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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 TL-SG3210/TL-SG3216/TL-SG3424/TL-SG3424P without any explanation. The commands in this guide apply to these four models if not specially noted, and TL-SG3424 is taken as an example model in the example commands.

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: HTTP and HTTPS Commands
Provide information about the commands used for configuring the HTTP and HTTPS logon.

Chapter 11: 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.
Chapter 12: ARP Inspection Commands
Provide information about the commands used for protecting the switch from the ARP cheating or ARP Attack.

Chapter 13: DoS Defend Command
Provide information about the commands used for DoS defend and detecting the DoS attack.

Chapter 14: IEEE 802.1X Commands
Provide information about the commands used for configuring IEEE 802.1X function.

Chapter 15: System Log Commands
Provide information about the commands used for configuring system log.

Chapter 16: SSH Commands
Provide information about the commands used for configuring and managing SSH (Security Shell).

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 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: PoE Commands
Provide information about the commands used for configuring PoE function.

Chapter 26: ACL Commands
Provide information about the commands used for configuring the ACL (Access Control List).

Chapter 27: MSTP Commands
Provide information about the commands used for configuring the MSTP (Multiple Spanning Tree Protocol).

**Chapter 28: IGMP Snooping Commands**

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

**Chapter 29: MLD Snooping Commands**

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

**Chapter 30: SNMP Commands**

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

**Chapter 31: LLDP Commands**

Provide information about the commands used for configuring LLDP function.

**Chapter 32: 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 the provided cable.
2. Start the terminal emulation program (such as the HyperTerminal) on the PC.
3. Specify the connection COM port in the terminal emulation program.
4. Configure the terminal emulation program or the terminal to use the following settings:
   - Baud rate: 38400 bps
   - Data bits: 8
   - Parity: none
   - Stop bits: 1
   - Flow control: none
5. The DOS prompt" TL-SG3424>" will appear after pressing the Enter button as shown in Figure 1-1. It indicates that you can use the CLI now.

Figure 1-1 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 1-2 to configure the Privileged EXEC Mode password.

![Figure 1-2 Configure the Privileged EXEC Mode Password](image)

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:**
Before Telnet login, you are required to configure Telnet login mode and login authentication information through console connection.

- **Login Local Mode**

Firstly, enter the Privileged EXEC Mode password set in 1.1.2 Configuring the Privileged EXEC Mode Password and configure the Telnet login mode as “login local” in the prompted DOS screen shown in Figure 1-3.
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** and type in **cmd** in the Search programs and files window and press the **Enter** button.

   ![Figure 1-4 Run Window](image)

   **Figure 1-4 Run Window**

2. Type **telnet 192.168.0.1** in the command prompt shown as Figure 1-5, and press the **Enter** button.

   ![Figure 1-5 Connecting to the Switch](image)

   **Figure 1-5 Connecting to the Switch**
3. Type the default user name and password (both of them are admin), then press the Enter button so as to enter User EXEC Mode.

![Figure 1-6 Enter into the User EXEC Mode](image)

4. Type `enable` command to enter Privileged EXEC Mode.

![Figure 1-7 Enter into the Privileged EXEC Mode](image)

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

➢ **Login Mode**

Firstly enter the Privileged EXEC Mode password set in 1.1.2 Configuring the Privileged EXEC Mode Password and configure the Telnet login mode as "login" and the connection password and 456 in the prompted DOS screen shown in Figure 1-8.
Now, you can logon by Telnet in **login mode**: 

1. Make sure the switch and the PC are in the same LAN. Click **Start** and type in **cmd** in the Search programs and files window and press the **Enter** button.

2. Type `telnet 192.168.0.1` in the command prompt shown as Figure 1-9, and press the **Enter** button.
3. You are prompted to enter the connection password **456** you have set through Console port connection, and then you are in User EXEC Mode.

![Figure 1-11 Enter into the User EXEC Mode](image1)

4. Type `enable` command to enter Privileged EXEC Mode.

![Figure 1-12 Enter into the Privileged EXEC Mode](image2)

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 1-13 to enable the SSH function through Telnet connection.
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.

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.
.Key Authentication Mode

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

2. After the key is successfully generated, please save the public key and private key to a TFTP server.

Note:

1. The key length is in the range of 512 to 3072 bits.
2. During the key generation, randomly moving the mouse quickly can accelerate the key generation.
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:

![Figure 1-21 Download the Public Key](image)

**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.

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

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.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Accessing Path</th>
<th>Prompt</th>
<th>Logout or Access the next mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>User EXEC Mode</td>
<td>Primary mode once it is connected with the switch.</td>
<td>TL-SG3424&gt;</td>
<td>Use the <strong>exit</strong> command to disconnect the switch (except that the switch is connected through the Console port). Use the <strong>enable</strong> command to access Privileged EXEC mode.</td>
</tr>
<tr>
<td>Privileged EXEC Mode</td>
<td>Use the <strong>enable</strong> command to enter this mode from User EXEC mode.</td>
<td>TL-SG3424#</td>
<td>Enter the <strong>disable</strong> or the <strong>exit</strong> command to return to User EXEC mode. Enter <strong>configure</strong> command to access Global Configuration mode.</td>
</tr>
<tr>
<td>Global Configuration Mode</td>
<td>Use the <strong>configure</strong> command to enter this mode from Privileged EXEC mode.</td>
<td>TL-SG3424 (config)#</td>
<td>Use the <strong>exit</strong> or the <strong>end</strong> command or press Ctrl+Z to return to Privileged EXEC mode. Use the <strong>interface gigabitEthernet port</strong> or <strong>interface range gigabitEthernet port-list</strong> command to access interface Configuration mode. Use the <strong>vlan vlan-list</strong> to access VLAN Configuration mode.</td>
</tr>
<tr>
<td>Interface Configuration Mode</td>
<td>Use the <strong>interface gigabitEthernet port</strong> or <strong>interface range gigabitEthernet port-list</strong> command to enter this mode from Global Configuration mode.</td>
<td>TL-SG3424 (config-if)# or TL-SG3424 (config-if-range)#</td>
<td>Use the <strong>end</strong> command or press Ctrl+Z to return to Privileged EXEC mode. Enter the <strong>exit</strong> or the # command to return to Global Configuration mode. A port number must be specified in the <strong>interface</strong> command.</td>
</tr>
<tr>
<td>VLAN Configuration Mode</td>
<td>Use the <strong>vlan vlan-list</strong> command to enter this mode from Global Configuration mode.</td>
<td>TL-SG3424 (config-vlan)#</td>
<td>Use the <strong>end</strong> command or press Ctrl+Z to return to Privileged EXEC mode. Enter the <strong>exit</strong> or the # command to return to Global configuration mode.</td>
</tr>
</tbody>
</table>
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 corresponds to different commands
     a). Interface gigabitEthernet: Configure parameters for an Ethernet port, such as Duplex-mode, flow control status.
     b). Interface range gigabitEthernet: The commands contained are the same as that of the Interface 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).
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:

```
TL-SG3424> enable
Enter password: 
TL-SG3424#
```

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:
```
TL-SG3424(config)# service password-encryption
```
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’s configuration file. 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:

```
TL-SG3424(config)#enable password 0 admin
```
**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’s configuration file. 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, you 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.

```
TL-SG3424(config)#enable secret 0 admin
```
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:

```
TL-SG3424# disable
TL-SG3424>
```

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:

```
TL-SG3424# configure
TL-SG3424 (config)#
```

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:

```
TL-SG3424(config-if)# exit
TL-SG3424(config)# exit
TL-SG3424#
```

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:

```
TL-SG3424(config-if)# end
TL-SG3424#
```

show history

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

Syntax
```
show history
```

Command Mode
Privileged EXEC Mode and any Configuration Mode

Example
Show the commands you have entered in the current mode:
clear history

Description

The clear history 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 show history command.

