Ground	GND	5
Data Set Ready	DSR	6
Request To Send	RTS	7
Clear To Send	CTS	8

ⓘ Some models are equipped with a serial RJ45 port instead.

Connecting to the console port

The serial port on the switch's front panel is used to connect to the switch for out-of-band console configuration.

The command-line-driven configuration program can be accessed from a terminal or a PC running a terminal emulation program. The pin assignments used to connect to the serial port are provided in the following table

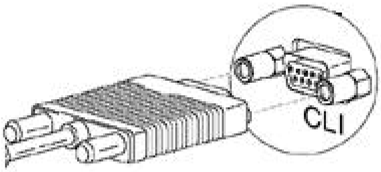
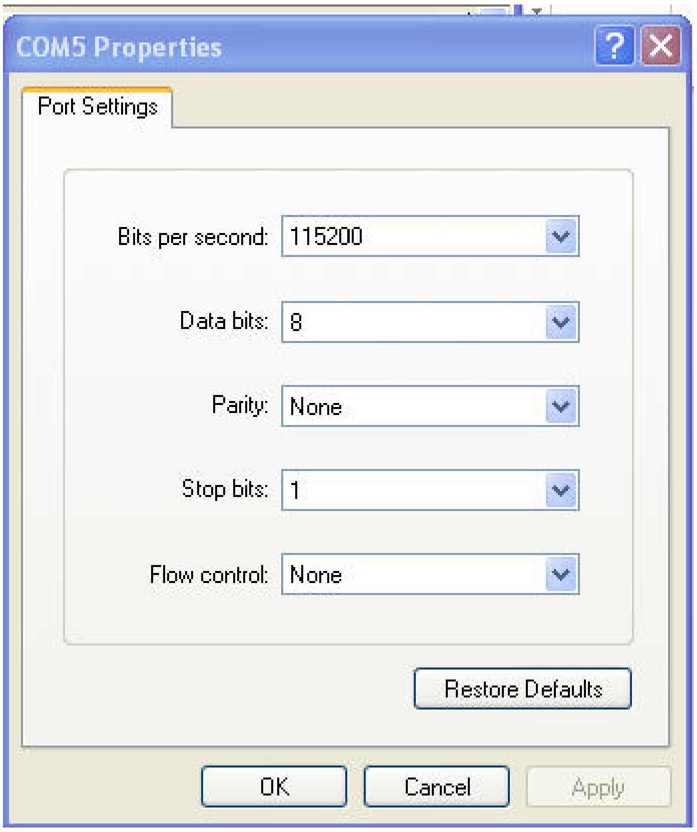


Figure 2: Plug in the Console Port (DB-9 DTE)



Bits per second: 115200

Data bits: 8

Parity: None

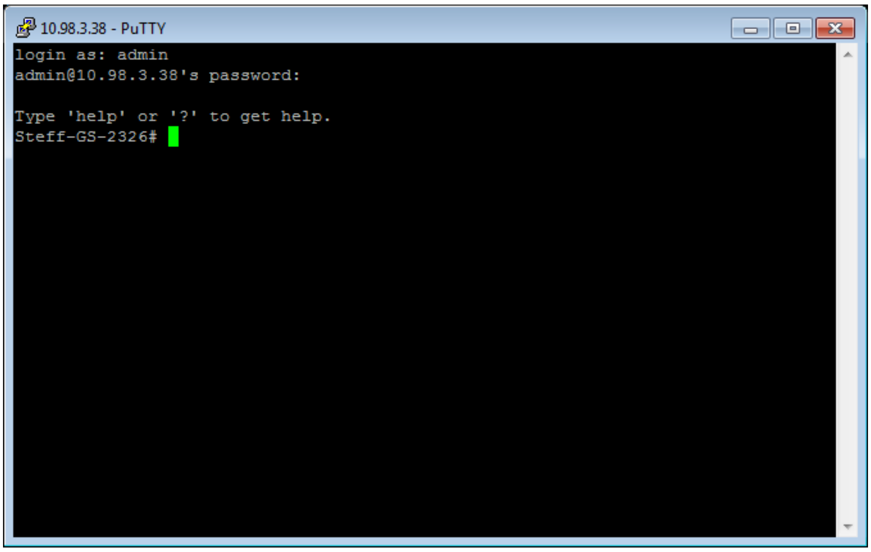
Stop bits: 1

Flow control: None

Figure 3: Console configure

After the switch has been finished configuration the it interface, you can access It via Console port. For instance, it will show the following screen and ask you inputting username and password in order to login and access authentication.

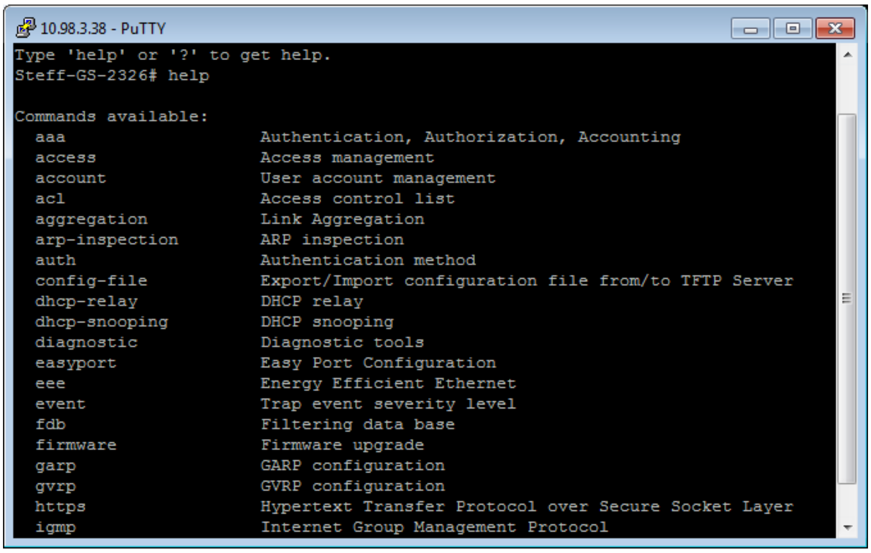
The default username and password is `admin`. For the first time to use, please enter the default username and password, and then click the Enter button. The login process now is completed. In this login menu, you have to input the complete username and password respectively, the switch will not give you a shortcut to username automatically. This looks inconvenient, but safer.



```
login as: admin
admin@10.98.3.38's password:

Type 'help' or '?' to get help.
Steff-GS-2326#
```

Figure 4: Console configure

You can type ? or help to get the switch help includes syntax or all function explaining. The screen shot as below figure displayed.

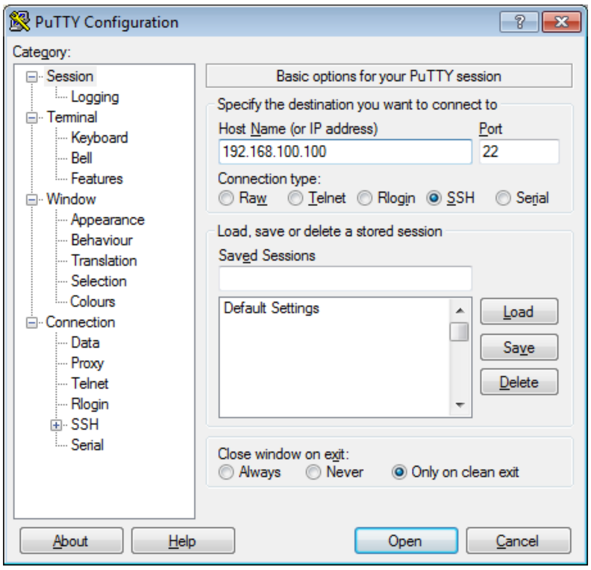


```
Type 'help' or '?' to get help.
Steff-GS-2326# help

Commands available:
  aaa                     Authentication, Authorization, Accounting
  access                  Access management
  account                 User account management
  acl                     Access control list
  aggregation             Link Aggregation
  arp-inspection          ARP inspection
  auth                    Authentication method
  config-file             Export/Import configuration file from/to TFTP Server
  dhcp-relay              DHCP relay
  dhcp-snooping           DHCP snooping
  diagnostic              Diagnostic tools
  easyport                Easy Port Configuration
  eee                     Energy Efficient Ethernet
  event                   Trap event severity level
  fdb                     Filtering data base
  firmware                Firmware upgrade
  garp                    GARP configuration
  gvrp                    GVRP configuration
  https                   Hypertext Transfer Protocol over Secure Socket Layer
  igmp                    Internet Group Management Protocol
```

Figure 5: Console configure

Connecting via SSH using PuTTY

The connection to the switch can also be established via SSH connection using tools like PuTTY:

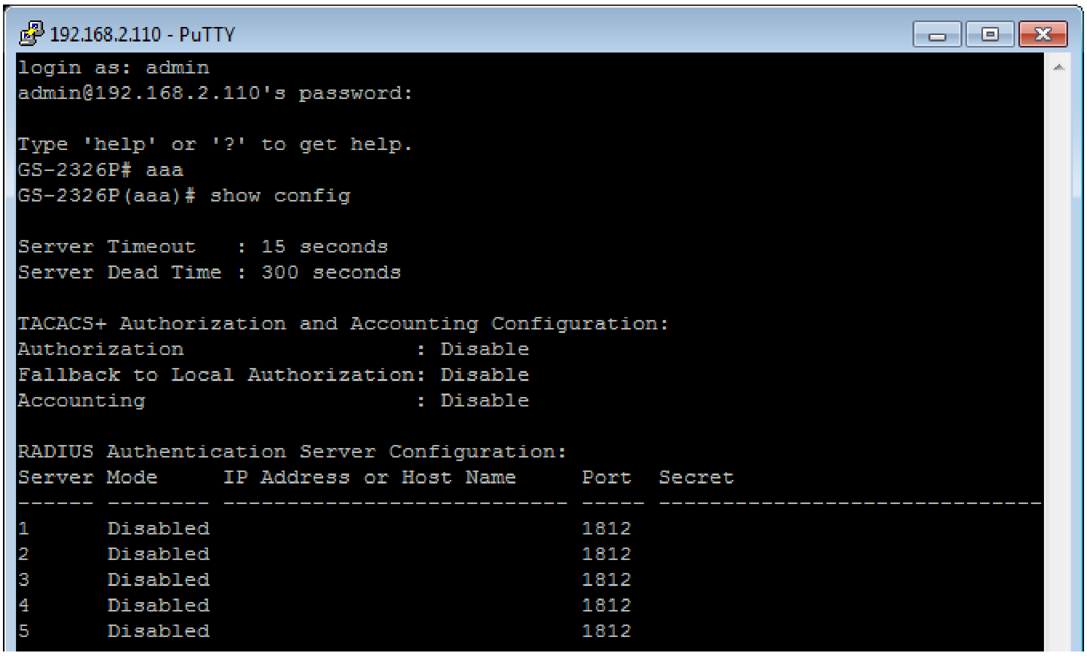


Host Name (or IP address): 192.168.100.100
Port: 22
Connection type: ○ Raw ○ Telnet ○ Rlogin ● SSH ○ Serial
Close window on exit: ○ Always ○ Never ● Only on clean exit

Figure 6: PuTTY configure

Navigating through CLI structure

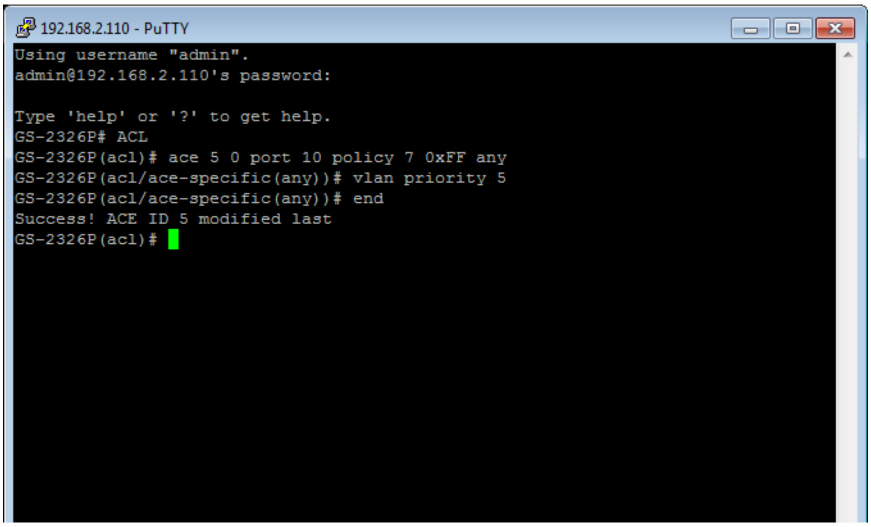
After you have established a connection to the CLI, you can navigate through the CLI structure just by entering the name of the required command section. For example, if you want to change AAA parameters, just enter `aaa` at the command line. The prompt will show the current menu in round brackets. Here you can enter the rewuired commands, e.g. `show config`:



```
login as: admin
admin@192.168.2.110's password:

Type 'help' or '?' to get help.
GS-2326P# aaa
GS-2326P(aaa)# show config

Server Timeout   : 15 seconds
Server Dead Time : 300 seconds

TACACS+ Authorization and Accounting Configuration:
Authorization                  : Disable
Fallback to Local Authorization: Disable
Accounting                     : Disable

RADIUS Authentication Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------ -------- --------------------------- ----- ------------------------------
1      Disabled                             1812
2      Disabled                             1812
3      Disabled                             1812
4      Disabled                             1812
5      Disabled                             1812
```

Figure 7: PuTTY configure

For some of the commands you will find a 2-level structure of commands, e.g. ACL/ace or QoS/qce. In those cases you will enter the first level command including all required or optional parameters. After the 1st level command has been entered, the prompt will show the menu and the first level command in round brackets. Here you can enter the 2nd level commands including all required parameters. Note that you might want to execute more than one 2nd level commands. fter all 2nd level commands have been entered, you will finish this sequence using the `end` command, which will bring you back to the first level menu.



```
Using username "admin".
admin@192.168.2.110's password:

Type 'help' or '?' to get help.
GS-2326P# ACL
GS-2326P(acl)# ace 5 0 port 10 policy 7 0xFF any
GS-2326P(acl/ace-specific(any))# vlan priority 5
GS-2326P(acl/ace-specific(any))# end
Success! ACE ID 5 modified last
GS-2326P(acl)#
```

Figure 8: PuTTY configure

2 Global Commands

The Global commands is probably the most commonly used in the CLI console. It is used for global configuration at any level of command.

Command	Function
3rd-party-licenses	Shows the license text of used 3rd-party licenses
auto-logout	Configure time of inactivity before automatic logout
exit	Exit from current mode
help	Show available commands
history	Show a list of previously run commands
logout	Disconnect
restore	Restore running configuration
save	Save running configuration
startlmc	Connect this switch with the LANCOM Management Cloud (LMC)
trace	Trace data of some modules

2.1 *3rd-party-licenses*

Using this command shows you the license text of used 3rd-party licenses.

Syntax:

```
3rd-party-licenses
```

Example:

```
Switch# 3rd-party-licenses
```

2.2 *auto-logout*

Using this command you can Configure time of inactivity before automatic logout.

Syntax:

```
auto-logout <10-3600>
```

Parameter:

<10-3600>

Time in seconds of inactivity before automatic logout.

Example:

```
Switch# auto-logout 3600
```

2.3 *exit*

Using this command you can Exit from current mode.

Syntax:

```
exit
```

Example:

```
Switch(aaa)# exit
Switch#
```

2.4 *help*

This command displays the CLI help. Press the TAB key twice as shortcut for "?" and/or "help".

Syntax:

```
help
?
```

Parameter:

help

Displays command help (available commands and description).

?

Displays parameter help (available commands and description).

Example:

```
Switch# help

Commands available:
  aaa                     Authentication, Authorization, Accounting
  access                  Access management
  account                 User account management
  ...                     ...
  vlan                    VLAN configuration
  voice-vlan              Voice VLAN configuration

Global commands:
  auto-logout         Configure time of inactivity before automatic logout

  exit                    Exit from current mode
  help                    Show available commands
  history                 Show a list of previously run commands
  logout                  Disconnect
  restore                 Restore running configuration
  save                    Save running configuration
Switch# auto-logout ?
  <10-3600>                 Time in seconds of inactivity before automatic
logout
```

2.5 *history*

Using this command you can Show a list of previously run commands.

Syntax:

```
history
```

Example:

```
Switch# history

Command history:
  0. help
  1. history
  2. 0
  3. history
  4. 3
  5. history
```

2.6 *logout*

Using this command you can Disconnect.

Syntax:

```
logout
```

Example:

```
Switch# logout
Username:
```

2.7 *restore*

Using this command you can Restore running configuration.

Syntax:

```
restore default [keep-ip]
restore user
```

Parameter:

default

Restore configuration as factory default.

user

Restore configuration as user configuration.

keep-ip

Restore configuration as factory default unless ip address.

Example:

```
Switch# restore default keep-ip

Switch# restore user
```

2.8 *save*

Using this command you can Save running configuration.

Syntax:

```
save start|user
```

Parameter:

start

Save running configuration as start configuration.

user

Save running configuration as user configuration.

Example:

```
Switch# save start

Switch# save user
```

2.9 *startlmc*

Connect this switch with the LANCOM Management Cloud (LMC). Thw LMC shows a pairing token that you have to use with this command.

Syntax:

```
startlmc Pairing Token
```

Parameter:

Pairing Token

The pairing token as shown by the LMC.

Example:

```
Switch# startlmc

Switch#
```

2.10 *trace*

Using this command you can trace data of some modules.

Syntax:

```
trace #|+|- MODULE
```

Parameter:

#

Toggles trace function for a module on / off.

+

Activates trace function for a module.

-

Deactivates trace function for a module.

MODULE

Activate or deactivate trace data for one of the following modules: Device-API, HTTP-Client, LMC-Control-Data, LMC-Control-State, LMC-Monitor-Data, LMC-Monitor-State or LMC-Pairing-State.

Example:

```
Switch# trace + HTTP
HTTP-Client: ON
Switch#
```

3 AAA Commands

This section shows you how to use an AAA (Authentication, Authorization, Accounting) server to provide access control to your network. The AAA server can be a TACACS+ or RADIUS server to create and manage objects that contain settings for using AAA servers.

Command	Function
acc-radius	Configure RADIUS accounting Server
accounting	Configure Accounting mode
authorization	Configure Authorization mode
deadtime	Configure server dead time
fallback-author	Configure Authorization mode
radius	Configure RADIUS authentication server
show	Show AAA information
tacacs+	Configure TACACS+ authentication server
timeout	Configure server response timeout

3.1 *acc-radius*

Using this command you can configure the RADIUS accounting server parameters.

Syntax:

```
acc-radius <index> enable [<ip-hostname>] [<0-65535>] [<Line>]
acc-radius <index> disable
```

Parameter:

<index>

The index of the RADIUS accounting server.

Possible values: 1 to 5.

enable|disable

Enables or disables the RADIUS accounting for the given index.

<ip-hostname>

The IP address or hostname of the RADIUS accounting server.

<0-65535>

The UDP port used for connection to RADIUS accounting server.

Special values: 0 is equivalent to default port (1813).

<LINE>

Shared secret for accessing the external server.

Possible values: maximum 29 characters.

Example:

```
Switch(aaa)# acc-radius 1 enable 192.168.2.22 65535 radius
Switch(aaa)# show config

Server Timeout   : 15 seconds
Server Dead Time : 300 seconds
TACACS+ Authorization and Accounting Configuration:
Authorization                  : Disable
Fallback to Local Authorization: Disable
Accounting                     : Disable


RADIUS Authentication Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------       --------       ---------------------------       -----
------------------------------
RADIUS Authentication Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------       --------       ---------------------------       -----
------------------------------

1      Disabled                             1812
2      Disabled                             1812
3      Disabled                             1812
4      Disabled                             1812
5      Disabled                             1812

RADIUS Accounting Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------       --------       ---------------------------       -----
------------------------------

1      Enabled  192.168.2.22                65535 radius
2      Disabled                             1813
3      Disabled                             1813
4      Disabled                             1813
5      Disabled                             1813

TACACS+ Authentication Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------       --------       ---------------------------       -----
------------------------------

1      Disabled                         49
2      Disabled                         49
3      Disabled                         49
4      Disabled                         49
5      Disabled                         49
Switch(aaa)#
```

3.2 *accounting*

Using this command you can enable or disable the global RADIUS accounting operation mode.

If no RADIUS accounting server is configured or reachable when enabling the global RADIUS accounting operation mode, the device will show “Server disconnect”.

Syntax:

```
accounting enable|disable
```

Parameter:

enable

Globally enable accounting operation mode.

disable

Globally disable accounting operation mode.

Example:

```
Switch(aaa)# accounting enable
Server disconnect!
Switch(aaa)# accounting disable
Switch(aaa)#
```

3.3 *authorization*

Using this command you can enable or disable the TACACS+/RADIUS authorization mode.

Never enable remote authentication if no authentication server is configured or reachable AND *fallback to local authorization* is disabled. If you enable remote authentication with no server available and the fallback setting disabled, the device will decline any further action with the authentication error “Server disconnect!”. In this state, remote administration is prohibited and the device can only be re-accessed by performing a hard reset.

Syntax:

```
authorization enable|disable
```

Parameter:

enable

Globally enable TACACS+/RADIUS authorization operation mode.

disable

Globally disable TACACS+/RADIUS authorization operation mode.

Example:

```
Switch(aaa)# authorization enable
Switch(aaa)#
```

3.4 *deadtime*

Using this command you can configure the RADIUS server deadtime.

The deadtime is the period during which the switch will not send new requests to a server that has failed to respond to a previous request. This will stop the switch from continually trying to contact a server that it has already determined as dead.

Syntax:

```
deadtime <0-3600>
```

Parameter:

<0-3600>

Time that a server is considered dead if it doesn't answer a request.

Possible values: 0 to 3600 seconds.

Special values: 0 disables this feature.

Example:

```
Switch(aaa)# deadtime 3600
Server disconnect!
Switch(aaa)#
```

3.5 *fallback-author*

Using this command you can configure the fallback function of RADIUS authorization in case the remote authorization fails.

Syntax:

```
fallback-author enable|disable
```

Parameter:

enable

Enables fallback function in case remote authorization fails.

disable

Disables fallback function.

Example:

```
Switch(aaa)# fallback-author enable
Server disconnect!
```

3.6 *radius*

Using this command you can configure the RADIUS authentication server parameters.

If no RADIUS authentication server is configured or reachable, the device will show “Server disconnect”.

Syntax:

```
radius <index> enable [<ip-hostname>] [<0-65535>] [<Line>]
radius <index> disable
```

Parameter:

<index>

The index of the RADIUS authentication server.

Possible values: 1 to 5.

enable|disable

Enables or disables the RADIUS authentication for the given index.

<ip-hostname>

The IP address or hostname of the RADIUS authentication server.

<0-65535>

The UDP port used for connection to RADIUS authentication server.

Special values: 0 is equivalent to default port (1813).

<LINE>

Shared secret for accessing the external server.

Possible values: maximum 29 characters.

Example:

```
Switch(aaa)# radius 1 enable 192.168.2.22 0 radius
Server disconnect!
```

3.7 *show*

Using this command you can display the current RADIUS AAA information.

Syntax:

```
show config
show statistics <1-5>
```

Parameter:

config

Shows AAA configuration.

statistics

Shows RADIUS statistics.

<1-5>

The index of the RADIUS server you want to show statistics for.

Example:

```
Switch(aaa)# show config

Server Timeout   : 15 seconds
Server Dead Time : 300 seconds

TACACS+ Authorization and Accounting Configuration:
Authorization                  : Disable
Fallback to Local Authorization: Disable
Accounting                     : Disable

RADIUS Authentication Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------       --------       ---------------------------       -----
------------------------------

1      Disabled                             1812
2      Disabled                             1812
3      Disabled                             1812
4      Disabled                             1812
5      Disabled                             1812

RADIUS Accounting Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------       --------       ---------------------------       -----
------------------------------

1      Disabled                             1813
2      Disabled                             1813
3      Disabled                             1813
4      Disabled                             1813
5      Disabled                             1813

TACACS+ Authentication Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------       --------       ---------------------------       -----
------------------------------

1      Disabled                         49
2      Disabled                         49
3      Disabled                         49
4      Disabled                         49
5      Disabled                         49
Switch(aaa)#
```

```
Switch(aaa)#  show statistics 1

Server #1 (0.0.0.0:1812) RADIUS Authentication Statistics:
Rx Access Accepts                    0  Tx Access Requests
   0
Rx Access Rejects                    0  Tx Access Retransmissions
   0
Rx Access Challenges                 0  Tx Pending Requests
   0
Rx Malformed Acc. Responses          0  Tx Timeouts
   0
Rx Bad Authenticators                0
Rx Unknown Types                     0
Rx Packets Dropped                   0
State:                        Disabled
Round-Trip Time:                     0 ms
```

```
Server #1 (0.0.0.0:1813) RADIUS Accounting Statistics:
Rx Responses                         0  Tx Requests
   0
Rx Malformed Responses               0  Tx Retransmissions
   0
Rx Bad Authenticators                0  Tx Pending Requests
   0
Rx Unknown Types                     0  Tx Timeouts
   0
Rx Packets Dropped                   0
State:                        Disabled
Round-Trip Time:                     0 ms
Switch(aaa)#
```

3.8 *tacacs+*

Using this command you can configure the TACACS+ authentication server parameters.

If no TACACS+ authentication server is configured or reachable, the device will show “Server disconnect”.

Syntax:

```
tacacs+ <index> enable [<ip-hostname>] [<0-65535>] [<Line>]
tacacs+ <index> disable
```

Parameter:

<index>

The index of the TACACS+ authentication server.

Possible values: 1 to 5

enable|disable

Enables or disables the TACACS+ authentication for the given index.

<ip-hostname>

The IP address or hostname of the TACACS+ authentication server.

<0-65535>

The UDP port used for connection to TACACS+ authentication server.

Special values: 0 is equivalent to default port (1813).

<LINE>

Shared secret for accessing the external server.

Possible values: maximum 29 characters.

Example:

```
Switch(aaa)# tacas+ 1 enable 192.168.2.22 0 tacacs
Server disconnect!
```

3.9 *timeout*

Using this command you can configure the server response timeout.

Syntax:

```
timeout <3-3600>
```

Parameter:

<3-3600>

The Timeout is the maximum time to wait for a reply from a server.

Example:

```
Switch(aaa)# timeout 360
Switch(aaa)#
```

4 Access Commands

This section shows you how to configure access management table of the switch including HTTP/HTTPS, SNMP, and TELNET/SSH. You can manage the switch over an Ethernet LAN, or over the Internet.

Command	Function
add	Add or modify access management entry
clear	Clear access management statistics
delete	Delete access management entry
mode	Configure the access management mode
show	Show access management information

4.1 *add*

Using this command you can add or modify access management parameters. If the host IP address matches the IP range of an entry and the used protcol matches the permitted protocols of this entry the switch will allow management access.

Syntax:

```
add <1-16> ipv4|ipv6 <start-ip> <end-ip> all|snmp|telnet|web
```

Parameter:

<1-16>

Index of the access management table entry.

ipv4

IPv4 format address.

ipv6

IPv6 format address.

<start-ip>

Indicates the start IP address for the access management entry.

<end-ip>

Indicates the end IP address for the access management entry.

all

Indicates that the host can access the switch from any interface if the host IP address matches the IP address range provided in the entry.

snmp

Indicates that the host can access the switch from SNMP interface if the host IP address matches the IP address range provided in the entry.

telnet

Indicates that the host can access the switch from TELNET/SSH interface if the host IP address matches the IP address range provided in the entry.

web

Indicates that the host can access the switch from HTTP/HTTPS interface if the host IP address matches the IP address range provided in the entry.

Example:

```
Switch(access)# add 1 ipv4 192.168.1.1 192.168.1.241 all
Switch(access)# show config
Access Management Mode : Disabled

W: WEB/HTTPS
S: SNMP
T: TELNET/SSH
Index Start IP Address                End IP Address                 W S T
----- ------------------------------- ------------------------------ - - -
1     192.168.1.1                     192.168.1.241                  Y Y Y
Switch(access)#
```

4.2 *clear*

Using this command you can clear access management statistics.

Syntax:

```
clear statistics
```

Parameter:

statistics

Clear access management statistics

Example:

```
Switch(access)# clear statistics
Switch(access)#
```

4.3 *delete*

Using this command you can delete an access management entry.

Syntax:

```
delete <1-16>
```

Parameter:

<1-16>

Index of the entry to be deleted.

Example:

```
Switch(access)# delete  1
Switch(access)# show config
Access Management Mode : Disabled
W: WEB/HTTPS
S: SNMP
T: TELNET/SSH
Index Start IP Address                End IP Address                W S T
----- ------------------------------- ------------------------------ - - -
Switch(access)#
```

4.4 *mode*

Using this command you can configure the access management mode.

Syntax:

```
mode disable|enable
```

Parameter:

disable

Disables access management mode.

enable

Enables access management mode.

Example:

```
Switch(access)# mode enable
Switch(access)#
Switch(access)# show config
Access Management Mode : Enabled
W: WEB/HTTPS
S: SNMP
T: TELNET/SSH
Index Start IP Address                End IP Address                W S T
----- ------------------------------- ------------------------------ - - -
1     192.168.2.22                    192.168.2.250                  Y Y Y
Switch(access)#
```

4.5 *show*

Using this command you can display access configuration and statistics.

Syntax:

```
show config|statistics
```

Parameter:

config

Shows current access management configuration.

statistics

Shows available access management statistics.

Example:

```
Switch(access)# show config

Access Management Mode : Enabled

W: WEB/HTTPS
S: SNMP
T: TELNET/SSH
Index Start IP Address               End IP Address                 W S T
----- ------------------------------- ------------------------------
UDP Port
```

```
Switch(access)# show statistics
Client  Receive     Allow       Discard
------  ----------  ----------  ----------
HTTP    0           0           0
HTTPS   0           0           0
SNMP    0           0           0
TELNET  0           0           0
SSH     0           0           0
```

5 Account Commands

In this function, only administrator can create, modify or delete the username and password. Administrator can modify other guest identities' password without confirming the password but it is necessary to modify the administrator-equivalent identity. Guest-equivalent identity can modify his password only. Please note that you must confirm administrator/guest identity in the field of Authorization in advance before configuring the username and password. Only one administrator is allowed to exist and unable to be deleted. In addition, up to 4 guest accounts can be created.

Command	Function
add	Add or modify user account
delete	Delete user account
show	Show user account information

5.1 *add*

Using this command you can add or modify user accounts.

Syntax:

```
add <1-15> <name> [<password>]
```

Parameter:

<1-15>

User privilege level, see *Privilege level Commands* on page 255.

<name>

Up to 32 characters to identify the user name.

If the user name is NOT already existing in the account table, an account will be created with the seletced name.

If the user name is already existing in the account table, the selected account will be updated with the given parameters

(!) If you omit the password for an existing account, the password will be removed.

<password>

The password for this user name.

Example:

```
Switch(account)# add 10 david david
Switch(account)# show
User Name                        Privilege Level
-------------------------------- ----------------
admin                                          15
david                                          10
```

5.2 *delete*

Using this command you can delete a user account.

Syntax:

```
delete <name>
```

Parameter:

<name>

Up to 32 characters to identify the user name

Example:

```
Switch(account)# delete guest
Switch(account)# show
User Name                        Privilege Level
-------------------------------- ----------------
admin                                          15
Switch(account)#
```

5.3 *show*

Using this command you can display current user account information.

Syntax:

```
show
```

Example:

```
Switch(account)# show
User Name                        Privilege Level
-------------------------------- ----------------
admin                                          15
Switch(account)#
```

6 ACL Commands

The switch access control list (ACL) is probably the most commonly used object in the IOS. It is used for packet filtering but also for selecting types of traffic to be analyzed, forwarded, or influenced in some way. The ACLs are divided into EtherTypes. IPv4, ARP protocol, MAC and VLAN parameters etc. Here we will just go over the standard and extended access lists for TCP/IP. As you create ACEs for ingress classification, you can assign a policy for each port, the policy number is 1-8, however, each policy can be applied to any port. This makes it very easy to determine what type of ACL policy you will be working with.

Command	Function
ace	Add or modify access control entry
action	Configure ACL port default action
Clear	Clear all ACL counters
delete	To delete the ACE (Access Control Entry) configuration on the switch
logging	Configure ACL port default logging operation
move	Move ACE
policy	Configure ACL port policy
rate-limiter	To set ACL rate limit
show	Show ACL information
shutdown	Configure ACL port default shut down operation

6.1 *ace*

Using this command you can add or modify Access Control Entry.

Syntax:

```
ace           <1-256> <0-256> ((port <port-list> policy <0-255> <0x00-0xFF>)|switch)
(any|arp|etype|icmp|ipv4|tcp|udp)
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:
1st level

<1-256>

If the ACE ID is specified and an entry with this ACE ID already exists, the ACE will be modified. Otherwise, a new ACE will be added.

<0-256>

If the next ACE ID is non-zero, the ACE will be placed before this ACE in the list. If the next ACE ID is zero, the ACE will be placed last in the list.

port

Port ACE keyword, the rule applies to the specified port only.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

policy

Policy ACE keyword, the rule applies to all ports configured with the specified policy.

<0-255>

Policy number.

<0x00-0xFF>

Policy number bitmask.

switch

Switch ACE keyword, the rule applies to all ports

any

Any frame can match this ACE.

arp

Only ARP frames can match this ACE. Notice the ARP frames won't match the ACE with Ethernet type

etype

Only Ethernet Type frames can match this ACE

icmp

Only ICMP frames can match this ACE. Notice the ICM frames won't match the ACE with Ethernet type

ipv4

Only IPv4 frames can match this ACE. Notice the IPv4 frames won't match the ACE with Ethernet type

tcp

Only TCP frames can match this ACE. Notice the TCP frames won't match the ACE with Ethernet type

udp

Only UDP frames can match this ACE. Notice the UDP frames won't match the ACE with Ethernet type

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# show
ACE ID        : 5                   Rate Limiter : Disabled
Ingress Port  : 10                  Port Redirect: Disabled
                                    Mirror       : Disabled
Policy/Bitmask: 7/0xff              Logging      : Disabled
Type          : User                Shutdown     : Disabled
Frame Type    : Any                 Counter      : 0
Action        : Permit

MAC Parameters                      VLAN Parameters
--------------                      ---------------
                                    802.1Q Tagged: Any
                                    VLAN ID      : Any
                                    Tag Priority : Any
Switch(acl/ace-specific(any))# end
Success! ACE ID 5 added last
```

6.1.1 *action*

Using this command you can configure the forwarding action of the ACE.

Syntax:

```
action        deny [port-redirect (<port-list>|disable)]  |  permit
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

deny

Deny forwarding.

permit

Permit forwarding.

port-redirect

Enables redirect function.

<port-list>

Port list for redirect of frames.

disable

Disables redirect function.

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# action deny port-redirect disable
Switch(acl/ace-specific(any))# end
```

6.1.2 *arp-opcode*

Using this command you can configure the ARP opcode of the ACE.

Syntax:

```
arp-opcode    any|arp|other|rarp
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

any

Don't care

arp

Frame must have ARP/RARP opcode set to ARP

other

Frame has unknown ARP/RARP opcode

rarp

Frame must have ARP/RARP opcode set to RARP

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# arp-opcode arp
Switch(acl/ace-specific(any))# end
```

6.1.3 *arp-flags*

Using this command you can configure the ARP flags of the ACE..

Syntax:

```
arp-flags     (arp-smac|ethernet|ip|length|rarp-dmac|request-reply) (<0-1>|any)
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

arp-smac

Specify whether frames can hit the action according to their sender hardware address field (SHA) settings

ethernet

Specify whether frames can hit the action according to their ARP/RARP protocol address space (PRO) settings

ip

Specify whether frames can hit the action according to their ARP/RARP hardware address space (HRD) settings

length

Specify whether frames can hit the action according to their ARP/RARP hardware address length (HLN) and protocol address length (PLN) settings

rarp-dmac

Specify whether frames can hit the action according to their target hardware address field (THA) settings

request-reply

Specify the available ARP/RARP opcode (OP) flag for this ACE

<0-1>

[arp-smac] 0: ARP frames where SHA is not equal to the SMAC address

[arp-smac] 1: ARP frames where SHA is equal to the SMAC address

[ethernet] 0: ARP/RARP frames where the PRO is not equal to IP (0x800)

[ethernet] 1: ARP/RARP frames where the PRO is equal to IP(0x800)

[ip] 0: ARP/RARP frames where the HLD is not equal to Ethernet(1)

[ip] 1: ARP/RARP frames where the HLD is equal to Ethernet(1)

[length] 0: ARP/RARP frames where the HLN is not equal to Ethernet(0x06) or the (PLN) is not equal to IPv4(0x04)

[length] 1: ARP/RARP frames where the HLN is equal to Ethernet (0x06) and the (PLN) is equal to IPv4(0x04)

[rarp-dmac] 0: RARP frames where THA is not equal to the DMAC address

[rarp-dmac] 1: RARP frames where THA is equal to the DMAC address

[request-reply] 0: Frame must have ARP Reply or RARP Reply OP flag

[request-reply] 1: Frame must have ARP Request or RARP Request OP flag set

any

Don't care

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# arp-flags  ethernet 1
Switch(acl/ace-specific(any))# end
```

6.1.4 *dip*

Using this command you can configure the destination IP address of the ACE.

Syntax:

```
dip            any|(<ip-address> [<1-32>])
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<ip-address>

A frame that hits this ACE matches this destination IP address value

<1-32>

Network prefix

any

Don't care

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# dip any
Switch(acl/ace-specific(any))# end
```

6.1.5 *dmac*

Using this command you can configure the destination MAC address of the ACE.

Syntax:

```
dmac           any|broadcast|multicast|unicast
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

any

Don't care

broadcast

Frame must be broadcast

multicast

Frame must be multicast

unicast

Frame must be unitcast

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# dmac broadcast
Switch(acl/ace-specific(any))# end
```

6.1.6 *dport*

Using this command you can configure the destination UDP/TCP port range of the ACE.

Syntax:

```
dport          <dport-range>|any
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<dport-range>

Destination UDP/TCP port range, format: 1,3-5

any

Don't care

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# dport 1-5
Switch(acl/ace-specific(any))# end
```

6.1.7 *end*

Using this command you cancomplete the current command sequence.

Syntax:

```
end            <cr>
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<cr>

No additional parameters required.

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# end
```

6.1.8 *etype*

Using this command you can configure the ethernet type of the ACE.

Syntax:

```
etype         <0x0600-0xffff>|any
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<0x0600-0xffff>

A frame that hits this ACE matches this EtherType value

any

Any but excluding 0x0800(IPv4) 0x0806(ARP) and 0x86DD(IPv6)

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# etype any
Switch(acl/ace-specific(any))# end
```

6.1.9 *icmp-code*

Using this command you can configure the ICMP code of the ACE.

Syntax:

```
icmp-code     <0-255>|any
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<0-255>

A frame that hits this ACE matches this ICMP code value

any

Don't care

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# icmp-code 55
Switch(acl/ace-specific(any))# end
```

6.1.10 *icmp-type*

Using this command you can configure the ICMP type of the ACE.

Syntax:

```
icmp-type     <0-255>|any
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<0-255>

A frame that hits this ACE matches this ICMP type value

any

Don't care

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# icmp-type 5
Switch(acl/ace-specific(any))# end
```

6.1.11 *ip-flags*

Using this command you can configure the IP flags of the ACE.

Syntax:

```
ip-flags      (fragment|options|ttl) (<0-1>|any)
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

fragment

Specify the fragment offset settings for this ACE

<0-1>

[fragment] 0: IPv4 frames where the MF bit is unset and the FRAG OFFSET field is equal zero

[fragment] 1: IPv4 frames where the MF bit is set or the FRAG OFFSET field is greater than zero

[options] 0: IPv4 frames where the options flag is unset

[options] 1: IPv4 frames where the options flag is set

[ttl] 0: IPv4 frames with a Time-to-Live field is equal to zero

[ttl] 1: IPv4 frames with a Time-to-Live field greater than zero

any

Don't care

options

Specify the IP options flag setting for this ACE

ttl

Specify the Time-to-Live settings for this ACE

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# ip-flags ttl 0
Switch(acl/ace-specific(any))# end
```

6.1.12 *ip-protocol*

Using this command you can configure the IP protocol of the ACE.

Syntax:

```
ip-protocol   <0-255>|any
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<0-255>

A frame that hits this ACE matches this IP protocol value

any

Don't care

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# ip-protocol 77
Switch(acl/ace-specific(any))# end
```

6.1.13 *logging*

Using this command you can configure the logging operation of the ACE.

Syntax:

```
logging       <port-list> enable|disable
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

disable

Frames matching the ACE are not logged

enable

Frames matching the ACE are stored in the system log

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# logging enable
Switch(acl/ace-specific(any))# end
```

6.1.14 *mirror*

Using this command you can configure the mirror operation of the ACE.

Syntax:

```
mirror        <port-list> disable|enable
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

disable

Frames matching the ACE are not mirrored

enable

Frames matching the ACE are mirrored

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# mirror disable
Switch(acl/ace-specific(any))# end
```

6.1.15 *rate*

Using this command you can configure the rate limit of the ACE.

Syntax:

```
rate          <1-16>|disable
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<1-16>

Rate limiter ID

disable

Rate limit is disabled for the ACE

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# rate disable
Switch(acl/ace-specific(any))# end
```

6.1.16 *show*

Using this command you can show the current ACE settings.

Syntax:

```
show            <cr>
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<cr>

No parameters required.

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# show
Switch(acl/ace-specific(any))# end
```

6.1.17 *shutdown*

Using this command you can configure the port shut down operation for the ACE.

Syntax:

```
shutdown        disable|enable
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

disable

Port shut down is disabled for the ACE

enable

If a frame matches the ACE, the ingress port will be disabled

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# shutdown enable
Switch(acl/ace-specific(any))# end
```

6.1.18 *sip*

Using this command you can configure the source IP address of the ACE.

Syntax:

```
sip             any|(<ip-address> [<1-32>])
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<ip-address>

A frame that hits this ACE matches this destination IP address value

<1-32>

Network prefix

any

Don't care

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# sip any
Switch(acl/ace-specific(any))# end
```

6.1.19 *smac*

Using this command you can configure the source MAC address for the ACE.

Syntax:

```
smac          <mac-address>|any
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<mac-address>

A frame that hits this ACE matches this source MAC address value

any

Don't care

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# mac-address any
Switch(acl/ace-specific(any))# end
```

6.1.20 *sport*

Using this command you can configure the source UDP/TCP port for the ACE.

Syntax:

```
sport         <sport-range>|any
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<sport-range>

Source UDP/TCP port range

any

Don't care

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# sport any
Switch(acl/ace-specific(any))# end
```

6.1.21 *tcp-flags*

Using this command you can configure the TCP flags for the ACE.

