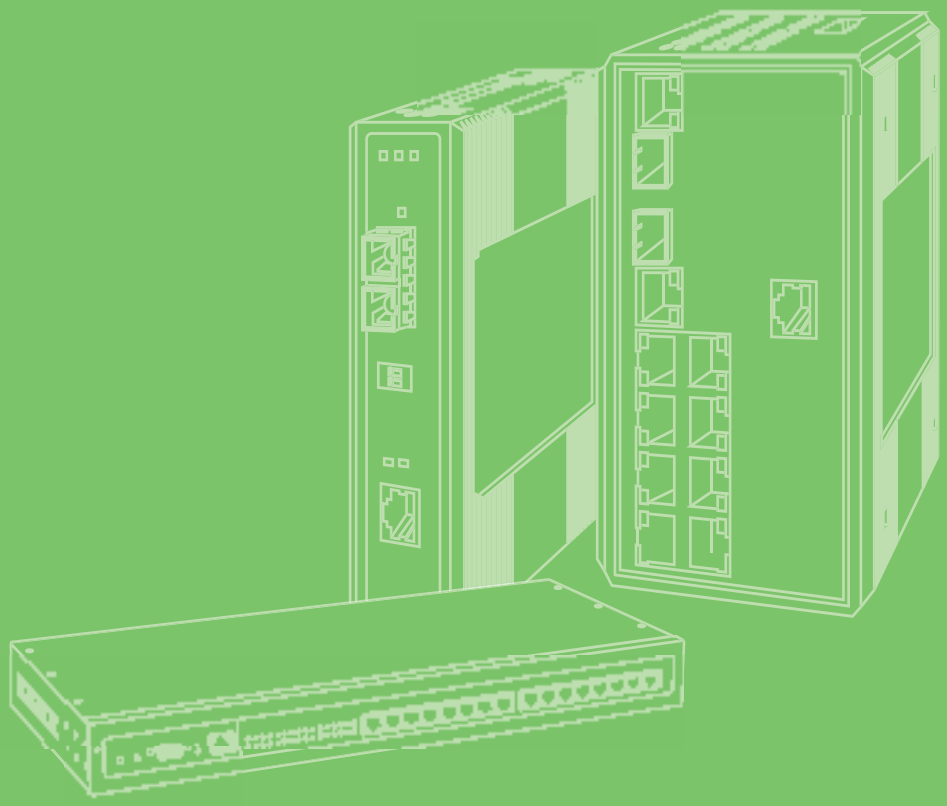
User Manual



EKI-7000 Series

Command Line Interface

ADVANTECH

Enabling an Intelligent Planet

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   - A complete description of the problem
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Firmware Compatibility

This document contains references to information regarding the CLI interface. The intent of this document is to provide guidance on identifying the CLI functions for the following firmware version.

Firmware version: 1.01.xx

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Warnings, Cautions and Notes

Warning! *Warnings indicate conditions, which if not observed, can cause personal injury!*

Caution! *Cautions are included to help you avoid damaging hardware or losing data. e.g.*

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Note! *Notes provide optional additional information.*

Document Feedback

To assist us in making improvements to this manual, we would welcome comments and constructive criticism. Please send all such - in writing to: support@advantech.com

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Chapter 1

Command Line Interface

1.1 Using the Command-Line Interface

The Advantech IOS command-line interface (CLI) is the primary user interface used to configure, monitor, and maintain Advantech devices. The user interface allows you to directly execute CLI commands.

This chapter describes the basic features of the Advantech IOS CLI and how to use them. Topics covered include the following:

- Layer 2 features
- Multicast
- IGMP Snooping
- MLD Snooping
- Redundancy
- QoS
- Security
- Management
- Diagnostic

1.1.1 Initially Configuring a Device

The initial configuration of a device varies by platform. This document provides configuration information for the listed devices.

After initially configuring and connecting the device to the network, you can configure the device by using the remote access method, such as Telnet or Secure Shell (SSH), to access the CLI or by using the configuration method provided on the device, such as Security Device Manager.

1.1.2 Understanding Command Syntax

The command syntax is the format used for entering CLI commands. The commands are derived from the use of the command, keywords, and arguments. The keywords are alphanumeric strings used literally, while arguments are used as placeholders for required values.

1.1.3 Understanding Enable and Enable Secret Passwords

Some privileged EXEC commands are used for actions that impact the system, and it is recommended that you set a password for these commands to prevent unauthorized use. Two types of passwords, enable (not encrypted) and enable secret (encrypted), can be set.

The following commands set these passwords and are issued in global configuration mode:

- enable password
- enable secret password

1.1.4 Abbreviating Commands

The CLI commands can be used in an abbreviated form to execute. The CLI recognizes the abbreviates uniquely identifying the command. In the following example the `show version` command is used to illustrate the correct usage:

Full command: `show version`

Correct abbreviation: `sh ver`

However, attempting to execute the `show` command by using the single letter `s` would be invalid as `s` may refer to the commands `show` or `save`. For the same reason the variable `version` cannot be abbreviated to a single `v` as it may represent the variable `vlan`, etc.

Full command: `show version`

Incorrect abbreviation: `s version, s ver, sh v`

1.2 L2 Features

1.2.1 Port Configuration

Table 1.1: Port Configuration

Function	Privilege	Description	Example
`[no] shutdown`	Admin EXEC	Use "shutdown" command to disable port and use "no shutdown" to enable port. If port is error disabled for any reason, use "no shutdown" command to recover the port manually.	This example shows how to modify port duplex configuration. switch (config)# interface fa1 switch (config-if)# shutdown"
`speed (10|100)`	Admin EXEC	Use "speed" command to change port speed configuration. The speed is only able to configure to the physical maximum speed. For example, in fast Ethernet port, speed 1000 is not available.	This example shows how to modify port speed configuration. switch (config)# interface fa2 switch (config-if)# speed auto 10/100
`speed (1000|)`	Admin EXEC		
`speed auto [(10|100|10/100)]`	Admin EXEC		
`speed auto [(1000|)]`	Admin EXEC		
`duplex (auto|full|half)`	Admin EXEC	Use "duplex" command to change port duplex configuration.	This example shows how to modify port duplex configuration. switch (config)# interface fa1 switch (config-if)# duplex full switch (config-if)# exit switch (config)# interface fa2 switch (config-if)# duplex half
`description WORD<1-" SYS_STR_CONST(SYS_ PORTDESC_STR_LEN) ">`	Admin EXEC	Use "description" command to give the port a name to identify it easily. If description includes space character, please use double quotes to wrap it.	This example shows how to modify port descriptions. switch (config)# interface fa2 switch (config-if)# description "uplink port"
`no description`	Admin EXEC	Use no form to restore description to empty string.	

Table 1.1: Port Configuration (Continued)

Function	Privilege	Description	Example
[no] protected	Admin EXEC	Use "protected" command to protect port. Protected port is only allowed to communicate with unprotected port. In other words, protected port is not allowed to communicate with another protected port. Use no form to make port unprotected	This example shows how to configure ports fa1 and fa2 as protected ports. switch (config)# interface range fa1-2 switch (config-if-range)# protected

1.2.2 MAC Address Table

Table 1.2: MAC Address Table

Function	Privilege	Description	Example
show mac address-table aging-time	User EXEC	View the aging time of the address table.	switch# show mac address-table aging-time
show mac address-table A:B:C:D:E:F [vlan <1-4094>]	User EXEC	Displays entries for a specific MAC address (for all or VLAN).	switch# show mac address-table 0:1:2:3:4:5 vlan 1
show mac address-table [vlan <1-4094>] [interfaces IF_PORTS]	User EXEC	View MAC entry on specified interface or VLAN or all dynamic MAC entries in MAC address table.	switch# show mac address-table vlan 1 interface fa5
show mac address-table static [vlan <1-4094>] [interfaces IF_PORTS]	User EXEC	View static MAC entry on specified interface or VLAN or all dynamic MAC entries in MAC address table.	switch# show mac address-table static vlan 1 interface fa5
show mac address-table dynamic [vlan <1-4094>] [interfaces IF_PORTS]	User EXEC	View dynamic MACentry on specified interface or VLAN or all dynamic MAC entries in MAC address table.	switch# show mac address-table dynamic vlan 1 interface fa5
show mac address-table counters	User EXEC	Display the number of addresses present in MAC address table.	switch# show mac address-table counters
clear mac address-table dynamic [interfaces IF_PORTS]	Admin EXEC	Delete dynamic MAC entry on specified interface or all dynamic MAC entries in MAC address table.	switch (config)# clear mac address-table dynamic interfaces fa5
clear mac address-table dynamic vlan <1-4094>	Admin EXEC	Delete dynamic MAC entry on specified VLAN dynamic MAC entry in MAC address table.	switch (config)# clear mac address-table dynamic vlan 1
mac address-table aging-time <10-630>	Admin EXEC	Set the aging time of the address table.	switch (config)# mac address-table aging-time 300
mac address-table static A:B:C:D:E:F vlan <1-4094> interfaces IF_PORTS	Admin EXEC	Add static addresses to the MAC address table.	switch (config)# mac address-table static 0:1:2:3:4:5 vlan 1 interfaces fa5

Table 1.2: MAC Address Table (Continued)

Function	Privilege	Description	Example
`no mac address-table static A:B:C:D:E:F vlan <1-4094>`	Admin EXEC	Delete static addresses from the MAC address table.	switch (config)# no mac address-table static 0:1:2:3:4:5 vlan 1 interfaces fa5

1.2.3 Jumbo Frame

Table 1.3: Jumbo Frame

Function	Privilege	Description	Example
`jumbo-frame <1518-9216>`	Admin EXEC	Use "jumbo-frame" command to modify maximum frame size. The only way to show this configuration is by using "show running-config" command.	This example shows how to modify maximum frame size to 9216 bytes. switch (config)# jumbo-frame 9216
`no jumbo-frame`	Admin EXEC	Use no form to disable jumbo-frame.	switch (config)# no jumbo-frame

1.2.4 Flow Control

Table 1.4: Flow Control

Function	Privilege	Description	Example
`[no] back-pressure`	Admin EXEC	Use "back-pressure" command to change port back-pressure configuration. Use no form to restore back-pressure to default (off) configuration.	This example shows how to modify port duplex configuration. switch (config)# interface fa1 switch (config-if)# back-pressure switch (config-if)# no back-pressure
`flowcontrol (off|on)`	Admin EXEC	Use "flow-control" command to change port flow control configuration. Use off form to restore flow control to default (off) configuration.	This example shows how to modify port duplex configuration. switch (config)# interface fa1 switch (config-if)# flow-control on switch (config-if)# flow-control off

1.2.5 Spanning Tree

Table 1.5: Spanning Tree

Function	Privilege	Description	Example
`show spanning-tree [instance <0-15>]`	User EXEC	Show spanning-tree instance information.	switch# show spanning-tree instance 10
`show spanning-tree interfaces IF_PORTS [instance <0-15>]`	User EXEC	Show spanning-tree instance information per port.	switch# show spanning-tree interface gi1 instance 10

Table 1.5: Spanning Tree (Continued)

Function	Privilege	Description	Example
`show spanning-tree`	User EXEC	Show spanning-tree information.	switch# show spanning-tree
`show spanning-tree interfaces IF_PORTS`	User EXEC	Show spanning-tree state of one port.	switch# show spanning-tree interface gi1
`show spanning-tree interfaces IF_PORTS statistic`	User EXEC	Show spanning-tree statistics of one port.	switch# show spanning-tree interface gi1 statistic
`[no] spanning-tree`	Admin EXEC	Enable or Disable Spanning-Tree Protocol.	switch# configure switch (config)# spanning-tree switch (config)# exit
`spanning-tree bpdu (filtering|flooding)`	Admin EXEC	Specify the forwarding action of BPDU to filtering or flooding.	switch# configure switch (config)# spanning-tree bpdu filtering switch (config)# exit
`no spanning-tree bpdu`	Admin EXEC	Restore to default BPDU action. Default action is flooding.	switch# configure switch (config)# no spanning-tree bpdu switch (config)# exit"
`spanning-tree mode (stp|rstp|mstp)`	Admin EXEC	Specify the mode to Spanning Tree Protocol. Specify the mode to Rapid Spanning Tree Protocol. Specify the mode to Multiple Spanning Tree Protocol.	switch# configure switch (config)# spanning-tree mode stp switch (config)# exit
`no spanning-tree force-version`	Admin EXEC	Restore to default stp version. Default stp version is rstp.	switch# configure switch (config)# no spanning-tree force-version switch (config)# exit
`spanning-tree priority <0-61440>`	Admin EXEC	Specify the bridge priority; must use multiples of 4096.	switch# configure switch (config)# spanning-tree priority 16384 switch (config)# exit
`no spanning-tree priority`	Admin EXEC	Restore to default priority. Default priority is 32768.	switch# configure switch (config)# no spanning-tree priority switch (config)# exit
`spanning-tree hello-time <1-10>`	Admin EXEC	Specify the hello-time interval (seconds).	switch# configure switch (config)# spanning-tree hello-time 5 switch (config)# exit
`no spanning-tree hello-time`	Admin EXEC	Restore to default hello-time. Default hello-time is 2.	switch# configure switch (config)# no spanning-tree hello-time switch (config)# exit
`spanning-tree forward-delay <4-30>`	Admin EXEC	Specify the forward-delay interval (seconds).	switch# configure switch (config)# spanning-tree forward-delay 30 switch (config)# exit
`no spanning-tree forward-delay`	Admin EXEC	Restore to default forward-delay. Default forward-delay is 15.	switch# configure switch (config)# no spanning-tree forward-delay switch (config)# exit

