Industrial Switch

CLI Configuration Manual

Version：V1.3

Manual description

This manual describes the the command line configuration of the industrial switch products, including its product overview, Console configuration management, as well as the configuration of the major modules of the order. In the configuration commands, including the basic configuration, Ethernet configuration, storm suppression configuration and equipment management commands, etc.. This manual is designed to help users to master the configuration and usage of products.

Reader range

The manual is applicable to the following：

- Engineering and technical personnel
- Engineering staff
- Equipment maintenance personnel
- Network management personnel
- Other people who are interested in this product

Content introduction

Describe the main content of this manual, introduce the key points of each chapter, guide users to use this manual:

Chapter	Outline
The first chapter Product Overview	Products overview
The second chapter Console configuration management	Console configuration management
The third chapter basic commands	Basic configuration command
The fourth chapter Ethernet command	Ethernet configuration command
The fifth chapter storm suppression configuration command	Storm suppression configuration command
The sixth chapter LDP configuration management commands	LLDP configuration command
The seventh chapter Port mirroring configuration command	Port mirroring configuration command
The eighth chapter equipment management command	Device management configuration command
The ninth chapter ACL and IGMP command	ACL and IGMP configuration command
The tenth chapter ACL and IGMP command	PoE command

Version update description

Firmware Version	Manual Version	Release time	Update instructions
-	V1.0	2015.9	Manual first release
-	V1.1	2017.2	Add ACL and IGMP command
-	V1.2	2017.2	Add PoE Configuration
	V1.3	2019.8	Add ZTP and TACACS+ configuration

sign

The manual uses three eye-catching signs to indicate that in the operation of the process should pay special attention to the place

 Explain  Be careful  Caution: caution should be noted in the operation

Disclaimer of liability

This user's manual is based on the existing information and is subject to change without notice. We have done our best to ensure that the content is accurate and reliable, but we are not responsible for the loss and damage caused by omission, inaccuracy or mistakes in this manual.

Catalog

1. Product Overview

1.1 Preface

The main purpose of this manual is the command line configuration of the QSW-2135 switch series, including its product overview, Console configuration management, and the configuration commands for each module. In the configuration command, including the basic configuration, Ethernet configuration, storm suppression configuration and equipment management commands. This manual is designed to help users to master the configuration and usage of QSW-2135 switch products.

1.2 Product Overview

QSW-2135 switch series products (hereinafter referred to as QSW-2135) is a multi port, multi function, a new generation of high performance network, desktop packet access of intelligent products, support 802.3ah/802.1ag multi-level OAM management and maintenance, to achieve interoperability with existing PTN and IPRAN devices, and can be managed by our implementation of HView network management.

1.3 Characteristic

- Support 1-4 100/1000M Ethernet SFP ports can be set, and 1-8 10/100/1000M adaptive port;
- Low power, wide range of temperature and humidity, support redundant power input;
- Compliance with CE, FCC and other related standards;
- Provide a console interface, support for telnet management;
- Support VLAN 802.1Q, basic QinQ and flexible QinQ, support up to VLAN 4K table entry;
- Support for rich OAM, including 802.3ah standards in line with the EFM and 802.1ag, Y.1731 standard CFM;
- Support LACP protocol port protection, linear protection based on G.8031 protocol and the ring network protection based on G.8032 protocol based on;

- Support service port, 802.1P, DSCP, MAC, ID, Ethernet, VLAN address Type based on QOS;
- Support port、VLAN and port +VLAN based on speed;
- Support MAC address table dynamic automatic learning and static configuration;
- Support SLA, can realize the link delay, jitter, packet loss and throughput of link performance test;
- Support RMON, can send and receive packets statistics port number and port traffic data;
- Support SNMP protocol based unified network management and Server Web configuration mode;
- Support the broken fiber alarm; support Dying Gasp remote equipment fail alarm;
- Support spanning tree (STP) and fast spanning tree (RSTP) protocol and multi spanning tree (MSTP) protocol;
- Support industrial Ethernet ring network protocol ERPS, the protection of the switching time is less than 20ms;
- Support port loop detection and equipment online upgrade.

2. Console Configuration Management

2.1 Console Configuration

Console interface is an interface to the user for local management of the device. The interface includes a series of configuration commands that can be configured and managed by the user, and the command line interface has the following features:

- Localization of equipment through the console port configuration management
- Users can use “?" To get online help
- Provide network testing tools such as Ping, can help users to quickly diagnose online network connectivity

2.1.1 Console Interface Pin Definition

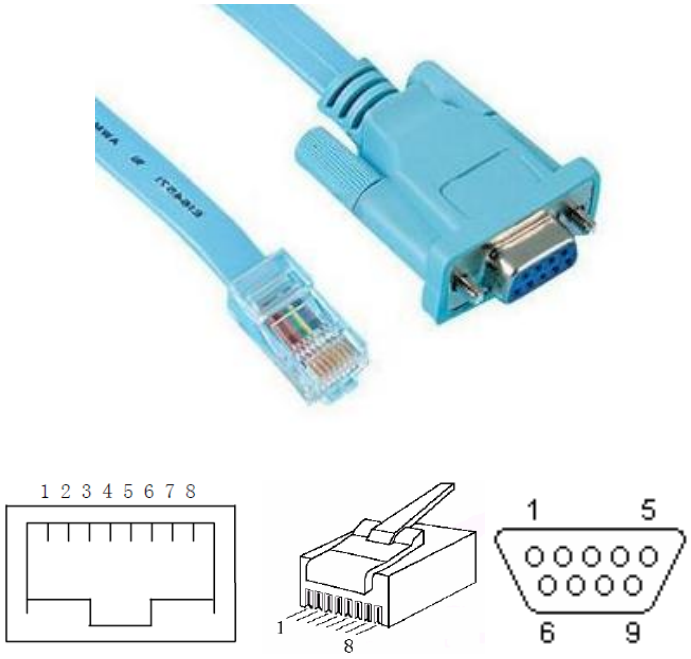

Figure 2-1:Console interface pin

table 2-1：Console Interface pin definition

Console port (DTE)	RJ45 Pin	DB-9 Pin	Console Device
RTS	8	8	CTS
DTR	7	6	DSR
TxD	6	2	RxD
GND	5	5	GND
GND	4	5	GND
RxD	3	3	TxD
DSR	2	4	DTR
CTS	1	7	RTS