Syntax

clear history

Command Mode

Privileged EXEC Mode and any Configuration Mode

Example

Clear the commands you have entered in the current mode:

TL-SG3424 (config)# clear history
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.

**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:

```
TL-SG3424(config)# vlan 2-10,100
```

Delete VLAN 2:

```
TL-SG3424(config)# no vlan 2
```
Parameter

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

Command Mode

Global Configuration Mode

Example

Create VLAN Interface 2:

```bash
TL-SG3424(config)# interface vlan 2
```

description

Description

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

Syntax

```
description descriptor
no description
```

Parameter

`descriptor` —— 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":

```bash
TL-SG3424(config)# vlan 2
TL-SG3424(config-vlan)# description group1
```

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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/3
TL-SG3424(config-if)# switchport mode trunk
```

**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/3
TL-SG3424(config-if)# switchport mode access
TL-SG3424(config-if)# switchport access vlan 2
```

**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
```

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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:

```plaintext
TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# switchport mode trunk
TL-SG3424(config-if)# switchport trunk allowed vlan 2
```

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:

```plaintext
TL-SG3424(config)# interface gigabitEthernet 1/0/4
TL-SG3424(config-if)# switchport mode general
```
**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/3
TL-SG3424(config-if)# switchport pvid 1
```

**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:

```
TL-SG3424(config)# show vlan summary
```
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:
```
TL-SG3424(config)# show vlan brief
```

show vlan

Description
The `show vlan` command is used to display the detailed information of the specified IEEE 802.1Q VLAN.

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

Parameter
```
vlan-list — Specify IEEE 802.1Q VLAN ID, ranging from 1 to 4094. It is multi-optional. By default, the detailed information of all VLANs will be displayed.
```

Command Mode
Privileged EXEC Mode and Any Configuration Mode

Example
Display the detailed information of all VLANs:
```
TL-SG3424(config)# show vlan
```
Display the detailed information of VLAN 2:
```
TL-SG3424(config)# show vlan id 2
```
Display the detailed information of VLAN 3-10:
```
TL-SG3424(config)# show vlan id 3-10
```
show interface switchport

Description

The `show interface switchport` command is used to display the IEEE 802.1Q VLAN configuration information of the specified port/LAG.

Syntax

```
show interface switchport [ gigabitEthernet port | port-channel lagid ]
```

Parameter

- `port` —— The port number.
- `lagid` —— The ID of the LAG.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the VLAN configuration information of all ports and LAGs:

```
TL-SG3424(config)# show interface switchport
```
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.

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 “TP”:

```
TL-SG3424(config)# mac-vlan mac-address 00:11:11:01:01:12 vlan 2
description TP
```

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:

```
TL-SG3424(config)# show mac-vlan all
```

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

```
TL-SG3424(config)# show mac-vlan mac-address 00:11:11:01:01:12
```

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

```
TL-SG3424(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.

**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 “TP” whose Ethernet protocol type is 0x2024 and frame type is EthernetII:

```
TL-SG3424(config)# protocol-vlan template name TP ether-type 2024 frame ether_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:

```
TL-SG3424(config)# protocol-vlan vlan 2 template 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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/3
TL-SG3424(config-if)# protocol-vlan group 2
```

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:

```
TL-SG3424(config)# show protocol-vlan template
```

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:

```
TL-SG3424(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.

**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:

```
TL-SG3424(config)# voice vlan 10
```

**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:

```
TL-SG3424(config)# voice vlan aging time 1
```

**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:

```
TL-SG3424(config)# voice vlan priority 5
```

**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 descrip ]
```

```
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 TP-Phone with the OUI address 00:11:11:11:11:11 and the mask address FF:FF:FF:00:00:00:

```
TL-SG3424(config)# voice vlan mac-address 00:11:11:11:11:11 mask FF:FF:FF:00:00:00 description TP-Phone
```

---

**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:
**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/3
TL-SG3424(config-if)# switchport voice vlan security
```

**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:

```
TL-SG3424(config)# show voice vlan
```
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:

```
TL-SG3424(config)# show voice vlan oui
```

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:

```
TL-SG3424(config)# show voice vlan switchport
```

Display the Voice VLAN configuration information of port 2:

```
TL-SG3424(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.

**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:

```
TL-SG3424(config)# gvrp
```

**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:

```
TL-SG3424(config)# interface range gigabitEthernet 1/0/2-6
TL-SG3424(config-if-range)# gvrp
```

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:

```
TL-SG3424(config)# interface range gigabitEthernet 1/0/2-6
TL-SG3424(config-if-range)# gvrp registration fixed
```

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
```

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**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.

d - 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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/6
TL-SG3424(config-if)# gvrp timer leaveall 2000
TL-SG3424(config-if)# no gvrp timer join
```

**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:

```
TL-SG3424(config)# show gvrp global
```

**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:

```
TL-SG3424(config)# show gvrp interface
```

Display the GVRP configuration information of port 2:

```
TL-SG3424(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.

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:

TL-SG3424(config)# interface range gigabitEthernet 1/0/2-4
TL-SG3424(config-if-range)# channel-group 1 mode on
**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**

```plaintext
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”:

```
TL-SG3424(config)# port-channel load-balance src-dst-mac
```

---

**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**

```plaintext
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:

```
TL-SG3424(config)# lacp system-priority 1024
```

**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:

```
TL-SG3424(config)# interface range gigabitEthernet 1/0/1-3
TL-SG3424(config-if-range)# lacp port-priority 1024
```

Configure the LACP port priority as 2048 for port 4:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/4
TL-SG3424(config-if)# lacp port-priority 2048
```

**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:

```
TL-SG3424(config)# show etherchannel 1 detail
```

**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:

```
TL-SG3424(config)# show etherchannel load-balance
```

**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:

```
TL-SG3424(config)# show lacp 1 internal
```

**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:

```
TL-SG3424(config)# show lacp sys-id
```
Chapter 9  User Manage Commands

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

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 }
```

```
o user name name
```

Parameter

**name** —— Type a name for users’ login, which contains 16 characters at most, composed of 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 ( !$%’()*,-./[{}]).

**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’s configuration file. 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 “tplink”, of which the password is “admin” and unencrypted:

```
TL-SG3424(config)#user name tplink privilege admin password 0 admin
```

**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, composed of 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’s configuration file.

Command Mode

Global Configuration Mode

User Guidelines

1. If both the user name (password) and user name (secret) are defined, only the latest configured password will take effect.

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 "tplink", of which the password is “admin”. The password will be displayed in the encrypted form.

TL-SG3424(config)#user name tplink privilege admin secret 0 admin

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 } [ snmp ] [ telnet ] [ ssh ] [ http ] [ https ] [ ping ] [ all ]

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.
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 } [ snmp ] [ telnet ] [ ssh ] [ http ] [ https ] [ ping ] [ all ]

no user access-control

Parameter

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

[ snmp ] [ telnet ] [ ssh ] [ http ] [ https ] [ ping ] [ all ] —— Specify the access interface. These interfaces are enabled by default.