Table 1.5: Spanning Tree (Continued)

Function	Privilege	Description	Example
`spanning-tree maximum-age <6-40>`	Admin EXEC	Specify the maximum-age time (seconds).	switch# configure switch (config)# spanning-tree maximum-age 10 switch (config)# exit
`no spanning-tree maximum-age`	Admin EXEC	Restore to default maximum-age. Default maximum-age is 20.	switch# configure switch (config)# no spanning-tree maximum-age switch (config)# exit
`spanning-tree tx-hold-count <1-10>`	Admin EXEC	Specify the tx-hold-count value.	switch# configure switch (config)# spanning-tree tx-hold-count 10 switch (config)# exit
`no spanning-tree tx-hold-count`	Admin EXEC	Restore to default tx-hold-count. Default tx-hold-count is 6.	switch# configure switch (config)# no spanning-tree tx-hold-count switch (config)# exit
`spanning-tree pathcost method (long|short)`	Admin EXEC	Specify the type of pathcost value as 32 bits (long). Specify the type of pathcost value as 16 bits (short).	switch# configure switch (config)# spanning-tree pathcost method short switch (config)# exit
`[no] spanning-tree`	Admin EXEC	Enable or Disable Spanning-Tree Protocol per port.	switch# configure switch (config)# interface gi1 switch (config-if)# spanning-tree switch (config-if)# exit switch (config)# exit
`spanning-tree port-priority <0-240>`	Admin EXEC	Specify the STP port priority; must use multiples of 16.	switch# configure switch (config)# interface gi1 switch (config-if)# spanning-tree port-priority 64 switch (config-if)# exit switch (config)# exit
`no spanning-tree port-priority`	Admin EXEC	Restore to default port-priority. Default port-priority is 128.	switch# configure switch (config)# interface gi1 switch (config-if)# no spanning-tree port-priority switch (config-if)# exit switch (config)# exit
`spanning-tree cost long <0-200000000>`	Admin EXEC	Specify the STP port cost. In long pathcost method, the range is from 0 to 20000000. (0 = Auto)	switch# configure switch (config)# interface gi1 switch (config-if)# spanning-tree cost long 200000 switch (config-if)# exit switch (config)# exit
`spanning-tree cost short <0-65535>`	Admin EXEC	Specify the STP port cost. In short pathcost method, the range is from 0 to 65535. (0 = Auto).	switch# configure switch (config)# interface gi1 switch (config-if)# spanning-tree cost short 1000 switch (config-if)# exit switch (config)# exit

Table 1.5: Spanning Tree (Continued)

Function	Privilege	Description	Example
`no spanning-tree cost`	Admin EXEC	Restore to default cost per port. Default cost is 0.	switch# configure switch (config)# interface gi1 switch (config-if)# no spanning-tree cost switch (config-if)# exit switch (config)# exit
`[no] spanning-tree edge`	Admin EXEC	Enable or Disable Spanning-Tree edge.	switch# configure switch (config)# interface gi1 switch (config-if)# spanning-tree edge switch (config-if)# exit switch (config)# exit
`spanning-tree link-type point-to-point`	Admin EXEC	Specify the STP port link-type to point-to-point.	switch# configure switch (config)# interface gi1 switch (config-if)# spanning-tree link-type point-to-point switch (config-if)# exit switch (config)# exit
`no spanning-tree link-type point-to-point`	Admin EXEC	Disable the STP port link-type from point-to-point.	switch# configure switch (config)# interface gi1 switch (config-if)# no spanning-tree link-type point-to-point switch (config-if)# exit switch (config)# exit
`spanning-tree mcheck`	Admin EXEC	Specify the STP port to migrate port.	switch# configure switch (config)# interface gi1 switch (config-if)# spanning-tree mcheck switch (config-if)# exit switch (config)# exit
`spanning-tree mst-config-id revision-level LEVEL<0-65535>`	Admin EXEC	Specify the MSTP mst-config-id revision level.	switch# configure switch (config)# spanning-tree mst-config-id revision-level 100 switch (config)# exit
`spanning-tree mst-config-id name NAME<32>`	Admin EXEC	Specify the MSTP mst-config-id name.	switch# configure switch (config)# spanning-tree mst-config-id name MST1 switch (config)# exit
`[no] spanning-tree instance-id INST<1-15>`	Admin EXEC	Create or delete MSTP instance ID.	switch# configure switch (config)# spanning-tree instance-id 10 switch (config)# exit
`spanning-tree instance-id INST<1-15> vlan (add|remove) VLAN-LIST`	Admin EXEC	Add or remove VLAN from instance.	switch# configure switch (config)# spanning-tree instance-id 10 vlan add 10-20 switch (config)# exit
`spanning-tree instance-id INST<1-15> priority VALUE<0-61440>`	Admin EXEC	Specify the instance priority.	switch# configure switch (config)# spanning-tree instance-id 10 priority 1000 switch (config)# exit

1.2.6 VLAN

Table 1.6: VLAN

Function	Privilege	Description	Example
`show vlan default-vlan`	User EXEC	Display information about default VLAN.	switch# show vlan default-vlan
`show vlan VLAN-LIST interfaces IF_PORTS membership`	User EXEC	Display information about VLAN list.	switch# show vlan 1 interfaces GigabitEthernet 10 membership
`show vlan [(VLAN-LIST|dynamic|static)]`	User EXEC	Display information about VLAN list or dynamic or static.	switch# show vlan 1 switch# show vlan dynamic switch# show vlan static
`show interfaces IF_PORTS`	User EXEC	Use "show interface" command to show port counters, parameters and status.	show interfaces GigabitEthernet 1
`show interfaces IF_PORTS status`	User EXEC	Use "show interface" command to show port status.	show interfaces GigabitEthernet 1 status
`show interfaces IF_PORTS protected`	User EXEC	Use "show interface" command to show port protected status.	show interfaces GigabitEthernet 1 protected
`show interfaces switchport IF_PORTS`	User EXEC	Use "show interface switchport" command to show port VLAN status.	switch# show interfaces switchport GigabitEthernet 1
`[no] vlan VLAN-LIST`	Admin EXEC	Create or remove a VLAN entry. Using “vlan” command to enter the VLAN configuration mode.	switch (config)# vlan 100 switch (config)# no vlan 100
`name NAME`	Admin EXEC	Configure the name of a VLAN entry.	switch (config)# vlan 100 switch (config-vlan)# name VLAN-one-hundred
`switchport mode hybrid`	Admin EXEC	Hybrid port: Support all functions as defined in IEEE 802.1Q specification.	switch (config-if)# switchport mode hybrid
`show management-vlan`	User EXEC	Display information about management VLAN.	switch (config)# show management-vlan
`switchport hybrid pvid <1-4094>`	Admin EXEC	This command configures the hybrid port’s PVID. Use "show interface switchport" command to show configuration.	switch (config)# interface GigabitEthernet 1 switch (config-if)# switchport mode hybrid switch (config-if)# switchport hybrid pvid 100
`[no] switchport hybrid ingress-filtering`	Admin EXEC	This command per port configures the ingress-filtering status. This filtering is used to filter the frames come from the non-member ingress port. Use "show interface switchport" command to show configuration.	switch (config)# interface GigabitEthernet 1 switch (config-if)# switchport mode hybrid switch (config-if)# switchport hybrid ingress-filtering

Table 1.6: VLAN (Continued)

Function	Privilege	Description	Example
`switchport hybrid acceptable-frame-type (all|tagged-only|untagged-only)`	Admin EXEC	This command per port configures the acceptable-frame-type. Use "show interface switchport" command to show configuration.	switch (config)# interface GigabitEthernet 1 switch (config-if)# switchport mode hybrid switch (config-if)# switchport hybrid acceptable-frame-type tagged-only
`switchport hybrid allowed vlan add VLAN-LIST [(tagged|untagged)]`	Admin EXEC	This command per hybrid port configures adds the allowed VLAN list. Use "show interface switchport" command to show configuration.	switch (config)# interface GigabitEthernet 1 switch (config-if)# switchport mode hybrid switch (config-if)# switchport hybrid allowed vlan add 1 tagged
`switchport hybrid allowed vlan remove VLAN-LIST`	Admin EXEC	This command per hybrid port configures removes the allowed VLAN list. Use "show interface switchport" command to show configuration.	switch (config)# interface GigabitEthernet 1 switch (config-if)# switchport mode hybrid switch (config-if)# switchport hybrid allowed vlan remove 100
`[no] switchport default-vlan tagged`	Admin EXEC	This command perport configures the membership of the default VLAN to tagged. Use "show interface switchport" command to show configuration.	switch (config)# interface GigabitEthernet 1 switch (config-if)# switchport mode hybrid switch (config-if)# switchport default-vlan tagged
`[no] switchport forbidden default-vlan`	Admin EXEC	This command perport configures the membership of the default VLAN to forbidden. Use "show interface switchport" command to show configuration.	switch (config)# interface GigabitEthernet 1 switch (config-if)# switchport mode hybrid switch (config-if)# switchport forbidden default-vlan
`switchport forbidden vlan (add|remove) VLAN-LIST`	Admin EXEC	This command perport configures the membership of the specfied VLANs to forbidden. Use "show interface switchport" command to show configuration.	switch (config)# interface GigabitEthernet 1 switch (config-if)# switchport mode hybrid switch (config-if)# switchport forbidden vlan 100
`management-vlan vlan <1-4094>` `no management-vlan`	Admin EXEC	(1) Set <1-4094> as management VLAN ID; it is recommended to first create the VLAN and then assign the port to it. (2) When using no command, restore management VLAN to default VLAN. (3) To view the created management VLAN, use "show management-vlan".	(1) The following example specifies that management VLAN 2 is created. switch (config)# management-vlan vlan 2 (2) The following example specifies that management-VLAN is restored to be default VLAN. switch (config)# no management-vlan

1.2.7 Q-in-Q

Table 1.7: Q-in-Q

Function	Privilege	Description	Example
`switchport outerpvid <1-4094>`	Admin EXEC	This command configures the hybrid port's Outer PVID. Use "show interface switchport" command to show configuration.	This example sets gi2's Outer PVID to 1024. switch (config)# interface GigabitEthernet 2 switch (config-if)# switchport outerpvid 1024
`switchport qinqmode (nni|uni)`	Admin EXEC	The qinqmode is used to configure the hybrid port for different port roles. Nni: transfer frame will be add outer tag Vlan-Identifier Uni: transfer frame will not be add outer tag Vlan-Identifier.	This example shows how to change gi1 to nni mode and gi2 to uni mode. switch (config)# interface GigabitEthernet 1 switch (config-if)# switchport qinqmode nni switch (config-if)# exit switch (config)# interface GigabitEthernet 2 switch (config-if)# switchport qinqmode uni
`vlan outertpid <0x0000-0xFFFF>`	Admin EXEC	Use "vlan outertpid" command to change outer VLAN's Tag Protocol Identifier(tpid) configuration.	This example shows how to modify Tag Protocol Identifier configuration. switch (config)# vlan outertpid 0x9100

1.2.8 Link Aggregation

Table 1.8: Link Aggregation

Function	Privilege	Description	Example
`show lag`	User EXEC	Use "show lag" command to show current LAG load balance algorithm and members active/inactive status.	This example shows how to show current LAG status. switch# show lag
`lag load-balance (src-dst-mac|src-dst-mac-ip|src-port)`	Admin EXEC	Link aggregation group port should transmit packets spread to all ports to balance traffic loading. Two algorithms are supported; use this command to select the required algorithm.	This example shows how to change load balance algorithm to src-dst-mac-ip. switch (config)# lag load-balance src-dst-mac-ip
`no lag load-balance`	Admin EXEC	Use no form to disable load-blance.	This example shows how to disable load balance algorithm. switch (config)# no lag load-balance

Table 1.8: Link Aggregation (Continued)

