

User Manual

Command Line Interface

DP612

Industrial 12G Layer 3 Managed PoE Switch

DS612

Industrial 12G Layer 3 Managed Switch

Feb.07.2018 V.1

WoMaster

DP612 Industrial 12G L3 Managed PoE Switch

DS612 Industrial 12G L3 Managed Switch

WoMaster Command Line Interface User Manual

Copyright Notice

© WoMaster. All rights reserved.

About This Manual

This user manual is intended to guide a professional installer to configure the device through Command Line Interface. It includes procedures to assist you in avoiding unforeseen problems.



NOTE:

Only qualified and trained personnel should be involved with installation, inspection, and repairs of this switch.

Disclaimer

WoMaster reserves the right to make changes to this Manual or to the product hardware at any time without notice. Information provided here is intended to be accurate and reliable. However, it might not cover all details and variations in the equipment and does not claim to provide for every possible contingency met in the process of installation, operation, or maintenance. Should further information be required or should particular problem arise which are not covered sufficiently for the user's purposes, the matter should be referred to WoMaster. Users must be aware that updates and amendments will be made from time to time to add new information and/or correct possible unintentional technical or typographical mistakes. It is the user's responsibility to determine whether there have been any such updates or amendments of the Manual. WoMaster assumes no responsibility for its use by the third parties.

WoMaster Online Technical Services

At WoMaster, you can use the online service forms to request the support. The submitted forms are stored in server for WoMaster team member to assign tasks and monitor the status of your service. Please feel free to write to help@womaster.eu if you encounter any problems.

TABLE OF CONTENTS

COVER.....	1
TABLE OF CONTENTS.....	3
1. COMMAND LINE INTERFACE (CLI) INTRODUCTION	4
1.1 PREPARATION FOR SERIAL CONSOLE	4
1.2 PREPARATION FOR TELNET CONSOLE	5
2. UNDERSTANDING ALL COMMANDS.....	7
3. COMMANDS.....	12
3.1 CLI COMMANDS FOR SYSTEM CONFIGURATION.....	12
3.2 CLI COMMANDS FOR PORT CONFIGURATION	17
3.3 CLI COMMANDS FOR PoE CONFIGURATION (PoE Model Only)	22
3.4 CLI COMMANDS FOR REDUNDANCY CONFIGURATION	27
3.5 CLI COMMANDS FOR VLAN CONFIGURATION	36
3.6 CLI COMMANDS FOR QOS CONFIGURATION	44
3.7 CLI COMMANDS FOR MULTICAST FILTERING CONFIGURATION.....	48
3.8 CLI COMMANDS FOR SNMP CONFIGURATION	50
3.9 CLI COMMANDS FOR SECURITY CONFIGURATION	63
3.10 CLI COMMANDS FOR WARNING CONFIGURATION	66
3.11 CLI COMMANDS FOR DIAGNOSTICS CONFIGURATION	70
3.12 CLI COMMANDS FOR BACKUP RESTORE.....	73
3.13 CLI COMMANDS FOR FIRMWARE UPGRADE.....	74
3.14 CLI COMMANDS FOR RESET.....	74
3.15 CLI COMMANDS FOR SAVE & LOAD	74
3.16 CLI COMMANDS FOR LOGOUT	75
3.17 CLI COMMANDS FOR REBOOT	75

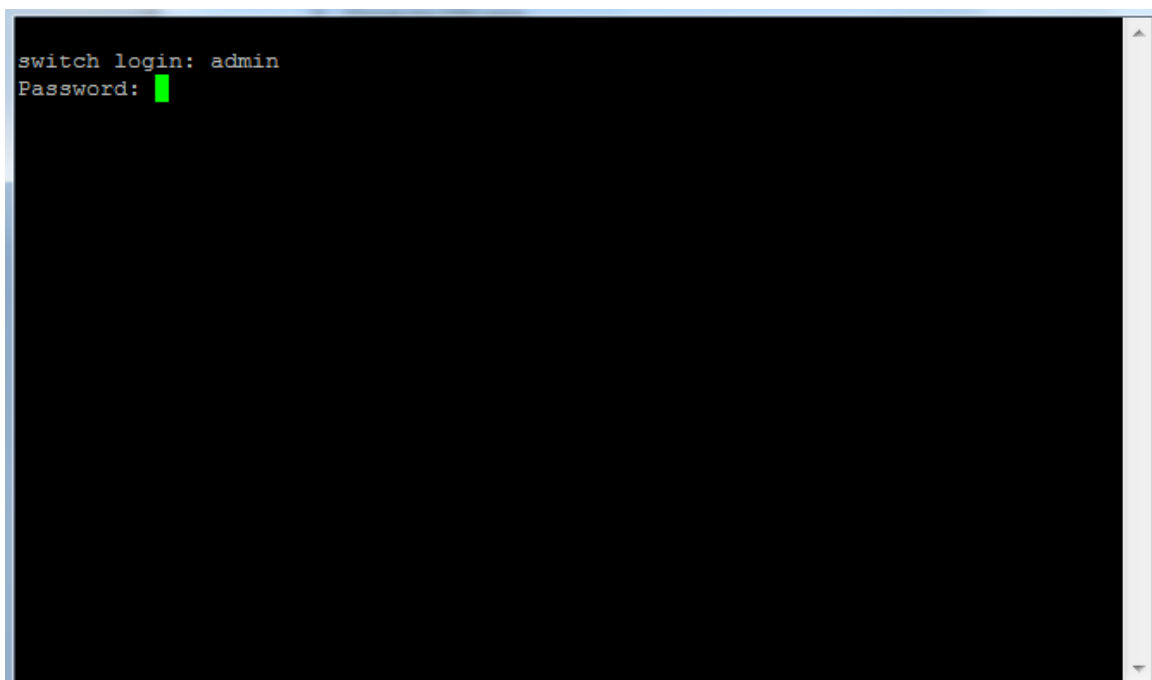
1. COMMAND LINE INTERFACE (CLI) INTRODUCTION

The Command Line Interface (CLI) is the user interface to the switch's embedded software system. The CLI in WoMaster switches can be accessed through either the serial console or Telnet console. The explanation for Serial and Telnet console preparation would be explained below:

1.1 PREPARATION FOR SERIAL CONSOLE

Attach RJ-45 to RS-232 DB-9 console cable to PC's COM port; connect RJ45 connector to the Console port of the WoMaster Managed Switch.

1. Go to Start -> Program -> Accessories -> Communication -> Hyper Terminal
2. Give a name to the new console connection.
3. Choose the COM name
4. Select correct serial settings. The serial settings of **WoMaster Managed switches** are as below:
Baud Rate: 115200 / Parity: None / Data Bit: 8 / Stop Bit: 1
5. After connected, switch login screen can be seen.

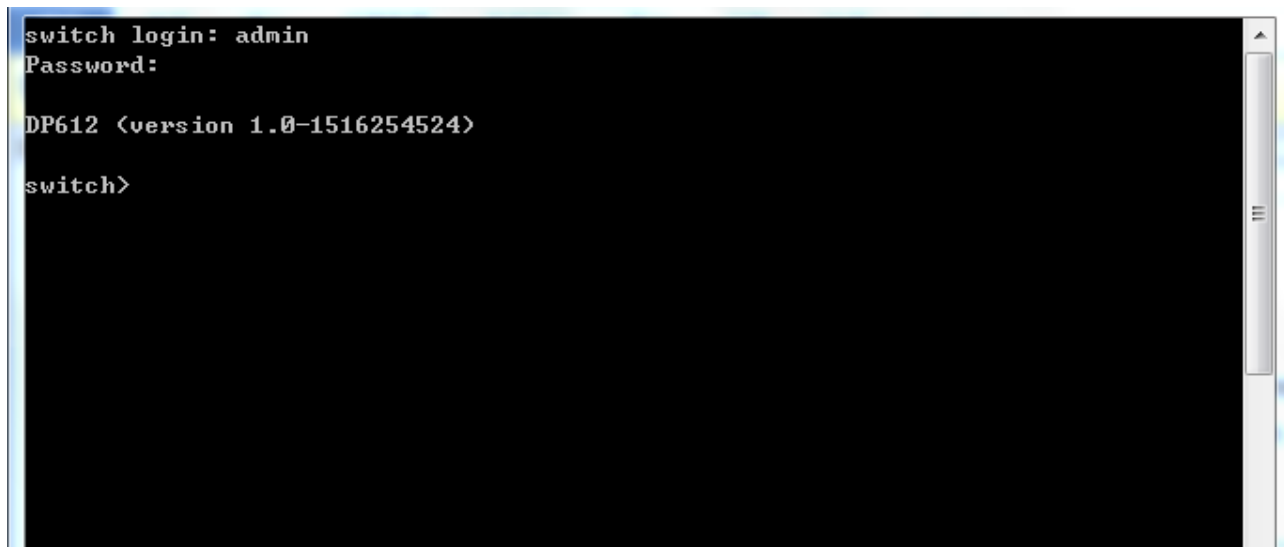


6. Login the switch. The default username: **admin**; password: **admin**.

1.2 PREPARATION FOR TELNET CONSOLE

WoMaster managed switch supports Telnet console. User can connect to the switch by Telnet and the command lines are the same as what user sees by RS232 console port. Below are the steps to open Telnet connection to the switch.

1. Start -> Run -> cmd. ->**Enter**
2. Type the **Telnet 192.168.10.1** (or the IP address of the switch). And then press **Enter**, user will directly enter the Telnet console.
3. Type the Login Name and its Password. The default Login Name and Password are **admin / admin**.



```
switch login: admin
Password:
DP612 <version 1.0-1516254524>
switch>
```

SSH (Secure Shell)

WoMaster managed SWITCH also supports SSH console. User can remotely connect to the switch by command line interface. The SSH connection can secure all the configuration commands user sent to the switch.

SSH is a client/server architecture while the switch is the SSH server. When user wants to make SSH connection with the switch, user should download the SSH client tool first.

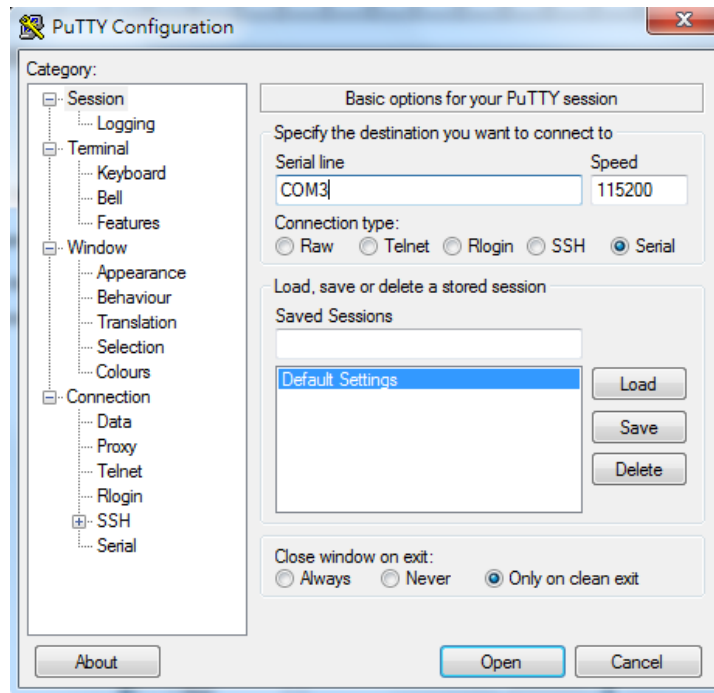
SSH Client

There are many free, sharewares, trials or charged SSH clients user can find on the internet, e.g., PuTTY is a free and popular Telnet/SSH client. We'll use this tool to demonstrate how to login by SSH. (PuTTY copyright 1997-2016 Simon Tatham).

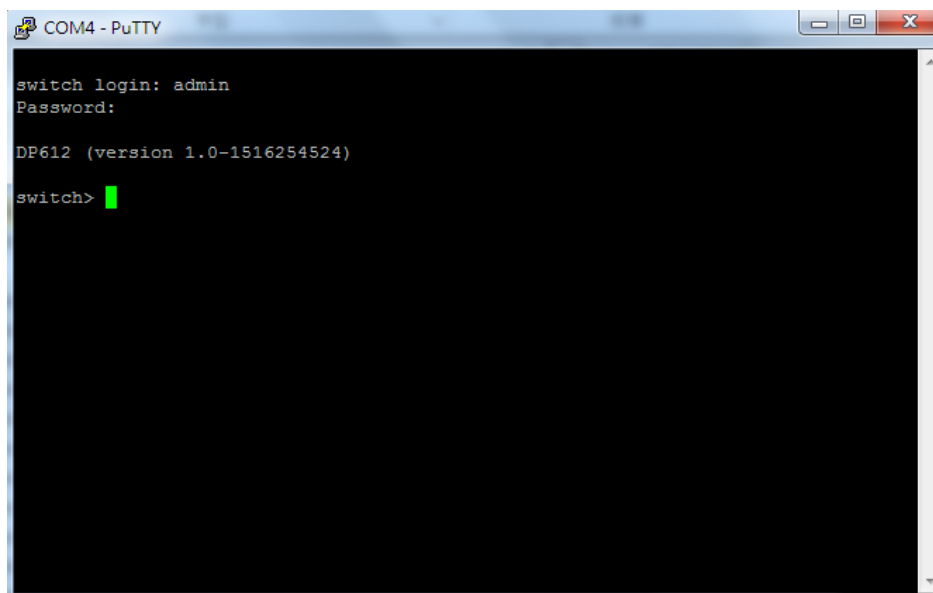
Download PuTTY: <http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>

1. Open SSH Client/PuTTY

In the **Session** configuration, choose the **Serial** protocol then enter the **Serial line** and **Speed**. For the serial line, please check the device manager to make sure the serial line name. The speed should be 115200. Then click on **Open** to start the SSH session console.



2. After it user can see the CLI command screen is pop-up
3. Type the Switch Login name and its Password. The default setting are **admin / admin**.



4. All the commands user sees in Putty are the same as the CLI commands user sees via RS232 console.

The next chapter will introduce in detail how to use command line to configure some features in the switch.

2. UNDERSTANDING ALL COMMANDS

For either type of connection, access to the command line interface is generally referred to as an EXEC session. There are some different command modes. Each command mode has its own access ability, available command lines and uses different command lines to enter and exit.