2.1.2 Terminal Rate Configuration

Open the terminal emulator software (such as SourceCRT on the Windows Microsoft machine, or on the Linux machine "small computer"), and then select the appropriate COM port connection. Set the terminal and port to the following parameters:

- Terminal Mode: VT-100
- Baud rate : 115200 bps
- Data bits : 8
- Parity : None
- Stop bits : 1
- Flow Control : None

2.2 Landing Local Management

RedBoot(tm) version V1.16 - built 15:42:57, Nov 18 2013

== Executing boot script in 3.000 seconds - enter ^C to abort

RedBoot> fis load -d managed

Image loaded from 0x80040000-0x80a651ac

RedBoot> go

Press ENTER to get startedGigabitEthernet 1/5 with current speed is restricted to full duplex

Username: admin

```
Password:

#
```

- Input user name:admin
- Input password:admin,press the Enter key, and login to console management interface.

2.3 Command Line Control Interface

In order to facilitate the user to use, you can enter the "?" To get online help for the command list.

```
# ?
  clear          Reset functions
  configure      Enter configuration mode
  copy           Copy from source to destination
  debug          Debugging functions
  delete         Delete one file in flash: file system
  dir            Directory of all files in flash: file system
  disable        Turn off privileged commands
  do             To run exec commands in config mode
  dot1x          IEEE Standard for port-based Network Access Control
  enable         Turn on privileged commands
  erps           Ethernet Ring Protection Switching
  exit           Exit from EXEC mode
  firmware       Firmware upgrade/swap
  help           Description of the interactive help system
  ip             IPv4 commands
  link-oam       Link OAM configuration
  logout         Exit from EXEC mode
  more           Display file
  no             Negate a command or set its defaults
  ping           Send ICMP echo messages
  ptp            Enable wireless mode for an interface.
  reload         Reload system.
  send           Send a message to other tty lines
  show           Show running system information
  terminal       Set terminal line parameters
#
```

3 Basic Command

This chapter mainly introduces the basic configuration of the system, user management, configuration file upload and download configuration, Telnet/SSH login device configuration and other basic features of the relevant commands

3.1 Basic Configuration Command

3.1.1 Ip address

Command function

ip address command to configure the IP address of the VLANIF interface

Command form

- **ip address** *ip-address mask-address*

Parameter description

Parameter	Explain	Value
Ip-address	Specify IP address	Dotted decimal
Net-mask	Specified subnet mask	Dotted decimal

Use instance

```
# configure terminal
(config)# interface vlan 1
(config-if-vlan)# ip address 192.168.0.11 255.255.255.0
(config-if-vlan)#
```

3.1.2 Ip route

Command function

ip route command used to configure the gateway

Command form

- **ip route** *Network Netmask Gateway*

Parameter description

Parameter	Explain	Value

Network	IP network address	Dotted decimal
Netmask	Specified subnet mask	Dotted decimal
Gateway	Gateway	Dotted decimal

Use instance

```
# configure terminal
(config)# ip route 192.168.0.0 255.255.255.0 192.168.0.254
(config)#
```

3.1.3 Clear

Command function

clear command can be used to clear the specified status statistics.

Command form

- **clear**

Parameter description

No

Use instance

Clear LLDP Port Statistics

```
# clear LLDP statistics
```

3.1.4 Hostname

Command function

hostname Command to configure the host name of the device

Command form

- **hostname** *hostname*

Parameter description

Parameter	Explain	Value
Hostname	Specify device name	String form, length range is 1 ~ 20 bytes

Use instance

#Config the host name of the device is QSW-2135

```
(config)# hostname QSW-2135
```

```
QSW-2135 (config)#
```

3.1.5 Help

Command function

Help command can be used to display system help information

Command form

- **help**

Parameter description

No

Use instance

Display online help information

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

#
```

3.1.6 Ping

Command function

Ping command can be used to test the connectivity of IP networks

Command form

- **ping ip** *A.B.C.D*
- **ping ipv6** *A:B:C:D:E:F:G:H.*

Parameter description

Parameter	Explain	Value
A.B.C.D	Host IP address to be tested	Dotted decimal
A:B:C:D:E:F:G:H	Host IPv6 address to be tested	

Use instance

ping IP address of the remote device

```
# ping ip 192.168.0.11
PING server 192.168.0.11, 56 bytes of data.
64 bytes from 192.168.0.11: icmp_seq=0, time=0ms
64 bytes from 192.168.0.11: icmp_seq=1, time=0ms
64 bytes from 192.168.0.11: icmp_seq=2, time=0ms
64 bytes from 192.168.0.11: icmp_seq=3, time=0ms
64 bytes from 192.168.0.11: icmp_seq=4, time=0ms
Sent 5 packets, received 5 OK, 0 bad
#
```

3.1.7 Exit

Command function

Exit command is used to return the first level menu

Command form

- **exit**

Parameter description

No

Use instance

Use exit to return to the upper level command line

```
(config)# exit
#
```

3.1.8 Logout

Command function

Logout command exit login

Command form

- **logout**

Parameter description

No

Use instance

Exit and login again

```
# logout
Press ENTER to get started
```

3.1.9 Reload

Command function

Reload command can be used to restart the device or restore the factory value

Command form

- **reload cold**
- **reload defaults**

Parameter description

No

Use instance

Restart device