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:

TL-SG3424(config)# user access-control mac-based 00:00:13:0A:00:01
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 } [ snmp ] [ telnet ] [ ssh ] [ http ] [ https ] [ ping ] [ all ]
```

**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.
- `[ snmp | telnet | ssh | http | https | ping | all ]` — Specify the access interface. These interfaces are enabled by default.

Command Mode

Global Configuration Mode

Example

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

```
TL-SG3424(config)# user access-control port-based interface range gigabitEthernet 1/0/2-6
```

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:

```
TL-SG3424(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:

```
TL-SG3424(config)# line vty 0 5
```

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’s configuration file. 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 “tplink” and unencrypted:

```
TL-SG3424(config)# line console 0
TL-SG3424(config-line)# password 0 tplink
```

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

```
TL-SG3424(config)# line vty 0 5
TL-SG3424(config-line)# password 0 tplink
```

**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:

```
TL-SG3424(config)# line console 0
```
**login local**

**Description**

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

**Syntax**

```bash
login local
```

**Command Mode**

Line Configuration Mode

**Example**

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

```bash
TL-SG3424(config)# line vty 0 5
TL-SG3424(config-line)# login local
```

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

```bash
TL-SG3424(config)# line console 0
TL-SG3424(config-line)# login local
```

**telnet**

**Description**

The `telnet enable` command is used to enable the Telnet function. To disable the Telnet function, please use the `telnet disable` command. This function is enabled by default.

**Syntax**

```bash
telnet enable
telnet disable
```
Command Mode

Global Configuration Mode

Example

Disable the Telnet function:

```
TL-SG3424(config)# telnet disable
```

**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:

```
TL-SG3424(config)# show user account-list
```

**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:

```
TL-SG3424(config)# show user configuration
```
show telnet-status

Description

The show telnet-status command is used to display the configuration information of the Telnet function.

Syntax

show telnet-status

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display whether the Telnet function is enabled:

TL-SG3424(config)# show telnet-status
Chapter 10  HTTP and HTTPS Commands

With the help of HTTP (HyperText Transfer Protocol) or HTTPS (Hyper Text Transfer Protocol over Secure Socket Layer), you can manage the switch through a standard browser. HTTP is the protocol to exchange or transfer hypertext. 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.

**ip http server**

**Description**

The `ip http server` command is used to enable the HTTP server within the switch. To disable the HTTP function, please use `no ip http server` command. This function is enabled by default. The HTTP and HTTPS server function cannot be disabled at the same time.

**Syntax**

```
ip http server
no ip http server
```

**Command Mode**

Global Configuration Mode

**Example**

Disable the HTTP function:

```
TL-SG3424 (config)# no ip http server
```

**ip http max-users**

**Description**

The `ip http max-users` command is used to configure the maximum number of users that are allowed to connect to the HTTP server. To cancel this limitation, please use `no ip http max-users` command.
Syntax

```
ip http max-users admin-num guest-num
no ip http max-users
```

Parameter

```
admin-num —— The maximum number of the users logging on to the HTTP server 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 logging on to the HTTP server 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 the Admin and Guest users logging on to the HTTP server as 5 and 3:

```
TL-SG3424(config)# ip http max-users 5 3
```

**ip http session**

Description

The `ip http session` command is used to configure the connection timeout of the HTTP server. To restore to the default timeout time, please use `no ip http session` command.

Syntax

```
ip http session minutes
no ip http session
```

Parameter

```
minutes —— The timeout time, ranging from 5 to 30 in minutes. By default, the value is 10.
```

Command Mode

Global Configuration Mode

Example
ip http secure-server

Description

The `ip http secure-server` command is used to enable the HTTPS server within the switch. To disable the HTTPS function, please use `no ip http secure-server` command. This function is enabled by default. The HTTP and HTTPS server function cannot be disabled at the same time.

Syntax

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

Command Mode

Global Configuration Mode

Example

Disable the HTTP function:

```
TL-SG3424(config)# no ip http secure-server
```

ip http secure-protocol

Description

The `ip http secure-protocol` command is used to configure the SSL protocol version. To restore to the default SSL version, please use `no ip http secure-protocol` command. By default, the switch supports SSLv3 and TLSv1.

Syntax

```
   ip http secure-protocol \{ [ ssl3 ] [ tls1 ] \}
   no ip http session
```

Parameter

```
   ssl3 ——— The SSL 3.0 protocol.
   tls1 ——— The TLS 1.0 protocol
```

Command Mode

Global Configuration Mode
Example

Configure the protocol of SSL connection as SSL 3.0:

```
TL-SG3424(config)# ip http secure-protocol ssl3
```

### ip http secure-ciphersuite

#### Description

The `ip http secure-ciphersuite` command is used to configure the cipherSuites over the SSL connection supported by the switch. To restore to the default ciphersuite types, please use `no ip http secure-ciphersuite` command.

#### Syntax

```
ip http secure-ciphersuite { [ 3des-ede-cbc-sha ] [ rc4-128-md5 ] [ rc4-128-sha ] [ des-cbc-sha ] }
nip http secure-ciphersuite
```

#### Parameter

- `[ 3des-ede-cbc-sha ]`  
- `[ rc4-128-md5 ]`  
- `[ rc4-128-sha ]`  
- `[ des-cbc-sha ]`  

Specify the encryption algorithm and the digest algorithm to use on an SSL connection.

By default, the switch supports all these ciphersuites.

#### Command Mode

Global Configuration Mode

#### Example

Configure the ciphersuite to be used for encryption over the SSL connection as 3des-ede-cbc-sha:

```
TL-SG3424(config)# ip http secure-ciphersuite 3des-ede-cbc-sha
```

### ip http secure-max-users

#### Description

The `ip http secure-max-users` command is used to configure the maximum number of users that are allowed to connect to the HTTPs server. To cancel this limitation, please use `no ip http secure-max-users` command.
Syntax

```
ip http secure-max-users admin-num guest-num
no ip secure-max-users
```

Parameter

- **admin-num** — The maximum number of the users logging on to the HTTPS server 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 logging on to the HTTPS server 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 the Admin and Guest users logging on to the HTTPS server as 5 and 3:

```
TL-SG3424(config)# ip http secure-max-users 5 3
```

### ip http secure-session

**Description**

The `ip http secure-session` command is used to configure the connection timeout of the HTTPS server. To restore to the default timeout time, please use `no ip http secure-session` command.

**Syntax**

```
ip http secure-session minutes
no ip http secure-session
```

**Parameter**

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

**Command Mode**

Global Configuration Mode
Example

Configure the timeout time of the HTTP server connection as 15 minutes:

```yaml
TL-SG3424(config)# ip http secure-session 15
```

**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:

```yaml
TL-SG3424(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

```yaml
TL-SG3424(config)# ip http secure-server download certificate ssl.cert
ip-address fe80::1234
```
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:

TL-SG3424(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

TL-SG3424(config)# ip http secure-server download key ssl.key ip-address fe80::1234

show ip http configuration

Description

The show ip http configuration command is used to display the configuration information of the HTTP server, including status, session timeout, access-control, max-user number and the idle-timeout, etc.

Syntax

show ip http configuration
Command Mode
Privileged EXEC Mode and Any Configuration Mode

Example
Display the configuration information of the HTTP server:

TL-SG3424(config)# show ip http configuration

**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:

TL-SG3424(config)# show ip http secure-server
Chapter 11 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.