Syntax:

```
tcp-flags     ack|fin|psh|rst|syn|urg (<0-1>|any)
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

ack

Specify the TCP "Acknowledgment field significant" (ACK) value for this ACE

fin

Specify the TCP "No more data from sender" (FIN) value for this ACE

psh

Specify the TCP "Push Function" (PSH) value for this ACE

rst

Specify the TCP "Reset the connection" (RST) value for this ACE

syn

Specify the TCP "Synchronize sequence numbers" (SYN) value for this ACE

urg

Specify the TCP "Urgent Pointer field significant" (URG) value for this ACE

<0-1>

0: TCP frames where the ack|fin|psh|rst|syn|urg field is unset

1: TCP frames where the ack|fin|psh|rst|syn|urg field is set

any

Don't care

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# tcp-flags ack 1
Switch(acl/ace-specific(any))# end
```

6.1.22 *vlan*

Using this command you can configure VLAN parameters of the ACE.

Syntax:

```
vlan          (priority (any|<0-7>)) | (tagged any|disable|enable) | (vid any|<1-4094>)
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

priority

any

Don't care

<0-7>

A frame that hits this ACE matches this tag priority

Specify the tag priority for this ACE

tagged

Specify whether frames can hit the action according to the 802.1Q tagged

any

Don't care

disable

Untagged frame only

enable

Tagged frame only

vid

Specify the VLAN ID filter for this ACE

any

No VLAN ID filter is specified. (VLAN ID filter status is don't-care.)

<1-4094>

A frame that hits this ACE matches this VLAN ID value

Example:

```
Switch(acl)# ace 5 0 port 10 policy 7 0xFF any
Switch(acl/ace-specific(any))# vlan priority 5
Switch(acl/ace-specific(any))# end
```

6.2 *action*

Using this command you can configure ACL port default action.

Syntax:

```
action <port-list> deny [port-redirect (<port-list>|disable)]
action <port-list> permit
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

deny

Deny forwarding

permit

Permit forwarding

port-redirect

port redirect keyword

<port-list>

Port list for copy of frames

disable

Disables port copy

Example:

```
Switch(acl)# action 1 permit
Switch(acl)#
Switch(acl)# show port
                   Rate
Port Policy Action Limiter  Port Copy    Mirror   Logging  Shutdown Counter
----  ------  ------  --------  ------------  --------  --------  --------
----------
1    1      Deny   Disabled Disabled     Disabled Disabled Disabled 0
2    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
3    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
4    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
5    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
.................

Rate Limiter  Rate
------------  ------------
1             1 PPS
2             1 PPS
3             1 PPS
4             1 PPS
```

6.3 *clear*

Clear all ACL counters.

Syntax:

```
clear
```

Example:

```
Switch(acl)# clear
Switch(acl)#
```

6.4 *delete*

Using this command you can delete the ACE (Access Control Entry) configuration on the switch.

Syntax:

```
delete <1-256>
```

Parameter:

<1-256>

ACE ID must be exist

Example:

```
Switch(acl)# delete 1
Switch(acl)#
Switch(acl)# show acl-config
Number of ACEs: 0
```

6.5 *logging*

Using this command you can configure ACL port default logging operation.

Syntax:

```
logging <port-list> enable|disable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Frames received on the port are not logged

enable

Frames received on the port are stored in the system log

Example:

```
Switch(acl)# logging 1 disable
Switch(acl)#
```

6.6 *mirror*

Configure ACL port default mirror operation.

Syntax:

```
mirror <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Frames received on the port are not mirrored

enable

Frames received on the port are mirrored

Example:

```
Switch(acl)# mirror 5 enable
Switch(acl)#
```

6.7 *move*

Using this command you can move ACE configuration between two indexes.

Syntax:

```
move <1-256> <0-256>
```

Parameter:

<1-256>

ACE ID must be exist

<0-256>

If the next ACE ID is non-zero, the ACE will be Placed before this ACE in the list. If the next ACE ID is zero, the ACE will be placed last in the list.

Example:

```
Switch(acl)# move 1 0
Switch(acl)#
```

6.8 *policy*

Using this command you can set acl port policy on switch.

Syntax:

```
policy <port-list> <0-255>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-255>

Policy number

Example:

```
Switch(acl)# policy 1 1
Switch(acl)#
```

6.9 *port-rate*

Using this command you can set acl port-rate on switch.

Syntax:

```
port-rate <port-list> (<1-16>|disable)
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<1-16>

Rate limiter ID

disable

Disables rate limit

Example:

```
Switch(acl)# port-rate 1 1
Switch(acl)#
```

6.10 *rate-limiter*

Using this command you can set the access control rule with rate limiter on switch.

Syntax:

```
rate-limiter <1-16> kbps <0-10000>
rate-limiter <1-16> pps <0-3276700>
```

Parameter:

<1-16>

Rate limiter ID

kbps

Kbits per second

<0-10000>

Rate in 100Kbps (the value 1 correlates to 100 kbps).

pps

Packets per second

<0-3276700>

Rate in pps (the value 1 corrolates to 1 pps).

Example:

```
Switch(acl)# rate-limiter 1 kbps 100
Switch(acl)#
```

6.11 *show*

Using this command you can show all access control entry setting or information of the switch.

Syntax:

```
show acl-config [<1-256>]
show acl-status|port|rate-limiter
```

Parameter:

acl-config

Shows ACL configuration

<1-256>

Shows detail ACE configuration by ACE ID

acl-status

Shows ACL status

port

Shows ACL port configuration

rate-limiter

Shows ACL rate limiter

Example:

```
Switch(acl)# show acl-config
Number of ACEs: 0
```

```
Switch(acl)# show port
                  Rate
Port Policy Action Limiter  Port Copy    Mirror   Logging  Shutdown Counter
----  ------  ------  ---------  ------------  ---------  ---------  ---------
----------
1    1      Permit 1        Disabled     Disabled Disabled Disabled 0
2    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
3    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
4    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
5    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
6    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
7    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
8    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
9A   1      Permit Disabled Disabled     Disabled Disabled Disabled 0
10A  1      Permit Disabled Disabled     Disabled Disabled Disabled 0
9B   1      Permit Disabled Disabled     Disabled Disabled Disabled 0
10B  1      Permit Disabled Disabled     Disabled Disabled Disabled 0

Rate Limiter  Rate
------------  ------------
1             1 PPS
2             1 PPS
3             1 PPS
4             1 PPS
5             1 PPS
 --More--, q to quit
```

6.12 *shutdown*

Configure ACL port default shut down operation.

Syntax:

```
shutdown <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Port shut down is disabled.

enable

If a frame is received on the port, the port will be disabled.

Example:

```
Switch(acl)# shutdown 5 disable
Switch(acl)#
```

6.13 *state*

Configure ACL port state.

Syntax:

```
state <port-list>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables ACL port state

enable

Enables ACL port state

Example:

```
Switch(acl)# state 5 enable
Switch(acl)#
```

7 Aggregation Commands

The Aggregation is used to configure the settings of Link Aggregation. You can bundle more than one port with the same speed, full duplex and the same MAC to be a single logical port, thus the logical port aggregates the bandwidth of these ports. This means you can apply your current Ethernet equipment's to build the bandwidth aggregation. For example, if there are three Fast Ethernet ports aggregated in a logical port, then this logical port has bandwidth three times as high as a single Fast Ethernet port has.

Command	Function
delete	Delete command
group	Configure the link aggregation group
mode	Configure the link aggregation traffic distribution mode
Show	Show aggregation group information

7.1 *delete*

Using this command you can delete a selected link aggregation group.

Syntax:

```
delete group <group-id>
```

Parameter:

group

Delete instruction for groups.

group-id

Group ID you want to delete.

Example:

```
Switch(aggregation)# delete group 2
Switch(aggregation)# show
Aggregation Mode
----------------
Source MAC      : Disabled
Destination MAC : Disabled
IP Address      : Disabled
TCP/UDP Port    : Disabled
```

7.2 *group*

Using this command you can define a selected link aggregation group.

Syntax:

```
group <1-13> <port-list>
```

Parameter:

<1-13>

The Aggregation group id.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(aggregation)# group 2 5-7
Switch(aggregation)#
```

7.3 *mode*

Using this command you can enable or disable the link aggregation for different criteria.

enable or disable

Syntax:

```
mode (dmac|ip|port|smac) (disable|enable)
```

Parameter:

dmac

Destination MAC address.

ip

Source and destination IP address.

port

Source and destination UDP/TCP port

smac

Source MAC address

disable

Disables field in traffic distribution

enable

Enables field in traffic distribution

Example:

```
Switch(aggregation)# mode ip disable
Switch(aggregation)#
Switch(aggregation)# show
Aggregation Mode
----------------
```

```
Source MAC      : Disabled
Destination MAC : Disabled
IP Address      : Disabled
TCP/UDP Port    : Disabled

Group ID  Name    Type    Configured Ports  Aggregated Ports
--------  ------  ------  ----------------  ----------------
2         LLAG2   Static  5-7               None
Switch(aggregation)#
```

7.4 *show*

Using this command you can show the current link aggregation configuration.

Syntax:

```
show
```

Example:

```
Switch(aggregation)# show
Aggregation Mode
----------------
Source MAC      : Enabled
Destination MAC : Disabled
IP Address      : Disabled
TCP/UDP Port    : Enabled

Group ID  Name    Type    Configured Ports  Aggregated Ports
--------  ------  ------  ----------------  ----------------
2         LLAG2   Static  5-7               None
Switch(aggregation)#
```

8 Arp-inspection Commands

The section describes how to configure the ARP inspection parameters of the switch. You could use the ARP inspection configuration to manage the ARP table.

Command	Function
add	Add ARP inspection static entry
delete	Delete ARP inspection static entry
delete-static	Delete ARP inspection static gateway entry
dos-icmp	IP-DoS ICMP mode
dos-port1	IP-DoS server port 1
dos-port2	IP-DoS server port 2
dos-port3	IP-DoS server port 3
dos-port4	IP-DoS server port 4
dos-tcp	IP-DoS TCP mode
dos-udp	IP-DoS UDP mode
mode	Configure ARP inspection mode
port-mode	Configure ARP inspection port mode
reopen	Reopen blocked ARP entry
show	Show ARP inspection information
spoofing-action	Spoofing per port action
spoofing-limit	Spoofing per port limit per min
spoofing-mode	Globally spoofing mode
spoofing-portmode	Spoofing per port mode
static-gateway	Set static gateway entry
static-mode	Globally static gateway mode
translate	Translate ARP inspection dynamic entries into static

8.1 *add*

Using this command you can add a static entry in ARP inspection table.

Syntax:

```
add <port-list> <1-4094> <ip-address> <mac-address>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<1-4094>

VLAN ID, possible values from 1 to 4094.

<ip-address>

IP address allowed for doing ARP request

<mac-address>

MAC address, format 0a-1b-2c-3d-4e-5f

Example:

```
Switch(arp-inspection)# add 1 5 192.168.1.2 0a-1b-2c-3d-4e-5f
Switch(arp-inspection)#
```

8.2 *delete*

Using this command you can delete a static entry in ARP inspection table.

Syntax:

```
delete <port-list> <1-4094> <ip-address> <mac-address>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<1-4094>

VLAN ID, possible values from 1 to 4094.

<ip-address>

IP address allowed for doing ARP request

<mac-address>

MAC address, format 0a-1b-2c-3d-4e-5f

Example:

```
Switch(arp-inspection)# delete 1 5 192.168.1.2 0a-1b-2c-3d-4e-5f
Switch(arp-inspection)#
```

8.3 *delete-static*

Using this command you can delete a static gateway entry in ARP inspection table.

Syntax:

```
delete-static <ip-address> <mac-address> <port> both|drop|none|shutdown|trap
```

Parameter:

<ip-address>

IP address allowed for doing ARP request

<mac-address>

MAC address, format 0a-1b-2c-3d-4e-5f

<port>

Port, possible value depending on distinct hardware model.

<1-4094>

VLAN ID, possible values from 1 to 4094.

both

Send a SNMP trap and shutdown the port.

drop

Drop ARP Packet and send a SNMP trap.

none

Do nothing.

shutdown

Shutdown the port.

trap

Send a SNMP trap.

Example:

```
Switch(arp-inspection)# delete-static 10.1.1.1 0a-1b-2c-3d-4e-5f 5 both
Switch(arp-inspection)#
```

8.4 *dos-icmp*

Using this command you enable or disable the IP-DoS ICMP mode.

Syntax:

```
dos-icmp disable|enable
```

Parameter:

disable

Disable IP-DoS ICMP mode.

enable

Enable IP-DoS ICMP mode.

Example:

```
Switch(arp-inspection)# dos-icmp enable
Switch(arp-inspection)#
```

8.5 *dos-port1*

Using this command you set or disable the port for IP-DoS server port 1.

Syntax:

```
dos-port1 disable|<Port>
```

Parameter:

disable

Disable IP-DoS server port 1.

<Port>

Port, possible value depending on distinct hardware model.

Example:

```
Switch(arp-inspection)# dos-port1 disable
Switch(arp-inspection)#
```

8.6 *dos-port2*

Using this command you set or disable the port for IP-DoS server port 2.

Syntax:

```
dos-port2 disable|<Port>
```

Parameter:

disable

Disable IP-DoS server port 2.

<Port>

Port, possible value depending on distinct hardware model.

Example:

```
Switch(arp-inspection)# dos-port2 disable
Switch(arp-inspection)#
```

8.7 *dos-port3*

Using this command you set or disable the port for IP-DoS server port 3.

Syntax:

```
dos-port3 disable|<Port>
```

Parameter:

disable

Disable IP-DoS server port 3.

<Port>

Port, possible value depending on distinct hardware model.

Example:

```
Switch(arp-inspection)# dos-port3 disable
Switch(arp-inspection)#
```

8.8 *dos-port4*

Using this command you set or disable the port for IP-DoS server port 4.

Syntax:

```
dos-port4 disable|<Port>
```

Parameter:

disable

Disable IP-DoS server port 4.

<Port>

Port, possible value depending on distinct hardware model.

Example:

```
Switch(arp-inspection)# dos-port4 disable
Switch(arp-inspection)#
```

8.9 *dos-tcp*

Using this command you enable or disable the IP-DoS TCP mode.

Syntax:

```
dos-tcp disable|enable
```

Parameter:

disable

Disable IP-DoS TCP mode.

enable

Enable IP-DoS TCP mode.

Example:

```
Switch(arp-inspection)# dos-tcp enable
Switch(arp-inspection)#
```

8.10 *dos-udp*

Using this command you enable or disable the IP-DoS UDP mode.

Syntax:

```
dos-udp disable|enable
```

Parameter:

disable

Disable IP-DoS UDP mode.

enable

Enable IP-DoS UDP mode.

Example:

```
Switch(arp-inspection)# dos-udp enable
Switch(arp-inspection)#
```

8.11 *mode*

Using this command you can configure the ARP inspection mode.

Syntax:

```
mode disable|enable
```

Parameter:

disable

Globally disable ARP inspection mode.

enable

Globally enable ARP inspection mode.

Example:

```
Switch(arp-inspection)# mode disable
Switch(arp-inspection)#
```

8.12 *port-mode*

Using this command you can configure the ARP inspection port mode.

Syntax:

```
port-mode <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables ARP inspection port mode

enable

Enables ARP inspection port mode

Example:

```
Switch(arp-inspection)# port-mode 1 disable
Switch(arp-inspection)#
```

8.13 *reopen*

Using this command you can reopen either a ARP spoofing blocked port or a ARP static gateway.

Syntax:

```
reopen spoofing <port-list> | static-gateway <1-4>
```

Parameter:

spoofing

Reopen ARP Spoofing blocked port..

<port-list>

Port list, depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

static-gateway <1-4>

Reopen ARP Static Gateway blocked entry 1 to 4 .

Example:

```
Switch(arp-inspection)# reopen spoofing 5
Switch(arp-inspection)#
```

8.14 *show*

Using this command you can show the current ARP inspection configuration.

Syntax:

```
show config|dos-config|spoofing-config|static-config|status
```

Parameter:

config

Shows ARP inspection configuration

dos-config

Show ARP IP-DoS configuration

spoofing-config

Show ARP spoofing configuration

static-config

Show ARP static gateway configuration

status

Shows ARP inspection static and dynamic entry

Example:

```
Switch(arp-inspection)# show config

ARP Inspection Mode : Disabled

Port  Port Mode
----  ---------
1     Disabled
2     Disabled
3     Disabled
4     Disabled
5     Disabled
6     Disabled
7     Disabled
8     Disabled
9     Disabled
10    Disabled
11    Disabled
12    Disabled
13    Disabled
14    Disabled
15    Disabled
16    Disabled
17    Disabled
18    Disabled
```

```
19    Disabled
20    Disabled
21    Disabled
22    Disabled
23    Disabled
24    Disabled
25    Enabled
26    Disabled
27    Disabled
28    Disabled
Switch(arp-inspection)#
```

8.15 *spoofing-action*

Using this command you can define the spoofing action per port.

Syntax:

```
spoofing-action <port-list> both|drop|none|shutdown|trap
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

both

Send a SNMP trap and shutdown the port.

drop

Drop ARP Packet and send a SNMP trap.

none

Do nothing.

shutdown

Shutdown the port.

trap

Send a SNMP trap.

Example:

```
Switch(arp-inspection)# spoofing-action 1 none
Switch(arp-inspection)#
```

8.16 *spoofing-limit*

Using this command you can define the limit per minute of spoofing per port.

Syntax:

```
spoofing-limit <port-list> <1-100>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<1-100>

Range; Default: 1

Example:

```
Switch(arp-inspection)# spoofing-limit 5 2
Switch(arp-inspection)#
```

8.17 *spoofing-mode*

Using this command you can set the ARP spoofing prevention mode globally for all ports.

Syntax:

```
spoofing-mode disable|enable
```

Parameter:

disable

Globally disable port ARP spoofing prevention mode.

enable

Globally enable port ARP spoofing prevention mode.

Example:

```
Switch(arp-inspection)# spoofing-mode enable
Switch(arp-inspection)#
```

8.18 *spoofing-portmode*

Using this command you can configure the ARP spoofing mode per port.

Syntax:

```
spoofing-portmode <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables ARP spoofing port mode

enable

Enables ARP spoofing port mode

Example:

```
Switch(arp-inspection)# spoofing-portmode 1 enable
Switch(arp-inspection)#
```

8.19 *static-gateway*

Using this command you can set a static gateway entry in ARP inspection table.

Syntax:

```
static-gateway <ip-address> <mac-address> <port> both|drop|none|shutdown|trap
```

Parameter:

<ip-address>

IP address allowed for doing ARP request

<mac-address>

MAC address, format 0a-1b-2c-3d-4e-5f

<port>

Port, possible value depending on distinct hardware model.

<1-4094>

VLAN ID, possible values from 1 to 4094.

both

Send a SNMP trap and shutdown the port.

drop

Drop ARP Packet and send a SNMP trap.

none

Do nothing.

shutdown

Shutdown the port.

trap

Send a SNMP trap.

Example:

```
Switch(arp-inspection)# static-gateway 10.1.1.1 0a-1b-2c-3d-4e-5f 1 drop
Switch(arp-inspection)#
```

8.20 *mode*

Using this command you can configure the static gateway mode.

Syntax:

```
mode disable|enable
```

Parameter:

disable

Globally disable static gateway mode.

enable

Globally enable static gateway mode.

Example:

```
Switch(arp-inspection)# static-mode enable
Switch(arp-inspection)#
```

8.21 *translate*

Using this command you can translate dynamic ARP inspection entries into static entries.

Syntax:

```
translate
```

Example:

```
Switch(arp-inspection)# translate
ARP Inspection:
        Translate 0 dynamic entries into static entries.
Switch(arp-inspection)#
```

9 Auth Method Commands

The section describes how to configure the local authentication method.

Command	Function
fallback	Configure local authentication fallback
method	Configure authentication method
show	Show Authentication configuration

9.1 *fallback*

Using this command you can configure the local authentication fallback function.

Syntax:

```
fallback (console|ssh|telnet|web) (disable|enable)
```

Parameter:

console

Settings the authenticate method fallback via console

ssh

Settings the authenticate method fallback via ssh

telnet

Settings the authenticate method fallback via telnet

web

Settings the authenticate method fallback via web

disable

Disables local authentication if remote authentication fails

enable

Enables local authentication if remote authentication fails

Example:

```
Switch(auth)# fallback ssh disable
Switch(auth)#
```

9.2 *method*

Using this command you can configure the local authentication method.

Syntax:

```
method (console|ssh|telnet|web) (local|none|radius|tacacs+)
```

Parameter:

console

Settings the authenticate method via console

ssh

Settings the authenticate method via ssh

telnet

Settings the authenticate method via telnet

web

Settings the authenticate method via web

local

Use local authentication

none

Authentication disabled

telnet

Use remote RADIUS authentication

tacacs+

Use remote TACACS+ authentication

Example:

```
Switch(auth)# method ssh local
Switch(auth)#
```

9.3 *show*

Using this command you can show the current authentication method configuration.

Syntax:

```
show
```

Example:

```
Switch(auth)# show
Client   Authentication Method  Local Authentication Fallback
-------  ---------------------  -----------------------------
console  local                  Disabled
telnet   local                  Disabled
ssh      local                  Disabled
web      local                  Disabled10B   Disabled
```

10 Cold-Reboot Commands

This section describes how to restart switch for any maintenance needs.

Command	Function
cold-reboot	Cold reboot the system

10.1 *cold-reboot*

Using this command you can cold reboot the system.

Syntax:

```
cold-reboot
```

Example:

```
Switch# cold-reboot
```

11 Config-file Commands

This section describes how to export and import the Switch configuration. Any current configuration files will be exported as XML format.

Command	Function
export	Export configuration file to TFTP server
import	Import configuration file from TFTP server

11.1 *export*

Using this command you can export the current device configuration to a TFTP server.

Syntax:

```
export <ip-address> [<filename>]
```

Parameter:

<ip-address>

The TFTP server ip address

<filename>

Configuration file name.

Example:

```
Switch(config-file)# export 192.168.1.100 testfile
Switch(config-file)#
```

11.2 *import*

Using this command you can import a device configuration from a TFTP server.

Syntax:

```
import <ip-address> <filename> [check]
```

Parameter:

<ip-address>

The TFTP server ip address

<filename>

Configuration file name.

check

Check configuration file only, do not start import.

Example:

```
Switch(config-file)# import 192.168.1.100 testfile
Switch(config-file)#
```

12 Debug Commands

Debug utilities.

Command	Function
cli-sessions	Show CLI sessions
memory	Show memory usage
net	Show network stack info
show-bootlog	Show bootlog
show-eventlog	Show eventlog
state-monitor	State monitor
threads	Show internal threads
wake-up	Wake up thread

12.1 *cli-sessions*

Using this command you can see the open sessions for the command line interface.

Syntax:

```
cli-sessions
```

Example:

```
Switch(debug)# cli-sessions
CLI Sessions:

Open CLI Sessions:
0x8074aef0: admin        15 - local
Switch(debug)#
```

12.2 *memory*

Using this command you can see the memory usage of the switch.

Syntax:

```
memory
```

Example:

```
Switch(debug)# memory
Memory Info:
```

```
Heap:
Total:               108875392 Bytes (106323KB)
Free:                104191196 Bytes (101749KB)
Largest Free Block:  102058476 Bytes (99666KB)
Switch(debug)#
```

12.3 *net*

Using this command you can see information about the network stack of the switch.

Syntax:

```
net arp|show
```

Parameter:

arp

The parameter shows the ARP table.

show

The parameter gives a short overview.

Example:

```
Switch(debug)# net show
ARP-Table: 1 entries
Switch(debug)#
```

12.4 *show-bootlog*

Using this command you can see the boot log of the switch.

Syntax:

```
show-bootlog
```

Example:

```
Switch(debug)# show-bootlog
Category    | Level    | Time                    | Message
----------------------------------------------------------------------------
Event/Boot  | Info    | 2018-07-23 11:00:02 | Switch just made a warm boot.
 Firmware Version: v3.32.0012
Event/Boot  | Info     | 2018-07-23 11:03:47 | reboot requested by cli
Switch(debug)#
```

12.5 *show-eventlog*

Using this command you can see the event log of the switch.

Syntax:

```
show-eventlog
```

Example:

```
Switch(debug)# show-eventlog
Category    | Level   | Time                      | Message
--------------------------------------------------------------------------
Event/Boot  | Info    | 2018-07-23 11:00:02 | Switch just made a warm boot.
 Firmware Version: v3.32.0012
Event       | Info    | 2018-07-23 11:00:02 | Configuration changed, but
not flashed yet
Event       | Info    | 2018-07-23 11:03:31 | CLI: config save by admin IDs
 of changed sections:
Event/Boot  | Info    | 2018-07-23 11:03:47 | reboot requested by cli
Switch(debug)#
```

12.6 *state-monitor*

Using this command you can see information about the states of all threads.

Syntax:

```
state-monitor clear|show
```

Parameter:

clear

The parameter clears all thread-states.

show

The parameter gives an overview of all thread-states.

Example:

```
Switch(debug)# state-monitor show
State Monitor:

No module states recorded
Switch(debug)#
```

12.7 *threads*

Using this command you can see information about all internal threads.

Syntax:

```
threads
```

Example:

```
Switch(debug)#threads
Threads Info:

ID  State  SetPrio  CurPrio  Name                     Stack Base  Size
Used
--  -----  -------  -------  ----------------------  ----------  -----
-----
2   Sleep        6        6  Network alarm support   0x8175a3c0   4096
1464
3   Sleep        7        7  Network support         0x81759150   4304
436
...
Switch(debug)#
```

12.8 *wake-up*

Using this command you can wake up sleeping threads.

Syntax:

```
wake-up control-service|worker
```

Parameter:

control-service

The parameter wakes the thread of the control service.

worker

The parameter wakes the worker thread.

Example:

```
Switch(debug)# wake-up worker
Release worker thread
Switch(debug)#
```

13 DHCP Relay Commands

The section describes how to forward DHCP requests to another specific DHCP server via DHCP relay. The DHCP servers may be on another network.

Command	Function
clear	Clear DHCP relay statistics
del	Delete Entry
mode	Configure DHCP relay mode
relay-option	Configure DHCP relay agent information option
server	Configure DHCP relay server
show	Show DHCP relay information
vlan	Configure DHCP relay GIADDR

13.1 *clear*

Using this command you can clear the DHCP relay statistics.

Syntax:

```
clear statistics
```

Parameter:

statistics

The parameter let you to clear DHCP relay statistics.

Example:

```
Switch(dhcp-relay)# clear statistics
Switch(dhcp-relay)#
```

13.2 *del*

Using this command you can delete DHCP relay GIADDR information.

Syntax:

```
del idx <1-6>
```

Parameter:

idx

Delete DHCP relay GIADDR information

<1-6>

DHCP relay GIADDR index.

Example:

```
Switch(dhcp-relay)# del idx 1
No Idx = 1 entry
Switch(dhcp-relay)#
```

13.3 *mode*

Using this command you can configure the DHCP relay mode.

When enable DHCP relay mode operation, the agent forward and to transfer DHCP messages between the clients and the server when they are not on the same subnet domain. And the DHCP broadcast message won't flood for security considered.

Syntax:

```
mode disable|enable
```

Parameter:

disable

Disables DHCP relay mode.

enable

Enables DHCP snooping mode.

Example:

```
Switch(dhcp-relay)# mode disable
Switch(dhcp-relay)#
```

13.4 *relay-option*

Using this command you can configure the DHCP relay agent option.

The agent insert specific information (option 82) into a DHCP message when forwarding to DHCP server and remove it from a DHCP message when transferring to DHCP client. If agent receive a DHCP message that already contains relay agent information. It will enforce the policy.

Syntax:

```
relay-option disable
relay-option enable [drop|keep|replace]
```

Parameter:

disable

The parameter means you to disable DHCP relay agent information option mode.

enable

The parameter means you to enable DHCP relay agent information option mode.

drop

Drop the packet when receive a DHCP message that already contains relay information.

keep

Keep the original relay information when receive a DHCP message that already contains it.

replace

Replace the original relay information when receive a DHCP message that already contains it.

Example:

```
Switch(dhcp-relay)# relay-option disable
Switch(dhcp-relay)#
```

13.5 *server*

Using this command you can configure the DHCP relay server.

Syntax:

```
server <ip-address>
```

Parameter:

<ip-address>

The parameter let you type in the DHCP server IP address.

Example:

```
Switch(dhcp-relay)# server 192.168.1.100
Switch(dhcp-relay)# show config
DHCP Relay Mode                : Disabled
DHCP Relay Server              : 192.168.1.100
DHCP Relay Information Mode    : Disabled
DHCP Relay Information Policy : Replace
Switch(dhcp-relay)#
```

13.6 *show*

Using this command you can show the current DHCP relay configuration.

Syntax:

```
show config|statistics
```

Parameter:

config

The parameter lets you to set for show DHCP relay configuration

statistics

The parameter lets you to set for show DHCP relay statistics

Example:

```
Switch(dhcp-relay)# show config
DHCP Relay Mode                : Disabled
DHCP Relay Server              : 192.168.1.100
DHCP Relay Information Mode    : Disabled
DHCP Relay Information Policy : Replace
```

```
Switch(dhcp-relay)# show statistics

Server Statistics:
------------------
Transmit to Server         :         0 Transmit Error               :
    0
Receive from Server        :         0 Receive Missing Agent Option :
    0
Receive Missing Circuit ID :         0 Receive Missing Remote ID    :
    0
Receive Bad Circuit ID     :         0 Receive Bad Remote ID        :
    0

Client Statistics:
--------------------
Transmit to Client   :         0   Transmit Error       :         0
Receive from Client  :         0   Receive Agent Option :         0
Replace Agent Option :         0   Keep Agent Option    :         0
Drop Agent Option    :         0
Switch(dhcp-relay)#
```

13.7 *vlan*

Using this command you can configure DHCP relay GIADDR.

Syntax:

```
vlan <1-4094> <ip-address>
```

Parameter:

<1-4094>

VLAN ID

<ip-address>

The parameter lets you to set the DHCP GIADDR address.

Example:

```
Switch(dhcp-relay)# vlan 1 10.1.1.1
Switch(dhcp-relay)#
```

14 DHCP Snooping Commands

The section describes to configure the DHCP Snooping parameters of the switch. The DHCP Snooping can prevent attackers from adding their own DHCP servers to the network.

Command	Function
clear	Clear DHCP snooping statistics
mode	Configure DHCP snooping mode
Port-mode	Configure DHCP snooping port mode
show	Show DHCP snooping information

14.1 *clear*

Using this command you can clear the DHCP snooping statistics.

Syntax:

```
clear statistics <port-list>
```

Parameter:

statistics

The parameter let you to clear DHCP snooping statistics.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(dhcp-snooping)# clear statistics 1
Switch(dhcp-snooping)#
```

14.2 *mode*

Using this command you can configure the DHCP snooping mode.

ⓘ When enable DHCP snooping mode operation, the request DHCP messages will be forwarded to trusted ports and only allowed reply packets from trusted ports.

Syntax:

```
mode disable|enable
```

Parameter:

disable

Disables DHCP snooping mode.

enable

Enables DHCP snooping mode.

Example:

```
Switch(dhcp-snooping)# mode disable
Switch(dhcp-snooping)#
```

14.3 *port-mode*

Using this command you can configure the DHCP relay port mode.

Syntax:

```
port-mode <port-list> trusted|untrusted
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

trusted

Configures the port as trusted source of the DHCP message

untrusted

Configures the port as untrusted source of the DHCP message

Example:

```
Switch(dhcp-snooping)# port-mode 1 trusted
Switch(dhcp-snooping)#
Switch(dhcp-snooping)# show config

DHCP Snooping Mode : Disabled
Port  Port Mode
----  ---------
1     trusted
2     untrusted
3     untrusted
4     untrusted
5     untrusted
6     untrusted
7     untrusted
8     untrusted
9     untrusted
10    untrusted
11    untrusted
12    untrusted
13    untrusted
14    untrusted
```

```
15    untrusted
16    untrusted
17    untrusted
18    untrusted
--More--, q to quit
Switch(dhcp-snooping)#
```

14.4 *show*

Using this command you can show the current DHCP snooping configuration.

Syntax:

```
show config
show statistics <port-id>
```

Parameter:

config

Shows DHCP snooping configuration.

statistics

Shows DHCP snooping statistics.

<port-id>

ID of the port the statistics shall be displayed for.

Example:

```
Switch(dhcp-snooping)# port-mode 1 trusted
Switch(dhcp-snooping)#
Switch(dhcp-snooping)# show config

DHCP Snooping Mode : Disabled
Port  Port Mode
----  ---------
1     trusted
2     untrusted
3     untrusted
4     untrusted
5     untrusted
6     untrusted
7     untrusted
8     untrusted
9     untrusted
10    untrusted
11    untrusted
12    untrusted
13    untrusted
14    untrusted
15    untrusted
16    untrusted
17    untrusted
18    untrusted
```

```
--More--, q to quit
Switch(dhcp-snooping)#
```

```
Switch(dhcp-snooping)# show statistics 1
Port 1 Statistics:              Receive Packets                   Transmit
 Packets
-------------------------------------  -----------------------------------
Rx Discover                          0  Tx Discover
   0
Rx Offer                             0  Tx Offer
   0
Rx Request                           0  Tx Request
   0
Rx Decline                           0  Tx Decline
   0
Rx ACK                               0  Tx ACK
   0
Rx NAK                               0  Tx NAK
   0
Rx Release                           0  Tx Release
   0
Rx Inform                            0  Tx Inform
   0
Rx Lease Query                       0  Tx Lease Query
   0
Rx Lease Unassigned                  0  Tx Lease Unassigned
   0
Rx Lease Unknown                     0  Tx Lease Unknown
   0
Rx Lease Active                      0  Tx Lease Active
   0
Switch(dhcp-snooping)#
```

15 Diagnostic Commands

This section provides a set of basic system diagnosis. It let users know that whether the system is health or needs to be fixed. The basic system check includes ICMP Ping, ICMPv6, and VeriPHY Cable Diagnostics.

Command	Function
ping	Uses the ICMP protocol's mandatory ECHO_REQUEST datagram to elicit an ICMP ECHO_RESPONSE from a host or gateway.
ping6	Uses the ICMP protocol's mandatory ECHO_REQUEST datagram to elicit an ICMP ECHO_RESPONSE from a host or gateway.
veriphy	Run cable diagnostics.

15.1 *ping*

Using this command you can the ICMP protocol's ECHO_REQUEST datagram to request an ICMP ECHO_RESPONSE from a host or gateway.

Syntax:

```
ping <ip-hostname> [<2-1452>] [<1-60>] [<0-30>]
```

Parameter:

<ip-hostname>

IPv4 Hostname or IP address.

<2-1452>

Size of ICMP echo packet.

<1-60>

Count of ICMP echo packet.

<0-30>

Interval of ICMP echo packet.

Example:

```
Switch(diagnostic)# ping 192.168.6.200 80
PING server 192.168.6.200, 80 bytes of data.
88 bytes from 192.168.6.200: icmp_seq=0, time=0ms
88 bytes from 192.168.6.200: icmp_seq=1, time=0ms
88 bytes from 192.168.6.200: icmp_seq=2, time=0ms
88 bytes from 192.168.6.200: icmp_seq=3, time=0ms
88 bytes from 192.168.6.200: icmp_seq=4, time=0ms
Sent 5 packets, received 5 OK, 0 bad
Switch(diagnostic)#
```

15.2 *ping6*

Using this command you can the ICMP protocol's ECHO_REQUEST datagram to request an ICMP ECHO_RESPONSE from a host or gateway.

Syntax:

```
ping6 <ipv6-address> [<2-1452>] [<1-60>] [<0-30>]
```

Parameter:

<ipv6-address>

IPv6 Hostname or IP address.

<2-1452>

Size of ICMP echo packet.

<1-60>

Count of ICMP echo packet.

<0-30>

Interval of ICMP echo packet.

Example:

```
Switch(diagnostic)# ping6 ff06:0:0:0:0:0:0:c3 80
PING6 server ff06::c3, 80 bytes of data.
88 bytes from 192.168.6.200: icmp_seq=0, time=0ms
88 bytes from 192.168.6.200: icmp_seq=1, time=0ms
88 bytes from 192.168.6.200: icmp_seq=2, time=0ms
88 bytes from 192.168.6.200: icmp_seq=3, time=0ms
88 bytes from 192.168.6.200: icmp_seq=4, time=0ms
Sent 5 packets, received 5 OK, 0 bad
Switch(diagnostic)#
```

15.3 *veriphy*

Using this command you can verify the physical cable connection for each port.

Syntax:

```
veriphy <port-list>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(diagnostic)# veriphy 1
Starting VeriPHY, please wait
Port   Pair A   Length   Pair B   Length   Pair C   Length   Pair D   Length
-----  -------  -------  -------  -------  -------  -------  -------  ------
1      OK        255     OK        255     OK        255     OK        255
Switch(diagnostic)#
```

16 Easyport Commands

Easy Port provides a convenient way to save and share common configurations. You can use it to enable features and settings based on the location of a switch in the network and for mass configuration deployments across the network. You could easy to implement included Voice IP phone, Wireless Access Point and IP Camera … etc. Others you can leverage configuration to run a converged voice, video, and data network considering quality of service (QoS), bandwidth, latency, and high performance.

Command	Function
ip-cam	To set the IP-CAM Configuration on the switch
ip-phone	To set the IP-Phone Configuration on the switch
wifi-ap	To set the WIFI-AP Configuration on the switch.

16.1 *ip-cam*

Using this command you can configure IP-Cam parameters.

The command configuration has level rule, you need to set the port-list what you want to assign setting profile first, and then enter to 2nd level to set every parameters.

Syntax:

```
ip-cam        <port-list>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(easyport)# ip-cam 22
Switch(easyport/ip-cam)# vlan-mode trunk
Switch(easyport/ip-cam)# access-vlan 8
Switch(easyport/ip-cam)# traffic-class 7
Switch(easyport/ip-cam)# psec-action both
Switch(easyport/ip-cam)# psec-limit 40
Switch(easyport/ip-cam)# psec-mode enable
Switch(easyport/ip-cam)# admin-edge enable
Switch(easyport/ip-cam)# bpdu-guard enable
Switch(easyport/ip-cam)# show
Role                         : IP-CAM
Access VLAN                  : 8
VLAN Mode                    : Trunk
Traffic Class                : 7
Port Security Mode           : Enabled
Port Security Action         : Trap & Shutdown
Port Security Limit          : 40
STP Admin Edge               : Enabled
STP BPDU Guard           : Enabled

Switch(easyport/ip-cam)#
```

16.1.1 *access-vlan*

Using this command you can configure configure access VLAN for IP Camera.

Syntax:

```
access-vlan        <1-4094>
```

Parameter:

<1-4094>

Access VLAN ID, possible values from 1 to 4094..

Example:

```
Switch(easyport)# ip-cam 22
Switch(easyport/ip-cam)# access-vlan 8

Switch(easyport/ip-cam)#
```

16.1.2 *admin-edge*

Using this command you can configure configure spanning tree admin-edge for IP Camera.

Syntax:

```
admin-edge        disable|enable
```

Parameter:

disable

Disables spanning tree admin edge.

enable

Enables spanning tree admin edge.

Example:

```
Switch(easyport)# ip-cam 22
Switch(easyport/ip-cam)# admin-edge enable

Switch(easyport/ip-cam)#
```

16.1.3 *bpdu-guard*

Using this command you can configure configure spanning tree BPDU guard for IP Camera..

Syntax:

```
bpdu-guard        disable|enable
```

Parameter:

disable

Disables spanning tree BPDU guard.

enable

Enables spanning tree BPDU guard.

Example:

```
Switch(easyport)# ip-cam 22
Switch(easyport/ip-cam)# bpdu-guard enable

Switch(easyport/ip-cam)#
```

16.1.4 *end*

Using this command you can finish IP camera settings and return.

Syntax:

```
end
```

Example:

```
Switch(easyport)# ip-cam 22
Switch(easyport/ip-cam)# end

Switch(easyport/ip-cam)#
```

16.1.5 *psec-action*

Using this command you can configure configure port security action for IP Camera.

Syntax:

```
psec-action        both|none|shutdown|trap
```

Parameter:

both

Send a SNMP trap and shutdown the port.

none

Do nothing.

shutdown

Shutdown the port.

trap

Send a SNMP trap.

Example:

```
Switch(easyport)# ip-cam 22
Switch(easyport/ip-cam)# psec-action both
Switch(easyport/ip-cam)#
```

16.1.6 *psec-limit*

Using this command you can configure configure port security maximum for IP Camera.

Syntax:

```
psec-limit        <1-50>
```

Parameter:

<1-50>

Max. number of MAC addresses.

Example:

```
Switch(easyport)# ip-cam 22
Switch(easyport/ip-cam)# psec-limit 40

Switch(easyport/ip-cam)#
```

16.1.7 *psec-mode*

Using this command you can configure configure port security mode for IP Camera.

Syntax:

```
psec-mode        <1-50>
```

Parameter:

disable

Disables port security.

enable

Enables port security.

Example:

```
Switch(easyport)# ip-cam 22
Switch(easyport/ip-cam)# psec-mode enable

Switch(easyport/ip-cam)#
```

16.1.8 *show*

Using this command you can display current IP camera settings.

Syntax:

```
show
```

Example:

```
Switch(easyport/ip-cam)# show
Role                     : IP-CAM
Access VLAN              : 8
VLAN Mode                : Trunk
Traffic Class            : 7
Port Security Mode       : Enabled
Port Security Action     : Trap & Shutdown
Port Security Limit      : 40
STP Admin Edge           : Enabled
STP BPDU Guard           : Enabled
```

16.1.9 *traffic-class*

Using this command you can configure configure traffic class for IP Camera.

Syntax:

```
traffic-class        <0-7>
```

Parameter:

<0-7>

0:Low, 7:High.

Example:

```
Switch(easyport)# ip-cam 22
Switch(easyport/ip-cam)# traffic-class 7

Switch(easyport/ip-cam)#
```

16.1.10 *vlan-mode*

Using this command you can configure configure VLAN mode for IP Camera.

Syntax:

```
vlan-mode        access|hybrid|trunk
```

Parameter:

access

Untag all frames.

hybrid

Tag all frames except VLAN ID same as PVID.

trunk

Tag all frames.

Example:

```
Switch(easyport)# ip-cam 22
Switch(easyport/ip-cam)# vlan-mode trunk
Switch(easyport/ip-cam)#
```

16.2 *ip-phone*

Using this command you can configure IP-Phone parameters.

Syntax:

```
ip-phone       <port-list>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
witch(easyport)# ip-phone 22
Switch(easyport/ip-phone)# access-vlan 20
Switch(easyport/ip-phone)# voice-vlan 20
Switch(easyport/ip-phone)# psec-mode enable
Switch(easyport/ip-phone)# psec-limit 30
Switch(easyport/ip-phone)# traffic-class 7
Switch(easyport/ip-phone)# vlan-mode access
Switch(easyport/ip-phone)# psec-action both
Switch(easyport/ip-phone)# save start
Switch(easyport/ip-phone)# show
Role                      : IP-Phone
Access VLAN               : 20
VLAN Mode                 : Access
Voice VLAN                : 20
Traffic Class             : 7
Port Security Mode        : Enabled
Port Security Action      : Trap & Shutdown
Port Security Limit       : 30
STP Admin Edge            : Enabled
STP BPDU Guard            : Enabled

