

# Reference Guide

## LP-SGW2404F

**24 Copper + 4 Fiber Ports Gigabit Managed Switch  
with firmware IPv6 1.1.0 Build 20141106 Rel.54850 (n)**



REV1.1.0

B02: Build 20141106 Rel.54850 (n)

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## Preface

This Guide is intended for network administrator to provide referenced information about CLI (Command Line Interface). The switch mentioned in this Guide stands for LP-SGW2404F.

### Overview of this Guide

#### Chapter 1: Using the CLI

Provide information about how to use the CLI, CLI Command Modes, Security Levels and some Conventions.

#### Chapter 2: User Interface

Provide information about the commands used to switch between five CLI Command Modes.

#### Chapter 3: IEEE 802.1Q VLAN Commands

Provide information about the commands used for configuring IEEE 802.1Q VLAN.

#### Chapter 4: MAC-Based VLAN Commands

Provide information about the commands used for configuring MAC-Based VLAN.

#### Chapter 5: Protocol-Based VLAN Commands

Provide information about the commands used for configuring Protocol-Based VLAN.

#### Chapter 6: Voice VLAN Commands

Provide information about the commands used for configuring Voice VLAN.

#### Chapter 7: GVRP Commands

Provide information about the commands used for configuring GVRP (GARP VLAN registration protocol).

#### Chapter 8: Etherchannel Commands

Provide information about the commands used for configuring LAG (Link Aggregation Group) and LACP (Link Aggregation Control Protocol).

#### Chapter 9: User Manage Commands

Provide information about the commands used for user management.

#### Chapter 10: Binding Table Commands

Provide information about the commands used for binding the IP address, MAC address, VLAN and the connected Port number of the Host together. Besides, it also provides information about the commands used for monitoring the process of the Host obtaining the IP address from DHCP server, and record the IP address, MAC address, VLAN and the connected Port number of the Host for automatic binding.

**Chapter 11: ARP Inspection Commands**

Provide information about the commands used for protecting the switch from the ARP cheating or ARP Attack.

**Chapter 12: DoS Defend Command**

Provide information about the commands used for DoS defend and detecting the DoS attack.

**Chapter 13: IEEE 802.1X Commands**

Provide information about the commands used for configuring IEEE 802.1X function.

**Chapter 14: System Log Commands**

Provide information about the commands used for configuring system log.

**Chapter 15: SSH Commands**

Provide information about the commands used for configuring and managing SSH (Security Shell).

**Chapter 16: SSL Commands**

Provide information about the commands used for configuring and managing SSL (Secure Sockets Layer).

**Chapter 17: MAC Address Commands**

Provide information about the commands used for Address configuration.

**Chapter 18: System Configuration Commands**

Provide information about the commands used for configuring the System information and System IP, reboot and reset the switch, upgrade the switch system and commands used for device diagnose, including cable test.

**Chapter 19: IPv6 Address Configuration Commands**

Provide information about the commands used for configuring the System IPv6 addresses.

**Chapter 20: Ethernet Configuration Commands**

Provide information about the commands used for configuring the Bandwidth Control, Negotiation Mode, and Storm Control for Ethernet ports.

**Chapter 21: QoS Commands**

Provide information about the commands used for configuring the QoS function.

**Chapter 22: Port Mirror Commands**

Provide information about the commands used for configuring the Port Mirror function.

**Chapter 23: Port Isolation Commands**

Provide information about the commands used for configuring the Port Isolation function.



**Chapter 24: Loopback Detection Commands**

Provide information about the commands used for configuring the Loopback Detection function.

**Chapter 25: ACL Commands**

Provide information about the commands used for configuring the ACL (Access Control List).

**Chapter 26: MSTP Commands**

Provide information about the commands used for configuring the MSTP (Multiple Spanning Tree Protocol).

**Chapter 27: IGMP Snooping Commands**

Provide information about the commands used for configuring the IGMP Snooping (Internet Group Management Protocol Snooping).

**Chapter 28: MLD Snooping Commands**

Provide information about the commands used for configuring the MLD Snooping (Multicast Listener Discovery Snooping).

**Chapter 29: SNMP Commands**

Provide information about the commands used for configuring the SNMP (Simple Network Management Protocol) functions.

**Chapter 30: Cluster Commands**

Provide information about the commands used for configuring the Cluster Management function.

# Chapter 1 Using the CLI

## 1.1 Accessing the CLI

You can log on to the switch and access the CLI by the following two methods:

1. Log on to the switch by the console port on the switch.
2. Log on to the switch remotely by a Telnet or SSH connection through an Ethernet port.

### 1.1.1 Logon by a console port

To log on to the switch by the console port on the switch, please take the following steps:

1. Connect the PCs or Terminals to the console port on the switch by a provided cable.
2. Click **Start** → **All Programs** → **Accessories** → **Communications** → **Hyper Terminal** to open the Hyper Terminal as the Figure 1-1 shown.

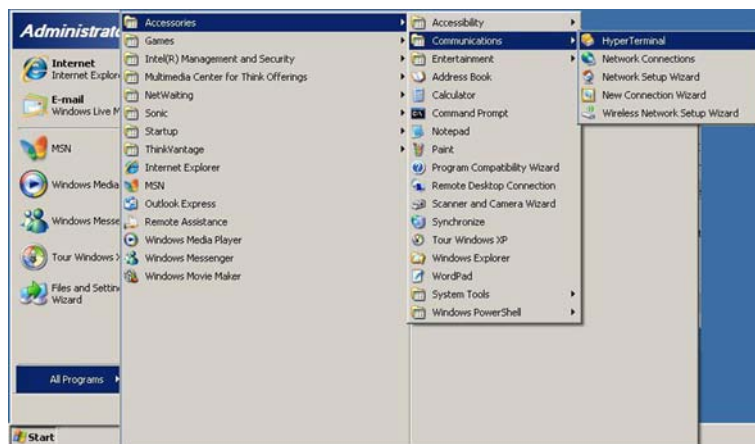


Figure 1-1 Open Hyper Terminal

3. The Connection Description Window will prompt as Figure 1-2 shown. Enter a name into the Name field and click **OK**.



Figure 1-2 Connection Description

4. Select the port to connect in Figure 1-3, and click **OK**.



Figure 1-3 Select the port to connect

5. Configure the port selected in the step above as the following Figure 1-4 shown. Configure **Bits per second** as 38400, **Data bits** as 8, **Parity** as None, **Stop bits** as 1, **Flow control** as None, and then click **OK**.

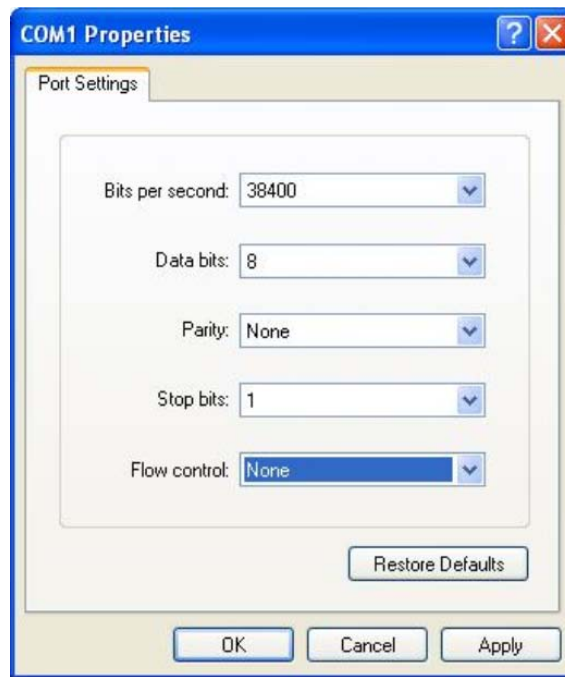


Figure 1-4 Port Settings

- The DOS prompt “LP-SGW2404F>” will appear after pressing the **Enter** button as Figure 1-5 shown. It indicates that you can use the CLI now.

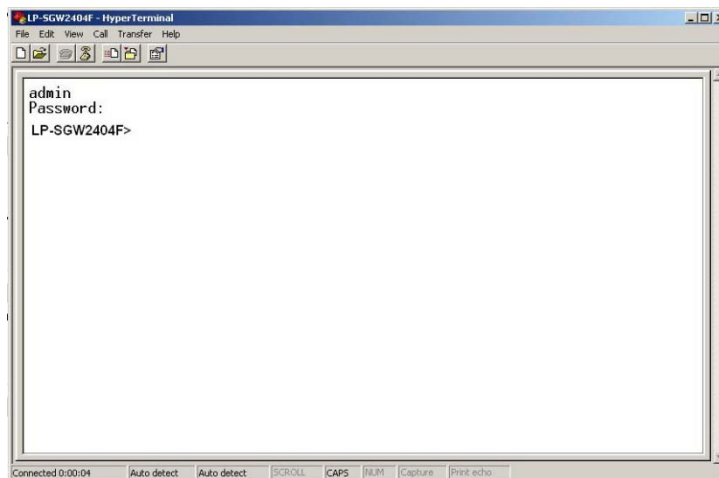


Figure 1-5 Log in the Switch

### 1.1.2 Configuring the Privileged EXEC Mode Password

To configure the switch remotely by a Telnet or SSH connection, please set a password for entering the Privileged EXEC Mode through the console connection first. Follow the steps in [1.1.1 Logon by a console port](#) to log on to the switch, and then follow the steps shown in Figure 1-6 to configure the Privileged EXEC Mode password.

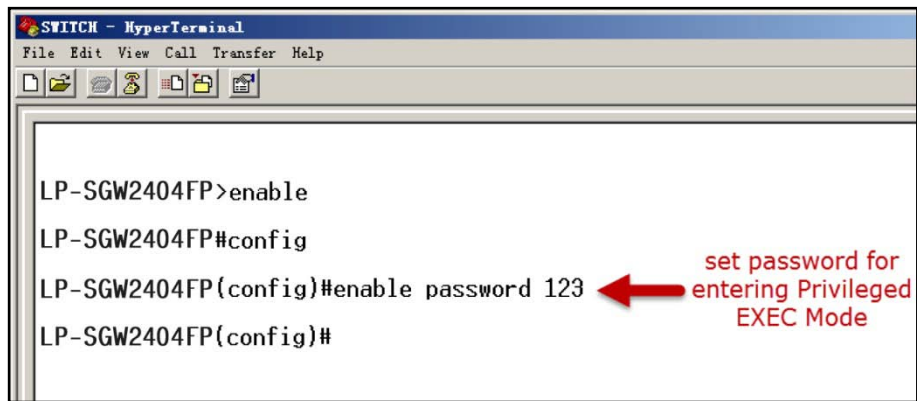


Figure 1-6 Configure the Privileged EXEC Mode Password

### 1.1.3 Logon by Telnet

To successfully create Telnet connection, firstly CLI commands about configuring Telnet login mode, login authentication information and Privileged EXEC Mode password should be configured through Console connection.

Telnet login has the following two modes, you can choose one according to your needs:

**Login local Mode:** It requires username and password, which are both **admin** by default.

**Login Mode:** It requires no username and password, but a connection password is required.

**Note:**

1. Before Telnet login, you are required to configure Telnet login mode and login authentication information through **Console connection**. The relevant CLI commands should be entered in the prompted DOS screen shown in [Figure 1-5 Log in the Switch](#).
2. You will enter User EXEC Mode after Telnet connection is successfully created, but for switch security concerns, you are required to set a password whose function is further accessing the Privileged EXEC Mode when you configure the login mode.

➤ **Login Local Mode**

Firstly, configure the Telnet login mode as “**login local**” and set the password for entering into the Privileged EXEC Mode as **123** in the prompted DOS screen shown in Figure 1-7.

```

SWITCH - HyperTerminal
File Edit View Call Transfer Help

LP-SGW2404FP>enable
LP-SGW2404FP#config
LP-SGW2404FP(config)#line vty 0 5
LP-SGW2404FP(config-line)#login ← set login mode
LP-SGW2404FP(config-line)#password 123 ← set connection password
LP-SGW2404FP(config-line)#exit
LP-SGW2404FP(config)#enable password 123_ ← set password for entering Privileged
    
```

Figure 1-7 Configure login local mode

Now, you can logon by Telnet in **login local** mode.

1. Make sure the switch and the PC are in the same LAN. Click **Start** → **Run** to open the **Run** window, and type **cmd** in the prompt Run window as Figure 1-8 and click **OK**.

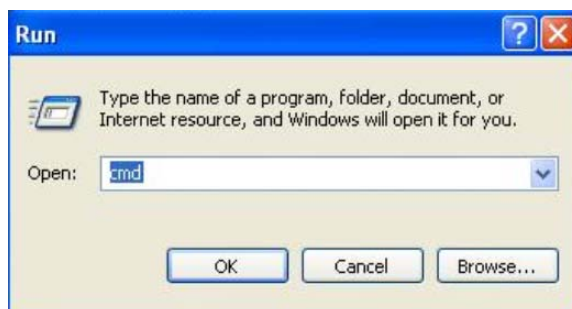


Figure 1-8 Run Window

2. Open Telnet and type **telnet 192.168.0.1** in the command prompt shown as Figure 1-9, and press the **Enter** button.

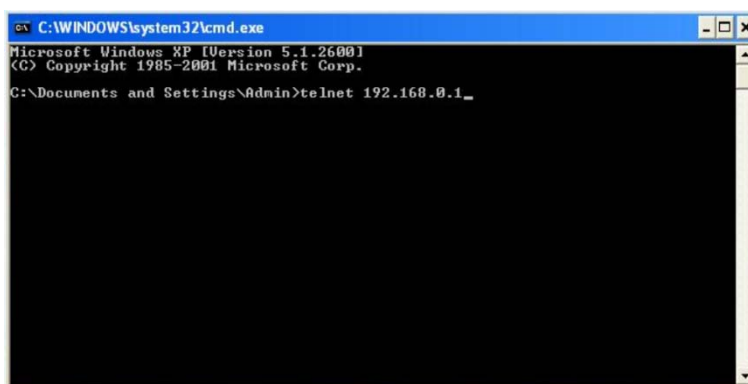


Figure 1-9 Connecting to the Switch

3. Type the default user name and password **admin/admin**, then press the **Enter** button so as to enter User EXEC Mode.

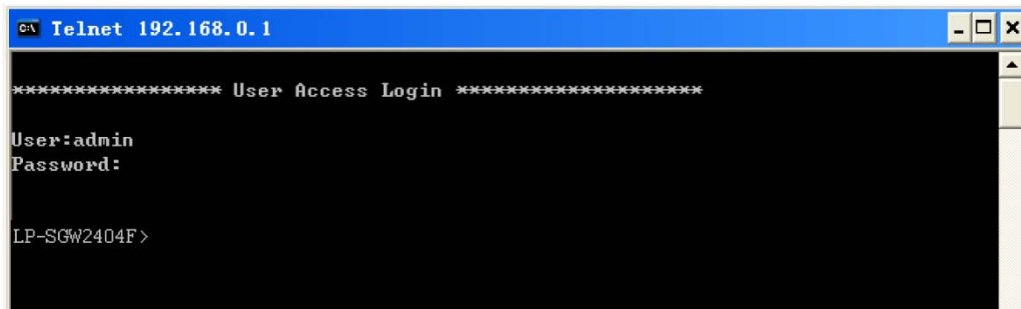


Figure 1-10 Enter the User EXEC Mode

Now you can manage your switch with CLI commands through Telnet connection.

4. Type **enable** command to enter Privileged EXEC Mode. A password that you have set through Console port connection is required. Here the password is set as **123**.

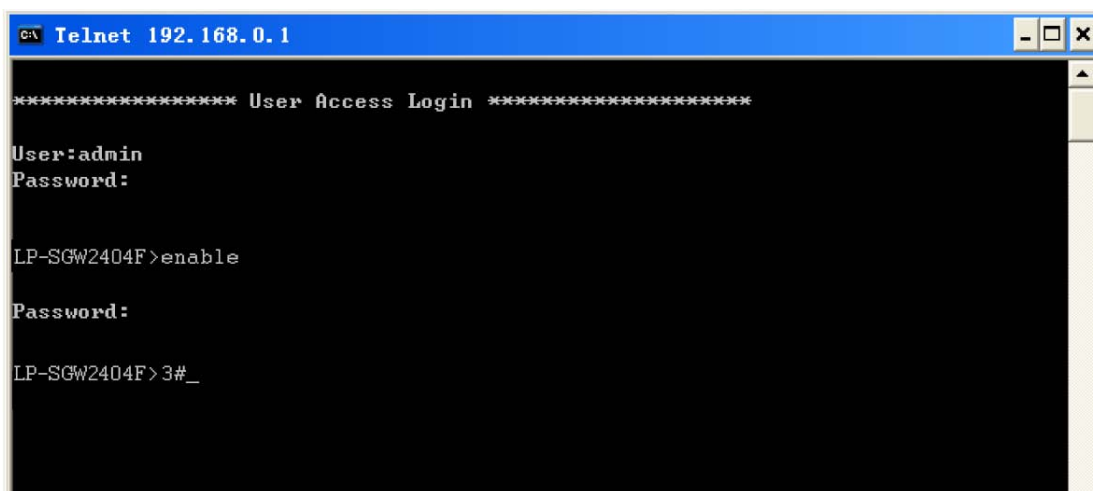


Figure 1-11 Enter the Privileged EXEC Mode

### ➤ Login Mode

Firstly configure the Telnet login mode as “**login**”, and both the connection password and the Privileged EXEC Mode password as **123** in the prompted DOS screen shown in Figure 1-13.

```

SWITCH - HyperTerminal
File Edit View Call Transfer Help

LP-SGW2404FP>enable
LP-SGW2404FP#config
LP-SGW2404FP(config)#line vty 0 5
LP-SGW2404FP(config-line)#login ← set login mode
LP-SGW2404FP(config-line)#password 123 ← set connection password
LP-SGW2404FP(config-line)#exit
LP-SGW2404FP(config)#enable password 123_ ← set password for entering Privileged
  
```

Figure 1-12 Configure login mode

Now, you can logon by Telnet in **login mode**:

1. Open Telnet and type **telnet 192.168.0.1** in the command prompt shown as Figure 1-14, and press the **Enter** button.

```

C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.
C:\Documents and Settings\Admin>telnet 192.168.0.1_
  
```

Figure 1-13 Connecting to the Switch

2. You are prompted to enter the connection password **123** you have set through Console port connection, and then you are in User EXEC Mode.



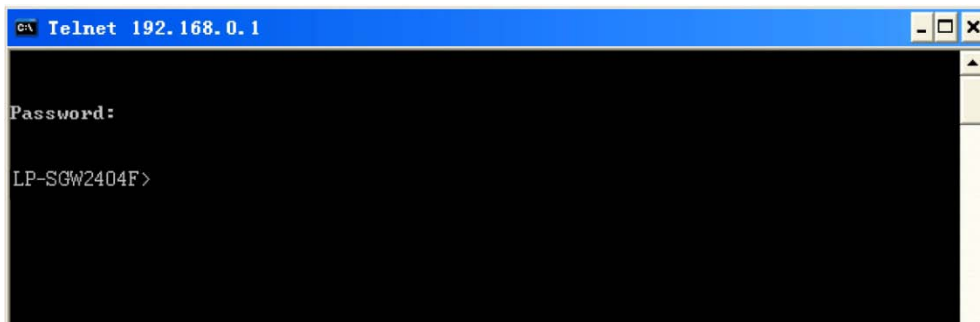


Figure 1-14 Enter the User EXEC Mode

1. When entering **enable** command to access Privileged EXEC Mode, you are required to give the password **123** you have set through Console port connection.

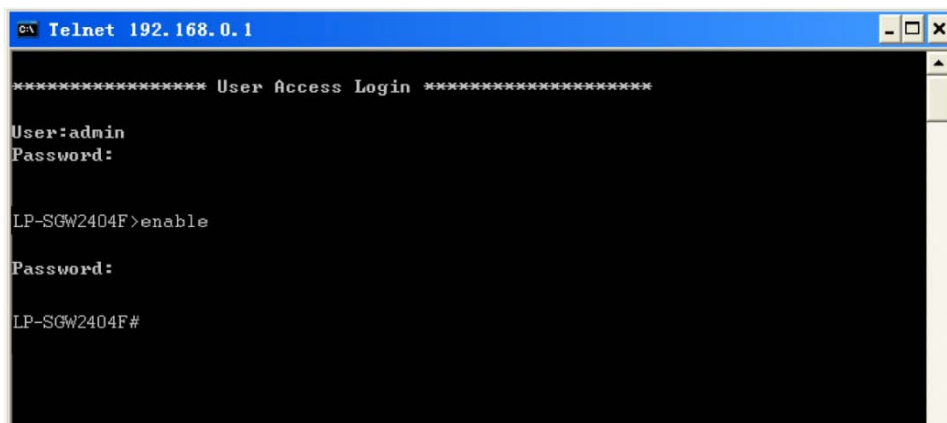


Figure 1-15 Enter the Privileged EXEC Mode

Now you can manage your switch with CLI commands through Telnet connection.

**Note:**

You can refer to [Chapter 9 User Manage Commands](#) for detailed commands information of the Telnet connection configuration.

### 1.1.4 Logon by SSH

To log on by SSH, a Putty client software is recommended. There are two authentication modes to set up an SSH connection:

**Password Authentication Mode:** It requires username and password, which are both **admin** by default.

**Key Authentication Mode:** It requires a public key for the switch and a private key for the SSH client software. You can generate the public key and the private key through Putty Key Generator.

**Note:**

Before SSH login, please follow the steps shown in Figure 1-16 to enable the SSH function through console connection.

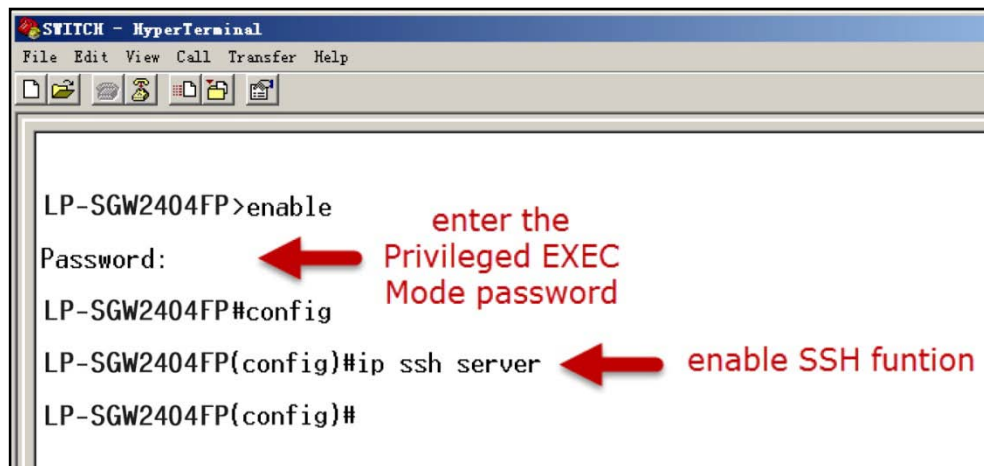


Figure 1-16 Enable SSH function

➤ **Password Authentication Mode**

1. Open the software to log on to the interface of PuTTY. Enter the IP address of the switch into Host Name field; keep the default value 22 in the Port field; select SSH as the Connection type.

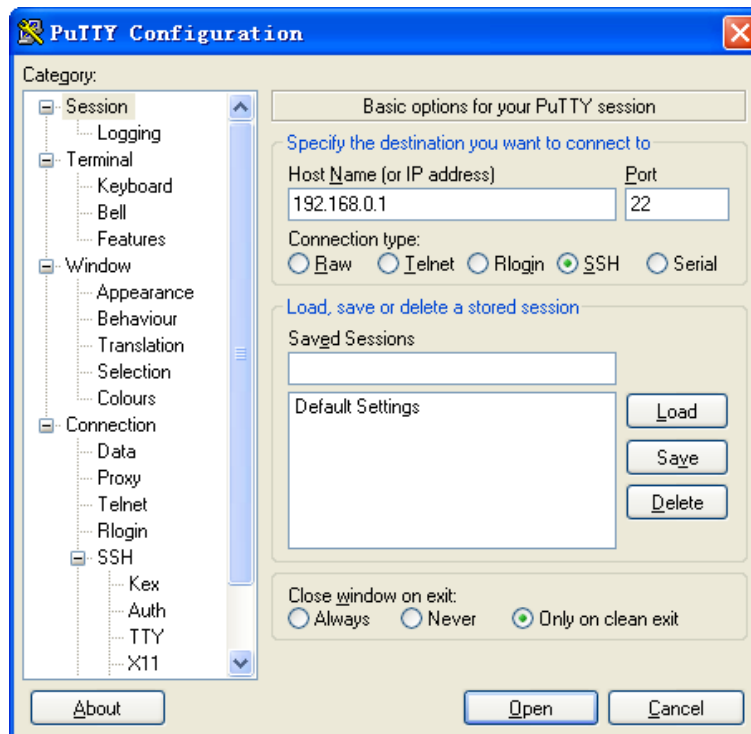


Figure 1-17 SSH Connection Config

2. Click the **Open** button in the above figure to log on to the switch. Enter the login user name and password to log on the switch, and then enter the Privileged EXEC Mode password, so you can continue to configure the switch.

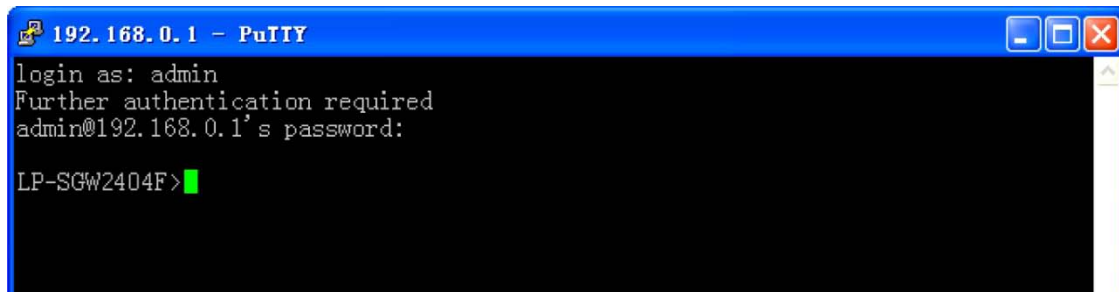


Figure 1-18 Log on the Switch

➤ **Key Authentication Mode**

1. Select the key type and key length, and generate SSH key.

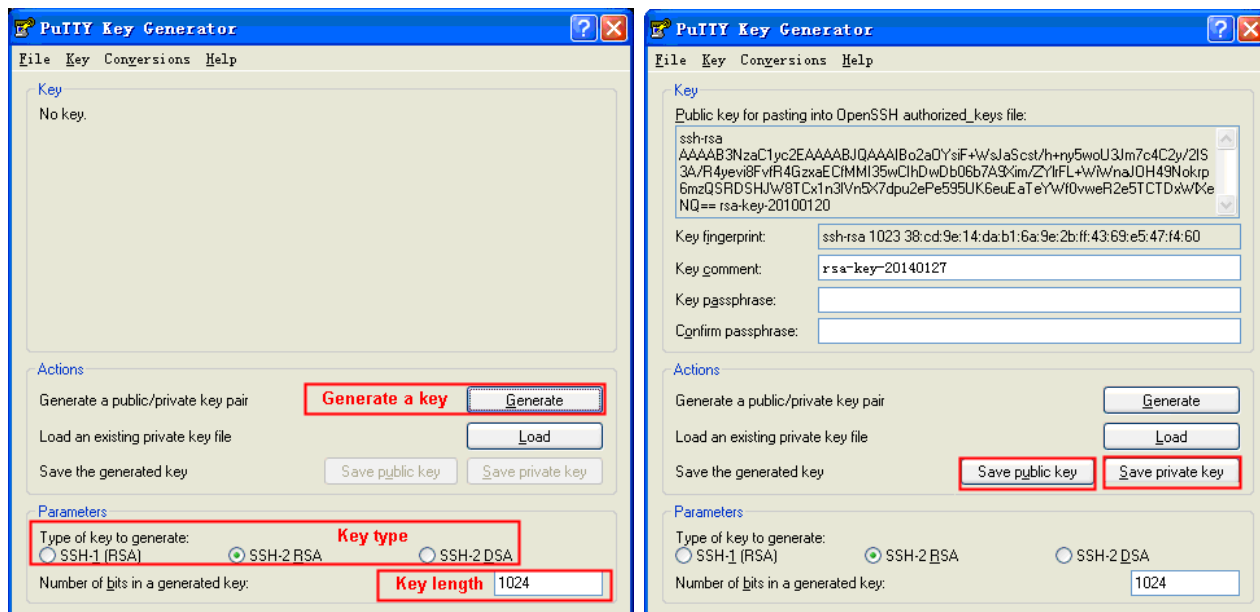


Figure 1-19 Generate SSH Key



**Note:**

1. The key length is in the range of 256 to 3072 bits.
  2. During the key generation, randomly moving the mouse quickly can accelerate the key generation.
2. After the key is successfully generated, please save the public key and private key to a TFTP server.

Figure 1-20 Save the Generated Key

3. Log on to the switch by the console port, and download the public key file from the TFTP server to the switch, as the following figure shows:

```

SWITCH - HyperTerminal
File Edit View Call Transfer Help
LP-SGW2404FP>enable
Password:
LP-SGW2404FP#config
LP-SGW2404FP(config)#ip ssh server
LP-SGW2404FP(config)#
This terminal has been idle for 3 minutes.
It will be logged out if it remains idle for another 3 minutes.
LP-SGW2404FP(config)#ip ssh download v2 public ip-address 192.168.0.100
Start to download SSH key file.....
Download SSH key file OK.
LP-SGW2404FP#config
    
```

↑ The file name of the public key      ↑ The IP address of the TFTP server

Figure 1-21 Download the Public Key

**Note:**

1. The key type should accord with the type of the key file.
  2. The SSH key downloading can not be interrupted.
4. After the public key is loaded, please log on to the interface of PuTTY and enter the IP address for login.

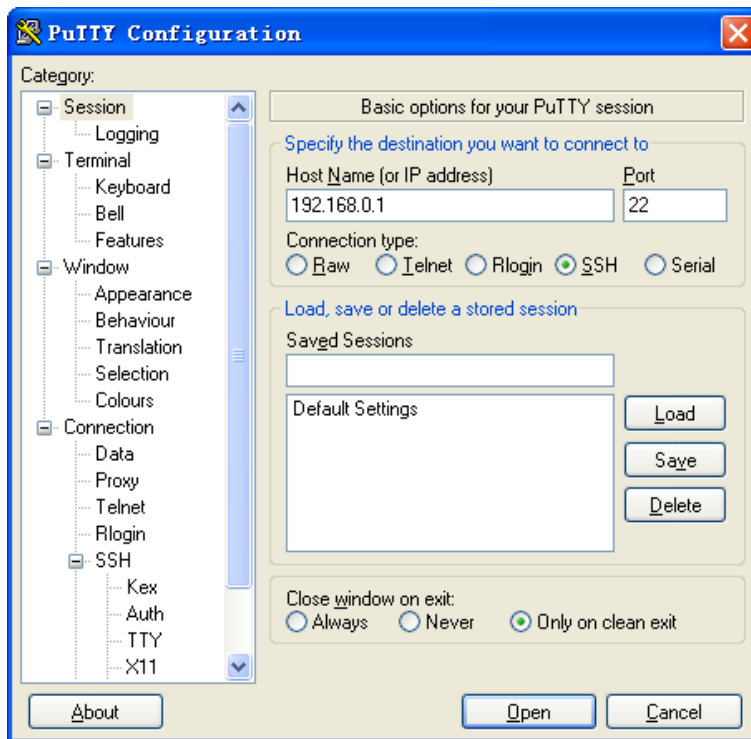


Figure 1-22 SSH Connection Config

5. Click **Browse** to load the private key file to SSH client software and click **Open**.

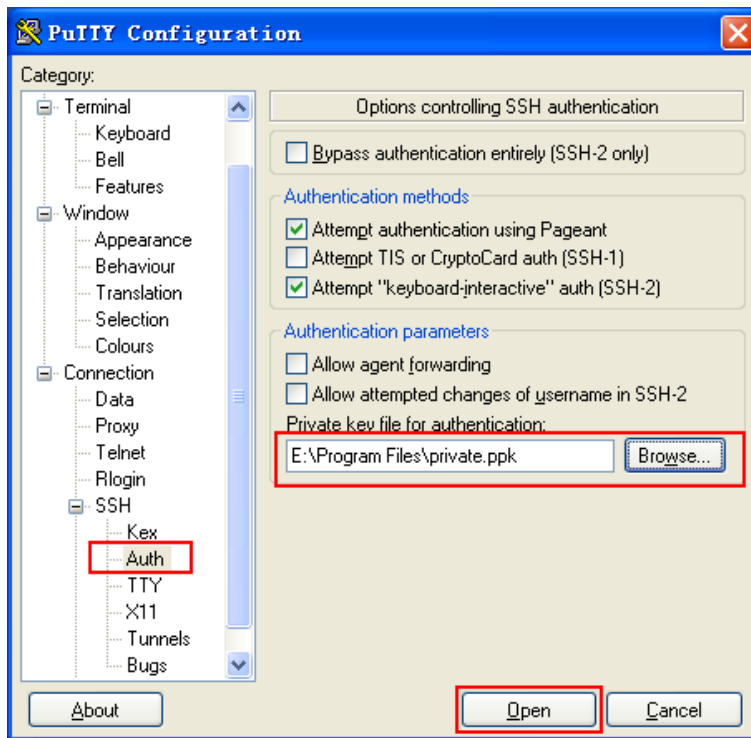


Figure 1-23 Load the Private Key

After successful authentication, please enter the login user name. If you log on to the switch without entering password, it indicates that the key has been successfully loaded.

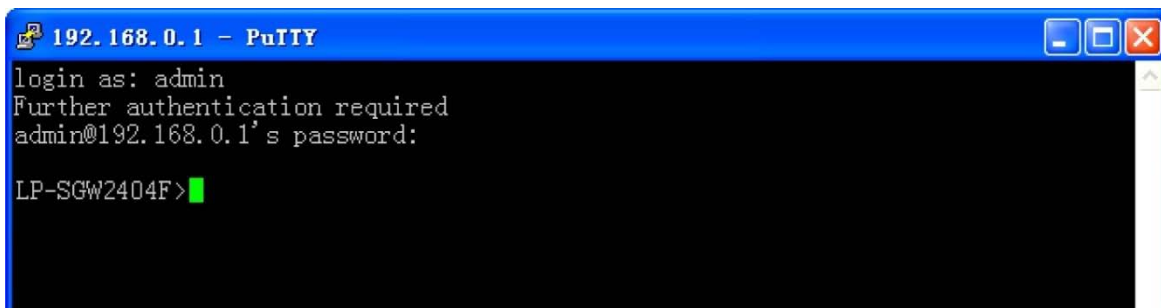


Figure 1-24 Log on the Switch

## 1.2 CLI Command Modes

The CLI is divided into different command modes: User EXEC Mode, Privileged EXEC Mode, Global Configuration Mode, Interface Configuration Mode and VLAN Configuration Mode. Interface Configuration Mode can also be divided into Interface gigabitEthernet, Interface link-aggregation and some other modes, which is shown as the following diagram.

The following table gives detailed information about the Accessing path, Prompt of each mode and how to exit the current mode and access the next mode.