Function	Privilege	Description	Example
`lag <1-8> mode (static | active | passive)`	Admin EXEC	Link aggregation group function aggregates multiple physical ports into one logic port to increase bandwidth. This command makes normal port joins a normal port to a specific LAG logic port in static or dynamic mode.	This example shows how to create a dynamic LAG and join fa1-fa3 to this LAG. switch (config)# interface range fa1-3 switch (config-if)# lag 1 mode active
`no lag`	Admin EXEC	Use "no lag" to leave the LAG logic port.	This example shows how to remove gi1 from LAG. switch (config)# interface GigabitEthernet 1 switch (config-if)# no lag
`lacp system-priority <1-65535>`	Admin EXEC	LACP system priority is used for two connected DUT to select master switch. Lower system priority value has higher priority. The DUT with higher priority can decide which ports are able to join the LAG.	This example shows how to configure lacp system priority to 1000. switch (config)# lacp system-priority 1000
`no lacp system-priority`	Admin EXEC	Use "no lacp system-priority" to restore to the default priority value. Use "show running-config" command to show configuration.	This example shows how to restore lacp system priority to default value. switch (config)# no lacp system-priority
`lacp port-priority <1-65535>`	Admin EXEC	LACP port priority is used for two connected DUT to select aggregation ports. Lower port priority value has higher priority. The port with higher priority will be selected into LAG first. Use "show running-config" command to show configuration.	This example shows how to configure interface fa1 lacp port priority to 100. switch (config)# interface fa1 switch (config-if)# lacp port-priority 100
`no lacp port-priority`	Admin EXEC	Use no form to restore port-priority to default value.	
`lacp timeout (long|short)`	Admin EXEC	LACP must send LACP packet to partner switch to check the link status. This command configures the LACP packet sending interval.	This example shows how to configure interface fa1 lacp timeout to short. switch (config)# interface fa1 switch (config-if)# lacp timeout short
`no lacp timeout`	Admin EXEC		

1.2.9 GARP

Table 1.9: GARP

Function	Privilege	Description	Example
`show garp`	User EXEC	Display GARP status.	switch# show garp
`garp join-time <6-600>`	Admin EXEC	Set interval of join timer.	switch (config)# garp join-time 10
`garp leave-time <12-3000>`	Admin EXEC	Set interval of leave timer.	switch (config)# garp leave-time 30
`garp leaveall-time <12-12000>`	Admin EXEC	Set interval of leave all timer.	switch (config)# garp leaveall-time 240
`garp timer join <6-600> leave <12-3000> leaveall <12-12000>`	Admin EXEC	Set interval of all timers.	switch (config)# garp timer join 10 leave 30 leaveall 240

1.2.10 GVRP

Table 1.10: GVRP

Function	Privilege	Description	Example
`show gvrp`	User EXEC	Display GVRP status.	switch# show gvrp
`[no] gvrp`	Admin EXEC	Enable or disable GVRP function.	switch (config)# gvrp

1.2.11 Port Mirror

Table 1.11: GVRP

Function	Privilege	Description	Example
`show mirror`	User EXEC	Display all mirror sessions.	switch# show mirror
`show mirror session <1-4>`	User EXEC	Specify the mirror session to display.	switch# show mirror session 1
`mirror session <1-4> source interfaces IF_PORTS (both|rx|tx)`	Admin EXEC	Specify the mirror session to configure. Specify the source interface, include physical ports and LA port. Specify the traffic direction to mirror.	switch# configure switch (config)# mirror session 1 source interface fa2-5 both switch (config)# exit
`mirror session <1-4> destination interface IF_NMLPORT [allow-ingress]`	Admin EXEC	Specify the mirror session to configure. Specify the SPAN destination. A destination must be a physical port. Enable ingress traffic forwarding.	switch# configure switch (config)# mirror session 1 destination interface fa1 switch (config)# exit
`no mirror session (<1-4>|all)`	Admin EXEC	Clear the configuration of specified mirror session. Clear the configuration of all the mirror sessions.	switch# configure switch (config)# no mirror session 1 switch (config)# exit

Table 1.11: GVRP (Continued)

Function	Privilege	Description	Example
`no mirror session <1-4> destination interface IF_NMLPORT`	Admin EXEC	Delete the destination interface of the mirror session.	switch# configure switch (config)# no mirror session 1 destination interface fa1 switch (config)# exit
`no mirror session <1-4> source interfaces IF_PORTS (both|rx|tx)`	Admin EXEC	Delete the source interface of the mirror session. Delete the traffic direction of the mirror port.	switch# configure switch (config)# no mirror session 1 source interface fa2-5 both switch (config)# exit

1.2.12 LLDP

Table 1.12: LLDP

Function	Privilege	Description	Example
`show lldp`	User EXEC	Display LLDP information.	switch# show lldp
`show lldp interfaces IF_NMLPORTS`	User EXEC	Display LLDP information in specified ports.	switch# show lldp interfaces fa5
`show lldp local-device`	User EXEC	Display the local configuration.	switch# show lldp local-device
`show lldp interfaces IF_NMLPORTS local-device`	User EXEC	Display the local configuration in specified ports.	switch# show lldp interfaces fa5,fa6 local-device
`show lldp neighbor`	User EXEC	Display the neighbor's LLDP information.	switch# show lldp neighbor
`show lldp interfaces IF_NMLPORTS neighbor`	User EXEC	Display the neighbor's LLDP information in specified ports.	switch# show lldp interfaces fa5,fa6 neighbor
`show lldp statistics`	User EXEC	Display the LLDP RX/TX statistics.	switch# show lldp statistics
`show lldp interfaces IF_NMLPORTS statistics`	User EXEC	Display the LLDP RX/TX statistics in specified ports.	switch# show lldp interfaces fa5,fa6 statistics
`show lldp interfaces IF_NMLPORTS tlvs-overloading`	User EXEC	Display the length of LLDP TLVs and if the TLVs overload the PDU length in specified ports.	switch# show lldp interfaces fa5,fa6 tlvs-overloading
`clear lldp statistics`	Admin EXEC	Clear statistics of LLDP.	switch# clear lldp statistics
`[no] lldp`	Admin EXEC	Disable or enable LLDP.	switch (config)# lldp
`[no] lldp tx`	Admin EXEC	Per port disable or enable LLDP TX.	switch (config-if)# lldp rx
`[no] lldp rx`	Admin EXEC	Per port disable or enable LLDP RX.	switch (config-if)# lldp tx

Table 1.12: LLDP (Continued)

Function	Privilege	Description	Example
`lldp holdtime-multiplier <2-10>`	Admin EXEC	Set the LLDP PDU hold multiplier that decides time-to-live (TTL) value sent in LLDP advertisements: TTL = (tx-interval * holdtime-multiplier).	switch (config)# lldp holdtime-multiplier 4
`no lldp holdtime-multiplier`	Admin EXEC		switch (config)# no lldp holdtime-multiplier
`lldp tx-interval <5-32767>`	Admin EXEC	Set the LLDP TX interval.	switch (config)# lldp tx-interval 30
`no lldp tx-interval`	Admin EXEC		switch (config)# no lldp tx-interval
`lldp reinit-delay <1-10>`	Admin EXEC	Set the LLDP re-initial delay. This delay avoids LLDP generating too many PDUs if the port is up and down frequently.	switch (config)# lldp reinit-delay 2
`no lldp reinit-delay`	Admin EXEC		switch (config)# no lldp reinit-delay
`lldp tx-delay <1-8191>`	Admin EXEC	Set the delay in seconds between successive LLDP frame transmissions. The delay starts to count any time that LLDP PDU is sent, such as by LLDP PDU advertise routine, LLDP PDU content change, port link up, etc.	switch (config)# lldp tx-delay 2
`no lldp tx-delay`	Admin EXEC		switch (config)# no lldp tx-delay
`lldp tlv-select pvid (enable|disable)`	Admin EXEC	This command per port configures the 802.1 PVID TLV attach enable status.	switch (config-if)# lldp tlv-select pvid enable
`no lldp tlv-select pvid`	Admin EXEC		switch (config-if)# no lldp tlv-select pvid
`lldp tlv-select vlan-name (add|remove) VLAN-LIST`	Admin EXEC	The commands per port add or remove VLAN list for 802.1 VLAN-NAME TLV.	switch (config-if)# lldp tlv-select vlan-name add 1,2,3,4
`lldp tlv-select TLV [TLV] [TLV] [TLV] [TLV] [TLV] [TLV] [TLV]`	Admin EXEC	This command per port configures the selected TLV attaching in PDU.	switch (config-if)# lldp tlv-select port-desc sys-name sys-desc sys-cap mac-phy lag max-frame-size management-addr
`no lldp tlv-select`	Admin EXEC		switch (config-if)# no lldp tlv-select

Table 1.12: LLDP (Continued)

Function	Privilege	Description	Example
`lldp lldpdu (filtering|bridging|flooding)`	Admin EXEC	This command globally configures the LLDP PDU handling behavior when LLDP is globally disabled. It should be noted that if LLDP is globally enabled and per port LLDP RX status is configured to disable, the received LLDP PDU is dropped instead of taking the global disable behavior.	switch (config)# lldp lldpdu filtering
`no lldp lldpdu`	Admin EXEC		switch (config)# no lldp lldpdu

1.3 Multicast

1.3.1 IGMP Snooping

Table 1.13: IGMP Snooping

Function	Privilege	Description	Example
`show ip igmp snooping`	User EXEC	This command will display IP IGMP snooping global info.	switch# show ip igmp snooping
`show ip igmp snooping router`	User EXEC	This command will display the IP IGMP router info.	switch# show ip igmp snooping router
`show ip igmp snooping groups [(dynamic | static)]`	User EXEC	This command will display the IP IGMP groups for dynamic or static or all types.	switch# show ip igmp snooping groups switch# show ip igmp snooping groups dynamic switch# show ip igmp snooping groups static
`show ip igmp snooping vlan [VLAN-LIST]`	User EXEC	This command will display IP IGMP snooping VLAN info.	switch# show ip igmp snooping vlan
`show ip igmp snooping groups counters`	User EXEC	This command will display the IP IGMP group counter include static group.	switch# show ip igmp snooping counters
`show ip igmp snooping querier`	User EXEC	This command will display all of the static VLAN IP IGMP querier info.	switch# show ip igmp snooping querier
`clear ip igmp snooping groups [(dynamic |static)]`	Admin EXEC	This command will clear the IP IGMP groups for dynamic or static or all types.	switch# clear ip igmp snooping groups static
`clear ip igmp snooping statistics`	Admin EXEC	This command will clear the IGMP statistics.	switch# clear ip igmp snooping statistics

Table 1.13: IGMP Snooping (Continued)

Function	Privilege	Description	Example
`[no] ip igmp snooping`	Admin EXEC	"No IP IGMP snooping" will clear all ip igmp snooping dynamic groups and dynamic router ports, and make the static IP IGMP group invalid. Subsequently, dynamic group and router port will not be learned via IGMP message.	switch (config)# ip igmp snooping switch (config)# no ip igmp snooping
`[no] ip igmp snooping report-suppression`	Admin EXEC	"No IP IGMP snooping report-suppression" will disable IGMP v1/v2 IGMP report suppression function. When received, report will be forwarded to the VLAN router ports.	switch (config)# ip igmp snooping report-suppression switch (config)# no ip igmp snooping report-suppression
`no ip igmp snooping vlan VLAN-LIST group A.B.C.D`	Admin EXEC	"IP IGMP snooping vlan 1 static-group 224.1.1.1 interfaces gi1" will add static group. The static group will not learn other dynamic ports. If the dynamic group exists, the static group will overlap the dynamic group. If the last member of the static group is removed, the static group will be deleted. To validate the static group, IGMP snooping VLAN and IP IGMP snooping must be enabled. Use "Show IP IGMP snooping group [(dynamic | static)]" command to display configuration. Use "No IP IGMP snooping vlan 1 group 224.1.1.1" command to delete the static group. The "clear ip igmp snooping groups" command can also be used to delete the static group.	switch (config)# ip igmp snooping vlan 1 static-group 224.1.1.1 interfaces gi1-2
`no ip unknown-multicast action`	Admin EXEC	When IGMP snooping and MLD snooping are disabled, router port actions cannot be set. Disabling IGMP snooping & MLD snooping will flood multicast traffic to all members of the VLAN. When the action is a router port flood or drop, it will delete the unknown multicast group entry.	switch (config)# ip unknown-multicast action router-port switch (config)# no ip unknown-multicast action

Table 1.13: IGMP Snooping (Continued)