Switch(easyport/ip-phone)#
```

16.2.1 *access-vlan*

Using this command you can configure configure access VLAN for IP Phone.

Syntax:

```
access-vlan        <1-4094>
```

Parameter:

<1-4094>

Access VLAN ID, possible values from 1 to 4094..

Example:

```
Switch(easyport)# ip-phone 22
Switch(easyport/ip-phone)# access-vlan 8

Switch(easyport/ip-phone)#
```

16.2.2 *admin-edge*

Using this command you can configure configure spanning tree admin-edge for IP Phone.

Syntax:

```
admin-edge        disable|enable
```

Parameter:

disable

Disables spanning tree admin edge.

enable

Enables spanning tree admin edge.

Example:

```
Switch(easyport)# ip-phone 22
Switch(easyport/ip-phone)# admin-edge enable

Switch(easyport/ip-phone)#
```

16.2.3 *bpdu-guard*

Using this command you can configure configure spanning tree BPDU guard for IP Phone..

Syntax:

```
bpdu-guard        disable|enable
```

Parameter:

disable

Disables spanning tree BPDU guard.

enable

Enables spanning tree BPDU guard.

Example:

```
Switch(easyport)# ip-phone 22
Switch(easyport/ip-phone)# bpdu-guard enable

Switch(easyport/ip-phone)#
```

16.2.4 *end*

Using this command you can finish IP Phone settings and return.

Syntax:

```
end
```

Example:

```
Switch(easyport)# ip-phone 22
Switch(easyport/ip-phone)# end

Switch(easyport/ip-phone)#
```

16.2.5 *psec-action*

Using this command you can configure configure port security action for IP Phone.

Syntax:

```
psec-action        both|none|shutdown|trap
```

Parameter:

both

Send a SNMP trap and shutdown the port.

none

Do nothing.

shutdown

Shutdown the port.

trap

Send a SNMP trap.

Example:

```
Switch(easyport)# ip-phone 22
Switch(easyport/ip-phone)# psec-action both

Switch(easyport/ip-phone)#
```

16.2.6 *psec-limit*

Using this command you can configure configure port security maximum for IP Phone.

Syntax:

```
psec-limit        <1-50>
```

Parameter:

<1-50>

Max. number of MAC addresses.

Example:

```
Switch(easyport)# ip-phone 22
Switch(easyport/ip-phone)# psec-limit 40

Switch(easyport/ip-phone)#
```

16.2.7 *psec-mode*

Using this command you can configure configure port security mode for IP Phone.

Syntax:

```
psec-mode        <1-50>
```

Parameter:

disable

Disables port security.

enable

Enables port security.

Example:

```
Switch(easyport)# ip-phone 22
Switch(easyport/ip-phone)# psec-mode enable

Switch(easyport/ip-phone)#
```

16.2.8 *show*

Using this command you can display current IP Phone settings.

Syntax:

```
show
```

Example:

```
Switch(easyport/ip-phone)# show
Role                      : IP-PHONE
Access VLAN               : 8
VLAN Mode                 : Trunk
Traffic Class             : 7
Port Security Mode        : Enabled
Port Security Action      : Trap & Shutdown
Port Security Limit       : 40
STP Admin Edge            : Enabled
STP BPDU Guard            : Enabled
```

16.2.9 *traffic-class*

Using this command you can configure configure traffic class for IP Phone.

Syntax:

```
traffic-class        <0-7>
```

Parameter:

<0-7>

0:Low, 7:High.

Example:

```
Switch(easyport)# ip-phone 22
Switch(easyport/ip-phone)# traffic-class 7

Switch(easyport/ip-phone)#
```

16.2.10 *vlan-mode*

Using this command you can configure configure VLAN mode for IP Phone.

Syntax:

```
vlan-mode        access|hybrid|trunk
```

Parameter:

access

Untag all frames.

hybrid

Tag all frames except VLAN ID same as PVID.

trunk

Tag all frames.

Example:

```
Switch(easyport)# ip-phone 22
Switch(easyport/ip-phone)# vlan-mode trunk

Switch(easyport/ip-phone)#
```

16.3 *wifi-ap*

Using this command you can configure wireless access point parameters.

Syntax:

```
wifi-ap        <port-list>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
witch(easyport)# wifi-ap 22
Switch(easyport/wifi-ap)# access-vlan 55
Switch(easyport/wifi-ap)# admin-edge disable
Switch(easyport/wifi-ap)# bpdu-guard disable
Switch(easyport/wifi-ap)# psec-action both
Switch(easyport/wifi-ap)# psec-limit 30
Switch(easyport/wifi-ap)# psec-mode enable
Switch(easyport/wifi-ap)# traffic-class 4
Switch(easyport/wifi-ap)# vlan-mode hybrid
Switch(easyport/wifi-ap)# show
Role                         : WIFI-AP
Access VLAN                  : 55
VLAN Mode                    : Hybrid
Traffic Class                : 4
Port Security Mode           : Enabled
Port Security Action         : Trap & Shutdown
Port Security Limit          : 30
STP Admin Edge               : Disabled
STP BPDU Guard               : Disabled

Switch(easyport/wifi-ap)#
```

16.3.1 *access-vlan*

Using this command you can configure configure access VLAN for WiFi AP.

Syntax:

```
access-vlan        <1-4094>
```

Parameter:

<1-4094>

Access VLAN ID, possible values from 1 to 4094..

Example:

```
Switch(easyport)# wifi-ap 22
Switch(easyport/wifi-ap)# access-vlan 8

Switch(easyport/wifi-ap)#
```

16.3.2 *admin-edge*

Using this command you can configure configure spanning tree admin-edge for WiFi AP.

Syntax:

```
admin-edge        disable|enable
```

Parameter:

disable

Disables spanning tree admin edge.

enable

Enables spanning tree admin edge.

Example:

```
Switch(easyport)# wifi-ap 22
Switch(easyport/wifi-ap)# admin-edge enable

Switch(easyport/wifi-ap)#
```

16.3.3 *bpdu-guard*

Using this command you can configure configure spanning tree BPDU guard for WiFi AP.

Syntax:

```
bpdu-guard        disable|enable
```

Parameter:

disable

Disables spanning tree BPDU guard.

enable

Enables spanning tree BPDU guard.

Example:

```
Switch(easyport)# wifi-ap 22
Switch(easyport/wifi-ap)# bpdu-guard enable

Switch(easyport/wifi-ap)#
```

16.3.4 *end*

Using this command you can finish WiFi AP settings and return.

Syntax:

```
end
```

Example:

```
Switch(easyport)# wifi-ap 22
Switch(easyport/wifi-ap)# end

Switch(easyport/wifi-ap)#
```

16.3.5 *psec-action*

Using this command you can configure configure port security action for WiFi AP.

Syntax:

```
psec-action        both|none|shutdown|trap
```

Parameter:

both

Send a SNMP trap and shutdown the port.

none

Do nothing.

shutdown

Shutdown the port.

trap

Send a SNMP trap.

Example:

```
Switch(easyport)# wifi-ap 22
Switch(easyport/wifi-ap)# psec-action both

Switch(easyport/wifi-ap)#
```

16.3.6 *psec-limit*

Using this command you can configure configure port security maximum for WiFi AP.

Syntax:

```
psec-limit        <1-50>
```

Parameter:

<1-50>

Max. number of MAC addresses.

Example:

```
Switch(easyport)# wifi-ap 22
Switch(easyport/wifi-ap)# psec-limit 40

Switch(easyport/wifi-ap)#
```

16.3.7 *psec-mode*

Using this command you can configure configure port security mode for WiFi AP.

Syntax:

```
psec-mode        <1-50>
```

Parameter:

disable

Disables port security.

enable

Enables port security.

Example:

```
Switch(easyport)# wifi-ap 22
Switch(easyport/wifi-ap)# psec-mode enable

Switch(easyport/wifi-ap)#
```

16.3.8 *show*

Using this command you can display current WiFi AP settings.

Syntax:

```
show
```

Example:

```
Switch(easyport/wifi-ap)# show
Role                      : IP-PHONE
Access VLAN               : 8
VLAN Mode                 : Trunk
Traffic Class             : 7
Port Security Mode        : Enabled
Port Security Action      : Trap & Shutdown
Port Security Limit       : 40
STP Admin Edge            : Enabled
STP BPDU Guard            : Enabled
```

16.3.9 *traffic-class*

Using this command you can configure configure traffic class for WiFi AP.

Syntax:

```
traffic-class        <0-7>
```

Parameter:

<0-7>

0:Low, 7:High.

Example:

```
Switch(easyport)# wifi-ap 22
Switch(easyport/wifi-ap)# traffic-class 7

Switch(easyport/wifi-ap)#
```

16.3.10 *vlan-mode*

Using this command you can configure configure VLAN mode for WiFi AP.

Syntax:

```
vlan-mode        access|hybrid|trunk
```

Parameter:

access

Untag all frames.

hybrid

Tag all frames except VLAN ID same as PVID.

trunk

Tag all frames.

Example:

```
Switch(easyport)# wifi-ap 22
Switch(easyport/wifi-ap)# vlan-mode trunk

Switch(easyport/wifi-ap)#
```

17 EEE Commands

The section which allows the user to inspect and configure the current EEE port settings.

EEE is a power saving option that reduces the power usage when there is very low traffic utilization (or no traffic).

EEE works by powering down circuits when there is no traffic. When a port gets data to be transmitted all circuits are powered up. The time it takes to power up the circuits is named wakeup time. The default wakeup time is 17 us for 1Gbit links and 30 us for other link speeds. EEE devices must agree upon the value of the wakeup time in order to make sure that both the receiving and transmitting device has all circuits powered up when traffic is transmitted. The devices can exchange information about the devices wakeup time using the LLDP protocol.

For maximizing the power saving, the circuit isn't started at once transmit data are ready for a port, but is instead queued until 3000 bytes of data are ready to be transmitted. For not introducing a large delay in case that data less then 3000 bytes shall be transmitted, data are always transmitted after 48 us, giving a maximum latency of 48 us + the wakeup time.

If desired it is possible to minimize the latency for specific frames, by mapping the frames to a specific queue (done with QOS), and then mark the queue as an urgent queue. When an urgent queue gets data to be transmitted, the circuits will be powered up at once and the latency will be reduced to the wakeup time.

Command	Function
mode	Configure EEE mode
show	Show EEE information
urgent-queue	Configure EEE urgent queue

17.1 *mode*

Using this command you can configure EEE parameters.

Syntax:

```
mode <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables Energy Efficient Ethernet.

enable

Enables Energy Efficient Ethernet.

Example:

```
Switch(eee)# mode 2 enable
Switch(eee)# show
Port  Mode      Urgent Queues
```

```
----  --------  -------------
1     Disabled  none
2     Enabled   none
3     Disabled  none
```

17.2 *show*

Using this command you can show the current EEE configuration.

Syntax:

```
show
```

Example:

```
Switch(eee)# show
Port  Mode      Urgent Queues
----  --------  -------------
1     Disabled  none
2     Disabled  none
3     Disabled  none
```

17.3 *urgent-queue*

Using this command you can configure EEE urgent queue parameters.

Syntax:

```
urgent-queue <port-list> <queue-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<queue-list>

Queue list, format : 1,3-5.

disable

Queue will postpone the transmsion until 3000 bytes are ready to be transmitted.

enable

Queues set will activate transmition of frames as soon as any data is available.

Example:

```
Switch(eee)# urgent-queue 1 4 enable
Switch(eee)# show
Port  Mode      Urgent Queues
----  --------  -------------
```

```
1      Disabled  4
2      Enabled   none
3      Disabled  none
```

18 Event Commands

The function is used to set an Alarm trap and get the Event log. The Trap Events Configuration function is used to enable the switch to send out the trap information while pre-defined trap events occurred.

Command	Function
group	Configure trap event severity level
show	Show trap event configuration

18.1 *group*

Using this command you can configure the trap event severity level.

Syntax:

```
group <group-name> <0-7>
```

Parameter:

<group-name>

Trap event group name

- ACL
- ACL_Log
- Access_Mgmt
- Auth_Failed
- Cold_Start
- Config_Info
- Firmware_Upgrade
- Import_Export
- LACP
- Link_Status
- Login
- Logout
- Loop_Protect
- Mgmt_IP_Change
- Module_Change
- NAS
- Password_Change
- Poe_Auto_Check
- Port_Security
- VLAN
- Warm_Start

<0-7>

Severity level

- <0> Emergency: system is unusable
- <1> Alert: action must be taken immediately
- <2> Critical: critical conditions
- <3> Error: error conditions
- <4> Warning: warning conditions
- <5> Notice: normal but significant condition
- <6> Informational: informational messages
- <7> Debug: debug-level messages

Example:

```
Switch(event)# group acl 5
Switch(event)# show
Group Name                        Severity Level
--------------------------------  ----------------
ACL                               Notice
ACL_Log                           Debug
Access_Mgmt                       Info
Auth_Failed                       Warning
Cold_Start                        Warning
Config_Info                       Info
Firmware_Upgrade                  Info
Import_Export                     Info
LACP                              Info
Passwd_Change                     Info
Port_Security                     Info
Thermal_Protect                   Info
VLAN                              Info
Warm_Start                        Warning
Switch(event)#
```

18.2 *show*

Using this command you can show the current trap event severity configuration.

Syntax:

```
show
```

Example:

```
Switch(event)# show
Group Name                        Severity Level
--------------------------------  ----------------
ACL                               Critical
ACL_Log                           Debug
Access_Mgmt                       Info
Auth_Failed                       Warning
Cold_Start                        Warning
Config_Info                       Info
Firmware_Upgrade                  Info
Import_Export                     Info
Link_Status                       Warning
Login                             Info
Logout                            Info
```

```
Mgmt_IP_Change                    Info
Module_Change                     Notice
NAS                               Info
Passwd_Change                     Info
Port_Security                     Info
Thermal_Protect                   Info
VLAN                              Info
Warm_Start                        Warning
Switch(event)#
```

19 Fdb Commands

Filtering Data Base (Fdb) configuration gathers many functions, including MAC table information, static MAC learning, which cannot be categorized to some function type.

MAC table

Switching of frames is based upon the DMAC address contained in the frame. The switch builds up a table that maps MAC addresses to switch ports for knowing which ports the frames should go to (based upon the DMAC address in the frame). This table contains both static and dynamic entries. The static entries are configured by the network administrator if the administrator wants to do a fixed mapping between the DMAC address and switch ports. The frames also contain a MAC address (SMAC address), which shows the MAC address of the equipment sending the frame. The SMAC address is used by the switch to automatically update the MAC table with these dynamic MAC addresses. Dynamic entries are removed from the MAC table if no frame with the corresponding SMAC address has been seen after a configurable age time

Command	Function
age-time	Configure aging time of MAC address
delete	Delete commands
flush	Flush out dynamic learned MAC address
learning	Configure learning mode of switch ports
static-mac	Configure static MAC address
show	Show MAC address table information

19.1 *age-time*

Using this command you can configure the age-time of MAC address.

Syntax:

```
age-time disable|<10-1000000>
```

Parameter:

disable

Disables automatic aging.

<10-1000000>

Aging time in seconds.

Example:

```
Switch(fdb)# age-time 1000
Switch(fdb)# show configuration
Automatic Aging : Enabled
Aging Time : 1000 seconds
Port  Learning Mode
```

```
----  -------------
1     Auto
2     Auto
3     Auto
4     Auto
..........
Switch(fdb)#
```

19.2 *delete*

Using this command you can delete a static MAC address entry.

Syntax:

```
delete static-mac <mac-address> <1-4094>
```

Parameter:

static mac

Deletes a static MAC entry.

<mac-address>

MAC address in the format 0a-1b-2c-3d-4e-5f.

<1-4094>

VLAN ID, available values from 1 to 4094.

Example:

```
Switch(fdb)# static-mac 00-1F-3B-6A-3B-11 3 22
Switch(fdb)# show static-mac
No    VID   MAC Address        Ports
----  ----  -----------------  ---------------
1     3     00-1f-3b-6a-3b-11  22
Total static MAC address : 1
Switch(fdb)# delete static-mac 00-1F-3B-6A-3B-11 3
Switch(fdb)# show static-mac
Total static MAC address : 0
Switch(fdb)#
```

19.3 *flush*

Using this command you can flush all MAC addresses which have been learned dynamically.

Syntax:

```
flush
```

Example:

```
Switch(fdb)# flush
Switch(fdb)#
```

19.4 *learning*

Using this command you can configure the MAC address learning mode.

Syntax:

```
learning <port-list> auto|disable|secure
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

auto

Learning is done automatically as soon as a frame with unknown SMAC is received.

disable

Disables MAC address learning mode.

secure

Only static MAC entries are learned, all other frames are dropped.

Example:

```
Switch(fdb)# learning 2 disable
Switch(fdb)# learning 4 secure
Switch(fdb)# show configuration
Automatic Aging : Enabled
Aging Time : 300 seconds
Port  Learning Mode
----  -------------
1     Auto
2     Disabled
3     Auto
4     Secure
..............
Switch(fdb)#
```

19.5 *static-mac*

Using this command you can configure a static MAC address entry.

Syntax:

```
static-mac <mac-address> <1-4094> <port-list>|block
```

Parameter:

<mac-address>

MAC address in the format 0a-1b-2c-3d-4e-5f.

<1-4094>

VLAN ID, available values from 1 to 4094.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

block

Blocks the specific MAC address for all ports.

Example:

```
Switch(fdb)# static-mac 00-1F-3B-6A-3B-11 33 2
Switch(fdb)# show static-mac
No    VID   MAC Address        Ports
----  ----  -----------------  ---------------
1     33    00-1f-3b-6a-3b-11  2
Total static MAC address : 1
Switch(fdb)#
```

19.6 *show*

Using this command you can show the current MAC address table.

Syntax:

```
show configuration|static-mac
show mac-table [mac-address <mac-address>]
                 [port <port-list>]
                 [vid <1-4094>]
```

Parameter:

configuration

Shows MAC address table configuration.

static-mac

Shows static MAC address.

mac-table

Shows MAC address table.

mac-address

Shows MAC address table for specific MAC address.

<mac-address>

MAC address in the format 0a-1b-2c-3d-4e-5f.

port

Shows MAC address table for specific ports.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

vid

Shows MAC address table for specific VLAN.

<1-4094>

VLAN ID, available values from 1 to 4094.

Example:

```
Switch(fdb)# static-mac 00-1F-3B-6A-3B-11 33 2
Switch(fdb)# show static-mac
No    VID   MAC Address        Ports
----  ----  -----------------  ---------------
1     33    00-1f-3b-6a-3b-11  2
Total static MAC address : 1
Switch(fdb)#
```

20 Firmware Commands

This section describes how to upgrade Firmware. The Switch can be enhanced with more value-added functions by installing firmware upgrades.

Command	Function
show	Show information about active and alternate firmware images
swap	Activate the alternate firmware image
upgrade	Upgrade system firmware

20.1 *show*

Using this command you can show the active and alternate firmware image version information.

Syntax:

```
show
```

Example:

```
Switch(firmware)# show
Active Image
------------
Image      : managed
Version    : GS-2326P (standalone) v2.50
Date       : 2014-01-17T14:33:34+08:00

Alternate Image
---------------
Image      : managed.bk
Version    : GS-2326P (standalone) v1.65
Date       : 2013-01-14T14:11:35+08:00

Switch(firmware)#
```

20.2 *swap*

Using this command you can swap the active firmware image into alternate firmware image and vice versa.

Syntax:

```
swap
```

Example:

```
Switch(firmware)# swap
Alternate image activated, now rebooting.
```

```
Switch(firmware)#

Using username "admin".
admin@192.168.2.110's password:

Type 'help' or '?' to get help.
Switch# firmware
Switch(firmware)# show
Active Image
------------
Image     : managed
Version   : GS-2326P (standalone) v1.65
Date      : 2013-01-14T14:11:35+08:00

Alternate Image
---------------
Image     : managed.bk
Version   : GS-2326P (standalone) v2.50
Date      : 2014-01-17T14:33:34+08:00

Switch(firmware)#
```

20.3 *upgrade*

Using this command you can upgrade the system firmware to active or alternate division.

While the firmware is being updated, the device access via web interface is disabled. The front LED flashes Green/Off with a frequency of 10 Hz while the firmware update is in progress. Do not restart or power off the device at this time or the switch may fail to work afterwards.

Syntax:

```
upgrade <ipv6-address> <filename>
upgrade <ip-hostname> <filename>
```

Parameter:

<ipv6-address>

TFTP server IPv6 address. IPv6 address is in 128-bit records represented as eight fields of up to four hexadecimal digits with a colon separate each field (":"). For example, `fe80::215:c5ff:fe03:4dc7`. The symbol "::" is a special syntax that can be used as a shorthand way of representing multiple 16-bit groups of contiguous zeros; but it can only appear once. It also used a following legally IPv4 address. For example, `::192.1.2.34`.

<ip-hostname>

TFTP server IPv4 address or hostname.

<filename>

Firmware image file name

Example:

```
Switch(firmware)# upgrade 192.168.1.100 managed.bk
Switch(firmware)# show
Active Image
```

```
------------
Image      : managed.bk
Version    : GS-2326P (standalone) v1.65
Date       : 2013-01-14T14:11:35+08:00

Alternate Image
---------------
Image      : managed
Version    : GS-2326P (standalone) v2.50
Date       : 2014-01-17T14:33:34+08:00

Switch(firmware)#
```

21 GARP Commands

The Generic Attribute Registration Protocol (GARP) provides a generic framework whereby devices in a bridged LAN, e.g. end stations and switches, can register and de-register attribute values, such as VLAN Identifiers, with each other. In doing so, the attributes are propagated to devices in the bridged LAN, and these devices form a reachability tree that is a subset of an active topology. GARP defines the architecture, rules of operation, state machines and variables for the registration and de-registration of attribute values.

A GARP participation in a switch or an end station consists of a GARP application component, and a GARP Information Declaration (GID) component associated with each port or the switch. The propagation of information between GARP participants for the same application in a bridge is carried out by the GARP Information Propagation (GIP) component. Protocol exchanges take place between GARP participants by means of LLC Type 1 services, using the group MAC address and PDU format defined for the GARP application concerned.

Command	Function
applicant	Enable/Diable applicant administrative control
join-time	Set the GARP join timer configuration
leave-all	Set the GARP leave all timer configuration
leave-time	Set the GARP leave timer configuration
show	Show the GARP configuration

21.1 *applicant*

Using this command you can enable or disable the applicant administrative control.

Syntax:

```
applicant <port-list> non-participant|normal-participant
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

non-participant

Set applicant administrative control to non-participant

normal-participant

Set applicant administrative control to normal-participant.

Example:

```
Switch(garp)# applicant 3 non-participant
Switch(garp)#
```

21.2 *join-time*

Using this command you can set the GARP join time.

If you didn't set the GARP environment already then the switch will show “Set jointimer failed”.

Syntax:

```
join-time <port-list> <time-value>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<time-value>

Join time in seconds. Possible values from 200 to 1000.

Example:

```
Switch(garp)# join-time 3-5 200
Error! Set jointimer failed
```

21.3 *leave-all*

Using this command you can set the GARP leave all time.

If you didn't set the GARP environment already then the switch will show “Set leave all timer failed”.

Syntax:

```
leave-all <port-list> <timer-value>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<timer-value>

Leave all time in seconds. Possible values from 10000 to 50000.

Example:

```
Switch(garp)# leave-all 3-5 10000
Error! Set leavealltimer failed
Switch(garp)#
```

21.4 *leave-time*

Using this command you can set GARP leave time.

ⓘ If you didn't set the GARP environment already then the switch will show “Set leavetimer failed”.

Syntax:

```
leave-time <port-list> <timer-value>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<timer-value>

Leave all time in seconds. Possible values from 600 to 3000.

Example:

```
Switch(garp)# leave-time 3-5 600
Error! Set leavetimer failed
Switch(garp)#
```

21.5 *show*

Using this command you can display the current GARP configuration and statistics.

ⓘ If you didn't set the GARP environment already then the switch will show “empty field value”.

Syntax:

```
show config
show statistic <port-list>
```

Parameter:

config

Shows current GARP configuration.

statistic

Shows the basic GARP port statistics.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(garp)# show statistic 3-5 ?
  <cr>
Switch(garp)# show statistic 3-5
Port  Peer MAC           Failed Count
----  -----------------  ------------
3     -                  -
4     -                  -
5     -                  -
Switch(garp)#
Switch(garp)#
```

22 GVRP Commands

GVRP is an application based on Generic Attribute Registration Protocol (GARP), mainly used to automatically and dynamically maintain the group membership information of the VLANs. The GVRP offers the function providing the VLAN registration service through a GARP application. It makes use of GARP Information Declaration (GID) to maintain the ports associated with their attribute database and GARP Information Propagation (GIP) to communicate among switches and end stations. With GID information and GIP, GVRP state machine maintain the contents of Dynamic VLAN Registration Entries for each VLAN and propagate these information to other GVRP-aware devices to setup and update their knowledge database, the set of VLANs associated with currently active members, and through which ports these members can be reached.

Command	Function
clear	Clear the basic GVRP port statistics
control	Enable/Disable GVRP globally
mode	Enable/Disable GVRP on port
rrole	Enable/Disable GVRP restricted role on port
show	Show the GVRP configuration

22.1 *clear*

Using this command you can clear the basic GVRP port statistics.

ⓘ If you set the GVRP on port then you could show the port GVRP statistics information or clear all record on port.

Syntax:

```
clear <port-list>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(gvrp)# clear 3-5
Switch(gvrp)#
```

22.2 *control*

Using this command you can enable or disable the GVRP mode globally.

Syntax:

```
control disable|enable
```

Parameter:

disable

Disables GVRP function globally.

enable

Enables GVRP function globally.

Example:

```
Switch(gvrp)# control enable
Switch(gvrp)#
```

22.3 *mode*

Using this command you can enable or disable the GVRP function per port.

Syntax:

```
mode <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables GVRP function on the selected ports.

enable

Enables GVRP function on the selected ports.

Example:

```
Switch(gvrp)# mode 3-5 enable
Switch(gvrp)#
```

22.4 *rrole*

Using this command you can enable or disable the GVRP restricted role per port.

Syntax:

```
rrole <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables GVRP restricted role on the selected ports.

enable

Enables GVRP restricted role on the selected ports.

Example:

```
Switch(gvrp)# rrole 3-5 enable
Switch(gvrp)#
```

22.5 *show*

Using this command you can display the current GVRP information.

Syntax:

```
show config
show statistics <port-list>
```

Parameter:

config

Shows the current GVRP configuration.

statistics

Shows the basic GVRP port statistics.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(gvrp)# show config
GVRP global mode : Enabled

Port  Mode       Restricted Role
----  ---------  ---------------
1     Diabled    Diabled
2     Diabled    Diabled
3     Enabled    Enabled
4     Enabled    Enabled
5     Enabled    Enabled
6     Diabled    Diabled
7     Diabled    Diabled
8     Diabled    Diabled
9     Diabled    Diabled
.................
```

```
Switch(gvrp)#
Switch(gvrp)# show statistics 1-10
Port  Joins Tx Count        Leaves Tx Count
----  --------------------  --------------------
1     0                     0
2     0                     0
3     0                     0
4     0                     0
5     0                     0
6     0                     0
7     0                     0
8     0                     0
9     0                     0
...............
Switch(gvrp)#
```

23 HTTPs Commands

This section shows you how to use HTTPS to securely access the Switch. HTTPS is a secure communication protocol that combines authentication and data encryption to provide secure encrypted communication via the browser.

Command	Function
mode	Configure the HTTPS mode
redirect	Configure the HTTPS redirect mode
show	Show the HTTPs configuration

23.1 *mode*

Using this command you can enable or disable HTTPs operation.

Syntax:

```
mode disable|enable
```

Parameter:

disable

Disables HTTPS operation.

enable

Enables HTTPS operation.

Example:

```
Switch(https)# mode enable
Switch(https)#
```

23.2 *redirect*

Using this command you can enable or disable HTTPs redirect mode.

Syntax:

```
redirect disable|enable
```

Parameter:

disable

Disables redirect HTTPs mode.

enable

Enables redirect HTTPs mode.

Example:

```
Switch(https)# redirect enable
Switch(https)#
```

23.3 *show*

Using this command you can display the current HTTPs configuration.

Syntax:

```
show
```

Example:

```
Switch(https)# show
HTTPS Mode           : Enabled
HTTPS Redirect Mode : Enabled
Switch(https)#
```

24 IGMP Commands

The function, is used to establish the multicast groups to forward the multicast packet to the member ports, and, in nature, avoids wasting the bandwidth while IP multicast packets are running over the network. This is because a switch that does not support IGMP or IGMP Snooping cannot tell the multicast packet from the broadcast packet, so it can only treat them all as the broadcast packet. Without IGMP Snooping, the multicast packet forwarding function is plain and nothing is different from broadcast packet.

A switch supported IGMP Snooping with the functions of query, report and leave, a type of packet exchanged between IP Multicast Router/Switch and IP Multicast Host, can update the information of the Multicast table when a member (port) joins or leaves an IP Multicast Destination Address. With this function, once a switch receives an IP multicast packet, it will forward the packet to the members who joined in a specified IP multicast group before.

The packets will be discarded by the IGMP Snooping if the user transmits multicast packets to the multicast group that had not been built up in advance. IGMP mode enables the switch to issue IGMP function that you enable IGMP proxy or snooping on the switch, which connects to a router closer to the root of the tree. This interface is the upstream interface. The router on the upstream interface should be running IGMP.

Command	Function
compatibility	Set the Versions of IGMP Operating on Hosts and Routers
delete	Delete commands what you set on the switch
fast-leave	Set per-port Fast Leave
filtering	The IP Multicast Group that will be filtered
flooding	Set IGMP Flooding Mode
lmqi	Set per-VLAN Last Member Query Interval
proxy	Set IGMP Proxy Mode
qi	Set per-VLAN Query Interval
qri	Set per-VLAN Query Response Interval
querier	Set per-VLAN IGMP Querier
router	Set Router Port
rv	Set per-VLAN Robustness Variable
show	Show IGMP Snooping Information
snooping	Set IGMP Snooping Mode
ssm-range	Set IGMP SSM Range
state	Enable/Disable per-VLAN IGMP Snooping Mode
throttling	Set per-port Throttling
uri	Set per-VLAN Unsolicited Report Interval

24.1 *compatibility*

Using this command you can configure the IGMP compatibility.

Syntax:

```
compatibility <vlan-list> Forced-IGMPv1|Forced-IGMPv2|Forced-IGMPv3|IGMP-Auto
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

Forced-IGMPv1

Enables IGMPv1 of IGMP operating on hosts and routers.

Forced-IGMPv2

Enables IGMPv2 of IGMP operating on hosts and routers.

Forced-IGMPv3

Enables IGMPv3 of IGMP operating on hosts and routers.

IGMP-Auto

Enables auto mode of IGMP operating on hosts and routers.

Example:

```
Switch(igmp)# compatibility 1 IGMP-Auto
Switch(igmp)# show status 1
      Querier Rx         Tx         Rx         Rx         Rx         Rx
VID   Status  Query      Query      V1 Join    V2 Join    V3 Join    V2
Leave
----   ------   ---------- ---------- ---------- ---------- ----------
----------
Switch(igmp)#
```

24.2 *delete*

Using this command you can delete IGMP filtering groups.

If you type illegal ipmc-address, then switch won't allow you to delete it. And screen will display e.g. “Invalid argument '223.224.223.224'”.

Syntax:

```
delete <port-list> <ipmc-address>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<ipmc-address>

IPMC address to delete IGMP filtering group. Available range from 224.0.0.0 to 239.255.255.255.

Example:

```
Switch(igmp)# delete 3 224.0.0.2
Switch(igmp)#
```

24.3 *fast-leave*

Using this command you can configure the fast-leave mode for each port.

> When you enable IGMP fast-leave processing, the switch immediately removes a port when it detects an IGMP version 2 leave message on that port.

Syntax:

```
fast-leave <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables fast-leave mode for the selected ports.

enable

Enables fast-leave mode for the selected ports.

Example:

```
Switch(igmp)# fast-leave 1 disable
Switch(igmp)#
```

24.4 *filtering*

Using this command you can configure IGMP filtering group for each port.

> If you type illegal ipmc-address, then switch won't allow you to filter it. And screen will display e.g. “Invalid argument '223.224.223.224'”.

Syntax:

```
filtering <port-list> <ipmc-address>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<ipmc-address>

IPMC address of the IGMP filtering group. Available range from 224.0.0.0 to 239.255.255.255.

Example:

```
Switch(igmp)# filtering 5 224.0.0.1
Switch(igmp)#
```

24.5 *flooding*

Using this command you can enable or disable the IGMP flooding mode.

Syntax:

```
flooding enable|disable
```

Parameter:

disable

Disables the IGMP flooding mode.

enable

Enables the IGMP flooding mode.

Example:

```
Switch(igmp)# flooding enable
Switch(igmp)# show config
IGMP Snooping : Disabled

IGMP Flooding Control : Enabled
IGMP Proxy : Disabled

IGMP SSM Range: 232.0.0.0/8
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited
5     Disabled  No              Disabled    Unlimited
6     Disabled  No              Disabled    Unlimited
7     Disabled  No              Disabled    Unlimited
8     Disabled  No              Disabled    Unlimited
9     Disabled  No              Disabled    Unlimited
..........
Switch(igmp)#
```

24.6 *lmqi*

Using this command you can define Last Member Query Interval for each VLAN.

Syntax:

```
lmqi <vlan-list> <0-31744>
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

<0-31744>

Range:0~31744 tenths of sec, Default:100 tenths of sec

Example:

```
Switch(igmp)# lmqi 45 379
Switch(igmp)#
```

24.7 *proxy*

Using this command you can enable or disable the IGMP proxy mode.

Syntax:

```
proxy enable|disable
```

Parameter:

enable

Enables IGMP proxy mode.

disable

DisablesIGMP proxy mode.

Example:

```
Switch(igmp)# proxy enable
Switch(igmp)# show config

IGMP Snooping : Disabled

IGMP Flooding Control : Enabled
IGMP Proxy : Enabled

IGMP SSM Range: 232.0.0.0/8
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited
5     Disabled  No              Disabled    Unlimited
6     Disabled  No              Disabled    Unlimited
7     Disabled  No              Disabled    Unlimited
8     Disabled  No              Disabled    Unlimited
9     Disabled  No              Disabled    Unlimited
```

```
..........
Switch(igmp)#
```

24.8 *qi*

Using this command you can define Query Interval for each VLAN.

Syntax:

```
qi <vlan-list> <1-31744>
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

<1-31744>

Range:1~31744 sec, default:125 sec

Example:

```
Switch(igmp)# qi 5 360
Switch(igmp)#
```

24.9 *qri*

Using this command you can define Query Response Intervall for each VLAN.

Syntax:

```
qri <vlan-list> <0-31744>
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

<0-31744>

Range:0~31744 tenths of sec, default:100 tenths of sec

Example:

```
Switch(igmp)# qri 5 360
Switch(igmp)#
```

24.10 *querier*

Using this command you can enable or disable IGMP Querier mode for each VLAN.

Syntax:

```
querier <vlan-list> disable|enable
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

disable

Disables IGMP Querier mode for the selected VLAN.

enable

Enables IGMP Querier mode for the selected VLAN.

Example:

```
Switch(igmp)# querier 5 enable
Switch(igmp)#
```

24.11 *router*

Using this command you can enable or disable IGMP Router Port mode for each port.

Syntax:

```
router <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables IGMP Router Port mode for each port.

enable

Enables IGMP Router Port mode for each port.

Example:

```
Switch(igmp)# router 5 enable
Switch(igmp)#
```

24.12 *rv*

Using this command you can define Robustness Variable for each VLAN.

Syntax:

```
rv <vlan-list> <1-255>
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

<1-255>

Range:1~255, default:2

Example:

```
Switch(igmp)# rv 5 100
Switch(igmp)#
```

24.13 *show*

Using this command you can display the IGMP Snooping information.

Syntax:

```
show config
show groups|ssm|status|version [<1-4094>]
```

Parameter:

config

Shows IGMP snooping configuration.

groups

Shows IGMP group table.

ssm

Shows IGMPv3 information table.

status

Shows IGMP snooping status.

version

Shows current IGMP working querier/host version.

<1-4094>

VLAN ID, possible values from 1 to 4094.

Example:

```
Switch(igmp)# show config
IGMP Snooping : Disabled

IGMP Flooding Control : Disabled
IGMP Proxy : Disabled

IGMP SSM Range: 232.0.0.0/8
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited
5     Disabled  No              Disabled    Unlimited
6     Disabled  No              Disabled    Unlimited
7     Disabled  No              Disabled    Unlimited
8     Disabled  No              Disabled    Unlimited
9     Disabled  No              Disabled    Unlimited
10    Disabled  No              Disabled    Unlimited
11    Disabled  No              Disabled    Unlimited
12    Disabled  No              Disabled    Unlimited
13    Disabled  No              Disabled    Unlimited
14    Disabled  No              Disabled    Unlimited
15    Disabled  No              Disabled    Unlimited
 --More--, q to quit
```

24.14 *snooping*

Using this command you can enable or disable IGMP Snooping mode.

Syntax:

```
snooping disable|enable
```

Parameter:

disable

Disables the global IGMP snooping mode.

enable

Enables the global IGMP snooping mode.

Example:

```
Switch(igmp)# snooping enable
Switch(igmp)#
```

24.15 *ssm-range*

Using this command you can define the IGMP SSM range.

Syntax:

```
ssm-range <ipmc-address> <4-32>
```

Parameter:

<ipmc-address>

IGMP SSM range address.

<4-32>

IGMP SSM range value.

Example:

```
Switch(igmp)# ssm-range 224.0.0.1 16
Switch(igmp)#
```

24.16 *state*

Using this command you can enable or disable IGMP Snooping mode for each VLAN.

Syntax:

```
state <vlan-list> disable|enable
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

disable

Disables IGMP snooping for selected VLAN.

enable

Enables IGMP snooping for selected VLAN.

Example:

```
Switch(igmp)# state 5 enable
Switch(igmp)#
```

24.17 *throttling*

Using this command you can define the throttling value for each port.

Syntax:

```
throttling <port-list> <0-10>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-10>

Port group limit number, range:0~10, 0: unlimited

Example:

```
Switch(igmp)# throttling 5 8
Switch(igmp)#
```

24.18 *uri*

Using this command you can define Unsolicited Report Interval for each VLAN.

Syntax:

```
uri <vlan-list> <0-31744>
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

<0-31744>

Range:0~31744 sec, default:1 sec

Example:

```
Switch(igmp)# uri 5 3600
Switch(igmp)#
```

25 IP Commands

IP is an acronym for Internet Protocol. It is a protocol used for communicating data across an internet network.

IP is a "best effort" system, which means that no packet of information sent over is assured to reach its destination in the same condition it was sent. Each device connected to a Local Area Network (LAN) or Wide Area Network (WAN) is given an Internet Protocol address, and this IP address is used to identify the device uniquely among all other devices connected to the extended network.

The current version of the Internet protocol is IPv4, which has 32-bits Internet Protocol addresses allowing for in excess of four billion unique addresses. This number is reduced drastically by the practice of webmasters taking addresses in large blocks, the bulk of which remain unused. There is a rather substantial movement to adopt a new version of the Internet Protocol, IPv6, which would have 128-bits Internet Protocol addresses. This number can be represented roughly by a three with thirty-nine zeroes after it. However, IPv4 is still the protocol of choice for most of the Internet.

Command	Function
dhcp	Enable/Disable DHCP client
dns-proxy	Enable/Disable DNS proxy
mgmt-vlan	Set the management VLAN ID
name-server	Set DNS IP address
setup	Set the IP address
show	Show ip information

25.1 *dhcp*

Using this command you can configure the DHCP client.

Syntax:

```
dhcp disable|enable|renew
```

Parameter:

disable

Disables DHCP client.

enable

Enables DHCP client.

renew

Forces DHCP client to renew IP address.

Example:

```
Switch(ip)# dhcp enable
Switch(ip)# show
                       Configured      Current
                       --------------- ---------------
DHCP Client          : Enabled
```

```
IP Address            : 192.168.20.1    0.0.0.0
IP Mask               : 255.255.255.0   0.0.0.0
IP Gateway            : 192.168.20.250  0.0.0.0
VLAN ID               : 1               1
DNS Server            : 0.0.0.0         0.0.0.0
DNS Proxy             : Enabled
```

25.2 *dns-proxy*

Using this command you can configure the DNS proxy.

Syntax:

```
dns-proxy disable|enable
```

Parameter:

disable

Disables DNS proxy mode.

enable

Enables DNS proxy mode.

Example:

```
Switch(ip)# dns-proxy enable
Switch(ip)# show
                        Configured      Current
                        --------------- ---------------
DHCP Client           : Enabled
IP Address            : 192.168.20.1    0.0.0.0
IP Mask               : 255.255.255.0   0.0.0.0
IP Gateway            : 192.168.20.250  0.0.0.0
VLAN ID               : 1               1
DNS Server            : 0.0.0.0         0.0.0.0
DNS Proxy             : Enabled
```

25.3 *mgmt-vlan*

Using this command you can define the management VLAN ID.

Syntax:

```
mgmt-vlan <1-4094>
```

Parameter:

<1-4094>

Management VLAN ID, possible values from 1 to 4094

Example:

```
Switch(ip)# mgmt-vlan 2
Switch(ip)# show
                       Configured      Current
                       --------------- ---------------
DHCP Client          : Disabled
IP Address           : 192.168.20.1    192.168.20.1
IP Mask              : 255.255.255.0   255.255.255.0
IP Gateway           : 192.168.20.250  192.168.20.250
VLAN ID              : 2               2
DNS Server           : 0.0.0.0         0.0.0.0
DNS Proxy            : Disabled
```

25.4 *name-server*

Using this command you can define the DNS IP address.

Syntax:

```
name-server <ip-address>
```

Parameter:

<ip-address>

DNS IP address.

Example:

```
Switch(ip)# name-server 192.168.20.10
Switch(ip)# show
                       Configured      Current
                       --------------- ---------------
DHCP Client          : Disabled
IP Address           : 192.168.20.1    192.168.20.1
IP Mask              : 255.255.255.0   255.255.255.0
IP Gateway           : 192.168.20.250  192.168.20.250
VLAN ID              : 2               2
DNS Server           : 192.168.20.10   192.168.20.10
DNS Proxy            : Disabled
```

25.5 *setup*

Using this command you can define the devices IP address.

ⓘ The IP address and the router must be on the same subnet.

Syntax:

```
setup <ip-address> [<ip-mask>] [<ip-address>]
```

Parameter:

<ip-address>

IP address.

<ip-mask>

IP subnet mask.

<ip-address>

Gateway IP address.

Example:

```
Switch(ip)# setup 192.168.20.10 255.255.255.0 192.168.20.250
Switch(ip)# show
                       Configured      Current
                       --------------- ---------------
DHCP Client          : Disabled
IP Address           : 192.168.20.10   192.168.20.10
IP Mask              : 255.255.255.0   255.255.255.0
IP Gateway           : 192.168.20.250  192.168.20.250
VLAN ID              : 2               2
DNS Server           : 0.0.0.0         0.0.0.0
DNS Proxy            : Disabled
```

25.6 *show*

Using this command you can show the current IP information.

Syntax:

```
show
```

Example:

```
Switch(ip)# show
                       Configured      Current
                       --------------- ---------------
DHCP Client          : Disabled
IP Address           : 192.168.20.10   192.168.20.10
IP Mask              : 255.255.255.0   255.255.255.0
IP Gateway           : 192.168.20.250  192.168.20.250
VLAN ID              : 2               2
DNS Server           : 0.0.0.0         0.0.0.0
DNS Proxy            : Disabled
```

26 IP-Source-Guard Commands

The section describes to configure the IP Source Guard detail parameters of the switch. You could use the IP Source Guard configure to enable or disable with the Port of the switch.

Command	Function
add	Add or modify IP source guard static entry
delete	Delete IP source guard static entry
limit	IP source guard port limitation for dynamic entries
mode	Configure IP source guard mode
port-mode	Configure IP source guard port mode
show	Show IP source guard information
translate	Translate IP source guard dynamic entries into static entries

26.1 *add*

Using this command you can add or modify IP source guard static entry.

Syntax:

```
add <port-list> <1-4094> <ip-address> <mac-address>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<1-4094>

VLAN ID, possible values from 1 to 4094.