```
# reload cold
% Cold reload in progress, please stand by.
# interface GigabitEthernet 1/3 down
+
RedBoot(tm) version V1.16 - built 15:42:57, Nov 18 2013


== Executing boot script in 3.000 seconds - enter ^C to abort
RedBoot> fis load -d managed
Image loaded from 0x80040000-0x80a651ac
RedBoot> go


Press ENTER to get startedGigabitEthernet 1/5 with current speed is restricted
```

```
to full duplex
```

3.1.10 Username

Command function

Usenamer command to set up a local login user

Command form

●username privilege password

Parameter description

Parameter	Explain	Value
User	Specified user name	String form
privilege	Specify user rights	Authority level 1-15,15 maximum
password	Specify password	String form

Command instance

Add the user name is guest, password is guest, the user rights 15

```
(config)# username guest privilege 15 password unencrypted guest
(config)#
```

3.1.11 No

Command function

No command is to delete the specified configuration

Command form

● no

Parameter description

No

Use instance

Delete user name for G2

```
(config)# no username g2
(config)#
```

3.1.12 Copy running-config startup-config

Command function

copy running-config startup-config command can be used to save the user's current configuration

Command form

●copy running-config startup-config

Parameter description

No

Use instance

Save the current configuration

```
# copy running-config startup-config
Building configuration...
% Saving 1519 bytes to flash:startup-config
#
```

3.1.13 Copy running-config tftp:// <tftp server ip>/filename

Command function

The command can be used to download the current profile of the user to the specified server

Command form

●copy running-config tftp://<tftp server ip>/filename

Parameter description

No

Use instance

Download the current configuration file to TFTP server, the file name is "config1""

```
# copy running-config tftp://192.168.0.88/config1
Building configuration...
% Saving 1206 bytes to TFTP server 192.168.0.88: /config1
#
```

3.1.14 Copy tftp:// <tftp server ip>/filename running-config

Command function

The command can be used to upload profiles to the device

Command form

●copy tftp://<tftp server ip>/filename running-config

Parameter description

No

Use instance

Upload profile config1 to device

```
# copy tftp://192.168.0.88/config1 running-config
% Loading /config1 from TFTP server 192.168.0.88
#
```

4 Ethernet Command

This chapter mainly introduces the interface configuration, link aggregation, OAM, VLAN, QOS and other functional characteristics of the configuration of the relevant commands.

4.1 Interface Configuration Command

4.1.1 Shutdown

Command function

Shutdown command can open or close the enable of specified port

Command form

- **shutdown**
- **no shutdown**

Parameter description

- **No**

Use instance

close interface 1

```
# configure terminal
(config)# interface GigabitEthernet 1/1
(config-if)# shutdown
interface GigabitEthernet 1/1 down
(config-if)#
```

Open interface 1

```
(config-if)# no shutdown
interface GigabitEthernet 1/1 up
(config-if)#
```

4.1.2 Duplex**Command function**

Use this command to configure the port to open the auto negotiation function

Command form

- **duplex auto**
- **duplex full**
- **duplex half**

Parameter description

Parameter	Explain	Value
auto	Open port auto negotiation function	Auto
full	Full Duplex Mode	Full
half	Half-Duplex Mode	Half

Use instance

Open automatic negotiation for interface 1

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

4.1.3 Speed

Command function

Use this command to configure the port's rate

Command form

- **speed** *10/100/1000/auto*

Parameter description

Parameter	Explain	Value
10	The specified port rate is 10 Mbps	10
100	The specified port rate is 100 Mbps	100
1000	The specified port rate is 1000 Mbps	1000
Auto	Open port auto negotiation function	Auto

Use instance

Specify interface 1 for 10 Mbps

```
(config-if)# speed 10
(config-if)#
```

4.1.4 Flowcontrol

Command function

Flowcontrol command to open or close the interface flow control function

Command form

● **flow-control** *enable/disable*

Parameter description

Parameter	Explain	Value
On	Open port traffic control	-
Off	Close port traffic control	-

Use instance

Open interface 1 flow control function

```
(config-if)# flowcontrol on
(config-if)#
```

4.1.5 Interface GigabitEthernet 1/number-number

Command function

This command is used to enter the specified port configuration view. If the port range is set, just say it to the bulk port.

Command form

●**interface GigabitEthernet 1/number-number**

Parameter description

Parameter	Explain	Value
number-number	Specify the port number range need to enter	Integer value :1-8

Use instance

Enter configuration view for port 1

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

Batch enter port1 to port 8 configuration view

```
(config)# interface GigabitEthernet 1/1-8
(config-if)#
```

4.1.6 MTU

Command function

Mtu command is the maximum transmission unit of the configuration port.

Command form

● **mtu** *mtu-size*

Parameter description

Parameter	Explain	Value
Mtu-size	Set port for maximum transmission unit	Integer form, value range is 1518-9000, unit: byte

Use instance

Configuration port 1 maximum transmission unit is 9000byte

```
config-if)# mtu 9000
(config-if)#
```

4.1.7 Mac Address-table Learning

Command function

mac address-table learning command for configuring port MAC address learning

Command form

●**mac address-table learning**

●**no mac address-table learning**

Parameter description

Parameter	Explain	Value
		-

Use instance

Open interface 1 Port MAC learning function

```
(config)# interface GigabitEthernet 1/1
(config-if)# mac address-table learning
(config-if)#
```

4.2 LINK-OAM Configuration Command

4.1.1 Link-oam

Command function

Link-oam command to configure port OAM enable

Command form

●**Link-oam**

●**no Link-oam**

Parameter description

No

Use instance

Open Link-oam enable for port1

```
(config-if)# link-oam
(config-if)#
```

4.1.2 Link-oam Mode

Command function

link-oam mode command is used to set the working mode of the OAM

Command form

●**link-oam mode**

Parameter description

No

Use instance

Set port 1 link-oam mode to active