**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 00:00:00:00:01, VLAN ID 2 and Port number 5 manually. And then enable the entry for the ARP detection:

```
TL-SG3424(config)# ip source binding host1 192.168.0.1 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:

```
TL-SG3424(config)# no ip source binding index 5
```

**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. “none” indicates applying none; “arp-detection” indicates ARP detection.

**Command Mode**  
Global Configuration Mode
Example

Modify the hostname as “tp-link” of the entry with the index 1:

```
TL-SG3424(config)#ip source binding index 1 hostname tp-link
```

**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:

```
TL-SG3424(config)# ip dhcp snooping
```

**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:

```
TL-SG3424(config)# ip dhcp snooping global
  global-rate 30
dec-threshold 20
dec-rate 20
```

**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:
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:

```
TL-SG3424(config)# ip dhcp snooping information strategy replace
```

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 tplink:

TL-SG3424(config)# ip dhcp snooping information remote-id tplink

**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 tplink:

TL-SG3424(config)# ip dhcp snooping information circuit-id tplink
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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# ip dhcp snooping trust
```

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)
Enable the MAC Verify feature for port 2:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# ip dhcp snooping mac-verify
```

### 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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# ip dhcp snooping limit rate 20
```

### 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:

TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# ip dhcp snooping decline

**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:

TL-SG3424(config)# show ip source binding
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:

```
TL-SG3424# show ip dhcp snooping
```

### 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:

```
TL-SG3424# show ip dhcp snooping information
```

### 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:

```
TL-SG3424# show ip dhcp snooping interface gigabitEthernet 1/0/2
```
Chapter 12  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.

**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:

```
TL-SG3424(config)# ip arp inspection
```

**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:

TL-SG3424(config)# interface range gigabitEthernet 1/0/2-5
TL-SG3424(config-if-range)# ip arp inspection trust

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:

TL-SG3424(config)# interface range gigabitEthernet 1/0/2-6
TL-SG3424(config-if-range)# ip arp inspection
**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/5
TL-SG3424(config-if)# ip arp inspection limit-rate 50
```

**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/5
TL-SG3424(config-if)# ip arp inspection recover
```

**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:

```
TL-SG3424(config)# show ip arp inspection
```

**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:
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:

```
TL-SG3424(config)# show ip arp inspection statistics
```

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:

```
TL-SG3424(config)# clear ip arp inspection statistics
```
Chapter 13  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.

**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:

```
TL-SG3424(config)# ip dos-prevent
```

**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 }
o 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:

```
TL-SG3424(config)# ip dos-prevent type land
```

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:

```
TL-SG3424(config)# show ip dos-prevent
```
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.

**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:

```
TL-SG3424(config)# dot1x system-auth-control
```

**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.
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:

```
TL-SG3424(config)# dot1x auth-method pap
```

**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:

```
TL-SG3424(config)# dot1x guest-vlan 5
```
**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:

```
TL-SG3424(config)# dot1x quiet-period
```

**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:

```plaintext
TL-SG3424(config)# dot1x timeout quiet-period 100
```

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

```plaintext
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:

```plaintext
TL-SG3424(config)# dot1x max-reauth-req 5
```

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

```plaintext
dot1x
no dot1x
```
**Command Mode**

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

**Example**

Enable the IEEE 802.1X function for port 1:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/1
TL-SG3424(config-if)# dot1x
```

**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# dot1x guest-vlan
```

**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

```plaintext
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:

```plaintext
TL-SG3424(config)# interface gigabitEthernet 1/0/1
TL-SG3424(config-if)# dot1x port-control authorized-force
```

**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

```plaintext
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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/1
TL-SG3424(config-if)# dot1x port-method port-based
```

---

**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 a fixed length, which you can copy from another switch’s configuration file. 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 a fixed length, which you can copy from another switch’s configuration file. 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 tplink:

TL-SG3424(config)#radius auth-pri 10.20.1.100 auth-key tplink

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:

TL-SG3424(config)# radius server-account
**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:

```
TL-SG3424(config)# show dot1x global
```

**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:

```
TL-SG3424(config)# show dot1x interface
```

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

```
TL-SG3424(config)# show dot1x interface gigabitEthernet 1/0/1
```
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:
```
TL-SG3424(config)# show radius accounting
```

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:
```
TL-SG3424(config)# show radius authentication
```
Chapter 15  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.

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:

TL-SG3424(config)# logging buffer 5
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:

TL-SG3424(config)#logging file flash

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.
logging file flash level

Description

The **logging file flash level** command is used to specify the system log message severity level. Messages will 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:

```
TL-SG3424(config)#logging file flash level 7
```
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:

```
TL-SG3424(config)# clear logging buffer
```

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:

```
TL-SG3424(config)# logging host index 2 192.168.0.148 5
```

**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:

```
TL-SG3424(config)# show logging local-config
```

**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:

```
TL-SG3424(config)# show logging loghost 2
```
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:

TL-SG3424(config)# show logging buffer level 5

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:

TL-SG3424(config)# show logging flash level 3
Chapter 16  SSH Commands

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

**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:

```
TL-SG3424(config)# ip ssh server
```

**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:

```
TL-SG3424(config)# ip ssh version v2
```
**Command Mode**
Global Configuration Mode

**Example**
Specify the idle-timeout time of SSH as 100 seconds:

```
TL-SG3424(config)# ip ssh timeout 100
```

**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:

```
TL-SG3424(config)# ip ssh max-client 3
```

**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 512 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:

```
TL-SG3424(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:

```
TL-SG3424(config)# ip ssh download v1 ssh.key ip-address fe80::1234
```

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:

```
TL-SG3424(config)# show ip ssh
```
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.

**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 interface gigabitEthernet port
no mac address-table static { mac-addr | vid | mac-addr 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:

```
TL-SG3424(config)# mac address-table static 00:02:58:4f:6c:23 vid 1
interface gigabitEthernet 1/0/1
```
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:
```
TL-SG3424(config)# mac address-table aging-time 500
```

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:

```
TL-SG3424(config)# mac address-table filtering 00:1e:4b:04:01:5d vid 1
```

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 }]
```

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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/1
TL-SG3424(config-if)# mac address-table max-mac-count max-number 30
     mode static status enable
```

**show mac address-table**

Description

The `show mac address-table` command is used to display the information of the specified type 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:

```
TL-SG3424(config)# show mac address-table all
```

**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:

```
TL-SG3424(config)# show mac address-table aging-time
```

**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:

```
TL-SG3424(config)# show mac address-table max-mac-count interface gigabitEthernet
```

Display the security configuration of port 1:

```
TL-SG3424(config)# show mac address-table max-mac-count interface gigabitEthernet 1/0/1
```

**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:

```
TL-SG3424(config)# show mac address-table interface gigabitEthernet 1/0/1
```

**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:

```
TL-SG3424(config)# show mac address-table count
```

**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:

```
TL-SG3424(config)# show mac address-table address 00:00:00:00:23:00
```

### 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:

```
TL-SG3424(config)# show mac address-table vlan 1
```

### clear mac address-table

**Description**

The `clear mac address-table` command is used to clear all address entries for the specified type.

**Syntax**

```
clear mac address-table { dynamic | filtering | static }
```

**Parameter**

`dynamic | filtering | static` —— The type of your desired entry.

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Clear the information of dynamic Address entries:

```
TL-SG3424(config)# clear mac address-table dynamic
```
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 loopback test and cable test.

**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:

```
TL-SG3424(config)# system-time manual 02/14/2012-12:30:00
```

**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 —— Time Zone 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:

```
TL-SG3424(config)# system-time ntp UTC-12:00 133.100.9.2 139.79.100.163 11
```

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:

```
TL-SG3424(config)# system-time dst predefined Europe
```
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 1st, the end time as 00:00 am on October 1st and the offset as 30 minutes:

```
TL-SG3424(config)# system-time dst date Apr 1 00:00 Oct 1 00:00 30
```
**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 } { eweek }
{ 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.
- **eweek** —— 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:

```
TL-SG3424(config)# system-time dst recurring first Sun May 02:00 last Sun Oct 02:00 45
```
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 “TL-SG3424”.

Command Mode
Global Configuration Mode

Example
Configure the system name as TPLINK:
TL-SG3424(config)# hostname TPLINK

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. It is “SHENZHEN” by default.

Command Mode
Global Configuration Mode

Example
Configure the system location as SHENZHEN:
TL-SG3424(config)# location SHENSHEN
**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. It is “www.tp-link.com” by default.

**Command Mode**

Global Configuration Mode

**Example**

Configure the system contact information as www.tp-link.com:

```
TL-SG3424(config)# contact-info www.tp-link.com
```

---

**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:

```
TL-SG3424(config)# ip management-vlan 6
```
**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:

```
TL-SG3424(config)# interface vlan 1
TL-SG3424(config-if)# ip address 192.168.0.69 255.255.255.0
```

**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:

TL-SG3424(config)# interface vlan 1
TL-SG3424(config-if)# ip address-alloc dhcp

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:

TL-SG3424(config)# interface vlan 1
TL-SG3424(config-if)# ip address-alloc bootp

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:

TL-SG3424# reset

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:

TL-SG3424# reboot

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:

TL-SG3424# copy running-config startup-config
**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:

```
TL-SG3424# 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:

```
TL-SG3424# copy startup-config tftp ip-address fe80::1234 filename config
```

**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:

```
TL-SG3424# 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

```
TL-SG3424# copy tftp startup-config ip-address fe80::1234 filename config
```

**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:

```
TL-SG3424# 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

```
TL-SG3424# firmware upgrade ip-address fe80::1234 filename firmware.bin
```
**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:

```
TL-SG3424# 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:

```
TL-SG3424# ping fe80::1234 -n 8 -l 512
```
**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:

```
TL-SG3424# 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:

```
TL-SG3424# tracert fe80::1234 20
```

**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:

```
TL-SG3424# show system-time
```

### 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:

```
TL-SG3424# show system-time dst
```

### 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:
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:

```
TL-SG3424# show system-info
```

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:

```
TL-SG3424#show running-config
```

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:

```
TL-SG3424# 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.

**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:

```
TL-SG3424(config)# interface vlan 1
TL-SG3424(config-if)# ipv6 enable
```  

**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:

```
TL-SG3424(config)# interface vlan 1
TL-SG3424(config-if)# ipv6 address autoconfig
```

**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:

```
TL-SG3424(config)# interface vlan 1
TL-SG3424(config-if)# ipv6 address fe80::1234 link-local
```

**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:

```
TL-SG3424(config)# interface vlan 1
TL-SG3424(config-if)# ipv6 address dhcp
```

### 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:

```
TL-SG3424(config)# interface vlan 1
TL-SG3424(config-if)# ipv6 address ra
```
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
TL-SG3424(config)# interface vlan 1
TL-SG3424(config-if)# ipv6 address 3ffe::1/64 eui-64

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:

```
TL-SG3424(config)# interface vlan 1
TL-SG3424(config-if)# ipv6 address 3001::1/64
```

**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:

```
TL-SG3424(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.

**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/2
```

**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:

```
TL-SG3424(config)# interface range gigabitEthernet 1/0/1-3,1/0/6-7,1/0/9
```

**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 Port5 to port 5:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/5
TL-SG3424(config-if)# description Port5
```

**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
```
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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/3
TL-SG3424(config-if)# flow-control
```

Media-type

Note: This command does not apply to TL-SG3210.

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”:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/24
TL-SG3424(config-if)# media-type sfp
```

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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/3
TL-SG3424(config-if)# duplex full
```
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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/3
TL-SG3424(config-if)# speed 100
```

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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/5
TL-SG3424(config-if)# storm-control broadcast
```

---

**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/5
TL-SG3424(config-if)# storm-control multicast
```
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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/5
TL-SG3424(config-if)# storm-control unicast
```

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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/5
TL-SG3424(config-if)# bandwidth ingress 5120 egress 1024
```

**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

```
TL-SG3424(config)# clear counters
```
**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:

```
TL-SG3424(config)# show interface status
```

Display the connective-status of port 1:

```
TL-SG3424(config)# show interface gigabitEthernet 1/0/1 status
```

**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:

```
TL-SG3424(config)# show interface counters
```

Display the statistic information of port 2:

```
TL-SG3424(config)# show interface gigabitEthernet 1/0/2 counters
```
**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:
```
TL-SG3424(config)# show interface description
```

Display the description of port 2:
```
TL-SG3424(config)# show interface gigabitEthernet 1/0/2 description
```

**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:
```
TL-SG3424# show interface flowcontrol
```

Display the flow-control information of port 2:
```
TL-SG3424# show interface gigabitEthernet 1/0/2 flowcontrol
```
**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:

```
TL-SG3424(config)# show interface configuration
```

Display the configurations of port 2:

```
TL-SG3424(config)# show interface gigabitEthernet 1/0/2 configuration
```

**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:

```
```
**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:

```
TL-SG3424(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.

**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/5
TL-SG3424(config-if)# qos 3
```

**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:

TL-SG3424(config)# qos dscp

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:

```
TL-SG3424(config)# qos queue cos-map 5 2
```
User Guidelines


Example

Map DSCP values 10-12 to CoS 2:

```bash
TL-SG3424(config)# qos queue dscp-map 10-12 2
```

**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 }
```

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:

```
TL-SG3424(config)# qos queue mode wrr
```

### 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:

```
TL-SG3424# show qos interface gigabitEthernet 1/0/5
```

Display the configuration of QoS for ports 1-4:

```
TL-SG3424# show qos interface range gigabitEthernet 1/0/1-4
```

### 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:

TL-SG3424# show qos cos-map

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:

TL-SG3424# show qos dscp-map

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:

TL-SG3424# show qos queue mode
**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:

```
TL-SG3424# 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.

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:

```
TL-SG3424(config)# monitor session 1 destination interface gigabitEthernet 1/0/1
```

Delete the monitor session 1:

```
TL-SG3424(config)# no monitor session 1
```
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:
TL-SG3424(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:
TL-SG3424(config)# no monitor session 1 source interface gigabitEthernet 1/0/4 rx

**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:

```
TL-SG3424(config)# show monitor session 1
```

Display the monitoring configuration of all monitor sessions:

```
TL-SG3424(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.

**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/5
TL-SG3424(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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# no port isolation
```

**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:

```
TL-SG3424# show port isolation interface gigabitEthernet 1/0/2
```

Display the forward-list of all Ethernet ports:

```
TL-SG3424# 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.