<ip-address>

IP address allowed for doing IP source guard.

<mac-address>

MAC address, format 0a-1b-2c-3d-4e-5f.

Example:

```
Switch(ip-source-guard)# add 5 2 192.168.2.100 0a-1b-2c-3d-4e-5f
Switch(ip-source-guard)# show binding-table
Type      Port  VLAN  IP Address       MAC Address
-------   ----  ----  ---------------  -----------------
Static       5     2  192.168.2.100    0a-1b-2c-3d-4e-5f
```

26.2 *delete*

Using this command you can delete statis IP source guard entries.

Syntax:

```
delete <port-list> <1-4094> <ip-address> <mac-address>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<1-4094>

VLAN ID, possible values from 1 to 4094.

<ip-address>

IP address.

<mac-address>

MAC address, format 0a-1b-2c-3d-4e-5f.

Example:

```
Switch(ip-source-guard)# delete 5 2 192.168.2.100 0a-1b-2c-3d-4e-5f
Switch(ip-source-guard)# show binding-table
Type     Port  VLAN  IP Address       MAC Address
-------  ----  ----  ---------------  -----------------
<none>
```

26.3 *limit*

Using this command you can define IP source guard port limitation for dynamic entries.

Syntax:

```
limit <port-list> <0-2>|unlimited
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-2>

Specify the maximum number of dynamic clients that can be learned on given port. If the port mode is enabled and the value of max dynamic client is equal to 0, itmeans only allow the IP packets forwarding that are matched in static entries on the specific port unlimited

unlimited

dynamic clients

Example:

```
Switch(ip-source-guard)# limit 1 0
Switch(ip-source-guard)# show config

IP Source Guard Mode : Disabled

Port  Port Mode  Dynamic Entry Limit
----  ---------  -------------------
1     Disabled   0
2     Disabled   unlimited
3     Disabled   unlimited
4     Disabled   unlimited
5     Disabled   unlimited
6     Disabled   unlimited
7     Disabled   unlimited
8     Disabled   unlimited
9     Disabled   unlimited
10    Disabled   unlimited
11    Disabled   unlimited
12    Disabled   unlimited
13    Disabled   unlimited
14    Disabled   unlimited
15    Disabled   unlimited
16    Disabled   unlimited
17    Disabled   unlimited
18    Disabled   unlimited
19    Disabled   unlimited
20    Disabled   unlimited
21    Disabled   unlimited
22    Disabled   unlimited
23    Disabled   unlimited
24    Disabled   unlimited
25    Disabled   unlimited
26    Disabled   unlimited
27    Disabled   unlimited
28    Disabled   unlimited
```

26.4 *mode*

Using this command you can enable or disable the IP source guard mode.

Syntax:

```
mode enable|disable
```

Parameter:

disable

Globally disable IP source guard mode.

enable

Globally enable IP source guard mode. All configured ACEs will be lost when the mode is enabled.

Example:

```
Switch(ip-source-guard)# mode enable
Switch(ip-source-guard)# show config

IP Source Guard Mode : Enabled

Port  Port Mode  Dynamic Entry Limit
----  ---------  -------------------
1     Disabled   0
2     Disabled   unlimited
3     Disabled   unlimited
4     Disabled   unlimited
5     Disabled   unlimited
6     Disabled   unlimited
7     Disabled   unlimited
8     Disabled   unlimited
9     Disabled   unlimited
10    Disabled   unlimited
11    Disabled   unlimited
12    Disabled   unlimited
13    Disabled   unlimited
14    Disabled   unlimited
15    Disabled   unlimited
16    Disabled   unlimited
17    Disabled   unlimited
18    Disabled   unlimited
19    Disabled   unlimited
20    Disabled   unlimited
21    Disabled   unlimited
22    Disabled   unlimited
23    Disabled   unlimited
24    Disabled   unlimited
25    Disabled   unlimited
26    Disabled   unlimited
27    Disabled   unlimited
28    Disabled   unlimited
```

26.5 *port-mode*

Using this command you can enable or disable IP source guard port mode for each port.

Syntax:

```
port-mode <port-list> enable|disable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables IP source guard port mode.

enable

Enables IP source guard port mode.

Example:

```
Switch(ip-source-guard)# port-mode 1 enable
Switch(ip-source-guard)# show config

IP Source Guard Mode : Enabled

Port  Port Mode  Dynamic Entry Limit
----  ---------  -------------------
1     Enabled    unlimited
2     Disabled   unlimited
3     Disabled   unlimited
4     Disabled   unlimited
5     Disabled   unlimited
6     Disabled   unlimited
7     Disabled   unlimited
8     Disabled   unlimited
9     Disabled   unlimited
10    Disabled   unlimited
11    Disabled   unlimited
12    Disabled   unlimited
13    Disabled   unlimited
14    Disabled   unlimited
15    Disabled   unlimited
16    Disabled   unlimited
17    Disabled   unlimited
18    Disabled   unlimited
19    Disabled   unlimited
20    Disabled   unlimited
21    Disabled   unlimited
22    Disabled   unlimited
23    Disabled   unlimited
24    Disabled   unlimited
25    Disabled   unlimited
26    Disabled   unlimited
27    Disabled   unlimited
28    Disabled   unlimited
```

26.6 *show*

Using this command you can show the current IP source guard information.

Syntax:

```
show binding-table|config
```

Parameter:

binding-table

Shows IP-MAC binding table.

config

Shows IP source guard configuration.

Example:

```
Switch(ip-source-guard)# show binding-table
Type     Port  VLAN  IP Address       MAC Address
-------  ----  ----  ---------------  -----------------
Static      1     1  192.168.1.1      5a-80-70-64-60-80
```

26.7 *translate*

Using this command you can translate dynamic IP source guard entries into static entries.

Syntax:

```
translate
```

Example:

```
Switch(ip-source-guard)# translate
IP Source Guard:
        Translate 0 dynamic entries into static entries.
```

27 IPv6 Commands

This section describes how to configure the switch-managed IPv6 information. The Configured column is used to view or change the IPv6 configuration. And the Current column is used to show the active IPv6 configuration.

Command	Function
autoconfig	Configure IPv6 autoconfig mode
setup	Set the IPv6 address
show	Show IPv6 information

27.1 *autoconfig*

Using this command you can configure the IPv6 autoconfig mode.

Syntax:

```
autoconfig disable|enable|renew
```

Parameter:

disable

Disables IPv6 autoconfig mode.

enable

Enables IPv6 autoconfig mode.

renew

Forces renewal of IPv6 address.

Example:

```
Switch(ipv6)# autoconfig enable
Switch(ipv6)# show config
Auto Configuration : Enabled
Address            : ::192.168.1.1
Prefix             : 96
Gateway            : ::
```

27.2 *setup*

Using this command you can define the devices IPv6 address.

Syntax:

```
setup setup <ipv6-address> [<1-128>] [<ipv6-gateway>]
```

Parameter:

<ipv6-address>

IPv6 address is in 128-bit records represented as eight fields of up to four hexadecimal digits with a colon separate each field (“:”). For example, `fe80::215:c5ff:fe03:4dc7`. The symbol “::” is a special syntax that can be used as a shorthand way of representing multiple 16-bit groups of contiguous zeros; but it can only appear once. It also used a following legally IPv4 address. For example, `::192.1.2.34`.

<1-128>

IPv6 prefix

<ipv6-gateway>

Gateway IPv6 address IPv6 address is in 128-bit records represented as eight fields of up to four hexadecimal digits with a colon separate each field (“:”).

Example:

```
Switch(ipv6)# setup ::192.168.6.1 1 ::192.168.0.0
Switch(ipv6)# show config
Auto Configuration : Enabled
Address            : ::192.168.6.1
Prefix             : 1
Gateway            : ::192.168.0.0
```

27.3 *show*

Using this command you can show the current IPv6 information.

Syntax:

```
show config|current
```

Parameter:

config

Shows IPv6 configuration.

current

Shows current IPv6 information.

Example:

```
Switch(ipv6)# show config
Auto Configuration : Disabled
Address            : ::192.168.6.1
Prefix             : 96
Gateway            : ::


Switch(ipv6)# show current

Active Configuration for IPv6: (Static with Stateless)
Link-Local Address : fe80::240:c7ff:fe34:3400
Address            : ::192.168.6.1
```

```
Prefix                : 96
Gateway               : ::
```

28 LACP Commands

Ports using Link Aggregation Control Protocol (according to IEEE 802.3ad specification) as their trunking method can choose their unique LACP GroupID to form a logic "trunked port". The benefit of using LACP is that a port makes an agreement with its peer port before it becomes a ready member of a "trunk group" (also called aggregator). LACP is safer than the other trunking method - static trunk.

Command	Function
clear	Clear command
key	Configure the LACP key
mode	Configure the LACP mode
role	Configure the LACP role
Show	Show LACP information

28.1 *clear*

Using this command you can clear the link aggregation entries.

Syntax:

```
clear statistics
```

Parameter:

statistics

Clears LACP statistics.

Example:

```
Switch(lacp)# clear statistics
Switch(lacp)# show statistics
Port  Rx Frames   Tx Frames   Rx Unknown  Rx Illegal
----  ----------  ----------  ----------  ----------
1     0           0           0           0
2     0           0           0           0
3     0           0           0           0
4     0           0           0           0
```

28.2 *key*

Using this command you can configure the LACP key for each port.

Syntax:

```
key <port-list> <1-65535>|auto
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<1-65535>

LACP key

auto

The Auto setting will set the key as appropriate by the physical link speed, 10Mb = 1, 100Mb = 2, 1Gb = 3

Example:

```
Switch(lacp)# key 1 10000
Switch(lacp)# show config
Port  Mode      Key    Role
----  --------  -----  ------
1     Disabled  10000  Active
2     Disabled  Auto   Active
3     Disabled  Auto   Active
4     Disabled  Auto   Active
5     Disabled  Auto   Active
```

28.3 *mode*

Using this command you can configure the LACP mode for each port.

Syntax:

```
mode <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables LACP protocol for the selected port(s).

enable

Enables LACP protocol for the selected port(s).

Example:

```
Switch(lacp)# mode 1 enable
Switch(lacp)# show config
Port  Mode      Key    Role
----  --------  -----  ------
1     Enabled   Auto   Active
2     Disabled  Auto   Active
3     Disabled  Auto   Active
4     Disabled  Auto   Active
```

28.4 *role*

Using this command you can configure the LACP role for each port.

Syntax:

```
role <port-list> active|passive
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

active

Initiate LACP negotiation, and transmit LACP packets each second.

passive

Listen for LACP packets.

Example:

```
Switch(lacp)# role 1 passive
Switch(lacp)# show config
Port  Mode      Key    Role
----  --------  -----  ------
1     Disabled  Auto   Passive
2     Disabled  Auto   Active
3     Disabled  Auto   Active
```

28.5 *show*

Using this command you can show LACP information.

Syntax:

```
show config|statistics|status
```

Parameter:

config

Shows LACP configuration.

statistics

Shows LACP statistics.

status

Shows LACP status.

Example:

```
Switch(lacp)# show config
Port  Mode      Key    Role
----  --------  -----  ------
1     Disabled  Auto   Passive
2     Disabled  Auto   Active

Switch(lacp)# show statistics
Port  Rx Frames   Tx Frames   Rx Unknown  Rx Illegal
----  ----------  ----------  ----------  ----------
1     0           0           0           0
2     0           0           0           0
3     0           0           0           0

witch(lacp)# show status

Port  Mode      Key    Aggr ID  Partner System ID  Partner Port
----  --------  -----  -------  -----------------  ------------
1     Disabled  -      -        -                  -
2     Disabled  -      -        -                  -
3     Disabled  -      -        -                  -
```

29 LLDP Commands

The switch supports the LLDP. For current information on your switch model, The Link Layer Discovery Protocol (LLDP) provides a standards-based method for enabling switches to advertise themselves to adjacent devices and to learn about adjacent LLDP devices. The Link Layer Discovery Protocol (LLDP) is a vendor-neutral Link Layer protocol in the Internet Protocol Suite used by network devices for advertising their identity, capabilities, and neighbors on a IEEE 802 local area network, principally wired Ethernet. The protocol is formally referred to by the IEEE as Station and Media Access Control Connectivity Discovery specified in standards document IEEE 802.1AB.

Command	Function
cdp-aware	Configure CDP (Cisco Discovery Protocol) aware mode
clear	Clear LLDP statistics
delay	Configure ARP inspection mode
hold	Configure LLDP Tx hold value
interval	Configure LLDP transmission interval
mode	Configure the LLDP mode
option-tlv	Configure LLDP Optional TLVs
reinit	Configure LLDP reinit delay
show	Show LLDP information

29.1 *cdp-aware*

Using this command you can configure CDP (Cisco Discovery Protocol) aware mode.

Syntax:

```
cdp-aware <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables CDP awareness

enable

Enables CDP awareness (CDP discovery information is added to the LLDP neighbor table)

Example:

```
Switch(lldp)# cdp-aware 1 enable
Switch(lldp)# show config
Interval     : 30
Hold         : 4
```

```
Tx Delay    : 2
Reinit Delay: 2
              Port        System   System      System      Management CDP
Port Mode      Description Name      Description Capability  Address
awareness
---- -------- ----------- -------- ----------- ----------- ----------
---------
1    Disabled Enabled    Enabled  Enabled    Enabled    Enabled   Enabled
2     Disabled Enabled     Enabled   Enabled     Enabled     Enabled
Disabled
3     Disabled Enabled     Enabled   Enabled     Enabled     Enabled
Disabled
```

29.2 *clear*

Using this command you can clear LLDP statistics.

Syntax:

```
clear
```

Example:

```
Switch(lldp)# clear
Switch(lldp)# show statistics
LLDP global counters
Neighbor entries was last changed at 2014-01-01 00:00:00 (5600 sec. ago).
Total Neighbors Entries Added    0.
Total Neighbors Entries Deleted  0.
Total Neighbors Entries Dropped  0.
Total Neighbors Entries Aged Out 0.

LLDP local counters
       Rx       Tx       Rx       Rx       Rx TLV   Rx TLV   Rx TLV
Port   Frames   Frames   Errors   Discards Errors   Unknown  Organz.  Aged
----   ------   ------   ------   -------- ------   -------  -------  -----
1      0        0        0        0        0        0        0        0
2      0        0        0        0        0        0        0        0
3      0        0        0        0        0        0        0        0
```

29.3 *delay*

Using this command you can configure LLDP Tx delay.

Syntax:

```
delay <1-8192>
```

Parameter:

<1-8192>

LLDP transmission delay

Example:

```
Switch(lldp)# delay 5
Switch(lldp)# show config
Interval    : 30
Hold        : 4
Tx Delay    : 5
Reinit Delay: 2
              Port        System   System      System      Management CDP
Port Mode      Description Name      Description Capability   Address
awareness
---- --------  -----------  --------  -----------  -----------  ----------
---------
1    Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
2    Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
3    Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
```

29.4 *hold*

Using this command you can configure LLDP Tx hold value.

Syntax:

```
hold <2-10>
```

Parameter:

<2-10>

LLDP hold value

Example:

```
Switch(lldp)# hold 10
Switch(lldp)# show config
Interval    : 30
Hold        : 10
Tx Delay    : 2
Reinit Delay: 2
              Port        System   System      System      Management CDP
Port Mode      Description Name      Description Capability   Address
awareness
---- --------  -----------  --------  -----------  -----------  ----------
---------
1    Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
2    Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
3    Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
```

29.5 *interval*

Using this command you can configure LLDP transmission interval.

Syntax:

```
interval <5-32768>
```

Parameter:

<5-32768>

LLDP transmission interval

Example:

```
Switch(lldp)# interval 40
Switch(lldp)# show config
Interval    : 40
Hold        : 4
Tx Delay    : 2
Reinit Delay: 2
              Port        System   System      System      Management CDP
Port Mode      Description Name      Description Capability   Address
awareness
----  --------  -----------  --------  -----------  -----------  ----------
---------
1     Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
2     Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
3     Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
```

29.6 *mode*

Using this command you can configure the LLDP mode.

Syntax:

```
mode <port-list> disable|enable|rx-only|tx-only
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

The switch will not send out LLDP information, and will drop LLDP information received from neighbours.

enable

The switch will send out LLDP information, and will analyze LLDP information received from neighbours.

rx-only

The switch will not send out LLDP information, but LLDP information from neighbour units is analyzed.

tx-only

The switch will drop LLDP information received from neighbours, but will send out LLDP information.

Example:

```
Switch(lldp)# mode 1 enable
Switch(lldp)# show config
Interval    : 30
Hold        : 4
Tx Delay    : 2
Reinit Delay: 2
              Port        System   System      System      Management CDP
Port Mode      Description Name      Description Capability   Address
awareness
---- --------  -----------  --------  -----------  -----------  ----------
---------
1     Enabled  Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
2     Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
3     Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
```

29.7 *option-tiv*

Using this command you can configure LLDP Optional TLVs.

Syntax:

```
option-tiv <port-list> (mgmt-addr|port-desc|sys-capa|sys-desc|sys-name) (disable|enable)
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

mgmt-addr

Management IP address

port-desc

Port description

sys-capa

System capability

sys-desc

System description

sys-name

System name

disable

Disables TLV

enable

Enables TLV

Example:

```
Switch(lldp)# option-tlv 1 mgmt-addr disable
Switch(lldp)# option-tlv 1 port-desc disable
Switch(lldp)# option-tlv 1 sys-capa disable
Switch(lldp)# option-tlv 1 sys-desc disable
Switch(lldp)# option-tlv 1 sys-name disable
Switch(lldp)# show config
Interval    : 30
Hold        : 4
Tx Delay    : 2
Reinit Delay: 2
              Port        System   System      System      Management CDP
Port Mode      Description Name      Description Capability   Address
awareness
---- --------  -----------  --------  -----------  -----------  ----------
---------
1     Disabled Disabled     Disabled Disabled     Disabled     Disabled
Disabled
2     Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
3     Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
```

29.8 *reinit*

Using this command you can configure LLDP reinit delay.

Syntax:

```
reinit <1-10>
```

Parameter:

<1-10>

LLDP reinit delay

Example:

```
Switch(lldp)# reinit 10
Switch(lldp)# show config
Interval    : 30
Hold        : 4
Tx Delay    : 2
Reinit Delay: 10
```

29.9 *show*

Using this command you can show current LLDP information.

Syntax:

```
show config|eee|statistics
show info <port-list>
```

Parameter:

config

Shows LLDP configuration

eee

Shows LLDP neighbours EEE information

statistics

Shows LLDP statistics

info

Shows LLDP neighbor device information

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(lldp)# show config
Interval    : 30
Hold        : 4
Tx Delay    : 2
Reinit Delay: 2
              Port        System   System      System      Management CDP
Port Mode      Description Name      Description Capability   Address
awareness
----  --------  -----------  --------  -----------  -----------  ----------
---------
1     Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled
2     Disabled Enabled      Enabled   Enabled      Enabled      Enabled
Disabled

Switch(lldp)# show info 1
No LLDP entries found

Switch(lldp)# show statistics
LLDP global counters
Neighbor entries was last changed at 2014-01-01 00:00:00 (8222 sec. ago).
Total Neighbors Entries Added    0.
Total Neighbors Entries Deleted  0.
Total Neighbors Entries Dropped  0.
Total Neighbors Entries Aged Out 0.

LLDP local counters
       Rx        Tx        Rx        Rx       Rx TLV    Rx TLV    Rx TLV
Port   Frames    Frames    Errors    Discards Errors    Unknown   Organz.  Aged
```

```
----   ------   ------   ------   -------- ------   -------  -------  -----
1       0        0        0        0        0        0        0        0
2       0        0        0        0        0        0        0        0
```

30 LLDP Media Commands

Media Endpoint Discovery is an enhancement of LLDP, known as LLDP-MED, that provides the following facilities:

Auto-discovery of LAN policies (such as VLAN, Layer 2 Priority and Differentiated services (Diffserv) settings) enabling plug and play networking.

Device location discovery to allow creation of location databases and, in the case of Voice over Internet Protocol (VoIP), Enhanced 911 services.

Extended and automated power management of Power over Ethernet (PoE) end points.

Inventory management, allowing network administrators to track their network devices, and determine their characteristics (manufacturer, software and hardware versions, serial or asset number).

This section allows you to configure the LLDP-MED. This function applies to VoIP devices which support LLDP-MED.

Command	Function
civic	Configure LLDP-MED civic address location
coordinate	Configure LLDP-MED coordinate location
delete	Delete the selected policy
ecs	Configure LLDP-MED Emergency Call Service
fast	Configure LLDP-MED fast start repeat count
policy	Configure LLDP-MED policy
port-policy	Configure LLDP-MED port policy
show	Show LLDP-MED information

30.1 *civic*

Using this command you can configure LLDP-MED civic address location function.

Syntax:

```
civic additional-code <LINE>
civic additional-info <LINE>
civic apartment <LINE>
civic block <LINE>
civic city <LINE>
civic ...
civic zip_code <LINE>
```

Parameter:

additional-code

Additional code

additional-info

Additional location info

apartment

Unit (Apartment, suite)

block

Neighbourhood, block

building

Building (structure)

city

City, township, shi (Japan)

comm-name

Postal community name

country-code

The two-letter ISO 3166 country code

county

County, parish, gun (Japan), district

district

City division, borough, city district, ward, chou(Japan)

floor

Floor

house-no

House number

house-no-suffix

House number suffix

landmark

Landmark or vanity address

leading-street-direction

Leading street direction

name

Name (residence and office occupant)

p.o.box

Post office box (P.O. BOX)

place-type

Place type

room-number

Room number

state

National subdivisions (state, canton, region, province, prefecture)

street

Street

street-suffix

Street suffix

trailing-street-suffix

Trailing street suffix

zip_code

Postal/zip code

<LINE>

The value for the Civic Address Location entry

Example:

```
Switch(lldpmed)# civic city taipei
Switch(lldpmed)# civic floor 1
Switch(lldpmed)# show config

Fast Start Repeat Count   : 4

Location Coordinates
--------------------
Latitude                  : 0.0000 North
Longitude                 : 0.0000 East
Altitude                  : 0.0000 meter(s)
Map datum                 : WGS84

Civic Address Location
----------------------
Country code              :
National subdivison       :
County                    :
City                      : taipei
City district             :
Block (Neighborhood)      :
Street                    :
Street Dir                :
Trailling Street          :
Street Suffix             :
House No.                 :
House No. Suffix          :
Landmark                  :
Additional Location Info  :
Name                      :
Zip                       :
Building                  :
Unit                      :
Floor                     : 1
Room No.                  :
Placetype                 :
Postal Community Name     :
P.O. Box                  :
Addination Code           :

Emergency Call Service    :
```

30.2 *coordinate*

Using this command you can configure LLDP-MED coordinate location function.

Syntax:

```
coordinate altitude <coordinate-value> floor|meter
coordinate datum nad83-mllw|nad83-navd88|wgs84
coordinate latitude <coordinate-value> north|south
coordinate longitude <coordinate-value> east|west
```

Parameter:

altitude

Altitude

<coordinate-value>

-32767 to 32767 Meters or floors with max. 4 digits00

floor

Representing altitude in a form more relevant in buildings which have different floor-to-floor dimensions

meter

Representing meters of Altitude defined by the vertical datum specified

datum

Map datum

nad83-mllw

North American Datum 1983, CRS Code 4269, Prime Meridian

Name: Greenwich; The associated vertical datum is Mean Lower Low Water (MLLW).

This datum pair is to be used when referencing locations on water/sea/ocean.

nad83-navd88

North American Datum 1983, CRS Code 4269, Prime Meridian

Name: Greenwich; The associated vertical datum is the North American Vertical Datum of 1988 (NAVD88).

This datum pair is to be used when referencing locations on land, not near tidal water (which would use Datum = NAD83/MLLW)

wgs84

(Geographical 3D) - World Geodesic System 1984, CRS Code 4327, Prime Meridian

Name: Greenwich

latitude

Latitude

<coordinate-value>

0 to 90 degress with max. 4 digits

north

North of the equator

south

South of the equator

longitude

Longitude

<coordinate-value>

0 to 180 degress with max. 4 digits

east

East of the prime meridian

west

West of the prime meridian

Example:

```
Switch(lldpmed)# coordinate altitude 10 floor
Switch(lldpmed)# coordinate datum nad83-mllw
Switch(lldpmed)# coordinate latitude 60 north
Switch(lldpmed)# coordinate longitude 30 east
Switch(lldpmed)# show config

Fast Start Repeat Count   : 4

Location Coordinates
--------------------
Latitude                  : 60.0000 North
Longitude                 : 30.0000 East
Altitude                  : 10.0000 floor
Map datum                 : NAD83/MLLW
```

30.3 *delete*

Using this command you can delete the selected policy.

Syntax:

```
delete <0-31>
```

Parameter:

<0-31>

Policy ID, available value is from 0 to 31

Example:

```
Switch(lldpmed)# delete 1
Switch(lldpmed)# show policy
Policy Id  Application Type         Tag       Vlan ID  L2 Priority  DSCP
---------  ------------------------ --------  -------  -----------  ----
```

30.4 *ecs*

Using this command you can configure LLDP-MED Emergency Call Service.

Syntax:

```
ecs <number>
```

Parameter:

<number>

The numerical digit string for the Emergency Call Service

Example:

```
Switch(lldpmed)# ecs 0921555678
Switch(lldpmed)# show config

Fast Start Repeat Count    : 4

Location Coordinates
--------------------
Latitude                   : 60.0000 North
Longitude                  : 30.0000 East
Altitude                   : 10.0000 floor
Map datum                  : NAD83/MLLW


Emergency Call Service     : 0921555678
```

30.5 *fast*

Using this command you can configure LLDP-MED fast start repeat count function.

Syntax:

```
fast <1-10>
```

Parameter:

<1-10>

The number of times the fast start LLDPDU are being sent during the activation of the fast start mechanism defined by LLDP-MED

Example:

```
Switch(lldpmed)# fast 10
Switch(lldpmed)# show config

Fast Start Repeat Count    : 10

Location Coordinates
--------------------
Latitude                   : 60.0000 North
Longitude                  : 30.0000 East
Altitude                   : 10.0000 floor
Map datum                  : NAD83/MLLW
```

30.6 *policy*

Using this command you can configure LLDP-MED policy.

Syntax:

```
policy tagged|untagged <1-4094> <0-7> <0-63> <classification>
```

Parameter:

tagged

The device is using tagged frames

untagged

The device is using untagged frames

<1-4094>

VLAN ID, possible values from 1 to 4094.

<0-7>

Layer 2 priority to be used for the specified application type

<0-63>

DSCP value to be used to provide Diffserv node behaviour for the specified application type as defined in IETF RFC 2474

classification

guest-voice

Guest Voice to support a separate limited feature-set voice service for guest users and visitors with their own IP Telephony handsets and other similar appliances supporting interactive voice services

guest-voice-signaling

Guest Voice Signaling (conditional) for use in network topologies that require a different policy for the guest voice signaling than for the guest voice media

softphone-voice

Softphone Voice for use by softphone applications on typical data centric devices, such as PCs or laptops. This class of endpoints frequently does not support multiple VLANs, if at all,and are typically configured to use an untagged VLAN or a single tagged data specific VLAN

streaming-video

Streaming Video for use by broadcast or multicast based video content distribution and other similar applications supporting streaming video services that require specific network policy treatment. Video applications relying on TCP with buffering would not be an intended use of this application type

video-conferencing

Video Conferencing for use by dedicated Video Conferencing equipment and other similar appliances supporting real-time interactive video/audio services

video-signaling

Video Signaling (conditional) for use in network topologies that require a separate policy for the video signaling than for the video media

voice

Voice for use by dedicated IP Telephony handsets and other similar appliances supporting interactive voice services. These devices are typically deployed on a separate VLAN for ease of deployment and enhanced security by isolation from data applications

voice-signaling

Voice Signaling (conditional) for use in network topologies that require a different policy for the voice signaling than for the voice media

Example:

```
Switch(lldpmed)# policy tagged 1 0 60 guest-voice
New policy added with policy id: 1
Switch(lldpmed)# show policy
Policy Id  Application Type          Tag       Vlan ID  L2 Priority  DSCP
---------  ------------------------  --------  -------  -----------  ----
0          Guest Voice               Tagged    1        0            60
```

30.7 *port-policy*

Using this command you can configure LLDP-MED port policy function.

Syntax:

```
port-policy <port-list> <0-31> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-31>

Policy ID, available value is from 0 to 31

disable

Disables the policy to a given port

enable

Enables the policy to a given port

Example:

```
Switch(lldpmed)# port-policy 1 2 enable
Switch(lldpmed)# show port-policy
Port    Policies
----    -------------
1       2
2       none
3       none
4       none
5       none
```

30.8 *show*

Using this command you can display LLDP-MED information.

Syntax:

```
show config|policy|port-policy
show info <port-list>
```

Parameter:

config

Shows LLDP-MED configuration

policy

Shows LLDP-MED policy configuration

port-policy

Shows LLDP-MED port policy configuration

info

Shows LLDP-MED neighbor device information

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
witch(lldpmed)# show config

Fast Start Repeat Count   : 10

Location Coordinates
--------------------
Latitude                  : 60.0000 North
Longitude                 : 30.0000 East
Altitude                  : 10.0000 floor
Map datum                 : NAD83/MLLW

Civic Address Location
----------------------
Country code              :
National subdivison       :
County                    :
City                      : taipei
City district             :
Block (Neighborhood)      :
Street                    :
Street Dir                :
Trailling Street          :
Street Suffix             :
House No.                 :
House No. Suffix          :
Landmark                  :
Additional Location Info  :
Name                      :
Zip                       :
```

```
Building                  :
Unit                      :
Floor                     : 1
Room No.                  :
Placetype                 :
Postal Community Name     :
P.O. Box                  :
Addination Code           :

Emergency Call Service    : 0921555678

Switch(lldpmed)# show info 1
No LLDP-MED entries found

Switch(lldpmed)# show policy
Policy Id  Application Type          Tag       Vlan ID  L2 Priority  DSCP
---------  ------------------------  --------  -------  -----------  ----
0          Guest Voice               Tagged    1        0            60

Switch(lldpmed)# show port-policy
Port    Policies
----    -------------
1       2
2       none
3       none
```

31 LANCOM Management Cloud (LMC) Configuration Commands

Commands to configure LANCOM Management Cloud (LMC).

Command	Function
Configuration-via-DHCP	Allow configuration of LMC-Servers via DHCP option 43
DHCP-Client-Auto-Renew	Auto renew DHCP Lease on LMC connection failure
Delete-Certificate	Delete LMC certificate
LMC-Domain	LMC-Domain configuration
LMC-Rollout-Location-ID	Location information for LMC rollout
LMC-Rollout-Project-ID	Project information for LMC rollout
LMC-Rollout-Role	Role information for LMC rollout
Operating	Enable or disable LMC operation
show	Show LMC configuration

31.1 *Configuration-via-DHCP*

Using this command you can allow the configuration of LMC-Servers via DHCP option 43.

Syntax:

```
Configuration-via-DHCP no|yes
```

Parameter:

no

Always use the static LMC configuration.

yes

Use configuration via DHCP option 43 if present.

Example:

```
Switch(LMC)# configuration-via-DHCP yes
Switch(LMC)#
```

31.2 *DHCP-Client-Auto-Renew*

Using this command you can automatically renew the DHCP lease if the connection to the LMC fails.

Syntax:

```
DHCP-Client-Auto-Renew no|yes
```

Parameter:

no

No renewal of the DHCP lease on connection failure to the LMC.

yes

Automatic renewal of the DHCP lease on connection failure to the LMC.

Example:

```
Switch(LMC)# DHCP-Client-Auto-Renew yes
Switch(LMC)#
```

31.3 *Delete-Certificate*

Using this command you can delete the certificate used for the connection to the LMC.

Syntax:

```
Delete-Certificate
```

Example:

```
Switch(LMC)# delete-Certificate
done
Switch(LMC)#
```

31.4 *LMC-Domain*

Using this command you can set the hostname of the LMC.

Syntax:

```
LMC-Domain <LINE>
```

Parameter:

<LINE>

LMC domain.

Example:

```
Switch(LMC)# LMC-Domain cloud.lancom.de
Switch(LMC)#
```

31.5 *LMC-Rollout-Location-ID*

Using this command you can set the Location ID of this switch in the LMC.

Syntax:

```
LMC-Rollout-Location-ID <LINE>
```

Parameter:

<LINE>

LMC Rollout Location ID (max. 36 characters).

Example:

```
Switch(LMC)# LMC-Rollout-Location-ID Aachen
Switch(LMC)#
```

31.6 *LMC-Rollout-Project-ID*

Using this command you can set the project ID of this switch in the LMC.

Syntax:

```
LMC-Rollout-Project-ID <LINE>
```

Parameter:

<LINE>

LMC Rollout Project ID (max. 36 characters).

Example:

```
Switch(LMC)# LMC-Rollout-Project-ID 12345
Switch(LMC)#
```

31.7 *LMC-Rollout-Role*

Using this command you can set the role of this switch in the LMC.

Syntax:

```
LMC-Rollout-Role <LINE>
```

Parameter:

<LINE>

LMC Rollout role (max. 36 characters).

Example:

```
Switch(LMC)# LMC-Rollout-Role switch
Switch(LMC)#
```

31.8 *Operating*

Using this command you can allow the configuration of LMC-Servers via DHCP option 43.

Syntax:

```
Operating no|try|yes
```

Parameter:

no

Disable the LMC client.

try

Disable the LMC client after 24 hours, if the device is not claimed by a project of the LMC.

yes

Enable the LMC client.

Example:

```
Switch(LMC)# operating try
Switch(LMC)#
```

31.9 *show*

Using this command you either see the configuration parameters of LMC on this switch or the status of the connection to the LMC.

Syntax:

```
show [transport-status]
```

Parameter:

transport-status

Shows the status of the connection to the LMC

Example:

```
Switch(LMC)#  show transport-status
LMC Transport Status:
Service-Name            HTTP-Requests        Request-Errors
TX-Bytes             RX-Bytes
Control-Service                    0                    0
   0                    0
Monitor-Service                    0                    0
   0                    0

Switch(LMC)# show
LMC Configuration:
Operating                       : try
Configuration-Via-DHCP          : no
DHCP-Client-Auto-Renew          : no
LMC-Domain                      : cloud.lancom.de
LMC-Rollout-Project-ID          : 12345
LMC-Rollout-Location-ID         : Aachen
LMC-Rollout-Role                : switch

LMC Status:
Zero-Touch-Support              : no
Pairing-Token-Present           : no
LMC-Client-Status               : Trying
Management-Status                                                     :
Not-Authenticated-With-LMC,No-Cloud-Management
Control-Status                  : Disabled
Monitoring-Status               : Disabled
Configuration-Source            : Static Configuration
Active-LMC-Domain               : cloud.lancom.de
Active-LMC-Rollout-Project-ID   : 12345
Active-LMC-Rollout-Location-ID  : Aachen
Active-LMC-Rollout-Role         : switch
Config-Modified                 : no
Device-Id                       : not present
Round-Trip-Time                 : 0 ms

Switch(LMC)#
```

32 Loop protection Commands

The loop detection is used to detect the presence of traffic. When switch receives packet's (looping detection frame) MAC address the same as oneself from port, show Loop Protection happens. The port will be locked when it received the looping detection frames.

Command	Function
interval	Configure loop protection transmit interval
mode	Configure loop protection mode
port-action	Configure loop protection port action
port-mode	Configure loop protection port mode
port-transmit	Configure loop protection port transmit mode
show	Display loop protection information
shutdown	Configure loop protection shutdown time

32.1 *interval*

Using this command you can configure loop protection transmit interval.

Syntax:

```
interval <1-10>
```

Parameter:

<1-10>

Transmit time interval

Example:

```
Switch(loop-protect)# interval 3
Switch(loop-protect)# show config
Loop Protection    : Disabled
Transmission Time  : 3
Shutdown Time      : 180
```

32.2 *mode*

Using this command you can configure loop protection mode globally.

Syntax:

```
mode disable|enable
```

Parameter:

disable

Disables loop protection mode globally.

enable

Enables loop protection mode globally.

Example:

```
Switch(loop-protect)# mode enable
Switch(loop-protect)# show config
Loop Protection    : Enabled
Transmission Time : 3
Shutdown Time      : 180

Port  Mode      Action             Transmit
----  --------  ----------------  --------
1     Enabled   Shutdown           Enabled
2     Enabled   Shutdown           Enabled
3     Enabled   Shutdown           Enabled
4     Enabled   Shutdown           Enabled
```

32.3 *port-action*

Using this command you can configure loop protection port action.

Syntax:

```
port-action <port-list> both|log|shutdown
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

both

Shutdown the port and log event.

log

Log the event only.

shutdown

Shutdown the port.

Example:

```
Switch(loop-protect)# port-action 1 both
Switch(loop-protect)# show config
Loop Protection    : Disabled
Transmission Time : 3
Shutdown Time      : 180

Port  Mode      Action             Transmit
```

```
----  --------  ----------------  --------
1     Enabled   Shutdown and Log  Enabled
2     Enabled   Shutdown          Enabled

Switch(loop-protect)# port-action 1 log
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 3
Shutdown Time     : 180

Port  Mode      Action            Transmit
----  --------  ----------------  --------
1     Enabled   Log Only          Enabled
2     Enabled   Shutdown          Enabled

Switch(loop-protect)# port-action 1 shutdown
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 3
Shutdown Time     : 180

Port  Mode      Action            Transmit
----  --------  ----------------  --------
1     Enabled   Shutdown          Enabled
2     Enabled   Shutdown          Enabled
```

32.4 *port-mode*

Using this command you can configure loop protection port mode for each port.

Syntax:

```
port-mode <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables loop protection mode for the selected port(s).

enable

Enables loop protection mode for the selected port(s).

Example:

```
Switch(loop-protect)# port-mode 1 disable
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 3
Shutdown Time     : 180

Port  Mode      Action            Transmit
----  --------  ----------------  --------
```

```
1     Disabled  Shutdown          Enabled
2     Enabled   Shutdown          Enabled
3     Enabled   Shutdown          Enabled
```

32.5 *port-transmit*

Using this command you can configure loop protection port transmit mode for each port.