User EXEC mode: As long as user login the SWITCH by CLI. User is in the **User EXEC mode**. User can ping, telnet remote device, and show some basic information. Type **exit** to logout. Press **?** to see the command list

SWITCH> ?	
enable	Turn on privileged mode command
exit	Exit current mode and down to previous mode
list	Print command list
ping	Send echo messages
quit	Exit current mode and down to previous mode
show	Show running system information
telnet	Open a telnet connection
tracert	Trace route to destination

Privileged EXEC mode: Press enable in the **User EXEC mode**, then User can enter the **Privileged EXEC mode**. In this mode, the system allows User to view current configuration, reset default, reload SWITCH, show system information, save configuration and enter the global configuration mode. Type **exit** to leave and press **?** to see the command list.

SWITCH# ?	
archive	Manage archive files
clear	Remove all ARP entries
clock	Configure time-of-day clock
configure	Configuration from vty interface
copy	Copy from one file to another
debug	Debugging functions (see also 'undebug')
dir	Display a list of files
disable	Turn off privileged mode command
dot1x	IEEE 802.1x standard access security control
end	End current mode and change to enable mode
exit	Exit current mode and down to previous mode
list	Print command list
mac	MAC interface commands
no	Negate a command or set its defaults
pager	Terminal pager
ping	Send echo messages
quit	Exit current mode and down to previous mode
reboot	Reboot system
reload	copy a default-config file to replace the current one
show	Show running system information
telnet	Open a telnet connection
tracert	Trace route to destination
usb	USB
write	Write running configuration to memory, network, or terminal

Global Configuration Mode: Type configure terminal in privileged EXEC mode. Then User can enter the Global Configuration mode. In Global Configuration mode, User can configure all the features that the system provides. Type **exit** to leave and press **?** to see the command list.

The command lists of global configuration mode.

SWITCH(config)# ?	
access-list	Add an access list entry
administrator	Administrator account setting
arp	Set a static ARP entry
auth	Authentication
cfm	IEEE 802.1ag - Connectivity Fault Management
clock	Configure time-of-day clock
default	Set a command to its defaults
dot1x	IEEE 802.1x standard access security control
end	End current mode and change to enable mode
erps	Ethernet Ring Protection Switching (ITU-T G.8032)
exit	Exit current mode and down to previous mode
gmrp	GMRP protocol
gvrp	GARP VLAN Registration Protocol
hostname	Set system's network name
interface	Select an interface to configure
ip	Global IP configuration subcommands
ipv6	IP information
key	Authentication key management
lacp	Link Aggregation Control Protocol
list	Print command list
lldp	Link Layer Discovery Protocol
log	Logging control
mac	Global MAC configuration subcommands
mac-address-table	mac address table
mirror	Port mirroring
nameserver	DNS Server
no	Negate a command or set its defaults
ntp	Configure NTP
poe	Configure power over ethernet
ptp	IEEE1588 PTPv2
qos	Quality of Service (QoS)
relay	relay output type information
route-map	Create route-map or enter route-map command mode
router	Enable a routing process
service	enable service
sfp	Small form-factor pluggable
smtp-server	SMTP server configuration
snmp-server	the SNMP server
spanning-tree	the spanning tree algorithm
trunk	Trunk group configuration
vlan	Virtual LAN
warning-event	Warning event selection
write-config	Specify config files to write to

Interface Configuration: Many features are enabled for a particular interface. The Interface commands enable or modify the operation of an interface. In this mode, a physical port is set up for a specific logical connection operation. The Interface Configuration mode provides access to the router interface configuration commands.

This section has two interface configuration, **Port interface** and **VLAN interface**. For Port interface, type **interface IFNAME** in global configuration mode. Then User can enter the interface configuration mode. In this mode, User can configure port settings. In port interface, the name of Giga Ethernet port 1 is ge1, Giga Ethernet 2 is ge2, and so on. Type **exit** to leave current level and press **?** to see the command list

The command lists of the global configuration mode.

```
SWITCH(config)# interface ge1
SWITCH(config-if)# ?

acceptable          Configures the 802.1Q acceptable frame types of a port.
auto-negotiation    Enables auto-negotiation state of a given port
description         Interface specific description
dot1x               IEEE 802.1x standard access security control
duplex              Specifies the duplex mode of operation for a port
end                 End current mode and change to enable mode
ethertype           Ethertype
exit                Exit current mode and down to previous mode
flowcontrol         Sets the flow-control value for an interface
garp                General Attribute Registration Protocol
ingress             802.1Q ingress filtering features
ip                  Interface Internet Protocol config commands
lacp                Link Aggregation Control Protocol
list                Print command list
loopback            Specifies the loopback mode of operation for a port
mac                 MAC interface commands
media-type           Specify media type
mtu                 Specifies the MTU on a port.
no                  Negate a command or set its defaults
poe                 Configure power over ethernet
qos                 Quality of Service (QoS)
quit                Exit current mode and down to previous mode
rate-limit          Rate limit configuration
sfp                 Small form-factor pluggable
shutdown            Shutdown the selected interface
spanning-tree       the spanning-tree protocol
speed               Specifies the speed of a Fast Ethernet port or a Gigabit Ethernet port.
storm-control        Enables packets flooding rate limiting features
switchport          Set switching mode characteristics
```

The second section is VLAN interface, press **interface VLAN (VLAN-ID)** in global configuration mode. User can then enter VLAN interface configuration mode. In this mode, User can configure the settings for the specific VLAN. In VLAN interface, the name of VLAN 1 is VLAN 1, VLAN 2 is VLAN 2, and so on. To leave VLAN interface mode type **exit**. Press **?** to see the available command list.

The command lists of the VLAN interface configuration mode.

```
SWITCH(config)# interface vlan 1
SWITCH(config-if)# ?
description    Interface specific description
end            End current mode and change to enable mode
exit          Exit current mode and down to previous mode
ip            Interface Internet Protocol config commands
ipv6          Interface Internet Protocol config commands
list          Print command list
no            Negate a command or set its defaults
quit          Exit current mode and down to previous mode
shutdown      Shutdown the selected interface
vrrp          Virtual Router Redundancy Protocol (VRRP)
```

The table below presents the summary of the 5 command modes:

COMMAND MODE	MAIN FUNCTION	PROMPT
User EXEC	This is the first level of access. User can ping, telnet remote device, and show some basic information	SWITCH>
Privileged EXEC	In this mode, the system allows User to view current configuration, reset default, reload switch, show system information, save configuration...and enter global configuration mode.	SWITCH#
Global Configuration	In global configuration mode, User can configure all the features that the system provides User	SWITCH(config)#
Port Interface Configuration	In this mode, User can configure port related settings.	SWITCH(config-if)#
VLAN Interface Configuration	In this mode, User can configure settings for specific VLAN.	SWITCH(config-if)#

Here are some useful commands for User to see these available commands. Save User time in typing and avoid typing error. Press **?** to see all the available commands in this mode. It helps User to see the next command User can/should type as well.

```
SWITCH(config)# interface (?)
IFNAME      Interface's name
Vlan        Select a vlan to configure
```

(Character)? To see all the available commands starts from this character.

```
SWITCH(config)# a?
administrator Administrator account setting
arp            Set a static ARP entry
auth          Authentication
```

The tab key helps User to input the command quicker. If there is only one available command in the next, clicking on tab key can help to finish typing soon.

```
SWITCH# co (tab) (tab)
configure copy

SWITCH(config)# ad (tab)
SWITCH(config)# administrator
```

Ctrl+C To stop executing the unfinished command.

Ctrl+S To lock the screen of the terminal. User can't input any command.

Ctrl+Q To unlock the screen which is locked by Ctrl+S.

Ctrl+Z To exit configuration mode.

Alert message when multiple users want to configure the switch. If the administrator is in configuration mode, then the Web users can't change the settings. Womaster Managed switch allows only one administrator to configure the switch at a time.

3. COMMANDS

3.1 CLI COMMANDS FOR SYSTEM CONFIGURATION

This chapter will show the CLI Command for System Features, and this chapter covers the information, User Account, Ip Setting, Date and Time and DHCP Server section. And the Show commands are used to display device settings, statistics and other information.

Feature	Command Line
SWITCH Setting	
System Name	SWITCH(config)# hostname DWORD This system's network name SWITCH(config)# hostname SWITCH SWITCH(config)#
System Location	SWITCH(config)# snmp-server location Taipei DWORD string that describes the system location information
System Contact	SWITCH(config)# snmp-server contact help@womaster.eu DWORD string that describes the system contact information
Display	SWITCH# show snmp-server name SWITCH SWITCH# show snmp-server location Taipei SWITCH# show snmp-server contact help@womaster.eu SWITCH# show version Model Name : DP612 Bootloader : 2.1.0.0 Software : 1.0-1516254524 MAC Address : 94:66:E7:7F:A9:23
Admin Password	
User Name and Password	SWITCH(config)# administrator NAME PASSWORD NAME Administrator account name PASSWORD Administrator account password SWITCH(config)# administrator admin admin Administrator account name and password is unchanged

Display	SWITCH# show administrator Administrator account information name: admin password: admin
IP Configuration	
IP Address/Mask (192.168.10.8, 255.255.255.0	SWITCH(config)# int vlan 1 SWITCH(config-if)# ip address address dhcp igmp SWITCH(config-if)# ip address 192.168.10.8/24 SWITCH(config-if)# ip dhcp client SWITCH(config-if)# ip dhcp client renew SWITCH(config-if)# ipv6 address ; IPv6 configuration X:X::X:X/M IPv6 address (e.g. 3ffe:506::1/48) SWITCH(config-if)# ipv6 address 3ffe:506::1/48
Gateway	SWITCH(config)# ip route 0.0.0.0/0 192.168.10.254/24 A.B.C.D IP destination prefix A.B.C.D/M IP destination prefix (e.g. 10.0.0.0/8)
Remove Gateway	SWITCH(config)# no ip route 0.0.0.0/0 192.168.10.254/24
Display	SWITCH# show running-config ! interface vlan1 ip address 192.168.10.8/24 no shutdown ! ip route 0.0.0.0/0 192.168.10.254 !
Time Setting	
NTP Server	SWITCH(config)# ntp peer enable disable primary secondary SWITCH(config)# ntp peer primary IPADDR SWITCH(config)# ntp peer primary 192.168.10.120
Clock Setting	SWITCH# clock set TIME hh:mm:ss Current Time

	MONTH <1-12> Month of the year DAY <1-31> Day of the month YEAR <1993-2037> Year SWITCH# clock set 11:20:30 7 21 2017 Fri Jul 21 11:20:30 2017 (GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London
Time Zone	SWITCH(config)# clock timezone 26 Sun Jan 1 04:13:24 2006 (GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London Note: By typing clock timezone ?, User can see the timezone list. Then choose the number of the timezone User want to select.
Daylight Saving	SWITCH(config)# clock summer-time 4 0 2 12:00 4 0 3 12:00 Clock summer-time<start week of month ><start weekday> <start month><start Hour:Min><end week of month><end weekday><end month><end Hour:Min> Start / End week of month: 1~5 (5 means the last week) Start / End weekday: 0 (Sunday) ~6 (Saturday) Start / End Month: 1 (Jan) ~12 (Dec) START_TIME Start time, format hh:mm
IEEE 1588	SWITCH(config)# ptp run preferred-clock Preferred Clock slave Run as slave
Display	SWITCH# sh ntp associations Network time protocol Status : Disabled Primary peer : N/A Secondary peer : N/A SWITCH# show clock Fri Jul 21 06:10:53 2017 (GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London SWITCH# show clock timezone clock timezone (26) (GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London
DHCP Server	
DHCP Server configuration	Enable DHCP Server on DP310 switch SWITCH#

	SWITCH# configure terminal SWITCH(config)# router dhcp SWITCH(config-dhcp)# service dhcp Configure DHCP network address pool SWITCH(config-dhcp)#network 50.50.50.0/4 -(network/mask) SWITCH(config-dhcp)#default-router 50.50.50.1																																										
Lease time configure	SWITCH(config-dhcp)#lease 300 (300 sec)																																										
DHCP Relay Agent	Enable DHCP Relay Agent SWITCH# SWITCH# configure terminal SWITCH(config)# router dhcp SWITCH(config-dhcp)# service dhcp SWITCH(config-dhcp)# ip dhcp relay information option Enable DHCP Relay policy SWITCH(config-dhcp)# ip dhcp relay information policy <u>replace</u> drop Relay Policy keep Drop/Keep/Replace option82 field replace																																										
Show DHCP Relay Agent	SWITCH# show ip dhcp relay DHCP Relay Agent ON ----- Re-forwarding policy: Replace <table><tr><th>Port</th><th>Circuit-ID</th><th>Hex Display</th></tr><tr><td colspan="3">-----</td></tr><tr><td>1</td><td>00010001</td><td>00010001</td></tr><tr><td>2</td><td>00010002</td><td>00010002</td></tr><tr><td>3</td><td>00010003</td><td>00010003</td></tr><tr><td>4</td><td>00010004</td><td>00010004</td></tr><tr><td>5</td><td>00010005</td><td>00010005</td></tr><tr><td>6</td><td>00010006</td><td>00010006</td></tr><tr><td>7</td><td>00010007</td><td>00010007</td></tr><tr><td>8</td><td>00010008</td><td>00010008</td></tr><tr><td>9</td><td>00010009</td><td>00010009</td></tr><tr><td>10</td><td>0001000a</td><td>0001000a</td></tr><tr><td>11</td><td>0001000b</td><td>0001000b</td></tr><tr><td>12</td><td>0001000c</td><td>0001000c</td></tr></table> Remote-ID: 94:66:e7:7f:a9:23 (9466e77fa923)	Port	Circuit-ID	Hex Display	-----			1	00010001	00010001	2	00010002	00010002	3	00010003	00010003	4	00010004	00010004	5	00010005	00010005	6	00010006	00010006	7	00010007	00010007	8	00010008	00010008	9	00010009	00010009	10	0001000a	0001000a	11	0001000b	0001000b	12	0001000c	0001000c
Port	Circuit-ID	Hex Display																																									

1	00010001	00010001																																									
2	00010002	00010002																																									
3	00010003	00010003																																									
4	00010004	00010004																																									
5	00010005	00010005																																									
6	00010006	00010006																																									
7	00010007	00010007																																									
8	00010008	00010008																																									
9	00010009	00010009																																									
10	0001000a	0001000a																																									
11	0001000b	0001000b																																									
12	0001000c	0001000c																																									

Show DHCP server information	<pre> SWITCH# show ip dhcp server statistics SWITCH# show ip dhcp server statistics DHCP Server OFF [Address Pool 1] network:0.0.0.0/0 default-router:0.0.0.0 lease time:604800 Excluded Address List IP Address ----- Manual Binding List (Port/IP) PortIP Address ----- Manual Binding List (IP/MAC) IP Address MAC Address ----- Option82 Binding List IP Address Circuit-ID Remote-ID ----- Leased Address List IP Address MAC Address Leased Time Remains ----- </pre>
------------------------------	---