Function	Privilege	Description	Example
[no] ip igmp snooping vlan VLAN-LIST fastleave [no] ip igmp snooping vlan VLAN-LIST router learn pim-dvmrp ip igmp snooping vlan VLAN-LIST robustness-variable <1-7> no ip igmp snooping vlan VLAN-LIST robustness-variable ip igmp snooping vlan VLAN-LIST response-time <5-20> no ip igmp snooping vlan VLAN-LIST response-time ip igmp snooping vlan VLAN-LIST query-interval <30-18000> no ip igmp snooping vlan VLAN-LIST query-interval ip igmp snooping vlan VLAN-LIST last-member-query-interval <1-25> no ip igmp snooping vlan VLAN-LIST last-member-query-interval ip igmp snooping vlan VLAN-LIST last-member-query-count <1-7> no ip igmp snooping vlan VLAN-LIST last-member-query-count	Admin EXEC	"No IP IGMP snooping vlan 1 (last-member-query-count | last-member-query-interval | query-interval | response-time | robustness-variable)" will set the VLAN parameters to default. The CLI setting will change the IP IGMP VLAN parameters admin settings.	switch (config)# ip igmp snooping vlan 1 fastleave switch (config)# ip igmp snooping vlan 1 last-member-query-count 5 switch (config)# ip igmp snooping vlan 1 last-member-query-interval 3 switch (config)# ip igmp snooping vlan 1 query-interval 100 switch (config)# ip igmp snooping vlan 1 response-time 12 switch (config)# ip igmp snooping vlan 1 robustness-variable 4

Table 1.13: IGMP Snooping (Continued)

Function	Privilege	Description	Example
`[no] ip igmp snooping vlan VLAN-LIST`	Admin EXEC	"No IP IGMP snooping vlan 1" will clear all VLAN IP IGMP snooping dynamic groups and dynamic router ports, and invalidate any static IP IGMP groups with a VLAN ID of 1. Subsequently, the dynamic groups and router ports will not be learned via IGMP message for VLAN 1.	switch (config)# ip igmp snooping vlan 1
`ip igmp snooping version (2|3)`	Admin EXEC	"IP IGMP snooping version 3" supports v3 basic mode. When the version changes from v3 to v2, all querier versions will update to version 2.	switch (config)# ip igmp snooping version 3
`no ip igmp snooping vlan VLAN-LIST querier [version (2|3)] ip igmp snooping vlan VLAN-LIST querier`	Admin EXEC	When IP IGMP vlan querier is enabled, a router selection process will be triggered. The selected router will send a general and specific query.	switch (config)# ip igmp snooping vlan 2 querier

1.3.2 MLD Snooping

Table 1.14: MLD Snooping

Function	Privilege	Description	Example
`show ip mld snooping`	User EXEC	This command will display IP MLD snooping global info.	switch# show ip mld snooping
`show ip mld snooping router`	User EXEC	This command will display the IP MLD router info.	switch# show ip mld snooping router
`show ip mld snooping groups [(dynamic | static)]`	User EXEC	This command will display the IP MLD groups for dynamic or static ports, or for all types.	switch# show ip mld snooping groups switch# show ip mld snooping groups dynamic Switch# show ip mld snooping groups static
`show ip mld snooping vlan [VLAN-LIST]`	User EXEC	This command will display IP MLD snooping VLAN info.	switch# show ip mld snooping vlan
`show ip mld snooping groups counters`	User EXEC	This command will display the IP MLD group counter include static group.	switch# show ip mld snooping counters
`show ip mld snooping querier`	User EXEC	This command will display all of the static VLAN IP MLD querier info.	switch# show ip mld snooping querier

Table 1.14: MLD Snooping (Continued)

Function	Privilege	Description	Example
`clear ip mld snooping groups [(dynamic |static)]`	Admin EXEC	This command will clear the IP MLD groups for dynamic or static ports, or for all types.	switch# clear ip mld snooping groups static
`clear ip mld snooping statistics`	Admin EXEC	This command will clear the MLD statistics.	switch# clear ip mld snooping statistics
`[no] ip mld snooping`	Admin EXEC	"No IP MLD snooping" will clear all IP MLD snooping dynamic groups and dynamic router ports, and make the static IP MLD group invalid. Subsequently, the dynamic group and router ports will not be learned via MLD message.	switch (config)# ip mld snooping switch (config)# no ip mld snooping
`[no] ip mld snooping report-suppression`	Admin EXEC	"No IP MLD snooping report-suppression" will disable MLD v1/v2 MLD report suppression function. Reports received will be forwarded to the VLAN router ports.	switch (config)# ip mld snooping report-suppression switch (config)# no ip mld snooping report-suppression
`[no] ip mld snooping vlan VLAN-LIST static-group X:X::X:X interfaces IF_PORTS` `no ip mld snooping vlan VLAN-LIST group X:X::X:X`	Admin EXEC	"IP MLD snooping vlan 1 static-group ff0e:dd::00:dd interfaces gi1" will add static group. The static group willl not learn other dynamic ports. If the dynamic group exists, the static group will overlap the dynamic group. If the last member of the static group is removed, the static group will be deleted. For the static group to be valid, IGMP snooping VLAN and IP IGMP snooping must both be enabled. Use "Show IP IGMP snooping group [(dynamic | static)]" to display the configuration. Use "No IP MLD snooping vlan 1 group ff0e:dd::00:dd" or "Clear IP MLD snooping groups" to delete the static group.	switch (config)# ip mld snooping vlan 1 static-group ff0e:dd::00:dd interfaces gi1-2

Table 1.14: MLD Snooping (Continued)

Function	Privilege	Description	Example

`[no] ip mld snooping vlan VLAN-LIST fastleave`
`[no] ip mld snooping vlan VLAN-LIST router learn pim-dvmrp`
`ip mld snooping vlan VLAN-LIST robustness-variable <1-7>`
`no ip mld snooping vlan VLAN-LIST robustness-variable`
`ip mld snooping vlan VLAN-LIST response-time <5-20>`
`no ip mld snooping vlan VLAN-LIST response-time`
`ip mld snooping vlan VLAN-LIST query-interval <30-18000>`
`no ip mld snooping vlan VLAN-LIST query-interval`
`ip mld snooping vlan VLAN-LIST last-member-query-interval <1-25>`
`no ip mld snooping vlan VLAN-LIST last-member-query-interval`
`ip mld snooping vlan VLAN-LIST last-member-query-count <1-7>`
`no ip mld snooping vlan VLAN-LIST last-member-query-count`
	Admin EXEC	"No IP MLD snooping vlan 1 (last-member-query-count | last-member-query-interval | query-interval | response-time | robustness-variable)" will set the VLAN parameters to default. The CLI setting will change the IP MLD vlan parameters admin settings.	switch (config)# ip mld snooping vlan 1 fastleave
			switch (config)# ip mld snooping vlan 1 last-member-query-count 5
			switch (config)# ip mld snooping vlan 1 last-member-query-interval 3
			switch (config)# ip mld snooping vlan 1 query-interval 100
			switch (config)# ip mld snooping vlan 1 response-time 12
			switch (config)# ip mld snooping vlan 1 robustness-variable 4

`[no] ip mld snooping vlan VLAN-LIST`	Admin EXEC	"No IP MLD snooping vlan 1" will clear vlan all IP MLD snooping dynamic group and dynamic router ports, and invalidate any static IP MLD group invalid with a VLAN ID of 1. Subsequently, the dynamic group and router ports will not be learned via MLD message for VLAN 1.	switch (config)# ip mld snooping vlan 1

Table 1.14: MLD Snooping (Continued)

Function	Privilege	Description	Example
`ip mld snooping version (1|2)`	Admin EXEC	"IP MLD snooping version 2", supports v2 basic mode. When the version changes from v2 to v1, all querier versions will update to version 2.	switch (config)# ip mld snooping version 2
`ip mld snooping vlan VLAN-LIST querier [version (1|2)]` `no ip mld snooping [vlan VLAN-LIST] querier`	Admin EXEC	When enable IP MLD vlan querier is enabled, a router selection process will be triggered. The selected router will send a general and specific query.	switch (config)# ip mld snooping vlan 2 querier

1.4 Redundancy

1.4.1 X-Ring

Table 1.15: X-Ring

Function	Privilege	Description	Example
`show xring-elite`	User EXEC	Display xring-elite status.	switch# show xring-elite
`[no] xring-elite`	Admin EXEC	Disable or enable xring-elite function.	switch (config)# no xring-elite switch (config)# xring-elite
`xring-elite ring-id <1-255> ports IF_PORTS`	Admin EXEC	Create a normal ring.	switch (config)# xring-elite ring-id 1 ports GigabitEthernet 1,2
`xring-elite legacy ring-id <1-255> ports IF_PORTS`	Admin EXEC	Create a legacy ring.	switch (config)# xring-elite legacy ring-id 2 ports GigabitEthernet 3,4
`no xring-elite ring-id <1-255>`	Admin EXEC	Delete a normal ring or legacy ring.	switch (config)# no xring-elite ring-id 1
`show xring-plus`	User EXEC	Display xring-plus status.	switch# show xring-plus
`[no] xring-plus`	Admin EXEC	Disable or enable xring-plus function.	switch (config)# no xring-plus switch (config)# xring-plus
`xring-plus create ring-id <1-255> interface IF_PORT interface IF_PORT`	Admin EXEC	Create a ring.	switch (config)# xring-plus create ring-id 5 interface GigabitEthernet 1 interface GigabitEthernet 2
`xring-plus create ring-id <1-255> coupling interfaces IF_PORTS master-ring ring-id <1-255>`	Admin EXEC	Create a coupling.	switch (config)# xring-plus create ring-id 6 coupling interfaces 3 master-ring ring-id 5 switch (config)# xring-plus create ring-id 6 coupling interfaces 3,4 master-ring ring-id 5
`xring-plus delete ring-id <1-255>`	Admin EXEC	Delete a ring or coupling.	switch (config)# xring-plus delete ring-id 5

1.5 QoS

1.5.1 Rate Limit

Table 1.16: Rate Limit

Function	Privilege	Description	Example
`show rate-limit`	User EXEC	Display rate-limit information.	switch# show rate-limit
`show rate-limit interfaces IF_NMLPORTS`	User EXEC	Display rate-limit information in specified interface.	switch# show rate-limit interfaces fa 5
`rate-limit ingress <16-1000000>`	Admin EXEC	Set ingress rate-limit.	switch (config-if)# rate-limit ingress 10000
`no rate-limit ingress`	Admin EXEC	No ingress rate-limit.	switch (config-if)# no rate-limit ingress
`rate-limit egress <16-1000000>`	Admin EXEC	Set egress rate-limit.	switch (config-if)# rate-limit egress 10000
`no rate-limit egress`	Admin EXEC	No egress rate-limit.	switch (config-if)# no rate-limit egress
`rate-limit egress queue <1-8> <16-1000000>`	Admin EXEC	Set egress rate-limit in queue.	switch (config-if)# rate-limit egress queue 3 10000
`no rate-limit egress queue <1-8>`	Admin EXEC	No egress rate-limit in queue.	switch (config-if)# no rate-limit egress queue 3

1.5.2 QoS

Table 1.17: QoS

Function	Privilege	Description	Example
`show qos`	User EXEC	Display QoS state.	switch# show qos
`show qos queueing`	User EXEC	Display QoS queueing state.	switch# show qos queueing
`show qos interfaces IF_PORTS`	User EXEC	Display QoS state by interface.	switch# show qos interface gi1
`show qos map [(cos-queue|dscp-queue|precedence-queue|queue-cos|queue-dscp|queue-precedence)]`	User EXEC	Display QoS map detail.	switch# show qos map
`[no] qos`	Admin EXEC	Enabled or disabled the device to QoS mode.	switch# configure switch (config)# qos switch (config)# exit
`qos queue strict-priority-num <0-8>`	Admin EXEC	Specify the strict priority queue number.	switch# configure switch (config)# qos queue strict-priority-num 1 switch (config)# exit
`qos queue weight SEQUENCE`	Admin EXEC	Specify the non-strict priority queue weight value. The valid queue weight value is from 1 to 127.	switch# configure switch (config)# qos queue weight 3 switch (config)# exit

Table 1.17: QoS (Continued)