```
(config-if)# link-oam mode active
(config)#
```

4.3 Spanning-tree Configuration Command

4.3.1 Spanning-tree

Command function

spanning-tree command to configure port spanning-tree enable

Command form

●**spanning-tree**

●**no spanning-tree**

Parameter description

No

Use instance

Open spanning-tree port1 enable

```
(config-if)# spanning-tree
(config-if)#
```

4.3.2 Spanning-tree Mode

Command function

spanning-tree mode command is used to set the working mode of the spanning-tree

Command form

●**spanning-tree mode**

Parameter description

No

Use instance

Set the spanning-tree working mode to RSTP

```
(config)# spanning-tree mode rstp
(config)#
```

4.3.3 Spanning-tree Mst

Command function

spanning-tree mst command used to configure the basic settings for spanning-tree MST

Command form

●spanning-tree mst forward-time <Fwdtime : 4-30>

●spanning-tree mst max-age <Maxage : 6-40>

●spanning-tree mst max-hops <Maxage : 6-40>

Parameter description

Parameter	Explain	Value
forward-time		4-30
max-age		6-40
max-hops		6-40

Use instance

The value of the max-age is configured to 28:

```
(config)# spanning-tree mst max-age 28
(config)#
```

4.4 Loop Command Configuration

Command function

Loop commands for configuring loop enable

Command form

● loop

● no loop

Parameter description

4.5 Link Aggregation Configuration Command

4.5.1 Aggregation Mode

Command function

aggregation mode command for setting link aggregation mode

Command form

●aggregation mode

Parameter description

Parameter	Explain	Value
Dmac	Objective MAC mode	
Smac	Source MAC mode	
Ip	Ip mode	
Port	Port mode	

4.5.2 Aggregation Group

Command function

aggregation group command to add a port to a specified link aggregation group

no aggregation group command to delete port to specified link aggregation group

Command form

●aggregation group id

●**no** aggregation group id

Parameter description

Parameter	Explain	Value
Id	Link aggregation group ID	1-13

Use instance

Add port 1,2 to link aggregation group 1

```
# configure terminal
(config)# interface GigabitEthernet 1/1-2
(config-if)# aggregation group 1
```

```
(config-if)#
```

4.5.3 LACP

Command function

lacp command for configuring LACP

Command form

- **lacp role active/ passive**
- **lacp key**
- **lacp port-priority**
- **lacp timeout**

Parameter	Explain	Value
Role	LACP mode	**active/ passive**
Key	Range:1-65535. Automatically set the button to set the appropriate physical link speed, 10MB 100MB = 1, = 2, 1GB = 3. Using a specific setting, you can enter a user defined value. Ports with the same key value can participate in the same aggregation group, and the different keys can not be	**1-65535 / auto**
port-priority	The priority of the port, the lower number means greater priority	**1-65535**
timeout	Timeout control, fast will send LACP packets every second, while slow will wait 30 seconds to send LACP	**Fast/slow**

Use instance

Configure the LACP of port 1 to active mode

```
(config)# interface GigabitEthernet 1/1
 (config-if)# lacp role active
(config-if)#
```

4.6 VLAN Configuration Command

4.6.1 Vlan vlan_list

Command function

This command is used to create a VLAN

Command form

- **vlan vlan_list**

Parameter description

No

Use instance

create vlan 100

```
# configure terminal
(config)# vlan 100
(config-vlan)#
```

4.6.2 Switchport Forbidden Vlan

Command function

This command is used to add or remove a VLAN ID that is forbidden to pass.

Command form

- **switchport forbidden vlan add VID**
- **switchport forbidden vlan remove VID**

Parameter description

Parameter	Explain	Value
Add VID	Add a VLAN ID that is prohibited	Integer value, range <1 ~ 4095>
remove VID	remove a VLAN ID that is prohibited	Integer value, range <1 ~ 4095>

Use instance

Configure interface 1 to disable VLAN 100 via

```
# configure terminal
(config)# interface GigabitEthernet 1/1
```

```
(config-if)# switchport forbidden vlan add 100
(config-if)#
```

4.6.3 Switchport Mode

Command function

This command is used to set the type of port VLAN

Command form

●switchport mode

Parameter description

Use instance

Set interface 1 VLAN type to hybrid

```
# configure terminal
(config)# interface GigabitEthernet 1/1
(config-if)# switchport mode hybrid
(config-if)#
```

4.6.4 Switchport Hybrid

Command function

This command is used to set the port type in the hybrid mode, VLAN Ingress management, VLAN Egressmanagement, and allow the VLAN to pass through.

Command form

●switchport hybrid acceptable-frame-type

●switchport hybrid allowed vlan

●switchport hybrid egress-tag

●switchport hybrid port-type

●switchport hybrid ingress-filtering

Parameter description

Parameter	Explain	Value
acceptable-frame-type	Allow an acceptable-frame-type	All, tagged, untagged
allowed vlan	Allows the VLAN to pass through	vlan_list：1-4095 add:1-4095 all：Allow all VLAN to pass

		except：1-4095 none：Do not allow any VLAN to pass remove：1-4095
egress-tag	Egress packet type	All、none
port-type	Port type	c-port 、 s-port 、 s-custom-port 、 unaware

Use instance

Configure port 1 VLAN type is hybrid, port type is C-Port, open ingress-filtering, allow VLAN ID 1-4 to pass

```
# configure terminal
(config)# interface GigabitEthernet 1/1
(config-if)# switchport mode hybrid
(config-if)# switchport hybrid port-type c-port
(config-if)# switchport hybrid ingress-filtering
(config-if)# switchport hybrid allowed vlan 1-4
(config-if)#
```

4.7 PVLAN Configuration

4.7.1 Pvlan

Command function

Pvlan command is used to create and set MEP

Command form

●pvlan <pvlan id_list>

Parameter description

Parameter	Explain	Value
Pvlan id	Pvlan id	1-8

Use instance

#Add port 1 to PVLAN ID 3