Mode	Accessing Path	Prompt	Logout or Access the next mode
User EXEC Mode	Primary mode once it is connected with the switch.	LP-SGW2404F>	Use the <b>exit</b> command to disconnect the switch (except that the switch is connected through the Console port). Use the <b>enable</b> command to access Privileged EXEC mode.
Privileged EXEC Mode	Use the <b>enable</b> command to enter this mode from User EXEC mode.	LP-SGW2404F#	Enter the <b>disable</b> or the <b>exit</b> command to return to User EXEC mode. Enter <b>configure</b> command to access Global Configuration mode.
Global Configuration Mode	Use the <b>configure</b> command to enter this mode from Privileged EXEC mode.	LP-SGW2404F (config)#	Use the <b>exit</b> or the <b>end</b> command or press <b>Ctrl+Z</b> to return to Privileged EXEC mode. Use the <b>interface gigabitEthernet port</b> or <b>interface range gigabitEthernet port-list</b> command to access interface Configuration mode. Use the <b>vlan vlan-list</b> to access VLAN Configuration mode.

Mode	Accessing Path	Prompt	Logout or Access the next mode
Interface Configuration Mode	Use the <b>interface gigabitEthernet port</b> or <b>interface range gigabitEthernet port-list</b> command to enter this mode from Global Configuration mode.	<b>LP-SGW2404F (config-if)#</b> or <b>LP-SGW2404F (config-if-range)#</b>	Use the <b>end</b> command or press <b>Ctrl+Z</b> to return to Privileged EXEC mode. Enter the <b>exit</b> or the <b>#</b> command to return to Global Configuration mode. A port number must be specified in the <b>interface</b> command.
VLAN Configuration Mode	Use the <b>vlan vlan-list</b> command to enter this mode from Global Configuration mode.	<b>LP-SGW2404F (config-vlan)#</b>	Use the <b>end</b> command or press <b>Ctrl+Z</b> to return to Privileged EXEC mode. Enter the <b>exit</b> or the <b>#</b> command to return to Global configuration mode.

**Note:**

1. The user is automatically in User EXEC Mode after the connection between the PC and the switch is established by a console port or by a telnet connection.
2. Each command mode has its own set of specific commands. To configure some commands, you should access the corresponding command mode firstly.
  - **Global Configuration Mode:** In this mode, global commands are provided, such as the Spanning Tree, Schedule Mode and so on.
  - **Interface Configuration Mode:** In this mode, users can configure one or several ports, different ports correspond to different commands
    - a). Interface gigabitEthernet: Configure parameters for an Ethernet port, such as Duplex-mode, flow control status.
    - b). Interface range gigabitEthernet: Configure parameters for several Ethernet ports.
    - c). Interface link-aggregation: Configure parameters for a link-aggregation, such as broadcast storm.
    - d). Interface range link-aggregation: Configure parameters for multi-trunks.
    - e). Interface vlan: Configure parameters for the vlan-port.
  - **Vlan Configuration Mode:** In this mode, users can create a VLAN and add a specified port to the VLAN.
3. Some commands are global, that means they can be performed in all modes:
  - **show:** Displays all information of switch, for example: statistic information, port information, VLAN information.
  - **history:** Displays the commands history.



## 1.3 Security Levels

This switch's security is divided into two levels: User level and Admin level.

User level only allows users to do some simple operations in User EXEC Mode; Admin level allows you to monitor, configure and manage the switch in Privileged EXEC Mode, Global Configuration Mode, Interface Configuration Mode and VLAN Configuration Mode.

For logging on remotely by Telnet or SSH, you need a username and password (both **admin** by default) to get the privilege to the User level. Guest users are restricted to access the CLI. Users can enter Privileged EXEC mode from User EXEC mode by using the **enable** command and entering a Privileged EXEC mode password. Please connect to the switch by console port to configure the Privileged EXEC mode password.

For logging on by console port, you can enter the User EXEC mode directly. Users can enter Privileged EXEC mode from User EXEC mode by using the **enable** command. In default case, no password is needed. In Global Configuration Mode, you can configure password for Admin level by **enable password** command. Once password is configured, you are required to enter it to access Privileged EXEC mode.

## 1.4 Conventions

### 1.4.1 Format Conventions

The following conventions are used in this Guide:

- Items in square brackets [ ] are optional
- Items in braces { } are required
- Alternative items are grouped in braces and separated by vertical bars. For example: **speed** {10 | 100 | 1000 }
- Bold indicates an unalterable keyword. For example: **show logging**
- Normal Font indicates a constant (several options are enumerated and only one can be selected). For example: **switchport type** { access | trunk | general }
- Italic Font indicates a variable (an actual value must be assigned). For example: **bridge aging-time** *aging-time*

### 1.4.2 Special Characters

You should pay attentions to the description below if the variable is a character string:

- These six characters " < > , \ & cannot be input.
- If a blank is contained in a character string, single or double quotation marks should be used, for example 'hello world', "hello world", and the words in the quotation marks will be identified as a string. Otherwise, the words will be identified as several strings.

### 1.4.3 Parameter Format

Some parameters must be entered in special formats which are shown as follows:

- MAC Address must be entered in the format of xx:xx:xx:xx:xx:xx
- One or several values can be typed for a port-list or a vlan-list using comma to separate. Use a hyphen to designate a range of values, for instance,1/0/1,1/0/3-5,1/0/7 indicates choosing port 1/0/1,1/0/3,1/0/4,1/0/5,1/0/7.
- The port number should format as 1/0/3, meaning unit/slot/port. The unit number is always 1, and slot number is always 0 and the port number is a variable (an actual value must be assigned).

## Chapter 2 User Interface

### 2.1 enable

#### Description

The **enable** command is used to access Privileged EXEC Mode from User EXEC Mode.

#### Syntax

**enable**

#### Command Mode

User EXEC Mode

#### Example

If you have set the password to access Privileged EXEC Mode from User EXEC Mode:

```
LP-SGW2404F> enable
Enter password :
LP-SGW2404F#
```

### 2.2 service password-encryption

#### Description

The **service password-encryption** command is used to encrypt the password when the password is defined or when the configuration is written, using the symmetric encryption algorithm. Encryption prevents the password from being readable in the configuration file. To disable the global encryption function, please use **no service password-encryption** command.

#### Syntax

**service password-encryption**  
**no service password-encryption**

#### Command Mode

Global Configuration Mode

## Example

Enable the global encryption function:

```
LP-SGW2404F(config)# service password-encryption
```

## 2.3 enable password

### Description

The **enable password** command is used to set or change the password for users to access Privileged EXEC Mode from User EXEC Mode. To remove the password, please use **no enable password** command. This command uses the symmetric encryption.

### Syntax

```
enable password { [ 0 ] password | 7 encrypted-password }  
no enable password
```

### Parameter

0 — Specify the encryption type. 0 indicates that an unencrypted password will follow. By default, the encryption type is 0.

*password* — Super password, a string from 1 to 31 alphanumeric characters or symbols. The password is case sensitive, allows digits, English letters (case sensitive), underlines and sixteen special characters ( !\$%'()\*,-./[]{} ). By default, it is empty.

7 — Indicates a symmetric encrypted password with fixed length will follow.

*encrypted-password* — A symmetric encrypted password with fixed length, which you can copy from another switch configuration. After the encrypted password is configured, you should use the corresponding unencrypted password if you re-enter this mode.

### Command Mode

Global Configuration Mode

### User Guidelines

If the password you configured here is unencrypted and the global encryption function is enabled in [service password-encryption](#), the password in the configuration file will be displayed in the symmetric encrypted form.

## Example

Set the super password as “admin” and unencrypted to access Privileged EXEC Mode from User EXEC Mode:

```
LP-SGW2404F(config)#enable password 0 admin
```

## 2.4 enable secret

### Description

The **enable secret** command is used to set a secret password, which is using an MD5 encryption algorithm, for users to access Privileged EXEC Mode from User EXEC Mode. To return to the default configuration, please use **no enable secret** command. This command uses the MD5 encryption.

### Syntax

```
enable secret { [ 0 ] password | 5 encrypted-password }  
no enable secret
```

### Parameter

0 — Specify the encryption type. 0 indicates that an unencrypted password will follow. By default, the encryption type is 0.

*password* — Super password, a string from 1 to 31 alphanumeric characters or symbols. The password is case sensitive, allows digits, English letters (case sensitive), underlines and sixteen special characters ( !\$%'()\*,-./[]{} ). By default, it is empty. The password in the configuration file will be displayed in the MD5 encrypted form.

5 — Indicates an MD5 encrypted password with fixed length will follow.

*encrypted-password* — An MD5 encrypted password with fixed length, which you can copy from another switch configuration. After the encrypted password is configured, you should use the corresponding unencrypted password if you re-enter this mode.

### Command Mode

Global Configuration Mode

## User Guidelines

If both the **enable password** and **enable secret** are defined, users must enter the password set in **enable secret**.

### Example

Set the secret password as “admin” and unencrypted to access Privileged EXEC Mode from User EXEC Mode. The password will be displayed in the encrypted form.

```
LP-SGW2404F(config)#enable secret 0 admin
```

## 2.5 disable

### Description

The **disable** command is used to return to User EXEC Mode from Privileged EXEC Mode.

### Syntax

```
disable
```

### Command Mode

Privileged EXEC Mode

### Example

Return to User EXEC Mode from Privileged EXEC Mode:

```
LP-SGW2404F# disable
```

```
LP-SGW2404F>
```

## 2.6 configure

### Description

The **configure** command is used to access Global Configuration Mode from Privileged EXEC Mode.

### Syntax

```
configure
```

### Command Mode

Privileged EXEC Mode

## Example

Access Global Configuration Mode from Privileged EXEC Mode:

```
LP-SGW2404F# configure
LP-SGW2404F (config)#
```

## 2.7 exit

### Description

The **exit** command is used to return to the previous Mode from the current Mode.

### Syntax

```
exit
```

### Command Mode

Any Configuration Mode

### Example

Return to Global Configuration Mode from Interface Configuration Mode, and then return to Privileged EXEC Mode:

```
LP-SGW2404F(config-if)# exit
LP-SGW2404F(config)# exit
LP-SGW2404F#
```

## 2.8 end

### Description

The **end** command is used to return to Privileged EXEC Mode.

### Syntax

```
end
```

### Command Mode

Any Configuration Mode

### Example

Return to Privileged EXEC Mode from Interface Configuration Mode:

```
LP-SGW2404F(config-if)# end
```

LP-SGW2404F#

## 2.9 history

### Description

The **history** command is used to show the latest 20 commands you entered in the current mode since the switch is powered.

### Syntax

```
history
```

### Command Mode

Privileged EXEC Mode and any Configuration Mode

### Example

Show the commands you have entered in the current mode:

```
LP-SGW2404F (config)# history
```

```
1 history
```

## 2.10 history clear

### Description

The **history clear** command is used to clear the commands you have entered in the current mode, therefore these commands will not be shown next time you use the **history** command.

### Syntax

```
history clear
```

### Command Mode

Privileged EXEC Mode and any Configuration Mode

### Example

Clear the commands you have entered in the current mode:

```
LP-SGW2404F (config)#history clear
```



## Chapter 3 IEEE 802.1Q VLAN Commands

VLAN (Virtual Local Area Network) technology is developed for the switch to divide the LAN into multiple logical LANs flexibly. Hosts in the same VLAN can communicate with each other, regardless of their physical locations. VLAN can enhance performance by conserving bandwidth, and improve security by limiting traffic to specific domains.

### 3.1 vlan

#### Description

The **vlan** command is used to create IEEE 802.1Q VLAN and enter VLAN Configuration Mode. To delete the IEEE 802.1Q VLAN, please use **no vlan** command.

#### Syntax

```
vlan vlan-list
no vlan vlan-list
```

#### Parameter

*vlan-list* — Specify IEEE 802.1Q VLAN ID list, ranging from 2 to 4094, in the format of 2-3, 5. It is multi-optional.

#### Command Mode

Global Configuration Mode

#### Example

Create VLAN 2-10 and VLAN 100:

```
LP-SGW2404F(config)# vlan 2-10,100
```

Delete VLAN 2:

```
LP-SGW2404F(config)# no vlan 2
```

### 3.2 interface vlan

#### Description

The **interface vlan** command is used to create VLAN Interface and enter Interface VLAN Mode. To delete VLAN Interface, please use **no interface vlan** command.

#### Syntax

```
interface vlan vlan-id  
no interface vlan vlan-id
```

**Parameter**

*vlan-id* — Specify IEEE 802.1Q VLAN ID, ranging from 1 to 4094.

**Command Mode**

Global Configuration Mode

**Example**

Create VLAN Interface 2:

```
LP-SGW2404F(config)# interface vlan 2
```

## 3.3 name

**Description**

The **name** command is used to assign a description to a VLAN. To clear the description, please use **no name** command.

**Syntax**

```
name descript  
no name
```

**Parameter**

*descript* —String to describe the VLAN, which contains 16 characters at most.

**Command Mode**

VLAN Configuration Mode ( VLAN )

**Example**

Specify the name of VLAN 2 as “group1”:

```
LP-SGW2404F(config)# vlan 2  
LP-SGW2404F(config-vlan)# name group1
```

## 3.4 switchport mode

**Description**

The **switchport mode** command is used to configure the Link Type for the ports.

## Syntax

**switchport mode** { access | trunk | general }

## Parameter

access | trunk | general — Link Types. There are three Link Types for the ports.

## Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

## Example

Specify the Link Type of port 3 as trunk:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# switchport mode trunk
```

## 3.5 switchport access vlan

### Description

The **switchport access vlan** command is used to add the desired Access port to IEEE 802.1Q VLAN. To remove the specified port/ports from the corresponding VLAN, please use **no switchport access vlan** command.

### Syntax

**switchport access vlan** *vlan-id*  
**no switchport access vlan**

### Parameter

*vlan-id* — Specify IEEE 802.1Q VLAN ID, ranging from 2 to 4094.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Specify the Link Type of port 3 as access and add it to VLAN 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# switchport mode access
LP-SGW2404F(config-if)# switchport access vlan 2
```

## 3.6 switchport trunk allowed vlan

### Description

The **switchport trunk allowed vlan** command is used to add the desired Trunk port to IEEE 802.1Q VLAN. To delete the corresponding VLAN(s), please use **no switchport trunk allowed vlan** command.

### Syntax

```
switchport trunk allowed vlan vlan-list  
no switchport trunk allowed vlan vlan-list
```

### Parameter

*vlan-list* — Specify IEEE 802.1Q VLAN ID list, ranging from 2 to 4094, in the format of 2-3, 5. It is multi-optional.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Specify the Link Type of port 2 as trunk and add it to VLAN 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2  
LP-SGW2404F(config-if)# switchport mode trunk  
LP-SGW2404F(config-if)# switchport trunk allowed vlan 2
```

## 3.7 switchport general allowed vlan

### Description

The **switchport general allowed vlan** command is used to add the desired General port to IEEE 802.1Q VLAN and specify the egress rule. To delete the corresponding VLAN(s), please use **no switchport general allowed vlan** command.

### Syntax

```
switchport general allowed vlan vlan-list { tagged | untagged }  
no switchport general allowed vlan vlan-list
```

### Parameter

*vlan-list* — Specify IEEE 802.1Q VLAN ID list, ranging from 2 to 4094, in the format of 2-3, 5. It is multi-optional.

tagged | untagged — Egress rule , untagged or tagged. **Tagged:** All packets forwarded by the port are tagged. The packets contain VLAN information. **Untagged:** Packets forwarded by the port are untagged.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Specify the Link Type of port 4 as general, then add it to VLAN 2 and configure the egress rule of port 4 as tagged:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/4
LP-SGW2404F(config-if)# switchport mode general
LP-SGW2404F(config-if)# switchport general allowed vlan 2 tagged
```

## 3.8 switchport pvid

### Description

The **switchport pvid** command is used to configure the PVID for the switch ports.

### Syntax

**switchport pvid** *vlan-id*

### Parameter

*vlan-id* — Specify IEEE 802.1Q VLAN ID, ranging from 1 to 4094.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Specify the PVID of port 3 as 1:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# switchport pvid 1
```

## 3.9 show vlan summary

### Description

The **show vlan summary** command is used to display the summarized information of IEEE 802.1Q VLAN.

**Syntax**

```
show vlan summary
```

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the summarized information of IEEE 802.1Q VLAN:

```
LP-SGW2404F(config)# show vlan summary
```

## 3.10 show vlan brief

**Description**

The **show vlan brief** command is used to display the brief information of IEEE 802.1Q VLAN.

**Syntax**

```
show vlan brief
```

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the brief information of IEEE 802.1Q VLAN:

```
LP-SGW2404F(config)# show vlan brief
```

## 3.11 show vlan

**Description**

The **show vlan** command is used to display the detailed information of the specified IEEE 802.1Q VLAN. By default, the detailed information of all VLANs will be displayed.

**Syntax**

```
show vlan [ id vlan-list ]
```

**Parameter**

*vlan-list* — Specify IEEE 802.1Q VLAN ID, ranging from 1 to 4094. It is multi-optional.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the detailed information of all VLANs:

```
LP-SGW2404F(config)# show vlan
```

Display the detailed information of VLAN 2:

```
LP-SGW2404F(config)# show vlan id 2
```

Display the detailed information of VLAN 3-10:

```
LP-SGW2404F(config)# show vlan id 3-10
```

## Chapter 4 MAC-based VLAN Commands

MAC-based VLAN (Virtual Local Area Network) is the way to classify the VLANs based on MAC Address. A MAC address corresponds to a VLAN ID. The untagged packets and the priority-tagged packets sourced from the MAC address will be tagged with this VLAN ID.

### 4.1 mac-vlan mac-address

#### Description

The **mac-vlan mac-address** command is used to create a MAC-based VLAN entry. To delete MAC-based VLAN entry, please use the **no mac-vlan mac-address** command.

#### Syntax

```
mac-vlan mac-address mac-addr vlan vlan-id [ description descript ]  
no mac-vlan mac-address mac-addr
```

#### Parameter

*mac-addr* — MAC address, in the format of XX:XX:XX:XX:XX:XX.

*vlan-id* — Specify IEEE 802.1Q VLAN ID, ranging from 1 to 4094.

*descript* — Give a description of the MAC-based VLAN entry for identification, which contains 8 characters at most.

#### Command Mode

Global Configuration Mode

#### Example

Add an entry whose MAC address is 00:11:11:01:01:12 to VLAN 2, then name the MAC-base entry as "SWITCH":

```
LP-SGW2404F(config)# mac-vlan mac-address 00:11:11:01:01:12 vlan 2  
description SWITCH
```

### 4.2 show mac-vlan

#### Description

The **show mac-vlan** command is used to display the information of the MAC-based VLAN. MAC address and VLAN ID can be used to filter the displayed information.



## Syntax

```
show mac-vlan { all | mac-address mac-addr | vlan vlan-id }
```

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Parameter

*mac-addr* — MAC address, in the format of XX:XX:XX:XX:XX:XX.

*vlan-id* — Specify IEEE 802.1Q VLAN ID, ranging from 1 to 4094.

## Example

Display the MAC-based VLAN table:

```
LP-SGW2404F(config)# show mac-vlan all
```

Display the MAC-based VLAN information of the entry whose MAC address is 00:27:11:01:01:12:

```
LP-SGW2404F(config)# show mac-vlan mac-address 00:27:11:01:01:12
```

Display the MAC-based VLAN information of the entry whose VLAN ID is 4:

```
LP-SGW2404F(config)# show mac-vlan vlan 4
```

## Chapter 5 Protocol-based VLAN Commands

Protocol-based VLAN (Virtual Local Area Network) is the way to classify VLANs based on Protocols. A Protocol corresponds to a VLAN ID. The untagged packets and the priority-tagged packets matching the protocol template will be tagged with this VLAN ID.

### 5.1 protocol-vlan template

#### Description

The **protocol-vlan template** command is used to create Protocol-based VLAN template. To delete Protocol-based VLAN template, please use **no protocol-vlan template** command.

#### Syntax

```
protocol-vlan template name protocol-name ether-type type frame { 802_3 | ether_2 | snap | llc }  
no protocol-vlan template template-idx
```

#### Parameter

*protocol-name* — Give a name to the Protocol-based VLAN Template, which contains 8 characters at most.

*type* — The Ethernet protocol type in the protocol template, composed of 4 Hex integers.

802\_3 | ether\_2 | snap | llc — The frame type with 802\_3, ether\_2, snap, and llc options.

*template-idx* — The number of the Protocol-based VLAN Template. You can get the template corresponding to the number by the [show protocol-vlan template](#) command.

#### Command Mode

Global Configuration Mode

#### Example

Create a Protocol-based VLAN template named “SWITCH” whose Ethernet protocol type is 0x2024 and frame type is EthernetII:

```
LP-SGW2404F(config)# protocol-vlan template name SWITCH ether-type 2024  
frame ether_2
```

## 5.2 protocol-vlan vlan

### Description

The **protocol-vlan vlan** command is used to create a Protocol-based VLAN. To delete a Protocol-based VLAN, please use **no protocol-vlan** command.

### Syntax

```
protocol-vlan vlan vlan-id { template template-idx }  
no protocol-vlan vlan group-idx
```

### Parameter

*vlan-vid* —— Specify IEEE 802.1Q VLAN ID, ranging from 1-4094.

*template-idx* ——The number of the Protocol-based VLAN Template. You can get the template corresponding to the number by the [show protocol-vlan template](#) command.

*group-idx* ——The number of the Protocol-based VLAN entry. You can get the Protocol-based VLAN entry corresponding to the number by the [show protocol-vlan vlan](#) command.

### Command Mode

Global Configuration Mode

### Example

Create Protocol-based VLAN 2 and bind it with Protocol-based VLAN Template 3:

```
LP-SGW2404F(config)# protocol-vlan vlan 2 template 3
```

## 5.3 protocol-vlan group

### Description

The **protocol-vlan group** command is used to create a Protocol-based VLAN group. To delete a Protocol-based VLAN group, please use **no protocol-vlan group** command.

### Syntax

```
protocol-vlan group group-id  
no protocol-vlan group group-id
```

### Parameter

*group-id* ——The number of the Protocol-based VLAN entry. You can get the Protocol-based VLAN entry corresponding to the number by the **show protocol-vlan vlan** command.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Create Protocol-based VLAN group 2 which is binding with port 3:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# protocol-vlan group 2
```

## 5.4 show protocol-vlan template

### Description

The **show protocol-vlan template** command is used to display the information of the Protocol-based VLAN templates.

### Syntax

```
show protocol-vlan template
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the information of the Protocol-based VLAN templates:

```
LP-SGW2404F(config)# show protocol-vlan template
```

## 5.5 show protocol-vlan vlan

### Description

The **show protocol-vlan vlan** command is used to display the information about Protocol-based VLAN entry.

### Syntax

```
show protocol-vlan vlan
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display information of the Protocol-based VLAN entry:

```
LP-SGW2404F(config)# show protocol-vlan vlan
```

## Chapter 6 Voice VLAN Commands

Voice VLANs are configured specially for voice data stream. By configuring Voice VLANs and adding the ports with voice devices attached to voice VLANs, you can perform QoS-related configuration for voice data, ensuring the transmission priority of voice data stream and voice quality.

### 6.1 voice vlan

#### Description

The **voice vlan** command is used to enable Voice VLAN function. To disable Voice VLAN function, please use **no voice vlan** command.

#### Syntax

**voice vlan** *vlan-id*

**no voice vlan**

#### Parameter

*vlan-id* — Specify IEEE 802.1Q VLAN ID, ranging from 2 to 4094.

#### Command Mode

Global Configuration Mode

#### Example

Enable the Voice VLAN function for VLAN 10:

```
LP-SGW2404F(config)# voice vlan 10
```

### 6.2 voice vlan aging time

#### Description

The **voice vlan aging time** command is used to set the aging time for a voice VLAN. To restore to the default aging time for the Voice VLAN, please use **no voice vlan aging time** command. By default, the aging time is 1440 minutes.

#### Syntax

**voice vlan aging time** *time*

### no voice vlan aging time

#### Parameter

*time* — Aging time (in minutes) to be set for the Voice VLAN. It ranges from 1 to 43200.

#### Command Mode

Global Configuration Mode

#### Example

Set the aging time for the Voice VLAN as 1 minute:

```
LP-SGW2404F(config)# voice vlan aging time 1
```

## 6.3 voice vlan priority

#### Description

The **voice vlan priority** command is used to configure the priority for the Voice VLAN. To restore to the default priority, please use **no voice vlan priority** command. By default, the priority value is 6.

#### Syntax

**voice vlan priority** *pri*

**no voice vlan priority**

#### Parameter

*pri* — Priority, ranging from 0 to 7.

#### Command Mode

Global Configuration Mode

#### Example

Configure the priority of the Voice VLAN as 5:

```
LP-SGW2404F(config)# voice vlan priority 5
```

## 6.4 voice vlan mac-address

#### Description

The **voice vlan mac-address** command is used to create Voice VLAN OUI. To delete the specified Voice VLAN OUI, please use **no voice vlan mac-address** command.

### Syntax

**voice vlan mac-address** *mac-addr* **mask** *mask* [ **description** *descript* ]

**no voice vlan mac-address** *mac-addr*

### Parameter

*mac-addr* — The OUI address of the voice device, in the format of XX:XX:XX:XX:XX:XX.

*mask* — The OUI address mask of the voice device, in the format of XX:XX:XX:XX:XX:XX.

*descript* — Give a description to the OUI for identification which contains 16 characters at most.

### Command Mode

Global Configuration Mode

### Example

Create a Voice VLAN OUI described as SWITCH-Phone with the OUI address 00:11:11:11:11:11 and the mask address FF:FF:FF:00:00:00:

```
LP-SGW2404F(config)# voice vlan mac-address 00:11:11:11:11:11 mask  
FF:FF:FF:00:00:00 description SWITCH-Phone
```

## 6.5 switchport voice vlan mode

### Description

The **switchport voice vlan mode** command is used to configure the Voice VLAN mode for the Ethernet port.

### Syntax

**switchport voice vlan mode** { manual | auto }

### Parameter

manual | auto — Port mode.



### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Configure the port 3 to operate in the auto voice VLAN mode:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# switchport voice vlan mode auto
```

## 6.6 switchport voice vlan security

### Description

The **switchport voice vlan security** command is used to enable the Voice VLAN security feature. To disable the Voice VLAN security feature, please use **no switchport voice vlan security** command.

### Syntax

```
switchport voice vlan security
no switchport voice vlan security
```

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable port 3 for the Voice VLAN security feature:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# switchport voice vlan security
```

## 6.7 show voice vlan

### Description

The **show voice vlan** command is used to display the global configuration information of Voice VLAN.

### Syntax

**show voice vlan**

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration information of Voice VLAN globally:

```
LP-SGW2404F(config)# show voice vlan
```

## 6.8 show voice vlan oui

### Description

The **show voice vlan oui** command is used to display the configuration information of Voice VLAN OUI.

### Syntax

```
show voice vlan oui
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration information of Voice VLAN OUI:

```
LP-SGW2404F(config)# show voice vlan oui
```

## 6.9 show voice vlan switchport

### Description

The **show voice vlan switchport** command is used to display the Voice VLAN configuration information of all ports or a specified port.

### Syntax

```
show voice vlan switchport [ gigabitEthernet port ]
```

### Parameter

*port* — The Ethernet port number.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the Voice VLAN configuration information of all ports:

```
LP-SGW2404F(config)# show voice vlan switchport
```

Display the Voice VLAN configuration information of port 2:

```
LP-SGW2404F(config)# show voice vlan switchport gigabitEthernet 1/0/2
```

## Chapter 7 GVRP Commands

GVRP (GARP VLAN registration protocol) is an implementation of GARP (generic attribute registration protocol). GVRP allows the switch to automatically add or remove the VLANs via the dynamic VLAN registration information and propagate the local VLAN registration information to other switches, without having to individually configure each VLAN.

### 7.1 gvrp(global)

#### Description

The **gvrp** command is used to enable the GVRP function globally. To disable the GVRP function, please use **no gvrp** command.

#### Syntax

```
gvrp  
no gvrp
```

#### Command Mode

Global Configuration Mode

#### Example

Enable the GVRP function globally:

```
LP-SGW2404F(config)# gvrp
```

### 7.2 gvrp(interface)

#### Description

The **gvrp** command is used to enable the GVRP function for the desired port. To disable the GVRP function of this port, please use **no gvrp** command. The GVRP feature can only be enabled for the trunk-type ports.

#### Syntax

```
gvrp  
no gvrp
```

## Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

## Example

Enable the GVRP function for ports 2-6:

```
LP-SGW2404F(config)# interface range gigabitEthernet 1/0/2-6
LP-SGW2404F(config-if-range)# gvrp
```

## 7.3 gvrp registration

### Description

The **gvrp registration** command is used to configure the GVRP registration type on the desired port. To restore to the default value, please use **no gvrp registration** command.

### Syntax

```
gvrp registration { normal | fixed | forbidden }
no gvrp registration
```

### Parameter

normal | fixed | forbidden — Registration mode. By default, the registration mode is “normal”.

## Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

## Example

Configure the GVRP registration mode on ports 2-6 to fixed:

```
LP-SGW2404F(config)# interface range gigabitEthernet 1/0/2-6
LP-SGW2404F(config-if-range)# gvrp registration fixed
```

## 7.4 gvrp timer

## Description

The **gvrp timer** command is used to set a GVRP timer for the desired port. To restore to the default setting of a GARP timer, please use **no gvrp timer** command.

## Syntax

```
gvrp timer { leaveall | join | leave } value
```

```
no gvrp timer [ leaveall | join | leave ]
```

## Parameter

leaveall | join | leave — They are the three timers: leaveall, join and leave. Once the LeaveAll Timer is set, the port with GVRP enabled can send a LeaveAll message after the timer times out, so that other GARP ports can re-register all the attribute information. After that, the LeaveAll timer will start to begin a new cycle. To guarantee the transmission of the Join messages, a GARP port sends each Join message two times. The Join Timer is used to define the interval between the two sending operations of each Join message. Once the Leave Timer is set, the GARP port receiving a Leave message will start its Leave timer, and deregister the attribute information if it does not receive a Join message again before the timer times out.

*value* —The value of the timer. The LeaveAll Timer ranges from 1000 to 30000 centiseconds and the default value is 1000. The Join Timer ranges from 20 to 1000 centiseconds and the default value is 20. The Leave Timer ranges from 60 to 3000 centiseconds and the default value is 60.

## Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

## Example

Set the GARP leaveall timer of port 6 to 2000 centiseconds and restore to the join timer of it to the default value:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/6
LP-SGW2404F(config-if)# gvrp timer leaveall 2000
LP-SGW2404F(config-if)# no gvrp timer join
```

## 7.5 show gvrp global

### Description

The **show gvrp global** command is used to display the global GVRP status.

### Syntax

```
show gvrp global
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the global GVRP status:

```
LP-SGW2404F(config)# show gvrp global
```

## 7.6 show gvrp interface

### Description

The **show gvrp interface** command is used to display the GVRP configuration information of all ports or a specified Ethernet port.

### Syntax

```
show gvrp interface [ gigabitEthernet port ]
```

### Parameter

*port* —The Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the GVRP configuration information of all Ethernet ports:

```
LP-SGW2404F(config)# show gvrp interface
```

Display the GVRP configuration information of port 2:

```
LP-SGW2404F(config)# show gvrp interface gigabitEthernet 1/0/2
```

## Chapter 8 Etherchannel Commands

Etherchannel Commands are used to configure LAG and LACP function.

LAG (Link Aggregation Group) is to combine a number of ports together to make a single high-bandwidth data path, which can highly extend the bandwidth. The bandwidth of the LAG is the sum of bandwidth of its member port.

LACP (Link Aggregation Control Protocol) is defined in IEEE802.3ad and enables the dynamic link aggregation and disaggregation by exchanging LACP packets with its partner. The switch can dynamically group similarly configured ports into a single logical link, which will highly extend the bandwidth and flexibly balance the load.

### 8.1 channel-group

#### Description

The **channel-group** command is used to add a port to the EtherChannel Group and configure its mode. To delete the port from the EtherChannel Group, please use **no channel-group** command.

#### Syntax

```
channel-group num mode { on | active | passive }
```

```
no channel-group
```

#### Parameter

*num* — The number of the EtherChannel Group, ranging from 1 to 8.

on — Enable the static LAG.

active — Enable the active LACP mode.

passive — Enable the passive LACP mode.

#### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

#### Example

Add ports 2-4 to EtherChannel Group 1 and enable the static LAG:

```
LP-SGW2404F(config)# interface range gigabitEthernet 1/0/2-4
```

```
LP-SGW2404F(config-if-range)# channel-group 1 mode on
```



## 8.2 port-channel load-balance

### Description

The **port-channel load-balance** command is used to configure the Aggregate Arithmetic for LAG. To return to the default configurations, please use **no port-channel load-balance** command.

### Syntax

```
port-channel load-balance { src-dst-mac | src-dst-ip }  
no port-channel load-balance
```

### Parameter

src-dst-mac — The source and destination MAC address. When this option is selected, the Aggregate Arithmetic will be based on the source and destination MAC addresses of the packets. The Aggregate Arithmetic for LAG is “src-dst-mac” by default.

src-dst-ip — The source and destination IP address. When this option is selected, the Aggregate Arithmetic will be based on the source and destination IP addresses of the packets.

### Command Mode

Global Configuration Mode

### Example

Configure the Aggregate Arithmetic for LAG as “src-dst-mac”:

```
LP-SGW2404F(config)# port-channel load-balance src-dst-mac
```

## 8.3 lacp system-priority

### Description

The **lacp system-priority** command is used to configure the LACP system priority globally. To return to the default configurations, please use **no lacp system-priority** command.

### Syntax

```
lacp system-priority pri  
no lacp system-priority
```

### Parameter

*pri* — The system priority, ranging from 0 to 65535. It is 32768 by default.

### Command Mode

Global Configuration Mode

### Example

Configure the LACP system priority as 1024 globally:

```
LP-SGW2404F(config)# lacp system-priority 1024
```

## 8.4 lacp port-priority

### Description

The **lacp port-priority** command is used to configure the LACP port priority for specified ports. To return to the default configurations, please use **no lacp port-priority** command.

### Syntax

```
lacp port-priority pri
```

```
no lacp port-priority
```

### Parameter

*pri* — The port priority, ranging from 0 to 65535. It is 32768 by default.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Configure the LACP port priority as 1024 for ports 1-3:

```
LP-SGW2404F(config)# interface range gigabitEthernet 1/0/1-3
```

```
LP-SGW2404F(config-if-range)# lacp port-priority 1024
```

Configure the LACP port priority as 2048 for port 4:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/4
```

```
LP-SGW2404F(config-if)# lacp port-priority 2048
```

## 8.5 show etherchannel

### Description

The **show etherchannel** command is used to display the EtherChannel information.

### Syntax

```
show etherchannel [ channel-group-num ] { detail | summary }
```

### Parameter

*channel-group-num* — The EtherChannel Group number, ranging from 1 to 8. By default, it is empty, and will display the information of all EtherChannel Groups.

detail — The detailed information of EtherChannel.

summary — The EtherChannel information in summary.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the detailed information of EtherChannel Group 1:

```
LP-SGW2404F(config)# show etherchannel 1 detail
```

## 8.6 show etherchannel load-balance

### Description

The **show etherchannel load-balance** command is used to display the Aggregate Arithmetic of LAG.