Function	Privilege	Description	Example
`qos map cos-queue SEQUENCE to <1-8>`	Admin EXEC	Configure or show CoS to queue map	switch# configure switch (config)# qos map cos-queue 6 7 to 1 switch (config)# exit
`qos map dscp-queue SEQUENCE to <1-8>`	Admin EXEC	Configure or show DSCP to queue map.	switch# configure switch (config)# qos map dscp-queue 6 7 to 1 switch (config)# exit
`qos map precedence-queue SEQUENCE to <1-8>`	Admin EXEC	Configure or show IP Precedence to queue map.	switch# configure switch (config)# qos map precedence-queue 6 7 to 1 switch (config)# exit
`qos trust (cos|cos-dscp|dscp|precedence)`	Admin EXEC	Specify the device to trust CoS. Specify the device to trust DSCP for IP packets, and trust CoS for non-IP packets. Specify the device to trust DSCP. Specify the device to trust IP Precedence	switch# configure switch (config)# qos trust cos switch (config)# qos trust dscp switch (config)# exit
`no qos trust`	Admin EXEC	Clear qos trust configure.	switch# configure switch (config)# no qos trust switch (config)# exit
`qos cos <0-7>`	Admin EXEC	Specify the CoS value for the interface.	switch# configure switch (config)# interface gi1 switch (config-if)# qos cos 1 switch (config-if)# exit switch (config)# exit
`[no] qos trust`	Admin EXEC	Enabled or disabled the QoS mode per port.	switch# configure switch (config)# interface gi1 switch (config-if)# qos switch (config-if)# exit switch (config)# exit
`qos map queue-cos SEQUENCE to <0-7>`	Admin EXEC	Configure or show CoS to queue map.	switch# configure switch (config)# interface gi1 switch (config-if)# qos map cos-queue 6 7 to 1 switch (config-if)# exit switch (config)# exit
`qos map queue-dscp SEQUENCE to <0-63>`	Admin EXEC	Configure or show DSCP to queue map.	switch# configure switch (config)# interface gi1 switch (config-if)# qos map dscp-queue 6 7 to 1 switch (config-if)# exit switch (config)# exit
`qos map queue-precedence SEQUENCE to <0-7>`	Admin EXEC	Configure or show IP Precedence to queue map.	switch# configure switch (config)# interface gi1 switch (config-if)# qos map precedence-queue 6 7 to 1 switch (config-if)# exit switch (config)# exit

Table 1.17: QoS (Continued)

Function	Privilege	Description	Example
`[no] qos remark (cos|dscp|precedence)`	Admin EXEC		

1.6 Security

1.6.1 Loop Detection / Prevention

Table 1.18: Loop Detection / Prevention

Function	Privilege	Description	Example
`show loopback-detection`	User EXEC	Display loopback-detection global status.	switch# show loopback-detection
`show loopback-detection interfaces IF_PORTS state`	User EXEC	Display loopback-detection status of specified ports.	show loopback-detection interfaces GigabitEthernet 1,2 state
`[no] loopback-detection`	Admin EXEC	Enable or disable loopback-detection.	switch (config)# loopback-detection switch (config)# no loopback-detection
`loopback-detection interval <1-32767>`	Admin EXEC	Set loopback detection interval.	switch (config)# loopback-detection interval 1
`loopback-detection recover-time <60-1000000>`	Admin EXEC	Set block port recover time.	switch (config)# loopback-detection recover-time 60
`[no] loopback-detection`	Admin EXEC	Enable or disable loopback-detection of a specified port.	switch (config-if)# loopback-detection switch (config-if)# no loopback-detection

1.6.2 Storm Control

Table 1.19: Storm Control

Function	Privilege	Description	Example
`show storm-control`	User EXEC	Display storm-control information.	switch# show storm-control
`show storm-control interfaces IF_NMLPORTS`	User EXEC	Display storm-control information in specified interface.	switch# show storm-control interfaces fa5
`storm-control ifg (include|exclude)`	Admin EXEC	Decide whether to include/ exclude the preamble and inter frame gap into the calculation or not.	switch (config)# storm-control ifg include
`storm-control unit (bps|pps)`	Admin EXEC	Set the unit of calculation method.	switch (config)# storm-control unit bps
`[no] storm-control`	Admin EXEC	Disable or enable storm-control.	switch (config)# storm-control

Table 1.19: Storm Control (Continued)

Function	Privilege	Description	Example
`[no] storm-control (broadcast|unknown-unicast|unknown-multicast)`	Admin EXEC	Disable or enable storm-control type.	switch (config-if)# storm-control broadcast
`storm-control (broadcast|unknown-unicast|unknown-multicast) level <1-1000000>`	Admin EXEC	Set control rate of storm-control type.	switch (config-if)# storm-control broadcast level 1000
`no storm-control (broadcast|unknown-unicast|unknown-multicast) level`	Admin EXEC	No control rate of storm-control type.	switch (config-if)# no storm-control broadcast level
`storm-control action (drop|shutdown)`	Admin EXEC	The storm control mechanism drops packets which exceed storm control rate or just shuts down the port.	switch (config-if)# storm-control action shutdown
`no storm-control action`	Admin EXEC	Set action to drop.	switch (config-if)# no storm-control action

1.6.3 Port Security

Table 1.20: Port Security

Function	Privilege	Description	Example
`show port-security`	User EXEC	Display port-security status.	switch# show port-security
`[no] port-security [learning-limit <0-64>]`	Admin EXEC	Enable port security of a port and specify a maximum FDB learning number of that port. Disable port security.	switch (config-if)# port-security learning-limit 5 switch (config-if)# port-security switch (config-if)# no port-security
`[no] mac-violation-notify`	Admin EXEC	When a port reaches its maximum FDB learning number, the system will send to SNMP trap for a new MAC.	switch (config-if)# mac-violation-notify switch (config-if)# no mac-violation-notify

1.6.4 802.1X

Table 1.21: 802.1X

Function	Privilege	Description	Example
`show dot1x status`	User EXEC	Show Dot1x configuration.	switch# show dot1x
`[no] dot1x`	Admin EXEC	Configure radius server enable/disable. The “dot1x” command globally enables 802.1x ability. The “no dot1x run" command disables the 802.1x ability.	switch#show dot1x switch (config)# no dot1x

Table 1.21: 802.1X (Continued)

Function	Privilege	Description	Example
`dot1x authentication-based (port | mac)`	Admin EXEC	Configure radius server authentication mode.	switch (config)# dot1x authentication-based port switch (config)# dot1x authentication-based mac
`dot1x authentication-port IF_PORTS sectype (authorize | disable)`	Admin EXEC	Configure radius server authentication port.	switch (config)# dot1x authentication-port FastEthernet 1 sectype authorize switch (config)# dot1x authentication-port FastEthernet 1 sectype disable
`dot1x sys-configuration ip X.X.X.X radius-port <1-65535> accounting-port <1-65535> secret WORD<0-128>`	Admin EXEC	Configure radius server IP & port and secret key.	switch (config)# dot1x sys-configuration ip 192.168.1.100 radius-port 1812 accounting-port 1813 secret 12345678
`dot1x misc-configuration reauth-period <1-65535>`	Admin EXEC	Configure radius server reauth period.	switch (config)# dot1x misc-configuration reauth-period 3600

1.6.5 Remote Authentication

Table 1.22: Remote Authentication

Function	Privilege	Description	Example
`show security-login`	User EXEC	Show security login configuration.	switch# show security-login
`[no] security-login`	Admin EXEC	Use "security-login" command to enable security-login services. Use no form to disable service.	switch (config)# security-login switch (config)# no security-login
`security-login radius-config ip X.X.X.X port <1-65535> secret WORD<0-128>`	Admin EXEC	Configure radius login access control.	switch (config)# security-login radius-config ip 192.168.1.100 port 1812 secret 12345678
`security-login tacacs-config ip X.X.X.X port <1-65535> secret WORD<0-128>`	Admin EXEC	Configure security login access control.	switch (config)# security-login rtacacs-config ip 192.168.1.100 port 1812 secret 12345678
`security-login access-contrl (http | telnet | ssh | all)`	Admin EXEC	Configure security login access control.	switch (config)# security-login access-contrl http
`no security-login access-contrl (http | telnet | ssh | all)`	Admin EXEC	Reset security login access control.	switch (config)# no security-login access-contrl

Table 1.22: Remote Authentication (Continued)

Function	Privilege	Description	Example
`security-login login-type (radius | tacacs | both | all)`	Admin EXEC	Configure security login type.	switch (config)# security-login login-type radius
`no security-login login-type`	Admin EXEC	Reset security login type.	switch (config)# no security-login login-type

1.6.6 One Time Password

Table 1.23: One Time Password

Function	Privilege	Description	Example
`show otp`	User EXEC	Show OTP configuration.	switch# show otp
`[no] otp`	Admin EXEC	Use "otp" command to enable otp services. Use no form to disable service.	switch (config)# otp switch (config)# no otp
`otp secure-key-mode (one-time-used | time-restricted)`	Admin EXEC	Configure OTP secure key mode.	switch (config)# otp secure-key-mode one-time-used switch (config)# otp secure-key-mode time-restricted
`otp interval <3600-86400>`	Admin EXEC	Configure OTP survival time.	switch (config)# otp interval
`otp display-mode (attempt-failed | fixed-display)`	Admin EXEC	Configure OTP display mode.	switch (config)# otp display-mode attempt-failed switch (config)# otp display-mode fixed-display
`otp ssh-first-phase-auth username WORD<1-32> password WORD<1-32>`	Admin EXEC	Configure OTP SSH login information.	switch (config)# otp ssh-first-phase-auth username admin password 12345678

1.6.7 Account Manager

Table 1.24: Account Manager

Function	Privilege	Description	Example
`show username`	User EXEC	Show all user accounts in local database.	switch# show username
`show privilege`	User EXEC	Show current privilege level.	switch# show privilege
`username WORD<0-32> [privilege (admin|user)] (password WORD<0-32>) | ( secret [encrypted] WORD<0-32>) | nopassword`	Admin EXEC	Use "username" command to add a new user account or edit an existing user account.	switch (config)# username test privilege admin secret 1234
`no username WORD<0-32>`	Admin EXEC	Delete an existing user account.	switch (config)# no username test

Table 1.24: Account Manager (Continued)

Function	Privilege	Description	Example
`enable (password | (secret [encrypted])) PASSWORD`	Admin EXEC	Edit password for each privilege level to enable authentication.	switch (config)# enable secret 1234
`no enable`	Admin EXEC	Restore enable password to default empty value.	switch (config)# no enable

1.6.8 DoS Attack Prevention

Table 1.25: DoS Attack Prevention

Function	Privilege	Description	Example
`show dos`	User EXEC	Show current dos global state.	switch# show dos
`show dos interfaces IF_PORTS`	User EXEC	Show dos configuration on selected ports.	switch# show dos interfaces GigabitEthernet 1
`[no] dos (tcp-frag-off-min-check|synrst-deny|synfin-deny|xma-deny|nullscan-deny|syn-sportl1024-deny|tcphdr-min-check|smurf-deny|icmpv6-ping-max-check|icmpv4-ping-max-check|icmp-frag-pkts-deny|ipv6-min-frag-size-check|pod-deny|tcpblat-deny|udpblat-deny|land-deny|daeqsa-deny)`	Admin EXEC	Configure DUT to enable/disable support types of attacks.	switch (config)# no dos land-deny switch (config)# dos land-deny

1.6.9 IP Security

Table 1.26: IP Security

Function	Privilege	Description	Example
`show ip-security`	User EXEC	Display IP security information.	switch# show ip-security
`[no] ip-security`	Admin EXEC	Disable or enable IP security.	switch (config)# ip-security

Table 1.26: IP Security (Continued)

Function	Privilege	Description	Example
`ip-security ip A.B.C.D mask A.B.C.D [service (ping | http | https | telnet | ssh | snmp) state (enable | disable)]`	Admin EXEC	Add a specified IP (and service) entry for IP security usage.	switch (config)# ip-security ip 192.168.1.1 mask 255.255.0.0 service ping state enable
`no ip-security ip A.B.C.D mask A.B.C.D`	Admin EXEC	Remove specified IP security entry.	switch (config)# no ip-security ip 192.168.1.1 mask 255.255.0.0

1.6.10 Access Control List

Table 1.27: Access Control List

Function	Privilege	Description	Example
`show ipacl [entry-id WORD<1-7>]`	User EXEC	Display IP ACL entry information.	switch# show ipacl
`show macacl [entry-id WORD<1-7>]`	User EXEC	Display MAC ACL entry information.	switch# show macacl 3
`macacl entry-id <1-250>`	Admin EXEC	Specify MAC ACL entry id.	switch# configure switch (config)# macacl entry-id 10
`no macacl entry-id WORD<1-7>`	Admin EXEC	Remove the MAC ACL entry with specified id.	switch# configure switch (config)# no macacl entry-id 10
`ipacl entry-id <1-250>`	Admin EXEC	Specify IP ACL entry id.	switch# configure switch(config)# ipacl entry-id 20
`no ipacl entry-id WORD<1-7>`	Admin EXEC	Remove the IP ACL entry with specified id.	switch# configure switch (config)# no ipacl entry-id 2
`dst-mac A:B:C:D:E:F mask A:B:C:D:E:F`	Admin EXEC	Specify destination MAC address and mask for MAC ACL entry.	switch# configure switch (config)# macacl entry-id 10 switch (config-macacl)# dst-mac 96:FA:95:1D:67:4A mask FF:FF:FF:00:00:00 switch (config-macacl)# exit
`no dst-mac`	Admin EXEC	Remove destination MAC address for MAC ACL entry.	switch (config-macacl)# no dst-mac
`src-mac A:B:C:D:E:F mask A:B:C:D:E:F`	Admin EXEC	Specify source MAC address and mask for MAC ACL entry.	switch# configure switch (config)# macacl entry-id 10 switch (config-macacl)# src-mac 96:FA:95:1D:67:4A mask FF:FF:FF:00:00:00
`no src-mac`	Admin EXEC	Remove source MAC address for MAC ACL entry.	switch# configure switch (config)# macacl entry-id 10 switch (config-macacl)# no src-mac