3.2 CLI COMMANDS FOR PORT CONFIGURATION

This chapter provides the Port Configuration CLI Commands, all of the features is covered in this chapter

Feature	Command Line
Port Control	
Port Control – State	SWITCH(config-if)# shutdown -> Disable port state Port1 Link Change to DOWN interface gigabitethernet1 is shutdown now. SWITCH(config-if)# no shutdown -> Enable port state interface gigabitethernet1 is up now.
Port Control – Auto Negotiation	SWITCH(config)# interface ge1 SWITCH(config-if)# auto-negotiation Auto-negotiation of port 1 is enabled!
Port Control – Force Speed/Duplex	SWITCH(config-if)# speed 100 set the speed mode ok! SWITCH(config-if)# duplex full set the duplex mode ok!
Port Control – Flow Control	SWITCH(config-if)# flowcontrol on Flowcontrol on for port 1 set ok! SWITCH(config-if)# flowcontrol off Flowcontrol off for port 1 set ok!
Port Status	
Port Status	SWITCH# show interface ge1 Interface gigabitethernet1 Description : N/A Administrative Status : Enable Operating Status : Connected Duplex : Auto (Full) Speed : Auto (1000) MTU : 1518 Flow Control : off Default Port VLAN ID: 1 Ingress Filtering : Disabled Acceptable Frame Type : All Auto Negotiation : Enable Loopback Mode : None STP Status: Blocking Default CoS Value for untagged packets is 0. Medium mode is Copper. <i>Note: Administrative Status -> Port state of the port. Operating status -> Current status of the port. Duplex -> Duplex mode of the port. Speed -> Speed mode of the port. Flow control -> Flow Control status of the port.</i>
Rate Control	
Rate Control – Ingress or Egress	SWITCH(config-if)# rate-limit egress Outgoing packets ingress Incoming packets Note: To enable rate control, User should select the Ingress or Egress rule first; then assign the packet type and bandwidth.
Rate Control - Bandwidth	SWITCH(config-if)# rate-limit ingress bandwidth <0-100> Limit in megabits per second (0 is no limit) SWITCH(config-if)# rate-limit ingress bandwidth 8 Set the ingress rate limit 8Mbps for Port 1.
Port Trunking	
LACP	SWITCH(config)# lacp group 1 ge9-10

	Group 1 based on LACP (802.3ad) is enabled! Note: different speed port can't be aggregated together.																														
Static Trunk	SWITCH(config)# trunk group 2 ge6-7 Trunk group 2 enable ok!																														
Display - LACP	SWITCH# show lacp internal LACP group 1 internal information: <table><tr><th colspan="2">LACP Port</th><th>Admin</th><th>Oper</th><th>Port</th></tr><tr><th>Port</th><th>Priority</th><th>Key</th><th>Key</th><th>State</th></tr><tr><td colspan="5">-----</td></tr><tr><td>8</td><td></td><td>1</td><td>8</td><td>8 0x45</td></tr><tr><td>9</td><td></td><td>1</td><td>9</td><td>9 0x45</td></tr><tr><td>10</td><td></td><td>1</td><td>10</td><td>10 0x45</td></tr></table> LACP group 2 is inactive LACP group 3 is inactive LACP group 4 is inactive	LACP Port		Admin	Oper	Port	Port	Priority	Key	Key	State	-----					8		1	8	8 0x45	9		1	9	9 0x45	10		1	10	10 0x45
LACP Port		Admin	Oper	Port																											
Port	Priority	Key	Key	State																											

8		1	8	8 0x45																											
9		1	9	9 0x45																											
10		1	10	10 0x45																											
Display - Trunk	SWITCH# show trunk group 1 FLAGS: I -> Individual P -> In channel D -> Port Down Trunk Group GroupID Protocol Ports -----+-----+----- 1 LACP 8(D) 9(D) 10(D) SWITCH# show trunk group 2 FLAGS: I -> Individual P -> In channel D -> Port Down Trunk Group GroupID Protocol Ports -----+-----+----- 2 Static 6(D) 7(P) SWITCH#																														
CFM																															
Create	SWITCH(config)# cfm create domain IEEE 802.1ag Maintenance Domain SWITCH(config)# cfm create domain string Name Format: General string SWITCH(config)# cfm create domain string NAME Domain name, maximum of 43 characters SWITCH(config)# cfm create domain string test md-level IEEE 802.1ag Maintenance Domain Level SWITCH(config)# cfm create domain string test md-level <0-7> MD-Level 0~7 SWITCH(config)# cfm create domain string test md-level 2																														
Delete	SWITCH(config)# snmp-server community private rw community string add ok																														
Domain	SWITCH(config)# cfm domain NAME IEEE 802.1ag Domain name SWITCH(config)# cfm domain test add Add configuration item to Domain association IEEE 802.1ag Maintenance Association delete Delete configuration item from Domain SWITCH(config)# cfm domain test add association IEEE 802.1ag Maintenance Association																														

	SWITCH(config)# cfm domain test add association string Name Format: General string SWITCH(config)# cfm domain test add association string NAME Association name, maximum of 45 characters SWITCH(config)# cfm domain test add association string test1 vlan 1																																													
Group	SWITCH (config)# cfm group <0-255> Group ID 0~255 SWITCH (config)# cfm group 2 rmep IEEE 802.1ag Remote Maintenance End Point SWITCH (config)# cfm group 2 rmep <1-8191> MEP-ID 1~8191 SWITCH (config)# cfm group 2 rmep 30																																													
Display CFM																																														
Database	SWITCH# show cfm database <table><tr><th>Domain/ Association</th><th>Port</th><th>MP</th><th>Remote End-Point MAC Address</th><th>MEP ID</th><th>Life time</th><th>Age</th><th>CCM Timeout</th><th>Flags</th></tr><tr><td colspan="9">=====</td></tr><tr><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td>1</td><td>DE</td><td>--</td><td>1</td><td>--</td><td>--</td><td>Timeout</td><td>SA</td></tr><tr><td colspan="9">=====</td></tr></table> Maintenance Point: (UE) Up End-Point, (DE) Down End-Point Flags: (S) Static Entry, (D) Dynamic Entry Status: (A) Active, (I) Inactive NOTE: The Domain and Association names are truncated to 13 characters, Lifetime and Age are in milliseconds. =====	Domain/ Association	Port	MP	Remote End-Point MAC Address	MEP ID	Life time	Age	CCM Timeout	Flags	=====									1									1	1	DE	--	1	--	--	Timeout	SA	=====								
Domain/ Association	Port	MP	Remote End-Point MAC Address	MEP ID	Life time	Age	CCM Timeout	Flags																																						
=====																																														
1																																														
1	1	DE	--	1	--	--	Timeout	SA																																						
=====																																														
Domain	SWITCH# show cfm domain Domain: test, MD Level: 2																																													
JumboFrame																																														
Jumbo Frame	Type the maximum MTU to enable for specific port Jumbo Frame: SWITCH(config-if)# mtu <64-9216> bytes SWITCH(config-if)# mtu 9216 Disable Jumbo Frame: Switch(config)# no system mtu																																													

Display	<pre> SWITCH# show int ge8 Interface gigabitethernet8 Description : N/A Administrative Status : Disable Operating Status : Not Connected Duplex : Auto Speed : Auto MTU : 9216 Flow Control : off Default Port VLAN ID: 2 Ingress Filtering : Enabled Acceptable Frame Type : All Auto Negotiation : Enable Loopback Mode : None STP Status: Disabled Default CoS Value for untagged packets is 0. Medium mode is Copper. </pre>
Storm Control	
Strom Control Configuration	<pre> SWITCH(config-if)# storm-control broadcast Broadcast packets dlf Destination Lookup Failure multicast Multicast packets SWITCH(config-if)# storm-control broadcast ? <0-262142> Rate limit value 0~262142 packet/sec SWITCH(config-if)# storm-control broadcast 1000 Enables rate limit for Broadcast packets for Port 8 SWITCH(config-if)# storm-control multicast 1000 Enables rate limit for Multicast packetsfor Port 8 SWITCH(config-if)# storm-control dlf 1000 Enables rate limit for Destination Lookup Failue packets for Port8. </pre>

Display	switch# show storm-control
Storm	Storm-control for Port 1
Control	Broadcast packets : Disabled Rate : N/A (packets/s)
	Destination Lookup Failure packets : Disabled Rate : N/A (packets/s)
	Multicast packets : Disabled Rate : N/A (packets/s)
	Storm-control for Port 2
	Broadcast packets : Disabled Rate : N/A (packets/s)
	Destination Lookup Failure packets : Disabled Rate : N/A (packets/s)
	Multicast packets : Disabled Rate : N/A (packets/s)
	Storm-control for Port 3
	Broadcast packets : Disabled Rate : N/A (packets/s)
	Destination Lookup Failure packets : Disabled Rate : N/A (packets/s)
	Multicast packets : Disabled Rate : N/A (packets/s)
	Storm-control for Port 4
	Broadcast packets : Disabled Rate : N/A (packets/s)
	Destination Lookup Failure packets : Disabled Rate : N/A (packets/s)
	Multicast packets : Disabled Rate : N/A (packets/s)
	Storm-control for Port 5
	Broadcast packets : Disabled Rate : N/A (packets/s)
	Destination Lookup Failure packets : Disabled Rate : N/A (packets/s)
	Multicast packets : Disabled Rate : N/A (packets/s)
	Storm-control for Port 6
	Broadcast packets : Disabled Rate : N/A (packets/s)
	Destination Lookup Failure packets : Disabled Rate : N/A (packets/s)
	Multicast packets : Disabled Rate : N/A (packets/s)
	Storm-control for Port 7
	Broadcast packets : Disabled Rate : N/A (packets/s)
	Destination Lookup Failure packets : Disabled Rate : N/A (packets/s)
	Multicast packets : Disabled Rate : N/A (packets/s)
	Storm-control for Port 8
	Broadcast packets : Enabled Rate : 1000 (packets/s)
	Destination Lookup Failure packets : Enabled Rate : 1000 (packets/s)
	Multicast packets : Enabled Rate : 1000 (packets/s)
	

3.3 CLI COMMANDS FOR PoE CONFIGURATION (PoE Model Only)

This chapter is about the PoE Configuration CLI Command.

Syntax	show poe system
Command Mode	Enable mode
Description	Display the status of the PoE system.
Examples	SWITCH> enable SWITCH# s show poe system PoE System PoE Admin : Enable PoE Hardware : Normal Output power : 3.05 Watts Power Budget : Budget : 240 Watts Utilization : 1 % Event : Normal
Syntax	show poe interface IFNAME
Parameters	IFNAME : interface name
Command Mode	Enable mode
Description	Display the PoE status of interface.
Examples	SWITCH> enable SWITCH# show poe interface ge7 Interface gigabitethernet7 (POE Port 7) Control Mode : User (Enable) Powering Mode : 802.3af Operation Status : Powering Detection Status : Valid Classification : Class2 Output Power : 2.10 Watts, Voltage : 47.8 V, Current : 44.9 mA Power Budget : Budget Mode : Auto Budget : 35.00 Watts, Effective 7.70 Watts Utilization : 27 % Event : Normal
Syntax	show poe alive
Command Mode	Enable mode
Description	Display the status of pd status detection.

Examples	SWITCH# show poe alive-check PD Status Detection Status : Enabled Host 1 : Target IP : 192.168.10.10 Cycle Time : 10 Host 2 : Target IP : 192.168.10.11 Cycle Time : 20 Host 3 : Target IP : 192.168.10.12 Cycle Time : 30
Syntax	show poe schedule IFNAME
Parameters	IFNAME : interface name
Command Mode	Enable mode
Description	Display the status of schedule of interface.
Examples	SWITCH# show poe schedule ge1 Interface gigabitethernet1 POE Schedule Status : Disable Weekly Schedule : Sunday : 0,1,2,3,4,5,6,7,8,19,20,21,22,23 Monday : 0,1,2,3,4,5,6,7,8,19,20,21,22,23 Tuesday : 0,1,2,3,4,5,6,7,8,19,20,21,22,23 Wednesday : 0,1,2,3,4,5,6,7,8,19,20,21,22,23 Thursday : 0,1,2,3,4,5,6,7,8,19,20,21,22,23 Friday : 0,1,2,3,4,5,6,7,8,19,20,21,22,23 Saturday : 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20
Syntax	poe powering-mode 802.3af/forced/802.3at
Parameters	802.3af: deliver power if and only if the attached PD comply with IEEE 802.3af forced: deliver power no matter what PD attached
Command Mode	Interface mode
Description	Set the Powering mode of PoE
Examples	EX 1: <i>Set 802.3af powering mode</i> SWITCH(config-if)# poe powering-mode 802.3af EX 2: <i>Set forced powering mode</i> SWITCH(config-if)# poe powering-mode forced
Syntax	poe powering-mode 802.3at 2-event/ldp

Parameters	2-event: deliver power if and only if the attached PD comply with IEEE 802.3at physical layer classification lldp: deliver power if and only if the attached PD comply with IEEE 802.3at data link layer classification
Command Mode	Interface mode8
Description	Set the Powering mode of PoE
Examples	EX 1: <i>Set 802.3at 2-event powering mode</i> SWITCH(config-if)# poe powering-mode 802.3at 2-event EX 2: <i>Set 802.3at lldp powering mode</i> SWITCH(config-if)# poe powering-mode 802.3at lldp
Syntax	poe control-mode user/schedule
Parameters	user: user mode schedule: schedule mode
Command Mode	Interface mode
Description	Set the control mode of port
Examples	Set PoE port 2 to user mode. EX 1: SWITCH(config)# interface ge2 SWITCH(config-if)# poe control-mode user Set PoE port 2 to schedule mode. EX 2: SWITCH(config-if)# poe control-mode schedule
Syntax	poe user enable/disable
Parameters	enable: enable port in user mode disable: disable port in user mode
Command Mode	Interface mode
Description	Enable/Disable the PoE of the port in user mode. If in schedule mode, it will come into effect when the control mode changes to user mode.
Examples	To enable the PoE function in user mode SWITCH(config-if)# poe user enable To disable the PoE function in user mode SWITCH(config-if)# poe user disable
Syntax	poe type TYPE
Parameters	TYPE : port type string with max 20 characters
Command Mode	Interface mode
Description	Set the port type string.