Syntax:

```
port-transmit <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Passively looking for looped PDU's on the selected port(s).

enable

Actively generating loop protection PDU's on the selected port(s).

Example:

```
Switch(loop-protect)# port-transmit 1 disable
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 3
Shutdown Time     : 180

Port  Mode      Action            Transmit
----  --------  ----------------  --------
1     Disabled  Shutdown          Disabled
2     Enabled   Shutdown          Enabled
```

32.6 *show*

The command display loop protection information.

Syntax:

```
show config|status
```

Parameter:

config

Shows loop protection configuration.

status

Shows loop protection status.

Example:

```
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 5
Shutdown Time     : 180

Port  Mode      Action            Transmit
----  --------  ----------------  --------
1     Enabled   Shutdown          Enabled
2     Enabled   Shutdown          Enabled
3     Enabled   Shutdown          Enabled
4     Enabled   Shutdown          Enabled

Switch(loop-protect)# show status
Port  Action            Transmit  Loops     Status    Loop  Time of Last
Loop
----    ----------------    --------    --------    --------    ----
-------------------
1     Shutdown          Enabled          0  Down      -     -
2     Shutdown          Enabled          0  Down      -     -
3     Shutdown          Enabled          0  Down      -     -
4     Shutdown          Enabled          0  Down      -     -
```

32.7 *shutdown*

Using this command you can configure loop protection shutdown time.

Syntax:

```
shutdown <0-604800>
```

Parameter:

<0-604800>

Shutdown time interval. A value of zero disables re-enabling the port.

Example:

```
Switch(loop-protect)# shutdown 200
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 3
Shutdown Time     : 200
```

33 Large Scale Rollout Configuration Commands

Commands to configure Large Scale Rollout (LSR).

Command	Function
debug	Debug Large Scale Rollout
del_certificate	Delete certificate file
download	Download certificate file to TFTP server
initial-time	Large Scale Rollout initial time
mode	Configure Large Scale Rollout mode
password	Large Scale Rollout login password
project-id	Large Scale Rollout Project ID
server	Large Scale Rollout Server
show	Show Large Scale Rollout information
upload	Upload Certificate file from TFTP server
use_certificate	Configure Use Certificate mode
username	Large Scale Rollout login username

33.1 *debug*

Using this command you can debug Large Scale Rollout (LSR).

Syntax:

```
debug disable|enable|var
```

Parameter:

disable

The parameter disables the debugging of LSR.

enable

The parameter enables the debugging of LSR.

var

Shows the vaiables of LSR and their current values.

Example:

```
Switch(lsr)# debug enable
Switch(lsr)## debug var
_init_time: 21
_reboot_countdown: 0
_conf_reboot_countdown: 0
Switch(lsr)#
```

33.2 *del_certificate*

Using this command you can delete the certificate file of Large Scale Rollout (LSR).

Syntax:

```
del_certificate
```

Example:

```
Switch(lsr)# del_certificate
Switch(lsr)#
```

33.3 *download*

Using this command you can download the certificate file of Large Scale Rollout (LSR) to a TFTP server.

Syntax:

```
download <ip-address> <WORD>
```

Parameter:

<ip-address>

The IP address of the TFTP server.

<WORD>

The certificate filename.

Example:

```
Switch(lsr)# download 10.10.2.5 cert_file
Switch(lsr)#
```

33.4 *initial-time*

Using this command you can set the initial time (seconds) of Large Scale Rollout (LSR).

Syntax:

```
initial-time <10-3600>
```

Example:

```
Switch(lsr)# initial-time 300
Switch(lsr)#
```

33.5 *mode*

Using this command you can enable or disable the Large Scale Rollout (LSR) mode.

Syntax:

```
mode disable|enable
```

Parameter:

disable

The parameter disables the LSR mode.

enable

The parameter enables the LSR mode.

Example:

```
Switch(lsr)# mode enable
Switch(lsr)#
```

33.6 *password*

Using this command you can set the password of the Large Scale Rollout (LSR) user.

Syntax:

```
password <LINE>
```

Parameter:

<LINE>

Up to 255 characters for the password of the LSR user.

Example:

```
Switch(lsr)# password TestLSR123
Switch(lsr)#
```

33.7 *project-id*

Using this command you can set the project ID of the Large Scale Rollout (LSR).

Syntax:

```
project-id <LINE>
```

Parameter:

<LINE>

Up to 255 characters for the project ID of the LSR.

Example:

```
Switch(lsr)# project-id Test12
Switch(lsr)#
```

33.8 *server*

Using this command you can set the server for Large Scale Rollout (LSR).

Syntax:

```
server <IP address or host name>
```

Parameter:

<IP address or host name>

The IP address or host name of the LSR server.

Example:

```
Switch(lsr)# server lsr.intern
Switch(lsr)#
```

33.9 *show*

Using this command you can information about the configuration of Large Scale Rollout (LSR).

Syntax:

```
show [config]
```

Parameter:

config

Shows the current defaults and configuration of LSR.

Example:

```
Switch(lsr)# show
Configured                               Current
-------------------------                -------------------------
LSR Mode             : Disabled
LSR Server Address   : test.intern                                    test.intern
LSR User Name        : user                                            user
LSR User Password    : TestLSR123                              TestLSR123
LSR Project ID       : Test                                     Test
LSR Initial Time     : 60                                       60
Certificate file     : 0 Bytes
Use Certificate      : Disabled

Switch(lsr)#
```

33.10 *upload*

Using this command you can upload a certificate file from a TFTP server.

Syntax:

```
upload <ip-address> <WORD>
```

Parameter:

<ip-address>

The IP address of the TFTP server.

<WORD>

The certificate filename.

Example:

```
Switch(lsr)# upload 10.10.2.5 cert_file

Switch(lsr)#
```

33.11 *use_certificate*

Using this command you can configure to use a certificate for Large Scale Rollout (LSR).

Syntax:

```
use_certificate disable|enable
```

Parameter:

disable

The parameter disables the usage of a certificate for LSR.

enable

The parameter enables the usage of a certificate for LSR.

Example:

```
Switch(lsr)# use_certificate enable
Switch(lsr)#
```

33.12 *username*

Using this command you can configure the user for Large Scale Rollout (LSR).

Syntax:

```
username <LINE>
```

Parameter:

<LINE>

Up to 255 characters for the username of the LSR user.

Example:

```
Switch(lsr)# username lsr_user
Switch(lsr)#
```

34 Port Mirroring Commands

You can mirror traffic from any source port to a target port for real-time analysis. You can then attach a logic analyzer or RMON probe to the target port and study the traffic crossing the source port in a completely unobtrusive manner.

Mirror Configuration is to monitor the traffic of the network. For example, we assume that Port A and Port B are Monitoring Port and Monitored Port respectively, thus, the traffic received by Port B will be copied to Port A for monitoring.

Command	Function
analyzer-port	Configure analyzer port
port-mode	Configure port mode
show	Show port mirroring information

34.1 *analyzer-port*

Using this command you can configure the analyzer port on the switch.

Syntax:

```
analyzer-port <port>|disable
```

Parameter:

disable

Disables port mirroring

<port>

Defines this port as analyzer port and enables port mirroring, possible values depending on distinct hardware model.

Example:

```
Switch(mirror)# analyzer-port 1
Switch(mirror)# show

Analyzer Port: 1

Port  Mode
----  --------
1     Disabled
2     Disabled
```

34.2 *port-mode*

Using this command you can configure port mirroring mode for each port.

Syntax:

```
port-mode <port-list> disable|enable|rx-only|tx-only
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

The parameter means you to disable DHCP relay mode.

enable

The parameter means you to enable DHCP snooping mode.

rx-only

Enables Rx mirroring on the selected port(s).

tx-only

Enables Tx mirroring on the selected port(s).

Example:

```
Switch(mirror)# port-mode 2 enable
Switch(mirror)# port-mode 3 rx-only
Switch(mirror)# port-mode 4 tx-only
Switch(mirror)# port-mode 1 disable
Switch(mirror)# show

Analyzer Port: 1

Port  Mode
----  --------
1     Disabled
2     Enabled
3     Rx-only
4     Tx-only
```

34.3 *show*

Using this command you can show port mirroring information.

Syntax:

```
show
```

Example:

```
Switch(mirror)# show

Analyzer Port: Disabled

Port  Mode
----  --------
1     Disabled
2     Disabled
```

```
3      Disabled
4      Disabled
```

35 MLD Commands

Curiously enough, a network node that acts as a source of IPv6 multicast traffic is only an indirect participant in MLD snooping – it just provides multicast traffic, and MLD doesn't interact with it. (Note, however, that in an application like desktop conferencing a network node may act as both a source and an MLD host; but MLD interacts with that node only in its role as an MLD host.)

A source node creates multicast traffic by sending packets to a multicast address. In IPv6, addresses with the first eight bits set (that is, "FF" as the first two characters of the address) are multicast addresses, and any node that listens to such an address will receive the traffic sent to that address. Application software running on the source and destination systems cooperates to determine what multicast address to use. (Note that this is a function of the application software, not of MLD.)

When MLD snooping is enabled on a VLAN, the switch acts to minimize unnecessary multicast traffic. If the switch receives multicast traffic destined for a given multicast address, it forwards that traffic only to ports on the VLAN that have MLD hosts for that address. It drops that traffic for ports on the VLAN that have no MLD hosts.

Command	Function
compatibility	Set the Versions of MLD Operating on Hosts and Routers
delete	Delete commands
fast-leave	Set per-port Fast Leave
filtering	The IP Multicast Group that will be filtered
flooding	Set MLD Flooding Mode
lmqi	Set the per-VLAN Last Member Query Interval
proxy	Set MLD Proxy Mode
qi	Set the per-VLAN Query Interval
qri	Set the per-VLAN Query Response Interval
querier	Enable/Disable the per-VLAN MLD Querier
router	Set Router Port
rv	Set the per-VLAN Robustness Variable
show	Show MLD Information
snooping	Set MLD Snooping Mode
ssm-range	Set MLD SSM Range
state	Enable/Disable the per-VLAN MLD Snooping
throttling	Set per-port Throttling
uri	Set the per-VLAN Unsolicited Report Interval

35.1 *compatibility*

Using this command you can set the Versions of MLD Operating on Hosts and Routers.

Syntax:

```
compatibility <vlan-list> Forced-MLDv1|Forced-MLDv2|MLD-Auto
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

Forced-MLDv1

Set MLDv1 of MLD operating on hosts and routers

Forced-MLDv2

Set MLDv2 of MLD operating on hosts and routers

MLD-Auto

Set auto mode of MLD operating on hosts and routers

Example:

```
Switch(mld)# compatibility 1 forced-MLDv1
```

35.2 *delete*

Using this command you can delete the MLD filtering group.

Syntax:

```
delete <port-list> <ipv6-address>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<ipv6-address>

IP Multicast Group to delete.

Example:

```
Switch(mld)# delete 1 fe80::202:b3ff:fe1e:8329
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled
```

35.3 *fast-leave*

Using this command you can configure Fast Leave for each port.

Syntax:

```
fast-leave <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables fast leave on the selected port(s).

enable

Enables fast leave on the selected port(s)

Example:

```
Switch(mld)# fast-leave 1 enable
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Disabled  No              Enabled     Unlimited
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited
```

35.4 *filtering*

Using this command you can set the IP Multicast Group that will be filtered.

Syntax:

```
filtering <port-list> <ipv6-address>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<ipv6-address>

IPv6 address is in 128-bit records represented as eight fields of up to four hexadecimal digits with a colon separate each field (":"). For example, `fe80::215:c5ff:fe03:4dc7`. The symbol "::" is a special syntax that can be used as a shorthand way of representing multiple 16-bit groups of contiguous zeros; but it can only appear once. It also used a following legally IPv4 address. For example, `::192.1.2.34`.

Example:

```
Switch(mld)# filtering 1 fe80::215:c5ff:fe03:4dc7
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Disabled  No              Enabled     Unlimited
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited

VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Disabled  Enabled

Port  Filtering Groups
----  --------------------------------------
1     6665:3830:3a3a:3231:353a:6335:6666:3a66
2     No Filtering Group
3     No Filtering Group
```

35.5 *flooding*

Using this command you can set MLD Flooding Mode.

Syntax:

```
flooding disable|enable
```

Parameter:

disable

Disables unregistered IPMCv6 traffic flooding.

enable

Enables unregistered IPMCv6 traffic flooding.

Example:

```
Switch(mld)# flooding disable
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Disabled
MLd Proxy : Disabled
```

35.6 *lmqi*

Using this command you can set the per-VLAN Last Member Query Interval.

Syntax:

```
lmqi <vlan-list> <0-31744>
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

<0-31744>

Range:0~31744 tenths of sec, default:100 tenths of sec.

Example:

```
Switch(mld)# lmqi 1 31744
```

35.7 *proxy*

Using this command you can set MLD Proxy Mode.

Syntax:

```
proxy disable|enable
```

Parameter:

disable

Disables MLD proxy.

enable

Enables MLD proxy.

Example:

```
Switch(mld)# proxy enable
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Disabled
MLd Proxy : Enabled
```

35.8 *qi*

Using this command you can set the per-VLAN Query Interval.

Syntax:

```
qi <vlan-list> <1-31744>
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

<1-31744>

Range:1~31744 sec, default:125 sec

Example:

```
Switch(mld)# state 1 enable
Switch(mld)# qi 1 888
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited

VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Enabled   En
```

35.9 *qri*

Using this command you can set the per-VLAN Query Response Interval.

Syntax:

```
qri <vlan-list> <0-31744>
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

<0-31744>

Range:0~31744 tenths of sec, default:100 tenths of sec.

Example:

```
Switch(mld)# state 1 enable
Switch(mld)# qri 1 555
Switch(mld)# show config
MLD Snooping : Disabled
```

```
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited

VID   State     Querier   Compatibility  RV   QI    QRI   LLQI  URI
----  --------  --------  -------------  ---  ----- ----- ----- -----
1     Enabled   Enabled   IGMP-Auto      2    888   555   10    1
```

35.10 *querier*

Using this command you can Enable/Disable the per-VLAN MLD Querier.

Syntax:

```
querier <vlan-list> disable|enable
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

disable

Disables the per-VLAN MLD querier.

enable

Enables the per-VLAN MLD querier.

Example:

```
Switch(mld)# querier 1 enable
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited


VID   State     Querier   Compatibility  RV   QI    QRI   LLQI  URI
----  --------  --------  -------------  ---  ----- ----- ----- -----
1     Enabled   Enabled   IGMP-Auto      99   888   555   10    1
```

35.11 *router*

Using this command you can set Router Port.

Syntax:

```
router <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables router port

enable

Enables router port.

Example:

```
Switch(mld)# router 1 enable
Switch(mld)# show config
MLD Snooping : Enabled
MLd Flooding Control : Disabled
MLd Proxy : Enabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Enabled   No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited
```

35.12 *rv*

Using this command you can set the per-VLAN Robustness Variable.

Syntax:

```
rv <vlan-list> <2-255>
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

<2-255>

Range:2~255, default:2.

Example:

```
Switch(mld)# rv 1 99
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited


VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Enabled   Enabled   IGMP-Auto      99   888    555    10     1
```

35.13 *show*

Using this command you can show MLD Information.

Syntax:

```
show config
show groups|ssm|status|version [<1-4094>]
```

Parameter:

config

Shows MLD Configuration

groups

Entries in the MLD Group table

ssm

Entries in the MLDv2 information table

status

Shows MLD status

version

Shows MLD working querier/host version currently

<1-4094>

VLAN ID, possible values from 1 to 4094.

Example:

```
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
```

```
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited

VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Disabled  Enabled

Port  Filtering Groups
----  --------------------------------------
1     No Filtering Group
2     No Filtering Group
3     No Filtering Group
4     No Filtering Group
```

35.14 *snooping*

Using this command you can set MLD Snooping Mode.

Syntax:

```
snooping disable|enable
```

Parameter:

disable

Disables the global MLD snooping

enable

Enables the global MLD snooping

Example:

```
Switch(mld)# snooping enable
Switch(mld)# show config
MLD Snooping : Enabled
MLd Flooding Control : Disabled
MLd Proxy : Enabled
```

35.15 *ssm-range*

Using this command you can set MLD SSM Range.

Syntax:

```
ssm-range <ipv6-address> <8-128>
```

Parameter:

<ipv6-address>

Set MLD SSM range address.

<8-128>

Set MLD SSM range value.

Example:

```
ssm-range ::ffff:192.168.1.6 10
```

35.16 *state*

Using this command you can Enable/Disable the per-VLAN MLD Snooping.

Syntax:

```
state <vlan-list> disable|enable
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

disable

Disables the per-VLAN MLD snooping

enable

Enables the per-VLAN MLD snooping

Example:

```
Switch(mld)# state 1 enable
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited


VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Enabled   Enabled   IGMP-Auto      99   888    555    10     1
```

35.17 *throtting*

Using this command you can set per-port Throttling.

Syntax:

```
throtting <port-list> <0-10>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-10>

Set port group limit number, range:0~10, 0:unlimited

Example:

```
witch(mld)# throttling 1 10
Switch(mld)# show config
MLD Snooping : Enabled
MLd Flooding Control : Disabled
MLd Proxy : Enabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Disabled  No              Disabled    10
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited
```

35.18 *uri*

Using this command you can set the per-VLAN Unsolicited Report Interval.

Syntax:

```
uri <vlan-list> <0-31744>
```

Parameter:

<vlan-list>

VLAN list, possible values from 1 to 4094. Individual VLANs are separated by comma, VLAN ranges are joined by hyphen (1,3-5).

<0-31744>

Range:0~31744 sec, default:1 sec

Example:

```
Switch(mld)# uri 1 777
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  -----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited


VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Enabled   Enabled   IGMP-Auto      99   888    555    10     777
```

36 MVR Commands

The MVR feature enables multicast traffic forwarding on the Multicast VLAN. In a multicast television application, a PC or a television with a set-top box can receive the multicast stream. Multiple set-top boxes or PCs can be connected to one subscriber port, which is a switch port configured as an MVR receiver port. When a subscriber selects a channel, the set-top box or PC sends an IGMP join message to Switch A to join the appropriate multicast. Uplink ports that send and receive multicast data to and from the multicast VLAN are called MVR source ports.

Command	Function
immediate-leave	Configure MVR port state about immediate leave
mode	Configure MVR mode
port-mode	Configure MVR port mode
port-type	Configure MVR port type
show	Show command

36.1 *allow*

The IP Multicast Group that will be allowed.

Syntax:

```
allow <port-list> <ipmc-address> <ipmc-address>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<ipmc-address>

Add new entry to the group allow table, group allow start address

<ipmc-address>

Add new entry to the group allow table, group allow end address

Example:

```
Switch(mvr)# allow 5 224.0.0.2 224.0.0.5
Switch(mvr)#
```

36.2 *delete*

Delete MVR allow group.

Syntax:

```
delete <port-list> <ipmc-address> <ipmc-address>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<ipmc-address>

Delete MVR allow group, group allow start address

<ipmc-address>

Delete MVR allow group, group allow end address

Example:

```
Switch(mvr)# delete 5 224.0.0.2 224.0.0.5
Switch(mvr)#
```

36.3 *immediate-leave*

Using this command you can configure MVR port state about immediate leave.

Syntax:

```
immediate-leave <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables immediate leave on the specific port

enable

Enables immediate leave on the specific port

Example:

```
Switch(mvr)# immediate-leave 1 enable
Switch(mvr)# show config
MVR Mode         : Disabled
Muticast VLAN ID : 100

Port  Port Mode  Port Type  Immediate Leave
----  ---------  ---------  -----------------
1     Disabled   Receive    Enabled
2     Disabled   Receive    Disabled
3     Disabled   Receive    Disabled
4     Disabled   Receive    Disabled
```

36.4 *mode*

Using this command you can configure MVR mode.

Syntax:

```
mode disable|enable <1-4094>
```

Parameter:

disable

Disables MVR

enable

Enables multicast traffic forwarding on the Multicast VLAN

<1-4094>

Multicast VLAN ID, available is from 1 to 4094

Example:

```
Switch(mvr)# mode enable 1
Switch(mvr)# show config
MVR Mode          : Enabled
Muticast VLAN ID : 1
```

36.5 *port-mode*

Using this command you can configure MVR port mode.

Syntax:

```
port-mode <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables MVR on the specific port

enable

Enables MVR on the specific port

Example:

```
Switch(mvr)# port-mode 1 enable
Switch(mvr)# show config
MVR Mode          : Disabled
Muticast VLAN ID : 1
```

```
Port  Port Mode  Port Type  Immediate Leave
----  ---------  ---------  -----------------
1     Enabled    Receive    Enabled
2     Disabled   Receive    Disabled
3     Disabled   Receive    Disabled
4     Disabled   Receive    Disabled
```

36.6 *port-type*

Using this command you can configure MVR port type.

Syntax:

```
port-type <port-list> receiver|source
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

receiver

Define the port as receiver port

source

Define the port as source port

Example:

```
witch(mvr)# port-type 2 source
Switch(mvr)# show config
MVR Mode          : Disabled
Muticast VLAN ID : 1

Port  Port Mode  Port Type  Immediate Leave
----  ---------  ---------  -----------------
1     Enabled    Receive    Enabled
2     Disabled   Source     Disabled
3     Disabled   Receive    Disabled
4     Disabled   Receive    Disabled
```

36.7 *show*

Using this command you can show command.

Syntax:

```
show allow|config|group|statistics
```

Parameter:

allow

Shows MVR allow group information

config

Shows MVR configuration

group

Shows MVR group information

statistics

Shows MVR statistics information

Example:

```
Switch(mvr)# show config
MVR Mode         : Disabled
Muticast VLAN ID : 100

Port  Port Mode  Port Type  Immediate Leave
----  ---------  ---------  -----------------
1     Disabled   Receive    Disabled
2     Disabled   Receive    Disabled
3     Disabled   Receive    Disabled
4     Disabled   Receive    Disabled

Switch(mvr)# show group

Switch(mvr)# show statistics
```

37 NAS Commands

The section describes to configure the Network Access Server parameters of the switch. The NAS server can be employed to connect users to a variety of resources including Internet access, conference calls, printing documents on shared printers, or by simply logging on to the Internet.

Command	Function
agetime	Configure the time in seconds between check for activity on successfully authenticated MAC addresses
clear	Clear NAS statistics
eapol-timeout	Configure the time between EAPOL retransmissions
guest-vlan	Configure the Guest VLAN mode
hold-time	Configure the time in seconds before a MAC-address that failed authentication gets a new authentication chance
mode	Configure the NAS mode
port-guest-vlan	Configure the Guest VLAN mode of switch ports
port-radius-qos	Configure the RADIUS-assigned QoS mode of switch ports
port-radius-vlan	Configure the RADIUS-assigned VLAN mode of switch ports
port-state	Configure the NAS port state
radius-qos	Configure the RADIUS-assigned QoS mode
radius-vlan	Configure the RADIUS-assigned VLAN mode
reauth-period	Configure the period between reauthentications
reauthentication	Configure the NAS reauthentication mode
restart	Restart NAS authentication process
show	Show NAS information

37.1 *agetime*

Using this command you can configure the time in seconds between check for activity on successfully authenticated MAC addresses.

Syntax:

```
agetime <10-1000000>
```

Parameter:

<10-1000000>

Time in seconds between checks for activity on a MAC address that succeeded authentication

Example:

```
Switch(nas)# agetime 9999
Switch(nas)# show config
```

```
Mode                                   : Disabled
Reauthentication                       : Disabled
Reauthentication Period                : 3600
EAPOL Timeout                          : 30
Age Period                             : 9999
Hold Time                              : 10
RADIUS QoS                             : Disabled
RADIUS VLAN                            : Disabled
Guest VLAN                             : Disabled
Guest VLAN ID                          : 1
Maximum Reauthentication Count         : 2
Allow Guest VLAN if EAPOL Frame Seen : Disabled
```

37.2 *clear*

Using this command you can clear NAS statistics.

Syntax:

```
clear <port-list>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(nas)# clear 1
```

37.3 *eapol-timeout*

Using this command you can configure the time between EAPOL retransmissions.

Syntax:

```
eapol-timeout <1-65535>
```

Parameter:

<1-65535>

Time in seconds between EAPOL retransmissions

Example:

```
Switch(nas)# eapol-timeout 8888
Switch(nas)# show config
Mode                                   : Disabled
Reauthentication                       : Disabled
Reauthentication Period             : 3600
EAPOL Timeout                       : 8888
Age Period                          : 9999
Hold Time                           : 10
RADIUS QoS                          : Disabled
RADIUS VLAN                         : Disabled
Guest VLAN                          : Disabled
Guest VLAN ID                       : 1
Maximum Reauthentication Count      : 2
Allow Guest VLAN if EAPOL Frame Seen : Disabled
```

37.4 *guest-vlan*

Using this command you can configure the Guest VLAN mode.

Syntax:

```
guest-vlan disable
guest-vlan enable <1-4094> <1-255> allow_if_eapol_seen (disable|enable)
```

Parameter:

disable

Disables Guest VLAN

enable

Enables Guest VLAN

<1-4094>

Guest VLAN ID used when entering the Guest VLAN

<1-255>

The number of times a Request Identity EAPOL frame is sent without reasponse before considering entering the Guest VLAN

allow_if_eapol_seen

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

disable

The Guest VLAN can only be entered if no EAPOL frames have been received on a port for the lifetime of the port

enable

The Guest VLAN can be entered even if an EAPOL frame has been received during the lifetime of the port

Example:

```
Switch(nas)# guest-vlan enable 90 150 allow_if_eapol_seen enable
Switch(nas)# show config
Mode                                : Disabled
Reauthentication                    : Disabled
Reauthentication Period             : 3600
EAPOL Timeout                       : 8888
Age Period                          : 9999
Hold Time                           : 10
```

```
RADIUS QoS                            : Disabled
RADIUS VLAN                           : Disabled
Guest VLAN                            : Enabled
Guest VLAN ID                         : 90
Maximum Reauthentication Count        : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

37.5 *hold-time*

Using this command you can configure the time in seconds before a MAC-address that failed authentication gets a new authentication chance.

Syntax:

```
hold-time <10-1000000>
```

Parameter:

<10-1000000>

Hold time before MAC addresses that failed authentication expire

Example:

```
Switch(nas)# hold-time 7777
Switch(nas)# show config
Mode                                  : Disabled
Reauthentication                      : Disabled
Reauthentication Period               : 3600
EAPOL Timeout                         : 8888
Age Period                            : 9999
Hold Time                             : 7777
RADIUS QoS                            : Disabled
RADIUS VLAN                           : Disabled
Guest VLAN                            : Enabled
Guest VLAN ID                         : 90
Maximum Reauthentication Count        : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

37.6 *mode*

Using this command you can configure the NAS mode.

Syntax:

```
mode disable|enable
```

Parameter:

disable

Globally disable NAS operation mode

enable

Globally enable NAS operation mode

Example:

```
Switch(nas)# mode enable
Switch(nas)# show config
Mode                                 : Enabled
Reauthentication                     : Disabled
Reauthentication Period              : 3600
EAPOL Timeout                        : 8888
Age Period                           : 9999
Hold Time                            : 7777
RADIUS QoS                           : Disabled
RADIUS VLAN                          : Disabled
Guest VLAN                           : Enabled
Guest VLAN ID                        : 90
Maximum Reauthentication Count       : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

37.7 *port-guest-vlan*

Using this command you can configure the Guest VLAN mode of switch ports.

Syntax:

```
port-guest-vlan <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables Guest VLAN

enable

Enables Guest VLAN

Example:

```
Switch(nas)# port-guest-vlan 1 enable
Switch(nas)# show port-config
Port  Admin State        RADIUS-Assigned QoS  RADIUS-Assigned VLAN  Guest
 VLAN
----   ------------------   -------------------   --------------------
----------
1     Force Authorized    Disabled            Disabled             Enabled
2     Force Authorized    Disabled            Disabled            Disabled
3     Force Authorized    Disabled            Disabled            Disabled
4     Force Authorized    Disabled            Disabled            Disabled
```

37.8 *port-radius-qos*

Using this command you can configure the RADIUS-assigned QoS mode of switch ports.

Syntax:

```
port-radius-qos <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables RADIUS-assigned QoS

enable

Enables RADIUS-assigned QoS

Example:

```
Switch(nas)# port-radius-qos 2 enable
Switch(nas)# show port-config
Port  Admin State         RADIUS-Assigned QoS  RADIUS-Assigned VLAN  Guest
 VLAN
----   ------------------   -------------------   --------------------
----------
1     Force Authorized    Disabled             Disabled             Enabled
2     Force Authorized    Enabled              Disabled             Disabled
3     Force Authorized    Disabled             Disabled             Disabled
4     Force Authorized    Disabled             Disabled             Disabled
```

37.9 *port-radius-vlan*

Using this command you can configure the RADIUS-assigned VLAN mode of switch ports.

Syntax:

```
port-radius-vlan <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables RADIUS-assigned VLAN

enable

Enables RADIUS-assigned VLAN

Example:

```
Switch(nas)# port-radius-vlan 3 enable
Switch(nas)# show port-config
Port  Admin State         RADIUS-Assigned QoS  RADIUS-Assigned VLAN  Guest
 VLAN
----   ------------------   -------------------   --------------------
----------
1     Force Authorized    Disabled            Disabled             Enabled
2     Force Authorized    Enabled             Disabled             Disabled
3     Force Authorized    Disabled            Enabled              Disabled
4     Force Authorized    Disabled            Disabled             Disabled
```

37.10 *port-state*

Using this command you can configure the NAS port state.

Syntax:

```
port-state <port-list> force-auth|force-unauth|mac-based|multi|port-based|single
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

force-auth

Port access is allowed

force-unauth

Port access is not allowed

mac-based

Switch authenticates on behalf of the client

multi

Multiple Host NAS Authentication

port-based

Port-based NAS Authentication

single

Single Host NAS Authentication

Example:

```
Switch(nas)# port-state 4 force-unauth
Switch(nas)# port-state 5 mac-based
Switch(nas)# port-state 6 multi
Switch(nas)# port-state 7 port-based
Switch(nas)# port-state 8 single
Switch(nas)# show port-config
Port  Admin State         RADIUS-Assigned QoS  RADIUS-Assigned VLAN  Guest
 VLAN
----   ------------------   -------------------   --------------------
```

```
----------
1     Force Authorized    Disabled            Disabled            Disabled
2     Force Authorized    Disabled            Disabled            Disabled
3     Force Authorized    Disabled            Disabled            Disabled
4     Force Unauthorized  Disabled            Disabled            Disabled
5     MAC-Based Auth      Disabled            Disabled            Disabled
6     Multi 802.1X        Disabled            Disabled            Disabled
7     Port-based 802.1X   Disabled            Disabled            Disabled
8     Single 802.1X       Disabled            Disabled            Disabled
```

37.11 *radius-qos*

Using this command you can configure the RADIUS-assigned QoS mode.

Syntax:

```
radius-qos disable|enable
```

Parameter:

disable

Disables RADIUS-assigned QoS

enable

Enables RADIUS-assigned QoS

Example:

```
Switch(nas)# radius-qos enable
Switch(nas)# show config
Mode                                  : Enabled
Reauthentication                      : Disabled
Reauthentication Period               : 3600
EAPOL Timeout                         : 8888
Age Period                            : 9999
Hold Time                             : 7777
RADIUS QoS                            : Enabled
RADIUS VLAN                           : Disabled
Guest VLAN                            : Enabled
Guest VLAN ID                         : 90
Maximum Reauthentication Count        : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

37.12 *radius-vlan*

Using this command you can configure the RADIUS-assigned VLAN mode.

Syntax:

```
radius-vlan disable|enable
```

Parameter:

disable

Disables RADIUS-assigned VLAN

enable

Enables RADIUS-assigned VLAN

Example:

```
Switch(nas)# radius-vlan enable
Switch(nas)# show config
Mode                                  : Enabled
Reauthentication                      : Disabled
Reauthentication Period               : 3600
EAPOL Timeout                         : 8888
Age Period                            : 9999
Hold Time                             : 7777
RADIUS QoS                            : Enabled
RADIUS VLAN                           : Enabled
Guest VLAN                            : Enabled
Guest VLAN ID                         : 90
Maximum Reauthentication Count        : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

37.13 *reauth-period*

Using this command you can configure the period between reauthentications.

Syntax:

```
reauth-period <1-3600>
```

Parameter:

<1-3600>

Period between reauthentications

Example:

```
Switch(nas)# reauth-period 666
Switch(nas)# show config
Mode                                  : Enabled
Reauthentication                      : Disabled
Reauthentication Period               : 666
EAPOL Timeout                         : 8888
Age Period                            : 9999
Hold Time                             : 7777
RADIUS QoS                            : Enabled
RADIUS VLAN                           : Enabled
Guest VLAN                            : Enabled
Guest VLAN ID                         : 90
Maximum Reauthentication Count        : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

37.14 *reauthentication*

Using this command you can configure the NAS reauthentication mode.

Syntax:

```
reauthentication disable|enable
```

Parameter:

disable

Disables NAS reauthentication

enable

Enables NAS reauthentication

Example:

```
Switch(nas)# reauthentication enable
Switch(nas)# show config
Mode                                 : Enabled
Reauthentication                     : Enabled
Reauthentication Period              : 666
EAPOL Timeout                        : 8888
Age Period                           : 9999
Hold Time                            : 7777
RADIUS QoS                           : Enabled
RADIUS VLAN                          : Enabled
Guest VLAN                           : Enabled
Guest VLAN ID                        : 90
Maximum Reauthentication Count       : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

37.15 *restart*

Using this command you can restart NAS authentication process.

Syntax:

```
restart <port-list> reauthenticate|reinitialize
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

reauthenticate

Schedules a reauthentication whenever the quiet-period of the port runs out (EAPOL-based authentication). For MAC-based authentication, reauthentication will be attempted immediately

reinitialize

Forces a reinitialization of the clients on the port and thereby a reauthentication immediately

Example:

```
Switch(nas)# restart 1 reauthenticate
```

37.16 *show*

Show NAS information.

Syntax:

```
show config|port-config|status
show statistics <port-list>
```

Parameter:

config

Shows NAS configuration

port-config

Shows NAS port configuration

statistics

Shows NAS statistics

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

status

Shows NAS status

Example:

```
Switch(nas)# show config
Mode                                 : Disabled
Reauthentication                     : Disabled
Reauthentication Period              : 3600
EAPOL Timeout                        : 30
Age Period                           : 300
Hold Time                            : 10
RADIUS QoS                           : Disabled
RADIUS VLAN                          : Disabled
Guest VLAN                           : Disabled
Guest VLAN ID                        : 1
Maximum Reauthentication Count       : 2
Allow Guest VLAN if EAPOL Frame Seen : Disabled


Switch(nas)# show port-config
Port  Admin State         RADIUS-Assigned QoS  RADIUS-Assigned VLAN  Guest
 VLAN
----   ------------------   -------------------   --------------------
```

```
----------
1     Force Authorized   Disabled            Disabled            Disabled
2     Force Authorized   Disabled            Disabled            Disabled
3     Force Authorized   Disabled            Disabled            Disabled
4     Force Authorized   Disabled            Disabled            Disabled


Switch(nas)# show statistics 1

Port 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

Port 1 Backend Server Statistics:
Rx Access Challenges                 0  Tx Responses
   0
Rx Other Requests                    0
Rx Auth. Successes                   0
Rx Auth. Failures                    0


Switch(nas)# show status
Port Port State            Last Source       Last ID            QoS VLAN
----  ---------------------  -----------------  ------------------  ---
------------
1    Link Down             -                 -
2    Link Down             -                 -
3    Link Down             -                 -
4    Link Down             -                 -
```

38 PoE Commands

PoE is an acronym for Power Over Ethernet.

Power Over Ethernet is used to transmit electrical power, to remote devices over standard Ethernet cable. It could for example be used for powering IP telephones, wireless LAN access points and other equipment, where it would be difficult or expensive to connect the equipment to main power supply.

This feature only applies in some models with Power over Ethernet (PoE) feature. The models without PoE are not available to use this command.

Command	Function
max-power	Configure PoE maximum power per port
mode	Configure PoE mode
priority	Configure PoE priority
reset-port	Reset PoE port
retry-time	Configure the retry time of PoE port
show	Show PoE information

38.1 *delay-mode*

Using this command you can configure PoE Power Delay mode.

Syntax:

```
delay-mode <port-list> disable|enable
```

Parameter:

<port-list>

available value is from 1 to 24 format:1,3-5

disable

Disables PoE Power Delay

enable

Enables PoE Power Delay

Example:

```
Switch(poe)# delay-mode 3 enable
Switch(poe)#
```

38.2 *delay-time*

Using this command you can configure PoE Power Delay Time.

Syntax:

```
delay-time <port-list>
```

Parameter:

<port-list>

available value is from 1 to 24 format:1,3-5

<0-300>

Delay Time : 0 ~ 300(sec)

Example:

```
Switch(poe)# delay-time 5 60
Switch(poe)#
```

38.3 *detection*

Using this command you can configure PoE port capacitor detection.

Syntax:

```
detection <port-list> 4-point|both|legacy
```

Parameter:

<port-list>

available value is from 1 to 24 format:1,3-5

4-point

IEEE 802.3af 4-point detection only

both

IEEE 802.3af 4-point detection followed by legacy

legacy

Legacy capacitive detection only

Example:

```
Switch(poe)# detection 5 legacy
Switch(poe)#
```

38.4 *failure-action*

Using this command you can configure PoE Auto Check Failure Action.

Syntax:

```
failure-action <port-list> nothing|reboot-Remote-PD
```

Parameter:

<port-list>

available value is from 1 to 24 format:1,3-5

nothing

Failure Action : Nothing

reboot-Remote-PD

Failure Action : Reboot Remote PD

Example:

```
Switch(poe)# failure-action 5 reboot-Remote-PD
Switch(poe)#
```

38.5 *hour*

Using this command you can configure PoE Schedule Hour.

Syntax:

```
hour <port-list> <0-23> (All|Sun) (disable|enable)
```

Parameter:

<port-list>

available value is from 1 to 24 format:1,3-5

<0-23>

Hour : 0 ~ 23

All

Select all week

Sun

Sunday

disable

Disables PoE Schedule

enable

Enables PoE Schedule

Example:

```
Switch(poe)# hour 5 20 All enable
Switch(poe)#
```

38.6 *interval-time*

Using this command you can configure PoE Auto Check Interval Time.

Syntax:

```
interval-time <port-list> <10-120>
```

Parameter:

<port-list>

available value is from 1 to 24 format:1,3-5

<10-120>

Interval Time : 10 ~ 120(sec)

Example:

```
Switch(poe)# interval-time 5 60
Switch(poe)#
```

38.7 *max-power*

Using this command you can configure PoE maximum power per port.

Syntax:

```
max-power <port-list> <port-power>
```

Parameter:

<port-list>:

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<port-power>

The Maximum Power value contains a numerical value that indicates the maximum power in watts that can be delivered to a remote device. The maximum allowed value is 30 W

Example:

```
Switch(poe)# max-power 1 30
Switch(poe)# max-power 2 28
Switch(poe)# show config
```

```
Primary Power Supply [W]      : 250
Retry Time (seconds)          : 60

Port  Mode      Priority  Max. Power [W]
----  --------  --------  --------------
1     Enabled   Low       30.0
2     Enabled   Low       28.0
3     Enabled   Low       15.4
```

38.8 *mode*

Using this command you can configure PoE mode.

Syntax:

```
mode <port-list> disable|enable
```

Parameter:

<port-list>:

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables PoE operation.

enable

Enables PoE operation

Example:

```
Switch(poe)# mode 1 disable
Switch(poe)# show config
Primary Power Supply [W]      : 250
Retry Time (seconds)          : 60

Port  Mode      Priority  Max. Power [W]
----  --------  --------  --------------
1     Disabled  Low       30.0
2     Enabled   Low       28.0
3     Enabled   Low       15.4
```

38.9 *ping-check*

Using this command you can enable or disable POE Ping Check.

Syntax:

```
ping-check disable|enable
```

Parameter:

disable

Disables POE Ping Check

enable

Enables POE Ping Check

Example:

```
Switch(poe)# ping-check enable
Switch(poe)#
```

38.10 *ping-ip-addr*

Using this command you can configure PoE Ping IP Address.

Syntax:

```
ping-ip-addr <port-list> <ip-address>
```

Parameter:

<port-list>

available value is from 1 to 24 format:1,3-5

<ip-address>

Set PoE Ping IP Address

Example:

```
Switch(poe)# ping-ip-addr 5 192.168.2.200
Switch(poe)#
```

38.11 *ping-retry-time*

Using this command you can configure PoE Auto Check Retry Time.

Syntax:

```
ping-retry-time <port-list>
```

Parameter:

<port-list>

available value is from 1 to 24 format:1,3-5

<1-5>

Retry Time : 1 ~ 5

Example:

```
Switch(poe)# ping-retry-time 5 3
Switch(poe)#
```

38.12 *priority*

Using this command you can configure PoE priority.

Syntax:

```
priority <port-list> critical|high|low
```

Parameter:

<port-list>:

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

critical

Set priority to critical.

high

Set priority to high.

low

Set priority to low.

Example:

```
Switch(poe)# priority 1 critical
Switch(poe)# priority 2 high
Switch(poe)# priority 3 low
Switch(poe)# show config
Primary Power Supply [W]     : 250
Retry Time (seconds)         : 60

Port  Mode      Priority  Max. Power [W]
----  --------  --------  --------------
1     Disabled  Critical  30.0
2     Enabled   High      28.0
3     Enabled   Low       15.4
```

38.13 *reboot-time*

Using this command you can configure PoE Auto Check Reboot Time.

Syntax:

```
reboot-time <3-120>
```

Parameter:

<port-list>

available value is from 1 to 24 format:1,3-5

<3-120>

Reboot Time : 3 ~ 120(sec)

Example:

```
Switch(poe)# reboot-time 5 60
Switch(poe)#
```

38.14 *reset-port*

Using this command you can reset PoE port.

Syntax:

```
reset-port <port-list>
```

Parameter:

<port-list>:

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(poe)# reset-port 1
Switch(poe)# show config
Primary Power Supply [W]      : 250
Retry Time (seconds)          : 60

Port  Mode      Priority  Max. Power [W]
----  --------  --------  --------------
1     Disabled  Critical  30.0
2     Enabled   High      28.0
3     Enabled   Low       15.4
```

38.15 *retry-time*

Using this command you can configure the retry time of PoE port.

Syntax:

```
retry-time disable|<retry-period>
```

Parameter:

disable

Disables to try to turn on a overloaded PoE port.

<retry-period>

The period (in seconds) for trying to turn on a overloaded port. Available values are 5,10,20,30,40,50,60.

Example:

```
Switch(poe)# retry-time 40
Switch(poe)# show config
Primary Power Supply [W]      : 250
Retry Time (seconds)          : 40
```

38.16 *schedule-mode*

Using this command you can configure PoE Schedule mode.

Syntax:

```
schedule-mode <port-list> disable|enable
```

Parameter:

<port-list>

available value is from 1 to 24 format:1,3-5

disable

Disables PoE Schedule

enable

Enables PoE Schedule

Example:

```
Switch(poe)# schedule-mode 5 enable
Switch(poe)#
```

38.17 *select-all*

Using this command you can configure PoE Schedule Select All.

Syntax:

```
select-all <port-list>
```

Parameter:

<port-list>

available value is from 1 to 24 format:1,3-5

disable

Disables PoE Schedule Select All

enable

Enables PoE Schedule Select All

Example:

```
Switch(poe)# select-all 5 enable
Switch(poe)#
```

38.18 *show*

Using this command you can show the current PoE configuration and statistics.

Syntax:

```
show config|status
```

Parameter:

config

Shows PoE configuration.

status

Shows PoE status.

Example:

```
Switch(poe)# show config
Primary Power Supply [W]     : 250
Retry Time (seconds)         : 60

Port  Mode      Priority  Max. Power [W]
----  --------  --------  --------------
1     Enabled   Low       15.4
2     Enabled   Low       15.4
3     Enabled   Low       15.4


Switch(poe)# show status
      PD    Power     Power     Power    Current
Port  Class Requested Allocated Used     Used     Priority Port Status
-----   -----   ---------   ---------   --------   --------   --------
---------------------
1     0     0.0   [W] 0.0   [W] 0.0  [W] 0   [mA] Low      No PD detected
2     0     0.0   [W] 0.0   [W] 0.0  [W] 0   [mA] Low      No PD detected
3     0     0.0   [W] 0.0   [W] 0.0  [W] 0   [mA] Low      No PD detected
```

39 Port configuration Commands

This chapter describes how to view the current port configuration and how to configure ports to non-default settings, including:

- Linkup/Linkdown
- Speed (Current and configured)
- Flow Control (Current Rx, Current Tx and Configured)
- Maximum Frame Size
- Excessive Collision Mode
- Power Control

Command	Function
clear	Clear port counter
description	Interface specific description
excessive-collision	Configure excessive collision operation
flow-control	Configure flow operation
max-frame	Configure maximum receive frame size
port-state	Configure port state operation
power-saving	Configure power saving operation
show	Show port information
speed-duplex	Configure speed duplex operation

39.1 *clear*

Using this command you can clear port counter.

Syntax:

```
clear <port-list>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(port)# clear 1
Switch(port)# show simple-counter
Port         Packets                Bytes            Errors     Drops
Filtered
------  ------------------ ---------------------  ----------  ----------
----------
  1/Rx                  0                     0          0          0
```

```
     0
  1/Tx                0                     0          0          0
---------------------------------------------------------------------------

  2/Rx                0                     0          0          0
     0
  2/Tx                0                     0          0          0
---------------------------------------------------------------------------

  3/Rx                0                     0          0          0
     0
  3/Tx                0                     0          0          0
---------------------------------------------------------------------------
```

39.2 *description*

Using this command you can define a specific description for each port.

Syntax:

```
description <port-list> <desc>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<desc>

Up to 47 characters describing this interface

Example:

```
Switch(port)# description 1 david
Switch(port)# show configuration
Port  State     Speed Duplex  Flow Control  Max. Frame  Excessive  Power
Description
---------------------------------------------------------------------------
1     Enabled  Auto          -             10056       -          -
david
---------------------------------------------------------------------------
2     Enabled  Auto          -             10056       -          -

---------------------------------------------------------------------------
3     Enabled  Auto          -             10056       -          -

---------------------------------------------------------------------------
```

39.3 *excessive-collision*

Using this command you can configure excessive collision operation for each port.

Syntax:

```
excessive-collision <port-list> discard|restart
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

discard

Discard the packet when excessive collision

restart

Retransmit the packet, regardless of the number of collisions

Example:

```
Switch(port)# excessive-collision 21 restart
Switch(port)# show configuration
Port  State    Speed Duplex  Flow Control  Max. Frame  Excessive  Power
Description
--------------------------------------------------------------------------
1     Enabled  Auto          -             10056       -          -
david
--------------------------------------------------------------------------
2     Enabled  Auto          -             10056       -          -
--------------------------------------------------------------------------
21    Enabled  SFP_Auto_AMS  Disabled      10056       Restart    Disabled

--------------------------------------------------------------------------
22    Enabled  SFP_Auto_AMS  Disabled      10056       Discard    Disabled

--------------------------------------------------------------------------
```

39.4 *flow-control*

Using this command you can configure flow operation for each port.