Table 1.27: Access Control List (Continued)

Function	Privilege	Description	Example
`ethertype <0-65535>`	Admin EXEC	Specify the Ether type for MAC ACL entry.	switch# configure switch (config)# macacl entry-id 10 switch (config-macacl)# ethertype 100
`no ethertype`	Admin EXEC	Remove Ether type for MAC ACL entry.	switch# configure switch (config)# macacl entry-id 10 switch (config-macacl)# no ethertype
`vlanid <1-4094>`	Admin EXEC	Specify the VLAN id for MAC ACL entry.	switch# configure switch (config)# macacl entry-id 10 switch (config-macacl)# vlan id 10 switch (config-macacl)# exit
`no vlanid`	Admin EXEC	Remove the VLAN id for MAC ACL entry.	switch# configure switch (config)# macacl entry-id 10 switch (config-macacl)# no vlnaid switch (config-macacl)# exit
`dst-ip A.B.C.D mask A.B.C.D`	Admin EXEC	Specify destination IP address and mask for IP ACL entry.	switch# configure switch (config)# ipcacl entry-id 20 switch (config-ipacl)# dst-ip 192.168.1.6 mask 255.255.255.0 switch (config-ipacl)# exit
`no dst-ip`	Admin EXEC	Remove destination IP address for IP ACL entry.	switch (config-ipacl)# no dst-ip
`src-ip A.B.C.D mask A.B.C.D`	Admin EXEC	Specify source IP address and mask for IP ACL entry.	switch# configure switch (config)# ipcacl entry-id 20 switch (config-ipacl)# src-ip 192.168.1.3 mask 192.168.1.254 switch (config-ipacl)# exit
`no src-ip`	Admin EXEC	Remove source IP address for IP ACL entry.	switch# configure switch (config)# ipcacl entry-id 20 switch (config-ipacl)# no src-ip switch (config-ipacl)# exit
`no protocol`	Admin EXEC	Remove the IP protocol for IP ACL entry.	switch# configure switch (config)# ipcacl entry-id 2 switch (config-ipacl)# no protocol switch (config-ipacl)# exit
`protocol icmp`	Admin EXEC	Specify the IP protocol with ICMP for IP ACL entry.	switch# configure switch (config)# ipcacl entry-id 2 switch (config-ipacl)# proto-col icmp switch (config-ipacl)# exit

Table 1.27: Access Control List (Continued)

Function	Privilege	Description	Example
`protocol tcp [dstport <0-65535>] [srcport <0-65535>]`	Admin EXEC	Specify the destination and source ports of TCP protocol for IP ACL.	switch# configure switch (config)# ipcacl entry-id 2 switch (config-ipacl)# protocol tcp dstport 10 srcport 15
`protocol udp [dstport <0-65535>] [srcport <0-65535>]`	Admin EXEC	Specify the destination and source ports of UDP protocol for IP ACL.	switch# configure switch (config)# ipcacl entry-id 2 switch (config-ipacl)# protocol udp dstport 20 srcport 25 switch (config-ipacl)# exit
`action permit`	Admin EXEC	Specify the MAC/IP ACL action to be permit.	switch# configure switch (config)# macacl entry-id 20 switch (config-macacl)# action permit switch (config-macacl)# exit
`action drop`	Admin EXEC	Specify the MAC/IP ACL action to be drop.	switch# configure switch (config)# macacl entry-id 20 switch (config-macacl)# action drop switch (config-macacl)# exit
`action assign-queue <1-8>`	Admin EXEC	Specify the MAC/IP ACL action to be assign queue.	switch# configure switch (config)# macacl entry-id 20 switch (config-macacl)# action assign-queue 1 switch (config-macacl)# exit
`incoming-interface IF_PORTS`	Admin EXEC	Specify the incoming interface port for MAC/IP ACL.	switch# configure switch (config)# macacl entry-id 20 switch (config-macacl)# in-coming-interface GE2 switch (config-macacl)# exit
`action redirect-portlist IF_NMLPORTS`	Admin EXEC	Specify the MAC/IP ACL action to be to be redirect action to portlist.	switch# configure switch (config)# macacl entry-id 20 switch (config-macacl)# action redirect-portlist GE3, GE4, GE8 switch (config-macacl)# exit.
`action redirect-port IF_NMLPORTS`	Admin EXEC	Specify the MAC/IP ACL action to be to be redirect action to port.	switch (config-macacl)# action redirect-port GE9 switch (config-macacl)# exit.
`[no] active`	Admin EXEC	Enable or disable the active state of MAC/IP ACL.	switch# configure switch (config)# macacl entry-id 20 switch (config-macacl)# no active switch (config-macacl)# exit

1.7 Management

1.7.1 IP Management

Table 1.28: IP Management

Function	Privilege	Description	Example
`show ip`	User EXEC	Show system IPv4 address, net mask and default gateway.	switch# show ip
`show ip dhcp`	User EXEC	Show IPv4 DHCP client enable state.	switch# show ip dhcp
`show auto-ip`	User EXEC		
`[no] ip dhcp`	Admin EXEC	Use "IP DHCP" command to enable DHCP client to get IP address from remote DHCP server. Use "No IP DHCP" command to disable DHCP client and use static IP address.	switch (config)# ip dhcp switch (config)# no ip dhcp
`ip address A.B.C.D [mask A.B.C.D]`	Admin EXEC	Modify administration IPv4 address.	switch (config)# ip address 192.168.1.200 mask 255.255.255.0
`default-gateway A.B.C.D`	Admin EXEC	Modify default gateway address.	switch (config)# ip default-gateway 192.168.1.100
`show ipv6 dhcp`	User EXEC	Show system IPv6 DHCP client enable state.	switch# show ipv6 dhcp
`show ipv6`	User EXEC	Show system IPv6 address, net mask, default gateway and auto config state.	switch# show ipv6
`[no] ipv6 dhcp`	Admin EXEC	Use "IPv6 DHCP" command enable DHCPv6 client to get IP address from remote DHCPv6 server. Use "No IPv6 DHCP" command to disable DHCPv6 client and use static IPv6 address or IPv6 auto config address.	switch (config)# ipv6 dhcp
`[no] ipv6 autoconfig`	Admin EXEC	Use "IPv6 autoconfig" command to enable IPv6 auto configuration feature. Use "No IPv6 autoconfig" command to disable IPv6 auto configuration feature.	switch (config)# no ipv6 autoconfig
`ipv6 address X:X::X:X prefix <0-128>`	Admin EXEC	Use "IPv6 address" command to specify static IPv6 address.	switch (config)# ipv6 address fe80::20e:2eff:fef1:4b3c prefix 128
`ipv6 default-gateway X:X::X:X`	Admin EXEC	Use "IPv6 default-gateway" command to modify default gateway IPv6 address.	switch (config)# ipv6 default-gateway fe80::dcad:beff:feef:103

1.7.2 SNMP

Table 1.29: SNMP

Function	Privilege	Description	Example
`show snmp`	User EXEC	Display SNMP state.	switch# show snmp
`show snmpv3`	User EXEC	Display SNMPv3 configure state.	switch# show snmpv3
`show snmp trap`	User EXEC	Display SNMP trap setting.	switch# show snmp trap
`[no] snmp`	Admin EXEC	Enable or disabled SNMP engine.	switch# configure switch (config)# snmp switch (config)# exit
`[no] snmp trap (auth|linkUpDown|warm-start|cold-start|port-security)`	Admin EXEC	Specify SNMP trap setting.	switch# configure switch (config)# snmp trap auth switch (config)# exit
`snmp community NAME (ro|rw)`	Admin EXEC	SNMP v1/v2 community name. SNMP community read or readwrite attribute for basic mode.	switch# configure switch (config)# snmp community user rw switch (config)# exit
`no snmp community NAME`	Admin EXEC	Delete SNMP community name.	switch# configure switch (config)# no snmp community user switch (config)# exit
`snmp host (A.B.C.D|X:X::X:X|HOSTNAME) [version (1|2c)] NAME`	Admin EXEC	SNMP trap host IPv4/IPv6 address or host name. v1/v2c/v3 traps. SNMP community name or user name.	switch# configure switch (config)# snmp host 192.168.1.100 version 2c private switch (config)# exit
`no snmp host (A.B.C.D|X:X::X:X|HOSTNAME) [version (1|2c)]`	Admin EXEC	Delete SNMP host.	switch# configure switch (config)# no snmp host 192.168.1.100 version 2c switch (config)# exit
`snmpv3 user NAME (ro|rw) auth (md5|sha) password WORD<8-32> priv password WORD<8-32>`	Admin EXEC	SNMPv3 user name. SNMPv3 user read or readwrite attribute for basic mode. SNMPv3 user security level, auth-protocol, prvi-protocol.	switch# configure switch (config)# snmpv3 user root rw auth md5 password 12345678 switch (config)# exit
`no snmpv3 user NAME`	Admin EXEC	Delete SNMPv3 user name.	switch# configure switch (config)# no snmp user root switch (config)# exit

1.7.3 Configuration Management

Table 1.30: Configuration Management

Function	Privilege	Description	Example
`show (startup-config|running-config)`	Admin EXEC	Show startup/running configuration.	switch# show startup-config switch# show running-config

Table 1.30: Configuration Management (Continued)

Function	Privilege	Description	Example
`show running-config interfaces IF_PORTS`	Admin EXEC	Show running configuration on selected ports.	switch# show running-config interfaces GigabitEthernet 1
`copy running-config (startup-config|)`	Admin EXEC	Copy running configuration to startup configuration.	switch# copy running-config startupst-config
`copy (running-config|startup-config) tftp://`	Admin EXEC	Copy running/startup configuration to remote tftp server.	switch# copy running-config startupst-config tftp://192.168.1.111/test1.cfg
`copy tftp://(running-config|startup-config)`	Admin EXEC	Upgrade running/startup configuration from remote tftp server.	switch# copy tftp://192.168.1.111/test2.cfg startup-config
`copy (startup-config) running-config`	Admin EXEC	Copy startup configuration to running configuration.	switch# copy startupst-config running-config
`delete (startup-config|flash://)`	Admin EXEC	Restore factory defaults, equal to command "restore-defaults".	switch# delete backup-config
`reset`	Admin EXEC	Restore system to all factory defaults.	switch# reset
`reset except for [ip-address] [vlan] [user-account]`	Admin EXEC	Restore system to all factory defaults except for specified settings.	switch# reset except for ip-address
`save`	Admin EXEC		

1.7.4 Firmware Management

Table 1.31: Firmware Management

Function	Privilege	Description	Example
`boot system (image0|image1)`	Admin EXEC	Dual image stores a backup image in the flash partition. Use "boot system" command to select the active firmware image. The other firmware image will become a backup.	switch (config)# boot system image1
`delete system (image0|image1)`	Admin EXEC	Delete firmware image stored in flash.	switch# delete system image1
`copy (flash://|tftp://) (flash://|tftp://)`	Admin EXEC	Upgrade/backup firmware image from/to remote tftp server.	switch# copy tftp://192.168.1.100/vmlinux.bix flash://image0