Examples	Set the type string to "IPCam-1. SWITCH(config-if)# poe type IPCam-1
Syntax	poe budget [POWER]
Parameters	POWER : 0.4 – 30
Command Mode	Interface mode
Description	Set the port budget. The max budget is different between 802.3af, 802.3at and forced powering mode. The max budget of 802.3af powering mode is 15.4. The max budget of 802.3at powering mode is 30 The max budget of force powering mode is 30.
Examples	Set the max value of power consumption to 12 W with manual mode. SWITCH(config-if)# poe budget 12
Syntax	poe priority critical/high/low
Parameters	Critical : Highest priority level High : High priority level Low : Low priority level
Command Mode	Interface mode
Description	Set the powering priority. The port with higher priority will have the privilege to delivery power under limited power situation.
Examples	Set the priority to critical SWITCH(config-if)# poe priority critical
Syntax	poe schedule weekday hour
Parameters	Weekday : Valid range 0-6 (0=Sunday, 1=Monday, ..., 6=Saturday) Hour : Valid range 0-23, Valid format a,b,c-d
Command Mode	Interface mode
Description	Add a day schedule to an interface.
Examples	Add a schedule which enables PoE function at hour 1, 3, 5 and 10 to 23 on Sunday. SWITCH(config-if)# poe schedule 0 1,3,5,10-23
Syntax	no poe schedule weekday
Parameters	Weekday : Valid range 0-6 (0=Sunday, 1=Monday, ..., 6=Saturday)
Command Mode	Interface mode
Description	Remove a day schedule
Examples	Remove the Sunday schedule. SWITCH(config-if)# no poe schedule 0
Syntax	Poe budget; system command for DP612 is 240Watts under 75C operating temperature.
Parameters	POWER : 0~200

Command Mode	Configuration mode
Description	Set the power budget of DC1
Examples	Set the power budget of DC1 to 200W SWITCH(config)# poe budget DC1 200w
Syntax	poe alive-check enable/disable
Parameters	enable: enable PD Status Detection function disable: disable PD Status Detection function
Command Mode	Configuration mode
Description	Enable/Disable the PD Status Detection function
Examples	To enable the function of pd status detect function SWITCH(config)# poe alive-check enable To disable the function of pd status detect function SWITCH(config)# poe alive-check disable
Syntax	poe alive-check ip_address ping interval
Parameters	IP address : A.B.C.D Ping Interval : Valid range is 10 to 3600 in multiple of 10
Command Mode	Configuration mode
Description	Apply a rule of PD Status Detection.
Examples	Apply a rule which ping 192.160.10.2 per 20 seconds. And if 192.160.1.2 is timeout, pd status detection will re-enable the PoE. SWITCH(config)# poe alive-check 192.160.10.2 20

3.4 CLI COMMANDS FOR REDUNDANCY CONFIGURATION

Feature	Command Line
Global (STP, RSTP, MSTP)	
Enable	SWITCH(config)# spanning-tree enable
Disable	SWITCH(config)# spanning-tree disable
Mode (Choose the Spanning Tree mode)	SWITCH(config)# spanning-tree mode rst the rapid spanning-tree protocol (802.1w) stp the spanning-tree prtocol (802.1d) mst the multiple spanning-tree protocol (802.1s)
Priority	SWITCH(config)# spanning-tree priority <0-61440> valid range is 0 to 61440 in multiple of 4096 SWITCH(config)# spanning-tree priority 4096
Bridge Times	SWITCH(config)# spanning-tree bridge-times (forward Delay) (max-age) (Hello Time) SWITCH(config)# spanning-tree bridge-times 15 20 2 <4-30> the value of forward delay time in seconds This command allows you configure all the timing in one time.
Forward Time	SWITCH(config)# spanning-tree forward-time <4-30> the value of forward delay time in seconds SWITCH(config)# spanning-tree forward-time 15
Max Age	SWITCH(config)# spanning-tree max-age <6-40> the value of message maximum age time in seconds SWITCH(config)# spanning-tree max-age 20
Hello Time	SWITCH(config)# spanning-tree hello-time <1-10> the value of hello time in seconds SWITCH(config)# spanning-tree hello-time 2
Pathcost	SWITCH(config)# spanning-tree pathcost method long specifies 32-bit based values that range from 1-200,000,000 short specifies 16-bit based values that range from 1-65535
transmission-limit	SWITCH(config)# spanning-tree transmission-limit <1-10> valid range from 1-10
MSTP	
Enter the MSTP Configuration Tree	SWITCH(config)# spanning-tree mst MSTMAP the mst instance number or range configuration enter mst configuration mode forward-time the forward dleay time hello-time the hello time

	max-age the message maximum age time max-hops the maximum hops sync sync port state of exist vlan entry SWITCH(config)# spanning-tree mst configuration SWITCH(config)# spanning-tree mst configuration SWITCH(config-mst)# abort exit current mode and discard all changes end exit current mode, change to enable mode and apply all changes exit exit current mode and apply all changes instance the mst instance list Print command list name the name of mst region no Negate a command or set its defaults quit exit current mode and apply all changes revision the revision of mst region show show mst configuration						
Region Configuration	Region Name: SWITCH(config-mst)# name NAME the name string SWITCH(config-mst)# name Region Revision: SWITCH(config-mst)# revision <0-65535> the value of revision SWITCH(config-mst)# revision 65535						
Mapping Instance to VLAN (Ex: Mapping VLAN 2 to Instance 1)	SWITCH(config-mst)# instance <1-15> target instance number SWITCH(config-mst)# instance 1 vlan VLANMAP target vlan number(ex.10) or range(ex.1-10) SWITCH(config-mst)# instance 1 vlan 2						
Display Current MST Configuration	SWITCH(config-mst)# show current Current MST configuration Name Revision Instance Vlans Mapped ----- <table> <tr> <td>0</td><td>1,4-4094</td></tr> <tr> <td>1</td><td>2</td></tr> <tr> <td>2</td><td>3</td></tr> </table>	0	1,4-4094	1	2	2	3
0	1,4-4094						
1	2						
2	3						

	<pre> ----- Config HMAC-MD5 Digest: 0xB41829F9030A054FB74EF7A8587FF58D ----- </pre>
Remove Region Name	<pre> SWITCH(config-mst)# no name name configure revision revision configure instance the mst instance SWITCH(config-mst)# no name </pre>
Remove Instance example	<pre> SWITCH(config-mst)# no instance <1-15> target instance number SWITCH(config-mst)# no instance 2 </pre>
Show Pending MST Configuration	<pre> SWITCH(config-mst)# show pending Pending MST configuration Name [] (->The name is removed by no name) Revision Instance Vlans Mapped ----- 0 1,3-4094 1 2 (->Instance 2 is removed by no instance 2) ----- Config HMAC-MD5 Digest: 0x3AB68794D602FDF43B21C0B37AC3BCA8 ----- </pre>
Apply the setting and go to the configuration mode	<pre> SWITCH(config-mst)# quit apply all mst configuration changes SWITCH(config)# </pre>
Apply the setting and go to the global mode	<pre> SWITCH(config-mst)# end apply all mst configuration changes SWITCH# </pre>
Abort the Setting and go to the configuration mode. Show Pending to see the new settings are not applied.	<pre> SWITCH(config-mst)# abort discard all mst configuration changes SWITCH(config)# spanning-tree mst configuration SWITCH(config-mst)# show pending Pending MST configuration Name (->The name is not applied after Abort settings.) Revision Instance Vlans Mapped </pre>

	<pre> ----- 0 1,4-4094 1 2 2 3(-> The instance is not applied after Abort settings.) ----- Config HMAC-MD5 Digest: 0xB41829F9030A054FB74EF7A8587FF58D ----- </pre>
Port Configuration Mode	
Port Configuration	<pre> SWITCH(config)# int ge2 SWITCH(config-if)# spanning-tree bpdufilter a secure BPDU process on edge-port interfae bpduguard a secure response to invalid configurations(received BPDU sent by self) cost change an interafce's spanning-tree port path cost edge-port interface attached to a LAN segment that is at the end of a bridged LAN or to an end node link-type the link type for the Rapid Spanning Tree mst the multiple spanning-tree port-priority the spanning tree port priority stp-state the bridge port STP state </pre>
Port Path Cost	<pre> SWITCH(config-if)# spanning-tree cost <1-200000000> 16-bit based value range from 1-65535, 32-bit based value range from 1-200,000,000 SWITCH(config-if)# spanning-tree cost 200000 </pre>
Port Priority	<pre> SWITCH(config-if)# spanning-tree port-priority <0-240> the value of bridge port priority in multiple of 16 SWITCH(config-if)# spanning-tree port-priority 128 </pre>
Link Type - Auto	<pre> spanning-tree link-type auto automatically determines if IF is attached to a point-to-pointlink or shared media point-to-point a connection to exactly one other bridge shared a connection to two or more bridges SWITCH(config-if)# spanning-tree link-type auto </pre>
Link Type - P2P	<pre> SWITCH(config-if)# spanning-tree link-type point-to-point </pre>
Link Type - Share	<pre> SWITCH(config-if)# spanning-tree link-type shared </pre>
Edge Port	<pre> SWITCH(config-if)# spanning-tree edge-port </pre>

MSTP Port Configuration	SWITCH(config-if)# spanning-tree mst MSTMAP the mst instance number or range cost the mst instance port cost port-priority the mst instance port priority SWITCH(config-if)# spanning-tree mst MSTMAP cost <1-200000000> the value of mst instance port cost SWITCH(config-if)# spanning-tree mst MSTMAP port-priority <0-240> the value of mst instance port priority in multiple of 16																																																
Global Information																																																	
Active Information	SWITCH# show spanning-tree active Spanning-Tree : Enabled Protocol : RSTP Root Address : 9466.e79f.9834 Priority : 4096 Root Path Cost : 0 Root Port : N/A Root Times : max-age 20, hello-time 2, forward-delay 15 Bridge Address : 9466.e79f.9834 Priority : 4096 Bridge Times : max-age 20, hello-time 2, forward-delay 15 BPDU transmission-limit : 3 <table><tr><td>Port</td><td>Role</td><td>State</td><td>Cost</td><td>Prio.Nbr</td><td>Type</td></tr><tr><td colspan="6">Aggregated</td></tr><tr><td colspan="6">-----</td></tr><tr><td>ge1</td><td>Designated</td><td>Forwarding</td><td>200000</td><td>128.1</td><td>P2P(RSTP) N/A</td></tr><tr><td>ge5</td><td>Designated</td><td>Forwarding</td><td>200000</td><td>128.5</td><td>P2P(RSTP) N/A</td></tr><tr><td>ge7</td><td>Designated</td><td>Forwarding</td><td>200000</td><td>128.7</td><td>P2P(RSTP) N/A</td></tr><tr><td>ge10</td><td>Designated</td><td>Forwarding</td><td>20000</td><td>128.10</td><td>P2P(RSTP) N/A</td></tr></table>							Port	Role	State	Cost	Prio.Nbr	Type	Aggregated						-----						ge1	Designated	Forwarding	200000	128.1	P2P(RSTP) N/A	ge5	Designated	Forwarding	200000	128.5	P2P(RSTP) N/A	ge7	Designated	Forwarding	200000	128.7	P2P(RSTP) N/A	ge10	Designated	Forwarding	20000	128.10	P2P(RSTP) N/A
Port	Role	State	Cost	Prio.Nbr	Type																																												
Aggregated																																																	

ge1	Designated	Forwarding	200000	128.1	P2P(RSTP) N/A																																												
ge5	Designated	Forwarding	200000	128.5	P2P(RSTP) N/A																																												
ge7	Designated	Forwarding	200000	128.7	P2P(RSTP) N/A																																												
ge10	Designated	Forwarding	20000	128.10	P2P(RSTP) N/A																																												
RSTP Summary	SWITCH# show spanning-tree summary Spanning-Tree : Enabled Protocol : RSTP Root Address : 9466.e79f.9834 Priority : 4096 Root Path Cost : 0 Root Port : N/A Root Times : max-age 20, hello-time 2, forward-delay 15 Bridge Address 9466.e79f.9834 Priority : 4096 Bridge Times : max-age 20, hello-time 2, forward-delay 15 BPDU transmission-limit : 3 BPDU Skewing Detection : Disabled Backbonefast : Disabled Topology Change Flag : False Topology Change Detected Flag : False Topology Change Count : 7 Last Topology Change from : 0000.0000.0000																																																

	Timers: hello 1, topology change 0 Summary of connected spanning tree ports : Port-State Summary <table><tr><td>Blocking</td><td>Listening</td><td>Learning</td><td>Forwarding</td><td>Disabled</td></tr><tr><td>-----</td><td>-----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>0</td><td>0</td><td>0</td><td>4</td><td>6</td></tr></table> Port Link-Type Summary <table><tr><td>AutoDetected</td><td>PointToPoint</td><td>SharedLink</td><td>EdgePort</td></tr><tr><td>-----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>10</td><td>0</td><td>0</td><td>8</td></tr></table>	Blocking	Listening	Learning	Forwarding	Disabled	-----	-----	-----	-----	-----	0	0	0	4	6	AutoDetected	PointToPoint	SharedLink	EdgePort	-----	-----	-----	-----	10	0	0	8
Blocking	Listening	Learning	Forwarding	Disabled																								
-----	-----	-----	-----	-----																								
0	0	0	4	6																								
AutoDetected	PointToPoint	SharedLink	EdgePort																									
-----	-----	-----	-----																									
10	0	0	8																									
Port Info	SWITCH# show spanning-tree interface ge7 Interface fastethernet7 of Bridge is Enabled Port Role : Designated Port State : Forwarding Edge Port : Edge (Non-Edge) BPDU Filter : Disabled Link Type : Auto (Point-to-point) BPDU Guard : Disabled Timers : message-age 0, forward-delay 0 BPDUs : sent 368, received 1541 TCNs : sent 0, received 0 Message Expired Count : 0 Forward Transition Count : 2 Aggregation Group: N/A Type: N/A Aggregated with : N/A Port information <table><tr><td>port id 128.7</td><td>priority 128</td><td>cost 200000</td></tr></table> Designated root <table><tr><td>address 9466.e79f.9834</td><td>priority 4096</td><td>cost 200000</td></tr></table> Designated bridge <table><tr><td>address 9466.e79f.9834</td><td>priority 4096</td><td>port id 128.7</td></tr></table>	port id 128.7	priority 128	cost 200000	address 9466.e79f.9834	priority 4096	cost 200000	address 9466.e79f.9834	priority 4096	port id 128.7																		
port id 128.7	priority 128	cost 200000																										
address 9466.e79f.9834	priority 4096	cost 200000																										
address 9466.e79f.9834	priority 4096	port id 128.7																										
MSTP Information																												
MSTP Configuration	SWITCH# show spanning-tree mst configuration Current MST configuration (MSTP is Running) Name Revision <table><tr><td>Instance</td><td>Vlans Mapped</td></tr><tr><td>-----</td><td>-----</td></tr><tr><td>0</td><td>1,4-4094</td></tr><tr><td>1</td><td>2</td></tr><tr><td>2</td><td>3</td></tr><tr><td>-----</td><td>-----</td></tr></table> Config HMAC-MD5 Digest: 0xB41829F9030A054FB74EF7A8587FF58D	Instance	Vlans Mapped	-----	-----	0	1,4-4094	1	2	2	3	-----	-----															
Instance	Vlans Mapped																											
-----	-----																											
0	1,4-4094																											
1	2																											
2	3																											
-----	-----																											