Syntax:

```
flow-control <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables flow control operation on the selected port(s).

enable

Enables flow control operation on the selected port(s).

Example:

```
Switch(port)# flow-control 21 enable
Switch(port)# show configuration
Port  State    Speed Duplex  Flow Control  Max. Frame  Excessive  Power
Description
--------------------------------------------------------------------------
1     Enabled  Auto          -             10056       -          -
david
--------------------------------------------------------------------------
2     Enabled  Auto          -             10056       -          -


--------------------------------------------------------------------------
21    Enabled  SFP_Auto_AMS  Enabled       10056       Restart    Disabled

--------------------------------------------------------------------------
22    Enabled  SFP_Auto_AMS  Disabled      10056       Discard    Disabled

--------------------------------------------------------------------------
23    Enabled  SFP_Auto_AMS  Disabled      10056       Discard    Disabled

--------------------------------------------------------------------------
```

39.5 *max-frame*

Using this command you can configure maximum receive frame size for each port.

Syntax:

```
max-frame <port-list> <1518-10056>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<1518-10056>

Maximum receive frame size in bytes

Example:

```
Switch(port)# max-frame 1 1600
Switch(port)# show configuration
Port  State    Speed Duplex  Flow Control  Max. Frame  Excessive  Power
Description
--------------------------------------------------------------------------
1     Enabled  Auto          -                 1600        -           -
david
--------------------------------------------------------------------------
2     Enabled  Auto          -                 10056       -           -

--------------------------------------------------------------------------
3     Enabled  Auto          -                 10056       -           -
```

39.6 *power-saving*

Using this command you can configure power saving operation.

Syntax:

```
power-saving <port-list> actiphy|disable|dynamic|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

actiphy

Enables ActiPHY power control on the selected port(s).

disable

Disables power saving on the selected port(s).

dynamic

Enables dynamic power control on the selected port(s).

enable

Enables power saving on the selected port(s).

Example:

```
Switch(port)# power-saving 21 actiphy
Switch(port)# power-saving 22 dynamic
Switch(port)# power-saving 23 enable
Switch(port)# show configuration
Port  State    Speed Duplex  Flow Control  Max. Frame  Excessive  Power
Description
-------------------------------------------------------------------------
1     Disabled Auto          -             1600        -          -
david
-------------------------------------------------------------------------
2     Enabled  Auto          -             10056       -          -

-------------------------------------------------------------------------
21    Enabled  SFP_Auto_AMS  Enabled       10056       Restart    ActiPHY

-------------------------------------------------------------------------
22    Enabled  SFP_Auto_AMS  Disabled      10056       Discard    Dynamic

-------------------------------------------------------------------------
23    Enabled  SFP_Auto_AMS  Disabled      10056       Discard    Enabled

-------------------------------------------------------------------------
24    Enabled  SFP_Auto_AMS  Disabled      10056       Discard    Disabled

-------------------------------------------------------------------------
```

39.7 *show*

Using this command you can show port information.

Syntax:

```
show configuration
show detail-counter <port>
show sfp <sfp-port>
show simple-counter
show status [<port-list>]
```

Parameter:

configuration

Shows port configuration

detail-counter

Shows detailed traffic statistics for specific switch port

<port>

Port number

sfp

Shows sfp information

<sfp-port>

SFP port number

simple-counter

Shows general traffic statistics for all switch ports

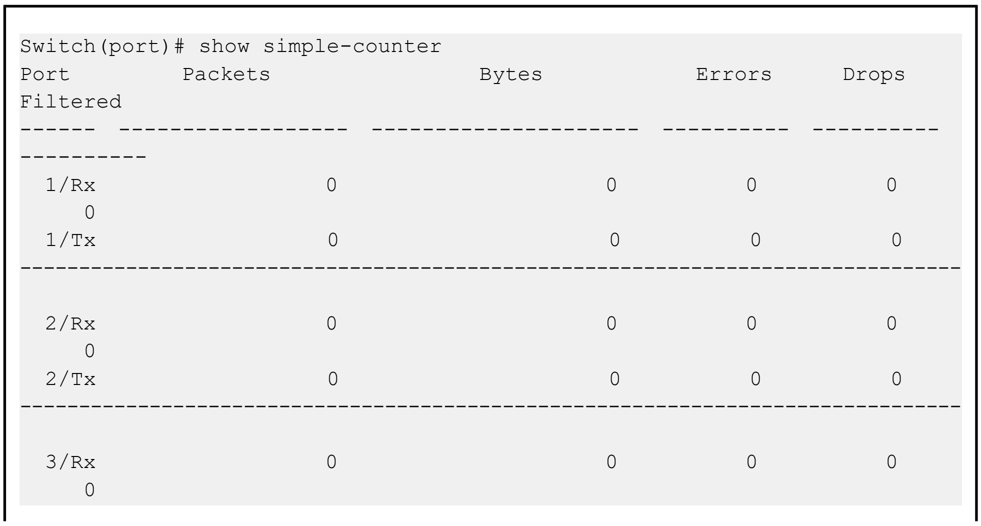
status

Shows port status

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:



```
Switch(port)# show simple-counter
Port         Packets                Bytes            Errors     Drops
Filtered
------  ------------------  ---------------------  ----------  ----------
----------
  1/Rx                 0                     0          0          0
     0
  1/Tx                 0                     0          0          0
---------------------------------------------------------------------------

  2/Rx                 0                     0          0          0
     0
  2/Tx                 0                     0          0          0
---------------------------------------------------------------------------

  3/Rx                 0                     0          0          0
     0
  3/Tx                 0                     0          0          0
--------------------------------------------------------------------------

  4/Rx                 0                     0          0          0
     0
  4/Tx                 0                     0          0          0
--------------------------------------------------------------------------
--------------------------------------------------------------------------

 21/Rx             37999              14338676      10258          6
     6
 21/Tx              8922               1817882          0          0
--------------------------------------------------------------------------

 22/Rx                 0                     0          0          0
     0
 22/Tx                 0                     0          0          0
--------------------------------------------------------------------------

 23/Rx                 0                     0          0          0
     0
 23/Tx                 0                     0          0          0
--------------------------------------------------------------------------

 24/Rx             10875               2276667          0          3
     3
 24/Tx             39016              14923782          0          0
```

39.8 *speed-duplex*

Using this command you can configure speed duplex operation.

Syntax:

```
speed-duplex <port-list> 10-full|10-half|...|disable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

10-full

Force speed duplex to 10-full operation

10-half

Force speed duplex to 10-half operation

100-full

Force speed duplex to 100-full operation

100-half

Force speed duplex to 100-half operation

1000-full

Force speed duplex to 1000-full operation

auto

Enables auto speed duplex configuration

disable

Disables the switch port operation

Example:

```
Switch(port)# speed-duplex 1 100-full
Switch(port)# speed-duplex 2 1000-full
Switch(port)# show configuration
Port  State    Speed Duplex  Flow Control  Max. Frame  Excessive  Power
Description
--------------------------------------------------------------------------
1     Disabled 100 Full      -             1600        -          -
david
--------------------------------------------------------------------------
2     Enabled  1G Full       -             10056       -          -

--------------------------------------------------------------------------
```

40 Port security Commands

This section shows you how to to configure the Port Security settings of the Switch. You can use the Port Security feature to restrict input to an interface by limiting and identifying MAC addresses.

Command	Function
action	Configure the action involved with exceeding the limit
aging	Configure the aging mode and period
limit	Configure the max. number of MAC addresses that can be learned on the port
mode	Configure the global limit control mode
port-mode	Configure the port mode
reopen	Reopen one or more ports whose limit is exceeded and shut down
show	Show port security status

40.1 *action*

Using this command you can configure the action involved with exceeding the limit.

Syntax:

```
action <port-list> both|none|shutdown|trap
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

both

Send a SNMP trap and shutdown the port

none

Do nothing

shutdown

Shutdown the port

trap

Send a SNMP trap

Example:

```
Switch(port-security)# action 1 both
Switch(port-security)# action 2 none
Switch(port-security)# action 3 shutdown
Switch(port-security)# action 4 trap
Switch(port-security)# show config
Mode       : Disabled
```

```
Aging     : Disabled
Age Period: 3600

Port  Mode      Limit  Action
----  --------  -----  ---------------
1     Disabled      4  Trap & Shutdown
2     Disabled      4  None
3     Disabled      4  Shutdown
4     Disabled      4  Trap
5     Disabled      4  None
```

40.2 *aging*

Using this command you can configure the aging mode and period.

Syntax:

```
aging disable
aging enable <10-10000000>
```

Parameter:

disable

Disables aging.

enable

Enables aging.

<10-10000000>

Aging time in seconds between checks for activity on a MAC address

Example:

```
Switch(port-security)# aging enable 20
Switch(port-security)# show config
Mode      : Disabled
Aging     : Enabled
Age Period: 20
```

40.3 *limit*

Using this command you can configure the max. number of MAC addresses that can be learned on the port.

Syntax:

```
limit <port-list> <1-1024>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<1-1024>

Max. number of MAC addresses on selected port (s).

Example:

```
Switch(port-security)# limit 1 999
Switch(port-security)# show config
Mode       : Disabled
Aging      : Enabled
Age Period: 20

Port  Mode      Limit  Action
----  --------  -----  ---------------
1     Disabled    999  Trap & Shutdown
2     Disabled      4  None
3     Disabled      4  Shutdown
```

40.4 *mode*

Using this command you can configure the global limit control mode.

Syntax:

```
mode disable|enable
```

Parameter:

disable

Globally disable port security.

enable

Globally enable port security.

Example:

```
Switch(port-security)# mode enable
Switch(port-security)# show config
Mode       : Enabled
Aging      : Enabled
Age Period: 20
```

40.5 *port-mode*

Using this command you can configure the port mode.

Syntax:

```
port-mode <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables port security on selected port(s).

enable

Enables port security on selected port(s).

Example:

```
Switch(port-security)# port-mode 1 enable
Switch(port-security)# show config
Mode       : Disabled
Aging      : Enabled
Age Period: 20

Port  Mode      Limit  Action
----  --------  -----  ---------------
1     Enabled     999  Trap & Shutdown
2     Disabled      4  None
3     Disabled      4  Shutdown
4     Disabled      4  Trap
5     Disabled      4  None
```

40.6 *reopen*

Using this command you can reopen one or more ports whose limit is exceeded and shut down.

Syntax:

```
reopen <port-list>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(port-security)# reopen 1
Switch(port-security)# show config
Mode       : Disabled
Aging      : Enabled
Age Period: 20

Port  Mode      Limit  Action
```

```
----  --------  -----  ---------------
1     Enabled     999  Trap & Shutdown
2     Disabled      4  None
3     Disabled      4  Shutdown
4     Disabled      4  Trap
```

40.7 *show*

Using this command you can show port security status.

Syntax:

```
show config|switch-status
show port-status <port>
```

Parameter:

config

Shows port security configuration

port-status

Shows MAC addresses learned by port security

<port>

Port number, possible values depending on distinct hardware model.

switch-status

Shows port security switch status

Example:

```
Switch(port-security)# show config
Mode      : Disabled
Aging     : Disabled
Age Period: 3600

Port  Mode      Limit  Action
----  --------  -----  ---------------
1     Disabled      4  None
2     Disabled      4  None
3     Disabled      4  None
4     Disabled      4  None


Switch(port-security)# show port-status 1
MAC Address        VID   State       Time of Addition           Age/Hold
Time
-----------------  ----  ----------  -------------------------  -------------
<none>


Switch(port-security)# show switch-status
Users:
L = Limit Control
8 = 802.1X
D = DHCP Snooping
```

```
Port  Users  State          MAC Count
----  -----  -------------  ---------
1     ---    Disabled       0
2     ---    Disabled       0
3     ---    Disabled       0
```

41 Privilege level Commands

This section provides an overview of the privilege levels. The switch provides user set Account, Aggregation, Diagnostics, EEE, GARP, GVRP, IP, IPMC Snooping LACP LLDP LLDP MED MAC Table MRP MVR MVRP Maintenance Mirroring POE Ports Private VLANs QoS SMTP SNMP Security Spanning Tree System Trap Event VCL VLANs Voice VLAN Privilege Levels form 1 to 15.

Command	Function
group	Configure a privilege level group
show	Show privilege configuration

41.1 *group*

Using this command you can assign a privilege group to a certain privilege level.

Syntax:

```
group <group-name> <1-15>
```

Parameter:

<group-name>

Privilege group name

- Account
- Aggregation
- Diagnostics
- EEE
- Easyport
- GARP
- GVRP
- IP
- IPMC_Snooping
- LACP
- LLDP
- LLDP_MED
- Loop_Protect
- MAC_Table
- MVR
- Maintenance
- Mirroring
- PoE
- Ports
- Private_VLANs
- QoS
- SFlow

- SMTP
- SNMP
- Security
- Single_IP
- Spanning_Tree
- System
- Trap_Event
- UPnP
- VCL
- VLANs
- Voice_VLAN

<1-15>

Privilege level

Example:

```
Switch(privilege)# group account 13
Switch(privilege)# show
Privilege Current Level: 15

Group Name                        Privilege Level
--------------------------------  ----------------
Account                           13
Aggregation                       10
Diagnostics                       10
```

41.2 *show*

Using this command you can show the current privilege group configuration.

Syntax:

```
show
```

Example:

```
Switch(privilege)# show
Privilege Current Level: 15

Group Name                        Privilege Level
--------------------------------  ----------------
Account                           13
Aggregation                       10
Diagnostics                       10
EPS                               10
ERPS                              10
ETH_LINK_OAM                      10
EVC                               10
GARP                              10
GVRP                              10
IP                                10
IPMC_Snooping                     10
LACP                              10
```

```
LLDP                                  10
LLDP_MED                              10
Loop_Protect                          10
MAC_Table                             10
MEP                                   10
MVR                                   10
Maintenance                           15
Mirroring                             10
PTP                                   10
Ports                                 10
Private_VLANs                         10
QoS                                   10
SMTP                                  10
SNMP                                  10
Security                              10
Spanning_Tree                         10
System                                10
Trap_Event                            10
VCL                                   10
VLAN_Translation                      10
VLANs                                 10
```

42 Private VLAN Commands

In a private VLAN, communication between ports in that private VLAN is not permitted. A VLAN can be configured as a private VLAN.

Command	Function
delete	Delete private VLAN group
port-isolate	Configure port isolation
private-vlan	Configure private VLAN group
show	Show private VLAN information

42.1 *delete*

Using this command you can delete private VLAN group.

Syntax:

```
delete private-vlan <1-X>
```

Parameter:

<1-X>

Private VLAN ID, possible values depending on distinct hardware model.

Example:

```
Switch(pvlan)# delete private-vlan 12
```

42.2 *port-isolate*

Using this command you can configure port isolation.

Syntax:

```
port-isolate <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables port isolation

enable

Enables port isolation

Example:

```
Switch(pvlan)# port-isolate 1 enable
Switch(pvlan)# show port-isolate
Port  Isolation
----  ---------
1     Enabled
2     Disabled
3     Disabled
4     Disabled
```

42.3 *private-vlan*

Using this command you can configure private VLAN group.

Syntax:

```
private-vlan <1-X> <port-list>
```

Parameter:

<1-X>

Private VLAN ID, possible values depending on distinct hardware model.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(pvlan)# private-vlan 2 10
Switch(pvlan)# show private-vlan
PVLAN ID  Ports
--------  ---------------
1         1-26
2         10
```

42.4 *show*

Using this command you can show private VLAN information.

Syntax:

```
show port-isolate|private-vlan
```

Parameter:

port-isolate

Shows port isolation information

private-vlan

Shows private VLAN membership information

The default Private VLAN includes all port members on the switch. Use 26-port switch as example.

Example:

```
Switch(pvlan)# show port-isolate
Port  Isolation
----  ---------
1     Disabled
2     Disabled
3     Disabled
4     Disabled
5     Disabled Switch(garp)#


Switch(pvlan)# show private-vlan
PVLAN ID  Ports
--------  ---------------
1         1-26
```

43 QoS Commands

The switch support four QoS queues per port with strict or weighted fair queuing scheduling. It supports QoS Control Lists (QCL) for advance programmable QoS classification, based on IEEE 802.1p, Ethertype, VID, IPv4/IPv6 DSCP and UDP/TCP ports and ranges.

High flexibility in the classification of incoming frames to a QoS class. The QoS classification looks for information up to Layer 4, including IPv4 and IPv6 DSCP, IPv4 TCP/UDP port numbers, and user priority of tagged frames. This QoS classification mechanism is implemented in a QoS control list (QCL). The QoS class assigned to a frame is used throughout the device for providing queuing, scheduling, and congestion control guarantees to the frame according to what was configured for that specific QoS class.

The switch support advanced memory control mechanisms providing excellent performance of all QoS classes under any traffic scenario, including jumbo frame. A super priority queue with dedicated memory and strict highest priority in the arbitration. The ingress super priority queue allows traffic recognized as CPU traffic to be received and queued for transmission to the CPU even when all the QoS class queues are congested.

Command	Function
delete	Delete QCE
dscp-classification	Configure DSCP ingress classification
dscp-map	Configure DSCP mapping table. This table is used to map QoS class and DP level based on DSCP value. DSCP value used to map QoS class and DPL is either translated DSCP value or incoming frame DSCP value
dscp-remap	Configure DSCP egress remap table. This table is used if the port egress remarking mode is 'remap' and the purpose is to map the DSCP and DP level to a new DSCP value
dscp-translation	Configure global ingress DSCP translation table. If port DSCP translation is enabled, translation table is used to translate incoming frame's DSCP value and translated value is used to map QoS class and DP level
dscp-trust	Configure trusted DSCP value which is used for QoS classification. The DSCP value to be checked for trust is either translated value if DSCP translation is enabled for the ingress port or incoming frame DSCP value if translation is disabled for the port. Trusted DSCP value is only used for QoS classification
port-classify	QoS ingress port classification
port-dscp	QoS port DSCP configuration
port-policer	Port policer
port-scheduler	QoS egress port schedulers
port-shaper	Port shaper
qce	Add or modify QoS control entry
queue-shaper	Queue shaper
show	Show QoS information
storm	Configure storm rate control
tag-remarking	QoS egress port tag remarking
show	Show the GVRP configuration

43.1 *delete*

Using this command you can delete QCE.

If you set the GVRP on port then you could show the port GVRP statistics information or clear all record on port.

Syntax:

```
delete <1-256>
```

Parameter:

<1-256>

QCE ID must be exist

Example:

```
Switch(qos)# delete 1
```

43.2 *dscp-classification*

Using this command you can configure DSCP ingress classification.

Syntax:

```
dscp-classification map <class-list> <dpl-list> <0-63>
dscp-classification mode <dscp-list> disable|enable
```

Parameter:

map

Configure DSCP ingress classification mapping table. This table is used to map DSCP from QoS class and DP level. The DSCP which needs to be classified depends on port DSCP classification and DSCP classification mode. Incoming frame DSCP may be translated before using the value for classification

<class-list>

QoS class list, available value is from 0 to 7

<dpl-list>

Drop precedence level list, available value is from 0 to 1

<0-63>

Mapped DSCP

mode

Configure DSCP ingress classification mode. If port DSCP classification is 'selected', DSCP will be classified based on QoS class and DP level only for DSCP value with classification mode 'enabled'. DSCP may be translated DSCP if translation is enabled for the port

<dscp-list>

DSCP list, format : 1,3,5-7

disable

Disables DSCP ingress classification

enable

Enables DSCP ingress classification

Example:

```
Switch(qos)# dscp-classification map 7 10
Switch(qos)# show class-map
QoS Class  DSCP
---------  ----
0          0
1          0
2          0
3          0
4          0
5          0
6          0
7          10


Switch(qos)# dscp-classification mode 1 enable
Switch(qos)# show dscp-translation
      Ingress      Ingress   Egress
DSCP  Translation  Classify  Remap
----  -----------  --------  ---------
0     0            Disabled  0
1     1            Enabled   1
2     2            Disabled  2
3     3            Disabled  3
4     4            Disabled  4
```

43.3 *dscp-map*

Using this command you can configure DSCP mapping table.

Syntax:

```
dscp-map <dscp-list> <0-7> <0-1>
```

Parameter:

<dscp-list>

DSCP list, format : 1,3,5-7

<0-7>

QoS classenable The parameter let you enable GVRP function on port.

<0-1>

Drop Precedence Level

Example:

```
Switch(qos)# dscp-map 2 6 2
Switch(qos)# show dscp-map
DSCP   Trust     QoS Class  DP Level
---------  --------  ---------  --------
0  (BE)    Disabled  0          0
1          Disabled  0          0
2          Disabled  6          2
3          Disabled  0          0
```

43.4 *dscp-remap*

Using this command you can configure DSCP egress remap table.

Syntax:

```
dscp-remap <dscp-list> <dpl-list> <0-63>
```

Parameter:

<dscp-list>

DSCP list, format : 1,3,5-7

<dpl-list>

Drop precedence level list, available value is from 0 to 1

<0-63>

Egress remapped DSCP

Example:

```
Switch(qos)# dscp-remap 3 44
Switch(qos)# show dscp-translation
      Ingress      Ingress   Egress
DSCP  Translation  Classify  Remap
----  -----------  --------  ---------
0     0            Disabled  0
1     1            Enabled   1
2     2            Disabled  2
3     3            Disabled  44
4     4            Disabled  4
```

43.5 *dscp-translation*

Using this command you can configure global ingress DSCP translation table.

Syntax:

```
dscp-translation <dscp-list> <0-63>
```

Parameter:

<dscp-list>

DSCP list, format : 1,3,5-7

<0-63>

Translated DSCP

Example:

```
Switch(qos)# dscp-translation 4 55
Switch(qos)# show dscp-translation
      Ingress      Ingress   Egress
DSCP  Translation  Classify  Remap
----  -----------  --------  ---------
0     0            Disabled  0
1     1            Enabled   1
2     2            Disabled  2
3     3            Disabled  44
4     55           Disabled  4
5     5            Disabled  5
```

43.6 *dscp-trust*

Using this command you can configure trusted DSCP value which is used for QoS classification.

Syntax:

```
dscp-trust <dscp-list> disable|enable
```

Parameter:

<dscp-list>

DSCP list, format : 1,3,5-7

disable

Set DSCP as untrusted DSCP

enable

Set DSCP as trusted DSCP

Example:

```
Switch(qos)# dscp-trust 6 enable
Switch(qos)# show dscp-map
DSCP   Trust     QoS Class  DP Level
---------  --------  ---------  --------
0  (BE)    Disabled  0          0
1          Disabled  0          0
2          Disabled  6          2
3          Disabled  0          0
4          Disabled  0          0
5          Disabled  0          0
6          Enabled   0          0
7          Disabled  0          0
```

43.7 *port-classify*

Using this command you can configure QoS ingress port classification.

Syntax:

```
port-classify class <port-list> <0-7>
port-classify dei <port-list> <0-1>
port-classify dpl <port-list> <0-1>
port-classify dscp <port-list> disable|enable
port-classify map <port-list> <0-7> <0-1> <0-7> <0-1>
port-classify pcp <port-list> <0-7>
port-classify tag <port-list> disable|enable
```

Parameter:

class

Configure the default QoS class

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-7>

QoS class for frames not classified in any other way. There is a one to one mapping between QoS class, queue and priority. A QoS class of 0 (zero) has the lowest priority

dei

Configure the default DEI for untagged frames

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-1>

Drop Eligible Indicator. It is a 1-bit field in the VLAN tag

dpl

Configure the default DP level

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-1>

DP level for frames not classified in any other way

dscp

Configure DSCP based classification mode

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables DSCP based classification

enable

Enables DSCP based classification

map

Configure the port classification map. This map is used when port classification tag is enabled, and the purpose is to translate the Priority Code Point (PCP) and Drop Eligible Indicator (DEI) from a tagged frame to QoS class and DP level

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-7>

Priority Code Point

<0-1>

Drop Eligible Indicator

<0-7>

QoS class

<0-1>

Drop precedence level

pcp

Configure the default PCP for untagged frames

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-7>

Priority Code Point. It is a 3-bit field storing the priority level for the 802.1Q frame

tag

Configure the classification mode for tagged frames

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Use default QoS class and DP level for tagged frames

enable

Use mapped versions of PCP and DEI for tagged frames

Example:

```
Switch(qos)# port-classify class 7 4
Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
```

```
1     0          0         0    0    Disabled    Disabled
2     0          0         0    0    Disabled    Disabled
3     0          0         0    0    Disabled    Disabled
4     0          0         0    0    Disabled    Disabled
5     0          0         0    0    Disabled    Disabled
6     0          0         0    0    Disabled    Disabled
7     4          0         0    0    Disabled    Disabled
8     0          0         0    0    Disabled    Disabled


Switch(qos)# port-classify dei 1 1
Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
1     0          0         0    1    Disabled    Disabled
2     0          0         0    0    Disabled    Disabled
3     0          0         0    0    Disabled    Disabled


Switch(qos)# port-classify dpl 2 3
Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
1     0          0         0    1    Disabled    Disabled
2     0          3         0    0    Disabled    Disabled
3     0          0         0    0    Disabled    Disabled
```

```
Switch(qos)# port-classify dscp 3 enable
Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
1     0          0         0    1    Disabled    Disabled
2     0          3         0    0    Disabled    Disabled
3     0          0         0    0    Disabled    Enabled


Switch(qos)# port-classify map 4 5 1 6 3
Switch(qos)# show port-map 4
Port  PCP  DEI  QoS class  DP level
----  ---  ---  ---------  --------
4     0    0    1          0
      0    1    1          1
      1    0    0          0
      1    1    0          1
      2    0    2          0
      2    1    2          1
      3    0    3          0
      3    1    3          1
      4    0    4          0
      4    1    4          1
      5    0    5          0
      5    1    6          3
      6    0    6          0
      6    1    6          1
      7    0    7          0
      7    1    7          1
```

```
Switch(qos)# port-classify pcp 5 3
Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
1     0           0           0      1    Disabled    Disabled
2     0          3           0      0    Disabled    Disabled
3     0           0           0      0    Disabled    Enabled
```

```
4     0          0           0      0    Disabled    Disabled
5     0          0           3      0    Disabled    Disabled


Switch(qos)# port-classify tag 6 enable
Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
1     0          0         0    1    Disabled    Disabled
2     0          3         0    0    Disabled    Disabled
3     0          0         0    0    Disabled    Enabled
4     0          0         0    0    Disabled    Disabled
5     0          0         3    0    Disabled    Disabled
6     0          0         0    0    Enabled     Disabled
```

43.8 *port-dscp*

Using this command you can do QoS port DSCP configuration.

Syntax:

```
port-dscp classification <port-list> all|disable|selected|zero
port-dscp egress-remark <port-list> (disable|enable) (remap_dp_aware|remap_dp_unaware)
port-dscp translation <port-list> disable|enable
```

Parameter:

classification

Configure DSCP classification based on QoS class and DP level. This enables per port to map new DSCP value based on QoS class and DP level

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

all

Classify all DSCP

disable

Disables DSCP ingress classification

selected

Classify only selected DSCP for which classification is enabled as specified in DSCP Translation window for the specific DSCP

zero

Classify DSCP if DSCP = 0

egress-remark

Configure the port DSCP remarking mode

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables DSCP egress rewrite

enable

Enables DSCP egress rewrite with the value received from analyzer

remap_dp_aware

Rewrite DSCP in egress frame with remapped DSCP where remap is DP aware and DP = 1

remap_dp_unaware

Rewrite DSCP in egress frame with remapped DSCP where remap is DP unaware or DP = 0

translation

Configure DSCP ingress translation mode. If translation is enabled for a port, incoming frame DSCP value is translated and translated value is used for QoS classification

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables DSCP ingress translation

enable

Enables DSCP ingress translation

Example:

```
Switch(qos)# port-dscp classification 1 all
Switch(qos)# port-dscp classification 2 selected
Switch(qos)# port-dscp classification 3 zero
Switch(qos)# show port-dscp
Port  DSCP translation  Ingress classification  Egress remark
----  ----------------  ----------------------  -------------
1     Disabled          All                     Disabled
2     Disabled          Selected                Disabled
3     Disabled          DSCP = 0                Disabled
4     Disabled          Disabled                Disabled


Switch(qos)# port-dscp egress-remark 4 enable
Switch(qos)# port-dscp egress-remark 5 remap
Switch(qos)# show port-dscp
Port  DSCP translation  Ingress classification  Egress remark
----  ----------------  ----------------------  -------------
1     Disabled          All                     Disabled
2     Disabled          Selected                Disabled
3     Disabled          DSCP = 0                Disabled
4     Disabled          Disabled                Enabled
5     Disabled          Disabled                Remapped


Switch(qos)# port-dscp translation 6 enable
Switch(qos)# show port-dscp
Port  DSCP translation  Ingress classification  Egress remark
----  ----------------  ----------------------  -------------
1     Disabled          All                     Disabled
2     Disabled          Selected                Disabled
3     Disabled          DSCP = 0                Disabled
4     Disabled          Disabled                Enabled
```

```
5     Disabled          Disabled                Remapped
6     Enabled           Disabled                Disabled
```

43.9 *port-policer*

Using this command you can do Port policer.

Syntax:

```
port-policer flow-control|mode <port-list> disable|enable
port-policer rate <port-list> Kbps|Kfps|Mbps|fps <rate-range>
```

Parameter:

flow-control

Configure the port policer flow control mode

mode

Configure the port policer mode

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables port policer flow control

enable

Enables port policer flow control

rate

Configure the port policer rate

Kbps

Rate in kilo bits per second (Kbps)

Kfps

Rate in kilo frame per second (Kfps)

Mbps

Rate in mega bits per second (Mbps)

fps

Rate in frame per second (fps)

<rate-range>

<100-10000000>

Rate for Kbps

<1-10000>

Rate for Kfps

<1-10000>

Rate for Mbps

<100-10000000>

Rate for fps

Example:

```
Switch(qos)# port-policer flow-control 1 enable
Switch(qos)# show port-policer
Port  Mode      Rate       Flow Control
----  --------  ---------  ------------
1     Disabled   500 kbps  Enabled
2     Disabled   500 kbps  Disabled
3     Disabled   500 kbps  Disabled
4     Disabled   500 kbps  Disabled


Switch(qos)# port-policer mode 2 enable
Switch(qos)# show port-policer
Port  Mode      Rate       Flow Control
----  --------  ---------  ------------
1     Disabled   500 kbps  Disabled
2     Enabled    500 kbps  Disabled
3     Disabled   500 kbps  Disabled
4     Disabled   500 kbps  Disabled


Switch(qos)# port-policer rate 3 mbps 99
Switch(qos)# show port-policer
Port  Mode      Rate       Flow Control
----  --------  ---------  ------------
1     Disabled   500 kbps  Disabled
2     Disabled   500 kbps  Disabled
3     Disabled    99 Mbps  Disabled
4     Disabled   500 kbps  Disabled
```

43.10 *port-scheduler*

Using this command you can do QoS egress port schedulers.

Syntax:

```
port-scheduler mode <port-list> strict|weighted
port-scheduler weight <port-list> <0-5> <1-100>
```

Parameter:

mode

Configure the port scheduler mode

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

strict

Strict priority scheduler mode

weighted

Weighted scheduler mode

weight

Configure the port scheduler weight

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-5>

Weighted queue

<1-100>

Scheduler weight

Example:

```
Switch(qos)# port-scheduler mode 1 weighted
Switch(qos)# show scheduler-mode
Port  Mode
----  --------
1     Weighted
2     Strict
3     Strict



Switch(qos)# port-scheduler weight 2 5 99
witch(qos)# show scheduler-weight 2
Port  Queue  Weight
----  -----  ---------
2     0      17  (9%)
      1      17  (9%)
      2      17  (9%)
      3      17  (9%)
      4      17  (9%)
      5      99  (55%)
```

43.11 *port-shaper*

Using this command you can do Port shaper .

Syntax:

```
port-shaper mode <port-list> disable|enable
port-shaper rate <port-list> <100-10000000>
```

Parameter:

mode

Configure the port shaper mode

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disable

enable

Enable

rate

Configure the port shaper rate

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<100-10000000>

Rate in kilo bits per second (Kbps)

Example:

```
Switch(qos)# port-shaper mode 1 enable
Switch(qos)# show port-shaper
Port  Mode      Rate
----  --------  ---------
1     Enabled    500 kbps
2     Disabled   500 kbps
3     Disabled   500 kbps


Switch(qos)# port-shaper rate 2 999
Switch(qos)# show port-shaper
Port  Mode      Rate
----  --------  ---------
1     Enabled    500 kbps
2     Disabled   999 kbps
3     Disabled   500 kbps
4     Disabled   500 kbps
```

43.12 *qce*

Using this command you can add or modify QoS control entry.

Syntax:

```
qce              <1-256> <0-256> <port-list> any|etype|ipv4|ipv6|llc|snap
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<1-256>

If the QCE ID parameter <qce_id> is specified and an entry with this QCE ID already exists, the QCE will be modified. Otherwise, a new QCE will be added

<0-256>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<port-list>

Port member for QCE

any

Any frame type can match this QCE

etype

Only Ethernet Type frames can match this QCE

ipv4

Only IPv4 frames can match this QCE

ipv6

Only IPv6 frames can match this QCE

llc

Only LLC frames can match this QCE

snap

Only SNAP frames can match this QCE

Example:

```
Switch(qos)# qce 13 23 25 etype
Switch(qos/qce-etype)# class 7
Switch(qos/qce-etype)# classified-dscp 63
Switch(qos/qce-etype)# dei 1
Switch(qos/qce-etype)# dmac unicast
Switch(qos/qce-etype)# dp 3
Switch(qos/qce-etype)# pcp 5
Switch(qos/qce-etype)# smac any
Switch(qos/qce-etype)# tag enable
Switch(qos/qce-etype)# vid 21-25
Switch(qos/qce-etype)# show
QCE ID     : 13
Frame Type : Ethernet               Port     : 25,29

VLAN Parameters                     MAC Parameters
---------------                     --------------
Tag        : Tagged                 SMAC     : Any
VID        : 21-25                  DMAC Type: Unicast
PCP        : 5
DEI        : 1

Ethernet Parameters                 Action Parameters
-------------------                 -----------------
Ether Type : Any                    Class    : 7
                                    DP       : 3
                                    DSCP     : 63
```

43.12.1 *class*

Using this command you can configure action of QoS class for this QCE.

Syntax:

```
class          default|<0-7>
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

class

Action of QoS class for this QCE

default

Basic classification

<0-7>

QoS class value

Example:

```
Switch(qos)# qce 13 23 25 etype
Switch(qos/qce-etype)# class 7
Switch(qos/qce-etype)# show
QCE ID      : 13
Frame Type : Ethernet                   Port      : 25,29

VLAN Parameters                         MAC Parameters
---------------                         --------------
Tag         : Tagged                    SMAC      : Any
VID         : 21-25                     DMAC Type: Unicast
PCP         : 5
DEI         : 1

Ethernet Parameters                     Action Parameters
-------------------                     -----------------
Ether Type : Any                        Class     : 7
                                        DP        : 3
                                        DSCP      : 63
```

43.12.2 *classified-dscp*

Using this command you can configure action of DSCP for this QCE.

Syntax:

```
classified-dscp         default|<0-63>
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

default

Basic classification

<0-63>

DSCP value

Example:

```
Switch(qos)# qce 13 23 25 etype
Switch(qos/qce-etype)# classified-dscp 63
Switch(qos/qce-etype)# show
QCE ID      : 13
Frame Type : Ethernet                   Port      : 25,29

VLAN Parameters                         MAC Parameters
---------------                         --------------
Tag         : Tagged                    SMAC      : Any
VID         : 21-25                     DMAC Type: Unicast
PCP         : 5
DEI         : 1

Ethernet Parameters                     Action Parameters
-------------------                     -----------------
Ether Type : Any                        Class     : 7
                                        DP        : 3
                                        DSCP      : 63
```

43.12.3 *dei*

Using this command you can configure whether frames can hit the action according to DEI.

Syntax:

```
dei          any|<0-1>
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

any

Don't care

<0-1>

Drop Eligible Indicator value

Example:

```
Switch(qos)# qce 13 23 25 etype
Switch(qos/qce-etype)# dei 1
Switch(qos/qce-etype)# show
QCE ID      : 13
Frame Type : Ethernet                   Port      : 25,29

VLAN Parameters                         MAC Parameters
---------------                         --------------
Tag         : Tagged                    SMAC      : Any
VID         : 21-25                     DMAC Type: Unicast
PCP         : 5
DEI         : 1
```

```
Ethernet Parameters                    Action Parameters
-------------------                    -----------------
Ether Type : Any                       Class    : 7
                                       DP       : 3
                                       DSCP     : 63
```

43.12.4 *dmac*

Using this command you can configure destination MAC address for this QCE.

Syntax:

```
dmac         any|broadcast|multicast|unicast
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

any

Don't care

broadcast

Frame must be broadcast

multicast

Frame must be multicast

unicast

Frame must be unitcast

Example:

```
Switch(qos)# qce 13 23 25 etype
Switch(qos/qce-etype)# dmac unicast
Switch(qos/qce-etype)# show
QCE ID     : 13
Frame Type : Ethernet                  Port     : 25,29

VLAN Parameters                        MAC Parameters
---------------                        --------------
Tag        : Tagged                    SMAC     : Any
VID        : 21-25                     DMAC Type: Unicast
PCP        : 5
DEI        : 1

Ethernet Parameters                    Action Parameters
-------------------                    -----------------
Ether Type : Any                       Class    : 7
                                       DP       : 3
                                       DSCP     : 63
```

43.12.5 *dp*

Using this command you can configure the action of drop precedence level for this QCE.

Syntax:

```
dp          default|<0-1>
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

default

Basic classification

<0-1>

Drop precedence level

Example:

```
Switch(qos)# qce 13 23 25 etype
Switch(qos/qce-etype)# dp 3
Switch(qos/qce-etype)# show
QCE ID     : 13
Frame Type : Ethernet               Port     : 25,29

VLAN Parameters                     MAC Parameters
---------------                     --------------
Tag        : Tagged                 SMAC     : Any
VID        : 21-25                  DMAC Type: Unicast
PCP        : 5
DEI        : 1

Ethernet Parameters                 Action Parameters
-------------------                 -----------------
Ether Type : Any                    Class    : 7
                                    DP       : 3
                                    DSCP     : 63
```

43.12.6 *end*

Using this command you can finish QCE settings and return to QoS mode.

Syntax:

```
end
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Example:

```
Switch(qos)# qce 13 23 25 etype
Switch(qos/qce-etype)# dscp any
Switch(qos/qce-etype)# end
Switch(qos)#
```

43.12.7 *pcp*

Using this command you can configure whether frames can hit the action according to PCP.

Syntax:

```
pcp          0-1|0-3|2-3|4-5|4-7|6-7|any|<0-7>
```

ⓘ The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

0-1

Priority Code Point (0-1)

0-3

Priority Code Point (0-3)

2-3

Priority Code Point (2-3)

4-5

Priority Code Point (4-5)

4-7

Priority Code Point (4-7)

6-7

Priority Code Point (6-7)

any

Don't care

<0-7>

Priority Code Point

Example:

```
Switch(qos)# qce 13 23 25 etype
Switch(qos/qce-etype)# pcp 5
Switch(qos/qce-etype)# show
QCE ID     : 13
Frame Type : Ethernet                    Port      : 25,29

VLAN Parameters                          MAC Parameters
---------------                          --------------
Tag        : Tagged                      SMAC      : Any
VID        : 21-25                       DMAC Type: Unicast
PCP        : 5
DEI        : 1

Ethernet Parameters                      Action Parameters
-------------------                      -----------------
Ether Type : Any                         Class     : 7
                                         DP        : 3
                                         DSCP      : 63
```

43.12.8 *show*

Using this command you can display current QCE configuration.

Syntax:

```
show
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Example:

```
Switch(qos)# qce 13 23 25 etype
Switch(qos/qce-etype)# dscp any
Switch(qos/qce-etype)# show
QCE ID      : 13
Frame Type : Ethernet                    Port      : 25,29

VLAN Parameters                          MAC Parameters
---------------                          --------------
Tag          : Tagged                    SMAC      : Any
VID          : 21-25                     DMAC Type: Unicast
PCP          : 5
DEI          : 1

Ethernet Parameters                      Action Parameters
-------------------                      -----------------
Ether Type : Any                         Class     : 7
                                         DP        : 3
                                         DSCP      : 63
```

43.12.9 *smac*

Using this command you can configure source MAC address for this QCE.

Syntax:

```
smac          <oui-address>|any
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

<oui-address>

A frame that hits this QCE matches this source OUI address value

any

Don't care

Example:

```
Switch(qos)# qce 13 23 25 etype
Switch(qos/qce-etype)# smac any
Switch(qos/qce-etype)# show
QCE ID      : 13
Frame Type : Ethernet                    Port      : 25,29

VLAN Parameters                          MAC Parameters
---------------                          --------------
Tag          : Tagged                    SMAC      : Any
VID          : 21-25                     DMAC Type: Unicast
PCP          : 5
DEI          : 1

Ethernet Parameters                      Action Parameters
-------------------                      -----------------
```

```
Ether Type : Any                    Class    : 7
                                    DP       : 3
                                    DSCP     : 63
```

43.12.10 *tag*

Using this command you can configure whether frames can hit the action according to the 802.1Q tagged.