### Syntax

```
show etherchannel load-balance
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the Aggregate Arithmetic of LAG:

```
LP-SGW2404F(config)# show etherchannel load-balance
```

## 8.7 show lacp

### Description

The **show lacp** command is used to display the LACP information for a specified EtherChannel Group.

### Syntax

```
show lacp [ channel-group-num ] { internal / neighbor }
```

### Parameter

*channel-group-num* — The EtherChannel Group number, ranging from 1 to 8. By default, it is empty, and will display the information of all LACP groups.

internal — The internal LACP information.

neighbor — The neighbor LACP information.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the internal LACP information of EtherChannel Group 1:

```
LP-SGW2404F(config)# show lacp 1 internal
```

## 8.8 show lacp sys-id

### Description

The **show lacp sys-id** command is used to display the LACP system priority globally.

### Syntax

```
show lacp sys-id
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the LACP system priority:

```
LP-SGW2404F(config)# show lacp sys-id
```

## Chapter 9 User Manage Commands

User Manage Commands are used to manage the user's logging information by Web, CLI or SSH, so as to protect the settings of the switch from being randomly changed.

### 9.1 user name (password)

#### Description

The **user name** command is used to add a new user or modify the existed users' information. To delete the existed users, please use **no user name** command. This command uses the symmetric encryption.

#### Syntax

```
user name name [ privilege admin | guest ] password { [ 0 ] password | 7  
encrypted-password }  
no user name name
```

#### Parameter

*name* —Type a name for users' login, which contains 16 characters at most, composing digits, English letters and under dashes only.

admin | guest — Access level. “Admin” means that you can edit, modify and view all the settings of different functions. “Guest” means that you can only view the settings without the right to edit and modify. It is “admin” by default.

0 — Specify the encryption type. 0 indicates that an unencrypted password will follow. By default, the encryption type is 0.

*password* — Users' login password, a string from 1 to 31 alphanumeric characters or symbols. The password is case sensitive, allows digits, English letters (case sensitive), underlines and sixteen special characters ( !\$%()'\*, -./[]{} ). By default, it is empty.

7 — Indicates a symmetric encrypted password with fixed length will follow.

*encrypted-password* — A symmetric encrypted password with fixed length, which you can copy from another switch configuration. After the encrypted password is configured, you should use the corresponding unencrypted password if you re-enter this mode.

## Command Mode

Global Configuration Mode

## User Guidelines

1. If the password you configured here is unencrypted and the global encryption function is enabled in [service password-encryption](#), the password in the configuration file will be displayed in the symmetric encrypted form.
2. If you change the password of the current user in a telnet or console connection, the connection will be cut off and the newly configured password is required for the re-login.

## Example

Add and enable a new admin user named “switch”, of which the password is “admin” and unencrypted:

```
LP-SGW2404F(config)#user name switch privilege admin password 0 admin
```

## 9.2 user name (secret)

### Description

The **user name** command is used to add a new user or modify the existed users' information. To delete the existed users, please use **no user name** command. This command uses the MD5 encryption.

### Syntax

```
user name name [ privilege admin | guest ] secret { [ 0 ] password | 5 encrypted-password }
```

```
no user name name
```

### Parameter

*name* —Type a name for users' login, which contains 16 characters at most, composing digits, English letters and under dashes only.

admin | guest — Access level. “Admin” means that you can edit, modify and view all the settings of different functions. “Guest” means that you can only view the settings without the right to edit and modify. It is “admin” by default.

0 — Specify the encryption type. 0 indicates that an unencrypted password will follow. By default, the encryption type is 0.

*password* —Users' login password, a string from 1 to 31 alphanumeric characters or symbols. The password is case sensitive, allows digits, English letters (case sensitive), underlines and sixteen special characters ( !\$%'()\*,-./[]{} ). By default, it is empty. The password will be saved to the configuration file using the MD5 encrypted algorithm.

5 — Indicates an MD5 encrypted password with fixed length will follow.

*encrypted-password* — An MD5 encrypted password with fixed length, which you can copy from another switch configuration.

## Command Mode

Global Configuration Mode

## User Guidelines

1. If both the **user name (password)** and **user name (secret)** are defined, users must enter the password set in **user name (secret)**.
2. If you change the password of the current user in a telnet or console connection, the connection will be cut off and the newly configured password is required for the re-login.

## Example

Add and enable a new admin user named “switch”, of which the password is “admin”. The password will be displayed in the encrypted form.

```
LP-SGW2404F(config)#user name switch privilege admin secret 0 admin
```

## 9.3 user access-control ip-based

### Description

The **user access-control ip-based** command is used to limit the IP-range of the users for login. Only the users within the IP-range you set here are allowed to login. To cancel the user access limit, please use **no user access-control** command.

### Syntax

```
user access-control ip-based ip-addr ip-mask
```

```
no user access-control
```

### Parameter

*ip-addr* — The source IP address. Only the users within the IP-range you set here are allowed for login.

*ip-mask* —The subnet mask of the IP address.

## Command Mode

Global Configuration Mode

## Example

Enable the access-control of the user whose IP address is 192.168.0.148:

```
LP-SGW2404F(config)# user access-control ip-based 192.168.0.148
255.255.255.255
```

## 9.4 user access-control mac-based

### Description

The **user access-control mac-based** command is used to limit the MAC Address of the users for login. Only the user with this MAC Address you set here is allowed to login. To cancel the user access limit, please use **no user access-control** command.

### Syntax

**user access-control mac-based** *mac-addr*

**no user access-control**

### Parameter

*mac-addr* — The source MAC address. Only the user with this MAC Address is allowed to login.

## Command Mode

Global Configuration Mode

## Example

Configure that only the user whose MAC address is 00:00:13:0A:00:01 is allowed to login:

```
LP-SGW2404F(config)# user access-control mac-based 00:00:13:0A:00:01
```



## 9.5 user access-control port-based

### Description

The **user access-control port-based** command is used to limit the ports for login. Only the users connected to these ports you set here are allowed to login. To cancel the user access limit, please use **no user access-control** command.

### Syntax

```
user access-control port-based interface { gigabitEthernet port | range  
gigabitEthernet port-list }  
no user access-control
```

### Parameter

*port* — The Ethernet port number.

*port-list* — The list group of Ethernet ports, in the format of 1/0/1-4. You can appoint 5 ports at most.

### Command Mode

Global Configuration Mode

### Example

Configure that only the users connected to ports 2-6 are allowed to login:

```
LP-SGW2404F(config)# user access-control port-based interface range  
gigabitEthernet 1/0/2-6
```

## 9.6 user max-number

### Description

The **user max-number** command is used to configure the maximum login user numbers at the same time. To cancel the limit on login numbers, please use **no user max-number** command.

### Syntax

```
user max-number admin-num guest-num  
no user max-number
```

## Parameter

*admin-num* —The maximum number of the users allowed to log on as Admin, ranging from 1 to 16. The total number of Admin and Guest should be less than 16.

*guest-num* —The maximum number of the users allowed to log on as Guest, ranging from 0 to 15. The total number of Admin and Guest should be less than 16.

## Command Mode

Global Configuration Mode

## Example

Configure the maximum number of users' login as Admin and Guest as 5 and 3:

```
LP-SGW2404F(config)# user max-num 5 3
```

# 9.7 user idle-timeout

## Description

The **user idle-timeout** command is used to configure the timeout time of the switch. To restore to the default timeout time, please use **no user idle-timeout** command.

## Syntax

**user idle-timeout** *minutes*

**no user idle-timeout**

## Parameter

*minutes* —The timeout time, ranging from 5 to 30 in minutes. The value is 10 by default.

## Command Mode

Global Configuration Mode

## Example

Configure the timeout time of the switch as 15 minutes:

```
LP-SGW2404F(config)# user idle-timeout 15
```

## 9.8 line

### Description

The **line** command is used to enter the Line Configuration Mode and make related configuration for the desired user(s), including the login mode and password configurations.

### Syntax

```
line [ console linenum | vty startlinenum endlinenum ]
```

### Parameter

*linenum* — The number of users allowed to login through console port. Its value is 0 in general as there is only one console port on a switch.

*startlinenum* — The start serial number of the login user selected to configure the login mode and password, ranging from 0 to 15. 0 means the first login user number, 1 means the second, and the rest can be done in the same manner.

*endlinenum* — The end serial number of the login user selected to configure the login mode and password, ranging from 0 to 15. 0 means the first login user number, 1 means the second, and the rest can be done in the same manner.

### Command Mode

Global Configuration Mode

### Example

Enter the Console port configuration mode and configure the console port 0:

```
LP-SGW2404F(config)# line console 0
```

Enter the Virtual Terminal configuration mode so as to prepare further configurations such as password and login mode for virtual terminal 0 to 5:

```
LP-SGW2404F(config)# line vty 0 5
```

## 9.9 password

### Description

The **password** command is used to configure the connection password. To clear the password, please use **no password** command.

## Syntax

**password** { [ 0 ] *password* | 7 *encrypted-password* }

**no password**

## Parameter

0 — Specify the encryption type. 0 indicates that an unencrypted password will follow. By default, the encryption type is 0.

*password* — Connection password, a string from 1 to 31 alphanumeric characters or symbols. The password is case sensitive, allows digits, English letters (case sensitive), underlines and sixteen special characters ( !\$%()\*,-./[]{} ). By default, it is empty.

7 — Indicates a symmetric encrypted password with fixed length will follow.

*encrypted-password* — A symmetric encrypted password with fixed length, which you can copy from another switch configuration. After the encrypted password is configured, you should use the corresponding unencrypted password if you re-enter this mode.

## Command Mode

Line Configuration Mode

## User Guidelines

If the password you configured here is unencrypted and the global encryption function is enabled in [service password-encryption](#), the password in the configuration file will be displayed in the symmetric encrypted form.

## Example

Configure the connection password of Console port connection 0 as “switch” and unencrypted:

```
LP-SGW2404F(config)#line console 0
```

```
LP-SGW2404F(config-line)#password 0 switch
```

Configure the connection password of virtual terminal connection 0-5 as “switch” and unencrypted:

```
LP-SGW2404F(config)#line vty 0 5
```

```
LP-SGW2404F(config-line)#password 0 switch
```

## 9.10 login

### Description

The **login** command is used to configure the login of a switch without using the default user name and password. At this situation, a connection password must be set for virtual terminal connection.

### Syntax

**login**

### Command Mode

Line Configuration Mode

### Example

Configure the login of Console port connection 0 as login mode:

```
LP-SGW2404F(config)# line console 0
LP-SGW2404F(config-line)# login
```

Configure the login of virtual terminal connection 0-5 as login mode:

```
LP-SGW2404F(config)# line vty 0 5
LP-SGW2404F(config-line)# login
```

## 9.11 login local

### Description

The **login local** command is used to configure the login of a switch with the user name and password.

### Syntax

**login local**

### Command Mode

Line Configuration Mode

### Example

Configure the login of virtual terminal connection 0-5 as login local mode:

```
LP-SGW2404F(config)# line vty 0 5
```

```
LP-SGW2404F(config-line)# login local
```

Configure the login of Console port connection 0 as login local mode:

```
LP-SGW2404F(config)# line console 0
```

```
LP-SGW2404F(config-line)# login local
```

## 9.12 show user account-list

### Description

The **show user account-list** command is used to display the information of the current users.

### Syntax

```
show user account-list
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the information of the current users:

```
LP-SGW2404F(config)# show user account-list
```

## 9.13 show user configuration

### Description

The **user configuration** command is used to display the security configuration information of the users, including access-control, max-number and the idle-timeout, etc.

### Syntax

```
show user configuration
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the security configuration information of the users:

```
LP-SGW2404F(config)# show user configuration
```

## Chapter 10 Binding Table Commands

You can bind the IP address, MAC address, VLAN and the connected Port number of the Host together, which can be the condition for the ARP Inspection to filter the packets.

### 10.1 ip source binding

#### Description

The **ip source binding** command is used to bind the IP address, MAC address, VLAN ID and the Port number together manually. You can manually bind the IP address, MAC address, VLAN ID and the Port number together in the condition that you have got the related information of the Hosts in the LAN. To delete the IP-MAC-VID-PORT entry from the binding table, please use **no ip source binding index** command.

#### Syntax

```
ip source binding hostname ip-addr mac-addr vlan vid interface gigabitEthernet port { none | arp-detection } [ forced-source { arp-scanning | dhcp-snooping } ]  
no ip source binding index idx
```

#### Parameter

*hostname* —— The Host Name, which contains 20 characters at most.

*ip-addr* —— The IP Address of the Host.

*mac-addr* —— The MAC Address of the Host.

*vid* —— The VLAN ID needed to be bound, ranging from 1 to 4094.

*port* —— The number of Ethernet port connected to the Host.

none | arp-detection —— The protect type for the entry. arp-detection indicates ARP detection; none indicates applying none.

forced-source —— The source of the binding entry can be specified as arp-scanning or dhcp-snooping. It is multi-optional.

*idx* —— The entry number needed to be deleted, ranging from 1 to 200. You can use the [show ip source binding](#) command to get the idx. Pay attention to that, the entry number is the actual number in the binding table not arranged in an order.



## Command Mode

Global Configuration Mode

## Example

Bind an entry with the IP 192.168.0.1, MAC 00:00:00:00:00:01, VLAN ID 2 and Port number 5 manually. And then enable the entry for the ARP detection:

```
LP-SGW2404F(config)# ip source binding host1 192.168.0.1 00:00:00:00:00:01
vlan 2 interface gigabitEthernet 1/0/5 arp-detection
```

Delete the IP-MAC –VID-PORT entry with the index 5:

```
LP-SGW2404F(config)# no ip source binding index 5
```

## 10.2 ip source binding index

### Description

The **ip source binding index** command is used to modify the existing entry of ip source binding.

### Syntax

```
ip source binding index idx {hostname hostname | mac mac-addr | vlan vlan-id |
interface gigabitEthernet port | none | arp-detection }
```

### Parameter

*idx* —The entry number needed to be modified. You can use the [show ip source binding](#) command to get the idx. Pay attention that the entry number is the actual number in the binding table which is not displayed in an arranged order.

*hostname* —The modified Host Name, which contains 20 characters at most.

*mac-addr* — The modified MAC address of the Host.

*vlan-id* —The modified VLAN ID, ranging from 1 to 4094.

*port* — The modified number of port connected to the Host.

none | arp-detection —The modified protect type for the entry. “arp-detection” indicates ARP detection; “none” indicates applying none.

## Command Mode

Global Configuration Mode

## Example

Modify the hostname as “host1” of the entry with the index 1:

```
LP-SGW2404F(config)#ip source binding index 1 hostname host1
```

## 10.3 ip dhcp snooping

### Description

The **ip dhcp snooping** command is used to enable DHCP-Snooping function globally. To disable DHCP-Snooping function globally, please use **no ip dhcp snooping** command. DHCP Snooping functions to monitor the process of the Host obtaining the IP address from DHCP server, and record the IP address, MAC address, VLAN and the connected Port number of the Host for automatic binding. The switch can also propagate the control information and the network parameters via the Option 82 field to provide more information for the Host.

### Syntax

```
ip dhcp snooping
```

```
no ip dhcp snooping
```

### Command Mode

Global Configuration Mode

### Example

Enable the DHCP-Snooping function globally:

```
LP-SGW2404F(config)# ip dhcp snooping
```

## 10.4 ip dhcp snooping global

### Description

The **ip dhcp snooping global** command is configure DHCP-Snooping globally. To restore to the default value, please use **no ip dhcp snooping global** command.

### Syntax

```
ip dhcp snooping global [ global-rate global-rate ] [ dec-threshold dec-threshold ] [ dec-rate dec-rate ]
```

## no ip dhcp snooping global

### Parameter

*global-rate* — The value to specify the maximum amount of DHCP messages that can be forwarded by the switch per second. The excessive messages will be discarded. The options are 0/10/20/30/40/50 (packet/second).By default, it is 0 standing for disable.

*dec-threshold* —The value to specify the minimum transmission rate of the Decline packets to trigger the Decline protection for the specific port. The options are 0/5/10/15/20/25/30 (packet/second).By default, it is 0 standing for disable.

*dec-rate* —The value to specify the Decline Flow Control. The traffic flow of the corresponding port will be limited to be this value if the transmission rate of the Decline packets exceeds the Decline Threshold. The options are 5/10/15/20/25/30 (packet/second). By default, it is 5.

### Command Mode

Global Configuration Mode

### Example

Configure the Global Flow Control as 30pps, the Decline Threshold as 20 pps, and decline Flow Control as 20 pps for DHCP Snooping:

```
LP-SGW2404F(config)# ip dhcp snooping global global-rate 30 dec-threshold 20  
dec-rate 20
```

## 10.5 ip dhcp snooping information option

### Description

The **ip dhcp snooping information option** command is used to enable the Option 82 function of DHCP Snooping. To disable the Option 82 function, please use **no ip dhcp snooping information option** command.

### Syntax

```
ip dhcp snooping information option  
no ip dhcp snooping information option
```

### Command Mode

Global Configuration Mode

### Example

Enable the Option 82 function of DHCP Snooping:

```
LP-SGW2404F(config)# ip dhcp snooping information option
```

## 10.6 ip dhcp snooping information strategy

### Description

The **ip dhcp snooping information strategy** command is used to select the operation for the Option 82 field of the DHCP request packets from the Host. To restore to the default option, please use **no ip dhcp snooping information strategy** command.

### Syntax

```
ip dhcp snooping information strategy strategy
```

```
no ip dhcp snooping information strategy
```

### Parameter

*strategy* — The operations for Option 82 field of the DHCP request packets from the Host, including three types:

keep: Indicates to keep the Option 82 field of the packets. It is the default option;

replace: Indicates to replace the Option 82 field of the packets with the switch defined one;

drop: Indicates to discard the packets including the Option 82 field

### Command Mode

Global Configuration Mode

### Example

Replace the Option 82 field of the packets with the switch defined one and then send out:

```
LP-SGW2404F(config)# ip dhcp snooping information strategy replace
```

## 10.7 ip dhcp snooping information remote-id

### Description

The **ip dhcp snooping information remote-id** command is used to enable and configure the customized sub-option Remote ID for the Option 82. To return to default Remote ID for the Option 82, please use **no ip dhcp snooping information remote-id** command.

### Syntax

```
ip dhcp snooping information remote-id string  
no ip dhcp snooping information remote-id
```

### Parameter

*string* —Enter the sub-option Remote ID, which contains 32 characters at most.

### Command Mode

Global Configuration Mode

### Example

Enable and configure the customized sub-option Remote ID for the Option 82 as switch:

```
LP-SGW2404F(config)# ip dhcp snooping information remote-id switch
```

## 10.8 ip dhcp snooping information circuit-id

### Description

The **ip dhcp snooping information circuit-id** command is used to enable and configure the customized sub-option Circuit ID for the Option 82. To return to the default Circuit ID for the Option 82, please use **no ip dhcp snooping information circuit-id** command.

### Syntax

```
ip dhcp snooping information circuit-id string  
no ip dhcp snooping information circuit-id
```

### Parameter

*string* —Enter the sub-option Circuit ID, which contains 32 characters at most.

### Command Mode

Global Configuration Mode

### Example

Enable and configure the customized sub-option Circuit ID for the Option 82 as switch:

```
LP-SGW2404F(config)# ip dhcp snooping information circuit-id switch
```

## 10.9 ip dhcp snooping trust

### Description

The **ip dhcp snooping trust** command is used to configure a port to be a Trusted Port. Only the Trusted Port can receive the DHCP packets from DHCP servers. To turn the port back to a distrusted port, please use **no ip dhcp snooping trust** command.

### Syntax

**ip dhcp snooping trust**

**no ip dhcp snooping trust**

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Configure port 2 to be a Trusted Port:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
LP-SGW2404F(config-if)# ip dhcp snooping trust
```

## 10.10 ip dhcp snooping mac-verify

### Description

The **ip dhcp snooping mac-verify** command is used to enable the MAC Verify feature. To disable the MAC Verify feature, please use **no ip dhcp snooping mac-**

**verify** command. There are two fields of the DHCP packet containing the MAC address of the Host. The MAC Verify feature is to compare the two fields and discard the packet if the two fields are different.

### Syntax

```
ip dhcp snooping mac-verify  
no ip dhcp snooping mac-verify
```

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable the MAC Verify feature for port 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2  
LP-SGW2404F(config-if)# ip dhcp snooping mac-verify
```

## 10.11 ip dhcp snooping limit rate

### Description

The **ip dhcp snooping limit rate** command is used to enable the Flow Control feature for the DHCP packets. The excessive DHCP packets will be discarded. To restore to the default configuration, please use **no ip dhcp snooping limit rate** command.

### Syntax

```
ip dhcp snooping limit rate value  
no ip dhcp snooping limit rate
```

### Parameter

*value* — The value of Flow Control. The options are 0/5/10/15/20/25/30(packet/second). The default value is 0, which stands for disable.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

## Example

Set the Flow Control of port 2 as 20 pps:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
LP-SGW2404F(config-if)# ip dhcp snooping limit rate 20
```

## 10.12 ip dhcp snooping decline

### Description

The **ip dhcp snooping decline** command is used to enable the Decline Protect feature. To disable the Decline Protect feature, please use **no ip dhcp snooping decline** command.

### Syntax

```
ip dhcp snooping decline
no ip dhcp snooping decline
```

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable the Decline Protect feature of port 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
LP-SGW2404F(config-if)# ip dhcp snooping decline
```

## 10.13 show ip source binding

### Description

The **show ip source binding** command is used to display the IP-MAC-VID-PORT binding table.

### Syntax

```
show ip source binding
```

### Command Mode



Privileged EXEC Mode and Any Configuration Mode

### Example

Display the IP-MAC-VID-PORT binding table:

```
LP-SGW2404F(config)# show ip source binding
```

## 10.14 show ip dhcp snooping

### Description

The **show ip dhcp snooping** command is used to display the running status of DHCP-Snooping.

### Syntax

```
show ip dhcp snooping
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the running status of DHCP-Snooping:

```
LP-SGW2404F# show ip dhcp snooping
```

## 10.15 show ip dhcp snooping information

### Description

The **show ip dhcp snooping information** command is used to display the Option 82 configuration status of DHCP-Snooping.

### Syntax

```
show ip dhcp snooping information
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the Option 82 configuration status of DHCP-Snooping:

```
LP-SGW2404F# show ip dhcp snooping information
```

## 10.16 show ip dhcp snooping interface gigabitEthernet

### Description

The **show ip dhcp snooping interface gigabitEthernet** command is used to display the DHCP-Snooping configuration of desired Gigabit Ethernet ports.

### Syntax

```
show ip dhcp snooping interface gigabitEthernet [ port ]
```

### Parameters

*port* —The Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the DHCP-Snooping configuration of port 2:

```
LP-SGW2404F# show ip dhcp snooping interface gigabitEthernet 1/0/2
```

## Chapter 11 ARP Inspection Commands

ARP (Address Resolution Protocol) Detect function is to protect the switch from the ARP cheating, such as the Network Gateway Spoofing and Man-In-The-Middle Attack, etc.

### 11.1 ip arp inspection(global)

#### Description

The **ip arp inspection** command is used to enable the ARP Detection function globally. To disable the ARP Detection function, please use **no ip arp detection** command.

#### Syntax

**ip arp inspection**  
**no ip arp inspection**

#### Command Mode

Global Configuration Mode

#### Example

Enable the ARP Detection function globally:

```
LP-SGW2404F(config)# ip arp inspection
```

### 11.2 ip arp inspection trust

#### Description

The **ip arp inspection trust** command is used to configure the port for which the ARP Detect function is unnecessary as the Trusted Port. To clear the Trusted Port list, please use **no ip arp detection trust** command. The specific ports, such as up-linked port, routing port and LAG port, should be set as Trusted Port. To ensure the normal communication of the switch, please configure the ARP Trusted Port before enabling the ARP Detect function.

#### Syntax

**ip arp inspection trust**

**no ip arp inspection trust**

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Configure the ports 2-5 as the Trusted Port:

```
LP-SGW2404F(config)# interface range gigabitEthernet 1/0/2-5
LP-SGW2404F(config-if-range)# ip arp inspection trust
```

## 11.3 ip arp inspection(interface)

### Description

The **ip arp inspection** command is used to enable the ARP Defend function. To disable the ARP detection function, please use **no ip arp inspection** command. ARP Attack flood produces lots of ARP Packets, which will occupy the bandwidth and slow the network speed extremely. With the ARP Defend enabled, the switch can terminate receiving the ARP packets for 300 seconds when the transmission speed of the legal ARP packet on the port exceeds the defined value so as to avoid ARP Attack flood.

### Syntax

**ip arp inspection**  
**no ip arp inspection**

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable the arp defend function for ports 2-6:

```
LP-SGW2404F(config)# interface range gigabitEthernet 1/0/2-6
LP-SGW2404F(config-if-range)# ip arp inspection
```

## 11.4 ip arp inspection limit-rate

### Description

The **ip arp inspection limit-rate** command is used to configure the ARP speed of a specified port. To restore to the default speed, please use **no ip arp inspection limit-rate** command.

### Syntax

**ip arp inspection limit-rate** *value*

**no ip arp inspection limit-rate**

### Parameter

*value* —The value to specify the maximum amount of the received ARP packets per second, ranging from 10 to 100 in pps(packet/second). By default, the value is 15.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Configure the maximum amount of the received ARP packets per second as 50 pps for port 5:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/5
LP-SGW2404F(config-if)# ip arp inspection limit-rate 50
```

## 11.5 ip arp inspection recover

### Description

The **ip arp inspection recover** command is used to restore to the port to the ARP transmit status from the ARP filter status.

### Syntax

**ip arp inspection recover**

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Restore port 5 to the ARP transmit status:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/5
LP-SGW2404F(config-if)# ip arp inspection recover
```

## 11.6 show ip arp inspection

### Description

The **show ip arp inspection** command is used to display the ARP detection global configuration including the enable/disable status and the Trusted Port list.

### Syntax

```
show ip arp inspection
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the ARP detection configuration globally:

```
LP-SGW2404F(config)# show ip arp inspection
```

## 11.7 show ip arp inspection interface

### Description

The **show ip arp inspection interface** command is used to display the interface configuration of ARP detection.

### Syntax

```
show ip arp inspection interface [ gigabitEthernet port ]
```

### Parameter

*port* —The Ethernet port number.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the configuration of all the ports:

```
LP-SGW2404F(config)# show ip arp inspection interface
```

Display the configuration of port 2:

```
LP-SGW2404F(config)# show ip arp inspection interface gigabitEthernet 1/0/2
```

## 11.8 show ip arp inspection statistics

### Description

The **show ip arp inspection statistics** command is used to display the number of the illegal ARP packets received.

### Syntax

```
show ip arp inspection statistics
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the number of the illegal ARP packets received:

```
LP-SGW2404F(config)# show ip arp inspection statistics
```

## 11.9 clear ip arp inspection statistics

### Description

The **clear ip arp inspection statistics** command is used to clear the statistic of the illegal ARP packets received.

### Syntax

```
clear ip arp inspection statistics
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

**Example**

Clear the statistic of the illegal ARP packets received:

```
LP-SGW2404F(config)# clear ip arp inspection statistics
```



## Chapter 12 DoS Defend Command

DoS (Denial of Service) Attack is to occupy the network bandwidth maliciously by the network attackers or the evil programs sending a lot of service requests to the Host. With the DoS Defend enabled, the switch can analyze the specific field of the received packets and provide the defend measures to ensure the normal working of the local network.

### 12.1 ip dos-prevent

#### Description

The **ip dos-prevent** command is used to enable the DoS defend function globally. To disable the DoS defend function, please use **no ip dos-prevent** command.

#### Syntax

```
ip dos-prevent
no ip dos-prevent
```

#### Command Mode

Global Configuration Mode

#### Example

Enable the DoS defend function globally:

```
LP-SGW2404F(config)# ip dos-prevent
```

### 12.2 ip dos-prevent type

#### Description

The **ip dos-prevent type** command is used to select the DoS Defend Type. To disable the corresponding Defend Type, please use **no ip dos-prevent type** command.

#### Syntax

```
ip dos-prevent type { land | scan-synfin | xma-scan | null-scan | port-less-1024 |
blat | ping-flood | syn-flood }
```

```
no ip dos-prevent type { land | scan-synfin | xma-scan | null-scan | port-less-1024  
| blat | ping-flood | syn-flood }
```

### Parameter

land — Land attack.

scan-synfin — Scan SYNFIN attack.

xma-scan — Xma Scan attack.

null-scan — NULL Scan attack.

port-less-1024 — The SYN packets whose Source Port less than 1024.

blat — Blat attack.

ping-flood — Ping flooding attack. With the ping flood attack enabled, the switch will limit automatically the forwarding speed of ping packets to 512K when attacked by ping flood.

syn-flood — SYN/SYN-ACK flooding attack. With the syn-flood attack enabled, the switch will limit automatically the forwarding speed of ping packets to 512K when attacked by syn-flood.

### Command Mode

Global Configuration Mode

### Example

Enable the DoS Defend Type named Land attack:

```
LP-SGW2404F(config)# ip dos-prevent type land
```

## 12.3 show ip dos-prevent

### Description

The **show ip dos-prevent** command is used to display the DoS information of the detected DoS attack, including enable/disable status, the DoS Defend Type.

### Syntax

```
show ip dos-prevent
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the DoS information of the detected DoS attack globally:

```
LP-SGW2404F(config)# show ip dos-prevent
```

## Chapter 13 IEEE 802.1X Commands

IEEE 802.1X function is to provide an access control for LAN ports via the authentication. Only the supplicant passing the authentication can access the LAN.

### 13.1 dot1x system-auth-control

#### Description

The **dot1x system-auth-control** command is used to enable the IEEE 802.1X function globally. To disable the IEEE 802.1X function, please use **no dot1x system-auth-control** command.

#### Syntax

```
dot1x system-auth-control
no dot1x system-auth-control
```

#### Command Mode

Global Configuration Mode

#### Example

Enable the IEEE 802.1X function:

```
LP-SGW2404F(config)# dot1x system-auth-control
```

### 13.2 dot1x auth-method

#### Description

The **dot1x auth-method** command is used to configure the Authentication Method of IEEE 802.1X and the default 802.1x authentication method is “eap-md5”. To restore to the default 802.1x authentication method, please use **no dot1x auth-method** command.

#### Syntax

```
dot1x auth-method { pap | eap-md5 }
no dot1x auth-method
```

## Parameter

pap | eap-md5 —Authentication Methods.

pap: IEEE 802.1X authentication system uses extensible authentication protocol (EAP) to exchange information between the switch and the client. The transmission of EAP packets is terminated at the switch and the EAP packets are converted to the other protocol (such as RADIUS) packets for transmission

eap-md5: IEEE 802.1X authentication system uses extensible authentication protocol (EAP) to exchange information between the switch and the client. The EAP protocol packets with authentication data can be encapsulated in the advanced protocol (such as RADIUS) packets to be transmitted to the authentication server.

## Command Mode

Global Configuration Mode

## Example

Configure the Authentication Method of IEEE 802.1X as pap:

```
LP-SGW2404F(config)# dot1x auth-method pap
```

## 13.3 dot1x guest-vlan(global)

### Description

The **dot1x guest-vlan** command is used to enable the Guest VLAN function globally. To disable the Guest VLAN function, please use **no dot1x guest-vlan** command.

### Syntax

**dot1x guest-vlan** *vid*

**no dot1x guest-vlan**

### Parameter

*vid* —The VLAN ID needed to enable the Guest VLAN function, ranging from 1 to 4094. The supplicants in the Guest VLAN can access the specified network source.

### Command Mode

Global Configuration Mode

## Example

Enable the Guest VLAN function for VLAN 5:

```
LP-SGW2404F(config)# dot1x guest-vlan 5
```

## 13.4 dot1x quiet-period

### Description

The **dot1x quiet-period** command is used to enable the quiet-period function. To disable the function, please use **no dot1x quiet-period** command.

### Syntax

```
dot1x quiet-period  
no dot1x quiet-period
```

### Command Mode

Global Configuration Mode

### Example

Enable the quiet-period function:

```
LP-SGW2404F(config)# dot1x quiet-period
```

## 13.5 dot1x timeout

### Description

The **dot1x timeout** command is used to configure the quiet period and the supplicant timeout. To restore to the default, please use **no dot1x timeout** command.

### Syntax

```
dot1x timeout { quiet-period time | reauth-period time }  
no dot1x timeout { quiet-period | reauth-period }
```

### Parameter

**quiet-period *time*** —The value for Quiet Period, ranging from 1 to 999 in seconds. By default, it is 10. Once the supplicant failed to the 802.1X

Authentication, then the switch will not respond to the authentication request from the same supplicant during the Quiet Period.

**reauth-period** *time* —The maximum time for the switch to wait for the response from supplicant before resending a request to the supplicant., ranging from 1 to 9 in second. By default, it is 3.

### Command Mode

Global Configuration Mode

### Example

Configure the quiet period as 100 seconds:

```
LP-SGW2404F(config)# dot1x timeout quiet-period 100
```

## 13.6 dot1x max-reauth-req

### Description

The **dot1x max-reauth-req** command is used to configure the maximum transfer times of the repeated authentication request when the server cannot be connected. To restore to the default value, please use **no dot1x max-reauth-req** command.

### Syntax

```
dot1x max-reauth-req times
```

```
no dot1x max-reauth-req
```

### Parameter

*times* —The maximum transfer times of the repeated authentication request, ranging from 1 to 9 in times. By default, the value is 3.

### Command Mode

Global Configuration Mode

### Example

Configure the maximum transfer times of the repeated authentication request as 5:

```
LP-SGW2404F(config)# dot1x max-reauth-req 5
```

## 13.7 dot1x

### Description

The **dot1x** command is used to enable the IEEE 802.1X function for a specified port. To disable the IEEE 802.1X function for a specified port, please use **no dot1x** command.

### Syntax

**dot1x**

**no dot1x**

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable the IEEE 802.1X function for port 1:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/1
LP-SGW2404F(config-if)# dot1x
```

## 13.8 dot1x guest-vlan(interface)

### Description

The **dot1x guest-vlan** command is used to enable the guest VLAN function for a specified port. To disable the Guest VLAN function for a specified port, please use **no dot1x guest-vlan** command. Please ensure that the Control Type of the corresponding port is port-based before enabling the guest VLAN function for it.

### Syntax

**dot1x guest-vlan**

**no dot1x guest-vlan**

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)



## Example

Enable the Guest VLAN function for port 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
LP-SGW2404F(config-if)# dot1x guest-vlan
```

## 13.9 dot1x port-control

### Description

The **dot1x port-control** command is used to configure the control mode of IEEE 802.1X for the specified port. By default, the control mode is “auto”. To restore to the default configuration, please use **no dot1x port-control** command.

### Syntax

```
dot1x port-control { auto | authorized-force | unauthorized-force }
no dot1x port-control
```

### Parameter

auto | authorized-force | unauthorized-force — The Control Mode for the port.

auto: In this mode, the port will normally work only after passing the 802.1X Authentication.

authorized-force: In this mode, the port can work normally without passing the 802.1X Authentication.

unauthorized-force: In this mode, the port is forbidden working for its fixed unauthorized status.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Configure the Control Mode for port 1 as authorized-force:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/1
LP-SGW2404F(config-if)# dot1x port-control authorized-force
```

## 13.10 dot1x port-method

### Description

The **dot1x port-method** command is used to configure the control type of IEEE 802.1X for the specified port. By default, the control type is “mac-based”. To restore to the default configuration, please use **no dot1x port-method** command.

### Syntax

```
dot1x port-method { mac-based | port-based }
no dot1x port-method
```

### Parameter

mac-based | port-based —The control type for the port.

mac-based: Any client connected to the port should pass the 802.1X authentication for access.

port-based: All the clients connected to the port can access the network on the condition that any one of the clients has passed the 802.1X Authentication.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Configure the Control Type for port 1 as port-based:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/1
LP-SGW2404F(config-if)# dot1x port-method port-based
```

## 13.11 radius

### Description

The **radius** command is used to configure the parameters of radius.