Display all MST Information	SWITCH# show spanning-tree mst ##### MST00 vlans mapped: 1,4-4094 Bridge address 9466.e77f.a923 priority 32768 (sysid 0) Root this SWITCH for CST and IST Configured max-age 2, hello-time 15, forward-delay 20, max-hops 20 <table><tr><th>Port</th><th>Role</th><th>State</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr><tr><td colspan="6">-----</td></tr><tr><td>ge1</td><td>Designated</td><td>Forwarding</td><td>200000</td><td>128.1</td><td>P2P Internal(MSTP)</td></tr><tr><td>ge2</td><td>Designated</td><td>Forwarding</td><td>200000</td><td>128.2</td><td>P2P Internal(MSTP)</td></tr></table> ##### MST01 vlans mapped: 2 Bridge address 9466.e77f.a923 priority 32768 (sysid 1) Root this SWITCH for MST01 <table><tr><th>Port</th><th>Role</th><th>State</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr><tr><td colspan="6">-----</td></tr><tr><td>ge1</td><td>Designated</td><td>Forwarding</td><td>200000</td><td>128.1</td><td>P2P Internal(MSTP)</td></tr><tr><td>ge2</td><td>Designated</td><td>Forwarding</td><td>200000</td><td>128.2</td><td>P2P Internal(MSTP)</td></tr></table>	Port	Role	State	Cost	Prio.Nbr	Type	-----						ge1	Designated	Forwarding	200000	128.1	P2P Internal(MSTP)	ge2	Designated	Forwarding	200000	128.2	P2P Internal(MSTP)	Port	Role	State	Cost	Prio.Nbr	Type	-----						ge1	Designated	Forwarding	200000	128.1	P2P Internal(MSTP)	ge2	Designated	Forwarding	200000	128.2	P2P Internal(MSTP)
Port	Role	State	Cost	Prio.Nbr	Type																																												

ge1	Designated	Forwarding	200000	128.1	P2P Internal(MSTP)																																												
ge2	Designated	Forwarding	200000	128.2	P2P Internal(MSTP)																																												
Port	Role	State	Cost	Prio.Nbr	Type																																												

ge1	Designated	Forwarding	200000	128.1	P2P Internal(MSTP)																																												
ge2	Designated	Forwarding	200000	128.2	P2P Internal(MSTP)																																												
MSTP Root Information	SWITCH# show spanning-tree mst root <table><tr><th>MST Instance</th><th>Root Address</th><th>Root Priority</th><th>Root Cost</th><th>Root Port</th><th>Max age</th><th>Hello</th><th>Fwd dly</th></tr><tr><td colspan="8">-----</td></tr><tr><td>MST00</td><td>9466.e77f.a923</td><td>32768</td><td>0</td><td>N/A</td><td>20</td><td>2</td><td>15</td></tr><tr><td>MST01</td><td>9466.e77f.a923</td><td>32768</td><td>0</td><td>N/A</td><td>20</td><td>2</td><td>15</td></tr><tr><td>MST02</td><td>9466.e77f.a923</td><td>32768</td><td>0</td><td>N/A</td><td>20</td><td>2</td><td>15</td></tr></table>	MST Instance	Root Address	Root Priority	Root Cost	Root Port	Max age	Hello	Fwd dly	-----								MST00	9466.e77f.a923	32768	0	N/A	20	2	15	MST01	9466.e77f.a923	32768	0	N/A	20	2	15	MST02	9466.e77f.a923	32768	0	N/A	20	2	15								
MST Instance	Root Address	Root Priority	Root Cost	Root Port	Max age	Hello	Fwd dly																																										

MST00	9466.e77f.a923	32768	0	N/A	20	2	15																																										
MST01	9466.e77f.a923	32768	0	N/A	20	2	15																																										
MST02	9466.e77f.a923	32768	0	N/A	20	2	15																																										
MSTP Instance Information	SWITCH# show spanning-tree mst 1 ##### MST01 vlans mapped: 2 Bridge address 9466.e77f.a923 priority 32768 (sysid 1) Root this SWITCH for MST01 <table><tr><th>Port</th><th>Role</th><th>State</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr><tr><td colspan="6">-----</td></tr><tr><td>ge1</td><td>Designated</td><td>Forwarding</td><td>200000</td><td>128.1</td><td>P2P Internal(MSTP)</td></tr><tr><td>ge2</td><td>Designated</td><td>Forwarding</td><td>200000</td><td>128.2</td><td>P2P Internal(MSTP)</td></tr></table>	Port	Role	State	Cost	Prio.Nbr	Type	-----						ge1	Designated	Forwarding	200000	128.1	P2P Internal(MSTP)	ge2	Designated	Forwarding	200000	128.2	P2P Internal(MSTP)																								
Port	Role	State	Cost	Prio.Nbr	Type																																												

ge1	Designated	Forwarding	200000	128.1	P2P Internal(MSTP)																																												
ge2	Designated	Forwarding	200000	128.2	P2P Internal(MSTP)																																												
MSTP Port Information	SWITCH# show spanning-tree mst interface ge1 Interface fastethernet1 of MST00 is Designated Forwarding																																																

	Edge Port : Edge (Edge)BPDU Filter : Disabled Link Type : Auto (Point-to-point)BPDU Guard : Disabled Boundary : Internal(MSTP) BPDUs : sent 6352, received 0 <table><tr><th>Instance</th><th>Role</th><th>State</th><th>Cost</th><th>Prio.Nbr</th><th>Vlans mapped</th></tr><tr><td colspan="6">-----</td></tr><tr><td>0</td><td>Designated</td><td>Forwarding</td><td>200000</td><td>128.1</td><td>1,4-4094</td></tr><tr><td>1</td><td>Designated</td><td>Forwarding</td><td>200000</td><td>128.1</td><td>2</td></tr><tr><td>2</td><td>Designated</td><td>Forwarding</td><td>200000</td><td>128.1</td><td>3</td></tr></table>	Instance	Role	State	Cost	Prio.Nbr	Vlans mapped	-----						0	Designated	Forwarding	200000	128.1	1,4-4094	1	Designated	Forwarding	200000	128.1	2	2	Designated	Forwarding	200000	128.1	3
Instance	Role	State	Cost	Prio.Nbr	Vlans mapped																										

0	Designated	Forwarding	200000	128.1	1,4-4094																										
1	Designated	Forwarding	200000	128.1	2																										
2	Designated	Forwarding	200000	128.1	3																										
ERPS																															
Instance	SWITCH(config)#erps <0-31>Ring identifier, valid range from 0 to 31 in decimal instanceERPS Instance SWITCH(config)# erps instance disableDisable ERPS Instance function enableEnable ERPS Instance function <0-15>ERPS Instance, valid range from 0 to 15 SWITCH(config)# erps instance 1 vlan vlanthe vlan SWITCH(config)# erps instance 1 vlan 1 VLANMAPtarget vlan number(ex.10) or range(ex.1-10)																														
Display	SWITCH# show erps Ethernet Ring Protection Switching (ITU-T G.8032) Ring ID: 1 Version: v2 Ring State: Enabled Node State: Idle Node Role: Ring Node Control Channel : VLAN 1 Sub Ring without VC : False VC of Sub Ring: VLAN 1 ERPS Instance: Instance 1 Ring Port 0: ge2 is Link Up and Forwarding Ring Port 1: ge3 is Link Up and Forwarding																														

	RPL Port : Ring Port 1 Revertive Mode : Revertive Manual Switch : Forced Switch : Timers WTR Timer : period is 5 minutes, timer is not running, remains 0 ms WTB Timer : period is 5100 ms, timer is not running, remains 0 ms Guard Timer : period is 100 ms, timer is not running, remains 0 ms Statistics R-APS(FS) : sent 0, received 0 R-APS(SF) : sent 5, received 4
--	--

3.5 CLI COMMANDS FOR VLAN CONFIGURATION

This chapter provides a detailed explanation of the Virtual LAN CLI commands. The commands are divided by functionality into the following different groups:

- VLAN Port Configuration is used to set the port VLAN ID, port accept frame type, Ingress and Egress rule and display switch settings, statistics and other information.
- VLAN Configuration is used to configure and create VLAN setting, and also display the setting and some information
- GVRP Configuration Commands are used to configure the GVRP feature.
- Management VLAN is used to set the VLAN management and display some information from the management VLAN.

Feature	Command Line
VLAN Port Configuration	
VLAN Port PVID	SWITCH(config-if)# switchport trunk native vlan 2 Set port default vlan id to 2 success
Port Accept Frame Type	SWITCH(config)# inter ge1 SWITCH(config-if)# acceptable frame type all any kind of frame type is accepted! SWITCH(config-if)# acceptable frame type vntaggedonly only vlan-tag frame is accepted!
Ingress Filtering (for fast Ethernet port 1)	SWITCH(config)# interface ge1 SWITCH(config-if)# ingress filtering enable ingress filtering enable SWITCH(config-if)# ingress filtering disable ingress filtering disable
Egress rule – Untagged (for VLAN 2)	SWITCH(config-if)# switchport access vlan 2 SWITCHport access vlan - success
Egress rule – Tagged (for VLAN 2)	SWITCH(config-if)# switchport trunk allowed vlan add 2
Display – Port Ingress Rule (PVID, Ingress Filtering, Acceptable Frame Type)	SWITCH# show interface ge1 Interface fastethernet1 Administrative Status : Enable Operating Status : Not Connected Duplex : Auto Speed : Auto Flow Control :off Default Port VLAN ID: 2

	Ingress Filtering : Disabled Acceptable Frame Type : All Port Security : Disabled Auto Negotiation : Enable Loopback Mode : None STP Status: disabled Default CoS Value for untagged packets is 0. Medium mode is Copper.
Display – Port Egress Rule (Egress rule, IP address, status)	<pre> SWITCH# show running-config ! interface ge1 SWITCHport access vlan 1 SWITCHport access vlan 3 SWITCHport trunk native vlan 2 interface vlan1 ip address 192.168.10.8/24 no shutdown </pre>
VLAN Configuration	
Create VLAN (2)	<pre> SWITCH(config)# vlan 2 vlan 2 success SWITCH(config)# interface vlan 2 SWITCH(config-if)# </pre> <i>Note: In CLI configuration, User should create a VLAN interface first. Then User can start to add/remove ports. Default status of the created VLAN is unused until User add member ports to it.</i>
Remove VLAN	<pre> SWITCH(config)# no vlan 2 no vlan success </pre> <i>Note: User can only remove the VLAN when the VLAN is in unused mode.</i>
VLAN Name	<pre> SWITCH(config)# vlan 2 vlan 2 has exists SWITCH(config-vlan)# name v2 </pre>

	SWITCH(config-vlan)# no name <i>Note: Use no name to change the name to default name, VLAN VID.</i>																				
VLAN description	SWITCH(config)# interface vlan 2 SWITCH(config-if)# SWITCH(config-if)# description this is the VLAN 2 SWITCH(config-if)# no description ->Delete the description.																				
IP address of the VLAN	SWITCH(config)# interface vlan 2 SWITCH(config-if)# SWITCH(config-if)# ip address 192.168.10.18/24 SWITCH(config-if)# no ip address 192.168.10.8/24 ->Delete the IP address																				
Create multiple VLANs (VLAN 5-10)	SWITCH(config)# interface vlan 5-10																				
Shut down VLAN	SWITCH(config)# interface vlan 2 SWITCH(config-if)# shutdown SWITCH(config-if)# no shutdown ->Turn on the VLAN																				
Display – VLAN table	SWITCH# sh vlan <table><tr><th>VLAN Name</th><th>Status</th><th>Trunk Ports</th><th>Access Ports</th></tr><tr><td>----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>1 VLAN1</td><td>Static</td><td>-</td><td>ge1-10</td></tr><tr><td>2 VLAN2</td><td>Unused</td><td>-</td><td>-</td></tr><tr><td>3 test</td><td>Static</td><td>ge4-7,ge8-10</td><td>ge1-3,ge7,ge9-10</td></tr></table>	VLAN Name	Status	Trunk Ports	Access Ports	----	-----	-----	-----	1 VLAN1	Static	-	ge1-10	2 VLAN2	Unused	-	-	3 test	Static	ge4-7,ge8-10	ge1-3,ge7,ge9-10
VLAN Name	Status	Trunk Ports	Access Ports																		
----	-----	-----	-----																		
1 VLAN1	Static	-	ge1-10																		
2 VLAN2	Unused	-	-																		
3 test	Static	ge4-7,ge8-10	ge1-3,ge7,ge9-10																		
GVRP configuration																					
GVRP enable/disable	SWITCH(config)# gvrp mode disable Disable GVRP feature globally on the SWITCH enable Enable GVRP feature globally on the SWITCH SWITCH(config)# gvrp mode enable Gvrp is enabled on the SWITCH!																				
Configure GVRP timer Join timer /Leave timer/ LeaveAll timer	SWITCH(config)# inter ge1 SWITCH(config-if)# garp timer <10-10000> SWITCH(config-if)# garp join-timer 20 Garp join timer value is set to 20 centiseconds on port 2! Note: The unit of these timer is centisecond																				
Management VLAN																					
Management VLAN	SWITCH(config)# int vlan 1 (Go to management VLAN)																				

	SWITCH(config-if)# no shutdown
Display	SWITCH# show running-config ! interface vlan1 ip address 192.168.10.17/24 ip igmp no shutdown !

The section below is the CLI command for PVLAN Configuration that divided by functionality into the following different groups:

- PVLAN Configuration is used to configure and create VLAN setting, and also display the setting and some information
- PVLAN Port Configuration is used to set the port VLAN ID, port accept frame type, Ingress and Egress rule and display switch settings, statistics and other information.
- PVLAN Information Commands are used to display the information in PVLAN Configuration.