```
# configure terminal
(config)# interface GigabitEthernet  1/1
(config-if)# pvlan 3
(config-if)#
```

4.7.2 Pvlan Isolation

Command function

pvlan isolation command to set port isolation

Command form

●pvlan isolation

Parameter description

No

Use instance

Isolation port 1

```
# configure terminal
(config)# interface GigabitEthernet  1/1
(config-if)# pvlan isolation
(config-if)#
```

4.8 ERPS Configuration

4.8.1 Mep

Command function

Mep command is used to create and set MEP

Command form

●mep <number> down domain port vid <Vid : vlan_id> flow <Flow : uint> level <Level : 0-7> interface GigabitEthernet <PORT_ID>

●**mep** <number> **cc <Prio : 0-7> <frame rate>**

●**mep** <number> **aps <Prio : 0-7> <multi uni> <raps ;laps> octet <Octet : uint>**

Parameter description

Parameter	Explain	Value
mep <number>	Set mep ID	1-100
Vid : vlan_id	Set VLAN ID	1-4095
Flow : uint	Set flow instance	1-8
Level : 0-7	Set MEP priority	0-7

PORT_ID	Set port ID	1-8
Prio : 0-7	Set **Continuity/aps** priority	0-7(The default value is 0）
frame rate	Set the frame rate for **Continuity**	Fr300s，fr100s，fr10s，fr1s，fr1m，fr6m，fr6h（Tthe default value is fr1s）
multi uni	Set the cast for aps	Multi，uni（Tthe default value is multi）
raps ;laps	Set the type for aps	Laps，raps(Tthe default value is raps)
Octet : uint	Set the octet for aps	0-255（Tthe default value is 1）

Use instance

creation MEP 1 for Port 7, priority 5, the management VID is 100

```
(config)# mep 1 down domain port vid 100 flow 7 level 5 interface GigabitEthernet 1/7
(config)#
```

4.8.2 Erps

Command function

Erps command is used to create and configure erps

Command form

● erps <number> major port0 interface GigabitEthernet <port_id> port1 interface GigabitEthernet <port_id>

●erps <number> mep port0 sf <number> aps <number> port1 sf <number> aps <number>

●erps <number> guard <number>

●erps <number> holdoff <number>

●erps <number> revertive <number>

●erps <number> rpl <owner/neighbor> <port0/port1>

●erps <number> version <number>

●erps <number> vlan <add/none/remove> <vlan_list>

Parameter description

Parameter	Explain	Value
erps <number>	Set erps ID	1-64
port_id	Set erps port id	1-8

sf <number>	Set sf port number	1-100
aps <number>	Set aps port number	1-100
guard <number>	Set guard time	10-2000
holdoff <number>	Set holdoff time	0-10000
revertive <number>	Set revertive time	1，5-12
<owner/neighbor>	Set rpl role	Owner,neighbor
<port0/port1>	Set rpl port	port0,port1
version <number>	Set instance version	V1，v2
vlan <add/none/remove>	Add or remove vlan for ERPS	Add,none,remove
<vlan_list>	Vlan id	1-4095

Use instance

Create erps1, the ring network port is port7 and port8, and port7 is the main node.

```
# configure terminal
(config)# erps 1 major port0 interface GigabitEthernet 1/7 port1 interface GigabitEthernet 1/8
(config)# erps 1 mep port0 sf 1 aps 1 port1 sf 2 aps 2
(config)# erps 1 rpl owner port0
(config)#
```

4.9 QoS Configuration Command

4.9.1 Qos Cos

Command function

qos cos command to configure port cos priority

Command form

●**qos cos** *value*

Parameter description

Parameter	Explain	Value
Value	Specify priority of COS	Integer value, range <0 ~ 7>

Use instance

Configure port 1 cos priority 7

```
# configure terminal
(config)# interface GigabitEthernet 1/1
(config-if)# qos cos 7
(config-if)#
```

4.9.2 QOS Configuration Based on DSCP

Command function

qos map dscp-cos command is used to configure the QOS based on the DSCP

Command form

●qos map dscp-cos <DscpNum : 0~63> cos < Priority > dpl< number>

Parameter description

Parameter	Explain	Value
DscpNum : 0~63	Specify the value of the DSCP	Integer value ranges from <0 to 63>
Priority	Specify the priority of DSCP	Integer value ranges from <0 to 7>
Number	Value of Dpl	Integer value ranges from <0 to 1>

Use instance

Configuration map for dscp-cos, CS1 priority is 7, DPL value is 1

```
(config)# qos map dscp-cos cs1 cos 7 dpl 1
(config)#
```

4.9.3 Qos Map Cos-dscp

Command function

This command is used to configure the DSCP classification

Command form

●**qos map cos-dscp** < Priority > **dpl <number> dscp <DscpNum : 0-63>**

Parameter description

Parameter	Explain	Value
DscpNum : 0~63	Specify the value of the DSCP	Integer value ranges from <0 to 63>
Priority	Specify the priority of DSCP	Integer value ranges from <0 to 7>
Number	Value of Dpl	Integer value ranges from <0 to 1>

Use instance

QoS priority 7 and DPL 0 of the DSCP is set to CS1

```
(config)# qos map cos-dscp 7 dpl 0 dscp cs1
(config)#
```

4.9.4 DSCP Entrance Conversion Configuration

Command function

This command is used to configure the conversion of the DSCP portal.

Command form

●qos map dscp-ingress-translation <DscpNumTr> to <DscpNumTr>

Parameter description

Parameter	Explain	Value
DscpNumTr	Specify the proportion of the queue	Integer value ranges from <0 to 63>

Use instance

configuration dscp-ingress-translation cs4 to cs5