**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:

```
TL-SG3424(config)# loopback-detection
```

**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:

```
TL-SG3424(config)# loopback-detection interval 50
```

**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:

```
TL-SG3424(config)# loopback-detection recovery-time 3
```

**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:
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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# loopback-detection config process-mode port-based recovery-mode manual
```

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:

TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# loopback-detection recover

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:

TL-SG3424# show loopback-detection global

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:

TL-SG3424# show loopback-detection interface

Display the configuration of loopback detection function and the status of port 5:

TL-SG3424# show loopback-detection interface gigabitEthernet 1/0/5
Chapter 25  PoE Commands

Note: Only TL-SG3424P supports PoE function.

PoE (Power over Ethernet) technology describes a system to transmit electrical power along with data to remote devices over standard twisted-pair cable in an Ethernet network. It is especially useful for supplying power to IP telephones, wireless LAN access points, cameras and so on.

**power inline consumption (global)**

**Description**

The `power inline consumption` command is used to configure the max power the PoE switch can supply globally.

**Syntax**

```plaintext
power inline consumption power-limit
```

**Parameter**

- `power-limit` —— The max power the PoE switch can supply, ranging from 1 to 320w. By default, the value is 320.

**Command Mode**

Global Configuration Mode

**Example**

Configure the max power the PoE switch can supply as 160w:

```
TL-SG3424P(config)# power inline consumption 160
```

**power inline disconnect-method**

**Description**

The `power inline disconnect-method` command is used to offset the power limit being exceeded and keep the switch system using power at a usable level.

**Syntax**

```plaintext
power inline disconnect-method {deny-next-port|deny-low-priority}
```

**Parameter**

- `deny-next-port` —— When the supply power exceeds the power limit, the PD linked to the next port will be disconnected.
deny-low priority —— When the supply power exceeds the power limit, the PD linked to the port with lower priority will be disconnected.

Command Mode
Global Configuration Mode

Example
Configure the power disconnect method as deny-next-port:

```
TL-SG3424P(config)# power inline disconnect-method deny-next-port
```

power profile

Description
The **power profile** command is used to create a PoE profile for the switch. To delete the configured PoE profile configuration, please use **no power profile** command. PoE Profile is a short cut for the configuration of the PoE port. In a PoE profile, the PoE status, PoE priority and power limit are configured. You can specify a PoE profile for each PoE port individually.

Syntax
```
power profile name [supply {enable | disable}] [priority {low | middle | high}] [consumption { power-limit | auto | class1 | class2 | class3 | class4 } ] ] ]
```

no power profile name

Parameter

- **name** —— The PoE profile name, ranging from 1 to 16 characters. If the name being assigned contains spaces then put it inside double quotes.

- **supply** —— The PoE status of the port in the profile. By default, the PoE status is “enable”.

- **priority** —— The PoE priority of the port in the profile. The priority levels include “high”, “middle” and “low” in descending order. When the supply power exceeds the system power limit, the PD linked to the port with lower priority will be disconnected. By default, the PoE priority is “low”.

- **consumption** —— The max power the port in the profile can supply, with five options: “power-limit”, “auto”, “class1”, “class2”, “class3” and “class4”. “Power-limit” indicates you can manually enter a value ranging from 1 to 300. The value is in the unit of 0.1 watt. For instance, if you want to configure the max power as 5w, you should enter 50. “Auto” indicates the value is assigned automatically by the PoE switch. “Class1” represents 4w. “Class2” represents 7w. “Class3” represents 15.4w. “Class4” represents 30w.
**Command Mode**

Global Configuration Mode

**Example**

Create a PoE profile named “IP Camera” whose PoE status is “enable”, PoE priority is “low” and the power limit is “5w”:

```
TL-SG3424P(config)# power profile "IP Camera" supply enable priority low consumption 50
```

**power time-range**

**Description**

The `power time-range` command is used to create PoE time-range for the switch and enter Power Time-range Create Configuration Mode. After a PoE time-range is created, you need to specify the date and time which has three mode options available: absolute, periodic and holiday. A PoE time-range can implement multiple time-ranges simultaneously as long as they do not conflict with each other. To delete the corresponding PoE time-range configuration, please use `no power time-range` command. The PoE time-range determines the power supply time of the switch. You can specify a PoE time-range for each PoE port individually.

**Syntax**

```
power time-range name

no power time-range name
```

**Parameter**

`name` —— The PoE time-range name, ranging from 1 to 16 characters.

**Command Mode**

Global Configuration Mode

**Example**

Create a PoE time-range named “tRange1” for the switch:

```
TL-SG3424P(config)# power time-range tRange1
```
power holiday

Description
The **power holiday** command is used to create PoE holiday for the switch. To delete the corresponding PoE holiday configuration, please use **no power holiday** command.

Syntax
```
power holiday name start-date start-date end-date end-date
no power holiday name
```

Parameter
- **name** —— The PoE holiday name, ranging from 1 to 16 characters.
- **start-date** —— The start date of the PoE holiday, in the format of MM/DD, for instance, 05/01.
- **end-date** —— The end date of the PoE holiday, in the format of MM/DD, for instance, 05/01.

Command Mode
Global Configuration Mode

Example
Create a PoE holiday named “National Day”, and configure the start date as October 1st and the end date as October 3rd:
```
TL-SG3424P(config)# power holiday NationalDay start-date 10/01 end-date 10/03
```

absolute

Description
The **absolute** command is used to create an absolute mode time-range for the PoE time-range of the switch. The switch will supply power when the specified absolute time occurs. To delete the corresponding absolute mode time-range configuration, 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.

end-date —— The end date in Absoluteness Mode, in the format of MM/DD/YYYY.

Command Mode

Power Time-range Create Configuration Mode

Example

Create an absolute mode time-range for the PoE of the switch and specify the date extending from May 5, 2012 through Oct. 5, 2012:

TL-SG3424P(config)# power time-range tRange1
TL-SG3424P(config-pwr-time-range)# absolute start 05/05/2012 end 10/05/2012

periodic

Description

The periodic command is used to create a periodic mode time-range for the PoE time-range of the switch. The switch will supply power when the specified periodic time occurs. To delete the corresponding periodic mode time-range configuration, 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 [ week-date | time-slice ]

Parameter

week-day —— Periodic Mode, with “1-7”, “daily”, “off-day” and “working-day” options. “1-7” should be entered in the format of 1-3, 7 which represent Monday, Tuesday, Wednesday and Sunday. “Daily” represents every day. “Off-day” represents weekend. “Working-day” represents working day.

time-slice —— Create time-slice, in the format of HH:MM-HH:MM.

Command Mode

Power Time-range Create Configuration Mode

Example

Configure the PoE time-range named “tRange2” as a periodic time-range and
specify the date and time as 8:30 to 12:00 on weekends:

TL-SG3424P(config)# power time-range tRange2
TL-SG3424P(config-pwr-time-range)# periodic week-date off-day
time-slice1 08:30-12:00

**holiday**

**Description**

The `holiday` command is used to create holiday mode time-range for the PoE time-range of the switch. When the PoE holiday which is excluded from PoE time-range occurs, the switch will not supply power.

**Syntax**

```plaintext
holiday { exclude | include }
```

**Parameter**

- `exclude` — Indicates the PoE time-range of the switch excluding the PoE holiday. When PoE holiday occurs, the switch will not supply power.
- `include` — Indicates the PoE time-range of the switch including the PoE holiday. It is the default option. When PoE holiday occurs, the switch will supply power.

**Command Mode**

Power Time-range Create Configuration Mode

**Example**

Create a holiday mode time-range for the PoE time-range named “tRange3” and configure PoE time-range of the switch excludes the PoE holiday:

TL-SG3424P(config)# power time-range tRange3
TL-SG3424P(config-pwr-time-range)# holiday exclude

**power inline consumption(interface)**

**Description**

The `power inline consumption` command is used to configure the power limit the corresponding port can supply.

**Syntax**