### Syntax

```
radius { [auth-pri ip] [auth-sec ip] [auth-port port] [acct-pri ip] [acct-sec ip] [acct-
port port] [auth-key { [ 0 ] password | 7 encrypted-password } ] [acct-key { [ 0 ]
password | 7 encrypted-password] } }
```

**no radius** { auth-port | auth-key | auth-pri | auth-sec | acct-port | acct-key | acct-pri | acct-sec }

## Parameter

**auth-pri** *ip* — The IP address of the authentication server.

**auth-sec** *ip* — The IP address of the alternative authentication server.

**auth-port** *port* — The UDP port of authentication server(s) ranging from 1 to 65535. The default value is 1812.

**acct-pri** *ip* — The IP address of the accounting server.

**acct-sec** *ip* — The IP address of the alternative accounting server.

**acct-port** *port* — The UDP port of accounting server(s) ranging from 1 to 65535. The default value is 1813.

**auth-key** { [ 0 ] *password* | 7 *encrypted-password* } — 0 and 7 are the encryption type. 0 indicates that an unencrypted password will follow. 7 indicates that a symmetric encrypted password with a fixed length will follow. By default, the encryption type is 0. “*password*” is the shared password for the switch and the authentication servers to exchange messages which contains 31 characters at most. The question marks and spaces are not allowed. “*encrypted-password*” is a symmetric encrypted password with fixed length, which you can copy from another switch configuration. The password or encrypted-password you configured here will be displayed in the encrypted form.

**acct-key** { [ 0 ] *password* | 7 *encrypted-password* } — 0 and 7 are the encryption type. 0 indicates that an unencrypted password will follow. 7 indicates that a symmetric encrypted password with a fixed length will follow. By default, the encryption type is 0. “*password*” is the shared password for the switch and the authentication servers to exchange messages which contains 31 characters at most. The question marks and spaces are not allowed. “*encrypted-password*” is a symmetric encrypted password with fixed length, which you can copy from another switch configuration. The password or encrypted-password you configured here will be displayed in the encrypted form.

## Command Mode

Global Configuration Mode

### Example

Configure the IP address of the accounting server as 10.20.1.100 and password as switch:

```
LP-SGW2404F(config)#radius auth-pri 10.20.1.100 auth-key switch
```

## 13.12 radius server-account

### Description

The **radius server-account** command is used to enable the accounting feature. To disable the accounting feature, please use **no radius server-account** command.

### Syntax

```
radius server-account  
no radius server-account
```

### Command Mode

Global Configuration Mode

### Example

Enable the accounting feature:

```
LP-SGW2404F(config)# radius server-account
```

## 13.13 show dot1x global

### Description

The **show dot1x global** command is used to display the global configuration of 801.X.

### Syntax

```
show dot1x global
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration of 801.X globally:

```
LP-SGW2404F(config)# show dot1x global
```

## 13.14 show dot1x interface

### Description

The **show dot1x interface** command is used to display all ports' or the specified port's configuration information of 801.X.

### Syntax

```
show dot1x interface [ gigabitEthernet port ]
```

### Parameter

*port* —The number of the Ethernet port. Display the configuration of all the ports by default.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration information of 801.X for all ports:

```
LP-SGW2404F(config)# show dot1x interface
```

Display the configuration information of 801.X for port 1:

```
LP-SGW2404F(config)# show dot1x interface gigabitEthernet 1/0/1
```

## 13.15 show radius accounting

### Description

The **show radius accounting** command is used to display the configuration of the accounting server.

### Syntax

```
show radius accounting
```

### Command Mode

Privileged EXEC Mode and Any Configuration Modes

### Example

Display the configuration of the accounting server:

```
LP-SGW2404F(config)# show radius accounting
```

## 13.16 show radius authentication

### Description

The **show radius authentication** command is used to display the configuration of the RADIUS authentication server.

### Syntax

```
show radius authentication
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration of the RADIUS authentication server:

```
LP-SGW2404F(config)# show radius authentication
```

## Chapter 14 System Log Commands

The log information will record the settings and operation of the switch respectively for you to monitor operation status and diagnose malfunction.

### 14.1 logging buffer

#### Description

The **logging buffer** command is used to configure the severity level and the status of the configuration input to the log buffer. To disable the logging buffer function, please use **no logging buffer** command. Local Log is the log information saved in the switch. It has two output channels, that is, it can be saved to two different positions, log buffer and log file. The log buffer indicates the RAM for saving system log and the information in the log buffer can be got by [show logging buffer](#) command. It will be lost when the switch is restarted.

#### Syntax

**logging buffer** *level*  
**no logging buffer**

#### Parameter

*level* — Severity level of the log information output to each channel. There are 8 severity levels marked with values 0-7. The smaller value has the higher priority. Only the log with the same or smaller severity level value will be output. By default, it is 6 indicating that all the log information between level 0-6 will be saved in the log buffer.

#### Command Mode

Global Configuration Mode

#### Example

Set the severity level as 5:

```
LP-SGW2404F(config)# logging buffer 5
```

## 14.2 logging file flash

### Description

The **logging file flash** command is used to store the log messages in a file in the flash on the switch. To disable the log file flash function, please use **no logging file flash** command. The log file flash indicates the flash sector for saving system log. The information in the log file of the flash will not be lost after the switch is restarted and can be got by the [show logging flash](#) command.

### Syntax

```
logging file flash
no logging file flash
```

### Command Mode

Global Configuration Mode

### Example

Enable the log file flash function:

```
LP-SGW2404F(config)#logging file flash
```

## 14.3 logging file flash frequency

### Description

The **logging file flash frequency** command is used to specify the frequency to synchronize the system log file in the log buffer to the flash. To resume the default synchronizing frequency, please use the **no logging file flash frequency** command.

### Syntax

```
logging file flash frequency { periodic periodic | immediate }
no logging file flash frequency
```

### Parameter

*periodic* — The frequency to synchronize the system log file in the log buffer to the flash, ranging from 1 to 48 hours. By default, the synchronization process takes place every 24 hours.



**immediate** — The system log file in the buffer will be synchronized to the flash immediately. This option will reduce the life of the flash and is not recommended.

### Command Mode

Global Configuration Mode

### Example

Specify the log file synchronization frequency as 10 hours:

```
LP-SGW2404F(config)#logging file flash frequency periodic10
```

## 14.4 logging file flash level

### Description

The **logging file flash level** command is used to specify the system log message severity level. Messages with a severity level equal to or higher than this value will be stored to the flash. To restore to the default level, please use **no logging file flash level** command.

### Syntax

**logging file flash level** *level*

**no logging file flash level**

### Parameter

*level* — Severity level of the log message. There are 8 severity levels marked with values 0-7. The smaller value has the higher priority. Only the log with the same or smaller severity level value will be saved to the flash. By default, it is 2 indicating that the log message marked with 0~2 will be saved in the log flash.

### Command Mode

Global Configuration Mode

### Example

Save the log messages with their severities equal or higher than 7 to the flash :

```
LP-SGW2404F(config)#logging file flash level 7
```

## 14.5 clear logging

### Description

The **clear logging** command is used to clear the information in the log buffer and log file.

### Syntax

```
clear logging [ buffer | flash ]
```

### Parameter

buffer | flash —The output channels: buffer and flash. Clear the information of the two channels, by default.

### Command Mode

Global Configuration Mode

### Example

Clear the information in the log file:

```
LP-SGW2404F(config)# clear logging buffer
```

## 14.6 logging host index

### Description

The **logging host index** command is used to configure the Log Host. To clear the configuration of the specified Log Host, please use **no logging host index** command. Log Host is to receive the system log from other devices. You can remotely monitor the settings and operation status of other devices through the log host.

### Syntax

```
logging host index idx host-ip level
```

```
no logging host index idx
```

### Parameter

*idx* — The index of the log host. The switch supports 4 log hosts at most.

*host-ip* — The IP for the log host.

*level* — The severity level of the log information sent to each log host. There are 8 severity levels marked with values 0-7. The smaller value has the higher priority. Only the log with the same or smaller severity level value will be sent to the corresponding log host. By default, it is 6 indicating that the log information marked with 0~6 will be sent to the log host.

### Command Mode

Global Configuration Mode

### Example

Set the IP address as 192.168.0.148, the level 5:

```
LP-SGW2404F(config)# logging host index 2 192.168.0.148 5
```

## 14.7 show logging local-config

### Description

The **show logging local-config** command is used to display the configuration of the Local Log including the log buffer and the log file.

### Syntax

```
show logging local-config
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration of the Local Log:

```
LP-SGW2404F(config)# show logging local-config
```

## 14.8 show logging loghost

### Description

The **show logging loghost** command is used to display the configuration of the log host.

## Syntax

```
show logging loghost [ index ]
```

## Parameter

*index* —The index of the log host whose configuration will be displayed, ranging from 1 to 4. Display the configuration of all the log hosts by default.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the configuration of the log host 2:

```
LP-SGW2404F(config)# show logging loghost 2
```

# 14.9 show logging buffer

## Description

The **show logging buffer** command is used to display the log information in the log buffer according to the severity level.

## Syntax

```
show logging buffer [ level level ]
```

## Parameter

*level* — Severity level. There are 8 severity levels marked with values 0-7. The information of levels with priority not lower than the select level will display. Display all the log information in the log buffer by default.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the log information from level 0 to level 5 in the log buffer:

```
LP-SGW2404F(config)# show logging buffer level 5
```

## 14.10 show logging flash

### Description

The **show logging flash** command is used to display the log information in the log file according to the severity level.

### Syntax

```
show logging flash [ level level ]
```

### Parameter

*level* — Severity level. There are 8 severity levels marked with values 0-7. The information of levels with priority not lower than the select level will display. Display all the log information in the log file by default.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the log information with the level marked 0~3 in the log file:

```
LP-SGW2404F(config)# show logging flash level 3
```

## Chapter 15 SSH Commands

SSH (Security Shell) can provide the unsecured remote management with security and powerful authentication to ensure the security of the management information.

### 15.1 ip ssh server

#### Description

The **ip ssh server** command is used to enable SSH function. To disable the SSH function, please use **no ip ssh server** command.

#### Syntax

```
ip ssh server
no ip ssh server
```

#### Command Mode

Global Configuration Mode

#### Example

Enable the SSH function:

```
LP-SGW2404F(config)# ip ssh server
```

### 15.2 ip ssh version

#### Description

The **ip ssh version** command is used to enable the SSH protocol version. To disable the protocol version, please use **no ip ssh version** command.

#### Syntax

```
ip ssh version { v1 | v2 }
no ip ssh version { v1 | v2 }
```

#### Parameter

v1 | v2 — The SSH protocol version to be enabled. They represent SSH v1 and SSH v2 respectively.

#### Command Mode

Global Configuration Mode

### Example

Enable SSH v2:

```
LP-SGW2404F(config)# ip ssh version v2
```

## 15.3 ip ssh timeout

### Description

The **ip ssh timeout** command is used to specify the idle-timeout time of SSH. To restore to the factory defaults, please use **ip ssh timeout** command.

### Syntax

**ip ssh timeout** *value*

**no ip ssh timeout**

### Parameter

*value* — The Idle-timeout time. During this period, the system will automatically release the connection if there is no operation from the client. It ranges from 1 to 120 in seconds. By default, this value is 120 seconds.

### Command Mode

Global Configuration Mode

### Example

Specify the idle-timeout time of SSH as 300 seconds:

```
LP-SGW2404F(config)# ip ssh timeout 300
```

## 15.4 ip ssh max-client

### Description

The **ip ssh max-client** command is used to specify the maximum number of the connections to the SSH server. To return to the default configuration, please use **no ip ssh max-client** command.

### Syntax

**ip ssh max-client** *num*

**no ip ssh max-client**

### Parameter

*num* — The maximum number of the connections to the SSH server. It ranges from 1 to 5. By default, this value is 5.

### Command Mode

Global Configuration Mode

### Example

Specify the maximum number of the connections to the SSH server as 3:

```
LP-SGW2404F(config)# ip ssh max-client 3
```

## 15.5 ip ssh download

### Description

The **ip ssh download** command is used to download the SSH key file from TFTP server.

### Syntax

```
ip ssh download { v1 | v2 } key-file ip-address ip-addr
```

### Parameter

*v1 | v2* — Select the type of SSH key to download, v1 represents SSH-1, v2 represents SSH-2.

*key-file* — The name of the key-file which is selected to download. The length of the name ranges from 1 to 25 characters. The key length of the downloaded file must be in the range of 256 to 3072 bits.

*ip-addr* — The IP address of the TFTP server. Both IPv4 and IPv6 addresses are supported, for example 192.168.0.1 or fe80::1234.

### Command Mode

Global Configuration Mode

### Example

Download an SSH-1 type key file named ssh-key from TFTP server with the IP address 192.168.0.148:

```
LP-SGW2404F(config)# ip ssh download v1 ssh-key ip-address 192.168.0.148
```

Download an SSH-1 type key file named ssh-key from TFTP server with the IP address fe80::1234:

```
LP-SGW2404F(config)# ip ssh download v1 ssh-key ip-address fe80::1234
```



## 15.6 show ip ssh

### Description

The **show ip ssh** command is used to display the global configuration of SSH.

### Syntax

```
show ip ssh
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the global configuration of SSH:

```
LP-SGW2404F(config)# show ip ssh
```

## Chapter 16 SSL Commands

SSL(Secure Sockets Layer), a security protocol, is to provide a secure connection for the application layer protocol(e.g. HTTP) based on TCP. Adopting asymmetrical encryption technology, SSL uses key pair to encrypt/decrypt information. A key pair refers to a public key (contained in the certificate) and its corresponding private key. By default the switch has a certificate (self-signed certificate) and a corresponding private key. The Certificate/Key Download function enables the user to replace the default key pair.

### 16.1 ip http secure-server

#### Description

The **ip http secure-server** command is used to enable the SSL function globally on the switch. To disable the SSL function, please use **no ip http secure-server** command. Only the SSL function is enabled, a secure HTTPS connection can be established.

#### Syntax

```
ip http secure-server
no ip http secure-server
```

#### Command Mode

Global Configuration Mode

#### Example

Enable the SSL function:

```
LP-SGW2404F(config)# ip http secure-server
```

### 16.2 ip http secure-server download certificate

#### Description

The **ip http secure-server download certificate** command is used to download a certificate to the switch from TFTP server.

#### Syntax

```
ip http secure-server download certificate ssl-cert ip-address ip-addr
```

## Parameter

*ssl-cert* — The name of the SSL certificate which is selected to download to the switch. The length of the name ranges from 1 to 25 characters. The Certificate must be BASE64 encoded.

*ip-addr* — The IP address of the TFTP server. Both IPv4 and IPv6 addresses are supported, for example 192.168.0.1 or fe80::1234.

## Command Mode

Global Configuration Mode

## Example

Download an SSL Certificate named *ssl-cert* from TFTP server with the IP address of 192.168.0.146:

```
LP-SGW2404F(config)# ip http secure-server download certificate ssl-cert ip-
address 192.168.0.146
```

Download an SSL Certificate named *ssl-cert* from TFTP server with the IP address of fe80::1234

```
LP-SGW2404F(config)# ip http secure-server download certificate ssl-cert ip-
address fe80::1234
```

## 16.3 ip http secure-server download key

### Description

The **ip http secure-server download key** command is used to download an SSL key to the switch from TFTP server.

### Syntax

```
ip http secure-server download key ssl-key ip-address ip-addr
```

### Parameter

*ssl-key* — The name of the SSL key which is selected to download to the switch. The length of the name ranges from 1 to 25 characters. The key must be BASE64 encoded.

*ip-addr* — The IP address of the TFTP server. Both IPv4 and IPv6 addresses are supported, for example 192.168.0.1 or fe80::1234.

## Command Mode

Global Configuration Mode

## Example

Download an SSL key named ssl-key from TFTP server with the IP address of 192.168.0.146:

```
LP-SGW2404F(config)# ip http secure-server download key ssl-key ip-address  
192.168.0.146
```

Download an SSL key named ssl-key from TFTP server with the IP address of fe80::1234

```
LP-SGW2404F(config)# ip http secure-server download key ssl-key ip-address  
fe80::1234
```

## 16.4 show ip http secure-server

### Description

The **show ip http secure-server** command is used to display the global configuration of SSL.

### Syntax

```
show ip http secure-server
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the global configuration of SSL:

```
LP-SGW2404F(config)# show ip http secure-server
```

## Chapter 17 MAC Address Commands

MAC Address configuration can improve the network security by configuring the Port Security and maintaining the address information by managing the Address Table.

### 17.1 mac address-table static

#### Description

The **mac address-table static** command is used to add the static MAC address entry. To remove the corresponding entry, please use **no mac address-table static** command. The static address can be added or removed manually, independent of the aging time. In the stable networks, the static MAC address entries can facilitate the switch to reduce broadcast packets and enhance the efficiency of packets forwarding remarkably.

#### Syntax

```
mac address-table static mac-addr vid vid interface gigabitEthernet port  
no mac address-table static { mac-addr | vid vid | mac mac-addr vid vid |  
interface gigabitEthernet port }
```

#### Parameter

*mac-addr* — The MAC address of the entry you desire to add.

*vid* — The VLAN ID number of your desired entry. It ranges from 1 to 4094.

*port* — The Ethernet port number of your desired entry.

#### Command Mode

Global Configuration Mode

#### Example

Add a static Mac address entry to bind the MAC address 00:02:58:4f:6c:23, VLAN1 and port 1 together:

```
LP-SGW2404F(config)# mac address-table static 00:02:58:4f:6c:23 vid 1  
interface gigabitEthernet 1/0/1
```

## 17.2 mac address-table aging-time

### Description

The **mac address-table aging-time** command is used to configure aging time for the dynamic address. To return to the default configuration, please use **no mac address-table aging-time** command.

### Syntax

**mac address-table aging-time** *aging-time*

**no mac address-table aging-time**

### Parameter

*aging-time* — The aging time for the dynamic address. The value of it can be 0 or ranges from 10 to 630 seconds. When 0 is entered, the Auto Aging function is disabled. It is 300 by default.

### Command Mode

Global Configuration Mode

### Example

Configure the aging time as 500 seconds:

```
LP-SGW2404F(config)# mac address-table aging-time 500
```

## 17.3 mac address-table filtering

### Description

The **mac address-table filtering** command is used to add the filtering address entry. To delete the corresponding entry, please use **no mac address-table filtering** command. The filtering address function is to forbid the undesired package to be forwarded. The filtering address can be added or removed manually, independent of the aging time.

### Syntax

**mac address-table filtering** *mac-addr* **vid** *vid*

**no mac address-table filtering** {[ *mac-addr* ] [ **vid** *vid* ]}

### Parameter

*mac-addr* — The MAC address to be filtered.

*vid* — The corresponding VLAN ID of the MAC address. It ranges from 1 to 4094.

## Command Mode

Global Configuration Mode

## Example

Add a filtering address entry of which VLAN ID is 1 and MAC address is 00:1e:4b:04:01:5d:

```
LP-SGW2404F(config)# mac address-table filtering 00:1e:4b:04:01:5d vid 1
```

## 17.4 mac address-table max-mac-count

### Description

The **mac address-table max-mac-count** command is used to configure the Port Security. To return to the default configurations, please use **no mac address-table max-mac-count** command. Port Security is to protect the switch from the malicious MAC address attack by limiting the maximum number of the MAC addresses that can be learned on the port. The port with Port Security feature enabled will learned the MAC address dynamically. When the learned MAC address number reaches the maximum, the port will stop learning. Therefore, the other devices with the MAC address unlearned cannot access to the network via this port.

### Syntax

```
mac address-table max-mac-count {[ max-number num ] [ mode { dynamic | static | permanent } ] [ status { disable | enable }]}
```

```
no mac address-table max-mac-count
```

### Parameter

*num* — The maximum number of MAC addresses that can be learned on the port. It ranges from 0 to 64. By default this value is 64.

dynamic | static | permanent — Learn mode for MAC addresses. There are three modes, including Dynamic mode, Static mode and Permanent mode. When Dynamic mode is selected, the learned MAC address will be deleted automatically after the aging time. When Static mode is selected, the learned MAC address will be out of the influence of the aging time and can only be deleted manually. The learned entries will be cleared after the switch is rebooted. When permanent mode is selected, the learned MAC address will be out of the influence of the aging time and can only be deleted manually too. However, the learned entries will be saved even the switch is rebooted.

status — Enable or disable the Port Security function for a specified port. By default, this function is disabled.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable Port Security function for port 1, select Static mode as the learn mode, and specify the maximum number of MAC addresses that can be learned on this port as 30:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/1
LP-SGW2404F(config-if)# mac address-table max-mac-count max-number 30
mode static status enable
```

## 17.5 show mac address-table

### Description

The **show mac address-table** command is used to display the information of all Address entries.

### Syntax

```
show mac address-table { dynamic | static | drop | all }
```

### Parameter

dynamic | static | drop | all — The type of your desired entry.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the information of all Address entries:

```
LP-SGW2404F(config)# show mac address-table all
```

## 17.6 show mac address-table aging-time

### Description



The **show mac address-table aging-time** command is used to display the Aging Time of the MAC address.

**Syntax**

**show mac address-table aging-time**

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the Aging Time of the MAC address:

```
LP-SGW2404F(config)# show mac address-table aging-time
```

## 17.7 show mac address-table max-mac-count interface gigabitEthernet

**Description**

The **show mac address-table max-mac-count interface gigabitEthernet** command is used to display the security configuration of all ports or the specified port.

**Syntax**

**show mac address-table max-mac-count interface gigabitEthernet** [ *port* ]

**Parameter**

*port* — The Ethernet port number.

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the security configuration of all ports:

```
LP-SGW2404F(config)# show mac address-table max-mac-count interface  
gigabitEthernet
```

Display the security configuration of port 1:

```
LP-SGW2404F(config)# show mac address-table max-mac-count interface  
gigabitEthernet 1/0/1
```

## 17.8 show mac address-table interface gigabitEthernet

### Description

The **show mac address-table interface gigabitEthernet** command is used to display the address configuration of the specified port.

### Syntax

```
show mac address-table interface gigabitEthernet port
```

### Parameter

*port* — The Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the address configuration of port 1:

```
LP-SGW2404F(config)# show mac address-table interface gigabitEthernet  
1/0/1
```

## 17.9 show mac address-table count

### Description

The **show mac address-table count** command is used to display the total amount of MAC address table.

### Syntax

```
show mac address-table count
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the total amount of MAC address table:

```
LP-SGW2404F(config)# show mac address-table count
```

## 17.10 show mac address-table address

### Description

The **show mac address-table address** command is used to display the information of the specified MAC address.

### Syntax

**show mac address-table address** *mac-addr*

### Parameter

*mac-addr* — The specified MAC address.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the information of the MAC address 00:00:00:00:23:00:

```
LP-SGW2404F(config)#show mac address-table address 00:00:00:00:23:00
```

## 17.11 show mac address-table vlan

### Description

The **show mac address-table vlan** command is used to display the MAC address configuration of the specified vlan.

### Syntax

**show mac address-table vlan** *vid*

### Parameter

*vid* — The specified VLAN id.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the MAC address configuration of vlan 1:

```
LP-SGW2404F(config)# show mac address-table vlan 1
```

## Chapter 18 System Configuration Commands

System Configuration Commands can be used to configure the system information and system IP of the switch, and to reboot and reset the switch, upgrade the switch system and commands used for device diagnose, including cable test.

### 18.1 system-time manual

#### Description

The **system-time manual** command is used to configure the system time manually.

#### Syntax

**system-time manual** *time*

#### Parameter

*time* — Set the date and time manually, in the format of MM/DD/YYYY- HH: MM: SS.

#### Command Mode

Global Configuration Mode

#### Example

Configure the system time as 02/14/2012- 12:30:00:

```
LP-SGW2404F(config)# system-time manual 02/14/2012-12:30:00
```

### 18.2 system-time ntp

#### Description

The **system-time ntp** command is used to configure the time zone and the IP Address for the NTP Server. The switch will get UTC automatically if it has connected to an NTP Server.

#### Syntax

**system-time ntp** { *timezone* } { *ntp-server* } { *backup-ntp-server* } { *fetching-rate* }

#### Parameter

*timezone* — Your local time-zone, and it ranges from UTC-12:00 to UTC+13:00. The detailed information that each time-zone means are displayed as follow:

UTC-12:00 — TimeZone for International Date Line West.  
UTC-11:00 — TimeZone for Coordinated Universal Time-11.  
UTC-10:00 — TimeZone for Hawaii.  
UTC-09:00 — TimeZone for Alaska.  
UTC-08:00 — TimeZone for Pacific Time(US Canada).  
UTC-07:00 — TimeZone for Mountain Time(US Canada).  
UTC-06:00 — TimeZone for Central Time(US Canada).  
UTC-05:00 — TimeZone for Eastern Time(US Canada).  
UTC-04:30 — TimeZone for Caracas.  
UTC-04:00 — TimeZone for Atlantic Time(Canada).  
UTC-03:30 — TimeZone for Newfoundland.  
UTC-03:00 — TimeZone for Buenos Aires, Salvador, Brasilia.  
UTC-02:00 — TimeZone for Mid-Atlantic.  
UTC-01:00 — TimeZone for Azores, Cape Verde Is.  
UTC — TimeZone for Dublin, Edinburgh, Lisbon, London.  
UTC+01:00 — TimeZone for Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna.  
UTC+02:00 — TimeZone for Cairo, Athens, Bucharest, Amman, Beirut, Jerusalem.  
UTC+03:00 — TimeZone for Kuwait, Riyadh, Baghdad.  
UTC+03:30 — TimeZone for Tehran.  
UTC+04:00 — TimeZone for Moscow, St.Petersburg, Volgograd, Tbilisi, Port Louis.  
UTC+04:30 — TimeZone for Kabul.  
UTC+05:00 — TimeZone for Islamabad, Karachi, Tashkent.  
UTC+05:30 — TimeZone for Chennai, Kolkata, Mumbai, New Delhi.  
UTC+05:45 — TimeZone for Kathmandu.  
UTC+06:00 — TimeZone for Dhaka,Astana, Ekaterinburg.  
UTC+06:30 — TimeZone for Yangon (Rangoon).  
UTC+07:00 — TimeZone for Novosibirsk, Bangkok, Hanoi, Jakarta.  
UTC+08:00 — TimeZone for Beijing, Chongqing, Hong Kong, Urumqi, Singapore.  
UTC+09:00 — TimeZone for Seoul, Irkutsk, Osaka, Sapporo, Tokyo.  
UTC+09:30 — TimeZone for Darwin, Adelaide.  
UTC+10:00 — TimeZone for Canberra, Melbourne, Sydney, Brisbane.  
UTC+11:00 — TimeZone for Solomon Is., New Caledonia, Vladivostok.  
UTC+12:00 — TimeZone for Fiji, Magadan, Auckland, Wellington.  
UTC+13:00 — TimeZone for Nuku'alofa, Samoa.

*ntp-server* — The IP Address for the Primary NTP Server.  
*backup-ntp-server* — The IP Address for the Secondary NTP Server.  
*fetching-rate* — Specify the rate fetching time from NTP server.

## Command Mode

Global Configuration Mode

## Example

Configure the system time mode as NTP, the time zone is UTC-12:00, the primary NTP server is 133.100.9.2 and the secondary NTP server is 139.78.100.163, the fetching-rate is 11 hours:

```
LP-SGW2404F(config)# system-time ntp UTC-12:00 133.100.9.2 139.79.100.163
11
```

## 18.3 system-time dst predefined

### Description

The **system-time dst predefined** command is used to select a predefined DST configuration and the configuration can be recycled.

### Syntax

```
system-time dst predefined [ USA | Australia | Europe | New-Zealand ]
```

### Parameter

USA | Australia | Europe | New-Zealand — Predefined DST mode, with four options: USA, Australia, Europe and New-Zealand. By default, the setting is “Europe”.

The DST time periods which the four predefined DST mode represents are displayed as follow:

USA: Second Sunday in March, 02:00 ~ First Sunday in November, 02:00.

Australia: First Sunday in October, 02:00 ~ First Sunday in April, 03:00.

Europe: Last Sunday in March, 01:00 ~ Last Sunday in October, 01:00.

New Zealand: Last Sunday in September, 02:00 ~ First Sunday in April, 03:00.

## Command Mode

Global Configuration Mode

## Example

Configure the DST period of the switch as Europe:

```
LP-SGW2404F(config)# system-time dst predefined Europe
```

## 18.4 system-time dst date

### Description

The **system-time dst date** command is used to specify the DST configuration in Date mode. This configuration is one-off in use. By default, the current year is used as the starting time. DST time periods should be within 12 months over one/two year.

### Syntax

```
system-time dst date { smonth } { sday } { stime } { emonth } { eday } { etime } [ offset ]
```

### Parameter

*smonth* — Month to start, with the options: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec

*sday* — Day to start, ranging from 1 to 31. Please mind that the number of days depends on the month.

*stime* — Time to start, in the format of hh:mm.

*emonth* — Month to end, with the options: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec

*eday* — Day to end, ranging from 1 to 31. Please mind that the number of days depends on the month.

*etime* — Time to end, in the format of hh:mm.

*offset* — Specify the time adding in minutes when Daylight Saving Time comes. The value ranges from 1 to 1440 and the default value is 60 minutes. It is optional.

### Command Mode

Global Configuration Mode

### Example

Configure the DST start time as 00:00 am on April 1<sup>st</sup>, the end time as 00:00 am on October 1<sup>st</sup> and the offset as 30 minutes:

```
LP-SGW2404F(config)# system-time dst date Apr 1 00:00 Oct 1 00:00 30
```

## 18.5 system-time dst recurring

### Description

The **system-time dst recurring** command is used to specify the DST configuration in recurring mode. This configuration is recurring in use. The time period is restricted to be within one year.

### Syntax

```
system-time dst recurring { sweek } { sday } { smonth } { stime } { eweeek } { eday }
{ emonth } { etime } [ offset ]
```

### Parameter

*sweek* — Week to start, with the options: first, second, third, fourth, last.

*sday* — Day to start, with the options: Sun, Mon, Tue, Wed, Thu, Fri, Sat.

*smonth* — Month to start, with options: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec.

*stime* — Time to start, in the format of: hh:mm.

*eweeek* — Week to end, with options: first, second, third, fourth, last.

*eday* — Day to end, with options: Sun, Mon, Tue, Wed, Thu, Fri, Sat.

*emonth* — Month to end, with options: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec.

*etime* — Time to end, in the format of: hh:mm.

*offset* — Specify the time adding in minutes when Daylight Saving Time comes. The range of value depends and the default value is 60 minutes. It is optional.

### Command Mode

Global Configuration Mode

### Example

Specify the DST start time of the switch as 2:00 am on the first Sunday in May, the end time as 2:00 am on the last Sunday in October and the offset as 45 minutes:

```
LP-SGW2404F(config)# system-time dst recurring first Sun May 02:00 last Sun
Oct 02:00 45
```



## 18.6 hostname

### Description

The **hostname** command is used to configure the system name. To clear the system name information, please use **no hostname** command.

### Syntax

**hostname** *hostname*

**no hostname**

### Parameter

*hostname* — System Name. The length of the name ranges from 1 to 32 characters. By default, it is the device name, for example “LP-SGW2404F”.

### Command Mode

Global Configuration Mode

### Example

Configure the system name as LANPRO:

```
LP-SGW2404F(config)# hostname LANPRO
```

## 18.7 location

### Description

The **location** command is used to configure the system location. To clear the system location information, please use **no location** command.

### Syntax

**location** *location*

**no location**

### Parameter

*location* — Device Location. It consists of 32 characters at most.

### Command Mode

Global Configuration Mode

### Example

Configure the system location as CANADA:

```
LP-SGW2404F(config)# location CANADA
```

## 18.8 contact-info

### Description

The **contact-info** command is used to configure the system contact information. To clear the system contact information, please use **no contact-info** command.

### Syntax

```
contact-info contact_info
```

```
no contact-info
```

### Parameter

*contact\_info* — Contact Information. It consists of 32 characters at most.

### Command Mode

Global Configuration Mode

### Example

Configure the system contact information as www.lanpro.com:

```
LP-SGW2404F(config)# contact-info www.lanpro.com
```

## 18.9 ip management-vlan

### Description

The **ip management-vlan** command is used to configure the management VLAN, through which you can log on to the switch. By default, the management VLAN is VLAN1.

### Syntax

```
ip management-vlan {vlan-id}
```

### Parameter

*vlan-id* — VLAN ID, ranging from 1 to 4094.

### Command Mode

Global Configuration Mode

### Example

Set the VLAN6 as management VLAN:

```
LP-SGW2404F(config)# ip management-vlan 6
```

## 18.10 ip address

### Description

The **ip address** command is used to configure the system IP Address, Subnet Mask and Default Gateway. To restore to the factory defaults, please use **no ip address** command. This command should be configured in the Interface Configuration Mode of the management VLAN.

### Syntax

```
ip address {ip-addr} {ip-mask} [gateway]
```

```
no ip address
```

### Parameter

*ip-addr* — The system IP of the switch. The default system IP is 192.168.0.1.

*ip-mask* — The Subnet Mask of the switch. The default Subnet Mask is 255.255.255.0.

*gateway* — The Default Gateway of the switch. By default, it is empty.

### Command Mode

Interface Configuration Mode (interface vlan)

### Example

Configure the system IP as 192.168.0.69 and the Subnet Mask as 255.255.255.0 when the management VLAN of the switch is VLAN1:

```
LP-SGW2404F(config)# interface vlan 1
```

```
LP-SGW2404F(config-if)# ip address 192.168.0.69 255.255.255.0
```

## 18.11 ip address-alloc dhcp

### Description

The **ip address-alloc dhcp** command is used to enable the DHCP Client function. When this function is enabled, the switch will try to obtain IP from DHCP server. This command should be configured in the Interface Configuration Mode of the management VLAN.

**Syntax**

```
ip address-alloc dhcp
```

**Command Mode**

Interface Configuration Mode (interface vlan)

**Example**

Enable the DHCP Client function when the management VLAN of the switch is VLAN1:

```
LP-SGW2404F(config)# interface vlan 1
LP-SGW2404F(config-if)# ip address-alloc dhcp
```

## 18.12 ip address-alloc bootp

**Description**

The **ip address-alloc bootp** command is used to enable the BOOTP Protocol. When the BOOTP Protocol is enabled, the switch will try to obtain IP address from BOOTP Server. This command should be configured in the Interface Configuration Mode of the management VLAN.

**Syntax**

```
ip address-alloc bootp
```

**Command Mode**

Interface Configuration Mode (interface vlan)

**Example**

Enable the BOOTP Protocol to obtain IP address from BOOTP Server when the management VLAN of the switch is VLAN1:

```
LP-SGW2404F(config)# interface vlan 1
LP-SGW2404F(config-if)# ip address-alloc bootp
```

## 18.13 reset

**Description**

The **reset** command is used to reset the switch's software. After resetting, all configuration of the switch will restore to the factory defaults and your current settings will be lost.

**Syntax**

**reset**

**Command Mode**

Privileged EXEC Mode

**Example**

Reset the software of the switch:

```
LP-SGW2404F# reset
```

## 18.14 reboot

**Description**

The **reboot** command is used to reboot the switch. To avoid damage, please don't turn off the device while rebooting.

**Syntax**

**reboot**

**Command Mode**

Privileged EXEC Mode

**Example**

Reboot the switch:

```
LP-SGW2404F# reboot
```

## 18.15 copy running-config startup-config

**Description**

The **copy running-config startup-config** command is used to save the current settings.

**Syntax**

**copy running-config startup-config**

**Command Mode**

Privileged EXEC Mode

**Example**

Save current settings:

```
LP-SGW2404F# copy running-config startup-config
```

## 18.16 copy startup-config tftp

### Description

The **copy startup-config tftp** command is used to backup the configuration file to TFTP server.

### Syntax

```
copy startup-config tftp ip-address ip-addr filename name
```

### Parameter

*ip-addr* — IP Address of the TFTP server. Both IPv4 and IPv6 addresses are supported, for example 192.168.0.1 or fe80::1234.

*name* — Specify the name for the configuration file which would be backup.

### Command Mode

Privileged EXEC Mode

### Example

Backup the configuration files to TFTP server with the IP 192.168.0.148 and name this file config.cfg:

```
LP-SGW2404F# copy startup-config tftp ip-address 192.168.0.148 filename  
config
```

Backup the configuration files to TFTP server with the IP fe80::1234 and name this file config.cfg:

```
LP-SGW2404F# copy startup-config tftp ip-address fe80::1234 filename config
```

## 18.17 copy tftp startup-config

### Description

The **copy tftp startup-config** command is used to download the configuration file to the switch from TFTP server.

### Syntax

**copy tftp startup-config ip-address** *ip-addr filename name*

### Parameter

*ip-addr* — IP Address of the TFTP server. Both IPv4 and IPv6 addresses are supported, for example 192.168.0.1 or fe80::1234.

*name* — Specify the name for the configuration file which would be downloaded.

### Command Mode

Privileged EXEC Mode

### Example

Download the configuration file named as config.cfg to the switch from TFTP server with the IP 192.168.0.148:

```
LP-SGW2404F# copy tftp startup-config ip-address 192.168.0.148 filename config
```

Download the configuration file named as config.cfg to the switch from TFTP server with the IP fe80::1234

```
LP-SGW2404F# copy tftp startup-config ip-address fe80::1234 filename config
```

## 18.18 firmware upgrade

### Description

The **firmware upgrade** command is used to upgrade the switch system file via the TFTP server.

### Syntax

**firmware upgrade ip-address** *ip-addr filename name*

### Parameter

*ip-addr* — IP Address of the TFTP server. Both IPv4 and IPv6 addresses are supported, for example 192.168.0.1 or fe80::1234.

*name* — Specify the name for the firmware file.

### Command Mode

Privileged EXEC Mode

### Example

Upgrade the switch system file named as firmware.bin via the TFTP server with the IP address 192.168.0.148:

```
LP-SGW2404F# firmware upgrade ip-address 192.168.0.148 filename
firmware.bin
```

Upgrade the switch system file named as firmware.bin via the TFTP server with the IP address fe80::1234

```
LP-SGW2404F# firmware upgrade ip-address fe80::1234 filename firmware.bin
```

## 18.19 ping

### Description

The **ping** command is used to test the connectivity between the switch and one node of the network.

### Syntax

```
ping [ ip | ipv6 ] { ip_addr } [ -n count ] [ -l count ] [ -i count ]
```

### Parameter

**ip** — The type of the IP address for ping test should be IPv4.

**ipv6** — The type of the IP address for ping test should be IPv6.

**ip\_addr** — The IP address of the destination node for ping test. If the parameter ip/ipv6 is not selected, both IPv4 and IPv6 addresses are supported, for example 192.168.0.100 or fe80::1234.

**-n count** — The amount of times to send test data during Ping testing. It ranges from 1 to 10. By default, this value is 4.

**-l count** — The size of the sending data during ping testing. It ranges from 1 to 1024 bytes. By default, this value is 64.

**-i count** — The interval to send ICMP request packets. It ranges from 100 to 1000 milliseconds. By default, this value is 1000.

### Command Mode

User EXEC Mode and Privileged EXEC Mode

### Example

To test the connectivity between the switch and the network device with the IP 192.168.0.131, please specify the *count* (-l) as 512 bytes and *count* (-i) as 1000



milliseconds. If there is not any response after 8 times' Ping test, the connection between the switch and the network device is failed to establish:

```
LP-SGW2404F# ping 192.168.0.131 -n 8 -l 512
```

To test the connectivity between the switch and the network device with the IP fe80::1234, please specify the *count* (-l) as 512 bytes and *count* (-i) as 1000 milliseconds. If there is not any response after 8 times' Ping test, the connection between the switch and the network device is failed to establish:

```
LP-SGW2404F# ping fe80::1234 -n 8 -l 512
```

## 18.20 tracert

### Description

The **tracert** command is used to test the connectivity of the gateways during its journey from the source to destination of the test data.

### Syntax

```
tracert [ ip | ipv6 ] ip_addr [ maxHops ]
```

### Parameter

*ip* — The type of the IP address for tracert test should be IPv4.

*ipv6* — The type of the IP address for tracert test should be IPv6.

*ip\_addr* — The IP address of the destination device. If the parameter ip/ipv6 is not selected, both IPv4 and IPv6 addresses are supported, for example 192.168.0.100 or fe80::1234.

*maxHops* — The maximum number of the route hops the test data can pass though. It ranges from 1 to 30. By default, this value is 4.

### Command Mode

User EXEC Mode and Privileged EXEC Mode

### Example

Test the connectivity between the switch and the network device with the IP 192.168.0.131. If the destination device has not been found after 20 *maxHops*, the connection between the switch and the destination device is failed to establish:

```
LP-SGW2404F# tracert 192.168.0.131 20
```

Test the connectivity between the switch and the network device with the IP fe80::1234. If the destination device has not been found after 20 *maxHops*, the connection between the switch and the destination device is failed to establish:

```
LP-SGW2404F# traceroute fe80::1234 20
```

## 18.21 show system-time

### Description

The **show system-time** command is used to display the current time system and its source.

### Syntax

```
show system-time
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the time information of the switch:

```
LP-SGW2404F# show system-time
```

## 18.22 show system-time dst

### Description

The **show system-time dst** command is used to display the DST time information of the switch.

### Syntax

```
show system-time dst
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the DST time information of the switch

```
LP-SGW2404F# show system-time dst
```

## 18.23 show system-time ntp

### Description

The **show system-time ntp** command is used to display the NTP mode configuration information.

### Syntax

```
show system-time ntp
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the NTP mode configuration information of the switch:

```
LP-SGW2404F# show system-time ntp
```

## 18.24 show system-info

### Description

The **show system-info** command is used to display system description, system name, device location, system contact, hardware version, firmware version, system time, run time and so on.

### Syntax

```
show system-info
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the system information:

```
LP-SGW2404F# show system-info
```

## 18.25 show running-config

### Description

The **show running-config** command is used to display the current operating configuration of the system or of a specified port.

### Syntax

```
show running-config [ interface gigabitEthernet port ]
```

### Parameter

*port* — The Gigabit Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the system current operating configuration:

```
LP-SGW2404F#show running-config
```

## 18.26 show cable-diagnostics interface

### Description

The **show cable-diagnostics interface** command is used to display the cable diagnostics of the connected Ethernet Port., which facilitates you to check the connection status of the cable connected to the switch, locate and diagnose the trouble spot of the network.

### Syntax

```
show cable-diagnostics interface gigabitEthernet port
```

### Parameter

*port* — The number of the port which is selected for Cable test.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Show the cable-diagnostics of port 3:

```
LP-SGW2404F# show cable-diagnostics interface gigabitEthernet 1/0/3
```

## Chapter 19 IPv6 Address Configuration Commands

The IPv6 address configuration commands are provided in the Interface VLAN Mode. Type **enable** →**configure**→**interface vlan** {*vlan-id*} to enter the Interface Configuration Mode of the management VLAN. By default the management VLAN is VLAN1. You can use the command **ip management-vlan** {*vlan-id*} in the Global Configuration Mode to configure the management VLAN.

### 19.1 ipv6 enable

#### Description

This command is used to enable the IPv6 function globally. The IPv6 function should be enabled before the IPv6 address configuration management. By default it is enabled. If the IPv6 function is disabled, the corresponding IPv6 netstack and IPv6-based modules will be invalid, for example SSHv6, SSLv6, TFTPv6 etc. To disable the IPv6 function, please use **no ipv6 enable** command.

#### Syntax

```
ipv6 enable
no ipv6 enable
```

#### Command Mode

Interface Configuration Mode (interface vlan)

#### Example

Enable the IPv6 function when the management VLAN of the switch is VLAN1 :

```
LP-SGW2404F(config)# interface vlan 1
LP-SGW2404F(config-if)# ipv6 enable
```

### 19.2 ipv6 address autoconfig

#### Description

This command is used to enable the automatic configuration of the ipv6 link-local address. The switch has only one ipv6 link-local address, which can be configured automatically or manually. The general ipv6 link-local address has the prefix as fe80::/10. IPv6 routers cannot forward packets that have link-local source or

destination addresses to other links. The autoconfigured ipv6 link-local address is in EUI-64 format. To verify the uniqueness of the link-local address, the manually configured ipv6 link-local address will be deleted when the autoconfigured ipv6 link-local address takes effect.

### Syntax

**ipv6 address autoconfig**

### Configuration Mode

Interface Configuration Mode (interface vlan)

### Example

Enable the automatic configuration of the ipv6 link-local address when the management VLAN of the switch is VLAN1:

```
LP-SGW2404F(config)# interface vlan 1
LP-SGW2404F(config-if)# ipv6 address autoconfig
```

## 19.3 ipv6 address link-local

### Description

The **ipv6 address link-local** command is used to configure the system ipv6 link-local address manually. To delete the configured link-local address, please use **no ipv6 address link-local** command.

### Syntax

**ipv6 address *ipv6-addr* link-local**  
**no ipv6 address *ipv6-addr* link-local**

### Parameter

*ipv6-addr* — The link-local address of the switch. It should be a standardized IPv6 address with the prefix fe80::/10, otherwise this command will be invalid.

### Configuration Mode

Interface Configuration Mode (Interface vlan)

### Example

Configure the link-local address as fe80::1234 when the management VLAN of the switch is VLAN1:

```
LP-SGW2404F(config)# interface vlan 1
```

```
LP-SGW2404F(config-if)# ipv6 address fe80::1234 link-local
```

## 19.4 ipv6 address dhcp

### Description

The **ipv6 address dhcp** command is used to enable the DHCPv6 Client function. When this function is enabled, the switch will try to obtain IP from DHCPv6 server. To delete the allocated IP from DHCPv6 server and disable the DHCPv6 Client function, please use **no ipv6 address dhcp** command.

### Syntax

```
ipv6 address dhcp
```

```
no ipv6 address dhcp
```

### Configuration Mode

Interface Configuration Mode (interface vlan)

### Example

Enable the DHCP Client function when the management VLAN of the switch is VLAN1:

```
LP-SGW2404F(config)# interface vlan 1
```

```
LP-SGW2404F(config-if)# ipv6 address dhcp
```

## 19.5 ipv6 address ra

### Description

This command is used to configure the switch's global IPv6 address according to the address prefix and other configuration parameters from its received RA(Router Advertisement) message. To disable this function, please use **no ipv6 address ra** command.

### Syntax

```
ipv6 address ra
```

```
no ipv6 address ra
```

### Configuration Mode

Interface Configuration Mode (interface vlan)



## Example

Enable the automatic ipv6 address configuration function to obtain IPv6 address through the RA message when the management VLAN of the switch is VLAN1:

```
LP-SGW2404F(config)# interface vlan 1
LP-SGW2404F(config-if)# ipv6 address ra
```

## 19.6 ipv6 address eui-64

### Description

This command is used to manually configure a global IPv6 address with an extended unique identifier (EUI) in the low-order 64 bits on the interface. Specify only the network prefix. The last 64 bits are automatically computed from the switch MAC address. To remove an EUI-64 IPv6 address from the interface, please use the **no ipv6 address eui-64** command.

### Syntax

```
ipv6 address ipv6-addr eui-64
no ipv6 address ipv6-addr eui-64
```

### Parameter

*ipv6-addr* — Global IPv6 address with 64 bits network prefix, for example 3ffe::1/64.

### Configuration Mode

Interface Configuration Mode (interface vlan)

### Example

Configure an EUI-64 global address on the interface with the network prefix 3ffe::1/64

```
LP-SGW2404F(config)# interface vlan 1
LP-SGW2404F(config-if)# ipv6 address 3ffe::1/64 eui-64
```

## 19.7 ipv6 address

### Description

This command is used to manually configure a global IPv6 address on the interface. To remove a global IPv6 address from the interface, please use **no ipv6 address** command.

### Syntax

**ipv6 address** *ipv6-addr*

**no ipv6 address** *ipv6-addr*

### Parameter

*ipv6-addr* — Global IPv6 address with network prefix, for example 3ffe::1/64.

### Configuration Mode

Interface Configuration Mode (interface vlan)

### Example

Configure the global address 3001::1/64 on the interface:

```
LP-SGW2404F(config)# interface vlan 1
LP-SGW2404F(config-if)# ipv6 address 3001::1/64
```

## 19.8 show ipv6 interface vlan

### Description

This command is used to display the configured ipv6 information of the management vlan, interface, including ipv6 function status, link-local address and global address, ipv6 multicast groups etc.

### Syntax

**show ipv6 interface vlan** *vlan-id*

### Parameter

*vlan-id* — The VLAN ID of the management VLAN.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the ipv6 information of the management vlan interface:

```
LP-SGW2404F(config)# show ipv6 interface vlan 1
```



## Chapter 20 Ethernet Configuration Commands

Ethernet Configuration Commands can be used to configure the Bandwidth Control, Negotiation Mode and Storm Control for Ethernet ports.

### 20.1 interface gigabitEthernet

#### Description

The **interface gigabitEthernet** command is used to enter the Interface gigabitEthernet Configuration Mode and configure the corresponding Gigabit Ethernet port.

#### Syntax

```
interface gigabitEthernet port
```

#### Parameter

*port* — The Ethernet port number.

#### Command Mode

Global Configuration Mode

#### Example

To enter the Interface gigabitEthernet Configuration Mode and configure port 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
```

### 20.2 interface range gigabitEthernet

#### Description

The **interface range gigabitEthernet** command is used to enter the interface range gigabitEthernet Configuration Mode and configure multiple Gigabit Ethernet ports at the same time.

#### Syntax

```
interface range gigabitEthernet port-list
```

#### Parameter

*port-list* — The list of Ethernet ports.

#### Command Mode

Global Configuration Mode

### User Guidelines

Command in the **Interface Range gigabitEthernet** Mode is executed independently on all ports in the range. It does not affect the execution on the other ports at all if the command results in an error on one port.

### Example

To enter the Interface range gigabitEthernet Configuration Mode, and configure ports 1, 2, 3, 6, 7 and 9 at the same time by adding them to one port-list:

```
LP-SGW2404F(config)# interface range gigabitEthernet 1/0/1-3,1/0/6-7,1/0/9
```

## 20.3 description

### Description

The **description** command is used to add a description to the Ethernet port. To clear the description of the corresponding port, please use **no description** command.

### Syntax

**description** *string*

**no description**

### Parameter

*string* — Content of a port description, ranging from 1 to 16 characters.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet)

### Example

Add a description Port #5 to port 5:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/5
```

```
LP-SGW2404F(config-if)# description Port#5
```

## 20.4 shutdown

### Description

The **shutdown** command is used to disable an Ethernet port. To enable this port again, please use **no shutdown** command.

### Syntax

**shutdown**  
**no shutdown**

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Disable port 3:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# shutdown
```

## 20.5 flow-control

### Description

The **flow-control** command is used to enable the flow-control function for a port. To disable the flow-control function for this corresponding port, please use **no flow-control** command. With the flow-control function enabled, the Ingress Rate and Egress Rate can be synchronized to avoid packet loss in the network.

### Syntax

**flow-control**  
**no flow-control**

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable the flow-control function for port 3:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# flow-control
```

## 20.6 media-type

## Description

The **media-type** command is used to configure the media type of Combo port. For a Combo port, the media type should be configured before you set its speed and mode.

## Syntax

```
media-type { rj45 | sfp }
```

## Parameter

rj45 | sfp — Media type.

## Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

## Example

Configure the media type of Combo port 24T as “SFP”:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/24
LP-SGW2404F(config-if)# media-type sfp
```

## 20.7 duplex

### Description

The **duplex** command is used to configure the Duplex Mode for an Ethernet port. To return to the default configuration, please use **no duplex** command.

### Syntax

```
duplex { full | half }
```

```
no duplex
```

### Parameter

full | half — The duplex mode of the Ethernet port. There are two options: full-duplex mode (default) and half-duplex mode.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Configure the Duplex Mode as full-duplex for port 3:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# duplex full
```

## 20.8 speed

### Description

The **speed** command is used to configure the Speed Mode for an Ethernet port. To return to the default configuration, please use **no speed** command.

### Syntax

```
speed { 10 | 100 | 1000 | auto }
no speed
```

### Parameter

10 | 100 | 1000 | auto — The speed mode of the Ethernet port. There are four options: 10Mbps, 100Mbps, 1000Mbps and Auto negotiation mode (default).

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Configure the Speed Mode as 100Mbps for port 3:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# speed 100
```

## 20.9 storm-control broadcast

### Description

The **storm-control broadcast** command is used to enable the broadcast control function. To disable the broadcast control function, please use **no storm-control broadcast** command. Broadcast control function allows the switch to filter broadcast in the network. If the transmission rate of the broadcast packets exceeds the set bandwidth, the packets will be automatically discarded to avoid network broadcast storm.

### Syntax

```
storm-control broadcast [ rate rate ]
```



**no storm-control broadcast****Parameter**

*rate* — Specify the bandwidth for receiving broadcast packets on the port. The packet traffic exceeding the bandwidth will be discarded. The value of it can be 128k | 256k | 512k | 1m | 2m | 4m | 5m | 10m | 20m | 40m | 50m in bps. By default, the value is “128K”.

**Command Mode**

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

**Example**

Enable the broadcast control function for port 5:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/5
LP-SGW2404F(config-if)# storm-control broadcast
```

## 20.10 storm-control multicast

**Description**

The **storm-control multicast** command is used to enable the multicast control function. To disable the multicast control function, please use **no storm-control multicast** command. Multicast control function allows the switch to filter multicast in the network. If the transmission rate of the multicast packets exceeds the set bandwidth, the packets will be automatically discarded to avoid network broadcast storm.

**Syntax**

**storm-control multicast** [ *rate rate* ]

**no storm-control multicast**

**Parameter**

*rate* — Select the bandwidth for receiving multicast packets on the port. The packet traffic exceeding the bandwidth will be discarded. The value of it can be 128k | 256k | 512k | 1m | 2m | 4m | 5m | 10m | 20m | 40m | 50m in bps. By default, the value is “128K”.

**Command Mode**

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

**Example**

Enable the multicast control function for port 5:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/5
LP-SGW2404F(config-if)# storm-control multicast
```

## 20.11 storm-control unicast

### Description

The **storm-control unicast** command is used to enable the unicast control function. To disable the unicast control function, please use **no storm-control unicast** command. Unicast control function allows the switch to filter UL frame in the network. If the transmission rate of the UL frames exceeds the set bandwidth, the packets will be automatically discarded to avoid network broadcast storm.

### Syntax

```
storm-control unicast [ rate rate ]
no storm-control unicast
```

### Parameter

*rate* — Select the bandwidth for receiving UL-Frame on the port. The packet traffic exceeding the bandwidth will be discarded. The value of it can be 128k | 256k | 512k | 1m | 2m | 4m | 5m | 10m | 20m | 40m | 50m in bps. By default, the value is “128K”.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable the unicast control function for port 5:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/5
LP-SGW2404F(config-if)# storm-control unicast
```

## 20.12 bandwidth

### Description

The **bandwidth** command is used to configure the bandwidth limit for an Ethernet port. To disable the bandwidth limit, please use **no bandwidth** command.

### Syntax

**bandwidth** {[ **ingress** *ingress-rate* ] [ **egress** *egress-rate* ]}

**no bandwidth** { all | ingress | egress }

### Parameter

*ingress-rate* — Specify the bandwidth for receiving packets. Range:1-100000 for the megaport, 1-1000000 for the gigaport.

*egress-rate* — Specify the bandwidth for sending packets. Range:1-100000 for the megaport, 1-1000000 for the gigaport.

all | ingress | egress — Disable the bandwidth limitation function on the specified packet type. “all” indicates the bandwidth limitation on receiving and sending packets is disabled; “ingress” indicates the bandwidth limitation on receiving packets is disabled; “egress” indicates the bandwidth limitation on sending packets is disabled.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Configure the ingress-rate as 5120Kbps and egress-rate as 1024Kbps for port 5:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/5
LP-SGW2404F(config-if)# bandwidth ingress 5120 egress 1024
```

## 20.13 clear counters

### Description

The **clear counters** command is used to clear the statistic information of all the Ethernet ports.

### Syntax

**clear counters**

### Command Mode

Global Configuration Mode

### Example

Clear the statistic information of all ports

```
LP-SGW2404F(config)# clear counters
```

## 20.14 show interface status

### Description

The **show interface status** command is used to display the connective-status of an Ethernet port.

### Syntax

```
show interface [ gigabitEthernet port ] status
```

### Parameter

*port* — The Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the connective-status of all ports:

```
LP-SGW2404F(config)# show interface status
```

Display the connective-status of port 1:

```
LP-SGW2404F(config)# show interface gigabitEthernet 1/0/1 status
```

## 20.15 show interface counters

### Description

The **show interface counters** command is used to display the statistic information of all ports or an Ethernet port.

### Syntax

```
show interface [ gigabitEthernet port ] counters
```

### Parameter

*port* — The Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the statistic information of all Ethernet ports:

```
LP-SGW2404F(config)# show interface counters
```

Display the statistic information of port 2:

```
LP-SGW2404F(config)# show interface gigabitEthernet 1/0/2 counters
```

## 20.16 show interface description

### Description

The **show interface description** command is used to display the description of all ports or an Ethernet port.

### Syntax

```
show interface [ gigabitEthernet port ] description
```

### Parameter

*port* — The Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the description of all Ethernet ports:

```
LP-SGW2404F(config)# show interface description
```

Display the description of port 2:

```
LP-SGW2404F(config)# show interface gigabitEthernet 1/0/2 description
```

## 20.17 show interface flowcontrol

### Description

The **show interface flowcontrol** command is used to display the flow-control information of an Ethernet port.

### Syntax

```
show interface [ gigabitEthernet port ] flowcontrol
```

### Parameter

*port* — The Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the flow-control information of all Ethernet ports:

```
LP-SGW2404F# show interface flowcontrol
```

Display the flow-control information of port 2:

```
LP-SGW2404F# show interface gigabitEthernet 1/0/2 flowcontrol
```

## 20.18 show interface configuration

### Description

The **show interface configuration** command is used to display the configurations of all ports or an Ethernet port, including Port-status, Flow Control, Negotiation Mode and Port-description.

### Syntax

```
show interface [ gigabitEthernet port ] configuration
```

### Parameter

*port* — The Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configurations of all Ethernet ports:

```
LP-SGW2404F(config)# show interface configuration
```

Display the configurations of port 2:

```
LP-SGW2404F(config)# show interface gigabitEthernet 1/0/2 configuration
```

## 20.19 show storm-control

### Description

The **show storm-control** command is used to display the storm-control information of Ethernet ports.

### Syntax

```
show storm-control [ interface { gigabitEthernet port | range gigabitEthernet port-list } ]
```

### Parameter

*port* — The Ethernet port number.

*port-list* — The list of Ethernet ports.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the storm-control information of port 4, 5, 6, and 7:

```
LP-SGW2404F(config)# show storm-control interface range gigabitEthernet  
1/0/4-7
```

## 20.20 show bandwidth

### Description

The **show bandwidth** command is used to display the bandwidth-limit information of Ethernet ports.

### Syntax

```
show bandwidth [interface { gigabitEthernet port | range gigabitEthernet port-list  
}]
```

### Parameter

*port* — The Ethernet port number.

*port-list* — The list of the Ethernet ports.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the bandwidth-limit information of port 4:

```
LP-SGW2404F(config)# show bandwidth interface gigabitEthernet 1/0/4
```

## Chapter 21 QoS Commands

QoS (Quality of Service) function is used to optimize the network performance. It provides you with network service experience of a better quality.

### 21.1 qos

#### Description

The **qos** command is used to configure CoS (Class of Service) based on port. To return to the default configuration, please use **no qos** command.

#### Syntax

```
qos cos-id
```

```
no qos
```

#### Parameter

*cos-id* — The priority of port. It ranges from 0 to 7, which represent CoS0-CoS7 respectively. By default, the priority is 0.

#### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

#### User Guidelines

Port priority is one property of the port. When the port priority is specified, the data will be classified into the egress queue based on the CoS value of the ingress port and the mapping relation between the CoS and TC in [qos queue cos-map](#).

#### Example

Configure the priority of port 5 as 3:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/5
LP-SGW2404F(config-if)# qos 3
```

### 21.2 qos dscp

#### Description



The **qos dscp** command is used to enable the mapping relation between DSCP Priority and CoS value. To disable the mapping relation, please use **no qos dscp** command.

### Syntax

```
qos dscp
no qos dscp
```

### Command Mode

Global Configuration Mode

### User Guidelines

DSCP (DiffServ Code Point) is a new definition to IP ToS field given by IEEE. DSCP priorities are mapped to the corresponding 802.1p priorities. IP datagram will be classified into the egress queue based on the mapping relation between DSCP priority and CoS value.

### Example

Enable the mapping relation between DSCP Priority and CoS value:

```
LP-SGW2404F(config)# qos dscp
```

## 21.3 qos queue cos-map

### Description

The **qos queue cos-map** command is used to configure the mapping relation between IEEE 802.1P priority tag/IEEE 802.1Q tag, CoS value and the TC egress queue. To return to the default configuration, please use **no qos queue cos-map** command. When 802.1P Priority is enabled, the packets with 802.1Q tag are mapped to different priority levels based on 802.1P priority mode. The untagged packets are mapped based on port priority mode.

### Syntax

```
qos queue cos-map { tag/cos-id } { tc-id }
no qos queue cos-map
```

### Parameter

*tag/cos-id* — The 8 priority levels defined by IEEE 802.1P or the priority level the packets with tag are mapped to, which ranges from CoS 0 to CoS 7.

*tc-id* — The egress queue the packets with tag are mapped to. It ranges from 0 to 3, which represents TC0, TC1, TC2, TC3 respectively.

### Command Mode

Global Configuration Mode

### User Guidelines

1. By default, the mapping relation between tag/cos and the egress queue is: 0-TC1, 1-TC0, 2-TC0, 3-TC1, 4-TC2, 5-TC2, 6-TC3, 7-TC3.
2. Among the priority levels TC0-TC3, the bigger value, the higher priority.

### Example

Map CoS 5 to TC 2.:

```
LP-SGW2404F(config)# qos queue cos-map 5 2
```

## 21.4 qos queue dscp-map

### Description

The **qos queue dscp-map** command is used to configure the mapping relation between DSCP Priority and the CoS value. To return to the default configuration, please use **no qos queue dscp-map** command. DSCP (DiffServ Code Point) is a new definition to IP ToS field given by IEEE. This field is used to divide IP datagram into 64 priorities. When DSCP Priority is enabled, IP datagram are mapped to different priority levels based on DSCP priority mode; non-IP datagram with IEEE 802.1Q tag are mapped to different priority levels based on IEEE 802.1P priority mode if IEEE 802.1P Priority is enabled; the untagged non-IP datagram are mapped based on port priority mode.

### Syntax

```
qos queue dscp-map { dscp-list } { cos-id }
```

```
no qos queue dscp-map
```

### Parameter

*dscp-list* — List of DSCP value. One or several DSCP values can be typed using comma to separate. Use a hyphen to designate a range of values, for instance, 1,4-7,11 indicates choosing 1,4,5,6,7,11. The DSCP value ranges from 0 to 63.

*cos-id* — The priority level the packets with tag are mapped to, which ranges from CoS 0 to CoS 7.

### Command Mode

Global Configuration Mode

### User Guidelines

By default, the mapping relation between tag and the egress queue is: (0-7)-CoS 0, (8-15)-CoS 1, (16-23)-CoS 2, (24-31)-CoS 3, (32-39)-CoS 4, (40-47)-CoS 5, (48-55)-CoS 6, (56-63)-CoS 7.

### Example

Map DSCP values 10-12 to CoS 2:

```
LP-SGW2404F(config)# qos queue dscp-map 10-12 2
```

## 21.5 qos queue mode

### Description

The **qos queue mode** command is used to configure the Schedule Mode. To return to the default configuration, please use **no qos queue mode** command. When the network is congested, the program that many packets complete for resources must be solved, usually in the way of queue scheduling. The switch will control the forwarding sequence of the packets according to the priority queues and scheduling algorithms you set. On this switch, the priority levels are labeled as TC0, TC1... TC3.

### Syntax

```
qos queue mode { sp | wrr | sp+wrr | equ }
```

```
no qos queue mode
```

### Parameter

*sp* — Strict-Priority Mode. In this mode, the queue with higher priority will occupy the whole bandwidth. Packets in the queue with lower priority are sent only when the queue with higher priority is empty.

*wrr* — Weight Round Robin Mode. In this mode, packets in all the queues are sent in order based on the weight value for each queue. The weight value ratio of TC0, TC1, TC2 and TC3 is 1:2:4:8.

sp+wrr — Strict-Priority + Weight Round Robin Mode. In this mode, the switch provides two scheduling groups, SP group and WRR group. Queues in SP group and WRR group are scheduled strictly based on Strict-Priority mode while the queues inside WRR group follow the WRR mode. In SP + WRR mode, TC3 is the SP group; TC0, TC1 and TC2 belong to the WRR group and the weight value ratio of TC0, TC1 and TC2 is 1:2:4. In this way, when scheduling queues, the switch allows TC3 to occupy the whole bandwidth following the SP mode and the TC0, TC1 and TC2 in the WRR group will take up the bandwidth according to their ratio 1:2:4.

equ — Equal-Mode. In this mode, all the queues occupy the bandwidth equally. The weight value ratio of all the queues is 1:1:1:1.

### Command Mode

Global Configuration Mode

### Example

Specify the Schedule Mode as Weight Round Robin Mode:

```
LP-SGW2404F(config)# qos queue mode wrr
```

## 21.6 show qos interface

### Description

The **show qos interface** command is used to display the configuration of QoS based on port priority.

### Syntax

```
show qos interface [ gigabitEthernet port | range gigabitEthernet port-list ]
```

### Parameter

*port* — The Ethernet port number.

*port-list* — The list of Ethernet ports.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration of QoS for port 5:

```
LP-SGW2404F# show qos interface gigabitEthernet 1/0/5
```

Display the configuration of QoS for ports 1-4:

```
LP-SGW2404F# show qos interface range gigabitEthernet 1/0/1-4
```

## 21.7 show qos cos-map

### Description

The **show qos cos-map** command is used to display the configuration of IEEE 802.1P Priority and the mapping relation between cos-id and tc-id.

### Syntax

```
show qos cos-map
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration of IEEE 802.1P Priority and the mapping relation between cos-id and tc-id:

```
LP-SGW2404F# show qos cos-map
```

## 21.8 show qos dscp-map

### Description

The **show qos dscp-map** command is used to display the configuration of DSCP Priority.