```
(config)# qos map dscp-ingress-translation cs4 to cs5
(config)#
```

4.9.5 Dscp Export Conversion Configuration

Command function

This command is used to configure the DSCP exit configuration

Command form

●qos map dscp-egress-translation <DscpNumTr> 1 to <DscpNumTr>

Parameter description

Parameter	Explain	Value
DscpNumTr	Specify the proportion of the queue	Integer value ranges from <0 to 63>

Use instance

Configuration DSCP export CS7 and CS2 conversion

```
(config)# qos map dscp-egress-translation cs7 1 to cs2
(config)#
```

4.9.6 Qos WRR

Command function

qos wrr command is used to configure the QoS queue for queue specific gravity

Command form

● **qos wrr** *queue0 queue1 queue2 queue3 queue4 queue5*

Parameter description

Parameter	Explain	Value
Queue0～queue5	Specify the proportion of the queue	Integer value ranges from <1 to 100>

Use instance

Configuration Port 1 proportion to q1=0, q1=1, q2=2, q3=3, q4=4, q4=5

```
(config-if)# qos wrr 1 2 3 4 5 6
(config-if)#
```

4.9.7 Show Qos

Command function

show qos command is used to view the configuration status of the QoS Global

Command form

● **show qos**

Parameter description

No

Use instance

No

5 Storm Suppression Configuration Command

5.1 Qos Storm

5.1.1 Broadcast

Command function

qos storm broadcast command is used to configure the broadcast storm suppression and rate

Command form

●qos storm broadcast

Parameter description

Parameter	Explain	Value
qos storm broadcast （rate pps）	Configuration broadcast storm suppression and rate	1,2,4,8,16,32,64,128,256,512，1024

Use instance

Opening storm suppression function, the rate is 2 kfps

```
(config)# qos storm broadcast 2 kfps
(config)#
```

5.1.2 Multicast

Command function

qos storm multicast command for configuration of multicast suppression and rateCommand form

●qos storm multicast

Parameter description

Parameter	Explain	Value
qos storm multicast （rate pps）	The suppression and rate of multicast	1,2,4,8,16,32,64,128,256,512，1024

Use instance

Open multicast inhibit function, the rate is 4 kfps

```
(config)# qos storm multicast 4 kfps
(config)#
```

5.1.3 Unicast

Command function

qos storm unicast command is used to configure the suppression and rate of unknown unicast

Command form

●qos storm unicast

Parameter description

Parameter	Explain	Value
qos storm unicast	Configure the suppression and rate of unknown unicast	1,2,4,8,16,32,64,128,256,512，1024

Use instance

Open the unknown unicast inhibit function, the rate is 1024 kfps

```
(config)# qos storm unicast 1024 kfps
(config)#
```

6 LLDP Configuration Command

6.1 LLDP Global Command

Command function

Global configuration LLDP

Command form

- **LLDP holdtime**
- **LLDP reinit**
- **LLDP timer**
- **LLDP transmission-delay**
- **LLDP med**

Parameter description

Parameter	Explain	Value
holdtime	LLDP send message duration	<2-10>times
reinit	Configuration reinit-delay	<1-10>seconds
timer	Configure LLDP packets to send interval time	<5-32768>seconds
transmission-delay	Configuring transmission delay	<1-8192> seconds
med	Configuration med	

Use instance

Configuration reinit time is 10 seconds

```
# configure terminal
(config)# lldp reinit 10
(config)#
```

6.2 LLDP Configuration Base Port

Command function

The LLDP working mode of the configuration port

Command form

- **LLDP cdp-aware**
- **LLDP receive**
- **LLDP tlv-select**
- **LLDP transmit**
- **LLDP med**

Parameter description

No

Use instance

open port 1 port-description

```
# configure terminal
(config)# interface GigabitEthernet 1/1
(config-if)# lldp tlv-select port-description
(config-if)#
```

7 Port Mirroring Configuration Command

7.1 Monitor Destination

Command function

This command is used to set the mirror point destination port

Command form

●monitor destination interface GigabitEthernet <port_type_id>

Parameter description

Parameter	Explain	Value
<port_type_id>	Mirror point destination port	Integer value, range <1>/<1-8>

Use instance

Specify interface 1 for mirror destination port

```
(config)# monitor destination interface GigabitEthernet 1/1
(config)#
```

7.2 Monitor Source

Command function

This command is used to set the working mode of the mirror port

Command form

●monitor source cpu *

●monitor source interface GigabitEthernet <port_type_list> *

Parameter description

Parameter	Explain	Value
*	Cpu working mode	Both，rx，tx
<port_type_list>	Port number	1/1-8

Use instance

Set the mirror port 1 working mode to tx

```
(config)# monitor source interface GigabitEthernet 1/1    tx
(config)#
```

8 Management Configuration Command

8.1 Log Management Command

8.1.1 Show Log Info Error Warning

Command function

show log info error warning command to view the system log

Command form

●show log info error warning

Parameter description

No

Use instance

View system log

```
# show log info error warning
Switch logging host mode is disabled
Switch logging host address is null
Switch logging level is information

Number of entries on Switch 1:
Info     : 18
Warning: 0
Error    : 0
All      : 18

ID    Level   Time                        Message
----  ------  -------------------------   -----------------------------
   1  Info    1970-01-01T00:00:01+00:00   Switch just made a cold boot.
   2  Info    1970-01-01T00:00:22+00:00   Link up on port 4
   3  Info    1970-01-01T00:00:46+00:00   Link down on port 4
   4  Info    1970-01-01T00:01:17+00:00   Link up on port 4
   5  Info    1970-01-01T04:03:10+00:00   Link down on port 4
   6  Info    1970-01-01T04:10:00+00:00   Link up on port 4
```