1.7.5 DHCP Server

Table 1.32: DHCP Server

Function	Privilege	Description	Example
`show dhcp-server [lease]`	User EXEC	Show DHCP server information. Show leased client information.	switch# show dhcp-server switch# show dhcp-server lease
`[no] dhcp-server`	Admin EXEC	Enable or disable DHCP server.	switch (config)# dhcp-server
`dhcp-server lease-time <60-86400>`	Admin EXEC	Set the lease-time of DHCP server.	switch (config)# dhcp-server lease-time 16888
`dhcp-server global low-ip-address A.B.C.D high-ip-address A.B.C.D subnet-mask A.B.C.D gateway A.B.C.D dns A.B.C.D`	Admin EXEC	Set allocate IP range, subnet mask, gateway, DNS in global settings of DHCP server.	switch (config)# dhcp-server global low-ip-address 10.1.1.1 high-ip-address 10.1.2.1 subnet-mask 255.255.0.0 gateway 10.1.1.254 dns 10.1.1.100
`no dhcp-server global`	Admin EXEC	Remove global settings of DHCP server	switch (config)# no dhcp-server global
`dhcp-server interface IF_NMLPORT low-ip-address A.B.C.D high-ip-address A.B.C.D subnet-mask A.B.C.D gateway A.B.C.D dns A.B.C.D`	Admin EXEC	Set allocate IP range, subnet mask, gateway, DNS in specified port settings of DHCP server.	switch (config)# dhcp-server interface GigabitEthernet1 low-ip-address 11.1.1.1 high-ip-address 11.1.2.1 subnet-mask 255.255.0.0 gateway 11.1.1.254 dns 11.1.1.100
`no dhcp-server interfaces IF_NMLPORT`	Admin EXEC	Remove specific port settings of DHCP server.	switch (config)# no dhcp-server interfaces GigabitEthernet1
`dhcp-server vlan entry <1-8> vlan <1-4094> low-ip-address A.B.C.D high-ip-address A.B.C.D subnet-mask A.B.C.D gateway A.B.C.D dns A.B.C.D`	Admin EXEC	Set allocate IP range, subnet mask, gateway, DNS in specified VLAN settings of DHCP server.	switch (config)# dhcp-server vlan entry 2 vlan 12 low-ip-address 12.1.1.1 high-ip-address 12.1.2.1 subnet-mask 255.255.0.0 gateway 12.1.1.254 dns 12.1.1.100
`no dhcp-server vlan entry <1-8>`	Admin EXEC	Remove specific VLAN settings of DHCP server.	switch (config)# no dhcp-server vlan entry 2
`dhcp-server option82 entry <1-2> low-ip-address A.B.C.D high-ip-address A.B.C.D subnet-mask A.B.C.D gateway A.B.C.D dns A.B.C.D`	Admin EXEC	Set allocate IP range, subnet mask, gateway, DNS in specified option 82 settings of DHCP server.	switch (config)# dhcp-server option82 entry 1 low-ip-address 13.1.1.1 high-ip-address 13.1.2.1 subnet-mask 255.255.0.0 gateway 13.1.1.254 dns 13.1.1.100

Table 1.32: DHCP Server (Continued)

Function	Privilege	Description	Example
`dhcp-server option82 entry <1-2> circuit-id format ( string | hex ) content WORD<0-120>`	Admin EXEC	Set circuit ID in specified option 82 settings of DHCP server.	switch (config)# dhcp-server option82 entry 1 circuit-id format string content Hello
`dhcp-server option82 entry <1-2> remote-id format ( string | hex ) content WORD<0-120>`	Admin EXEC	Set remote ID in specified option 82 settings of DHCP server.	switch (config)# dhcp-server option82 entry 1 remote-id format string content World
`no dhcp-server option82 entry <1-2>`	Admin EXEC	Remove specific option 82 settings of DHCP server.	switch (config)# no dhcp-server option82 entry 1

1.7.6 DHCP Client

Table 1.33: DHCP Client

Function	Privilege	Description	Example
`show dhcp-auto-provision`	User EXEC	View DHCP-auto-provision status.	switch# show dhcp-auto-provision
`[no] dhcp-auto-provision`	Admin EXEC	Enable of disable DHCP-auto-provision.	switch (config)# dhcp-auto-provision
`[no] ip dhcp option82`	Admin EXEC	Enable or disable DHCP option 82 for DHCP client.	switch (config)# ip dhcp option82
`ip dhcp option82 circuit-id format ( string | hex | user-define ) [content WORD<0-120>]`	Admin EXEC	Set circuid-id in DHCP option 82 for DHCP client.	switch (config)# ip dhcp option82 circuit-id format string Hello
`ip dhcp option82 remote-id format ( string | hex | user-define ) [content WORD<0-120>]`	Admin EXEC	Set remote-id in DHCP option 82 for DHCP client.	switch (config)# ip dhcp option82 remote-id format string World

1.7.7 System Log (SYSLOG)

Table 1.34: System Log (SYSLOG)

Function	Privilege	Description	Example
`show logging`	User EXEC	Display the global logging status.	switch# show logging
`show logging (buffered|file)`	User EXEC	Display log of buffer or file.	switch# show logging buffered
`clear logging (buffered|file)`	Admin EXEC	Clear logging information.	switch# clear logging buffered
`[no] logging`	Admin EXEC	Disable or enable logging service.	switch (config)# logging

Table 1.34: System Log (SYSLOG) (Continued)

Function	Privilege	Description	Example
`logging host (A.B.C.D|HOSTNAME) [port <0-65535>] [severity <0-7>] [facility (local0|local1|local2|local3|local4|local5|local6|local7)]`	Admin EXEC	Set remote log server information and specify the minimum severity mask and facility of logging message.	switch (config)# logging host 192.168.1.100 severity 6 facility local0
`logging (buffered|console|file) [severity <0-7>]`	Admin EXEC	Enable logging into buffer or console of file and specify the minimum severity mask of logging message.	switch (config)# logging buffered severity 6
`no logging (buffered|console|file)`	Admin EXEC	Disable logging into buffer or console or file.	switch (config)# no logging buffered
`no logging host (A.B.C.D|HOSTNAME)`	Admin EXEC	Remove remote log server.	switch (config)# no logging host 192.168.1.100

1.7.8 System Time

Table 1.35: System Time

Function	Privilege	Description	Example
`clock source (local|sntp)`	Admin EXEC	Set the source of time. Use the no form of this command to select the default setting.	switch (config)# clock source sntp switch (config)# show clock detail 08:32:12 test(UTC+5) Sep 21 2012 No time source Time zone: Acronym is DFL Offset is UTC+8
`clock timezone ACRONYM HOUR-OFFSET [minutes <0-59>]`	Admin EXEC	Use the clock timezone command to set timezone setting.	switch (config)# clock timezone test +5 switch (config)# show clock detail 10:13:27 test(UTC+5) Sep 21 2012 No time source Time zone: Acronym is test Offset is UTC+5
`no clock timezone`	Admin EXEC	Use the no form of this command to timezone default setting.	switch (config)# no clock timezone
`sntp host HOSTNAME [port <1-65535>]`	Admin EXEC	Use the clock set command to set static time. The static time won't save to configuration file.	switch# clock set 11:03:00 sep 21 2012 11:03:00 DFL(UTC+8) Sep 21 2012

Table 1.35: System Time

Function	Privilege	Description	Example
`no sntp`	Admin EXEC	Use the no form of this command to restore sntp default setting.	switch (config)# no sntp
`clock set HH:MM:SS (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec) <1-31> <2000-2035>`	Admin EXEC	Use the clock set command to set static time. The static time won't save to configuration file.	switch# clock set 11:03:00 sep 21 2012 11:03:00 DFL(UTC+8) Sep 21 2012
`clock summer-time ACRONYM date (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec) <1-31> <2000-2037> HH:MM (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec) <1-31> <2000-2037> HH:MM [<1-1440>]`	Admin EXEC	Use the clock summer-time command to set daylight saving time for system time.	switch (config)# clock summer-time ACRONYM date jan 1 2017 00:00 apr 30 2017 23:59 60
`clock summer-time ACRONYM recurring (usa|eu) [<1-1440>]`	Admin EXEC	Use the global daylight saving policy defined by an international organization.	switch (config)# clock summer-time DLS recurring usa 60
`clock summer-time ACRONYM recurring (<1-5>|first|last) (sun|mon|tue|wed|thu|fri|sat) (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec) HH:MM (<1-5>|first|last) (sun|mon|tue|wed|thu|fri|sat) (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec) HH:MM [<1-1440>]`	Admin EXEC	Use the clock summer-time recurring daylight saving time duration. The first part of the command specifies when summer time begins, and the second part specifies when it ends.	clock summer-time ACRONYM recurring 1 sun jan 20:00 last sun jan 22:00 60
`no clock summer-time`	Admin EXEC	Use the no form of this command to clock summer-time default setting.	switch (config)# no clock summer-time

1.7.9 SMTP

Table 1.36: SMTP

Function	Privilege	Description	Example
`show smtp`	User EXEC	View SMTP client information.	
`smtpc profile-id <1-2> server-ip A.B.C.D server-port <25-25>`	Admin EXEC	Set SMTP server's IP and udp port in profile 1 or 2.	switch (config)# smtpc profile-id 1 server-ip 192.168.1.100 server-port 25

Table 1.36: SMTP (Continued)

Function	Privilege	Description	Example
`smtpc profile-id <1-2> sender-mail WORD<1-64>`	Admin EXEC	Set sender's mail address in profile 1 or 2.	switch (config)# smtpc profile-id 1 sender-mail sender@advantech.com.tw
`no smtpc profile-id <1-2> sender-mail`	Admin EXEC	Remove sender's mail address in profile 1 or 2.	switch (config)# no smtpc profile-id 1 sender-mail sender@advantech.com.tw
`smtpc profile-id <1-2> target-mail WORD<1-64>`	Admin EXEC	Set target's mail address in profile 1 or 2.	switch (config)# smtpc profile-id 1 sender-mail target@advantech.com.tw
`no smtpc profile-id <1-2> target-mail ( all | WORD<1-64>)`	Admin EXEC	Remove target's mail address in profile 1 or 2.	switch (config)# no smtpc profile-id 1 sender-mail target@advantech.com.tw
`smtpc active profile-id <1-2>`	Admin EXEC	Select an enabled profile for SMTP client used.	switch (config)# smtpc active profile-id 1
`no smtpc active profile`	Admin EXEC	SMTP client will not use any profile. It means disabled.	switch (config)# no smtpc active profile
`smtpc sendmsg title WORD<1-20> content WORD<1-64>`	Admin EXEC	Send a mail for testing SMTP client.	switch (config)# smtpc sendmsg title hello content world

1.7.10 NTP Server

Table 1.37: NTP Server

Function	Privilege	Description	Example
`show ntp-server`	User EXEC	Show NTP server configuration.	switch# show ntp-server
`[no] ntp-server`	Admin EXEC	Use "ntp-server" command to enable NTP server services. Use no form to disable service.	switch (config)# ntp-server switch (config)# no ntp-server
`ntp-server server-num <1-10> address WORD<0-64>`	Admin EXEC	NTP server address configuration.	switch (config)# ntp-server server-num 1 address 192.168.1.100
`[no] ntp-server server-num <1-10>`	Admin EXEC	Use the command to delete specific NTP server.	switch (config)# ntp-server server-num 1
`ntp-server server-time HH:MM:SS (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec) <1-31> <2000-2035>`	Admin EXEC	Use the command to set static time. The static time won't save to configuration file.	switch (config)# ntp-server server-time 11:03:00 sep 21 2012
`ntp-server timezone ACRONYM HOUR-OFFSET [minutes <0-59>]`	Admin EXEC	Use the command to set timezone setting. Use the no form of this command to default setting.	switch (config)# ntp-server timezone test +5
`no ntp-server timezone`	Admin EXEC	Disable timezone setting.	

Table 1.37: NTP Server (Continued)

Function	Privilege	Description	Example
`ntp-server summer-time ACRONYM date (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec) <1-31> <2000-2037> HH:MM (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec) <1-31> <2000-2037> HH:MM [<1-1440>]`	Admin EXEC	Use the command to set daylight saving time for system time.	Reference clock summer-time setting.
`ntp-server summer-time ACRONYM recurring (usa|eu) [<1-1440>]`	Admin EXEC	Use the command to set daylight saving time for system time.	Reference clock summer-time setting.
`ntp-server summer-time ACRONYM recurring (<1-5>|first|last) (sun|mon|tue|wed|thu|fri|sat) (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec) HH:MM (<1-5>|first|last) (sun|mon|tue|wed|thu|fri|sat) (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec) HH:MM [<1-1440>]`	Admin EXEC	Use the command to set daylight saving time for system time.	Reference clock summer-time setting.
`ntp-server manual-time (enable | disable)`	Admin EXEC	Manually set the system clock.	switch (config)# ntp-server manual-time enable switch (config)# ntp-server manual-time disable

1.7.11 RMON

Table 1.38: RMON

Function	Privilege	Description	Example
`show rmon (statistics | history | alarms | events)`	User EXEC	Display RMON setting configuration.	switch# show rmon history
`rmon statistics index <1-65535> interface IF_NMLPORT [owner OWNER<1-32>]`	Admin EXEC	Specify RMON statistics index. Specify statistics interface. Specify owner.	switch# configure switch (config)# rmon statistics index 10 interface gi1 owner ADV switch (config)# exit

Table 1.38: RMON (Continued)