```plaintext
power inline consumption { power-limit | auto | class1 | class2 | class3 | class4 }
```
Parameter

`power-limit` —— The max power the port in the profile can supply, with five options: "power-limit", "auto", "class1", "class2", "class3" and "class4". "Power-limit" indicates you can manually enter a value ranging from 1 to 300. The value is in the unit of 0.1 watt. For instance, if you want to configure the max power as 5w, you should enter 50. "Auto" indicates the value is assigned automatically by the PoE switch. "Class1" represents 4w. "Class2" represents 7w. "Class3" represents 15.4w. "Class4" represents 30w.

Command Mode

 Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure the power limit as “5w” for port 2:

```
TL-SG3424P(config)# interface gigabitEthernet 1/0/2
TL-SG3424P(config-if)# power inline consumption 50
```

**power inline priority**

Description

The `power inline priority` command is used to configure the PoE priority for the corresponding port

Syntax

`power inline priority { low | middle | high }

Parameter

priority —— The PoE priority of the port. The priority levels include “high”, “middle” and “low” in descending order. When the supply power exceeds the system power limit, the PD linked to the port with lower priority will be disconnected. By default, the priority level is “low”.

Command Mode

 Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure the PoE priority as “low” for port 2:

```
TL-SG3424P(config)# interface gigabitEthernet 1/0/2
TL-SG3424P(config-if)# power inline priority low
```
power inline supply

Description
The power inline supply command is used to configure the PoE status of the corresponding port.

Syntax
```
power inline supply { enable | disable }
```

Parameter
```
enable | disable —— The PoE status of the port. By default, the PoE status is “enable”.
```

Command Mode
Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example
Enable the PoE feature for port 2:
```
TL-SG3424P(config)# interface gigabitEthernet 1/0/2
TL-SG3424P(config-if)# power inline supply enable
```

power inline profile

Description
The power inline profile command is used to bind a PoE profile to the corresponding port. To cancel the bind relation, please use no power inline profile command.

Syntax
```
power inline profile name
no power inline profile
```

Parameter
```
name —— The name of the PoE profile to be bound to the port. If the name being assigned contains spaces then put it inside double quotes.
```

Command Mode
Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example
Bind the PoE profile named “IP Camera” to port 2:
**power inline time-range**

**Description**

The `power inline time-range` command is used to bind a PoE time-range to the corresponding port. To cancel the bind relation, please use `no power inline time-range` command.

**Syntax**

```
power inline time-range name
no power inline time-range
```

**Parameter**

`name` —— The name of the PoE time-range to be bound to the port.

**Command Mode**

Interface Configuration Mode

**Example**

Bind the PoE time-range named “tRange2” to port 2:

```
TL-SG3424P(config)# interface gigabitEthernet 1/0/2
TL-SG3424P(config-if)# power inline time-range tRange2
```

**show power inline**

**Description**

The `show power inline` command is used to display the global PoE information of the system.

**Syntax**

```
show power inline
```

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the PoE information of the system:

```
TL-SG3424P# show power inline
```
**show power inline configuration interface**

**Description**

The **show power inline configuration interface** command is used to display the PoE configuration of the certain port.

**Syntax**

```plaintext
show power inline configuration interface [ gigabitEthernet port ]
```

**Parameter**

- `port` —— The Ethernet port number.

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the PoE configuration of all ports:

```
TL-SG3424P# show power inline configuration interface
```

**show power inline information interface**

**Description**

The **show power inline information** command is used to display the PoE information of the certain port.

**Syntax**

```plaintext
show power inline information interface [ gigabitEthernet port ]
```

**Parameter**

- `port` —— The Ethernet port number.

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the PoE information of all ports:

```
TL-SG3424P# show power inline information interface
```

**show power profile**

**Description**

The **show power profile** command is used to display the defined PoE profile.
Syntax

show power profile

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the defined PoE profile:

TL-SG3424P# show power profile

show power holiday

Description

The show power holiday command is used to display the defined PoE holiday.

Syntax

show power holiday

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the defined PoE holiday:

TL-SG3424P# show power holiday

show power time-range

Description

The show power time-range command is used to display the configuration of PoE time-range.

Syntax

show power time-range

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration of PoE time-range:

TL-SG3424P# show power time-range
Chapter 26  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.

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:

```
TL-SG3424(config)# time-range tSeg1
```
Parameter

\textit{start-date} —— The start date in Absoluteness Mode, in the format of MM/DD/ YYYY. By default, it is 01/01/2000.

\textit{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 \textit{tSeg1} with time from May 5, 2012 to Oct. 5, 2012:

\begin{verbatim}
TL-SG3424(config)# time-range tSeg1
TL-SG3424(config-time-range)# absolute start 05/05/2012 end 10/05/2012
\end{verbatim}

\textbf{periodic}

Description

The \textbf{periodic} command is used to configure the Time-Range into an periodic mode. To delete the corresponding periodic mode Time-Range, please use \texttt{no periodic} command.

Syntax

\begin{verbatim}
periodic [ week-date week-day ] [ time-slice1 time-slice ] [ time-slice2 time-slice ] [ time-slice3 time-slice ] [ time-slice4 time-slice ]
\end{verbatim}

\texttt{no periodic}

Parameter

\textit{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.

\textit{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 \textit{tSeg1} with time from 8:30 to 12:00 at weekend:

\begin{verbatim}
TL-SG3424(config)# time-range tSeg1
\end{verbatim}
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
```plaintext
holiday
no holiday
```

Command Mode
Time-range Create Configuration Mode

Example
Configure the time-range tSeg1 into Holiday Mode:
```
TL-SG3424(config)# time-range  tSeg1
TL-SG3424(config-time-range)# holiday
```

holiday(global)

Description
The `holiday` command is used to define a holiday. To delete the corresponding holiday, please use `no holiday` command.

Syntax
```plaintext
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:

```
TL-SG3424(config)# holiday nationalday start-date 10/01 end-date 10/03
```

**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:

```
TL-SG3424(config)# access-list create 123
```

**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:

```
TL-SG3424(config)# mac access-list 23
```

**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:

```
TL-SG3424(config)# access-list create 120
TL-SG3424(config)# access-list standard 120 rule 10 permit sip 192.168.0.100 smask 255.255.255.0 tseg tSeg1
```

**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 ]
```

**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:

```
TL-SG3424(config)# access-list create 220
TL-SG3424(config)# access-list extended 220 rule 10 permit sip
192.168.0.100 smask 255.255.255.0 tseg tSeg1
```

**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 ]
```

**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:

```plaintext
TL-SG3424(config)# mac access-list 20
TL-SG3424(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
```

**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:
**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:

```
TL-SG3424(config)# access-list policy action policy1 120
```

**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:

```
TL-SG3424(config)# access-list policy action policy1 120
TL-SG3424(config-action)# redirect interface gigabitEthernet 1/0/2
```

**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:

```
TL-SG3424(config)# access-list policy action policy1 120
TL-SG3424(config-action)# redirect vlan 1
```

**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:

```
TL-SG3424(config)# access-list policy action policy1 120
TL-SG3424(config-action)# s-condition rate 1000 osd discard
```

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:

```
TL-SG3424(config)# access-list policy action policy1 120
TL-SG3424(config-action)# s-mirror interface gigabitEthernet 1/0/2
```

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:

TL-SG3424(config)# access-list policy action policy1 120
TL-SG3424(config-action)# qos-remark dscp 30 priority 2

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:

TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# access-list bind policy1
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:
```
TL-SG3424(config)# interface vlan 2
TL-SG3424(config-if)# access-list bind policy1
```

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:
```
TL-SG3424(config)# show time-range
```

show holiday

Description
The `show holiday` command is used to display the defined holiday.
show holiday

Syntax

show holiday

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the defined holiday:

```
TL-SG3424(config)# show holiday
```

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:

```
TL-SG3424(config)# show access-list 20
```

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:

```
TL-SG3424(config)# show access-list policy policy1
```

**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:

```
TL-SG3424(config)# show access-list bind
```
Chapter 27  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.