```
  7   Info     1970-01-01T04:10:00+00:00   Link down on port 4
  8   Info     1970-01-01T04:10:02+00:00   Link up on port 4
  9   Info     1970-01-01T04:10:06+00:00   Link down on port 4
 10   Info     1970-01-01T04:10:08+00:00   Link up on port 4
 11   Info     1970-01-01T04:10:11+00:00   Link down on port 4
 12   Info     1970-01-01T04:10:16+00:00   Link up on port 4
 13   Info     1970-01-01T04:10:16+00:00   Link down on port 4
 14   Info     1970-01-01T04:10:25+00:00   Link up on port 4
 15   Info     1970-01-01T04:10:36+00:00   Link down on port 4
 16   Info     1970-01-01T04:10:56+00:00   Link up on port 4
 17   Info     1970-01-01T04:10:56+00:00   Link down on port 4
 18   Info     1970-01-01T04:11:08+00:00   Link up on port 4
#
```

8.1.2 Show Interface GigabitEthernet <PORT_LIST> Capabilities

Command function

This command is used to view port optical module information

Command form

●show interface GigabitEthernet <port_list> capabilities

Parameter description

Parameter	Explain	Value
port_list	Port number	1-8

Use instance

View port 7 and port 8 light module information

```
# show interface GigabitEthernet 1/7-8 capabilities


GigabitEthernet 1/7 Capabilities:
SFP Information:
---------------------------
        Type                :1000BASE_LX
        Vendor name         :QTECH
        Vendor PN           :QSC-SFP10GE-1310
        Vendor revision      :
        Vendor SN           : 1105250972
```

```
        manufacturing date:2018.02.12

GigabitEthernet 1/8 Capabilities:
SFP Information:
---------------------------
        Type                :1000BASE_T
        Vendor name         :QTECH
        Vendor PN           :QSC-SFPGES
        Vendor revision     :
        Vendor SN           :S1903101099
        manufacturing date  :2019.02.23
#
```

8.1.3 Show History

Command function

show history command can be used to display the user's used history commands

Command form

- **show history**

Parameter description

No

Use instance

View user recently used commands

```
# show history
  show history
  exit
  logout
  configure terminal
#
```

8.1.4 Show Version

Command function

show version command can be used to display the current software and hardware version number, compile time and other information

Command form

● show version

Parameter description

No

Use instance

View system current version information

```
# show ver

MEMORY                  : Total=89496 KBytes, Free=74119 KBytes, Max=74118 KBytes
FLASH                   : 0x40000000-0x40ffffff, 256 x 0x10000 blocks
MAC Address             : 08-c6-b3-00-10-00
Previous Restart : Cold

System Contact      : aaa
System Name          : QSW-2135
System Location     :
System Time          : 2019-08-04T17:07:07+03:00
System Uptime        : 00:03:58

Active Image
------------
Image                   : managed
Version                 : 1.1.6
Date                    : 2016-05-07T13:51:31+08:00

Alternate Image
---------------
Image                   : managed.bk
Version                 : 1.1.6
Date                    : 2016-05-06T17:20:34+08:00


------------------
SID : 1
------------------
```

```
Product                :
Software Version : 4.2.1
Build Date             : 2016-05-07T13:51:31+08:00
SN
#
```

8.1.5 Show Users

Command function

show users command can be used to view the status of the user

Command form

● show users

Parameter description

No

Use instance

View local user information

```
# show users
Line is con 0.
      * You are at this line now.
      Connection is from Console.
      User name is admin.
      Privilege is 15.
      Elapsed time is 0 day 0 hour 5 min 27 sec.
      Idle time is 0 day 0 hour 0 min 0 sec.
#
```

8.1.6 Show Running- conifg

Command function

show running-config can view the current system configuration

Command form

● **show running-config**

Parameter description

No

Use instance

View current system configuration

```
# show running-config
Building configuration...
username admin privilege 15 password encrypted YWRtaW4=
!
vlan 1
!
!
!
spanning-tree mode rstp
spanning-tree mst max-age 40 forward-time 30
spanning-tree transmit hold-count 10
spanning-tree mst max-hops 40
spanning-tree edge bpdu-filter
spanning-tree edge bpdu-guard
spanning-tree mst name 08-c6-b3-00-03-90 revision 0
qos map dscp-cos 8 cos 6 dpl 0
qos map dscp-ingress-translation 32 to 56
qos map dscp-classify 16
qos map cos-dscp 5 dpl 1 dscp 40
qos map cos-dscp 6 dpl 0 dscp 16
qos map cos-dscp 7 dpl 0 dscp 8
qos map cos-dscp 7 dpl 1 dscp 16
qos map dscp-egress-translation 24 1 to 8
qos map dscp-egress-translation 56 1 to 16
!
interface GigabitEthernet 1/1
  qos wrr 1 2 3 4 5 6
!
interface GigabitEthernet 1/2
!
interface GigabitEthernet 1/3
!
```

```
interface GigabitEthernet 1/4
!
interface GigabitEthernet 1/5
 speed auto
 duplex auto
!
interface GigabitEthernet 1/6
 speed auto
 duplex auto
!
interface GigabitEthernet 1/7
!
interface GigabitEthernet 1/8
!
interface vlan 1
 ip address 192.168.0.13 255.255.255.0
!
!
spanning-tree aggregation
 spanning-tree link-type point-to-point
!
!
line console 0
!
line vty 0
!
line vty 1
!
line vty 2
!
line vty 3
!
line vty 4
!
line vty 5
!
line vty 6
!
line vty 7
!
```