Function	Privilege	Description	Example
`no rmon statistics index <1-65535>`	Admin EXEC	Delete snmp statistics index.	switch# configure switch (config)# no rmon statistics index 10 switch (config)# exit
`rmon history index <1-65535> interface IF_NMLPORT [buckets <1-50>] [interval <1-3600>] [owner OWNER<1-32>]`	Admin EXEC	Specify RMON history index. Specify history interface. Specify history bucket time. Specify history record interval time. Specify owner.	switch# configure switch (config)# rmon history index 10 interface gi1 buckets 20 interval 1000 owner ADV switch (config)# exit
`no rmon history index <1-65535>`	Admin EXEC	Delete SNMP history index.	switch# configure switch (config)# no rmon history index 10 switch (config)# exit
`rmon alarm index <1-65535> oid-variable OID<255> interval <1-2147483647> (absolute|delta) rising-threshold <0-2147483647> rising-event-index <1-65535> falling-threshold <0-2147483647> falling-event-index <1-65535> [owner OWNER<1-32>]`	Admin EXEC	Specify RMON alarm index. Specify alarm OID. Specify alarm check value frequency. How to compare values Specify rasing-threshold. Specify rasing-event-index. Specify falling-threshold. Specify falling-event-index. Specify owner.	switch# configure switch (config)# rmon statistics index 10 interface gi1 owner ADV switch (config)# exit
`no rmon alarm index <1-65535>`	Admin EXEC	Delete SNMP statistics index.	switch# configure switch (config)# no rmon alarm index 10 switch (config)# exit
`rmon event index <1-65535> description DESC<128> [log] [trap community-name OWNER<1-32>] [owner OWNER<1-32>]`	Admin EXEC	Specify RMON event index. Specify event description. Specify log flag for recording. Specify trap name to send SNMP trap message. Specify owner.	switch# configure switch (config)# rmon event index 10 description Good for us. log trap public owner ADV switch (config)# exit
`no rmon event index <1-65535>`	Admin EXEC	Delete SNMP event index.	switch# configure switch (config)# no rmon event index 10 switch (config)# exit

1.7.12 IP Configuration

Table 1.39: IP Configuration

Function	Privilege	Description	Example
`ip address A.B.C.D [mask A.B.C.D]`	Admin EXEC	Use "IP address" command to modify administration IPv4 address.	switch (config)# ip address 192.168.1.200 mask 255.255.255.0
`ip default-gateway A.B.C.D`	Admin EXEC	Use "IP default-gateway" command to modify default gateway address.	switch (config)# ip default-gateway 192.168.1.100
`no ip default-gateway`	Admin EXEC	Use "No IP default-gateway" to restore default gateway address to factory default.	switch (config)# no ip default-gateway
`ip dns A.B.C.D [A.B.C.D]`	Admin EXEC	Use "IP DNS" command to modify DNS server address.	switch (config)# ip dns 111.111.111.111
`no ip dns A.B.C.D`	Admin EXEC	Use "No IP DNS" to delete existing DNS server.	switch (config)# no ip dns 111.111.111.111

1.7.13 TELNET

Table 1.40: TELNET

Function	Privilege	Description	Example
`ip telnet`	Admin EXEC	Use "IP service" command to enable telnet services.	switch (config)# ip telnet
`[no] ip telnet`	Admin EXEC	Use no form to disable service.	switch (config)# no ip telnet

1.7.14 SSH

Table 1.41: SSH

Function	Privilege	Description	Example
`ip ssh`	Admin EXEC	Use "IP service" command to enable ssh services.	switch (config)# ip ssh
`[no] ip ssh`	Admin EXEC	Use no form to disable service.	switch (config)# no ip ssh
`show ip ssh`	User EXEC	Show current ssh service status.	switch# show ip ssh

1.7.15 HTTP

Table 1.42: HTTP

Function	Privilege	Description	Example
`ip http`	Admin EXEC	Use "IP service" command to enable http services.	switch (config)# ip http
`ip https`	Admin EXEC	Use "IP service" command to enable https services.	switch (config)# ip https
`[no] ip https`	Admin EXEC	Use no form to disable service.	switch (config)# no ip http

Table 1.42: HTTP (Continued)

Function	Privilege	Description	Example
`[no] ip http`	Admin EXEC	Use no form to disable service.	switch (config)# no ip http switch (config)# no ip https
`show ip (http|https)`	User EXEC	Show current https or http service status.	switch# show ip https
`ip (http|https) session-timeout <0-86400>`	Admin EXEC	Use "IP session-timeout" command to specify the session timeout value for http or https service.	switch (config)# ip http session-timeout 15 switch (config)# ip https session-timeout 20

1.7.16 Modbus TCP

Table 1.43: Modbus TCP

Function	Privilege	Description	Example
`show tcp-modbus status`	User EXEC	Show current TCP-modbus status.	switch# show tcp-modbus status
`show tcp-modbus timeout`	User EXEC	Show current TCP-modbus timeouts value.	switch# show tcp-modbus timeout
`[no] tcp-modbus`	Admin EXEC	Use "TCP-modbus" command to enable TCP modbus services. Use no form to disable service.	switch (config)# tcp-modbus switch (config)# no tcp-modbus

1.7.17 IXM

Table 1.44: IXM

Function	Privilege	Description	Example
`[no] ixm`	Admin EXEC	Use "IXM" command to enable IXM services. Use no form to disable service.	switch (config)# ixm switch (config)# no ixm

1.8 Diagnostic

1.8.1 Cable Diagnostic

Table 1.45: Cable Diagnostic

Function	Privilege	Description	Example
`show cable-diag interfaces IF_NMLPORTS`	User EXEC	Display the estimated length of copper cable attached to the ports. Show cable-diag interface all. Display the estimated length of copper cables attached to all ports. show cable-diag interface Display the estimated length of copper cable attached to port gi1.	This example show the cable's information which link in gi1. switch (config)# show cable-diag interfaces gi1 Port | Speed | Local pair | Pair length | Pair status ------ + ------- + ----------+ ------- ------ + -------------- gi1 | auto | Pair A | 0.88 | Open Pair B | 0.87 | Open Pair C | 0.82 | Open Pair D | 0.82 | Open

1.8.2 DMI

Table 1.46: DMI

Function	Privilege	Description	Example
`show dmi IF_PORTS information`	Admin EXEC	Use this command to display the information of EEPROM and Digital Diagnostic Monitoring Interface in SFP Optical Transceivers.	This example show SFP Optical Transceivers information whicn plug-in fa10. switch# show dmi FastEthernet 10 information
`[no] dmi (alarm|warning) (temperature|volta g|txbasis|txpower| rxpower) (high|low) state`	Admin EXEC	Use this command to enable/disable the mechanism that monitors SFP Optical Transceiver's Digital Diagnostic Monitoring interface information. Use no form to disable warning/alarm mechanism.	This example shows how to enable temperature's high threshold monitor mechanism with alarm level. (Current sfp plug-in in fa10). switch (config)# interface FastEthernet 10 switch (config-if)# dmi alarm temperature high state
`dmi (alarm|warning) (temperature|volta g|txbasis|txpower| rxpower) (high|low) value INPUT_VALUE`	Admin EXEC	Use this command to configure high/low threshold value used to compare with SFP Optical Transceiver's Digital Diagnostic Monitoring interface's value (temperature, voltage, etc).	This example shows how to configure the temperature high threshold value is 30.5 with alarm level. switch (config-if)# dmi alarm temperature high value 30.5

Table 1.46: DMI (Continued)

Function	Privilege	Description	Example
`[no] dmi alarm-warning message (log|snmp|mail)`	Admin EXEC	Use this command to determine which method to use when notifying of user alarm/warning events.	This example shows how to configure alarm-warning message is system log. switch (config)# dmi alarm-warning message log

1.8.3 IP-based Diagnostic

Table 1.47: IP-based Diagnostic

Function	Privilege	Description	Example
`ping HOSTNAME [count <1-5>] [interval <1-5>] [size <8-5120>]`	User EXEC	Use "ping" command to do network ping diagnostic.	switch# ping 192.168.1.100 count 4 interval 4 size 128
`ping6 HOSTNAME [count <1-5>] [interval <1-5>] [size <8-5120>]`	User EXEC	Use "ping6" command to carry out network ping diagnostic.	switch# ping6 192.168.1.100 count 4 interval 4 size 128
`show arp`	User EXEC	Use "show arp" command to show all arp entries.	Switch# show arp
`clear arp [A.B.C.D]`	Admin EXEC	Use "clear arp" command to clear all arp entries or one specific arp entry.	Switch# clear arp

1.8.4 PoE

Table 1.48: PoE

Function	Privilege	Description	Example
`show poe (system|port)`	User EXEC	Use "show PoE (system|port)" command to show current PoE setting value and status.	This example shows current PoE status per port. switch# show poe port
`poe`	Admin EXEC	Use PoE command to enter PoE's control level.	This example shows how to enter PoE control level. switch# configure switch (config)# poe switch (config-poe)#
`system powerlimit <0-800>`	Admin EXEC	Use "system powerlimit" command to configure how much power can be used in entire system.	This example shows how to configure whole system available power to 720W. switch (config-poe)# system power-limit 120
`system legacy-mode(enable| disable)`	Admin EXEC	Use "legacy-mode (enable | disable)" command to configure supply power mechanism in whole system.	This example show how to configure supply power mechanism to legacy mode. switch (config-poe)# system legacy-mode enable

Table 1.48: PoE (Continued)

Function	Privilege	Description	Example
`interfaces IF_NMLPORT state (enable|disable)`	Admin EXEC	Use "state (enable|disable)" command to configure whether PoE port will supply power or not.	This example shows how to stop PoE port supply power via fa1. switch (config-poe)# interfaces FastEthernet 1 state disable
`interfaces IF_NMLPORT priority (low|medium|high|critical)`	Admin EXEC	Use "priority (low|medium|high|critical)" command to configure PoE port's priority of power supply sequence.	This example shows how to configure fa1 as the most high priority level in power supply sequence. switch (config-poe)# interfaces FastEthernet 1 priority critical
`interfaces IF_NMLPORT power-limit <0-32000>`	Admin EXEC	Use "power-limit <0-30000>" command to configure how much power can be used via PoE port.	This example shows how to configure fa1's power of PoE to 15W. switch (config-poe)# interfaces FastEthernet 1 power-limit 15000
`interfaces IF_NMLPORT tyep (af | both_at_af)`	Admin EXEC	Use "type (af | both_at_af)" command to determine which PoE protocol support by PoE port. Two option can be selected: AF only or AT/AF .	This example show how to configure gi1's PoE only support AF proctocol only. switch (config-poe)# interfaces GigabitEthernet 1 type af
`interfaces IF_NMLPORT class-error-bypass (enable | disable)`	Admin EXEC	Use “class-error-bypass (enable | disable)” command to configure PoE port supply power ignore error class detected. This command is typically used when PSE detects PD-class errors.	This example show how to configure the gi1 PoE power supply during a detected class error. switch (config-poe)# interfaces GigabitEthernet 1 class-error-bypass enable

1.8.5 LED

Table 1.49: LED

Function	Privilege	Description	Example
`show led`	User EXEC	Use "show LED" command to show current LED event status and error times.	This example shows current LED event and its own error times. switch# show led (ALARM LED) EVENTS | STATUS | ERROR TIMES ---------- + ---------- + ---------- Power Failure | ERROR | 1 ---------- + ---------- + ----------

Table 1.49: LED (Continued)

Function	Privilege	Description	Example
`[no] led (alarm | system)`	Admin EXEC	Use "LED (alarm | system)" command to configure LED indication mechanism. Use no form to disable LED indication mechanism configuration.	This example shows how to configure enable alarm LED indication mechanism. switch (config)# led alarm
`[no] led (alarm | system) (power-failure | fiber-down | always)`	Admin EXEC	Use "(power-failure | fiber-down | always)" command to configure which event will be binding with which LED indication mechanism. Use no form to remove event from LED indication mechanism.	This example shows how to add the event fiber-down to alarm LED indication mechanism. switch (config)# led alarm fiber-down
`led system blink interval <0-3>`	Admin EXEC	Use "LED system blink interval" command to configure how long system LED will blink for.	This example shows how to configure system LED blink interval. switch (config)# led system blink interval 3

1.8.6 System

Table 1.50: System

Function	Privilege	Description	Example
`show version`	User EXEC	Use "show version" command to show loader and firmware version and build date.	switch# show version
`show info`	User EXEC	Use "show info" command to show system summary information.	switch# show info
`reboot`	Admin EXEC	Use "reboot" command to make system hot restart.	switch# reboot
`show language`	User EXEC		
`show flash`	User EXEC	Use "show flash" command to show all files" status which stored in flash.	switch# show flash
`clear line telnet`	Admin EXEC		
`terminal length <0-24>`	User EXEC		
`show network-port`	User EXEC	Show network port information.	switch (config)# no network-port type http
`[no] network-port type (http|https|telnet|ssh)`	Admin EXEC	Use no form to restore default value.	
`network-port type (http|https|telnet|ssh) port-num <1-65535>`	Admin EXEC	Use the command to change network port.	switch (config)# network-port type http port-num 8080

Table 1.50: System (Continued)

Function	Privilege	Description	Example
`system name NAME`	Admin EXEC	Use "system name" command to modify system name information of the switch.	switch (config)# system name myname
`system location LOCATION`	Admin EXEC	Use "system contact" command to modify contact information of the switch.	switch (config)# system contact callme
`system contact CONTACT`	Admin EXEC	Use "system location" command to modify location information of the switch.	switch (config)# system location home

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