### Syntax

```
show qos dscp-map
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration of DSCP Priority:

```
LP-SGW2404F# show qos dscp-map
```

## 21.9 show qos queue mode

### Description

The **show qos queue mode** command is used to display the schedule rule of the egress queues.

**Syntax**

**show qos queue mode**

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the schedule rule of the egress queues:

```
LP-SGW2404F# show qos queue mode
```

## 21.10 show qos status

**Description**

The **show qos status** command is used to display the status of IEEE 802.1P priority and DSCP priority.

**Syntax**

**show qos status**

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the status of IEEE 802.1P priority and DSCP priority:

```
LP-SGW2404F# show qos status
```

## Chapter 22 Port Mirror Commands

Port Mirror refers to the process of forwarding copies of packets from one port to a monitoring port. Usually, the monitoring port is connected to data diagnose device, which is used to analyze the monitored packets for monitoring and troubleshooting the network.

### 22.1 monitor session destination interface

#### Description

The **monitor session destination interface** command is used to configure the monitoring port. Each monitor session has only one monitoring port. To change the monitoring port, please use the **monitor session destination interface** command by changing the port value. The **no monitor session** command is used to delete the corresponding monitor session.

#### Syntax

```
monitor session session_num destination interface gigabitEthernet port
```

```
no monitor session session_num
```

#### Parameter

*session\_num* — The monitor session number, ranging from 1 to 4.

*port* — The Ethernet port number.

#### Command Mode

Global Configuration Mode

#### Example

Create monitor session 1 and configure port 1 as the monitoring port:

```
LP-SGW2404F(config)# monitor session 1 destination interface  
gigabitEthernet 1/0/1
```

Delete the monitor session 1:

```
LP-SGW2404F(config)# no monitor session 1
```

## 22.2 monitor session source interface

### Description

The **monitor session source interface** command is used to configure the monitored port. To delete the corresponding monitored port, please use **no monitor session source interface** command.

### Syntax

```
monitor session session_num source interface gigabitEthernet port-list mode  
no monitor session session_num source interface gigabitEthernet port-list  
mode
```

### Parameter

*session\_num* — The monitor session number, ranging from 1 to 4.

*port-list* — List of monitored port. It is multi-optional.

*mode* — The monitor mode. There are three options: rx, tx and both. Rx (ingress monitoring mode), means the incoming packets received by the monitored port will be copied to the monitoring port. TX (egress monitoring mode), indicates the outgoing packets sent by the monitored port will be copied to the monitoring port. Both (ingress and egress monitoring), presents the incoming packets received and the outgoing packets sent by the monitored port will both be copied to the monitoring port.

### Command Mode

Global Configuration Mode

### User Guidelines

1. The monitoring port is corresponding to current interface configuration mode.
2. Monitored ports number is not limited, but it can't be the monitoring port at the same time.
3. Whether the monitoring port and monitored ports are in the same VLAN or not is not demanded strictly.
4. The monitoring port and monitored ports cannot be link-aggregation member.

### Example

Create monitor session 1, then configure port 4, 5, 7 as monitored port and enable ingress monitoring:



```
LP-SGW2404F(config)# monitor session 1 source interface gigabitEthernet  
1/0/4-5,1/0/7 rx
```

Delete port 4 in monitor session 1 and its configuration:

```
LP-SGW2404F(config)# no monitor session 1 source interface gigabitEthernet  
1/0/4 rx
```

## 22.3 show monitor session

### Description

The **show monitor session** command is used to display the configuration of port monitoring.

### Syntax

```
show monitor session [session_num]
```

### Parameter

*session\_num* — The monitor session number, ranging from 1 to 4. It is optional. By default, the monitoring configuration of all monitor sessions is displayed.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the monitoring configuration of monitor session 1:

```
LP-SGW2404F(config)# show monitor session 1
```

Display the monitoring configuration of all monitor sessions:

```
LP-SGW2404F(config)# show monitor session
```

## Chapter 23 Port Isolation Commands

Port Isolation provides a method of restricting traffic flow to improve the network security by forbidding the port to forward packets to the ports that are not on its forwarding port list.

### 23.1 port isolation

#### Description

The **port isolation** command is used to configure the forward port list of a port, so that this port can only communicate with the ports on its port list. To delete the corresponding configuration, please use **no port isolation** command.

#### Syntax

```
port isolation gi-forward-list gi-forward-list  
no port isolation
```

#### Parameter

*gi-forward-list* — The list of Ethernet ports.

#### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

#### Example

Set port 1, 2, and 4 to the forward port list of port 5:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/5  
LP-SGW2404F(config-if)# port isolation gi-forward-list 1/0/1-2,1/0/4
```

Set all Ethernet ports to forward port list of port 2, namely restore to the default setting:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2  
LP-SGW2404F(config-if)# no port isolation
```

### 23.2 show port isolation interface

#### Description

The **show port isolation interface** command is used to display the forward port list of a port.

### Syntax

```
show port isolation interface [ gigabitEthernet port ]
```

### Parameter

*port* — The number of Ethernet port you want to show its forward port list, in the format of 1/0/2.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the forward-list of port 2:

```
LP-SGW2404F# show port isolation interface gigabitEthernet 1/0/2
```

Display the forward-list of all Ethernet ports:

```
LP-SGW2404F# show port isolation interface
```

## Chapter 24 Loopback Detection Commands

With loopback detection feature enabled, the switch can detect loops using loopback detection packets. When a loop is detected, the switch will display an alert or further block the corresponding port according to the configuration.

### 24.1 loopback-detection(global)

#### Description

The **loopback-detection** command is used to enable the loopback detection function globally. To disable it, please use **no loopback detection** command.

#### Syntax

**loopback-detection**  
**no loopback-detection**

#### Command Mode

Global Configuration Mode

#### Example

Enable the loopback detection function globally:

```
LP-SGW2404F(config)# loopback-detection
```

### 24.2 loopback-detection interval

#### Description

The **loopback-detection interval** command is used to define the interval of sending loopback detection packets from switch ports to network, aiming at detecting network loops periodically.

#### Syntax

**loopback-detection interval** *interval-time*

#### Parameter

*interval-time* — The interval of sending loopback detection packets. It ranges from 1 to 1000 seconds. By default, this value is 30.

#### Command Mode

Global Configuration Mode

### Example

Specify the interval-time as 50 seconds:

```
LP-SGW2404F(config)# loopback-detection interval 50
```

## 24.3 loopback-detection recovery-time

### Description

The **loopback-detection recovery-time** command is used to configure the time after which the blocked port would automatically recover to normal status.

### Syntax

```
loopback-detection recovery-time recovery-time
```

### Parameter

*recovery-time* — The time after which the blocked port would automatically recover to normal status, and the loopback detection would restart. It is integral times of detection interval, ranging from 1 to 100 and the default value is 3.

### Command Mode

Global Configuration Mode

### Example

Configure the recovery-time as 3 times of detection interval:

```
LP-SGW2404F(config)# loopback-detection recovery-time 3
```

## 24.4 loopback-detection(interface)

### Description

The **loopback-detection** command is used to enable the loopback detection function of the specified port. To disable it, please use **no loopback-detection** command.

### Syntax

```
loopback-detection
```

```
no loopback-detection
```

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable the loopback detection function of ports 1-3:

```
LP-SGW2404F(config)# interface range gigabitEthernet 1/0/1-3
LP-SGW2404F(config-if-range)# loopback-detection
```

## 24.5 loopback-detection config

### Description

The **loopback-detection config** command is used to configure the process-mode and recovery-mode for the ports by which the switch copes with the detected loops.

### Syntax

```
loopback-detection config [ process-mode { alert | port-based } ] [ recovery-mode { auto | manual } ]
```

### Parameter

alert | port-based — The mode how the switch processes the detected loops. Alert: When a loop is detected, display an alert. Port based: When a loop is detected, display an alert and block the port.

auto | manual — The mode how the blocked port recovers to normal status. Auto: Block status can be automatically removed after recovery time. Manual: Block status can only be removed manually.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Configure the loopback detection process-mode as port-based and recovery-mode as manual for port 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
LP-SGW2404F(config-if)# loopback-detection config process-mode port-based
recovery-mode manual
```

## 24.6 loopback-detection recover

### Description

The **loopback-detection recover** command is used to remove the block status of selected ports, thus recovering the blocked ports to normal status.

### Syntax

```
loopback-detection recover
```

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Recover the blocked port 2 to normal status:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
LP-SGW2404F(config-if)# loopback-detection recover
```

## 24.7 show loopback-detection global

### Description

The **show loopback-detection global** command is used to display the global configuration of loopback detection function such as loopback detection global status, loopback detection interval and loopback detection recovery time.

### Syntax

```
show loopback-detection global
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the global configuration of loopback detection function:

```
LP-SGW2404F# show loopback-detection global
```

## 24.8 show loopback-detection interface

### Description

The **show loopback-detection interface** command is used to display the configuration of loopback detection function and the status of the specified Ethernet port.

### Syntax

```
show loopback-detection interface [ gigabitEthernet port ]
```

### Parameter

*port* — The Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration of loopback detection function and the status of all ports:

```
LP-SGW2404F# show loopback-detection interface
```

Display the configuration of loopback detection function and the status of port 5:

```
LP-SGW2404F# show loopback-detection interface gigabitEthernet 1/0/5
```



## Chapter 25 ACL Commands

ACL (Access Control List) is used to filter data packets by configuring a series of match conditions, operations and time ranges. It provides a flexible and secured access control policy and facilitates you to control the network security.

### 25.1 time-range

#### Description

The **time-range** command is used to add Time-Range. To delete the corresponding Time-Range, please use **no time-range** command. A time-range based ACL enables you to implement ACL control over packets by differentiating the time-ranges. A time-range can be specified in each rule in an ACL. The rule takes effect only when the specified time-range is configured and the system time is within the time-range.

#### Syntax

```
time-range name  
no time-range name
```

#### Parameter

*name* — The Time-Range name, ranging from 1 to 16 characters.

#### Command Mode

Global Configuration Mode

#### Example

Add a time-range named tSeg1:

```
LP-SGW2404F(config)# time-range tSeg1
```

### 25.2 absolute

#### Description

The **absolute** command is used to configure a Time-Range into an absoluteness mode. To delete the corresponding absoluteness mode Time-range, please use **no absolute** command.

## Syntax

**absolute start** *start-date* **end** *end-date*

**no absolute**

## Parameter

*start-date* — The start date in Absoluteness Mode, in the format of MM/DD/YYYY. By default, it is 01/01/2000.

*end-date* — The end date in Absoluteness Mode, in the format of MM/DD/YYYY. By default, it is 12/31/2000. The absoluteness mode will be disabled if the start date and end date are both in default value.

## Command Mode

Time-range Create Configuration Mode

## Example

Configure the time-range tSeg1 with time from May 5, 2014 to Oct. 5, 2014:

```
LP-SGW2404F(config)# time-range tSeg1
LP-SGW2404F(config-time-range)# absolute start 05/05/2014 end 10/05/2014
```

## 25.3 periodic

### Description

The **periodic** command is used to configure the Time-Range into an periodic mode. To delete the corresponding periodic mode Time-Range, please use **no periodic** command.

### Syntax

**periodic** [ **week-date** *week-day* ] [ **time-slice1** *time-slice* ] [ **time-slice2** *time-slice* ] [ **time-slice3** *time-slice* ] [ **time-slice4** *time-slice* ]

**no periodic**

### Parameter

*week-day* — Periodic Mode, in the format of 1-3,6 or daily, off-day, working-day. 1-3, 6 represent Monday, Tuesday, Wednesday and Saturday; daily represents every day; off-day represents weekend and working-day represents working day. By default, the periodic mode is disabled.

*time-slice* — Create the time-slice, in the format of HH:MM-HH:MM.

### Command Mode

Time-range Create Configuration Mode

### Example

Configure the time-range tSeg1 with time from 8:30 to 12:00 at weekend:

```
LP-SGW2404F(config)# time-range tSeg1
LP-SGW2404F(config-time-range)# periodic week-date off-day time-slice1
08:30-12:00
```

## 25.4 holiday

### Description

The **holiday** command is used to configure the time-range into Holiday Mode under Time-range Create Configuration Mode. To delete the corresponding Holiday Mode time-range, please use **no holiday** command.

### Syntax

```
holiday
no holiday
```

### Command Mode

Time-range Create Configuration Mode

### Example

Configure the time-range tSeg1 into Holiday Mode:

```
LP-SGW2404F(config)# time-range tSeg1
LP-SGW2404F(config-time-range)# holiday
```

## 25.5 holiday(global)

### Description

The **holiday** command is used to define a holiday. To delete the corresponding holiday, please use **no holiday** command.

### Syntax

```
holiday name start-date start-date end-date end-date
no holiday
```

### Parameter

*name* — The holiday name, ranging from 1 to 16 characters.

*start-date* — The start date of the holiday, in the format of MM/DD, for instance, 05/01.

*end-date* — The end date of the holiday, in the format of MM/DD, for instance, 05/03.

### Command Mode

Global Configuration Mode

### Example

Define National Day, configuring the start date as October 1st, and the end date as October 3rd:

```
LP-SGW2404F(config)# holiday nationalday start-date 10/01 end-date 10/03
```

## 25.6 access-list create

### Description

The **access-list create** command is used to create standard-IP ACL and extend-IP ACL.

### Syntax

```
access-list create access-list-num
```

### Parameter

*access-list-num* — ACL ID, ranging from 100 to 299. The ID range of Standard-IP ACL ranges is 100-199 and the Extend-IP ACL is 200-299.

### Command Mode

Global Configuration Mode

### Example

Create a standard-IP ACL whose ID is 123:

```
LP-SGW2404F(config)# access-list create 123
```

## 25.7 mac access-list

### Description

The **mac access-list** command is used to create MAC ACL. To set the detailed configurations for a specified MAC ACL, please use **mac access-list** command to

access Mac Access-list Configuration Mode. To delete the MAC ACL, please use no **mac access-list**.

### Syntax

**mac access-list** *access-list-num*

**no mac access-list** *access-list-num*

### Parameter

*access-list-num* — ACL ID, ranging from 0 to 99.

### Command Mode

Global Configuration Mode

### Example

Create a MAC ACL whose ID is 23:

```
LP-SGW2404F(config)# mac access-list 23
```

## 25.8 access-list standard

### Description

The **access-list standard** command is used to add Standard-IP ACL rule. To delete the corresponding rule, please use **no access-list standard** command. Standard-IP ACLs analyze and process data packets based on a series of match conditions, which can be the source IP addresses and destination IP addresses carried in the packets.

### Syntax

**access-list standard** *acl-id rule rule-id* { deny | permit } [[ **sip** *source-ip* ] **smask** *source-ip-mask*] [[ **dip** *destination-ip* ] **dmask** *destination-ip-mask* ] [ **tseg** *time-segment* ]

**no access-list standard** *acl-id rule rule-id*

### Parameter

*acl-id* — The desired Standard-IP ACL for configuration.

*rule-id* — The rule ID.

deny — The operation to discard packets.

permit — The operation to forward packets. It is the default value.

*source-ip* — The source IP address contained in the rule.

*source-ip-mask* — The source IP address mask. It is required if you typed the source IP address.

*destination-ip* — The destination IP address contained in the rule.

*destination-ip-mask* — The destination IP address mask. It is required if you typed the destination IP address.

*time-segment* — The time-range for the rule to take effect. By default, it is not limited.

## Command Mode

Global Configuration Mode

## Example

Create a Standard-IP ACL whose ID is 120, and add Rule 10 for it. In the rule, the source IP address is 192.168.0.100, the source IP address mask is 255.255.255.0, the time-range for the rule to take effect is tSeg1, and the packets match this rule will be forwarded by the switch:

```
LP-SGW2404F(config)# access-list create 120
LP-SGW2404F(config)# access-list standard 120 rule 10 permit sip
192.168.0.100 smask 255.255.255.0 tseg tSeg1
```

## 25.9 access-list extended

### Description

The **access-list extended** command is used to add Extended-IP ACL rule. To delete the corresponding rule, please use **no access-list extended** command.

### Syntax

```
access-list extended acl-id rule rule-id { deny | permit } [[ sip source-ip ] smask
source-ip-mask ] [[ dip destination-ip] dmask destination-ip-mask ] [ tseg time-
segment ] [ dscp dscp ] [ s-port s-port ] [ d-port d-port ] [ tcpflag tcpflag ] [
protocol protocol] [ tos tos] [ pri pri ]
```

```
no access-list extended acl-id rule rule-id
```

### Parameter

*acl-id* — The desired Extended-IP ACL for configuration.

*rule-id* — The rule ID.

deny — The operation to discard packets.

*permit* — The operation to forward packets. It is the default value.

*source-ip* — The source IP address contained in the rule.

*source-ip-mask* — The source IP address mask. It is required if you typed the source IP address.

*destination-ip* — The destination IP address contained in the rule.

*destination-ip-mask* — The destination IP address mask. It is required if you typed the destination IP address.

*time-segment* — The time-range for the rule to take effect. By default, it is not limited.

*dscp* — Specify the dscp value, ranging from 0 to 63.

*s-port* — The source port number.

*d-port* — The destination port number.

*tcpflag* — Specify the flag value when using TCP protocol.

*protocol* — Configure the value of the matching protocol.

*tos* — Enter the IP ToS contained in the rule.

*pri* — Enter the IP Precedence contained in the rule.

## Command Mode

Global Configuration Mode

## Example

Create an Extended-IP ACL whose ID is 220, and add Rule 10 for it. In the rule, the source IP address is 192.168.0.100, the source IP address mask is 255.255.255.0, the time-range for the rule to take effect is tSeg1, and the packets match this rule will be forwarded by the switch:

```
LP-SGW2404F(config)# access-list create 220
LP-SGW2404F(config)# access-list extended 220 rule 10 permit sip
192.168.0.100 smask 255.255.255.0 tseg tSeg1
```

## 25.10 rule

### Description

The **rule** command is used to configure MAC ACL rule. To delete the corresponding rule, please use **no rule** command.

## Syntax

```
rule rule-id { deny | permit } [[ smac source-mac ] smask source-mac-mask ] [[
dmac destination-mac ] dmask destination-mac-mask ] [ vid vlan-id ] [ type
ethernet-type ] [ pri user-pri ] [ tseg time-segment ]
```

```
no rule rule-id
```

## Parameter

*rule-id* — The rule ID.

deny — The operation to discard packets.

permit — The operation to forward packets. It is the default value.

*source-mac* — The source MAC address contained in the rule.

*source-mac-mask* — The source MAC address mask. It is required if you typed the source MAC address.

*destination-mac* — The destination MAC address contained in the rule.

*destination-mac-mask* — The destination MAC address mask. It is required if you typed the destination MAC address.

*vlan-id* — The VLAN ID contained in the rule, ranging from 1 to 4094.

*ethernet-type* — EtherType contained in the rule, in the format of 4-hex number.

*user-pri* — The user priority contained in the rule, ranging from 0 to 7. By default, it is not limited.

*time-segment* — The time-range for the rule to take effect. By default, it is not limited.

## Command Mode

Mac Access-list Configuration Mode

## Example

Create a MAC ACL whose ID is 20, and add Rule 10 for it. In the rule, the source MAC address is 00:01:3F:48:16:23, the source MAC address mask is 11:11:11:11:11:00, VLAN ID is 2, the user priority is 5, the time-range for the rule to take effect is tSeg1, and the packets match this rule will be forwarded by the switch:

```
LP-SGW2404F(config)# mac access-list 20
LP-SGW2404F(config-mac-acl)# rule 10 permit smac 00:01:3F:48:16:23 smask
11:11:11:11:11:00 vid 2 pri 5 tseg tSeg1
```



## 25.11 access-list policy name

### Description

The **access-list policy name** command is used to add Policy. To delete the corresponding Policy, please use **no access-list policy name** command. A Policy is used to control the data packets those match the corresponding ACL rules by configuring ACLs and actions together for effect. The operations here include stream mirror, stream condition, QoS Remarking and redirect.

### Syntax

**access-list policy name** *name*

**no access-list policy name** *name*

### Parameter

*name* — The Policy Name, ranging from 1 to 16 characters.

### Command Mode

Global Configuration Mode

### Example

Add a Policy named policy1:

```
LP-SGW2404F(config)# access-list policy name policy1
```

## 25.12 access-list policy action

### Description

The **access-list policy action** command is used to add ACLs and create actions for the policy. To set the detailed configuration of actions for a policy, please use **access-list policy action** command to access Action Configuration Mode. To delete the corresponding actions, please use **no access-list policy action** command.

### Syntax

**access-list policy action** *policy-name acl-id*

**no access-list policy action** *policy-name acl-id*

### Parameter

*policy-name* — The Policy Name, ranging from 1 to 16 characters.

*acl-id* — The ID of the ACL to which the above policy is applied.

## Command Mode

Global Configuration Mode

## Example

Add ACL whose ID is 120 to policy1 and create an action for them:

```
LP-SGW2404F(config)# access-list policy action policy1 120
```

## 25.13 redirect interface

### Description

The **redirect interface** command is used to configure Direction function of policy action for specified ports.

### Syntax

```
redirect interface gigabitEthernet port
```

### Parameter

*port* — The destination port number of redirect.

### Command Mode

Action Configuration Mode

### Example

Edit the actions for policy1. Forward the data packets matching ACL 120 in the policy to port 2:

```
LP-SGW2404F(config)# access-list policy action policy1 120
```

```
LP-SGW2404F(config-action)# redirect interface gigabitEthernet 1/0/2
```

## 25.14 redirect vlan

### Description

The **redirect vlan** command is used to configure Direction function of policy action for specified VLAN.

### Syntax

```
redirect vlan vlan-id
```

### Parameter

*vlan-id* — The VLAN ID of Redirect. The data packets matching the corresponding ACL will be forwarded in the specific VLAN. The VLAN ID ranges from 1 to 4094.

### Command Mode

Action Configuration Mode

### Example

Edit the actions for policy1. Forward the data packets matching ACL 120 in the policy to Fast Ethernet VLAN 1:

```
LP-SGW2404F(config)# access-list policy action policy1 120
LP-SGW2404F(config-action)# redirect vlan 1
```

## 25.15 s-condition

### Description

The **s-condition** command is used to configure Stream Condition function of policy action.

### Syntax

```
s-condition rate rate osd { none | discard }
```

### Parameter

*rate* — The rate of Stream Condition, ranging from 0 to 100000kbps.

*osd* — Out of Band disposal of Stream Condition. It is the disposal way of the data packets those are transmitted beyond the rate. There are two options, none and discard. By default, the option is none.

### Command Mode

Action Configuration Mode

### Example

Edit the actions for policy1. For the data packets matching ACL 120 in the policy, if the rate beyond 1000kbps, they will be discarded by the switch:

```
LP-SGW2404F(config)# access-list policy action policy1 120
LP-SGW2404F(config-action)# s-condition rate 1000 osd discard
```

## 25.16 s-mirror

## Description

The **s-mirror** command is used to configure Stream Mirror function of policy action to the specified port.

## Syntax

**s-mirror interface gigabitEthernet** *port*

## Parameter

*port* — The Mirror Port number of Stream Mirror.

## Command Mode

Action Configuration Mode

## Example

Edit the actions for policy1. Specify the mirror port for the data packets matching ACL 120 as port 2:

```
LP-SGW2404F(config)# access-list policy action policy1 120
LP-SGW2404F(config-action)# s-mirror interface gigabitEthernet 1/0/2
```

## 25.17 qos-remark

### Description

The **qos-remark** command is used to configure QoS Remark function of policy action. To delete the corresponding policy action, please use **no qos-remark** command.

### Syntax

**qos-remark dscp** *dscp* **priority** *pri*

**no qos-remark**

### Parameter

*dscp* — DSCP of QoS Remark. Specify the DSCP region for the data packets matching the corresponding ACL. DSCP ranges from 0 to 63. By default, it is not limited.

*pri* — Local Priority of QoS Remark. Specify the local priority for the data packets matching the corresponding ACL. Local Priority ranges from 0 to 3.

### Command Mode

Action Configuration Mode

## Example

Edit the actions for policy1. For the data packets matching ACL 120, specify the DSCP region as 30 and local priority 2:

```
LP-SGW2404F(config)# access-list policy action policy1 120
LP-SGW2404F(config-action)# qos-remark dscp 30 priority 2
```

## 25.18 access-list bind(interface)

### Description

The **access-list bind** command is used to bind a policy to a specified port. To cancel the bind relation, please use **no access-list bind** command.

### Syntax

```
access-list bind policy-name
no access-list bind policy-name
```

### Parameter

*policy-name* — The name of the policy desired to bind.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Bind policy1 to port 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
LP-SGW2404F(config-if)# access-list bind policy1
```

## 25.19 access-list bind(vlan)

### Description

The **access-list bind** command is used to bind a policy to a VLAN. To cancel the bind relation, please use **no access-list bind** command.

### Syntax

```
access-list bind policy-name
no access-list bind policy-name
```

**Parameter**

*policy-name* — The name of the policy desired to bind.

**Command Mode**

Interface VLAN Mode

**Example**

Bind policy1 to VLAN 2:

```
LP-SGW2404F(config)# interface vlan 2
LP-SGW2404F(config-if)# access-list bind policy1
```

## 25.20 show time-range

**Description**

The **show time-range** command is used to display the configuration of Time-Range.

**Syntax**

```
show time-range
```

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the configuration of Time-Range:

```
LP-SGW2404F(config)# show time-range
```

## 25.21 show holiday

**Description**

The **show holiday** command is used to display the defined holiday.

**Syntax**

```
show holiday
```

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the defined holiday:

```
LP-SGW2404F(config)# show holiday
```

## 25.22 show access-list

### Description

The **show access-list** command is used to display configuration of ACL.

### Syntax

```
show access-list acl-id
```

### Parameter

*acl-id* — The ID of the ACL selected to display the configuration.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration of the MAC ACL whose ID is 20:

```
LP-SGW2404F(config)# show access-list 20
```

## 25.23 show access-list policy

### Description

The **show access-list policy** command is used to display the information of a specified policy.

### Syntax

```
show access-list policy name
```

### Parameter

*name* — The Policy Name desired to show.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the information of a policy named policy1:

```
LP-SGW2404F(config)# show access-list policy policy1
```

## 25.24 show access-list bind

**Description**

The **show access-list bind** command is used to display the configuration of Policy bind.

**Syntax**

**show access-list bind**

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the configuration of Policy bind:

```
LP-SGW2404F(config)# show access-list bind
```



## Chapter 26 MSTP Commands

MSTP (Multiple Spanning Tree Protocol), compatible with both STP and RSTP and subject to IEEE 802.1s, can disbranch a ring network. STP is to block redundant links and backup links as well as optimize paths.

### 26.1 spanning-tree(global)

#### Description

The **spanning-tree** command is used to enable STP function globally. To disable the STP function, please use **no spanning-tree** command.

#### Syntax

**spanning-tree**

**no spanning-tree**

#### Command Mode

Global Configuration Mode

#### Example

Enable the STP function:

```
LP-SGW2404F(config)# spanning-tree
```

### 26.2 spanning-tree(interface)

#### Description

The **spanning-tree** command is used to enable STP function for a port. To disable the STP function, please use **no spanning-tree** command.

#### Syntax

**spanning-tree**

**no spanning-tree**

#### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

#### Example

Enable the STP function for port 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
LP-SGW2404F(config-if)# spanning-tree
```

## 26.3 spanning-tree common-config

### Description

The **spanning-tree common-config** command is used to configure the parameters of the ports for comparison in the CIST and the common parameters of all instances. To return to the default configuration, please use **no spanning-tree common-config** command. CIST (Common and Internal Spanning Tree) is the spanning tree in a switched network, connecting all devices in the network.

### Syntax

```
spanning-tree common-config [ port-priority pri ] [ ext-cost ext-cost ] [ int-cost int-cost ] [ portfast { enable | disable } ] [ point-to-point { auto | open | close } ]
no spanning-tree common-config
```

### Parameter

*pri* — Port Priority, which must be multiple of 16 ranging from 0 to 240. By default, the port priority is 128. Port Priority is an important criterion on determining if the port connected to this port will be chosen as the root port. In the same condition, the port with the highest priority will be chosen as the root port. The lower value has the higher priority.

*ext-cost* — External Path Cost, which is used to choose the path and calculate the path costs of ports in different MST regions. It is an important criterion on determining the root port. The lower value has the higher priority. It ranges from 0 to 2000000. By default, it is 0 which is mean auto.

*int-cost* — Internal Path Cost, which is used to choose the path and calculate the path costs of ports in an MST region. It is an important criterion on determining the root port. The lower value has the higher priority. By default, it is automatic. It ranges from 0 to 2000000. By default, it is 0 which is mean auto.

enable | disable — Enable/ Disable Edge Port. By default, it is disabled. The edge port can transit its state from blocking to forwarding rapidly without waiting for forward delay.

auto | open | close — The P2P link status, with auto, open and close options. By default, the option is auto. If the two ports in the P2P link are root port or designated port, they can transit their states to forwarding rapidly to reduce the unnecessary forward delay.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable the STP function of port 1, and configure the Port Priority as 64, ExtPath Cost as 100, IntPath Cost as 100, and then enable Edge Port:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/1
LP-SGW2404F(config-if)# spanning-tree common-config port-priority 64 ext-
cost 100 int-cost 100 portfast enable point-to-point open
```

## 26.4 spanning-tree mode

### Description

The **spanning-tree mode** command is used to configure the STP mode of the switch. To return to the default configurations, please use **no spanning-tree mode** command.

### Syntax

```
spanning-tree mode { stp | rstp | mstp }
no spanning-tree mode
```

### Parameter

stp — Spanning Tree Protocol, the default value.  
rstp — Rapid Spanning Tree Protocol.  
mstp — Multiple Spanning Tree Protocol.

### Command Mode

Global Configuration Mode

### Example

Configure the spanning-tree mode as mstp:

```
LP-SGW2404F(config)# spanning-tree mode mstp
```

## 26.5 spanning-tree mst configuration

### Description

The **spanning-tree mst configuration** command is used to access MST Configuration Mode from Global Configuration Mode, as to configure the VLAN-Instance mapping, region name and revision level. To return to the default configuration of the corresponding Instance, please use **no spanning-tree mst configuration** command.

### Syntax

**spanning-tree mst configuration**

**no spanning-tree mst configuration**

### Command Mode

Global Configuration Mode

### Example

Enter into the MST configuration mode:

```
LP-SGW2404F(config)# spanning-tree mst configuration
```

## 26.6 instance

### Description

The **instance** command is used to configure the VLAN-Instance mapping. To remove the VLAN-instance mapping or disable the corresponding instance, please use **no instance** command. When an instance is disabled, the related mapping VLANs will be removed.

### Syntax

**instance** *instance-id* **vlan** *vlan-id*

**no instance** *instance-id* [**vlan** *vlan-id*]

### Parameters

*instance-id* — Instance ID, ranging from 1 to 8.

*vlan-id* — The VLAN ID selected to mapping with the corresponding instance.

### Command Mode

MST Configuration Mode

### Example

Map the VLANs 1-100 to Instance 1:

```
LP-SGW2404F(config)# spanning-tree mst configuration
```

```
LP-SGW2404F(config-mst)# instance 1 vlan 1-100
```

Disable Instance 1, namely remove all the mapping VLANs 1-100:

```
LP-SGW2404F(config)# spanning-tree mst configuration
```

```
LP-SGW2404F(config-mst)# no instance 1
```

Remove VLANs 1-50 in mapping VLANs 1-100 for Instance 1:

```
LP-SGW2404F(config)# spanning-tree mst configuration
```

```
LP-SGW2404F(config-mst)# no instance 1 vlan 1-50
```

## 26.7 name

### Description

The **name** command is used to configure the region name of MST instance.

### Syntax

```
name name
```

### Parameters

*name* — The region name, used to identify MST region. It ranges from 1 to 32 characters.

### Command Mode

MST Configuration Mode

### Example

Configure the region name of MST as “region1”:

```
LP-SGW2404F(config)# spanning-tree mst configuration
```

```
LP-SGW2404F(config-mst)# name region1
```

## 26.8 revision

### Description

The **revision** command is used to configure the revision level of MST instance.

### Syntax

revision *revision*

### Parameters

*revision* — The revision level for MST region identification, ranging from 0 to 65535.

### Command Mode

MST Configuration Mode

### Example

Configure the revision level of MST as 100:

```
LP-SGW2404F(config)# spanning-tree mst configuration
LP-SGW2404F(config-mst)# revision 100
```

## 26.9 spanning-tree mst instance

### Description

The **spanning-tree mst instance** command is used to configure the priority of MST instance. To return to the default value of MST instance priority, please use **no spanning-tree mst instance** command.

### Syntax

```
spanning-tree mst instance instance-id priority pri
no spanning-tree mst instance instance-id priority
```

### Parameter

*instance-id* — Instance ID, ranging from 1 to 8.

*pri* — MSTI Priority, which must be multiple of 4096 ranging from 0 to 61440. By default, it is 32768. MSTI priority is an important criterion on determining if the switch will be chosen as the root bridge in the specific instance.

### Command Mode

Global Configuration Mode

### Example

Enable the MST Instance 1 and configure its priority as 4096:

```
LP-SGW2404F(config)# spanning-tree mst instance 1 priority 4096
```

## 26.10 spanning-tree mst

## Description

The **spanning-tree mst** command is used to configure MST Instance Port. To return to the default configuration of the corresponding Instance Port, please use **no spanning-tree mst** command. A port can play different roles in different spanning tree instance. You can use this command to configure the parameters of the ports in different instance IDs as well as view status of the ports in the specified instance.

## Syntax

**spanning-tree mst instance** *instance-id* {[ **port-priority** *pri* ] | [ **cost** *cost* ]}

**no spanning-tree mst instance** *instance-id*

## Parameter

*instance-id* — Instance ID, ranging from 1 to 8.

*pri* — Port Priority, which must be multiple of 16 ranging from 0 to 240. By default, it is 128. Port Priority is an important criterion on determining if the port will be chosen as the root port by the device connected to this port.

*cost* — Path Cost, ranging from 0 to 200000. The lower value has the higher priority. Its default value is 0 meaning “auto”.

## Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

## Example

Configure the priority of port 1 in MST Instance 1 as 64, and path cost as 2000:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/1
LP-SGW2404F(config-if)# spanning-tree mst instance 1 port-priority 64 cost
2000
```

## 26.11 spanning-tree priority

### Description

The **spanning-tree priority** command is used to configure the bridge priority. To return to the default value of bridge priority, please use **no spanning-tree priority** command.

### Syntax

**spanning-tree priority** *pri*

**no spanning-tree priority**

### Parameter

*pri* — Bridge priority, ranging from 0 to 61440. It is 32768 by default.

### Command Mode

Global Configuration Mode

### Example

Configure the bridge priority as 4096:

```
LP-SGW2404F(config)# spanning-tree priority 4096
```

## 26.12 spanning-tree tc-defend

### Description

The **spanning-tree tc-defend** command is used to configure the TC Protect of Spanning Tree globally. To return to the default configuration, please use **no spanning-tree tc-defend** command. A switch removes MAC address entries upon receiving TC-BPDUs. If a malicious user continuously sends TC-BPDUs to a switch, the switch will be busy with removing MAC address entries, which may decrease the performance and stability of the network.

### Syntax

**spanning-tree tc-defend threshold** *threshold* **period** *period*

**no spanning-tree tc-defend**

### Parameter

*threshold* — TC Threshold, ranging from 1 to 100 packets. By default, it is 20. TC Threshold is the maximum number of the TC-BPDUs received by the switch in a TC Protect Cycle.

*period* — TC Protect Cycle, ranging from 1 to 10 in seconds. By default, it is 5.

### Command Mode

Global Configuration Mode

### Example

Configure TC Threshold as 30 packets and TC Protect Cycle as 10 seconds:

```
LP-SGW2404F(config)# spanning-tree tc-defend threshold 30 period 10
```



## 26.13 spanning-tree timer

### Description

The **spanning-tree timer** command is used to configure forward-time, hello-time and max-age of Spanning Tree. To return to the default configurations, please use **no spanning-tree timer** command.

### Syntax

**spanning-tree timer** {[ **forward-time** *forward-time* ] [ **hello-time** *hello-time* ] [ **max-age** *max-age* ]}

**no spanning-tree timer**

### Parameter

*forward-time* — Forward Delay, which is the time for the port to transit its state after the network topology is changed. Forward Delay ranges from 4 to 30 in seconds and it is 15 by default. Otherwise,  $2 * (\text{Forward Delay} - 1) \geq \text{Max Age}$ .

*hello-time* — Hello Time, which is the interval to send BPDU packets, and used to test the links. Hello Time ranges from 1 to 10 in seconds and it is 2 by default. Otherwise,  $2 * (\text{Hello Time} + 1) \leq \text{Max Age}$ .

*max-age* — The maximum time the switch can wait without receiving a BPDU before attempting to reconfigure, ranging from 6 to 40 in seconds. By default, it is 20.

### Command Mode

Global Configuration Mode

### Example

Configure forward-time, hello-time and max-age for Spanning Tree as 16 seconds, 3 seconds and 22 seconds respectively:

```
LP-SGW2404F(config)# spanning-tree timer forward-time 16 hello-time 3 max-age 22
```

## 26.14 spanning-tree hold-count

### Description

The **spanning-tree hold-count** command is used to configure the maximum number of BPDU packets transmitted per Hello Time interval. To return to the default configurations, please use **no spanning-tree hold-count** command.

### Syntax

**spanning-tree hold-count** *value*

**no spanning-tree hold-count**

### Parameter

*value* — The maximum number of BPDU packets transmitted per Hello Time interval, ranging from 1 to 20 in pps. By default, it is 5.

### Command Mode

Global Configuration Mode

### Example

Configure the hold-count of STP as 8pps:

```
LP-SGW2404F(config)# spanning-tree hold-count 8
```

## 26.15 spanning-tree max-hops

### Description

The **spanning-tree max-hops** command is used to configure the maximum number of hops that occur in a specific region before the BPDU is discarded. To return to the default configurations, please use **no spanning-tree max-hops** command.

### Syntax

**spanning-tree max-hops** *value*

**no spanning-tree max-hops**

### Parameter

*value* — The maximum number of hops that occur in a specific region before the BPDU is discarded, ranging from 1 to 40 in hop. By default, it is 20.

### Command Mode

Global Configuration Mode

### Example

Configure the max-hops of STP as 30:

```
LP-SGW2404F(config)# spanning-tree max-hops 30
```

## 26.16 spanning-tree bpdudfilter

### Description

The **spanning-tree bpdudfilter** command is used to enable the BPDU filter function for a port. With the function enabled, the port can be prevented from receiving and sending any BPDU packets. To disable the BPDU filter function, please use **no spanning-tree bpdudfilter** command.