```
line vty 8
!
line vty 9
!
line vty 10
!
line vty 11
!
line vty 12
!
line vty 13
!
line vty 14
!
line vty 15
!
end
#
```

8.2 Snmp-server community v3

Command function

Add SNMP trap server

Command form

●snmp-server community v3 <community name> <ipv4_addr> <ipv4_netmask>

● **snmp trap-server mac** *xx:xx:xx:xx:xx:xx*

● **snmp trap-server mac** *xx:xx:xx:xx:xx:xx* **-v** *vlanid*

Parameter description

Parameter	Explain	Value
community name	Configuration community	String <1-30>
ipv4_addr	Configuration ipv4	
ipv4_netmask	Configuration mask	

Use instance

configuration public ip 192.168.0.1 mask 255.255.255.0

```
(config)# snmp-server community v3 public 192.168.0.1 255.255.255.0
(config)#
```

8.3 Snmp-server trap

Command function

snmp-server trap command to set trap enable

Command form

●snmp-server trap

● no snmp-server trap

Parameter description

No

Use instance

Open trap enable

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

8.4 Zero Touch Provisioning Command

Command function

Zero touch provisioning command to set management IP address and configurations

Command form

●ip address dhcp

● dhcp download config enable

Parameter description

No

Use instance

Enable zero touch provisioning in VLAN 100

```
(config)#dhcp download config enable
(config)#int vlan 100
```

```
(config-if-vlan)# ip address dhcp
```

8.5 TACACS+ Authentication Command

Command function

TACACS+ authentication commands to set TACACS+ authentication parameters

Command form

- **(config)# aaa authentication login ssh tacacs**
- **(config)#tacacs-server key encrypted c2VjcmV0**
- **(config)#tacacs-server host 2405:200:1410:200::10**

Parameter description

No

Use instance

Enable TACACS+ authentication

```
(config)# aaa authentication login ssh tacacs
(config)#tacacs-server key encrypted c2VjcmV0
(config)#tacacs-server host 2405:200:1410:200::10
```

9 ACL and IGMP Command

9.1 ACL Configuration Command

Command function

The command is used to configure the ports enable, rate, port redirect, etc.

Command form

●(config-if)# access-list

Parameter description

No

Use instance

Configure port 1 enable for permit, rate rate-limiter ID set to 2, redirect to port 3：

```
# configure terminal
(config)# interface GigabitEthernet 1/1
(config-if)# access-list action permit
% Port redirect cannot be configured while permitted or filtered action on GigabitEthernet 1/1.
(config-if)# access-list rate-limiter 2
(config-if)# access-list redirect interface GigabitEthernet 1/3
(config-if)#
```

9.2 Rate-limiter Configuration

Command function

The command is used to configure the rate-limiter

Command form

●(config)# access-list

Parameter description

No

Use instance

Config rate-limiter ID 1 to 100pps：

```
(config)# access-list rate-limiter 1 pps 100
(config-if)#
```

Config rate-limiter ID 1-16 to 100pps：

```
(config)# access-list rate-limiter pps 100
(config-if)#
```

9.3 ACL Configuration

Command function

The command is used to control the packets in and out of the ports

Command form

●(config)# access-list ace <number >

Parameter description

Support 256 ACL commands

Use instance

Configuration of the first ACL control port is 1, frametype is ARP, SMAC is any, DMAC is broadcast：

```
(config)# access-list ace 1 ingress interface GigabitEthernet 1/1 frametype arp   smac any
          dmac-type broadcast
 (config)#
```

9.4 IGMP Enable Configuration

Command function

(config)# ip igmp snooping Enable IGMP snooping

(config)#no ip igmp snooping Disable IGMP snooping

Command form

●(config)# （no）ip igmp snooping

Parameter description

No

Use instance

#Disable and enable IGMP snooping：

```
(config)# no ip igmp snooping
(config)# ip igmp snooping
(config)#
```

9.5 Add and Delete IGMP VLAN

Command function

(config)# ip igmp snooping vlan <number> Add a new IGMP VLAN

(config)#no ip igmp snooping vlan <number> Delete an IGMP VLAN

Command form

●(config)#（no）ip igmp snooping vlan <number>

Parameter description

No

Use instance

#Add IGMP VLAN 1000，and delete IGMP VLAN 100：

```
(config)# ip igmp snooping vlan 1000
(config)#no ip igmp snooping vlan 100
 (config)#
```

9.6 IGMP Snooping VLAN Configuration

Command function

(config-if-vlan)# ip igmp snooping Command for IGMP parameters

Command form

●(config-if-vlan)# ip igmp snooping

Parameter description

No

Use instance

Config igmp snooping compatibility to v3,priority to 3,querier address to 224.0.0.0 in VLAN 1000：

```
(config)# in v 1000
(config-if-vlan)# ip igmp snooping compatibility v3
(config-if-vlan)# ip igmp snooping priority 3
  (config-if-vlan)# ip igmp snooping querier address 224.0.0.0
(config-if-vlan)#
```

10 PoE Command

10.1 Primary Power Supply Configuration

Command function

Maximum power supply

Command form

●(config)#poe supply number

Parameter description

No

Use instance

Configure the Maximum power supply 100W：

```
# con t
(config)# poe supply 100
(config)#
```

10.2 Power Over Ethernet Configuration

Command function

The command is used to configure the poe management mode

Command form

●(config)# poe management mode

Parameter description

No

Use instance

Config Reserved Power determined by Class and Power Management Mode to Actual Consumption：

```
# con t
(config)# poe management mode class-consumption
```

```
(config)#
```

10.3 PoE Port Configuration

Command function

The command is used to config PoE mode,Primary and Maximum Power

Command form

●(config-if)# poe mode

●(config-if)# poe power limit

●(config-if)# poe primary

Parameter description

No

Use instance

Configuration poe mode to PoE,Primary to High and Power limit to 10 in port 1：

```
# con t
(config)# in v 1
(config-if)# poe mode standard
(config-if)# poe primary high
(config-if)# poe power limit 10
(config-if)#
```