Syntax:

```
tag          any|disable|enable
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

any

Don't care.

disable

Untagged frame only.

enable

Tagged frame only.

Example:

```
Switch(qos)# qce 13 23 25 etype
Switch(qos/qce-etype)# tag enable
Switch(qos/qce-etype)# show
QCE ID     : 13
Frame Type : Ethernet               Port     : 25,29

VLAN Parameters                     MAC Parameters
---------------                     --------------
Tag        : Tagged                 SMAC     : Any
VID        : 21-25                  DMAC Type: Unicast
PCP        : 5
DEI        : 1

Ethernet Parameters                 Action Parameters
-------------------                 -----------------
Ether Type : Any                    Class    : 7
                                    DP       : 3
                                    DSCP     : 63
```

43.12.11 *vid*

Using this command you can configure the VLAN ID filter for this QCE.

Syntax:

```
vid          any|<vlan-range>
```

The availability of 2nd level parameters depends on the frame-type you select (any, ipv4, etc.).

Parameter:

any

No VLAN ID filter is specified. (VLAN ID filter status is don't-care.)

<vlan-range>

A frame that hits this QCE matches this VLAN range

Example:

```
Switch(qos)# qce 13 23 25 etype
Switch(qos/qce-etype)# vid 21-25
Switch(qos/qce-etype)# show
QCE ID     : 13
Frame Type : Ethernet                Port     : 25,29

VLAN Parameters                      MAC Parameters
---------------                      --------------
Tag        : Tagged                  SMAC     : Any
VID        : 21-25                   DMAC Type: Unicast
PCP        : 5
DEI        : 1

Ethernet Parameters                  Action Parameters
-------------------                  -----------------
Ether Type : Any                     Class    : 7
                                     DP       : 3
                                     DSCP     : 63
```

43.13 *queue-shaper*

Using this command you can do Queue shaper.

Syntax:

```
queue-shaper excess|mode <port-list> <queue-list> disable|enable
queue-shaper rate <port-list> <queue-list> <100-1000000>
```

Parameter:

excess

Configure the port queue excess bandwidth mode

mode

Configure the port queue shaper mode

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<queue-list>

Queue list, available value is from 0 to 7

disable

Disables use of excess bandwidth

enable

Enables use of excess bandwidth

rate

Configure the port queue shaper rate

<100-1000000>

Rate in kilo bits per second (Kbps)

Example:

```
Switch(qos)# queue-shaper excess 1 7 enable
Switch(qos)# show queue-shaper 1
Port  Queue  Mode      Rate       Excess
----  -----  --------  ---------  --------
1     0      Disabled   500 kbps  Disabled
      1      Disabled   500 kbps  Disabled
      2      Disabled   500 kbps  Disabled
      3      Disabled   500 kbps  Disabled
      4      Disabled   500 kbps  Disabled
      5      Disabled   500 kbps  Disabled
      6      Disabled   500 kbps  Disabled
      7      Disabled   500 kbps  Enabled
```

43.14 *show*

Using this command you can show QoS information .

Syntax:

```
show (class-map|dscp-map|dscp-translation|port-classify|port-dscp|
       port-policer|port-shaper|scheduler-mode|storm|tag-remarking)

show (port-map|queue-shaper|remarking-map|scheduler-weight) <port-list>

show qce <1-256>
show qcl-status (combined|conflicts|static|voice-vlan)
```

Parameter:

class-map

Shows QoS class and DP level to DSCP mapping

dscp-map

Shows DSCP to QoS class and DP level mapping

dscp-translation

Shows DSCP ingress and egress translation

port-classify

Shows QoS ingress port classification

port-dscp

Shows port DSCP configuration

port-policer

Shows port policer configuration

port-shaper

Shows port shaper configuration

scheduler-mode

Shows port scheduler mode configuration

storm

Shows storm control configuration

tag-remarking

Shows port tag remarking configuration

port-map

Shows port classification (PCP, DEI) to (QoS class, DP level) mapping table

queue-shaper

Shows port queue shaper configuration

remarking-map

Shows port tag remarking mapping table

scheduler-weight

Shows port scheduler weight configuration

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

qce

Shows QCL control list

<1-256>

QCE ID

qcl-status

Shows QCL status

combined

Shows the combined status

conflicts

Shows all conflict status

static

Shows the static user configured status

voice-vlan

Shows the status by Voice VLAN

Example:

```
Switch(qos)# show class-map
QoS Class  DSCP
---------  ----
```

```
0          0
1          0
2          0
3          0
4          0
5          0
6          0
7          0


Switch(qos)# show dscp-map
DSCP   Trust     QoS Class  DP Level
---------  --------  ---------  --------
0  (BE)    Disabled  0          0
1          Disabled  0          0
2          Disabled  0          0
3          Disabled  0          0


Switch(qos)# show dscp-translation
      Ingress      Ingress   Egress
DSCP  Translation  Classify  Remap
----  -----------  --------  ---------
0     0            Disabled  0
1     1            Disabled  1
2     2            Disabled  2
3     3            Disabled  3


Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
1     0          0         0    0    Disabled    Disabled
2     0          0         0    0    Disabled    Disabled
3     0          0         0    0    Disabled    Disabled
```

```
Switch(qos)# show port-dscp
Port  DSCP translation  Ingress classification  Egress remark
----  ----------------  ----------------------  -------------
1     Disabled          Disabled                Disabled
2     Disabled          Disabled                Disabled
3     Disabled          Disabled                Disabled


Switch(qos)# show port-map 1
Port  PCP  DEI  QoS class  DP level
----  ---  ---  ---------  --------
1     0    0    1          0
      0    1    1          1
      1    0    0          0


Switch(qos)# show port-policer
Port  Mode      Rate       Flow Control
----  --------  ---------  ------------
1     Disabled   500 kbps  Disabled
2     Disabled   500 kbps  Disabled
3     Disabled   500 kbps  Disabled


Switch(qos)# show port-shaper
Port  Mode      Rate
----  --------  ---------
```

```
1     Disabled   500 kbps
2     Disabled   500 kbps
3     Disabled   500 kbps
```

```
Switch(qos)# show qce 200


Switch(qos)# show qcl-status combined
Number of QCEs: 0
Switch(qos)# show qcl-status conflicts
Number of QCEs: 0
Switch(qos)# show qcl-status static
Number of QCEs: 0
Switch(qos)# show qcl-status voice-vlan


Switch(qos)# show queue-shaper 1
Port  Queue  Mode      Rate       Excess
----  -----  --------  ---------  --------
1     0      Disabled   500 kbps  Disabled
      1      Disabled   500 kbps  Disabled
      2      Disabled   500 kbps  Disabled
      3      Disabled   500 kbps  Disabled
      4      Disabled   500 kbps  Disabled
      5      Disabled   500 kbps  Disabled
      6      Disabled   500 kbps  Disabled
      7      Disabled   500 kbps  Disabled


Switch(qos)# show remarking-map 1
Port  QoS class  DP level  PCP  DEI
----  ---------  --------  ---  ---
1     0          0         1    0
      0          1         1    1
      1          0         0    0
      1          1         0    1
      2          0         2    0
      2          1         2    1
      3          0         3    0
      3          1         3    1
      4          0         4    0
      4          1         4    1
      5          0         5    0
      5          1         5    1
      6          0         6    0
      6          1         6    1
      7          0         7    0
      7          1         7    1
```

```
Switch(qos)# show scheduler-mode
Port  Mode
----  --------
1     Strict
2     Strict
3     Strict


Switch(qos)# show scheduler-weight 1
Port  Queue  Weight
----  -----  ---------
1     0      17  (17%)
      1      17  (17%)
      2      17  (17%)
      3      17  (17%)
      4      17  (17%)
      5      17  (17%)


Switch(qos)# show storm
            Unicast             Broadcast             Unknown
Port  Mode      Rate       Mode      Rate       Mode      Rate
----  --------  ---------  --------  ---------  --------  ---------
1     Disabled   500 kbps  Disabled   500 kbps  Disabled   500 kbps
2     Disabled   500 kbps  Disabled   500 kbps  Disabled   500 kbps
3     Disabled   500 kbps  Disabled   500 kbps  Disabled   500 kbps
4     Disabled   500 kbps  Disabled   500 kbps  Disabled   500 kbps
```

```
Switch(qos)# show tag-remarking ?
  <cr>
Switch(qos)# show tag-remarking
Port  Mode        PCP  DEI
----  ----------  ---  ---
1     Classified  0    0
2     Classified  0    0
3     Classified  0    0


Switch(qos)# show wred
Queue  Mode      Min. Threshold  Max. DP 1  Max. DP 2  Max. DP 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
```

43.15 *storm*

Using this command you can configure storm rate control.

Syntax:

```
storm (broadcast|multicast|unicast) (disable|enable)
```

Parameter:

broadcast

Broadcast frame storm control

unicast

Unicast frame storm control

unknown

Unknown frame storm control

disable

Disables port storm control

enable

Enables port storm control

Example:

```
Switch(qos)# show storm
Frame Type  State     Rate
----------  --------  ----------
Unicast     Disabled      1 pps
Multicast   Disabled      1 pps
Broadcast   Disabled      1 pps
```

43.16 *tag-remarking*

Using this command you can do QoS egress port tag remarking.

Syntax:

```
tag-remarking dei <port-list> <0-1>
tag-remarking map <port-list> <class-list> <dpl-list> <0-7> <0-1>
tag-remarking mode <port-list> classified|default|mapped
tag-remarking pcp <port-list> <0-7>
```

Parameter:

dei

Configure the default DEI. This value is used when port tag remarking mode is set to 'default'.

map

Configure the port tag remarking map. This map is used when port tag remarking mode is set to 'mapped', and the purpose is to translate the classified QoS class (0-7) and DP level (0-1) to PCP and DEI

mode

Configure the port tag remarking mode

pcp

Configure the default PCP. This value is used when port tag remarking mode is set to 'default'

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<class-list>

QoS class list, available value is from 0 to 7

<dpl-list>

Drop precedence level list, available value is from 0 to 1

<0-7>

Priority Code Point

<0-1>

Drop Eligible Indicator

classified

Use classified PCP/DEI values

default

Use default PCP/DEI values

mapped

Use mapped versions of QoS class and DP level

Example:

```
Switch(qos)# tag-remarking dei 1 1
Switch(qos)# tag-remarking mode 2 mapped
Switch(qos)# tag-remarking pcp 3 7
Switch(qos)# show tag-remarking
Port  Mode        PCP  DEI
----  ----------  ---  ---
1     Classified  0    1
2     Mapped      0    0
3     Classified  7    0
4     Classified  0    0


Switch(qos)# tag-remarking map 2 7 1 7 1
```

44 Reboot Commands

This section describes how to restart switch for any maintenance needs. Any configuration files or scripts that you saved in the switch should still be available afterwards.

Command	Function
reboot	Reboot the system

44.1 *reboot*

Using this command you can reboot the system.

Syntax:

```
reboot
```

Example:

```
Switch# reboot
```

45 SFlow Commands

The sFlow Collector configuration for the switch can be monitored and modified here. Up to 1 Collector is supported. This section allows for configuring sFlow collector IP type, sFlow collector IP Address,Port Number, for each sFlow Collector.

Command	Function
collector	sFlow Collector Configuration
sampler	sFlow sampler Configuration
show	Show sFlow

45.1 *collector*

Using this command you can set sFlow Collector Configuration.

Syntax:

```
collector IPv4|IPv6 <ip-address> <1-65535> <0-2147483647> <200-1500>
```

Parameter:

IPv4

IP type

IPv6

IP type

<ip-address>

IP address

<1-65535>

TCP/UDP port number. By default, the port number is 6343

<0-2147483647>

Set the receiver timeout for list of receiver ID (RID). Collector cannot collect samples unless receivertimeout is not set.

<200-1500>

Set the reciever datagram length for list of receiver ID (RID).

Example:

```
Switch(sflow)# collector ipv4 192.168.100.100 6345 99 1500
Switch(sflow)# show
% Incomplete command
Switch(sflow)# show collector
              Configured       Current
              ---------------- ----------------
Collector Id  1                1
IP Type       IPv4             IPv4
IP Address    192.168.100.100  192.168.100.100
Port          6345             6345
Time Out      99               90 Timer is still alive!
Datagram Size 1500             1500
```

45.2 *sampler*

Using this command you can sFlow sampler Configuration .

Syntax:

```
sampler <port-list> ALL|RX|TX|none <0-4095> <14-200> <0-3600>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

ALL

Sample on both RX and TX

RX

Sample on RX

TX

Sample on TX

none

Sampling is disabled

<0-4095>

If parameter sample_rate is 'N' then 1/N of packets is sampled.

<14-200>

Configures the size of the header of the sampled frame to be copied to the Queue for further processing. The Max header size ranges from 14 to 200 bytes.

<0-3600>

Configures the polling interval for the counter sampling. The accepted value for Counter Polling Interval ranges from 0 to 3600 seconds. Default value is 0 seconds which means polling is disabled.

Example:

```
Switch(sflow)# sampler 2 aLL 400 199 3600
Switch(sflow)# show sampler
sFlow sFlow    Sampler  Sampling Max Hdr Counter Polling
Ports Instance Type     Rate     Size    Interval
----- -------- -------- -------- ------- ---------------
    1        1     None        0     128               0
    2        1      ALL      400     199            3600
    3        1     None        0     128               0
    4        1     None        0     128               0
```

45.3 *show*

Using this command you can dhow sFlow.

Syntax:

```
show collector|sampler
```

Parameter:

collector

Shows sFlow collector

sampler

Shows sFlow sampler

Example:

```
Switch(sflow)# show collector
              Configured       Current
              ---------------- ----------------
Collector Id  1                1
IP Type       IPv4             IPv4
IP Address    0.0.0.0          0.0.0.0
Port          6343             6343
Time Out      0                0 Timer is still alive!
Datagram Size 1400             1400


Switch(sflow)# show sampler
sFlow sFlow    Sampler  Sampling Max Hdr Counter Polling
Ports Instance Type     Rate     Size    Interval
----- -------- -------- -------- ------- ---------------
    1        1     None        0     128               0
    2        1     None        0     128               0
    3        1     None        0     128               0
    4        1     None        0     128               0
```

46 Single IP Commands

Single IP Management (SIM), a simple and useful method to optimize network utilities and management, is designed to manage a group of switches as a single entity, called an SIM group. Implementing the SIM feature will have the following advantages for users

- Simplify management of small workgroups or wiring closets while scaling networks to handle increased bandwidth demand.
- Reduce the number of IP addresses needed on the network.
- Virtual stacking structure - Eliminate any specialized cables for stacking and remove the distance barriers that typically limit topology options when using other stacking technology.

Command	Function
connect	Connect to slave switch
connect	Configure single ip group name
mode	Configure single ip mode
show	Show single ip information

46.1 *connect*

Using this command you can connect to slave switch.

Syntax:

```
connect <1-16>
```

Parameter:

<1-16>

Slave switch index

Example:

```
Switch(sip)# connect 1
```

46.2 *group-name*

Using this command you can configure single IP group name.

Syntax:

```
group-name <name>
```

Parameter:

<name>

Up to 64 characters describing group name

Example:

```
Switch(sip)# group-name david
Switch(sip)# show config
Mode                 : Disabled
Group Name           : david
```

46.3 *mode*

Using this command you can configure single IP mode.

Syntax:

```
mode disable|master|slave
```

Parameter:

disable

Disables single ip operation.

master

Configure as master.

slave

Configure as slave

Example:

```
Switch(sip)# mode master
Switch(sip)# show c
Mode                 : Master
Group Name           : david
```

46.4 *show*

Using this command you can show single IP information.

Syntax:

```
show config|info
```

Parameter:

config

Shows single ip configuration.

info

Shows single ip group information.

Example:

```
Switch(sip)# show config
Mode                : Disabled
Group Name          : VirtualStack


Switch(sip)# show info
Index  Model Name       MAC Address
-----  ---------------  -----------------
```

47 SMTP Commands

The function, is used to set a Alarm trap when the switch alarm then you could set the SMTP server to send you the alarm mail.

Command	Function
delete	Delete commands
level	Delete commands
mail-address	Configure email user name
return-path	Configure email sender
sender	Configure email sender
server	Configure email server
show	Show email configuration
username	Show DHCP snooping information

47.1 *delete*

Using this command you can delete command.

Syntax:

```
delete mail-address <1-6>
delete return-path|sender|server|username
```

Parameter:

mail-address

Delete email address.

<1-6>

Delete email address id.

return-path

Delete return path.

sender

Delete sender.

server

Delete email server.

username

Delete username and password.

Example:

```
Switch(smtp)# delete mail-address 2
Switch(smtp)# show
Mail Server      :
User Name        :
Password         :
Severity level   : Info
Sender           :
Return Path      :
Email Adress 1   :
Email Adress 2   :
Email Adress 3   :
Email Adress 4   :
Email Adress 5   :
Email Adress 6   :
```

47.2 *level*

Using this command you can configure Severity level.

Syntax:

```
level <0-7>
```

Parameter:

<0-7>

Severity level

<0> Emergency: system is unusable

<1> Alert: action must be taken immediately

<2> Critical: critical conditions

<3> Error: error conditions

<4> Warning: warning conditions

<5> Notice: normal but significant condition

<6> Informational: informational messages

<7> Debug: debug-level messages

Example:

```
Switch(smtp)# level 7
Switch(smtp)# show
Mail Server      :
User Name        :
Password         :
Severity level   : Debug
Sender           :
Return Path      :
Email Adress 1   :
Email Adress 2   :
Email Adress 3   :
```

```
Email Adress 4  :
Email Adress 5  :
Email Adress 6  :
```

47.3 *mail-address*

Using this command you can configure email user name.

Syntax:

```
mail-address <1-6> <mail-address>
```

Parameter:

<1-6>

Email address index.

<mail-address>

Up to 47 characters describing mail address.

Example:

```
Switch(smtp)# mail-address 6 david@tech.com.tw
Switch(smtp)# show
Mail Server     :
User Name       :
Password        :
Severity level  : Debug
Sender          :
Return Path     :
Email Adress 1  :
Email Adress 2  :
Email Adress 3  :
Email Adress 4  :
Email Adress 5  :
Email Adress 6  : david@tech.com.tw
```

47.4 *return-path*

Using this command you can configure the address of email sender.

Syntax:

```
return-path <return-path>
```

Parameter:

<return-path>

Up to 47 characters describing return path.

Example:

```
Switch(smtp)# return-path david@tech.com.tw
Switch(smtp)# show
Mail Server      :
User Name        :
Password         :
Severity level   : Debug
Sender           :
Return Path      : david@tech.com.tw
Email Adress 1   :
Email Adress 2   :
Email Adress 3   :
Email Adress 4   :
Email Adress 5   :
Email Adress 6   : david@tech.com.tw
```

47.5 *sender*

Using this command you can configure email sender.

Syntax:

```
sender <sender>
```

Parameter:

<sender>

Up to 47 characters describing sender.

Example:

```
Switch(smtp)# sender tech
Switch(smtp)# show
Mail Server      :
User Name        :
Password         :
Severity level   : Debug
Sender           : david
Return Path      : david@mail. tech.com.tw
Email Adress 1   :
Email Adress 2   :
Email Adress 3   :
Email Adress 4   :
Email Adress 5   :
Email Adress 6   : david@tech.com.tw
```

47.6 *server*

Using this command you can configure email server.

Syntax:

```
server <server>
```

Parameter:

<server>

Up to 47 characters describing email server.

Example:

```
Switch(smtp)# server davidserver
Switch(smtp)# show
Mail Server      : davidserver
User Name        :
Password         :
Severity level   : Debug
Sender           : davidtech
Return Path      : david@mail.davidtech.com.tw
Email Adress 1   :
Email Adress 2   :
Email Adress 3   :
Email Adress 4   :
Email Adress 5   :
Email Adress 6   : jack@davidtech.com.tw
```

47.7 *show*

Using this command you can show email configuration.

Syntax:

```
show
```

Example:

```
Switch(smtp)# show
Mail Server      :
User Name        :
Password         :
Severity level   : Info
Sender           :
Return Path      :
Email Adress 1   :
Email Adress 2   :
Email Adress 3   :
Email Adress 4   :
Email Adress 5   :
Email Adress 6   :
```

47.8 *username*

Using this command you can configure email user name.

Syntax:

```
username <username> <password>
```

Parameter:

<username>

Up to 47 characters describing user name.

<password>

Up to 47 characters describing password

Example:

```
Switch(smtp)# username david 1111
Switch(smtp)# show
Mail Server      : davidserver
User Name        : david
Password         : ********
Severity level   : Debug
Sender           : davidtech
Return Path      : david@mail.davidtech.com.tw
Email Adress 1   :
Email Adress 2   :
Email Adress 3   :
Email Adress 4   :
Email Adress 5   :
Email Adress 6   : rose@davidtech.com.tw
```

48 SNMP Commands

Any Network Management System (NMS) running the Simple Network Management Protocol (SNMP) can manage the Managed devices equipped with SNMP agent, provided that the Management Information Base (MIB) is installed correctly on the managed devices. The SNMP is a protocol that is used to govern the transfer of information between SNMP manager and agent and traverses the Object Identity (OID) of the management Information Base (MIB), described in the form of SMI syntax. SNMP agent is running on the switch to response the request issued by SNMP manager.

Basically, it is passive except issuing the trap information. The switch supports a switch to turn on or off the SNMP agent. If you set the field SNMP "Enable", SNMP agent will be started up. All supported MIB OIDs, including RMON MIB, can be accessed via SNMP manager. If the field SNMP is set "Disable", SNMP agent will be de-activated, the related Community Name, Trap Host IP Address, Trap and all MIB counters will be ignored.

Command	Function
access	Configure SNMP access
community	Configure SNMP community
delete	Delete command
engine-id	Set SNMP Engine ID
getcommunity	Configure SNMP Get Community
group	Configure SNMP groups
mode	Enable/Disable SNMP mode
newcommunity	Configure SNMP New Get Community
setcommunity	Configure SNMP Set Community
show	Show SNMP command
trap	Configure SNMP trap
user	Configure SNMP users
view	Configure SNMP views

48.1 *access*

Using this command you can configure SNMP access.

Syntax:

```
access  <groupname>  <any|usmno   >  (AuthNoPriv|AuthPriv|NoAuthNoPriv)  <read-view-name>
<write-view-name>
access <groupname> <v1|v2c> NoAuthNoPriv <read-view-name> <write-view-name>
```

Parameter:

<groupname>

max 32 chars.

any

Security Model.

usm

Security Model.

v1

Security Model.

v2c

Security Model.

AuthNoPriv

Security Level. If security_model is not usm, the security_level value must be NoAuthNoPriv.

AuthPriv

Security Level. If security_model is not usm, the security_level value must be NoAuthNoPriv.

NoAuthNoPriv

Security Level. If security_model is not usm, the security_level value must be NoAuthNoPriv.

<read-view-name>

The scope for a specified instance can read, None is reserved for Empty.

<write-view-name>

The scope for a specified instance can write, None is reserved for Empty.

Example:

```
Switch(snmp)# access g usm noAuthNoPriv v v
Switch(snmp)# show access

SNMPv3 Accesses Table:
Idx    Group Name    Model SecurityLevel   Read View Name  Write View Name
--- ---------------- ----- -------------- ---------------- ----------------
1   g                usm   NoAuth, NoPriv v                v
```

48.2 *community*

Using this command you can configure SNMP community.

Syntax:

```
community <community> <username> <ip-address> <ip-mask>
```

Parameter:

<community>

max 32 chars.

<username>

max 32 chars.

<ip-address>

SNMP access source ip.

<ip-mask>

SNMP access source address mask.

Example:

```
Switch(snmp)# community david pm 192.168.6.127 255.255.255.0
Switch(snmp)# show community

SNMP Community Table:
Idx Community        UserName         Source IP       Source Mask
--- ---------------- ---------------- --------------- ---------------
1   david             pm               192.168.6.127   255.255.255.0

Number of entries: 1
```

48.3 *delete*

Using this command you can delete command.

Syntax:

```
delete access <1-14>
delete community <1-4>
delete group <1-14>
delete trap <1-6>
delete user <1-10>
delete view <1-48>
```

Parameter:

access

Delete snmpv3 access entry

<1-14>

table index.

community

Delete community entry.

<1-4>

table index.

group

Delete snmpv3 groups entry.

<1-14>

table index.

trap

Delete trap entry.

<1-6>

table index.

user

Delete snmpv3 users entry.

<1-10>

table index.

view

Delete snmpv3 views entry.

<1-48>

table index.

Example:

```
Switch(snmp)# delete access 14
```

48.4 *engine-id*

Using this command you can set SNMP Engine ID.

Syntax:

```
engine-id <HEX>
```

Parameter:

<HEX>

the format may not be all zeros or all 'ff',and is restricted to 5–32 octet string.

Example:

```
Switch(snmp)# engine-id ffffffffffffff
```

48.5 *getcommunity*

Using this command you can configure SNMP Get Community.

Syntax:

```
getcommunity disable
        getcommunity enable <community>
```

Parameter:

disable

Disables SNMP Get Community.

enable

Enables SNMP Get Community.

<community>

max 32 chars, default : public.

Example:

```
Switch(snmp)# getcommunity enable rose
Switch(snmp)# show snmp

SNMP Configuration
--------------------------------
Get Community Mode : Enable
Get Community      : rose
Set Community Mode : Enable
Set Community      : private


Idx Get Community
--- ----------------
1   rose
2
3
4
5
```

48.6 *group*

Using this command you can configure SNMP groups.

Syntax:

```
group <username> usm|v1|v2c <groupname>
```

Parameter:

<username>

max 32 chars

usm

Security Model.

v1

Security Model

v2c

Security Model

<groupname>

max 32 chars

Example:

```
Switch(snmp)# group pm v1 ccc
Switch(snmp)# show group

SNMPv3 Groups Table:
```

```
Idx Model Security Name                    Group Name
--- ----- -------------------------------- --------------------------------
1   v1    pm                               ccc

Number of entries: 1


Switch(snmp)# group pm v2c aaa
Switch(snmp)# show group

SNMPv3 Groups Table:
Idx Model Security Name                    Group Name
--- ----- -------------------------------- --------------------------------
1   v2c   pm                               aaa
```

48.7 *mode*

Using this command you can Enable/Disable SNMP mode.

Syntax:

```
mode disable|enable
```

Parameter:

disable

Disable SNMP mode.

enable

Enables SNMP mode.

Example:

```
Switch(snmp)# mode enable
Switch(snmp)# show mode

SNMPv3 State Show
SNMP State           : Enabled
SNMPv3 Engine ID     : 80001455030040c7232600
```

48.8 *newcommunity*

Using this command you can configure SNMP Get Community.

Syntax:

```
newcommunity <index> <community>
```

Parameter:

<index>

Community index : 1 to 5

<community>

max 32 chars, default : public.

Example:

```
Switch(snmp)# newcommunity 1 rose
Switch(snmp)# show snmp

SNMP Configuration
--------------------------------
Get Community Mode : Enable
Get Community      : public
Set Community Mode : Enable
Set Community      : private


Idx Get Community
--- ----------------
1   rose
2
3
4
5
```

48.9 *setcommunity*

Using this command you can configure SNMP Set Community.

Syntax:

```
setcommunity disable
setcommunity enable <community>
```

Parameter:

disable

Disables SNMP Set Community.

enable

Enables SNMP Set Community.

<community>

max 32 chars, default : private

Example:

```
Switch(snmp)# setcommunity enable jack
Switch(snmp)# show snmp

SNMP Configuration
--------------------------------
```

```
Get Community      : eee
Set Community Mode : Enable
Set Community      : jack
```

48.10 *show*

Using this command you can show SNMP command.

Syntax:

```
show access|community|group|mode|snmp|trap|user|view
```

Parameter:

access

Shows snmpv3 access entry.

community

Shows snmpv3 community entry.

group

Shows snmpv3 groups entry

mode

Shows snmp configuration.

snmp

Shows snmp community configuration.

trap

Shows snmp trap entry.

user

Shows snmpv3 users entry.

view

Shows snmpv3 views entry.

Example:

```
Switch(snmp)# show access

SNMPv3 Accesses Table:
Idx    Group Name    Model SecurityLevel   Read View Name  Write View Name
--- ---------------- ----- -------------- ---------------- ----------------

Number of entries: 0

Switch(snmp)# show community

SNMP Community Table:
Idx Community        UserName         Source IP       Source Mask
--- ---------------- ---------------- --------------- ---------------
1   david             pm               192.168.6.127   255.255.255.0

Number of entries: 1
```

48.11 *trap*

Using this command you can configure SNMP trap.

Syntax:

```
trap <1-6> v2 ipv4|ipv6 <ip-address> <1-65535> <0-7> <community>
trap <1-6> v3 ipv4|ipv6 <ip-address> <1-65535> <0-7> <secname> NoAuthNoPriv
trap <1-6> v3 ipv4|ipv6 <ip-address> <1-65535> <0-7> <secname> AuthNoPriv MD5|SHA <auth-pwd>
trap <1-6> v3 ipv4|ipv6 <ip-address> <1-65535> <0-7> <secname> AuthPriv SHA|MD5 <auth-pwd>
 DES <priv-pwd>
```

Parameter:

<1-6>

trap index: 1–6.

v2

version.

v3

version.

ipv4

Trap host IP type.

ipv6

Trap host IP type.

<ip-address>

Trap host IP address.

<1-65535>

trap port.

<0-7>

Severity level:

<0> Emergency: system is unusable

<1> Alert: action must be taken immediately

<2> Critical: critical conditions

<3> Error: error conditions

<4> Warning: warning conditions

<5> Notice: normal but significant condition

<6> Informational: informational messages

<7> Debug: debug-level messages

<community>

Community.

<secname>

Security name

NoAuthNoPriv

Security_Level

AuthNoPriv

Security_Level

AuthPriv

Security_Level

MD5

Authentication Protocol

SHA

Authentication Protocol

<auth-pwd>

SHA Authentication Password is restricted to 8–40

MD5 Authentication Password is restricted to 8–32

DES

Privacy Protocol

<priv-pwd>

MD5 Authentication Password is restricted to 8–32

Example:

```
Switch(snmp)# trap 2 v3 ipv4 192.168.2.110 2 5 asvsd AuthNoPriv SHA 123456789

Switch(snmp)# trap 2 v2 ipv4 192.168.6.127 65535 7 aaa
Switch(snmp)# show trap
SNMPv3 Trap Host Configuration:

                                 Community               Severity    Auth.
    Priv.
No Ver Server IP       Port Security Name           Level      Protocol
Protocol
-- --- --------------- ---- ---------------------- --------- ---------
--------
1
2  v2c 192.168.6.127   65535 aaa                    Debug
3
4
5
6
```

48.12 *user*

Using this command you can configure SNMP users.

Syntax:

```
user <username> NoAuthNoPriv
user <username> AuthNoPriv MD5|SHA <auth-pwd>
user <username> AuthPriv SHA|MD5 <auth-pwd> DES <priv-pwd>
```

Parameter:

<username>

max 32 chars.

NoAuthNoPriv

Security_Level.

AuthNoPriv

Security_Level.

AuthPriv

Security_Level.

MD5

Authentication Protocol.

SHA

Authentication Protocol.

<auth-pwd>

SHA Authentication Password is restricted to 8–40

MD5 Authentication Password is restricted to 8–32

DES

Privacy Protocol

<priv-pwd>

MD5 Authentication Password is restricted to 8–32

Example:

```
Switch(snmp)# user wade authnoPriv md5 12345678
Switch(snmp)# show user

SNMPv3 Users Table:
Index User Name                        Security Level Auth Priv
----- -------------------------------- -------------- ---- ----
1     wade                             AuthNoPriv     MD5  None

Number of entries: 1
```

48.13 *view*

Using this command you can configure SNMP views.

Syntax:

```
view <viewname> excluded|included <oid-subtree>
```

Parameter:

<viewname>

max 32 chars.

excluded

view_type.

included

view_type.

<oid-subtree>

The OID defining the root of the subtree.

Example:

```
Switch(snmp)# view viewdavid included .1.3.6.1.2
Switch(snmp)# show view

SNMPv3 Views Table:
Idx View Name                        View Type OID Subtree
---        -------------------------------------       ----------
--------------------------------
1   viewdavid                        included  .1.3.6.1.2
```

49 SSH Commands

This section shows you how to use SSH (Secure SHell) to securely access the Switch. SSH is a secure communication protocol that combines authentication and data encryption to provide secure encrypted communication.

Command	Function
mode	Configure the SSH mode
show	Show SSH configuration

49.1 *mode*

Using this command you can configure the SSH mode.

Syntax:

```
mode disable|enable
```

Parameter:

disable

Disables SSH mode operation.

enable

Enables SSH mode operation.

Example:

```
Switch(ssh)# mode enable
Switch(ssh)# show
SSH Mode : Enabled
```

49.2 *show*

Using this command you can show SSH configuration.

Syntax:

```
show
```

Example:

```
Switch(ssh)# show
SSH Mode : Enabled
```

50 STP Commands

The Spanning Tree Protocol (STP) can be used to detect and disable network loops, and to provide backup links between switches, bridges or routers. This allows the switch to interact with other bridging devices (that is, an STP-compliant switch, bridge or router) in your network to ensure that only one route exists between any two stations on the network, and provide backup links which automatically take over when a primary link goes down.

STP - STP uses a distributed algorithm to select a bridging device (STP- compliant switch, bridge or router) that serves as the root of the spanning tree network. It selects a root port on each bridging device (except for the root device) which incurs the lowest path cost when forwarding a packet from that device to the root device. Then it selects a designated bridging device from each LAN which incurs the lowest path cost when forwarding a packet from that LAN to the root device. All ports connected to designated bridging devices are assigned as designated ports. After determining the lowest cost spanning tree, it enables all root ports and designated ports, and disables all other ports. Network packets are therefore only forwarded between root ports and designated ports, eliminating any possible network loops.

Once a stable network topology has been established, all bridges listen for Hello BPDUs (Bridge Protocol Data Units) transmitted from the Root Bridge. If a bridge does not get a Hello BPDU after a predefined interval (Maximum Age), the bridge assumes that the link to the Root Bridge is down. This bridge will then initiate negotiations with other bridges to reconfigure the network to reestablish a valid network topology.

Command	Function
CName	Set MSTP Configuration name
FwdDelay	Set FwdDelay
MaxAge	Set Maxage
MaxHops	Set MaxHops
Statistics	Clear STP port statistics
Txhold	Set TxHold
Version	Set force-version
bpduFilter	Set edge port BPDU Filtering
bpduGuard	Set edge port BPDU Guard
migrate-check	Set the STP mCheck (Migration Check) variable for ports
msti-vlan	Map Vlan ID(s) to an MSTI
p-AutoEdge	Set the STP autoEdge port parameter
p-bpduGuard	Set the bpduGuard port parameter
p-cost	Set the STP port instance path cost
p-edge	Set the STP adminEdge port parameter
p-mode	Set the STP enabling for a port
p-p2p	Set the STP point2point port parameter
p-priority	Set the STP port instance priority
priority	Set the bridge instance priority
r-role	Set the MSTP restrictedRole port parameter
r-tcn	Set the MSTP restrictedTcn port parameter
recovery	Set edge port error recovery timeout
show	Show Region config, MSTI vlan mapping, instance parameters and port parameters

50.1 *cname*

Using this command you can Set MSTP Configuration name.

Syntax:

```
cname <name> [<0-65535>]
```

Parameter:

<name>

A text string up to 32 characters long.

<0-65535>

MSTP revision-level (0~65535).

Example:

```
Switch(stp)# cName david 65535
Switch(stp)# show cName
Configuration name: david
Configuration rev.: 65535
```

50.2 *fwdDelay*

Using this command you can Set FwdDelay.

Syntax:

```
fwdDelay <4-30>
```

Parameter:

<4-30>

MSTP forward delay (4-30, and max_age <= (forward_delay -1)*2)) .

Example:

```
Switch(stp)# fwdDelay 30
Switch(stp)# show instance
STP Configuration
Protocol Version: MSTP
Max Age          : 20
Forward Delay    : 30
Tx Hold Count    : 6
Max Hop Count    : 20
BPDU Filtering   : Disabled
BPDU Guard       : Disabled
Error Recovery   : 0 seconds
Error Recovery   : Disabled
```

50.3 *maxage*

Using this command you can Set Maxage.

Syntax:

```
maxage <6-40>
```

Parameter:

<6-40>

STP maximum age time (6-40, and max_age <= (forward_delay-1)*2).

Example:

```
Tx Hold Count    : 6
Max Hop Count    : 20
BPDU Filtering   : Disabled
BPDU Guard       : Disabled
Error Recovery   : 0 seconds
Error Recovery   : Disabled
```

50.4 *maxhops*

Using this command you can Set MaxHops.

Syntax:

```
maxhops <6-40>
```

Parameter:

<6-40>

STP BPDU MaxHops (6-40).

Example:

```
Switch(stp)# maxhops 38
Switch(stp)# show instance
STP Configuration
Protocol Version: MSTP
Max Age          : 39
Forward Delay    : 30
Tx Hold Count    : 6
Max Hop Count    : 38
BPDU Filtering   : Disabled
BPDU Guard       : Disabled
Error Recovery   : 0 seconds
Error Recovery   : Disabled
```

50.5 *statistics*

Using this command you can Clear STP port statistics.

Syntax:

```
statistics clear
```

Parameter:

clear

Clear the selected port statistics.

Example:

```
Switch(stp)# statistics clear
Port       Rx MSTP   Tx MSTP   Rx RSTP   Tx RSTP   Rx STP   Tx STP   Rx TCN
   T
x TCN   Rx Ill.  Rx Unk.
---------  --------  --------  --------  --------  -------  -------  -------
  -
------  -------  -------
```

50.6 *txhold*

Using this command you can Set TxHold.

Syntax:

```
txhold <1-10>
```

Parameter:

<1-10>

STP Transmit Hold Count (1-10).

Example:

```
Switch(stp)# txhold 9
Switch(stp)# show instance
STP Configuration
Protocol Version: MSTP
Max Age          : 39
Forward Delay    : 30
Tx Hold Count    : 9
Max Hop Count    : 38
BPDU Filtering   : Disabled
BPDU Guard       : Disabled
Error Recovery   : 0 seconds
Error Recovery   : Disabled
```

50.7 *version*

Using this command you can Set force-version.

Syntax:

```
version mstp|rstp|stp
```

Parameter:

mstp

Multiple Spanning Tree Protocol

rstp

Rapid Spanning Tree Protocol

stp

Spanning Tree Protocol

Example:

```
Switch(stp)# version stp
Switch(stp)# show instance
STP Configuration
Protocol Version: Compatible (STP)
Max Age          : 39
Forward Delay    : 30
Tx Hold Count    : 9
Max Hop Count    : 38
BPDU Filtering   : Disabled
BPDU Guard       : Disabled
Error Recovery   : 0 seconds
Error Recovery   : Disabled
```

50.8 *bpdufilter*

Using this command you can Set edge port BPDU Filtering what you set on the switch.

Syntax:

```
bpdufilter disable|enable
```

Parameter:

disable

Disables BPDU Filtering for Edge ports.

enable

Enables BPDU Filtering for Edge ports.

Example:

```
Switch(stp)# bpdufilter enable
Switch(stp)# show instance
STP Configuration
Protocol Version: Compatible (STP)
Max Age         : 39
Forward Delay   : 30
Tx Hold Count   : 9
Max Hop Count   : 38
BPDU Filtering  : Enabled
BPDU Guard      : Disabled
Error Recovery  : 0 seconds
Error Recovery  : Disabled
```

50.9 *bpduguard*

Using this command you can Set edge port BPDU Guard.

Syntax:

```
bpduguard disable|enable
```

Parameter:

disable

Disables BPDU Guard for Edge ports.

enable

Enables BPDU Guard for Edge ports.

Example:

```
Switch(stp)# bpduguard enable
Switch(stp)# show instance
STP Configuration
Protocol Version: Compatible (STP)
Max Age         : 39
Forward Delay   : 30
Tx Hold Count   : 9
Max Hop Count   : 38
BPDU Filtering  : Enabled
BPDU Guard      : Enabled
Error Recovery  : 0 seconds
Error Recovery  : Disabled
```

50.10 *migrate-check*

Using this command you can Set the STP mCheck (Migration Check) variable for ports.

Syntax:

```
migrate-check <port-list>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(stp)# migrate-check 1
```

50.11 *msti-vlan*

Using this command you can Map Vlan ID(s) to an MSTI.

Syntax:

```
msti-vlan add <0-7> <1-4094>
msti-vlan del <0-7>
```

Parameter:

add

add a VLAN to a MSTI.

del

clear MSTP MSTI VLAN mapping configuration.

<0-7>

STP bridge instance no (0-7, CIST=0, MSTI1=1, ...)

<1-4094>

available from 1 to 4094

Example:

```
Switch(stp)# msti-vlan add 1 4094
Switch(stp)# show msti-vlan
MSTI  VLANs mapped to MSTI
----  --------------------
MSTI1  4094
MSTI2  No VLANs mapped
MSTI3  No VLANs mapped
MSTI4  No VLANs mapped
MSTI5  No VLANs mapped
MSTI6  No VLANs mapped
MSTI7  No VLANs mapped
```

50.12 *p-autoEdge*

Using this command you can Set the STP autoEdge port parameter.

Syntax:

```
p-autoEdge aggregations|<port-list> disable|enable
```

Parameter:

aggregations

available value is for aggregated port.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables MSTP autoEdges

enable

Enables MSTP autoEdge

Example:

```
Switch(stp)# p-autoEdge aggregations enable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ------------------  ------------------  ---------------------
Aggr  Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Enabled

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ------------------  ------------------  ---------------------
1     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
3     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto


Switch(stp)# p-autoEdge 1 disable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ------------------  ------------------  ---------------------
Aggr  Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Enabled

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ------------------  ------------------  ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Disabled  Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
3     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
```

50.13 *p-bpduguard*

Using this command you can Set the bpduGuard port parameter.

Syntax:

```
p-bpduguard aggregations|<port-list> disable|enable
```

Parameter:

aggregations

available value is for aggregated port.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables BPDU Guard

enable

Enables BPDU Guard

Example:

```
Switch(stp)# p-bpduGuard aggregations enable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ------------------  ------------------  ---------------------
Aggr  Disabled  Disabled  Disabled   Disabled  Disabled  Enabled   Enabled

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ------------------  ------------------  ---------------------
1     Disabled  Disabled  Disabled   Disabled  Disabled  Disabled  Auto
2     Disabled  Disabled  Disabled   Disabled  Disabled  Disabled  Auto
3     Disabled  Disabled  Disabled   Disabled  Disabled  Disabled  Auto


Switch(stp)# p-bpduGuard 1 enable
Switch(stp)# show pconf
Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ------------------  ------------------  ---------------------
Aggr  Disabled  Disabled  Enabled   Disabled  Disabled  Enabled   Enabled

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ------------------  ------------------  ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
3     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
```

50.14 *p-cost*

Using this command you can Set the STP port instance path cost.

Syntax:

```
p-cost <0-7> aggregations|<port-list> <0-200000000>
```

Parameter:

<0-7>

STP bridge instance no (0-7, CIST=0, MSTI1=1, ...)

aggregations

available value is for aggregated port.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-200000000>

STP port path cost (1-200000000) or The value zero means auto status

Example:

```
Switch(stp)# p-cost 0 aggregations 2000000
Switch(stp)# show p-config 0

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
CIST  Aggr  2000000     128

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
CIST  1     Auto        128
CIST  2     Auto        128
CIST  3     Auto        128


Switch(stp)# p-cost 1 3 9999
Switch(stp)# show p-config 1

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
MSTI1  Aggr  Auto        128

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
MSTI1  1     Auto        128
MSTI1  2     Auto        128
MSTI1  3     9999        128
```

50.15 *p-edge*

Using this command you can Set the STP adminEdge port parameter.

Syntax:

```
p-edge aggregations|<port-list> disable|enable
```

Parameter:

aggregations

available value is for aggregated port.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables MSTP protocol

enable

Enables MSTP protocol

Example:

```
Switch(stp)# p-edge aggregations enable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ------------------ ------------------ ---------------------
Aggr  Disabled  Enabled   Enabled   Disabled  Disabled  Enabled   Enabled

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ------------------ ------------------ ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
```

50.16 *p-mode*

Using this command you can Set the STP enabling for a port.