### Syntax

```
spanning-tree bpdudfilter  
no spanning-tree bpdudfilter
```

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable the BPDU filter function for port 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2  
LP-SGW2404F(config-if)# spanning-tree bpdudfilter
```

## 26.17 spanning-tree bpduguard

### Description

The **spanning-tree bpduguard** command is used to enable the BPDU protect function for a port. With the BPDU protect function enabled, the port will set itself automatically as ERROR-PORT when it receives BPDU packets, and the port will disable the forwarding function for a while. To disable the BPDU protect function, please use **no spanning-tree bpduguard** command.

### Syntax

```
spanning-tree bpduguard  
no spanning-tree bpduguard
```

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable the BPDU protect function for port 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 2
LP-SGW2404F(config-if)# spanning-tree bpduguard
```

## 26.18 spanning-tree guard loop

### Description

The **spanning-tree guard loop** command is used to enable the Loop Protect function for a port. Loop Protect is to prevent the loops in the network brought by recalculating STP because of link failures and network congestions. To disable the Loop Protect function, please use **no spanning-tree guard loop** command.

### Syntax

```
spanning-tree guard loop
no spanning-tree guard loop
```

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable the Loop Protect function for port 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
LP-SGW2404F(config-if)# spanning-tree guard loop
```

## 26.19 spanning-tree guard root

### Description

The **spanning-tree guard root** command is used to enable the Root Protect function for a port. With the Root Protect function enabled, the root bridge will set itself automatically as ERROR-PORT when receiving BPDU packets with higher priority, in order to maintain the role of root ridge. To disable the Root Protect function, please use **no spanning-tree guard root** command.

## Syntax

**spanning-tree guard root**

**no spanning-tree guard root**

## Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

## Example

Enable the Root Protect function for port 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
```

```
LP-SGW2404F(config-if)# spanning-tree guard root
```

## 26.20 spanning-tree guard tc

### Description

The **spanning-tree guard tc** command is used to enable the TC Protect of Spanning Tree function for a port. To disable the TC Protect of Spanning Tree function, please use **no spanning-tree guard tc** command. A switch removes MAC address entries upon receiving TC-BPDUs. If a malicious user continuously sends TC-BPDUs to a switch, the switch will be busy with removing MAC address entries, which may decrease the performance and stability of the network. With the Protect of Spanning Tree function enabled, you can configure the number of TC-BPDUs in a required time, so as to avoid the process of removing MAC addresses frequently.

### Syntax

**spanning-tree guard tc**

**no spanning-tree guard tc**

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable the TC Protect of Spanning Tree for port 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
```

```
LP-SGW2404F(config-if)# spanning-tree guard tc
```

## 26.21 spanning-tree mcheck

### Description

The **spanning-tree mcheck** command is used to enable MCheck.

### Syntax

```
spanning-tree mcheck
```

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable MCheck for port 2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
LP-SGW2404F(config-if)# spanning-tree mcheck
```

## 26.22 show spanning-tree active

### Description

The **show spanning-tree active** command is used to display the active information of spanning-tree.

### Syntax

```
show spanning-tree active
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the active information of spanning-tree:

```
LP-SGW2404F(config)# show spanning-tree active
```

## 26.23 show spanning-tree bridge

### Description

The **show spanning-tree bridge** command is used to display the bridge parameters.

**Syntax**

**show spanning-tree bridge** [ forward-time | hello-time | hold-count | max-age | max-hops | mode | priority | state ]

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the bridge parameters:

```
LP-SGW2404F(config)# show spanning-tree bridge
```

## 26.24 show spanning-tree interface

**Description**

The **show spanning-tree interface** command is used to display the spanning-tree information of all ports or a specified port.

**Syntax**

**show spanning-tree interface** [ **gigabitEthernet** *port* ] [ edge | ext-cost | int-cost | mode | p2p | priority | role | state | status ]

**Parameter**

*port* — The Ethernet port number.

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the spanning-tree information of all ports:

```
LP-SGW2404F(config)# show spanning-tree interface
```

Display the spanning-tree information of port 2:

```
LP-SGW2404F(config)# show spanning-tree interface gigabitEthernet 1/0/2
```

Display the spanning-tree mode information of port 2:

```
LP-SGW2404F(config)# show spanning-tree interface gigabitEthernet 1/0/2
mode
```

## 26.25 show spanning-tree interface-security

## Description

The **show spanning-tree interface-security** command is used to display the protect information of all ports or a specified port.

## Syntax

```
show spanning-tree interface-security [ gigabitEthernet port ] [ bpdufilter |
bpduguard | loop | root | tc | tc-defend ]
```

## Parameter

*port* — The Ethernet port number.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the protect information of all ports:

```
LP-SGW2404F(config)# show spanning-tree interface-security
```

Display the protect information of port 1:

```
LP-SGW2404F(config)#show spanning-tree interface-security gigabitEthernet
1/0/1
```

Display the interface security bpdufilter information:

```
LP-SGW2404F(config)# show spanning-tree interface-security bpdufilter
```

## 26.26 show spanning-tree mst

### Description

The **show spanning-tree mst** command is used to display the related information of MST Instance.

### Syntax

```
show spanning-tree mst { configuration [ digest ] | instance instance-id [
interface [ gigabitEthernet port ]]}
```

### Parameter

*instance-id* — Instance ID desired to show, ranging from 1 to 8.

*port* — The Ethernet port number.

### Command Mode



Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the related information of MST Instance 1:

```
LP-SGW2404F(config)# show spanning-tree mst instance 1
```

## Chapter 27 IGMP Snooping Commands

IGMP Snooping (Internet Group Management Protocol Snooping) is a multicast control mechanism running on Layer 2 switch. It can effectively prevent multicast groups being broadcasted in the IPv4 network.

### 27.1 ip igmp snooping(global)

#### Description

The **ip igmp snooping** command is used to configure IGMP Snooping globally. To disable the IGMP Snooping function, please use **no ip igmp snooping** command.

#### Syntax

**ip igmp snooping**

**no ip igmp snooping**

#### Command Mode

Global Configuration Mode

#### Example

Enable IGMP Snooping function:

```
LP-SGW2404F(config)# ip igmp snooping
```

### 27.2 ip igmp snooping(interface)

#### Description

The **ip igmp snooping** command is used to enable the IGMP Snooping function for the desired port. To disable the IGMP Snooping function, please use **no ip igmp snooping** command.

#### Syntax

**ip igmp snooping**

**no ip igmp snooping**

#### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable IGMP Snooping function of port 3:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# ip igmp snooping
```

## 27.3 ip igmp snooping immediate-leave

### Description

The **ip igmp snooping immediate-leave** command is used to configure the Fast Leave function for port. To disable the Fast Leave function, please use **no ip igmp snooping immediate-leave** command.

### Syntax

```
ip igmp snooping immediate-leave
no ip igmp snooping immediate-leave
```

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable the Fast Leave function for port 3:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# ip igmp snooping immediate-leave
```

## 27.4 ip igmp snooping drop-unknown

### Description

The **ip igmp snooping drop-unknown** command is used to process the unknown multicast as discard. To disable the operation of processing the unknown multicast as discard, please use **no ip igmp snooping drop-unknown** command.

### Syntax

```
ip igmp snooping drop-unknown
no ip igmp snooping drop-unknown
```

### Command Mode

Global Configuration Mode

### Example

Specify the operation to process unknown multicast as discard:

```
LP-SGW2404F(config)# ip igmp snooping drop-unknown
```

## 27.5 ip igmp snooping vlan-config

### Description

The **ip igmp snooping vlan-config** command is used to enable VLAN IGMP Snooping function or to modify IGMP Snooping parameters, and to create static multicast IP entry. To disable the VLAN IGMP Snooping function, please use **no ip igmp snooping vlan-config** command.

### Syntax

```
ip igmp snooping vlan-config vlan-id-list [ rtime router-time | mtime member-time  
| ltime leave-time | rport interface gigabitEthernet port ]
```

```
ip igmp snooping vlan-config vlan-id static ip interface gigabitEthernet port
```

```
no ip igmp snooping vlan-config vlan-id-list
```

```
no ip igmp snooping vlan-config vlan-id static ip
```

### Parameter

*vlan-id-list* — The ID list of the VLAN desired to modify configuration, ranging from 1 to 4094, in the format of 1-3, 5.

*router-time* — Router Port Time. Within this time, if the switch does not receive IGMP query message from the router port, it will consider this port is not a router port any more. Router Port Time ranges from 60 to 600 in seconds. By default, it is 300.

*member-time* — Member Port Time. Within this time, if the switch does not receive IGMP report message from the member port, it will consider this port is not a member port any more. Member Port Time ranges from 60 to 600 in seconds. By default, it is 260.

*leave-time* — Leave Time, which is the interval between the switch receiving a leave message from a host and the switch removing the host from the multicast groups. Leave Time ranges from 1 to 30 in seconds. By default, it is 1.

*port* — The Ethernet port number.

*vlan-id* — The VLAN ID of the multicast IP, ranging from 1 to 4094.

*ip* — The static multicast IP address.

*port-list* — The list of Ethernet ports.

## Command Mode

Global Configuration Mode

## Example

Enable the IGMP Snooping function and modify Router Port Time as 300 seconds, Member Port Time as 200 seconds for VLAN1-3, and set the Leave time as 15 seconds for VLAN1-2:

```
LP-SGW2404F(config)# ip igmp snooping vlan-config 1-3 rtime 300
LP-SGW2404F(config)# ip igmp snooping vlan-config 1-3 mtime 200
LP-SGW2404F(config)# ip igmp snooping vlan-config 1-2 ltime 15
```

Add static multicast IP address 225.0.0.1, which correspond to VLAN 2, and configure the forward port as port 1-3:

```
LP-SGW2404F(config)# ip igmp snooping vlan-config 2 static 225.0.0.1
interface gigabitEthernet 1/0/1-3
```

## 27.6 ip igmp snooping multi-vlan-config

### Description

The **ip igmp snooping multi-vlan-config** command is used to create Multicast VLAN. To delete the corresponding Multicast VLAN, please use **no ip igmp snooping multi-vlan-config** command.

### Syntax

```
ip igmp snooping multi-vlan-config [ vlan-id ] [ rtime router-time | mtime member-time | ltime leave-time | rport interface gigabitEthernet port ]
```

```
no ip igmp snooping multi-vlan-config
```

### Parameter

*vid* — The ID of the VLAN desired to modify configuration, ranging from 2 to 4094.

*router-time* — Router Port Time. Within this time, if the switch does not receive IGMP query message from the router port, it will consider this port is not a router

port any more. Router Port Time ranges from 60 to 600 in seconds. By default, it is 300.

*member-time* — Member Port Time. Within this time, if the switch does not receive IGMP report message from the member port, it will consider this port is not a member port any more. Member Port Time ranges from 60 to 600 in seconds. By default, it is 260.

*leave-time* — Leave Time, which is the interval between the switch receiving a leave message from a host and the switch removing the host from the multicast groups. Leave Time ranges from 1 to 30 in seconds. By default, it is 1.

*port* — The Ethernet port number.

## Command Mode

Global Configuration Mode

## Example

Enable Multicast VLAN 3, and configure Router Port Time as 100 seconds, Member Port Time 100 seconds, Leave Time 3 seconds, and Static Router Port port 3:

```

LP-SGW2404F(config)# ip igmp snooping multi-vlan-config 3 rtime 100
LP-SGW2404F(config)# ip igmp snooping multi-vlan-config 3 mtime 100
LP-SGW2404F(config)# ip igmp snooping multi-vlan-config 3 ltime 3
LP-SGW2404F(config)# ip igmp snooping multi-vlan-config 3 rport interface
gigabitEthernet 1/0/3
    
```

## 27.7 ip igmp snooping filter add-id

### Description

The **ip igmp snooping filter add-id** command is used to configure the multicast IP-range desired to filter. To delete the corresponding IP-range, please use **no ip igmp snooping filter add-id** command. When IGMP Snooping is enabled, you can specified the multicast IP-range the ports can join so as to restrict users ordering multicast programs via configuring multicast filter rules. Multicast IP addresses ranges from 224.0.0.0 to 239.255.255.255. The range for receivers to join is from 224.0.1.0 to 239.255.255.255.

### Syntax

**ip igmp snooping filter addr-id** *addr-id list*

**no ip igmp snooping filter addr-id** *addr-id list*

### Parameter

*addr-id list* — The filtering address ID to be bound.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Bind the filtering address ID 2-6 to port 3:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# ip igmp snooping filter addr-id 2-6
```

## 27.8 ip igmp snooping filter(global)

### Description

The **ip igmp snooping filter** command is used to add or modify the multicast filtering IP-range. To delete the multicast filtering IP-range, please use **no ip igmp snooping filter** command.

### Syntax

```
ip igmp snooping filter id start-ip end-ip
no ip igmp snooping filter id
```

### Parameter

*id* — IP-range ID, ranging from 1 to 30.

*start-ip* — The start multicast IP of the IP-range.

*end-ip* — The end multicast IP of the IP-range.

### Command Mode

Global Configuration Mode

### Example

Modify the multicast IP-range whose ID is 3 as 225.1.1.1~226.3.2.1:

```
LP-SGW2404F(config)# ip igmp snooping filter 3 225.1.1.1 226.3.2.1
```

## 27.9 ip igmp snooping filter(interface)

## Description

The **ip igmp snooping filter** command is used to configure Port Filter. To return to the default configuration, please use **no igmp snooping filter** command. When the switch receives IGMP report message, it examines the multicast filtering IP ID configured on the access port to determine if the port can join the multicast group. If the multicast IP is not filtered, the switch will add the port to the forward port list of the multicast group. Otherwise, the switch will drop the IGMP report message. In that way, you can control the multicast groups that users can access.

## Syntax

```
ip igmp snooping filter
no ip igmp snooping filter
```

## Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

## Example

Enable IGMP Snooping filter function for port 3:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# ip igmp snooping filter
```

## 27.10 ip igmp snooping filter maxgroup

### Description

The **ip igmp snooping filter maxgroup** command is used to specify the maximum number of multicast groups for a port to join in.

### Syntax

```
ip igmp snooping filter maxgroup maxgroup
```

### Parameter

*maxgroup* — The maximum number of multicast groups for a port to join in. It is used to prevent some ports taking up too much bandwidth.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example



Specify the maximum number of multicast groups for ports 2-5 to join in as 10:

```
LP-SGW2404F(config)# interface range gigabitEthernet 1/0/2-5
LP-SGW2404F(config-if-range)# ip igmp snooping filter maxgroup 10
```

## 27.11 ip igmp snooping filter mode

### Description

The **ip igmp snooping filter mode** command is used to configure the Action mode for the desired port.

### Syntax

```
ip igmp snooping filter mode mode
```

### Parameter

*mode* — Action Mode, with refuse and accept options. Refuse indicates only the multicast packets whose multicast IP is not in the IP-range will be processed, while accept indicates only the multicast packets whose multicast IP is in the IP-range will be processed. By default, the option is “accept”.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Specify the Action Mode as accept for port 3:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
LP-SGW2404F(config-if)# ip igmp snooping filter mode accept
```

## 27.12 show ip igmp snooping

### Description

The **show ip igmp snooping** command is used to display the global configuration of IGMP snooping.

### Syntax

```
show ip igmp snooping
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the global configuration of IGMP:

```
LP-SGW2404F# show ip igmp snooping
```

## 27.13 show ip igmp snooping interface

### Description

The **show ip igmp snooping interface** command is used to display the port configuration of IGMP snooping.

### Syntax

```
show ip igmp snooping interface gigabitEthernet [ port | port-list ] { basic-config | filter | packet-stat }
```

### Parameter

*port* — The Ethernet port number.

*port-list* — The list of Ethernet ports.

*basic-config* | *filter* | *packet-stat* — The related configuration information selected to display.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the IGMP filter configuration of all ports:

```
LP-SGW2404F# show ip igmp snooping interface gigabitEthernet filter
```

Display the IGMP basic configuration of port 2:

```
LP-SGW2404F# show ip igmp snooping interface gigabitEthernet 1/0/2 basic-config
```

Display the IGMP packet statistics of ports 1-4:

```
LP-SGW2404F# show ip igmp snooping interface gigabitEthernet 1/0/1-4 packet-stat
```

## 27.14 show ip igmp snooping vlan

### Description

The **show ip igmp snooping vlan** command is used to display the VLAN configuration of IGMP snooping.

### Syntax

```
show ip igmp snooping vlan [ vlan-id ]
```

### Parameter

*vlan-id* —The VLAN ID selected to display.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the IGMP snooping configuration information of VLAN 2:

```
LP-SGW2404F# show ip igmp snooping vlan 2
```

## 27.15 show ip igmp snooping multi-vlan

### Description

The **show ip igmp snooping multi-vlan** command is used to display the Multicast VLAN configuration.

### Syntax

```
show ip igmp snooping multi-vlan
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the Multicast VLAN configuration:

```
LP-SGW2404F# show ip igmp snooping multi-vlan
```

## 27.16 show ip igmp snooping groups

### Description

The **show ip igmp snooping groups** command is used to display the information of all IGMP snooping groups. It can be extended to some other commands to display the dynamic and static multicast information of a selected VLAN.

## Syntax

```
show ip igmp snooping groups [ vlan vlan-id ] [ count | dynamic | dynamic count
| static | static count ]
```

## Parameter

*vlan-id* — The VLAN ID selected to display the information of all multicast items.

*count* — The numbers of all multicast groups.

*dynamic* — Display dynamic multicast groups.

*dynamic count* — The numbers of all dynamic multicast groups.

*static* — Display static multicast groups.

*static count* — The numbers of all static multicast groups.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the information of all IGMP snooping groups:

```
LP-SGW2404F#show ip igmp snooping groups
```

Display all the multicast entries in VLAN 5:

```
LP-SGW2404F(config)#show ip igmp snooping groups vlan 5
```

Display the count of multicast entries in VLAN 5:

```
LP-SGW2404F(config)#show ip igmp snooping groups vlan 5 count
```

Display the dynamic multicast groups of VLAN 5

```
LP-SGW2404F(config)#show ip igmp snooping groups vlan 5 dynamic
```

Display the static multicast groups of VLAN 5

```
LP-SGW2404F(config)#show ip igmp snooping groups vlan 5 static
```

Display the count of dynamic multicast entries of VLAN 5

```
LP-SGW2404F(config)#show ip igmp snooping groups vlan 5 dynamic count
```

Display the count of static multicast entries of VLAN 5

```
LP-SGW2404F(config)#show ip igmp snooping groups vlan 5 static count
```

## 27.17 show ip igmp snooping filter

## Description

The **show ip igmp snooping filter** command is used to display the Multicast Filter Address table.

## Syntax

```
show ip igmp snooping filter [ filter-addr-id-list ]
```

## Parameter

*filter-addr-id-list* —The multicast ID selected to display the multicast filter address information. It is optional.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display all the multicast filter address information:

```
LP-SGW2404F(config)# show ip igmp snooping filter
```

## Chapter 28 MLD Snooping Commands

MLD Snooping (Multicast Listener Discovery Snooping) is a multicast control mechanism running on Layer 2 switch. It can effectively prevent multicast groups being broadcasted in the IPv6 network.

### 28.1 ipv6 mld snooping

#### Description

The **ipv6 mld snooping** command is used to enable MLD Snooping function globally. If this function is disabled, all related MLD Snooping function would not work. To disable this function, please use **no ipv6 mld snooping** command.

#### Syntax

```
ipv6 mld snooping
no ipv6 mld snooping
```

#### Command Mode

Global Configuration Mode

#### Example

Enable MLD Snooping:

```
LP-SGW2404F(config)# ipv6 mld snooping
```

### 28.2 ipv6 mld snooping router-aging-time

#### Description

The **ipv6 mld snooping router-aging-time** command is used to specify router port aging time globally. The default aging time is 260 seconds. To restore the default timer, please use **no ipv6 mld snooping router-aging-time** command.

#### Syntax

```
ipv6 mld snooping router-aging-time timer
no ipv6 mld snooping router-aging-time
```

#### Parameter

*timer* — Specify the aging time in seconds, ranging from 1 to 1000.

#### Command Mode

Global Configuration Mode

### Example

Specify MLD Snooping router port aging time as 100 seconds globally:

```
LP-SGW2404F(config)# ipv6 mld snooping router-aging-time 100
```

## 28.3 ipv6 mld snooping member-aging-time

### Description

The **ipv6 mld snooping member-aging-time** command is used to specify member port aging time globally. The default aging time is 260 seconds. To restore the default timer, please use **no ipv6 mld snooping member-aging-time** command.

### Syntax

```
ipv6 mld snooping member-aging-time timer  
no ipv6 mld snooping member-aging-time
```

### Parameter

*timer* — Specify the aging time in seconds, ranging from 200 to 1000.

### Command Mode

Global Configuration Mode

### Example

Specify MLD Snooping member port aging time as 100 seconds globally:

```
LP-SGW2404F(config)# ipv6 mld snooping member-aging-time 100
```

## 28.4 ipv6 mld snooping report-suppression

### Description

The **ipv6 mld snooping report-suppression** command is used to enable the Report message suppression function. By default, it is enabled. To disable this function, please use **no ipv6 mld snooping report-suppression** command.

### Syntax

```
ipv6 mld snooping report-suppression  
no ipv6 mld snooping report-suppression
```

### Command Mode

Global Configuration Mode

### Example

Disable Report message suppression function:

```
LP-SGW2404F(config)# no ipv6 mld snooping report-suppression
```

## 28.5 ipv6 mld snooping unknown-filter

### Description

The **ipv6 mld snooping unknown-filter** command is used to enable the unknown multicast packets filter function. To disable this function, please use **no ipv6 mld snooping unknown-filter** command. By default, it is disabled.

### Syntax

```
ipv6 mld snooping unknown-filter  
no ipv6 mld snooping unknown-filter
```

### Command Mode

Global Configuration Mode

### Example

Enable unknown multicast filter function:

```
LP-SGW2404F(config)# ipv6 mld snooping unknown-filter
```

## 28.6 ipv6 mld snooping last-listener query-inteval

### Description

The **ipv6 mld snooping last-listener query-inteval** command is used to specify the interval to send Specific Query Message. The default value is 1 second. To restore the default interval, please use **no ipv6 mld snooping last-listener query-inteval** command.

### Syntax

```
ipv6 mld snooping last-listener query-inteval interval  
no ipv6 mld snooping last-listener query-inteval
```

### Parameter

*interval* — Specify the interval to send Specific Query Message in seconds, ranging from 1 to 5.

### Command Mode

Global Configuration Mode

### Example



Specify the interval of Specific Query Message to 3 seconds:

```
LP-SGW2404F(config)# ipv6 mld snooping last-listener query-inteval 3
```

## 28.7 ipv6 mld snooping last-listener query-count

### Description

The **ipv6 mld snooping last-listener query-count** command is used to specify the numbers of Specific Query Message to be sent. The default value is 2. To restore the default number, please use **no ipv6 mld snooping last-listener query-count** command.

### Syntax

```
ipv6 mld snooping last-listener query-count num  
no ipv6 mld snooping last-listener query-count
```

### Parameter

*num* — Specify the numbers of Specific Query Message to be sent, ranging from 1 to 7.

### Command Mode

Global Configuration Mode

### Example

Specify the number of Specific Query Message to 3:

```
LP-SGW2404F(config)# ipv6 mld snooping last-listener query-count 3
```

## 28.8 ipv6 mld snooping multicast-vlan

### Description

The **ipv6 mld snooping multicast-vlan** command is used to enable the multicast VLAN function. To disable this function, please use **no ipv6 mld snooping multicast-vlan** command. By default it is disabled.

### Syntax

```
ipv6 mld snooping multicast-vlan  
no ipv6 mld snooping multicast-vlan
```

### Command Mode

Global Configuration Mode

### Example

Enable multicast VLAN:

```
LP-SGW2404F(config)# ipv6 mld snooping multicast-vlan
```

## 28.9 ipv6 mld snooping multicast-vlan vlan-id

### Description

The **ipv6 mld snooping multicast-vlan vlan-id** command is used to specify the multicast VLAN ID. The default multicast VLAN is VLAN1. To restore the default VLAN, please use **no ipv6 mld snooping multicast-vlan vlan-id** command.

### Syntax

```
ipv6 mld snooping multicast-vlan vlan-id vid  
no ipv6 mld snooping multicast-vlan vlan-id
```

### Parameter

*vid* — The specified IEEE 802.1Q VLAN ID, ranging from 1 to 4094.

### Command Mode

Global Configuration Mode

### Example

Specify multicast VLAN as VLAN 2:

```
LP-SGW2404F(config)# ipv6 mld snooping multicast-vlan vlan-id 2
```

## 28.10 ipv6 mld snooping vlan

### Description

The **ipv6 mld snooping vlan** command is used to enable MLD Snooping function on a specified VLAN. To disable it, please use **no ipv6 mld snooping vlan** command.

### Syntax

```
ipv6 mld snooping vlan vlan-id  
no ipv6 mld snooping vlan vlan-id
```

### Parameter

*vlan-id* — The specified VLAN ID to enable MLD Snooping function, ranging from 1 to 4094.

### Command Mode

Global Configuration Mode

## Example

Enable MLD Snooping function on VLAN 2:

```
LP-SGW2404F(config)# ipv6 mld snooping vlan 2
```

## 28.11 ipv6 mld snooping vlan router-aging-time

### Description

The **ipv6 mld snooping vlan router-aging-time** command is used to specify router port aging time for a specified VLAN. If this time is set to 0, then the global router port aging time will be used. The default time is 0. To restore the default timer, please use **no ipv6 mld snooping vlan router-aging-time** command.

### Syntax

```
ipv6 mld snooping vlan vlan-id router-aging-time timer  
no ipv6 mld snooping vlan vlan-id router-aging-time
```

### Parameter

*vlan-id* — The specified IEEE 802.1Q VLAN ID, ranging from 1 to 4094.  
*timer* — Aging time of the router port in seconds, ranging from 0 to 1000.

### Command Mode

Global Configuration Mode

### Example

Specify the router port aging time as 100 seconds in VLAN 2:

```
LP-SGW2404F(config)# ipv6 mld snooping vlan 2 router-aging-time 100
```

## 28.12 ipv6 mld snooping vlan member-aging-time

### Description

The **ipv6 mld snooping vlan member-aging-time** command is used to specify member port aging time for a specified VLAN. If this time is set to 0, then the global member port aging time will be used. The default time is 0. To restore the default timer, please use **no ipv6 mld snooping vlan member-aging-time** command.

### Syntax

```
ipv6 mld snooping vlan vlan-id member-aging-time timer  
no ipv6 mld snooping vlan vlan-id member-aging-time
```

### Parameter

*vlan-id* — The specified IEEE 802.1Q VLAN ID, ranging from 1 to 4094.  
*timer* — Aging time of the member port in seconds, ranging from 200 to 1000 and 0.

### Command Mode

Global Configuration Mode

### Example

Specify the member port aging time as 100 seconds in VLAN 2:

```
LP-SGW2404F(config)# ipv6 mld snooping vlan 2 member-aging-time 100
```

## 28.13 ipv6 mld snooping vlan immediate-leave

### Description

The **ipv6 mld snooping vlan immediate-leave** command is used to enable the immediate leave function on a specified VLAN. To disable this function, please use **no ipv6 mld snooping vlan immediate-leave** command. By default, it is disabled.

### Syntax

```
ipv6 mld snooping vlan vlan-id immediate-leave  
no ipv6 mld snooping vlan vlan-id immediate-leave
```

### Parameter

*vlan-id* — The specified IEEE 802.1Q VLAN ID to enable the immediate leave function, ranging from 1 to 4094.

### Command Mode

Global Configuration Mode

### Example

Enable immediate leave function on VLAN 2:

```
LP-SGW2404F(config)# ipv6 mld snooping vlan 2 immediate-leave
```

## 28.14 ipv6 mld snooping vlan mrouter

### Description

The **ipv6 mld snooping vlan mrouter** command is used to configure the static router port in a specified VLAN. To disable the static router port, please use **no mld snooping vlan mrouter** command.

### Syntax

```
ipv6 mld snooping vlan vlan-id mrouter interface gigabitEthernet port
no ipv6 mld snooping vlan vlan-id mrouter [interface gigabitEthernet port]
```

### Parameter

*vlan-id* — The specified IEEE 802.1Q VLAN ID, ranging from 1 to 4094.  
*port* — Interface number of the router port(s).

### Command Mode

Global Configuration Mode

### Example

Configure the gigabitEthernet 1/0/2 as static router port in VLAN 2:

```
LP-SGW2404F(config)# ipv6 mld snooping vlan 2 mrouter interface
gigabitEthernet 1/0/2
```

## 28.15 ipv6 mld snooping vlan static

### Description

The **ipv6 mld snooping vlan static** command is used to configure the static multicast groups. To disable the static multicast group, please use **no ipv6 mld snooping vlan static** command.

### Syntax

```
ipv6 mld snooping vlan vlan-id static ipv6_multicast_addr interface
gigabitEthernet port
no ipv6 mld snooping vlan vlan-id static ipv6_multicast_addr [interface
gigabitEthernet port]
```

### Parameter

*vlan-id* — The multicast group VLAN ID, ranging from 1 to 4094.  
*ipv6\_multicast\_addr* — IPv6 address of the static multicast group.  
*port* — Interface number of the member port(s).

### Command Mode

Global Configuration Mode

### Example

Configure the static multicast group ff80::1234 in VLAN 2 with the member port gigabitEthernet 1/0/2:

```
LP-SGW2404F(config)# ipv6 mld snooping vlan 2 static ff80::1234 interface
gigabitEthernet 1/0/2
```

## 28.16 ipv6 mld snooping querier vlan

### Description

The **ipv6 mld snooping querier vlan** command is used to enable the MLD Querier function. To disable this function, please use **no ipv6 mld snooping querier vlan** command.

### Syntax

```
ipv6 mld snooping querier vlan vlan-id  
no ipv6 mld snooping querier vlan vlan-id
```

### Parameter

*vlan-id* — The VLAN that enables the MLD querier function, ranging from 1 to 4094.

### Command Mode

Global Configuration Mode

### Example

Enable MLD Querier function on VLAN 2:

```
LP-SGW2404F(config)# ipv6 mld snooping querier vlan 2
```

## 28.17 ipv6 mld snooping querier vlan max-response-time

### Description

The **ipv6 mld snooping querier vlan max-response-time** command is used to specify the max response time of the Query message. The default value is 10 seconds. To restore the default value, please use **no ipv6 mld snooping querier vlan max-response-time** command.

### Syntax

```
ipv6 mld snooping querier vlan vlan-id max-response-time time  
no ipv6 mld snooping querier vlan vlan-id max-response-time
```

### Parameter

*vlan-id* — The VLAN that enables the MLD Querier function, ranging from 1 to 4094.

*time* — Specify the time in seconds, ranging from 1 to 25.

### Command Mode

Global Configuration Mode

### Example

Specify the max response time as 10s on VLAN 2:

```
LP-SGW2404F(config)# ipv6 mld snooping querier vlan 2 max-response-time  
10
```

## 28.18 ipv6 mld snooping querier vlan query-interval

### Description

The **ipv6 mld snooping querier vlan query-interval** command is used to specify the interval to send the Query Message. The default value is 25 seconds. To restore the default value, please use **no ipv6 mld snooping querier vlan query-interval** command.

### Syntax

```
ipv6 mld snooping querier vlan vlan-id query-interval interval  
no ipv6 mld snooping querier vlan vlan-id query-interval
```

### Parameter

*vlan-id* —The VLAN that enables the MLD Querier function, ranging from 1 to 4094.

*interval* — Specify the interval to send the Query message in seconds, ranging from 2 to 300.

### Command Mode

Global Configuration Mode

### Example

Specify the interval to send the Query Message as 10s on VLAN 2:

```
LP-SGW2404F(config)# ipv6 mld snooping querier vlan 2 query-interval 10
```

## 28.19 ipv6 mld snooping querier vlan query-source

### Description

The **ipv6 mld snooping querier vlan query-source** command is used to specify the source address which sends the Query message. The default value is FE80::02FF:FFFF:FE00:0001. To restore the default value, please use **no ipv6 mld snooping querier vlan query-source** command.

### Syntax

```
ipv6 mld snooping querier vlan vlan-id query-source ipv6-addr
no ipv6 mld snooping querier vlan vlan-id query-source
```

### Parameter

*vlan-id* — IEEE 802.1Q VLAN ID, ranging from 1 to 4094.  
*ipv6-addr* — Specify the IPv6 source address.

### Command Mode

Global Configuration Mode

### Example

Specify the source address which sends the Query message as fe80::1234 on VLAN 2:

```
LP-SGW2404F(config)# ipv6 mld snooping querier vlan 2 query-source
fe80::1234
```

## 28.20 ipv6 mld snooping filter(global)

### Description

The **ipv6 mld snooping filter** command is used to configure the multicast group filter entries in the format of ip-range. To disable the filter entry, please use **no ipv6 mld snooping filter** command.

### Syntax

```
ipv6 mld snooping filter filter-id start-ipv6 end-ipv6
no ipv6 mld snooping filter filter-id
```

### Parameter

*filter-id* — Specify the filter ID, ranging from 1 to 30.  
*start-ipv6* — Start IPv6 multicast address of the filter entry.  
*end-ipv6* — End IPv6 multicast address of the filter entry.

### Command Mode

Global Configuration Mode

### Example

Create filter entry with filter ID as 2, start IP as ff80::1234 and end IP as ff80::1235:

```
LP-SGW2404F(config)# ipv6 mld snooping filter 2 ff80::1234 ff80::1235
```



## 28.21 ipv6 mld snooping filter(interface)

### Description

The **ipv6 mld snooping filter** command is used to enable the filter function on the interface. To disable the filter function, please use **no ipv6 mld snooping filter** command.

### Syntax

```
ipv6 mld snooping filter
no ipv6 mld snooping filter
```

### Command Mode

Interface Configuration Mode

### Example

Enable filter function on interface gigabitEthernet 1/0/2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
LP-SGW2404F(config-if)# ipv6 mld snooping filter
```

## 28.22 ipv6 mld snooping filter-mode

### Description

The **ipv6 mld snooping filter-mode** command is used to configure the filter mode of the interface. The default mode is accept. To restore the default mode, please use **no ipv6 mld snooping filter-mode** command.

### Syntax

```
ipv6 mld snooping filter-mode {accept | refuse}
no ipv6 mld snooping filter-mode
```

### Parameter

accept — Accept the multicast groups within the filter entry.  
refuse — Refuse the multicast groups within the filter entry.

### Command Mode

Interface Configuration Mode

### Example

Configure the filter mode as refuse on interface gigabitEthernet 1/0/2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
```

```
LP-SGW2404F(config-if)# ipv6 mld snooping filter-mode refuse
```

## 28.23 ipv6 mld snooping filter-id

### Description

The **ipv6 mld snooping filter-id** command is used to specify the filter id on the interface. To disable this configuration, please use **no ipv6 mld snooping filter-id** command.

### Syntax

```
ipv6 mld snooping filter-id filter-list  
no ipv6 mld snooping filter-id
```

### Parameter

*filter-list* — Specify the filter id list, in format of 1,3,10.

### Command Mode

Interface Configuration Mode

### Example

Specify the filter id as 1 and 10 on interface gigabitEthernet 1/0/2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2  
LP-SGW2404F(config-if)# ipv6 mld snooping filter-id 1,10
```

## 28.24 ipv6 mld snooping max-group

### Description

The **ipv6 mld snooping max-group** command is used to specify the limit number of groups for a port to join in. The default value is 256. To restore the default value, please use **no ipv6 mld snooping max-group** command.

### Syntax

```
ipv6 mld snooping max-group limit  
no ipv6 mld snooping max-group
```

### Parameter

*limit* — Specify the max number of multicast groups on a port, ranging from 0 to 256.

### Command Mode

Interface Configuration Mode

### Example

Specify the limit group as 128 on interface gigabitEthernet 1/0/2:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/2
LP-SGW2404F(config-if)# ipv6 mld snooping max-group 128
```

## 28.25 clear ipv6 mld snooping statistics

### Description

The **clear ipv6 mld snooping statistics** command is used to clear the statistics of the MLD packets.