Feature	Command Line
Private VLAN Configuration	
Create VLAN	SWITCH(config)# vlan 2 vlan 2 success SWITCH(config-vlan)# end End current mode and change to enable mode exit Exit current mode and down to previous mode list Print command list name Assign a name to vlan no no private-vlan Configure a private VLAN
Private VLAN Type	Go to the VLAN User want configure first. SWITCH(config)# vlan (VID)
Choose the Types	SWITCH(config-vlan)# private-vlan community Configure the VLAN as an community private VLAN isolated

Primary Type	Configure the VLAN as an isolated private VLAN primary Configure the VLAN as a primary private VLAN
Isolated Type	SWITCH(config-vlan)# private-vlan primary <cr>
Community Type	SWITCH(config-vlan)# private-vlan isolated <cr> SWITCH(config-vlan)# private-vlan community <cr>
Private VLAN Port Configuration	
Go to the port configuration	SWITCH(config)# interface (port_number, ex: gi9) SWITCH(config-if)# SWITCHport private-vlan host-association Set the private VLAN host association mapping map primary VLAN to secondary VLAN
Private VLAN Port Type	SWITCH(config-if)# SWITCHport mode private-vlan Set private-vlan mode SWITCH(config-if)# SWITCHport mode private-vlan host Set the mode to private-vlan host promiscuous Set the mode to private-vlan promiscuous
Promiscuous Port Type	SWITCH(config-if)# SWITCHport mode private-vlan promiscuous <cr>
Host Port Type	SWITCH(config-if)# SWITCHport mode private-vlan host <cr>
Private VLAN Port Configuration	SWITCH(config)# interface ge9
PVLAN Port Type	SWITCH(config-if)# SWITCHport mode private-vlan host
Host Association primary to secondary	SWITCH(config-if)# SWITCHport private-vlan host-association <2-4094> Primary range VLAN ID of the private VLAN port association SWITCH(config-if)# SWITCHport private-vlan host-association 2
(The command is only available for host port.)	<2-4094> Secondary range VLAN ID of the private VLAN port association SWITCH(config-if)# SWITCHport private-vlan host-association 2 3

Mapping primary to secondary VLANs (This command is only available for promiscuous port)	SWITCH(config)# interface ge10 SWITCH(config-if)# SWITCHport mode private-vlan promiscuous SWITCH(config-if)# SWITCHport private-vlan mapping 2 add 3 SWITCH(config-if)# SWITCHport private-vlan mapping 2 add 4 SWITCH(config-if)# SWITCHport private-vlan mapping 2 add 5
Private VLAN Information	
Private VLAN Information	SWITCH# show vlan private-vlan FLAGS: I -> Isolated P -> Promiscuous C -> Community Primary Secondary Type Ports ----- 2 3 Isolated ge10(P),ge9(I) 2 4 Community ge10(P),ge8(C) 2 5 Community ge10(P),ge7(C),ge9(I) 10 - - -
PVLAN Type	SWITCH# show vlan private-vlan type Vlan Type Ports ----- 2 primary ge10 3 isolated ge9 4 community ge8 5 community ge7,ge9 10 primary -
Host List	SWITCH# show vlan private-vlan port-list Ports Mode Vlan ----- 1 normal - 2 normal - 3 normal - 4 normal -

	5 normal - 6 normal - 7 host 5 8 host 4 9 host 3 10 promiscuous 2
Running Config Information Private VLAN Type	SWITCH# show run Building configuration... Current configuration: hostname SWITCH vlan learning independent ! vlan 1 ! vlan 2 private-vlan primary ! vlan 3 private-vlan isolated ! vlan 4 private-vlan community ! vlan 5 private-vlan community ! Private VLAN Port Information
	interface ge7 SWITCHport access vlan add 2,5 SWITCHport trunk native vlan 5 SWITCHport mode private-vlan host SWITCHport private-vlan host-association 2 5 ! interface ge8 SWITCHport access vlan add 2,4 SWITCHport trunk native vlan 4

	<pre>SWITCHport mode private-vlan host SWITCHport private-vlan host-association 2 4 ! interface ge9 SWITCHport access vlan add 2,5 SWITCHport trunk native vlan 5 SWITCHport mode private-vlan host SWITCHport private-vlan host-association 2 3 ! interface ge10 SWITCHport access vlan add 2,5 SWITCHport trunk native vlan 2 SWITCHport mode private-vlan promiscuous SWITCHport private-vlan mapping 2 add 3-5</pre>
--	--

3.6 CLI COMMANDS FOR QOS CONFIGURATION

This chapter provides a detailed explanation of the QoS commands. The following commands are available.

The commands are divided into these different groups:

- Configuration Commands are used to configure features and options of the switch. For every configuration command there is a show command that will display the configuration setting.
- Show commands are used to display device settings, statistics and other information.

This chapter covered some sections such as, QoS Setting, CoS-Queue Mapping and DSCP-Queue Mapping.

Feature	Command Line
QoS Setting	
Queue Scheduling – Strict Priority	SWITCH(config)# qos queue-sched rr Round Robin sp Strict Priority wrr Weighted Round Robin SWITCH(config)# qos queue-sched sp <cr>
Queue Scheduling – Round Robin	SWITCH(config)# qos queue-sched rr
Queue Scheduling - WRR	SWITCH(config)# qos queue-sched wrr
Port Setting – CoS (Default Port Priority)	SWITCH(config)# int ge8 SWITCH(config-if)# qos priority Configure the port default priority value SWITCH(config-if)# qos priority <0-7> Assign an priority (7 highest) Note: When change the port setting, User should Select the specific port first.
Trust Mode- CoS Only	SWITCH (config)# qos trust-mode cos 802.1p priority tag dscp TOS/DSCP field SWITCH (config)# qos trust-mode cos
Trust Mode- DSCP Only	SWITCH (config)# qos trust-mode cos 802.1p priority tag dscp TOS/DSCP field SWITCH (config)# qos trust-mode dscp
Display – Queue Scheduling	SWITCH# show qos queue-sched QoS queue scheduling scheme : Weighted Round Robin COS queue 0 = 1

	COS queue 1 = 1 COS queue 2 = 1 COS queue 3 = 1 COS queue 4 = 1 COS queue 5 = 1 COS queue 6 = 1 COS queue 7 = 1
Display –Trust Mode	SWITCH# show qos trust-mode QoS Trust Mode: 802.1p priority tag
Display –CoS (Port Priority)	SWITCH# show qos port-priority Port Default Priority : Port Priority -----+----- 1 0 2 0 3 0 4 0 5 0 6 0 7 0 8 0 9 0 10 0 11 0 12 0
CoS-Queue Mapping	
Format	SWITCH(config)# qos cos-map PRIORITY Assign an priority (7 highest) SWITCH(config)# qos cos-map 1 QUEUE Assign an queue (0-3) Note: Format: qos cos-map priority_value queue_value
Map CoS 0 to Queue 1	SWITCH(config)# qos cos-map 0 1 The CoS to queue mapping is set ok.
Map CoS 1 to Queue 0	SWITCH(config)# qos cos-map 1 0 The CoS to queue mapping is set ok.
Map CoS 2 to Queue 0	SWITCH(config)# qos cos-map 2 0 The CoS to queue mapping is set ok.

Map CoS 3 to Queue 1	SWITCH(config)# qos cos-map 3 1 The CoS to queue mapping is set ok.
Map CoS 4 to Queue 2	SWITCH(config)# qos cos-map 4 2 The CoS to queue mapping is set ok.
Map CoS 5 to Queue 2	SWITCH(config)# qos cos-map 5 2 The CoS to queue mapping is set ok.
Map CoS 6 to Queue 3	SWITCH(config)# qos cos-map 6 3 The CoS to queue mapping is set ok.
Map CoS 7 to Queue 3	SWITCH(config)# qos cos-map 7 3 The CoS to queue mapping is set ok.
Display – CoS-Queue mapping	SWITCH# sh qos cos-map CoS to Queue Mapping : CoS Queue ----+----- 0 1 1 0 2 0 3 1 4 2 5 2 6 3 7 3
DSCP-Queue Mapping	
Format	SWITCH(config)# qos dscp-map PRIORITY Assign an priority (63 highest) SWITCH(config)# qos dscp-map 0 QUEUE Assign an queue (0-3) Format: qos dscp-map priority_value queue_value
Map DSCP 0 to Queue 1	SWITCH(config)# qos dscp-map 0 1 The TOS/DSCP to queue mapping is set ok.
Display – DSCO-Queue mapping	SWITCH# show qos dscp-map DSCP to Queue Mapping : (dscp = d1 d2) d2 0 1 2 3 4 5 6 7 8 9 d1 -----+----- 0 1 1 1 1 1 1 1 0 0

	1 0000000000
	2 0000111111
	3 1122222222
	4 2222222233
	5 3333333333
	6 3333

3.7 CLI COMMANDS FOR MULTICAST FILTERING CONFIGURATION

IGMP Snooping is used to monitor IGMP messages between host and routers, and process these IGMP messages.

IGMP Snooping make switch be able to track all network group members which are physically connected with switch that running between host and multicast routers to manage the member relationships. This chapter will cover the Multicast features CLI Command about configure and display the settings.

Feature	Command Line
IGMP Snooping	
IGMP Snooping - Global	SWITCH(config)# ip igmp snooping IGMP snooping is enabled globally. Please specify on which vlans IGMP snooping enables
IGMP Snooping - VLAN	SWITCH(config)# ip igmp snooping vlan VLANLIST allowed vlan list all all existed vlan SWITCH(config)# ip igmp snooping vlan 1-2 IGMP snooping is enabled on vlan 1 IGMP snooping is enabled on vlan 2
Disable IGMP Snooping - Global	SWITCH(config)# no ip igmp snoopin IGMP snooping is disabled globally ok.
Disable IGMP Snooping - VLAN	SWITCH(config)# no ip igmp snooping vlan 3 IGMP snooping is disabled on VLAN 3.
Display – IGMP Snooping Setting	SWITCH# show ip igmp interface vlan1 enabled: Yes version: IGMPv1 query-interval; 125s query-max-response-time: 10s SWITCH# show ip igmp snooping IGMP snooping is globally disabled Static Router Port: N/A Vlan1 is IGMP snooping enabled immediate-leave is disabled last-member-query-interval is 100 centiseconds source-only-learning is disabled
Display – IGMP Table	SWITCH# sh ip igmp snooping multicast all

	<table><tr><th>VLAN</th><th>IP Address</th><th>Type</th><th>Ports</th></tr><tr><td>1</td><td>239.192.8.0</td><td>IGMP</td><td>ge6,</td></tr><tr><td>1</td><td>239.255.255.250</td><td>IGMP</td><td>ge6,</td></tr></table>	VLAN	IP Address	Type	Ports	1	239.192.8.0	IGMP	ge6,	1	239.255.255.250	IGMP	ge6,
VLAN	IP Address	Type	Ports										
1	239.192.8.0	IGMP	ge6,										
1	239.255.255.250	IGMP	ge6,										
IGMP Query													
IGMP Query V1	SWITCH(config)# int vlan 1 (Go to management VLAN) SWITCH(config-if)# ip igmp v1												
IGMP Query V2	SWITCH(config)# int vlan 1 (Go to management VLAN) SWITCH(config-if)# ip igmp												
IGMP Query version	SWITCH(config-if)# ip igmp version 1 SWITCH(config-if)# ip igmp version 2												
Disable	SWITCH(config)# int vlan 1 SWITCH(config-if)# no ip igmp												
Display	SWITCH# sh ip igmp interface vlan1 enabled: Yes version: IGMPv2 query-interval: 125s query-max-response-time: 10s SWITCH# show running-config ! interface vlan1 ip address 192.168.10.17/24 ip igmp no shutdown !												
Filtering Mode													
Enable Force filtering	SWITCH(config)# mac-address-table multicast filtering flood flood to all ports discard discard vlan Virtual LAN SWITCH(config)# mac-address-table multicast filtering discard vlan all Set VLAN all multicast filtering to discard mode.												

3.8 CLI COMMANDS FOR ROUTING CONFIGURATION

This chapter is about the Routing Configuration CLI Command.

Feature	Command Line
ARP	
Age Time	SWITCH (config)# arp aging-time <10-21600> seconds (10-21600) SWITCH (config)# arp aging-time 14400
Static ARP Entry	SWITCH (config)# arp A.B.C.D IP address of ARP entry aging-time Aging Time SWITCH (config)# arp 192.168.10.90 MACADDR 48-bit hardware address xxxx.xxxx.xxxx of ARP entry SWITCH (config)# arp 192.168.10.90 SWITCH (config)# arp 192.168.10.90 9466.e79f.5678 vlan L3 vlan interface SWITCH (config)# arp 192.168.10.90 9466.e79f.5678 vlan 1 interface L2 interface SWITCH (config)# arp 192.168.10.90 9466.e79f.5678 vlan 1 interface IFNAME Interface name, ex: gigabitethernet1 or g4 SWITCH (config)# arp 192.168.10.90 9466.e79f.5678 vlan 1 interface ge8 => The MAC address 9466.e79f.5678 with IP 192.168.10.90 is bind to the port 8 of VLAN 1.
ARP Table	SWITCH# show arp IP address Mac Address Port Vlan Age(min) Type ----- 192.168.10.80 708b.cd03.b567 ge5 1 233 Dynamic 192.168.10.90 9466.e79f.5678 ge8 1 0 Static
ARP Table Status	SWITCH # show arp status Aging time (secs) : 14400 ARP entry count : 2 ARP static entry count : 1 ARP dynamic entry count : 1

IP	
Global IP Routing Configuration	SWITCH (config)# ip route A.B.C.D IP destination prefix A.B.C.D/M IP destination prefix (e.g. 10.0.0.0/8)
Stop IP Routing	SWITCH (config)#no ip route A.B.C.D IP destination prefix A.B.C.D/M IP destination prefix (e.g. 10.0.0.0/8)
IP Interface Configuration	
Go to the VLAN Interface	SWITCH (config)# interface vlan 1 SWITCH (config-if)#
Create IP Address	SWITCH (config-if)# ip address A.B.C.D/M IP address (e.g. 10.0.0.1/8) Switch(config-if)# ip address 192.168.10.30/24
Create Secondary IP Address	SWITCH (config-if)# ip address 192.168.101.30/24 secondary
Change Interface to DOWN	SWITCH (config-if)# shutdown Interface vlan1 Change to DOWN
Activate the IP Interface	SWITCH (config-if)# no shutdown Interface vlan1 Change to UP
Show ip routing status	SWITCH # show ip route Codes: K - kernel route, C - connected, S - static, R - RIP, O - OSPF, IA - OSPF inter area, E1 - OSPF external type 1, E2 - OSPF external type 2, B - BGP, > - selected route, * - FIB route C>* 192.168.10.0/24 is directly connected, vlan1