Syntax:

```
p-mode aggregations|<port-list> disable|enable
```

Parameter:

aggregations

available value is for aggregated port.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables MSTP protocol

enable

Enables MSTP protocol

Example:

```
Switch(stp)# p-mode aggregations enable
Switch(stp)# show pconf

Port  Mode      AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ------------------  ------------------  ---------------------
Aggr  Enabled   Disabled  Enabled   Disabled  Disabled  Enabled   Enabled

Port  Mode      AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ------------------  ------------------  ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
```

50.17 *p-p2p*

Using this command you can Set the STP point2point port.

Syntax:

```
p-p2p aggregations|<port-list> auto|disable|enable
```

Parameter:

aggregations

available value is for aggregated port.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

auto

Automatic MSTP point2point detection

disable

Disables MSTP point2point

enable

Enables MSTP point2point

Example:

```
Switch(stp)# p-p2p aggregations auto
Switch(stp)# show pconf

Port  Mode      AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ------------------  ------------------  ---------------------
Aggr  Enabled   Disabled  Enabled   Disabled  Disabled  Enabled   Auto

Port  Mode      AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ------------------  ------------------  ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto


Switch(stp)# p-p2p 2 disable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ------------------  ------------------  ---------------------
Aggr  Enabled   Disabled  Enabled   Disabled  Disabled  Enabled   Auto

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ------------------  ------------------  ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Disabled
3     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
```

50.18 *p-priority*

Using this command you can Set the STP port instance priority.

Syntax:

```
p-priority <0-7> aggregations|<port-list> <0-240>
```

Parameter:

<0-7>

STP bridge instance no (0-7, CIST=0, MSTI1=1, ...)

aggregations

available value is for aggregated port.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-240>

STP bridge priority (0/16/32/48/.../224/240)

Example:

```
Switch(stp)# p-priority 3 aggregations 240
Switch(stp)# show p-config 3

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
MSTI3  Aggr  Auto        240

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
MSTI3  1     Auto        128
MSTI3  2     Auto        128


Switch(stp)# p-priority 1 2 224
Switch(stp)# show p-config 1

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
MSTI1  Aggr  Auto        128
```

```
MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
MSTI1  1     Auto         128
MSTI1  2     Auto         224
```

50.19 *priority*

Using this command you can Set the bridge instance priority.

Syntax:

```
priority <0-7> <0-61440>
```

Parameter:

<0-7>

STP bridge instance no (0-7, CIST=0, MSTI1=1, ...)

<0-61440>

STP bridge priority (0/4096/8192/12288/.../57344/61440)

Example:

```
Switch(stp)# priority 0 61440
Switch(stp)# show priority
MSTI#  Bridge Priority

-----  ----------------
CIST   61440
```

50.20 *r-role*

Using this command you can Set the MSTP restrictedRole port parameter.

Syntax:

```
r-role aggregations|<port-list> disable|enable
```

Parameter:

aggregations

available value is for aggregated port.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables MSTP restricted role

enable

Enables MSTP restricted role

Example:

```
Switch(stp)# r-role aggregations enable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  -----------------  -----------------  ---------------------
Aggr   Enabled   Disabled  Enabled   Enabled   Disabled  Enabled   Auto

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  -----------------  -----------------  ---------------------
1      Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2      Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Disabled
3      Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto


Switch(stp)# r-role 2 enable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  -----------------  -----------------  ---------------------
Aggr   Enabled   Disabled  Enabled   Enabled   Disabled  Enabled   Auto

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  -----------------  -----------------  ---------------------
1      Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2      Disabled  Disabled  Enabled   Enabled   Disabled  Disabled  Disabled
```

50.21 *r-tcn*

Using this command you can Set the MSTP restrictedTcn port parameter.

Syntax:

```
r-tcn aggregations|<port-list> disable|enable
```

Parameter:

aggregations

available value is for aggregated port.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables MSTP restricted TCN

enable

Enables MSTP restricted TCN

Example:

```
Switch(stp)# r-tcn aggregations enable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ------------------  ------------------  ---------------------
Aggr  Enabled   Disabled  Enabled   Enabled   Enabled   Enabled   Auto

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ------------------  ------------------  ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Enabled   Disabled  Disabled  Disabled
```

50.22 *recovery*

Using this command you can Set edge port error recovery timeout.

Syntax:

```
recovery <30-86400>
```

Parameter:

<30-86400>

Time before error-disabled ports are reenabled (30-86400 seconds, 0 disables)

Example:

```
Switch(stp)# recovery 86400
Switch(stp)# show instance
STP Configuration
Protocol Version: Compatible (STP)
Max Age         : 39
Forward Delay   : 30
Tx Hold Count   : 9
Max Hop Count   : 38
BPDU Filtering  : Enabled
BPDU Guard      : Enabled
Error Recovery  : 86400 seconds
Error Recovery  : Disabled
```

50.23 *show*

Using this command you can Show Region config, MSTI vlan mapping, instance parameters and port parameters.

Syntax:

```
show CName|statistics|instance|msti-vlan|pconf|priority
show status|p-config <0-7>
```

Parameter:

CName

Shows MSTP Configuration name

statistics

Shows STP port statistics

instance

Shows instance status

msti-vlan

Shows MSTP MSTI VLAN mapping configuration

pconf

Shows STP Port configuration

priority

Shows the bridge instance priority

status

Shows STP Bridge status

p-config

Shows the STP port instance configuration

<0-7>

STP bridge instance no (0-7, CIST=0, MSTI1=1, ...)

Example:

```
Switch(stp)# show cName
Configuration name: 00-40-c7-23-26-00
Configuration rev.: 0


Switch(stp)# show instance
STP Configuration
Protocol Version: MSTP
Max Age          : 20
Forward Delay    : 15
Tx Hold Count    : 6
Max Hop Count    : 20
BPDU Filtering   : Disabled
BPDU Guard       : Disabled
Error Recovery   : 0 seconds
Error Recovery   : Disabled


Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ------------------  ------------------  --------------------
Aggr   Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Enabled

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ------------------  ------------------  --------------------
1      Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
2      Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
3      Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
```

51 Syslog Commands

The Syslog is a standard for logging program messages . It allows separation of the software that generates messages from the system that stores them and the software that reports and analyzes them. It can be used as well a generalized informational, analysis and debugging messages. It is supported by a wide variety of devices and receivers across multiple platforms.

Command	Function
clear	Clear syslog entry
level	Configure syslog level
mode	Configure syslog mode
server	Configure syslog server IP address
show	Show syslog information

51.1 *clear*

clear.

Syntax:

```
clear
```

Example:

```
Switch(syslog)# clear
Switch(syslog)# show log
<0> Emergency: 0
<1> Alert    : 0
<2> Critical : 0
<3> Error    : 0
<4> Warning  : 0
<5> Notice   : 0
<6> Info     : 0
<7> Debug    : 0
    All      : 0

ID   Level     Time                Message
---- --------- ------------------- --------------------------------------
<none>
```

51.2 *level*

Using this command you can Configure syslog level.

Syntax:

```
level <0-7>
```

Parameter:

<0-7>

Severity level.

<0> Emergency: system is unusable

<1> Alert: action must be taken immediately

<2> Critical: critical conditions

<3> Error: error conditions

<4> Warning: warning conditions

<5> Notice: normal but significant condition

<6> Informational: informational messages

<7> Debug: debug-level messages

Example:

```
Switch(syslog)# level 7
Switch(syslog)# show config
Server Mode      : Disabled
Server Address 1 :
Server Address 2 :
Syslog Level     : Debug
```

51.3 *mode*

Using this command you can Configure syslog mode.

Syntax:

```
mode disable|enable
```

Parameter:

disable

Disable syslog mode.

enable

Enables syslog mode

Example:

```
Switch(syslog)# mode enable
Switch(syslog)# show config
Server Mode      : Enabled
Server Address 1 :
Server Address 2 :
Syslog Level     : Debug
```

51.4 *server*

Using this command you can Configure syslog server IP address.

Syntax:

```
server <1-2> <ip-hostname>
```

Parameter:

<1-2>

Syslog Server No.

<ip-hostname>

Syslog server IP address or host name

Example:

```
Switch(syslog)# server 2 192.168.6.1
Switch(syslog)# show config
Server Mode      : Enabled
Server Address 1 :
Server Address 2 : 192.168.6.1
Syslog Level     : Debug
```

51.5 *show*

Using this command you can Show syslog information.

Syntax:

```
show config
show log [<0-7>]
```

Parameter:

config

Shows syslog configuration.

<log-id>

Log ID

log

Shows syslog entry

<0-7>

Shows syslog entry that match the level

Example:

```
Switch(syslog)# show config
Server Mode      : Disabled
Server Address 1 :
Server Address 2 :
Syslog Level     : Info


Switch(syslog)# show detail-log 2
ID     : 2
Level  : Warning
Time   : 2014-01-01 01:00:27
Message:

Link up on port 2


Switch(syslog)# show log 2
<0> Emergency: 0
<1> Alert    : 0
<2> Critical : 0
<3> Error    : 0
<4> Warning  : 8
<5> Notice   : 0
<6> Info     : 12
<7> Debug    : 0
    All      : 20

ID   Level     Time                Message
---- --------- ------------------- --------------------------------------
<none>
```

52 System Commands

After you login, the switch shows you the system information. This section is default and tells you the basic information of the system, including "Model Name", "System Description", "Contact", "Device Name", "System Up Time", "BIOS Version", "Firmware Version", "Hardware-Mechanical Version", "Serial Number", "Host IP Address", "Host Mac Address", "Device Port", "RAM Size" , "Flash Size" and. With this information, you will know the software version used, MAC address, serial number, how many ports good and so on. This is helpful while malfunctioning.

Command	Function
contact	Configure system contact
location	Configure system location
name	Configure device name
show	Show system information

52.1 *contact*

Using this command you can Configure system contact.

Syntax:

```
contact <LINE>
```

Parameter:

<LINE>

Up to 255 characters describing system contact information.

Example:

```
GS-2326P(system)# contact LANCOM Systems GmbH  +49 (0)2405 49936-0
GS-2326P(system)#
```

52.2 *location*

Using this command you can Configure system location.

Syntax:

```
location <LINE>
```

Parameter:

<LINE>

Up to 255 characters describing system location.

Example:

```
GS-2326P(system)# location Wuerselen, Germany
GS-2326P(system)#
```

52.3 *name*

Using this command you can Configure device name .

Syntax:

```
name <devicename>
```

Parameter:

<devicename>

Up to 255 characters describing device name.

Example:

```
Switch(system)# name MyDevice
Switch(system)#
```

52.4 *show*

Using this command you can Show system information .

Syntax:

```
show
```

Example:

```
MyDevice(system)# show
Model Name                   : LANCOM GS-2326P
System Description          : 26-Port Layer-2 PoE+ Managed Gigabit Ethernet
 Switch with 2x SFP
Location                     : Wuerselen, Germany
Contact                      : LANCOM Systems GmbH +49 (0)2405 49936-0
Device Name                  : MyDevice
System Uptime                : 23:31:31
Current Time                 : 2014-01-01 23:31:31
BIOS Version                 : v1.00
Firmware Version             : v2.50
Hardware-Mechanical Version  : v1.01-v1.01
Serial Number                : 275032000216
Host IP Address              : 192.168.2.110
Subnet Mask                  : 255.255.255.0
Gateway IP Address           : 192.168.2.100
Host MAC Address             : 00-a0-57-1c-71-01
Console Baudrate             : 115200
```

```
RAM Size                    : 64
Flash Size                  : 16
CPU Load (100ms, 1s, 10s)   : 25%, 24%, 24%
Bridge FDB Size             : 8192 MAC addresses
Transmit Queue              : 8 queues per port
Maximum Frame Size          : 9600
```

53 Thermal Commands

The section describes the user to inspect and configure the current setting for controlling thermal protection. Thermal protection is used to protect the chip from getting overheated.

When the temperature exceeds the configured thermal protection temperature, ports will be turned off in order to decrease the power consumption. It is possible to arrange the ports with different priorities. Each priority can be given a temperature at which the corresponding ports shall be turned off.

Command	Function
port-priority	Configure the port priority
priority-temp	Configure the temperature at which the ports shall be shut down
show	Show thermal protection information

53.1 *port-priority*

Using this command you can Configure the port priority.

Syntax:

```
port-priority <port-list> <0-3>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<0-3>

<0-3>:

Example:

```
Switch(thermal)# port-priority 1 3
Switch(thermal)# show
Priority  Temperature
--------  -----------
0         255 C
1         255 C
2         255 C
3         255 C

Port Priority Chip Temperature Port status
---- -------- ---------------- --------------------------------------------
1     3                     60 C Port link operating normally
2     0                     59 C Port link operating normally
3     0                     59 C Port link operating normally
```

53.2 *priority-temp*

Using this command you can Configure the temperature at which the ports shall be shut down.

Syntax:

```
priority-temp <0-3> <0-255>
```

Parameter:

<0-3>

Port priority

<0-255>

The temperature at which the ports with the corresponding priority will be turned off

Example:

```
Switch(thermal)# priority-temp 1 99
Switch(thermal)# show
Priority  Temperature
--------  -----------
0         255 C
1         99 C
2         255 C
3         255 C

Port Priority Chip Temperature Port status
---- -------- ---------------- ---------------------------------------------
1     3                     59 C Port link operating normally
2     0                     59 C Port link operating normally
3     0                     59 C Port link operating normally
```

53.3 *show*

Using this command you can Show thermal protection information.

Syntax:

```
show
```

Example:

```
Switch(thermal)# show
Priority  Temperature
--------  -----------
0         255 C
1         255 C
2         255 C
3         255 C

Port Priority Chip Temperature Port status
---- -------- ---------------- ---------------------------------------------
```

```
1     0                     59 C Port link operating normally
2     0                     59 C Port link operating normally
3     0                     59 C Port link operating normally
4     0                     59 C Port link operating normally
```

54 Time Commands

This section allows configuration of the switch time. Time menu includes time and NTP configuration.

The switch provides manual and automatic ways to set the system time via NTP. Manual setting is simple and you just input "Year", "Month", "Day", "Hour", "Minute" and "Second" within the valid value range indicated in each item.

Command	Function
clock-source	Enable/Diable applicant administrative control
daylight	Set the GARP join timer configuration
delete	Set the GARP leave all timer configuration
manual	Set the GARP leave timer configuration
ntp	Configure NTP server
request-interval	Configure NTP Request Interval
show	Show the GARP configuration
time-zone	Configure system time zone
tries-number	Configure NTP number of tries

54.1 *clock-source*

Using this command you can configure the clock source.

Syntax:

```
clock-source local|ntp
```

Parameter:

local

Local settings.

ntp

Use NTP to synchronize system clock.

Example:

```
Switch(time)# clock-source ntp
Switch(time)# show daylight
Clock Source           : NTP Server
Local Time             : 2014-01-01 07:19:44 (YYYY-MM-DD HH:MM:SS)
Time Zone Offset       : 0 (min)
Daylight Savings       : Disabled
```

54.2 *daylight*

Using this command you can indicates the Daylight Savings operation.

Syntax:

```
daylight disable
daylight enable <1-1440> By-dates <YYYY:MM:DD> <HH:MM> <YYYY:MM:DD> <HH:MM>
daylight enable <1-1440> Recurring <DAY> <WORD> <MONTH> <HH:MM> <DAY> <WORD> <MONTH> <HH:MM>
```

Parameter:

disable

Disables Daylight Savings operation.

enable

Enables Daylight Savings operation.

<1-1440>

Minute. Time Set Offset.

By-dates

Manually enter day and time that DST starts and ends

<YYYY:MM:DD>

Day that DST starts

<HH:MM>

Time that DST starts

<YYYY:MM:DD>

Day that DST ends

<HH:MM>

Time that DST ends

Recurring

DST occurs on the same date every year

<DAY>

Sun, Mon, Tue, Wed, Thu, Fri, Sat

at which DST begins every year

<WORD>

first, 2, 3, 4, last

at which DST begins every year

<MONTH>

Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec

<HH:MM>

The time at which DST begins every year

<DAY>

Sun, Mon, Tue, Wed, Thu, Fri, Sat

at which DST ends every year

<WORD>

first, 2, 3, 4, last

at which DST ends every year

<MONTH>

Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec

at which DST ends every year

<HH:MM>

The time at which DST ends every year

Example:

```
Switch(time)# daylight enable 1440 by-dates 2015:03:01 10:00 2015:04:01
09:00
Switch(time)# show daylight
Clock Source          : NTP Server
Local Time            : 2014-01-01 07:23:21 (YYYY-MM-DD HH:MM:SS)
Time Zone Offset      : 0 (min)
Daylight Savings      : Enabled
Time Set Offset       : 1440 (min)
Daylight Savings Type : By dates
From                  : 2015-03-01 10:00 (YYYY-MM-DD HH:MM)
To                    : 2015-04-01 09:00 (YYYY-MM-DD HH:MM)


Switch(time)# daylight enable 1000 recurring wed 2 jan 11:00 sun 3 may 12:00
Switch(time)# show daylight
Clock Source          : NTP Server
Local Time            : 2014-01-01 07:28:43 (YYYY-MM-DD HH:MM:SS)
Time Zone Offset      : 0 (min)
Daylight Savings      : Enabled
Time Set Offset       : 1000 (min)
Daylight Savings Type : Recurring
From                  : Day:Wed Week:2     Month:Jan Time:11:00
To                    : Day:Sun Week:3     Month:May Time:12:00
```

54.3 *delete*

Using this command you can delete NTP server.

Syntax:

```
delete <1-5>
```

Parameter:

<1-5>

NTP server index.

Example:

```
Switch(time)# delete 1
```

54.4 *manual*

Using this command you can configure system time manually.

Syntax:

```
manual <YYYY:MM:DD> <HH:MM:SS>
```

Parameter:

<YYYY:MM:DD>

Date of system, example: 2014:01:12.

<HH:MM:SS>:

Time, example: 23:10:55.

Example:

```
Switch(time)# manual 2014:01:12 10:00:00
Switch(time)# show daylight
Clock Source           : Local Settings
Local Time             : 2014-01-12 10:00:07 (YYYY-MM-DD HH:MM:SS)
Time Zone Offset       : 0 (min)
Daylight Savings       : Enabled
Time Set Offset        : 1000 (min)
Daylight Savings Type  : Recurring
From                   : Day:Wed Week:2     Month:Jan Time:11:00
To                     : Day:Sun Week:3     Month:May Time:12:00
```

54.5 *ntp*

Using this command you can configure NTP server.

Syntax:

```
ntp <1-5> <ipv6-address>|<ip-hostname>
```

Parameter:

<1-5>

NTP server index.

<ipv6-address>

NTP server IPv6 address.

IPv6 address is in 128-bit records represented as eight fields of up to four hexadecimal digits with a colon separate each field (":"). For example, `fe80::215:c5ff:fe03:4dc7`. The symbol "::" is a special syntax that can be used as a shorthand way of representing multiple 16-bit groups of contiguous zeros; but it can only appear once. It also used a following legally IPv4 address. For example, `::192.1.2.34`.

<ip-hostname>

NTP server IP address or hostname

Example:

```
Switch(time)# ntp 1 64.90.182.55
Switch(time)# show ntp
Index   Server IP host address or a host name string
-----   ------------------------------------------------------
1       64.90.182.55
```

54.6 *request-interval*

Using this command you can configure the request interval of the NTP server.

Syntax:

```
request-interval <sec>
```

Parameter:

<sec>

60 ~ 999999999(sec)

Example:

```
Switch(time)# request-interval 86400
Switch(time)#
```

54.7 *show*

Using this command you can show time information.

Syntax:

```
show daylight|ntp
```

Parameter:

daylight

Shows time information.

ntp

Shows NTP information.

Example:

```
Switch(time)# show daylight
Clock Source          : Local Settings
Local Time            : 2014-01-01 07:17:29 (YYYY-MM-DD HH:MM:SS)
Time Zone Offset      : 0 (min)
Daylight Savings      : Disabled



Switch(time)# show ntp
Index   Server IP host address or a host name string
-----   ------------------------------------------------------
1
2
3
4
5
```

54.8 *time-zone*

Using this command you can configure system time zone.

Syntax:

```
time-zone -<HH:MM>|[+]<HH:MM>
```

Parameter:

<HH:MM>

The time difference between GMT and local time, the possible value is from GMT-12:00 to GMT+12:00.

Example:

```
Switch(time)# time-zone 01:00
Switch(time)# show daylight
Clock Source          : NTP Server
Local Time            : 2014-01-12 11:14:24 (YYYY-MM-DD HH:MM:SS)
Time Zone Offset      : 60 (min)
Daylight Savings      : Enabled
Time Set Offset       : 1000 (min)
Daylight Savings Type : Recurring
From                  : Day:Wed Week:2     Month:Jan Time:11:00
To                    : Day:Sun Week:3     Month:May Time:12:00
```

54.9 *tries-number*

Using this command you can configure the number of tries to request the time from the NTP server.

Syntax:

```
tries-number <Number of tries>
```

Parameter:

<Number of tries>

0 ~ 999999999

Example:

```
Switch(time)# tries-number 5
Switch(time)#
```

55 UPnP Commands

UPnP is an acronym for Universal Plug and Play. The goals of UPnP are to allow devices to connect seamlessly and to simplify the implementation of networks in the home (data sharing, communications, and entertainment) and in corporate environments for simplified installation of computer components.

Command	Function
duration	Configure the advertising duration
mode	Configure UPnP mode
show	Show UPnP configuration
ttl	Configure the TTL value of the IP header in SSDP message

55.1 *duration*

Using this command you can Configure the advertising duration.

Syntax:

```
duration <100-86400>
```

Parameter:

<100-86400>

UPnP duration range.

Example:

```
Switch(upnp)# duration 86400
Switch(upnp)# show
UPnP Mode                    : Disabled
UPnP TTL                     : 4
UPnP Advertising Duration : 86400
```

55.2 *mode*

Using this command you can Configure UPnP mode.

Syntax:

```
mode disable|enable
```

Parameter:

disable

Disables UPnP.

enable

Enables UPnP

Example:

```
Switch(upnp)# mode enable
Switch(upnp)# show
UPnP Mode                  : Enabled
UPnP TTL                   : 4
UPnP Advertising Duration : 86400
```

55.3 *show*

Using this command you can Show UPnP configuration.

Syntax:

```
show
```

Example:

```
Switch(upnp)# show
UPnP Mode                  : Enabled
UPnP TTL                   : 4
UPnP Advertising Duration : 86400
```

55.4 *ttl*

Using this command you can Configure the TTL value of the IP header in SSDP message.

Syntax:

```
ttl <1-255>
```

Parameter:

<1-255>

UPnP TTL value..

Example:

```
Switch(upnp)# ttl 255
Switch(upnp)# show
UPnP Mode                  : Enabled
UPnP TTL                   : 255
UPnP Advertising Duration : 86400
```

56 VCL Commands

VLAN Control List indicates two types of VLAN, which are MAC address-based VLAN and Protocol -based VLAN.

MAC address-based VLAN decides the VLAN for forwarding an untagged frame based on the source MAC address of the frame.

MAC-based VLANs group VLAN members by MAC address. With MAC-based VLAN configured, the device adds a VLAN tag to an untagged frame according to its source MAC address. MAC-based VLANs are mostly used in conjunction with security technologies such as 802.1X to provide secure, flexible network access for terminal devices.

Protocol -based VLAN supports Protocol including Ethernet LLC and SNAP Protocol.

Command	Function
delete	Delete command
mac-vlan	Configure MAC-based VLAN membership
protocol-vlan	Configure protocol-based VLAN
show	Show VCL status command

56.1 *delete*

Using this command you can Delete command.

ⓘ You need to set MAC VLAN or Protocol VLAN first, then you could delete and clear the configuration.

Syntax:

```
delete mac-vlan <mac-address>
delete protocol-vlan protocol ethernet <0x0600-0xffff>
delete protocol-vlan protocol llc <0x00-0xff> <0x00-0xff>
delete protocol-vlan protocol snap <oui-address> <0x0000-0xffff>
delete protocol-vlan vlan <WORD>
```

Parameter:

mac-vlan

Delete MAC-based VLAN entry

<mac-address>

MAC address, format 0a-1b-2c-3d-4e-5f

protocol-vlan

Delete protocol-based VLAN entry

protocol

Delete protocol-based VLAN ethertype protocol to group mapping

Ethernet

Delete protocol-based VLAN Ethernet-II protocol to group mapping

<0x0600-0xffff>

Ether type

llc

Delete protocol-based VLAN LLC protocol to group mapping

<0x00-0xff>

DSAP value

<0x00-0xff>

SSAP value

snap

Delete protocol-based VLAN SNAP protocol to group mapping

<oui-address>

OUI address, format : 00-40-c7

<0x0000-0xffff>

Protocol ID is the Ethernet type field value for the protocol running on top of SNAP

vlan

Delete protocol-based VLAN group to VLAN mapping

<WORD>

Up to 16 characters to describe protocol-based VLAN group name

Example:

```
Switch(vcl)# delete mac-vlan 00-00-00-00-00-11
Switch(vcl)# delete protocol-vlan vlan david
```

56.2 *mac-vlan*

Using this command you can Configure MAC-based VLAN membership.

Syntax:

```
mac-vlan <mac-address> <1-4094> <port-list>
```

Parameter:

<mac-address>

MAC address, format 0a-1b-2c-3d-4e-5f

<1-4094>

VLAN ID, possible values from 1 to 4094.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(vcl)# mac-vlan 0a-1b-2c-3d-4e-5f 4094 2
Switch(vcl)# show mac-config
MAC Address        VID   Ports
-----------------  ----  -----
0a-1b-2c-3d-4e-5f  4094  2
```

56.3 *protocol-vlan*

Using this command you can Configure protocol-based VLAN.

Syntax:

```
protocol-vlan protocol ethernet <0x0600-0xffff> <vgroup>
protocol-vlan protocol llc <0x00-0xff> <0x00-0xff> <vgroup>
protocol-vlan protocol snap <oui-address> <0x0000-0xffff>
protocol-vlan vlan <vgroup> <1-4094> <port-list>
```

Parameter:

protocol

Protocol-based VLAN ethertype protocol to group mapping

ethernet

Protocol-based VLAN Ethernet-II protocol to group mapping

<0x0600-0xffff>

Ether type

<vgroup>

Up to 16 characters to describe protocol-based VLAN group name

llc

Protocol-based VLAN LLC protocol to group mapping

<0x00-0xff>

DSAP value

<0x00-0xff>

SSAP value

<vgroup>

Up to 16 characters to describe protocol-based VLAN group name

snap

Protocol-based VLAN SNAP protocol to group mapping

<oui-address>

OUI address, format : 00-40-c7

<0x0000-0xffff>

Protocol ID is the Ethernet type field value for the protocol running on top of SNAP

vlan

Protocol-based VLAN group to VLAN mapping

<vgroup>

Up to 16 characters to describe protocol-based VLAN group name

<1-4094>

VLAN ID, possible values from 1 to 4094.

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(vcl)# protocol-vlan protocol Ethernet 0XFFFF david
Switch(vcl)# show protocol-vlan
Protocol Type  Protocol (Value)          Group Name
-------------  ------------------------  ----------------
Ethernet       ETYPE:0xffff              david


Switch(vcl)# protocol-vlan protocol snap 00-10-cc 0xeeee kevin
Switch(vcl)# show protocol-vlan
Protocol Type  Protocol (Value)          Group Name
-------------  ------------------------  ----------------
SNAP           OUI-00:10:cc; PID:0xeeee  kevin
Ethernet       ETYPE:0xffff              david


Switch(vcl)# protocol-vlan vlan jack 3000 1
Switch(vcl)# show protocol-vlan
Protocol Type  Protocol (Value)          Group Name
-------------  ------------------------  ----------------
SNAP           OUI-00:10:cc; PID:0xeeee  kevin
Ethernet       ETYPE:0xffff              david

Group Name        VID   Ports
----------------  ----  -----
jack              3000  1
```

56.4 *show*

Using this command you can Show VCL status command.

Syntax:

```
show mac-config
show mac-status static
show protocol-vlan
```

Parameter:

mac-config

Shows MAC-based VLAN entry

mac-status

Shows MAC-based VLAN status

static

Shows the VCL MAC-based VLAN entries configured by the administrator

protocol-vlan

Shows protocol-based VLAN configuration

Example:

```
Switch(vcl)# show mac-config
MAC Address        VID   Ports
-----------------  ----  -----
00-00-00-00-00-00  3     5,6
00-00-00-00-00-11  1     1,2
00-00-00-00-00-22  2     3,4
00-00-00-00-00-33  1     2,3

Switch(vcl)# show protocol-vlan
Protocol Type  Protocol (Value)          Group Name
-------------  ------------------------  ----------------
SNAP           OUI-00:10:cc; PID:0xeeee  kevin
Ethernet       ETYPE:0xffff              david

Group Name        VID   Ports
----------------  ----  -----
jack              3000  1
```

57 VLAN Commands

To assign a specific VLAN for management purpose. The management VLAN is used to establish an IP connection to the switch from a workstation connected to a port in the VLAN. This connection supports a VSM, SNMP, and Telnet session. By default, the active management VLAN is VLAN 1. Only one management VLAN can be active at a time.

Command	Function
delete	Delete VLAN group
egress-rule	Configure egress-rule of switch ports
forbidden	Configure forbidden VLAN group
frame-type	Configure frame type of switch ports
ingress-filtering	Configure ingress filtering of switch ports
port-type	Configure port type of switch ports
pvid	Configure port VLAN ID
show	Show VLAN information
tag-group	Configure tag-based VLAN group
tpid	Configure the TPID used for Custom S-ports. This is a global setting for all the Custom S-ports

57.1 *delete*

Using this command you can Delete VLAN group.

Syntax:

```
delete forbidden|group <1-4094>
```

Parameter:

forbidden

Delete VLAN forbidden group

group

Delete tag-based VLAN group

<1-4094>

VLAN ID, possible values from 1 to 4094.

Example:

```
Switch(vlan)# delete forbidden 1
Switch(vlan)# delete group 1
```

57.2 *egress-rule*

Using this command you can Configure egress-rule of switch ports.

Syntax:

```
egress-rule <port-list> access|hybrid|trunk
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

access

Untag all frames

hybrid

Tag all frames except VLAN ID same as PVID

trunk

Tag all frames

Example:

```
Switch(vlan)# egress-rule 1 access
Switch(vlan)# egress-rule 2 hybrid
Switch(vlan)# egress-rule 3 trunk
Switch(vlan)# show port-config
TPID for Custom S-port : 0x88a

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     1     All         Disabled        Access       UnAware
2     1     All         Disabled        Hybrid       UnAware
3     1     All         Disabled        Trunk        UnAware
```

57.3 *forbidden*

Using this command you can Configure forbidden VLAN group.

Syntax:

```
forbidden <1-4094> <WORD> <port-list>
```

Parameter:

<1-4094>

VLAN ID, possible values from 1 to 4094.

<WORD>

Up to 33 characters describing VLAN name

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(vlan)# forbidden 1 david 2-5
Switch(vlan)# show forbidden
VID   VLAN Name                         Ports
----  --------------------------------  ------------------
1     david                              2-5
```

57.4 *frame-type*

Using this command you can Configure frame type of switch ports.

Syntax:

```
frame-type <port-list> all|tagged|untagged
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

all

Accept all frames

tagged

Accept tagged frames only

untagged

Accept untagged frames only

Example:

```
Switch(vlan)# frame-type 1 tagged
Switch(vlan)# frame-type 2 untagged
Switch(vlan)# show port-config
TPID for Custom S-port : 0x88a8

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     1     Tagged      Disabled        Access       UnAware
2     1     Untagged    Disabled        Hybrid       UnAware
3     1     All         Disabled        Trunk        UnAware
```

57.5 *ingress-filtering*

Using this command you can Configure ingress filtering of switch ports.

Syntax:

```
ingress-filtering <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disables ingress filtering

enable

Enables ingress filtering. If ingress port is not a member of the classified VLAN of the frame, the frame is discarded

Example:

```
Switch(vlan)# ingress-filtering 1 enable
Switch(vlan)# show port-config
TPID for Custom S-port : 0x88a8

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     1     Tagged      Enabled         Access       UnAware
2     1     Untagged    Disabled        Hybrid       UnAware
3     1     All         Disabled        Trunk        UnAware
```

57.6 *port-type*

Using this command you can Configure port type of switch ports.

Syntax:

```
port-type <port-list> c-port|s-custom-port|s-port|unaware
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

c-port

Customer port

s-custom-port

Custom Service port

s-port

Service port

unaware

VLAN unaware port

Example:

```
Switch(vlan)# port-type 2 c-port
Switch(vlan)# port-type 3 s-port
Switch(vlan)# port-type 4 s-custom-port
Switch(vlan)# show port-config
TPID for Custom S-port : 0x88a8

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     1     Tagged      Enabled         Access       UnAware
2     1     Untagged    Disabled        Hybrid       C-Port
3     1     All         Disabled        Trunk        S-Port
4     1     All         Disabled        Hybrid       S-Custom-Port
```

57.7 *pvid*

Using this command you can Configure port VLAN ID.

Syntax:

```
pvid <port-list> <1-4094>
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

<1-4094>

VLAN ID, possible values from 1 to 4094.

Example:

```
Switch(vlan)# pvid 1 4000
Switch(vlan)# show port-config
TPID for Custom S-port : 0x88a8

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     4000  All         Disabled        Hybrid       UnAware
2     1     All         Disabled        Hybrid       UnAware
3     1     All         Disabled        Hybrid       UnAware
```

57.8 *show*

Using this command you can Show VLAN information.

Syntax:

```
show forbidden|port-config
show port-status (combined|gvrp|mstp|mvr|nas|static|voice)
show vlan [combined|gvrp|mstp|mvr|nas|static|vcl|voice)]
```

Parameter:

forbidden

Shows VLAN forbidden group

port-config

Shows VLAN port configuration

port-status

Show VLAN port status

combined

VLAN port status for combined VLAN Users

gvrp

VLAN port status for GVRP

mstp

VLAN port status for MSTP

mvr

VLAN port status for MVR

nas

VLAN port status for NAS

static

Static VLAN port status

voice

VLAN port status for Voice VLAN

vlan

Shows VLAN group

combined

Shows all the combined VLAN database

gvrp

Shows the VLANs configured by GVRP

mstp

Shows the VLANs configured by MSTP

mvr

Shows the VLANs configured by MVR

nas

Shows the VLANs configured by NAS

static

Shows the VLAN entries configured by the administrator

vcl

Shows the VLANs configured by VCL

voice

Shows the VLANs configured by Voice VLAN

Example:

```
Switch(vlan)# show port-config
TPID for Custom S-port : 0x88a8

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     1     All         Disabled        Hybrid       UnAware
2     1     All         Disabled        Hybrid       UnAware
3     1     All         Disabled        Hybrid       UnAware


Switch(vlan)# show port-status combined
Port  PVID  Frame Type  Ingress Filter Tx Tag       UVID  Port Type
Conflict
----  ----  ----------  -------------- -----------  ----  -------------
--------
1     1     All         Disabled       Untag This   1     UnAware       No
2     1     All         Disabled       Untag This   1     UnAware       No
3     1     All         Disabled       Untag This   1     UnAware       No


Switch(vlan)# show vlan combined
VID   VLAN Name                         User        Ports
----  --------------------------------  ----------  -----------------
1     default                           Combined    1-26
```

57.9 *tag-group*

Using this command you can Configure tag-based VLAN group.

Syntax:

```
tag-group <1-4094> <name> <port-list>
```

Parameter:

<1-4094>

VLAN ID, possible values from 1 to 4094.

<name>

Up to 33 characters describing VLAN name

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

Example:

```
Switch(vlan)# tag-group 3000 david 2
Switch(vlan)# show vlan
VID   VLAN Name                         User        Ports
----  --------------------------------  ----------  ------------------
1     default                           Static      1-26
3000  david                              Static      2
```

57.10 *tpid*

Using this command you can Configure the TPID used for Custom S-ports. This is a global setting for all the Custom S-ports.

Syntax:

```
tpid <0x0600-0xffff>
```

Parameter:

<0x0600-0xffff>

Configure TPID value, available value is from 0x600 to 0xffff

Example:

```
Switch(vlan)# tpid 0xffff
Switch(vlan)# show port-config
TPID for Custom S-port : 0xffff

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     1     All         Disabled        Hybrid       UnAware
2     1     All         Disabled        Hybrid       UnAware
3     1     All         Disabled        Hybrid       UnAware
```

58 Voice VLAN Commands

Voice VLAN is VLAN configured specially for voice traffic. By adding the ports with voice devices attached to voice VLAN, we can perform QoS-related configuration for voice data, ensuring the transmission priority of voice traffic and voice quality.

The Voice VLAN feature enables voice traffic forwarding on the Voice VLAN, then the switch can classify and schedule network traffic. It is recommended that there be two VLANs on a port - one for voice, one for data. Before connecting the IP device to the switch, the IP phone should configure the voice VLAN ID correctly.

Command	Function
config	Configure Voice VLAN
delete	Delete commands
discovery	Configure Voice VLAN discovery protocol
oui	Create Voice VLAN OUI entry. Modify OUI table will restart auto detect OUI process
port-mode	Configure Voice VLAN port mode
security	Configure Voice VLAN port security mode
show	Show Voice VLAN information

58.1 *config*

Using this command you can Configure Voice VLAN.

Syntax:

```
config disable
config enable <1-4094> <10-1000000> <0-7>
```

Parameter:

disable

Disable Voice VLAN mode operation.

enable

Enables Voice VLAN mode operation.

<1-4094>

VLAN ID, possible values from 1 to 4094..

<10-1000000>

Voice VLAN secure aging time, available value is from 10 to 1000000.

<0-7>

Voice VLAN traffic class, all traffic on the Voice VLAN will apply this class, available value is from 0(Low) to 7(High).

Example:

```
Switch(voice-vlan)# config enable 2 8888 7
Switch(voice-vlan)# show config
Voice VLAN Mode               : Enabled
Voice VLAN VLAN ID            : 2
Voice VLAN Age Time(seconds)  : 8888
Voice VLAN Traffic Class      : 7

Port  Mode      Security  Discovery Protocol
----  --------  --------  ------------------
1     Disabled  Disabled  OUI
2     Disabled  Disabled  OUI
3     Disabled  Disabled  OUI
```

58.2 *delete*

Using this command you can Delete command.

Syntax:

```
delete oui <oui-address>
```

Parameter:

oui

Delete Voice VLAN OUI entry. Modify OUI table will restart auto detect OUI process.

<oui-address>

OUI address, format : 0a-1b-2c.

Example:

```
Switch(voice-vlan)# delete oui 0a-1b-2c
```

58.3 *discovery*

Using this command you can Configure Voice VLAN discovery protocol.

Syntax:

```
discovery <port-list> both|lldp|oui
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

both

Both OUI and LLDP.

lldp

Detect telephony device by LLDP.

oui

Delete Voice VLAN OUI entry. Modify OUI table will restart auto detect OUI process.

Example:

```
Switch(voice-vlan)# discovery 2 both
Switch(voice-vlan)# discovery 3 lldp
Switch(voice-vlan)# show config
Voice VLAN Mode               : Enabled
Voice VLAN VLAN ID            : 2
Voice VLAN Age Time(seconds)  : 8888
Voice VLAN Traffic Class      : 7

Port  Mode      Security  Discovery Protocol
----  --------  --------  ------------------
1     Disabled  Disabled  OUI
2     Disabled  Disabled  Both
3     Disabled  Disabled  LLDP
```

58.4 *oui*

Using this command you can Create Voice VLAN OUI entry. Modify OUI table will restart auto detect OUI process.

Syntax:

```
oui <oui-address> [<description>]
```

Parameter:

<oui-address>

OUI address, format : 0a-1b-2c.

<description>

Up to 32 characters describing OUI address.

Example:

```
Switch(voice-vlan)# oui 0a-1b-2c david
Switch(voice-vlan)# show oui
No  Telephony OUI  Description
--  -------------  ----------------
1   00-01-E3       Siemens AG phones
2   00-03-6B       Cisco phones
3   00-0F-E2       H3C phones
4   00-60-B9       Philips and NEC AG phones
5   00-D0-1E       Pingtel phones
6   00-E0-75       Polycom phones
7   00-E0-BB       3Com phones
8   0A-1B-2C       david
```

58.5 *port-mode*

Using this command you can Configure Voice VLAN port mode.

Syntax:

```
port-mode <port-list> auto|disable|force
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

auto

Enables auto detect mode. It detects whether there is VoIP phone attached on the specific port and configure the Voice VLAN members automatically.

disable

Disjoin from Voice VLAN

force

Forced join to Voice VLAN

Example:

```
Switch(voice-vlan)# port-mode 1 auto
Switch(voice-vlan)# port-mode 2 force
Switch(voice-vlan)# show config
Voice VLAN Mode               : Enabled
Voice VLAN VLAN ID            : 2
Voice VLAN Age Time(seconds)  : 8888
Voice VLAN Traffic Class      : 7

Port  Mode      Security  Discovery Protocol
----  --------  --------  ------------------
1     Auto      Disabled  OUI
2     Forced    Disabled  OUI
3     Disabled  Disabled  OUI
```

58.6 *security*

Using this command you can Configure Voice VLAN port security mode.

Syntax:

```
security <port-list> disable|enable
```

Parameter:

<port-list>

Port list, possible values depending on distinct hardware model. Individual ports are separated by comma, port ranges are joined by hyphen (1,3-5).

disable

Disjoin from Voice VLAN

enable

Enables Voice VLAN security mode. When the function is enabled, all non-telephone MAC address in Voice VLAN will be blocked 10 seconds

Example:

```
Switch(voice-vlan)# security 1 enable
Switch(voice-vlan)# show config
Voice VLAN Mode               : Enabled
Voice VLAN VLAN ID            : 2
Voice VLAN Age Time(seconds)  : 8888
Voice VLAN Traffic Class      : 7

Port  Mode      Security  Discovery Protocol
----  --------  --------  ------------------
1     Disabled   Enabled   OUI
2     Disabled   Disabled  OUI
3     Disabled   Disabled  OUI
```

58.7 *show*

Using this command you can Show Voice VLAN information.

Syntax:

```
show config|oui
```

Parameter:

config

Shows Voice VLAN configuration.

oui

Shows OUI address

Example:

```
Switch(voice-vlan)# show config
Voice VLAN Mode               : Disabled
Voice VLAN VLAN ID            : 1000
Voice VLAN Age Time(seconds)  : 86400
Voice VLAN Traffic Class      : 7

Port  Mode      Security  Discovery Protocol
----  --------  --------  ------------------
1     Disabled  Disabled  OUI
```

```
2     Disabled  Disabled  OUI
3     Disabled  Disabled  OUI


Switch(voice-vlan)# show oui
No  Telephony OUI  Description
--  -------------  ----------------
1   00-01-E3       Siemens AG phones
2   00-03-6B       Cisco phones
3   00-0F-E2       H3C phones
4   00-60-B9       Philips and NEC AG phones
5   00-D0-1E       Pingtel phones
6   00-E0-75       Polycom phones
7   00-E0-BB       3Com phones
```