### Syntax

```
clear ipv6 mld snooping statistics
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Clear the statistics of the MLD packets:

```
LP-SGW2404F(config)# clear ipv6 mld snooping statistics
```

## 28.26 show ipv6 mld snooping

### Description

The **show ipv6 mld snooping** command is used to display the global configuration of MLD Snooping.

### Syntax

```
show ipv6 mld snooping
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the global configuration of MLD Snooping:

```
LP-SGW2404F(config)# show ipv6 mld snooping
```

## 28.27 show ipv6 mld snooping vlan

### Description

The **show ipv6 mld snooping vlan** command is used to display VLAN information of MLD Snooping.

### Syntax

```
show ipv6 mld snooping vlan [vlan-id]
```

### Parameter

*vlan-id* — The VLAN ID selected to display, ranging from 1 to 4094.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display all of the VLAN information:

```
LP-SGW2404F(config)# show ipv6 mld snooping vlan
```

## 28.28 show ipv6 mld snooping static-mcast

### Description

The **show ipv6 mld snooping static-mcast** command is used to display the static multicast groups configured by users.

### Syntax

```
show ipv6 mld snooping static-mcast
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display static multicast groups:

```
LP-SGW2404F(config)# show ipv6 mld snooping static-mcast
```

## 28.29 show ipv6 mld snooping group

### Description

The **show ipv6 mld snooping group** command is used to display multicast groups.

### Syntax

```
show ipv6 mld snooping group [ dynamic | static ][ vlan vlan-id ]
```

### Parameter

dynamic — Display dynamic groups.

static — Display static groups.

*vlan-id* — The VLAN ID selected to display, ranging from 1 to 4094.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display all of the multicast groups:

```
LP-SGW2404F(config)# show ipv6 mld snooping group
```

## 28.30 show ipv6 mld snooping filter

### Description

The **show ipv6 mld snooping filter** command is used to display the filter entries.

### Syntax

```
show ipv6 mld snooping filter
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the filter entries:

```
LP-SGW2404F(config)# show ipv6 mld snooping filter
```

## 28.31 show ipv6 mld snooping interface

### Description

The **show ipv6 mld snooping interface** command is used to display the interface information of MLD Snooping.

### Syntax

```
show ipv6 mld snooping interface [ gigabitEthernet port ]
```

**Parameter**

*port* — Specify the port number.

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display all of the interface information:

```
LP-SGW2404F(config)# show ipv6 mld snooping interface
```

## 28.32 show ipv6 mld snooping interface filter

**Description**

The **show ipv6 mld snooping interface filter** command is used to display the filter ids bounded to the interface.

**Syntax**

```
show ipv6 mld snooping interface filter [gigabitEthernet port]
```

**Parameter**

*port* — Specify the port number.

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display all filter ids bounded to all interface:

```
LP-SGW2404F(config)# show ipv6 mld snooping interface filter
```

## 28.33 show ipv6 mld snooping querier

**Description**

The **show ipv6 mld snooping querier** command is used to display the Querier configuration of VLAN.

**Syntax**

```
show ipv6 mld snooping querier [vlan vlan-id]
```

**Parameter**

*vlan-id* — The VLAN ID selected to display, ranging from 1 to 4094.

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display all Querier information:

```
LP-SGW2404F(config)# show ipv6 mld snooping querier
```

## 28.34 show ipv6 mld snooping statistics

**Description**

The **show ipv6 mld snooping statistics** command is used to display the statistics of the MLD packets.

**Syntax**

```
show ipv6 mld snooping statistics [interface gigabitEthernet port]
```

**Parameter**

*port* — Specify the port number.

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display statistics of MLD packets:

```
LP-SGW2404F(config)# show ipv6 mld snooping statistics
```

## Chapter 29 SNMP Commands

SNMP (Simple Network Management Protocol) functions are used to manage the network devices for a smooth communication, which can facilitate the network administrators to monitor the network nodes and implement the proper operation.

### 29.1 snmp-server

#### Description

The **snmp-server** command is used to enable the SNMP function. By default, it is disabled. To return to the default configuration, please use **no snmp-server** command.

#### Syntax

```
snmp-server
```

```
no snmp-server
```

#### Command Mode

Global Configuration Mode

#### Example

Enable the SNMP function:

```
LP-SGW2404F(config)# snmp-server
```

### 29.2 snmp-server view

#### Description

The **snmp-server view** command is used to add View. To delete the corresponding View, please use **no snmp-server view** command. The OID (Object Identifier) of the SNMP packets is used to describe the managed objects of the switch, and the MIB (Management Information Base) is the set of the OIDs. The SNMP View is created for the SNMP management station to manage MIB objects.

#### Syntax

```
snmp-server view name mib-oid { include | exclude }
```

```
no snmp-server view name mib-oid
```

#### Parameter



*name* — The entry name of View, ranging from 1 to 16 characters. Each View includes several entries with the same name.

*mib-oid* — MIB Object ID. It is the Object Identifier (OID) for the entry of View, ranging from 1 to 61 characters.

include | exclude — View Type, with include and exclude options. They represent the view entry can/cannot be managed by the SNMP management station individually.

## Command Mode

Global Configuration Mode

## Example

Add a View named view1, configuring the OID as 1.3.6.1.6.3.20, and this OID can be managed by the SNMP management station:

```
LP-SGW2404F(config)# snmp-server view view1 1.3.6.1.6.3.20 include
```

## 29.3 snmp-server group

### Description

The **snmp-server group** command is used to manage and configure the SNMP group. To delete the corresponding SNMP group, please use **no snmp-server group** command. SNMP v3 provides the VACM (View-based Access Control Model) and USM (User-Based Security Model) mechanisms for authentication. The users in the SNMP Group can manage the device via the Read View, Write View and Notify View. And the authentication mode and the privacy mode guarantee the high security for the communication between the management station and the managed device.

### Syntax

```
snmp-server group name [ smode { v1 | v2c | v3 } ] [ slev { noAuthNoPriv | authNoPriv | authPriv } ] [ read read-view ] [ write write-view ] [ notify notify-view ]
```

```
no snmp-server group name smode { v1 | v2c | v3 } slev { noAuthNoPriv | authNoPriv | authPriv }
```

### Parameter

*name* — The SNMP Group name, ranging from 1 to 16 characters. The Group Name, Security Model and Security Level compose the identifier of the SNMP Group. These three items of the Users in one group should be the same.

v1 | v2c | v3 — Security Model, with v1, v2c and v3 options. They represent SNMP v1, SNMP v2c and SNMP v3.

noAuthNoPriv | authNoPriv | authPriv — The Security Level of SNMP v3 Group. There are three options, including noAuthNoPriv (no authorization and no encryption), authNoPriv (authorization and no encryption) and authPriv (authorization and encryption). By default, the Security Level is noAuthNoPriv. There is no need to configure this in SNMP v1 Mode and SNMP v2c Mode.

*read-view* — Select the View to be the Read View. The management access is restricted to read-only, and changes cannot be made to the assigned SNMP View.

*write-view* — Select the View to be the Write View. The management access is writing only and changes can be made to the assigned SNMP View. The View defined both as the Read View and the Write View can be read and modified.

*notify-view* — Select the View to be the Notify View. The management station can receive notification messages of the assigned SNMP view generated by the switch's SNMP agent.

## Command Mode

Global Configuration mode

## Example

Add a group, and configure the name as group 1, the Security Model as SNMP v3, the security level as authNoPriv, the management access to the assigned View viewDefault as read-write, besides the notification messages sent by View viewDefault can be received by Management station:

```
LP-SGW2404F(config)# snmp-server group group1 smode v3 slev authNoPriv
read viewDefault write viewDefault notify viewDefault
```

Delete group 1:

```
LP-SGW2404F(config)# no snmp-server group group1 smode v3 slev
authNoPriv
```

## 29.4 snmp-server user

### Description

The **snmp-server user** command is used to add User. To delete the corresponding User, please use **no snmp-server user** command. The User in an SNMP Group can manage the switch via the management station software. The User and its Group have the same security level and access right.

### Syntax

```
snmp-server user name { local | remote } group-name [ smode { v1 | v2c | v3 } ] [
slev { noAuthNoPriv | authNoPriv | authPriv } ] [ cmode { none | MD5 | SHA } ] [
cpwd confirm-pwd ] [ emode { none | DES } ] [ epwd encrypt-pwd ]
no snmp-server user name
```

## Parameter

*name* — User Name, ranging from 1 to 16 characters.

local | remote — User Type, with local and remote options. Local indicates that the user is connected to a local SNMP engine, while remote means that the user is connected to a remote SNMP engine.

*group-name* — The Group Name of the User. The User is classified to the corresponding Group according to its Group Name, Security Model and Security Level.

**smode** { v1 | v2c | v3 } — The Security Model of the User, with v1, v2c and v3 options. By default, the option is v1. The Security Model of the User must be the same with that of the Group which the User belongs to.

**slev** { noAuthNoPriv | authNoPriv | authPriv } — The Security Level of SNMP v3 Group. There are three options, including noAuthNoPriv (no authorization and no encryption), authNoPriv (authorization and no encryption) and authPriv (authorization and encryption). By default, the option is “noAuthNoPriv”. The Security Level of the User must be the same with that of the Group which the User belongs to.

**cmode** { none | MD5 | SHA } — The Authentication Mode of the SNMP v3 User, with none, MD5 and SHA options. None indicates no authentication method is used, MD5 indicates the port authentication is performed via HMAC-MD5 algorithm and SHA indicates the port authentication is performed via SHA (Secure Hash Algorithm). SHA authentication mode has a higher security than MD5 mode. By default, the Authentication Mode is “none”.

*confirm-pwd* — Authentication Password, ranging from 1 to 16 characters.

**emode** { none | DES } — The Privacy Mode of the SNMP v3 User, with none and DES options. None indicates no privacy method is used, and DES indicates DES encryption method is used. By default, the Privacy Mode is “none”.

*encrypt-pwd* — Privacy Password, ranging from 1 to 16 characters.

## Command Mode

Global Configuration Mode

### Example

Add Local User admin to Group group2, and configure the Security Model of the user as v3, the Security Level of the group as authPriv, the Authentication Mode of the user as MD5, the Authentication Password as 11111, the Privacy Mode as DES, and the Privacy Password as 22222:

```
LP-SGW2404F(config)# snmp-server user admin local group2 smode v3 slev
authPriv cmode MD5 cpwd 11111 emode DES epwd 22222
```

## 29.5 snmp-server community

### Description

The **snmp-server community** command is used to add Community. To delete the corresponding Community, please use **no snmp-server community** command. SNMP v1 and SNMP v2c adopt community name authentication. The community name can limit access to the SNMP agent from SNMP network management station, functioning as a password.

### Syntax

```
snmp-server community name { read-only | read-write } mib-view
no snmp-server community name
```

### Parameter

*name* — Community Name, ranging from 1 to 16 characters.

read-only | read-write — The access rights of the community, with read-only and read-write options.

*mib-view* — The MIB View for the community to access.

### Command Mode

Global Configuration Mode

### Example

Add community public, and the community has read-write management right to View viewDefault:

```
LP-SGW2404F(config)# snmp-server community public read-write viewDefault
```

## 29.6 snmp-server host

## Description

The **snmp-server host** command is used to add Notification. To delete the corresponding Notification, please use **no snmp-server host** command.

## Syntax

```
snmp-server host ip udp-port user-name [ smode { v1 | v2c | v3 } ] [ slev { noAuthNoPriv | authNoPriv | authPriv } ] [ type { trap | inform } ] [ retries retries ] [ timeout timeout ]
```

```
no snmp-server host ip user-name
```

## Parameter

*ip* — The IP Address of the management Host. Both IPv4 and IPv6 addresses are supported, for example 192.168.0.100 or fe80::1234.

*udp-port* — UDP port, which is used to send notifications. The UDP port functions with the IP address for the notification sending. It ranges from 1 to 65535.

*user-name* — The User name of the management station.

**smode** { v1 | v2c | v3 } — The Security Model of the management station, with v1, v2c and v3 options. By default, the option is v1.

**slev** { noAuthNoPriv | authNoPriv | authPriv } — The Security Level of SNMP v3 Group. There are three options, including noAuthNoPriv (no authorization and no encryption), authNoPriv (authorization and no encryption) and authPriv (authorization and encryption). By default, the option is “noAuthNoPriv”.

**type** { trap | inform } — The type of the notifications, with trap and inform options. Trap indicates traps are sent, while inform indicates informs are sent. The inform type has a higher security than the trap type and resend and timeout need to be configured if you select this option. You can only select the trap type in Security Model v1. By default, the type of the notifications is “trap”.

*retries* — The amount of times the switch retries an inform request, ranging from 1 to 255. The switch will resend the inform request if it doesn't get the response from the management station during the Timeout interval, and it will terminate resending the inform request if the resending times reach the specified Retry times.

*timeout* — The maximum time for the switch to wait for the response from the management station before resending a request, ranging from 1 to 3600 in seconds.

## Command Mode

Global Configuration Mode

## Example

Add a Notification entry, and configure the IP Address of the management Host as 192.168.0.146, the UDP port as 162, the User name of the management station as admin, the Security Model of the management station as v2c, the type of the notifications as inform, the maximum time for the switch to wait as 1000 seconds, and the retries time as 100:

```
LP-SGW2404F(config)# snmp-server host 192.168.0.146 162 admin smode v2c
type inform retries 100 timeout 1000
```

Add a Notification entry, and configure the IP Address of the management Host as fe80::1234, the UDP port as 162, the User name of the management station as admin, the Security Model of the management station as v2c, the type of the notifications as inform, the maximum time for the switch to wait as 1000 seconds, and the retries time as 100:

```
LP-SGW2404F(config)# snmp-server host fe80::1234 162 admin smode v2c
type inform retries 100 timeout 1000
```

## 29.7 snmp-server engineID

### Description

The **snmp-server engineID** command is used to configure the local and remote engineID of the switch. To restore to the default setting, please use **no snmp-server engineID** command.

### Syntax

```
snmp-server engineID { [ local local-engineID ] [ remote remote-engineID ] }
no snmp-server engineID
```

### Parameter

*local-engineID* — Local Engine ID for local clients. The Engine ID is a unique alphanumeric string used to identify the SNMP engine on the switch. Its length ranges from 10 to 64 hexadecimal characters, which must be even number meanwhile.

*remote-engineID* — Remote Engine ID for the switch. The Engine ID is a unique alphanumeric string used to identify the SNMP engine on the remote device which receives informs from the switch. Its length ranges from 10 to 64 hexadecimal

characters, which must be even number meanwhile. The **snmp-server engineID** will be disabled if the **local** and **remote** are both not configured.

### Command Mode

Global Configuration Mode

### Example

Specify the local engineID as 1234567890, and the remote engineID as abcdef123456:

```
LP-SGW2404F(config)# snmp-server engineID local 1234567890 remote
abcdef123456
```

## 29.8 snmp-server traps snmp

### Description

The **snmp-server traps snmp** command is used to enable SNMP standard traps which include four types: linkup, linkdown, warmstart and coldstart. To disable the sending of SNMP standard traps, please use **no snmp-server traps snmp** command.

### Syntax

```
snmp-server traps snmp [ linkup | linkdown | warmstart | coldstart | auth-failure ]
no snmp-server traps snmp [ linkup | linkdown | warmstart | coldstart | auth-failure
]
```

### Parameter

linkup — Enable linkup trap. It is sent when port status changes from linkdown to linkup. By default, it is enabled.

linkdown — Enable linkdown trap. It is sent when port status changes from linkup to linkdown. By default, it is enabled.

warmstart — Enable warmstart trap. It is sent upon SNMP function reboot. By default, it is enabled.

coldstart — Enable coldstart trap. It is sent upon switch reboot. By default, it is enabled.

auth-failure — Enable the auth-failure trap. It is sent when a received SNMP request fails the authentication. By default, it is enabled.

### Command Mode

Global Configuration Mode

### Example

Enable SNMP standard linkup trap for the switch:

```
LP-SGW2404F(config)# snmp-server traps snmp linkup
```

## 29.9 snmp-server traps link-status

### Description

The **snmp-server traps link-status** command is used to enable SNMP link status trap for the specified port. To disable the sending of SNMP link status trap, please use **no snmp-server traps link-status** command.

### Syntax

```
snmp-server traps link-status
```

```
no snmp-server traps link-status
```

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable SNMP link status trap for port 3:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/3
```

```
LP-SGW2404F(config-if)# snmp-server traps link-status
```

## 29.10 snmp-server traps

### Description

The **snmp-server traps** command is used to enable SNMP extended traps. To disable the sending of SNMP extended traps, please use **no snmp-server traps** command.

### Syntax

```
snmp-server traps { bandwidth-control | cpu | flash | ipaddr-change | lldp |  
loopback-detection | storm-control | spanning-tree | memory }
```

```
no snmp-server traps { bandwidth-control | cpu | flash | ipaddr-change | lldp |  
loopback-detection | storm-control | spanning-tree | memory }
```



## Parameter

**bandwidth-control** — Enable bandwidth-control trap. It is sent when the rate limit function is enabled and the bandwidth exceeds the predefined value.

**cpu** — Allow CPU-related trap. It is sent when CPU usage exceeds the predefined threshold. By default, the CPU usage threshold of the switch is 80%.

**flash** — Enable flash trap. It is sent when flash is modified during operations such as backup, reset, firmware upgrade, configuration import, etc.

**ipaddr-change** — Enable ipaddr-change trap. It is sent when IP address is changed such as user manually modifies the IP address or the switch obtains a new IP address from DHCP.

**lldp** — Enable lldp trap. It is sent when the port's neighbor changes.

**loopback-detection** — Enable loopback-detection trap. It is sent when the switch detects loopback or loopback is cleared.

**storm-control** — Enable storm-control trap. It is sent when the multicast or broadcast rate exceeds the predefined value.

**spanning-tree** — Enable spanning-tree trap. It is sent when the port forwarding status changes or the port receives TCN packet or packet with TC flag.

**memory** — Enable memory trap. It is sent when CPU usage exceeds 80%.

## Command Mode

Global Configuration Mode

## Example

Enable SNMP extended bandwidth-control trap for the switch:

```
LP-SGW2404F(config)# snmp-server traps bandwidth-control
```

## 29.11 snmp-server traps mac

### Description

The **snmp-server traps mac** command is used to enable SNMP extended MAC address-related traps which include four types: new, full, learn-mode-change and max-learned. To disable the sending of SNMP extended MAC address related traps, please use **no snmp-server traps mac** command.

### Syntax

```
snmp-server traps mac [ new | full | learn-mode-change | max-learned ]
```

**no snmp-server traps mac** [ new | full | learn-mode-change | max-learned ]

### Parameter

**new** — Enable new MAC address trap. It is sent when the switch learns new MAC address including dynamic address, static address and filter address.

**full** — Enable MAC address table trap. It is sent when the MAC address table is full.

**learn-mode-change** — Enable MAC address learn-mode-change trap. It is sent when MAC address learning mode of the switch changes.

**max-learned** — Enable MAC address max-learned trap. It is sent when the amount of learned MAC address reaches the limit which is configured in port security module.

### Command Mode

Global Configuration Mode

### Example

Enable all SNMP extended MAC address-related traps for the switch:

```
LP-SGW2404F(config)# snmp-server traps mac
```

Enable new MAC address trap only for the switch:

```
LP-SGW2404F(config)# snmp-server traps mac new
```

## 29.12 snmp-server traps vlan

### Description

The **snmp-server traps vlan** command is used to enable SNMP extended VLAN-related traps which include two types: create and delete. To disable this function, please use **no snmp-server traps vlan** command.

### Syntax

**snmp-server traps vlan** [ create | delete ]

**no snmp-server traps vlan** [create | delete ]

### Parameter

**create** — Enable VLAN-created trap. It is sent when new VLAN is created successfully.

delete — Enable VLAN-deleted traps. It is sent when VLAN is deleted successfully.

### Command Mode

Global Configuration Mode

### Example

Enable all SNMP extended VLAN-related traps for the switch :

```
LP-SGW2404F(config)# snmp-server traps vlan
```

Enable VLAN-created trap only for the switch:

```
LP-SGW2404F(config)# snmp-server traps vlan create
```

## 29.13 rmon history

### Description

The **rmon history** command is used to configure the history sample entry. To return to the default configuration, please use **no rmon history** command. RMON (Remote Monitoring), basing on SNMP architecture, functions to monitor the network. History Group is one of the commonly used RMON Groups. After a history group is configured, the switch collects network statistics information periodically, based on which the management station can monitor network effectively.

### Syntax

```
rmon history index interface gigabitEthernet port [ interval seconds ] [ owner owner-name ]
```

```
no rmon history index
```

### Parameter

*index* — The index number of the entry, ranging from 1 to 12, in the format of 1-3,5.

*port* — The Ethernet port number.

*seconds* — The interval to take samplings from the port, ranging from 10 to 3600 in seconds. By default, it is 1800.

*owner-name* — The owner of the history sample entry, ranging from 1 to 16 characters. By default, it is “monitor”.

### Command Mode

Global Configuration Mode

### Example

Configure the sample port as Gi1/0/2 and the sample interval as 100 seconds for the entry 1-3:

```
LP-SGW2404F(config)# rmon history 1-3 interface gigabitEthernet 1/0/2
interval 100 owner owner1
```

## 29.14 rmon event

### Description

The **rmon event** command is used to configure the entries of SNMP-RMON Event. To return to the default configuration, please use **no rmon event** command. Event Group, as one of the commonly used RMON Groups, is used to define RMON events. Alarms occur when an event is detected.

### Syntax

```
rmon event index [ user user-name ] [ description descript ] [ type { none | log |
notify | log-notify } ] [ owner owner-name ]
```

```
no rmon event index
```

### Parameter

*index* — The index number of the event entry, ranging from 1 to 12. You can only select one entry for each command.

*user-name* — The name of the User to which the event belongs, ranging from 1 to 16 characters. By default, it is “public”.

*descript* — The description of the event, ranging from 1 to 16 characters. By default, it is empty.

*type* — The event type, with none, log, notify and both options. None indicates no processing, log indicates logging the event, notify indicates sending trap messages to the management station, and both indicates logging the event and sending trap messages to the management station.

*owner-name* — The owner of the event entry, ranging from 1 to 16 characters. By default, it is “monitor”.

### Command Mode

Global Configuration Mode

## Example

Configure the user name of entry 1, 2, 3 and 4 as user1, the description of the event as description1, the type of event as log and the owner of the event as owner1:

```
LP-SGW2404F(config)# rmon event 1-4 user user1 description description1
type log owner owner1
```

## 29.15 rmon alarm

### Description

The **rmon alarm** command is used to configure SNMP-RMON Alarm Management. To return to the default configuration, please use **no rmon alarm** command. Alarm Group is one of the commonly used RMON Groups. RMON alarm management allows monitoring the specific alarm variables. When the value of a monitored variable exceeds the threshold, an alarm event is generated, which triggers the switch to act in the set way.

### Syntax

```
rmon alarm index interface gigabitEthernet port [ alarm-variable { drop | revbyte
| revpkt | bpkt | mpkt | crc-lign | undersize | oversize | fragment | jabber | collision |
64 | 65-127 | 128-511 | 512-1023 | 1024-10240 } ] [ s-type { absolute | delta} ] [
rising-threshold r-hold ] [ rising-event-index r-event ] [ falling-threshold f-hold ] [
falling-event-index f-event ] [ a-type { rise | fall | all } ] [ owner owner-name ] [
interval interval ]
```

```
no rmon alarm index
```

### Parameter

*index* — The index number of the Alarm Management entry, ranging from 1 to 12, in the format of 1-3,5.

*port* — The Ethernet port number.

alarm-variable — The alarm variable. By default, the option is “drop”.

s-type — Sample Type, which is the sampling method for the selected variable and comparing the value against the thresholds. There are two options, absolute and delta. Absolute indicates comparing the values directly with the thresholds at the end of the sampling interval. Delta indicates subtracting the last sampled value

from the current value, and then comparing the difference in the values with the threshold. By default, the Sample Type is “absolute”.

*r-hold* — The rising counter value that triggers the Rising Threshold alarm, ranging from 1 to 65535. By default, it is 100.

*r-event* — Rise Event, which is the index of the corresponding event which will be triggered if the sampled value is larger than the Rising Threshold. It ranges from 1 to 12.

*f-hold* — The falling counter value that triggers the Falling Threshold alarm, ranging from 1 to 65535. By default, it is 100.

*f-event* — Fall Event, which is the index of the corresponding event which will be triggered if the sampled value is lower than the Falling Threshold. It ranges from 1 to 12.

*a-type* — Alarm Type, with rise, fall and all options. Rise indicates that the alarm event will be triggered when the sampled value exceeds the Rising Threshold, fall indicates that the alarm event will be triggered when the sampled value is under the Falling Threshold, and all indicates that the alarm event will be triggered either the sampled value exceeds the Rising Threshold or is under the Falling Threshold. By default, the Alarm Type is “all”.

*owner-name* — The owner of the entry, ranging from 1 to 16 characters. By default, it is “monitor”.

*interval* — The alarm interval time, ranging from 10 to 3600 in seconds. By default, it is 1800.

## Command Mode

Global Configuration Mode

## Example

Configure the port of entries of 1,2 and 3 as port 2, the owners as owner1 and the alarm intervals as 100 seconds

```
LP-SGW2404F(config)# rmon alarm 1-3 interface gigabitEthernet 1/0/2 owner  
owner1 interval 100
```

## 29.16 show snmp-server

### Description

The **show snmp-server** command is used to display SNMP configuration globally.

**Syntax**

```
show snmp-server
```

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display SNMP configuration globally:

```
LP-SGW2404F# show snmp-server
```

## 29.17 show snmp-server view

**Description**

The **show snmp-server view** command is used to display the View table.

**Syntax**

```
show snmp-server view
```

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the View table:

```
LP-SGW2404F# show snmp-server view
```

## 29.18 show snmp-server group

**Description**

The **show snmp-server group** command is used to display the Group table.

**Syntax**

```
show snmp-server group
```

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the Group table:

```
LP-SGW2404F# show snmp-server group
```

## 29.19 show snmp-server user

### Description

The **show snmp-server user** command is used to display the User table.

### Syntax

```
show snmp-server user
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the User table:

```
LP-SGW2404F# show snmp-server user
```

## 29.20 show snmp-server community

### Description

The **show snmp-server community** command is used to display the Community table.

### Syntax

```
show snmp-server community
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the Community table:

```
LP-SGW2404F# show snmp-server community
```

## 29.21 show snmp-server host

### Description

The **show snmp-server host** command is used to display the Host table.

### Syntax

```
show snmp-server host
```

### Command Mode



Privileged EXEC Mode and Any Configuration Mode

### Example

Display the Host table:

```
LP-SGW2404F# show snmp-server host
```

## 29.22 show snmp-server engineID

### Description

The **show snmp-server engineID** command is used to display the engineID of the SNMP.

### Syntax

```
show snmp-server engineID
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the engineID:

```
LP-SGW2404F# show snmp-server engineID
```

## 29.23 show rmon history

### Description

The **show rmon history** command is used to display the configuration of the history sample entry.

### Syntax

```
show rmon history [ index ]
```

### Parameter

*index* — The index number of the entry selected to display the configuration, ranging from 1 to 12, in the format of 1-3, 5. You can select more than one entry for each command. By default, the configuration of all history sample entries is displayed.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration of all history sample entries:

```
LP-SGW2404F# show rmon history
```

## 29.24 show rmon event

### Description

The **show rmon event** command is used to display the configuration of SNMP-RMON Event.

### Syntax

```
show rmon event [ index ]
```

### Parameter

*index* — The index number of the entry selected to display the configuration, ranging from 1 to 12, in the format of 1-3, 5. You can select more than one entry for each command. By default, the configuration of all SNMP-RMON enabled entries is displayed.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the Event configuration of entry1-4:

```
LP-SGW2404F# show rmon event 1-4
```

## 29.25 show rmon alarm

### Description

The **show rmon alarm** command is used to display the configuration of the Alarm Management entry.

### Syntax

```
show rmon alarm [ index ]
```

### Parameter

*index* — The index number of the entry selected to display the configuration, ranging from 1 to 12, in the format of 1-3, 5. You can select more than one entry for

each command. By default, the configuration of all Alarm Management entries is displayed.

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the configuration of the Alarm Management entry 1-2:

```
LP-SGW2404F# show rmon alarm 1-2
```

## Chapter 30 Cluster Commands

Cluster Management function enables a network administrator to manage the scattered devices in the network via a management device. After a commander switch is configured, management and maintenance operations intended for the member devices in a cluster is implemented by the commander device.

### 30.1 cluster ndp

#### Description

The **cluster ndp** command is used to configure NDP globally. To return to the default configuration, please use **no cluster ndp** command. NDP (Neighbor Discovery Protocol) is used to discover the information of the directly connected neighbor devices to support cluster establishing. An NDP-enabled device sends NDP packets regularly to neighbor devices as well as receives NDP packets from neighbor devices. An NDP packet carries the aging time, which indicates the period of the receiving devices to keep the NDP packet.

#### Syntax

**cluster ndp**

**cluster ndp timer** {[ **hello** *hello-time*] [**aging** *aging-time* ]}

**no cluster ndp**

**no cluster ndp timer** {[ **hello** *hello-time* ] [ **aging** *aging-time* ]}

#### Parameter

*hello-time* — Hello Time, which is the interval to send NDP packets. Hello Time ranges from 5 to 254 in seconds. By default, it is 60. Hello Time should be smaller than Aging Time.

*aging-time* — Aging Time, which is the period for the neighbor switch to keep the NDP packets from this switch. Aging Time ranges from 5 to 255 in seconds. By default, it is 180.

#### Command Mode

Global Configuration Mode

#### Example

Enable NDP function globally, and configure Aging Time as 120 seconds, Hello Time as 50 seconds:

```
LP-SGW2404F(config)# cluster ndp
LP-SGW2404F(config)# cluster ndp timer hello 50 aging 120
```

Change Aging Time to 80 seconds:

```
LP-SGW2404F(config)# cluster ndp timer aging 80
```

Change Hello Time to 80 seconds:

```
LP-SGW2404F(config)# cluster ndp timer hello 80
```

## 30.2 cluster ntdp

### Description

The **cluster ntdp** command is used to configure NTDP globally. To return to the default configuration, please use **no cluster ntdp** command. NTDP (Neighbor Topology Discovery Protocol) is used to collect the NDP information and neighboring connection information of each device in a specific network range. It provides the commander switch with the information of devices which can join the cluster and collects topology information of devices within the specified hops.

### Syntax

```
cluster ntdp
```

```
cluster ntdp timer {[ interval-time time ] [ hop-delay value ] [ port-delay value ]}
```

```
cluster ntdp hop hop-value
```

```
no cluster ntdp
```

```
no cluster ntdp timer {[ interval-time time ] [ hop-delay value ] [ port-delay value ]}
```

```
no cluster ntdp hop hop-value
```

### Parameter

*time* — NTDP Interval Time, which is the interval to collect topology information. NTDP Interval Time ranges from 1 to 60 in minutes. By default, it is 1.

**hop-delay** *value* — NTDP Hop Delay, which is the time between the switch receiving NTDP request packets and the switch forwarding NTDP request packets

for the first time. NTDP Hop Delay ranges from 1 to 1000 in milliseconds. By default, it is 200.

**port-delay** *value* — NTDP Port Delay, which is the time between the port forwarding NTDP request packets and its adjacent port forwarding NTDP request packets over. NTDP Port Delay ranges from 1 to 100 in milliseconds. By default, it is 20.

*hop-value* — NTDP Hops, which is the hop count the switch topology collects. NTDP Hops ranges from 1 to 16. By default, it is 3.

### Command Mode

Global Configuration Mode

### Example

Enable NTDP function globally, and specify NTDP Hops as 5, NTDP Interval Time as 30 minutes:

```
LP-SGW2404F(config)# cluster ntdp
LP-SGW2404F(config)# cluster ntdp timer interval-timer 30
LP-SGW2404F(config)# cluster ntdp hop 5
```

## 30.3 cluster explore

### Description

The **cluster explore** command is used to manually collect the topology information.

### Syntax

```
cluster explore
```

### Command Mode

Global Configuration Mode

### Example

Enable the topology information collecting function manually:

```
LP-SGW2404F(config)# cluster explore
```

## 30.4 cluster

### Description

The **cluster** command is used to configure cluster function for specified ports. To return to the default configuration, please use **no cluster** command.

### Syntax

```
cluster [ ndp { disable | enable } ] [ ntdp { disable | enable } ]  
no cluster
```

### Parameter

disable | enable — Enable/ Disable NDP function for the port. By default, it is enabled.

disable | enable — Enable/ Disable NTDP function for the port. By default, it is enabled.

### Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

### Example

Enable NDP and NTDP function for port 5:

```
LP-SGW2404F(config)# interface gigabitEthernet 1/0/5  
LP-SGW2404F(config-if)# cluster ndp enable ntdp enable
```

## 30.5 cluster candidate

### Description

The **cluster candidate** command is used to specify the current switch as candidate switch.

### Syntax

```
cluster candidate
```

### Command Mode

Global Configuration Mode

### Example

Specify the current switch as candidate switch:

```
LP-SGW2404F(config)# cluster candidate
```

## 30.6 cluster individual

### Description

The **cluster individual** command is used to specify the current switch as individual switch.

### Syntax

```
cluster individual
```

### Command Mode

Global Configuration Mode

### Example

Specify the current switch as individual switch:

```
LP-SGW2404F(config)# cluster individual
```

## 30.7 show cluster ndp

### Description

The **show cluster ndp** command is used to display NDP configuration of certain ports.

### Syntax

```
show cluster ndp [interface [ gigabitEthernet port ]]
```

### Parameter

*port* — The Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the NDP global configuration:

```
LP-SGW2404F# show cluster ndp
```

Display the NDP configuration of all Ethernet ports:

```
LP-SGW2404F# show cluster ndp interface
```

Display the NDP configuration of port 2:

```
LP-SGW2404F# show cluster ndp interface gigabitEthernet 1/0/2
```



## 30.8 show cluster ntdp

### Description

The **show cluster ntdp** command is used to display NTDP configuration or the information of device collected through NTDP.

### Syntax

```
show cluster ntdp [ interface gigabitEthernet port | device-list ]
```

### Parameter

*port* — The Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the NTDP configuration globally:

```
LP-SGW2404F# show cluster ntdp
```

Display the NTDP configuration of port 2:

```
LP-SGW2404F# show cluster ntdp interface gigabitEthernet 1/0/2
```

Display the information of device collected through NTDP:

```
LP-SGW2404F# show cluster ntdp device-list
```

## 30.9 show cluster neighbour

### Description

The **show cluster neighbour** command is used to display the cluster neighbor information.

### Syntax

```
show cluster neighbour
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the cluster neighbor information:

```
LP-SGW2404F# show cluster neighbour
```

## 30.10 show cluster manage role

### Description

The **show cluster manage role** command is used to display the cluster role of the current switch.

### Syntax

```
show cluster manage role
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the role of the current switch:

```
LP-SGW2404F(config)# show cluster manage role
```