Route	
Default Route	<pre> SWITCH(config)# ip route A.B.C.D IP destination prefix A.B.C.D/M IP destination prefix (e.g. 10.0.0.0/8) SWITCH (config)# ip route 0.0.0.0 A.B.C.D IP destination prefix mask SWITCH (config)# ip route 0.0.0.0 192.168.10.3 % Command incomplete. SWITCH (config)# ip route 0.0.0.0 192.168.10.3 A.B.C.D IP gateway address INTERFACE IP gateway interface name null0 Null interface blackhole Silently discard pkts when matched reject Emit an ICMP unreachable when matched SWITCH (config)# ip route 0.0.0.0 192.168.10.90 192.168.10.70 5 </pre>
Static Route	<pre> SWITCH # show ip route 0.0.0.0 Routing entry for 0.0.0.0/2 Known via "static", distance 5, metric 0, best * 192.168.10.70, via vlan1 </pre>
Show Static/Dynamic Route	<pre> SWITCH # show running-config ! ip route 0.0.0.0/2 192.168.10.70 5 ! </pre>
Routing Table Display	<pre> SWITCH # show ip route Codes: K - kernel route, C - connected, S - static, R - RIP, O - OSPF, IA - OSPF inter area, E1 - OSPF external type 1, E2 - OSPF external type 2, B - BGP, > - selected route, * - FIB route S>* 0.0.0.0/2 [5/0] via 192.168.10.70, vlan1 C>* 192.168.10.0/24 is directly connected, vlan1 </pre>

RIP	
(Before enable RIP, the IP Interfaces' setting should be configured and activated)	
Enable RIP protocol	SWITCH (config)# router rip SWITCH (config-router)# default-information Control distribution of default route default-metric Set a metric of redistribute routes distance Administrative distance distribute-list Filter networks in routing updates end End current mode and change to enable mode exit Exit current mode and down to previous mode list Print command list neighbor Specify a neighbor router network Enable routing on an IP network no Negate a command or set its defaults offset-list Modify RIP metric passive-interface Suppress routing updates on an interface quit Exit current mode and down to previous mode redistribute Redistribute information from another routing protocol route RIP static route configuration route-map Route map set timers Adjust routing timers version Set routing protocol version
RIP Version	SWITCH (config-router)# version <1-2> version SWITCH (config-router)# version 2
RIP Network	SWITCH (config-router)# network 192.168.10.0/24 A.B.C.D/M IP prefix <network>/<length>, e.g., 35.0.0.0/8 WORD L3 Interface name
RIP Timer	SWITCH (config-router)# timers basic <5-2147483647> Routing table update timer value in second. Default is 30.
RIP Split Horizon	SWITCH (config-router)# passive-interface IFNAME Interface name default default for all interfaces SWITCH (config-router)# passive-interface default

RIP default Metric (usually = 1)	SWITCH (config-router)# default-metric <1-16> Default metric
RIP Setting	SWITCH # show ip rip status Routing Protocol is "rip" Sending updates every 30 seconds with +/-50%, next due in 18 seconds Timeout after 180 seconds, garbage collect after 120 seconds Outgoing update filter list for all interface is not set Incoming update filter list for all interface is not set Default redistribution metric is 1 Redistributing: Default version control: send version 2, receive version 2 Interface Send Recv Key-chain Routing for Networks: Routing Information Sources: Gateway BadPackets BadRoutes Distance Last Update Distance: (default is 120)
RIP Table	SWITCH # show ip rip Codes: R - RIP, C - connected, S - Static, O - OSPF, B - BGP Sub-codes: (n) - normal, (s) - static, (d) - default, (r) - redistribute, (i) - interface Network Next Hop Metric From Tag Time C(i) 192.168.10.0/24 0.0.0.0 1 self 0

OSPF	
(Before enable OSPF, the IP Interfaces' setting should be configured and activated first.)	
Go to the OSPF command line	SWITCH (config)# router ospf SWITCH (config-router)# area OSPF area parameters auto-cost Calculate OSPF interface cost according to bandwidth compatible OSPF compatibility list default-information Control distribution of default information default-metric Set metric of redistributed routes distance Define an administrative distance distribute-list Filter networks in routing updates end End current mode and change to enable mode exit Exit current mode and down to previous mode list Print command list neighbor Specify neighbor router network Enable routing on an IP network no Negate a command or set its defaults passive-interface Suppress routing updates on an interface quit Exit current mode and down to previous mode redistribute Redistribute information from another routing protocol refresh Adjust refresh parameters router-id router-id for the OSPF process timers Adjust routing timers
Router ID for OSPF	SWITCH (config-router)# router-id 192.168.5.251
OSPF Network and its Area ID (0.0.0.0 for example)	SWITCH (config-router)# network <0-4294967295> OSPF area ID as a decimal value A.B.C.D OSPF area ID in IP address format SWITCH (config-router)# network 192.168.5.0/24 area 0.0.0.0
Interface Configuration	
Hello Interval	SWITCH(config-if)# ip ospf hello-interval <1-65535> Seconds SWITCH (config-if)# ip ospf hello-interval 10
Dead Interval	SWITCH(config-if)# ip ospf dead-interval 10 <1-65535> Seconds

Link Cost Change	SWITCH (config-if)# ip ospf cost <1-65535> Cost
Link Priority	SWITCH (config-if)# ip ospf priority <0-255> Priority
Authentication	switch(config-if)# ip ospf authentication <cr> message-digest Use message-digest authentication null Use null authentication
Authentication-key	switch(config-if)# ip ospf authentication-key AUTH_KEY The OSPF password (key)
Message-digest-key	switch(config-if)# ip ospf message-digest-key <1-255> Key ID
Retransmit-interval	switch(config-if)# ip ospf retransmit-interval 10 <3-65535> Seconds
Transmit-delay	switch(config-if)# ip ospf transmit-delay 10 <1-65535> Seconds
network	switch(config-if)# ip ospf network broadcast Specify OSPF broadcast multi-access network

Display	
IP OSPF Information	SWITCH # show ip ospf OSPF Routing Process, Router ID: 192.168.5.251 Supports only single TOS (TOS0) routes This implementation conforms to RFC2328 RFC1583Compatibility flag is disabled Initial SPF scheduling delay 200 millisec(s) Minimum hold time between consecutive SPF's 1000 millisec(s) Maximum hold time between consecutive SPF's 10000 millisec(s) Hold time multiplier is currently 1 SPF algorithm has not been run SPF timer is inactive Refresh timer 10 secs Number of external LSA 0. Checksum Sum 0x00000000 Number of areas attached to this router: 1 Area ID: 0.0.0.0 (Backbone) Number of interfaces in this area: Total: 0, Active: 0 Number of fully adjacent neighbors in this area: 0 Area has no authentication SPF algorithm executed 0 times Number of LSA 0 Number of router LSA 0. Checksum Sum 0x00000000 Number of network LSA 0. Checksum Sum 0x00000000 Number of summary LSA 0. Checksum Sum 0x00000000 Number of ASBR summary LSA 0. Checksum Sum 0x00000000 Number of NSSA LSA 0. Checksum Sum 0x00000000

IP OSPF Datasheet	<pre> Switch# show ip ospf database OSPF Router with ID (192.168.3.254) Router Link States (Area 0.0.0.0) Link ID ADV Router Age Seq# CkSum Link count 192.168.3.253 192.168.3.253 928 0x80000009 0xf3b2 2 192.168.3.254 192.168.3.254 927 0x8000000a 0xd4aa 3 192.168.5.254 192.168.5.254 230 0x80000006 0xc248 2 Net Link States (Area 0.0.0.0) Link ID ADV Router Age Seq# CkSum 192.168.3.254 192.168.3.254 927 0x80000003 0x7437 192.168.4.253 192.168.5.254 235 0x80000003 0x7334 </pre>
IP OSPF Interface Information	<pre> Switch# show ip ospf interface vlan1 is up ifindex 16, MTU 1500 bytes, BW 0 Kbit <UP,BROADCAST,RUNNING,MULTICAST> OSPF not enabled on this interface vlan2 is up ifindex 17, MTU 1500 bytes, BW 0 Kbit <UP,BROADCAST,RUNNING,MULTICAST> OSPF not enabled on this interface vlan5 is down ifindex 18, MTU 1500 bytes, BW 0 Kbit <BROADCAST,MULTICAST> OSPF not enabled on this interface </pre>
IP OSPF Neighbor Table	<pre> Switch# show ip ospf neighbor Neighbor ID Pri State Dead Time Address Interface RXmtL RqstL DBsmL ----- </pre>

IP OSPF Networking Routing Table	<pre>Switch# show ip ospf route ===== OSPF network routing table ===== N 192.168.2.0/24 [10] area: 0.0.0.0 directly attached to vlan2 N 192.168.3.0/24 [10] area: 0.0.0.0 directly attached to vlan3 N 192.168.11.0/24 [10] area: 0.0.0.0 directly attached to vlan1</pre>
OSPF Setting in Configuration file	<pre>Switch# show running-config router ospf router-id 192.168.3.253 network 192.168.2.0/24 area 0.0.0.0 network 192.168.3.0/24 area 0.0.0.0 network 192.168.11.0/24 area 0.0.0.0 ! ip routing</pre>
Multicast Routing (Before enable MRoute, the IP Interfaces' setting should be configured and activated first.)	
Enable the MRoute & Configure the static entry	<pre>SWITCH(config)# ip multicast 224.0.1.10 vlan specify the ingress VLAN switch(config)# ip multicast 224.0.1.10 vlan VLANID valid range is 1 to 4094 switch(config)# ip multicast 224.0.1.10 vlan 1 egress-vlan specify the egress VLAN switch(config)# ip multicast 224.0.1.10 vlan 1 egress-vlan VLANID valid range is 1 to 4094 switch(config)# ip multicast 224.0.1.10 vlan 1 egress-vlan 5 interface specify an interface list to add to switch(config)# ip multicast 224.0.1.10 vlan 1 egress-vlan 5 interface ge6</pre>
VRRP	
IP of VRRP	<pre>Switch(config-if)# vrrp 1 ip 192.168.10.1 The virtual router of vlan1 count is 1. Create virtual router 1 success.</pre>

Priority of the interface	SWITCH(config-if)# vrrp 1 priority <1-254> virtual router's priority value in range 1-254, 255 for virtual IP owner and 100 for backup by default
Preempt of the	SWITCH(config-if)# vrrp 1 preempt
VRRP Information	SWITCH# show vrrp [1-255] virtual router identifier in the range 1-255 (decimal) brief display a summary view of the virtual router information Switch# show vrrp vlan1 - Virtual Router ID 1 State is Master Virtual IP address is 192.168.10.1 Virtual MAC address is 0000.5e00.0101 Priority is 100 Advertisement interval is 1 sec Preemption is enabled Master Router is 192.168.10.1 (local), priority is 100 Master Advertisement interval is 1.000 sec Master Down interval is 3.609 sec
VRRP Brief Information	Switch# show vrrp brief Interface VRID Prio Time Owner Pre State Master IP addr Virtual IP addr vlan1 1 100 3.609 - enabled Master 192.168.10.1 192.168.10.1

3.9 CLI COMMANDS FOR SNMP CONFIGURATION

SNMP is the most widely used network management protocol in TCP/IP that offers a method for monitoring and managing computer network. For this reason, SNMP has been widely used and became de facto standard of network management. SNMPv2c provides several advantages over SNMPv1. SNMPv2c have expanded data types of 64-bit counter. It calls for improved efficiency and performance by introducing the GETBULK operation. Confirmed event notification is sought by the introduction of the Inform operator. Enhanced error handling approach, improved sets, and a fine tuned Data Definition Language are some of the advantages of SNMPv2c over the SNMPv1.

This chapter covers SNMP Community and SNMP Trap section. Through this function of reading or writing community name, the access control of the device is realized and the communication security is enhanced because the device will only accept the message with a qualified community name. Show commands are used to display device settings and other information.

Feature	Command Line
SNMP Community	
Read Only Community	SWITCH(config)# snmp-server community public ro community string add ok
Read Write Community	SWITCH(config)# snmp-server community private rw community string add ok
SNMP Trap	
Enable Trap	SWITCH(config)# snmp-server enable trap Set SNMP trap enable ok.
SNMP Trap Server IP without specific community name	SWITCH(config)# snmp-server host 192.168.10.33 SNMP trap host add OK, total host number = 1.
SNMP Trap Server IP with version 1 and community	SWITCH(config)# snmp-server host 192.168.10.33 version 1 private SNMP trap host add OK.con t Note: private is the community name, version 1 is the SNMP version
SNMP Trap Server IP with version 2 and community	SWITCH(config)# snmp-server host 192.168.10.33 version 2 private SNMP trap host add OK.
Disable SNMP Trap	SWITCH(config)# no snmp-server enable trap Set SNMP trap disable ok.
Display	SWITCH# sh snmp-server trap SNMP trap: Enabled SNMP trap community: public

	<pre>SWITCH# show running-config snmp-server community public ro snmp-server community private rw snmp-server enable trap snmp-server host 192.168.10.33 version 2 admin snmp-server host 192.168.10.33 version 1 admin</pre>
--	---

3.10 CLI COMMANDS FOR SECURITY CONFIGURATION

This chapter covers the Security configuration setting by CLI Command.

Feature	Command Line
Filter	
Add MAC access list	SWITCH(config)# mac access-list extended NAME access-list name SWITCH (config)# mac access-list extended server1 SWITCH (config-ext-macl)# permit Specify packets to forward deny Specify packets to reject end End current mode and change to enable mode exit Exit current mode and down to previous mode list Print command list no Negate a command or set its defaults quit Exit current mode and down to previous mode
Add IP Standard access list	Switch(config)# ip access-list extended Extended access-list standard Standard access-list Switch(config)# ip access-list extended <100-199> Extended IP access-list number <2000-2699> Extended IP access-list number (expanded range) WORD access-list name Switch (config)# ip access-list standard 1 SWITCH(config-std-acl)# deny Specify packets to reject permit Specify packets to forward end End current mode and change to enable mode exit Exit current mode and down to previous mode list Print command list no Negate a command or set its defaults quit Exit current mode and down to previous mode remark Access list entry comment

Add IP Extended access list	Switch(config)# ip access-list extended <100-199> Extended IP access-list number <2000-2699> Extended IP access-list number (expanded range) WORD access-list name Switch(config)# ip access-list extended 100 Switch(config-ext-acl)#
-----------------------------	--

Add MAC	SWITCH(config)# mac-address-table static 9466.e79f.5678 vlan 1 interface ge1 mac-address-table unicast static set ok!
Display	SWITCH# show mac-address-table static Destination Address Address Type Vlan Destination Port ----- 9466.e79f.5678 Static 1 ge1
802.1x	
enable	SWITCH(config)# dot1x system-auth-control SWITCH(config)#
disable	SWITCH(config)# no dot1x system-auth-control SWITCH(config)#
authentic-method	SWITCH(config)# dot1x authentic-method local Use the local username database for authentication radius Use the Remote Authentication Dial-In User Service (RADIUS) servers for authentication SWITCH(config)# dot1x authentic-method radius SWITCH(config)#
radius server-ip	SWITCH(config)# dot1x radius SWITCH(config)# dot1x radius server-ip 192.168.10.120 key 1234 RADIUS Server Port number NOT given. (default=1812) RADIUS Accounting Port number NOT given. (default=1813) RADIUS Server IP : 192.168.10.120 RADIUS Server Key : 1234 RADIUS Server Port : 1812 RADIUS Accounting Port : 1813 SWITCH(config)#
radius server-ip	SWITCH(config)# dot1x radius SWITCH(config)# dot1x radius server-ip 192.168.10.120key 1234

	RADIUS Server Port number NOT given. (default=1812) RADIUS Accounting Port number NOT given. (default=1813) RADIUS Server IP : 192.168.10.120 RADIUS Server Key : 1234 RADIUS Server Port : 1812 RADIUS Accounting Port : 1813 SWITCH(config)#
radius secondary-server-ip	SWITCH(config)# dot1x radius secondary-server-ip 192.168.10.250 key 5678 Port number NOT given. (default=1812) RADIUS Accounting Port number NOT given. (default=1813) Secondary RADIUS Server IP : 192.168.10.250 Secondary RADIUS Server Key : 5678 Secondary RADIUS Server Port : 1812 Secondary RADIUS Accounting Port : 1813
User name/password for authentication	SWITCH(config)# dot1x usernamepasswd vlan 1

3.11 CLI COMMANDS FOR WARNING CONFIGURATION

This chapter is about the Warning Configuration by using CLI Command. Womaster Switch supports device alarm and related alarm report, alarm enable/disable, and alarm searching. It assures that the alarm will be reported to the customer timely and accurately

Feature	Command Line
Relay Output	
Relay Output	<pre>SWITCH(config)# relay 1 di DI state dry dry output ping ping failure port port link failure power power failure ring ring failure Note: Select Relay 1 or 2 first, then select the event types.</pre>
DI State	<pre>SWITCH(config)# relay 1 di <1-2> DI number SWITCH(config)# relay 1 di 1 high high is abnormal low low is abnormal SWITCH(config)# relay 1 di 1 high</pre>
Dry Output	<pre>SWITCH(config)# relay 1 dry <0-65535> turn on period in second SWITCH(config)# relay 1 dry 5 <0-65535> turn on period in second SWITCH(config)# relay 1 dry 5 5</pre>
Ping Failure	<pre>SWITCH(config)# relay 1 ping 192.168.10.33 <cr> reset reset a device SWITCH(config)# relay 1 ping 192.168.10.33 reset <1-65535> reset time SWITCH(config)# relay 1 ping 192.168.10.33 reset 60 <0-65535> hold time to retry SWITCH(config)# relay 1 ping 192.168.10.33 reset 60 60</pre>
Port Link Failure	<pre>SWITCH(config)# relay 1 port PORTLIST port list</pre>

	SWITCH(config)# relay 1 port ge1-5
Power Failure	SWITCH(config)# relay 1 power <1-2> power id SWITCH(config)# relay 1 power 1 SWITCH(config)# relay 1 power 2
Ring Failure	SWITCH(config)# relay 1 ring
Disable Relay	SWITCH(config)# no relay <1-2> relay id SWITCH(config)# no relay 1 (<i>Relay_ID: 1 or 2</i>) <cr>
Display	SWITCH# show relay 1 Relay 1 Event : Power : Disabled Port Link : Disabled Ring : Enabled Ping : Disabled Ping Reset : Disabled Dry Output : Disabled DI : Disabled
Event Selection	
Event Selection	SWITCH(config)# warning-event coldstart Switch cold start event warmstart Switch warm start event linkdown Switch link down event linkup Switch link up event authentication Authentication failure event di Switch di event loop-protect Switch loop protection event poe-powering Switch PoE powering or unpowering event power Switch power failure event relay-output Switch relay output event ring Switch ring event sfp Switch SFP event time-sync Switch time synchronize event
Ex: Cold Start event	SWITCH(config)# warning-event coldstart Set cold start event enable ok.
Ex: Link Up event	SWITCH(config)# warning-event linkup

	[IFNAME] Interface name, ex: ge1 or ge8 SWITCH(config)# warning-event linkup ge5 Set ge5 link up event enable ok.
Display	SWITCH# show warning-event Warning Event: Cold Start: Disabled Warm Start: Disabled Authentication Failure: Disabled Link Down: Disabled Link Up: Disabled Power Failure: Disabled Ring: Disabled Relay Output: Disabled Time Synchronize Failure: Disabled PoE Powering: Disabled SFP: Disabled DI: Disabled Loop Protection: Disabled
Syslog Setting	
Local Mode	SWITCH(config)# log syslog local
Server Mode	SWITCH(config)# log syslog remote 192.168.10.4
Both	SWITCH(config)# log syslog local SWITCH(config)# log syslog remote 192.168.10.4
Disable	SWITCH(config)# no log syslog local
Email Alert	
SMTP Enable	SWITCH(config)# smtp-server enable email-alert SMTP Email Alert set enable ok.
Sender mail	SWITCH(config)# smtp-server server 192.168.10.100 ACCOUNT SMTP server mail account, ex: help@womaster.eu SWITCH(config)# smtp-server server 192.168.10.100 help@womaster.eu SMTP Email Alert set Server: 192.168.10.100, Account: info@womaster.eu ok.
Receiver mail	SWITCH(config)# smtp-server receipt 1 help@womaster.eu SMTP Email Alert set receipt 1: help@womaster.eu ok.
Authentication with username and password	SWITCH(config)# smtp-server authentication username admin password admin SMTP Email Alert set authentication Username: admin, Password: admin Note: User can assign string to username and password.

Disable SMTP	SWITCH(config)# no smtp-server enable email-alert SMTP Email Alert set disable ok.
Disable Authentication	SWITCH(config)# no smtp-server authentication SMTP Email Alert set Authentication disable ok.
Display	SWITCH# sh smtp-server SMTP Email Alert is Enabled Server: 192.168.10.100, Account: help@womaster.eu Authentication: Enabled Username: admin, Password: admin SMTP Email Alert Receipt: Receipt 1: help@womaster.eu Receipt 2: Receipt 3: Receipt 4:

3.12 CLI COMMANDS FOR DIAGNOSTICS CONFIGURATION

This chapter is about Diagnostics feature, the features that include in Diagnostics are LLDP, MAC Address Table, Port Statistics, Port Mirroring, Event Log, and Ping.

Feature	Command Line
LLDP	
Enable LLDP	SWITCH(config)# lldp holdtime Specify the holdtime of LLDP in seconds <10-255> Valid range is 10~255 run Enable LLDP timer Set the transmission frequency of LLDP in seconds <5-254> Valid range is 5~254
MAC Address Table	
Aging Time	SWITCH(config)# mac-address-table aging-time 350 mac-address-table aging-time set ok! TIMEVALUE aging time in seconds, the range is 15 to 3825 seconds <i>Note: 350 is the new ageing timeout value.</i>
Add Static Unicast MAC address	SWITCH(config)# mac-address-table static 9466.e79f.5678 vlan 1 interface ge7 mac-address-table ucast static set ok! <i>Note: rule: mac-address-table static MAC_address VLAN VID interface interface_name</i>
Add Multicast MAC address	SWITCH(config)# mac-address-table multicast 0100.5e01.0101 vlan 1 interface ge6-7 Adds an entry in the multicast table ok! MACADDR destination mac address xxxx.xxxx.xxxx (multicast) to add to the address table <i>Note: rule: mac-address-table multicast MAC_address VLAN VID interface_list interface_name/range</i> SWITCH(config)# mac-address-table multicast filtering filtering filtering of unknown multicast addresses flood flood to all ports discard discard vlan Virtual LAN
Show MAC Address Table	SWITCH# show mac-address-table

– All types	<pre>***** UNICAST MAC ADDRESS ***** Destination Address Address Type Vlan Destination Port ----- 000f.b079.ca3b Dynamic 1 ge4 9466.e79f.5678 Dynamic 1 ge7 9466.e700.00e7 Static 1 ge7 9466.e75f.05b9 Static 1 ge7 9466.e79d.0069 Management 1 ***** MULTICAST MAC ADDRESS ***** Vlan Mac Address COS Status Ports ----- 1 9466.e79d.0069 0 ge6 1 9466.e79f.06d9 0 ge4,ge6</pre>
Show MAC Address Table – Dynamic Learnt MAC addresses	<pre>SWITCH# show mac-address-table dynamic Destination Address Address Type Vlan Destination Port ----- 9466.e700.00e7 Dynamic 1 ge4 9466.e79f.06d9 Dynamic 1 ge7</pre>
Show MAC Address Table – Multicast MAC addresses	<pre>SWITCH# show mac-address-table multicast Vlan Mac Address COS Status Ports ----- 1 9466.e79f.06d9 0 ge6-7 1 9466.e700.00e7 0 ge4,ge6-7</pre>
Show MAC Address Table – Static MAC addresses	<pre>SWITCH# show mac-address-table static Destination Address Address Type Vlan Destination Port ----- 9466.e700.00e7 Static 1 ge7 9466.e75f.05b9 Static 1 ge7</pre>
Show Aging timeout time	<pre>SWITCH# show mac-address-table aging-time the mac-address-table aging-time is 345 sec.</pre>
Port Statistics	
Port Statistics	<pre>SWITCH# show rmon statistics ge4 (select interface) Interface fastethernet4 is enable connected, which has Inbound: Good Octets: 178792, Bad Octets: 0 Unicast: 598, Broadcast: 1764, Multicast: 160</pre>

	Pause: 0, Undersize: 0, Fragments: 0 Oversize: 0, Jabbers: 0, Discards: 0 Filtered: 0, RxError: 0, FCSError: 0 Outbound: Good Octets: 330500 Unicast: 602, Broadcast: 1, Multicast: 2261 Pause: 0, Deferred: 0, Collisions: 0 SingleCollision: 0, MultipleCollision: 0 ExcessiveCollision: 0, LateCollision: 0 Filtered: 0, FCSError: 0 Number of frames received and transmitted with a length of: 64: 2388, 65to127: 142, 128to255: 11 256to511: 64, 512to1023: 10, 1024toMaxSize: 42
Port Mirroring	
Enable Port Mirror	SWITCH(config)# mirror en Mirror set enable ok.
Disable Port Mirror	SWITCH(config)# mirror disable Mirror set disable ok.
Select Source Port	SWITCH(config)# mirror source ge1-2 both Received and transmitted traffic rx Received traffic tx Transmitted traffic SWITCH(config)# mirror source ge1-2 both Mirror source ge1-2 both set ok. Note: Select source port list and TX/RX/Both mode.
Select Destination Port	SWITCH(config)# mirror destination ge6 Mirror destination ge6 both set ok
Display	SWITCH# show mirror Mirror Status : Enabled Monitor Destination Port : ge6 Ingress Source Ports :ge1,ge2, Egress Source Ports :ge1,ge2,
Event Log	
Display	SWITCH# show event-log Jan 1 00:06:56 switch Event: Link 2 Down. Jan 1 00:06:56 switch Event: Ring11 Become Protection state. Jan 1 00:06:56 switch Event: Ring11, Port 2 Link Change to DOWN.

	Jan 1 00:06:57 switch Event: Link 2 Up. Jan 1 00:06:58 switch Event: Ring11 Become Non Protection state. Jan 1 00:06:58 switch Event: Ring11, Port 2 Link Change to UP.
Ping	
Ping IP	SWITCH# ping 192.168.10.4 PING 192.168.10.4 (192.168.10.4): 56 data bytes 64 bytes from 192.168.10.4: seq=0 ttl=64 time=5.6 ms 64 bytes from 192.168.10.4: seq=1 ttl=64 time=0.8 ms 64 bytes from 192.168.10.4: seq=2 ttl=64 time=1.0 ms 64 bytes from 192.168.10.4: seq=3 ttl=64 time=1.0 ms 64 bytes from 192.168.10.4: seq=4 ttl=64 time=0.8 ms --- 192.168.10.4 ping statistics --- 5 packets transmitted, 5 packets received, 0% packet loss round-trip min/avg/max = 0.8/1.8/5.6 ms

3.13 CLI COMMANDS FOR BACKUP RESTORE

This chapter provides a detailed explanation of the Backup and Restore the configuration by using CLI commands.

Feature	Command Line
Backup Startup Configuration file	SWITCH# copy startup-config tftp: 192.168.10.33/default.conf Writing Configuration [OK] Note: 192.168.10.33 is the TFTP server's IP and default.conf is name of the configuration file. User environment may use different IP addresses or different file name. Please type target TFTP server IP or file name in this command.
Restore Configuration	SWITCH# copy tftp: /default.conf startup-config
Show Startup Configuration	SWITCH# show startup-config
Show Running Configuration	SWITCH# show running-config

3.14 CLI COMMANDS FOR FIRMWARE UPGRADE

This chapter covers the CLI Command for upgrading the switch firmware.

Feature	Command line
Firmware Upgrade	SWITCH# archive download-sw /overwrite tftp "ip address" "firmwarefile".bin→ binary code file name Firmware upgrading, don't turn off the SWITCH! Tftping file "firmwarefile".bin→ binary code file name Firmware upgrading Firmware upgrade success!! Rebooting.....

3.15 CLI COMMANDS FOR RESET

This chapter is about CLI command to reset to factory default configuration.

Feature	Command Line
Factory Default	SWITCH# reload default-config file Reload OK! SWITCH# reboot

3.16 CLI COMMANDS FOR SAVE & LOAD

This chapter is cover two function from the switch, Save and Load the configuration CLI command.

Feature	Command Line
Save	SWITCH# write Building Configuration... --- save configuration [OK]
Load	SWITCH# copy running-config startup-config --- load configuration Building Configuration... [OK]

3.17 CLI COMMANDS FOR LOGOUT

This chapter is about the CLI Command for log out from the switch CLI interface.

Feature	Command Line
Logout	SWITCH> exit SWITCH# exit SWITCH login: admin Password:

3.18 CLI COMMANDS FOR REBOOT

This chapter is about restart the device using CLI Command.

Feature	Command Line
Reboot	SWITCH# reboot