**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:

```
TL-SG3424(config)# spanning-tree
```

**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/2
```
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. 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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/1
TL-SG3424(config-if)# spanning-tree common-config port-priority 64
ext-cost 100 int-cost 100 portfast enable point-to-point open
```

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:

```
TL-SG3424(config)# spanning-tree mode mstp
```

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**

```plaintext
spanning-tree mst configuration
no spanning-tree mst configuration
```

**Command Mode**

Global Configuration Mode

**Example**

Enter into the MST configuration mode:

```
TL-SG3424(config)# spanning-tree mst configuration
```

### 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**

```plaintext
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:

```
TL-SG3424(config)# spanning-tree mst configuration
TL-SG3424(config-mst)# instance 1 vlan 1-100
```

Disable Instance 1, namely remove all the mapping VLANs 1-100:

```
TL-SG3424(config)# spanning-tree mst configuration
TL-SG3424(config-mst)# no instance 1
```

Remove VLANs 1-50 in mapping VLANs 1-100 for Instance 1:

```
TL-SG3424(config)# spanning-tree mst configuration
TL-SG3424(config-mst)# instance 1 vlan 1-50
```
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”:

```
TL-SG3424(config)# spanning-tree mst configuration
TL-SG3424(config-mst)# name region1
```

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:

```
TL-SG3424(config)# spanning-tree mst configuration
TL-SG3424(config-mst)# revision 100
```
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
```plaintext
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:

```
TL-SG3424(config)# spanning-tree mst instance 1 priority 4096
```

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
```plaintext
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.
**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.

**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/1
TL-SG3424(config-if)# spanning-tree mst instance 1 port-priority 64 cost 2000
```

### 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:

```
TL-SG3424(config)# spanning-tree priority 4096
```
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:
```
TL-SG3424(config)# spanning-tree tc-defend threshold 30 period 10
```

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, \(2 \times (\text{Forward Delay} - 1) \geq \text{Max Age}\).

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, \(2 \times (\text{Hello Time} + 1) \leq \text{Max Age}\).

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:

```
TL-SG3424(config)# spanning-tree timer forward-time 16 hello-time 3 max-age 22
```

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:

```
TL-SG3424(config)# spanning-tree hold-count 8
```
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:
```
TL-SG3424(config)# spanning-tree max-hops 30
```

spanning-tree bpdufilter

Description
The `spanning-tree bpdufilter` 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 bpdufilter` command.

Syntax
```
spanning-tree bpdufilter
no spanning-tree bpdufilter
```

Command Mode
Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example
Enable the BPDU filter function for port 2:
spanning-tree bpdufilter

Description
The `spanning-tree bpdufilter` command is used to enable the BPDU filter function for a port. With the BPDU filter 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 filter function, please use `no spanning-tree bpdufilter` command.

Syntax
```
spanning-tree bpdufilter
no spanning-tree bpdufilter
```

Command Mode
Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example
Enable the BPDU filter function for port 2:
```
TL-SG3424(config)# interface gigabitEthernet 2
TL-SG3424(config-if)# spanning-tree bpdufilter
```

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:

TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# spanning-tree guard loop

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:

TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# spanning-tree guard root

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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# spanning-tree guard tc
```

**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# spanning-tree mcheck
```

**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:

```
TL-SG3424(config)# show spanning-tree active
```

### 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:

```
TL-SG3424(config)# show spanning-tree bridge
```

### 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:

```
TL-SG3424(config)# show spanning-tree interface
```

Display the spanning-tree information of port 2:

```
```
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:
```
TL-SG3424(config)# show spanning-tree interface-security
```
Display the protect information of port 1:
```
TL-SG3424(config)# show spanning-tree interface-security gigabitEthernet 1/0/1
```
Display the interface security bpdufilter information:
```
TL-SG3424(config)# show spanning-tree interface-security bpdufilter
```

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:

TL-SG3424(config)# show spanning-tree mst instance 1
Chapter 28  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.

**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:

```
TL-SG3424(config)# ip igmp snooping
```

**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:
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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/3
TL-SG3424(config-if)# ip igmp snooping immediate-leave
```

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:

```
TL-SG3424(config)# ip igmp snooping drop-unknown
```
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:

```
TL-SG3424(config)# ip igmp snooping vlan-config 1-3 rtime 300
TL-SG3424(config)# ip igmp snooping vlan-config 1-3 mtime 200
TL-SG3424(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:

```
TL-SG3424(config)# ip igmp snooping vlan-config 2 static 225.0.0.1
interface gigabitEthernet 1/0/1-3
```

**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 ]
```

**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:

```
TL-SG3424(config)# ip igmp snooping multi-vlan-config 3 rtime 100
TL-SG3424(config)# ip igmp snooping multi-vlan-config 3 mtime 100
TL-SG3424(config)# ip igmp snooping multi-vlan-config 3 ltime 3
TL-SG3424(config)# ip igmp snooping multi-vlan-config 3 rport interface gigabitEthernet 1/0/3
```

### 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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/3
TL-SG3424(config-if)# ip igmp snooping filter addr-id 2-6
```

**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:

```
TL-SG3424(config)# ip igmp snooping filter 3 225.1.1.1 226.3.2.1
```

**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/3
TL-SG3424(config-if)# ip igmp snooping filter
```

**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:

```
TL-SG3424(config)# interface range gigabitEthernet 1/0/2-5
TL-SG3424(config-if-range)# ip igmp snooping filter maxgroup 10
```

**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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/3
TL-SG3424(config-if)# ip igmp snooping filter mode accept
```

clear ip igmp snooping statistics

**Description**

The clear ip igmp snooping statistics command is used to clear the statistics of the IGMP packets.

**Syntax**

```
clear ip igmp snooping statistics
```

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Clear the statistics of the IGMP packets:

```
TL-SG3424(config)# clear ip igmp snooping statistics
```

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:

TL-SG3424# show ip igmp snooping

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:

TL-SG3424# show ip igmp snooping interface gigabitEthernet filter

Display the IGMP basic configuration of port 2:

TL-SG3424# show ip igmp snooping interface gigabitEthernet 1/0/2 basic-config

Display the IGMP packet statistics of ports 1-4:

TL-SG3424# show ip igmp snooping interface gigabitEthernet 1/0/1-4 packet-stat

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:

```
TL-SG3424# show ip igmp snooping vlan 2
```

---

### 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:

```
TL-SG3424# show ip igmp snooping multi-vlan
```

---

### 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:

```
TL-SG3424#show ip igmp snooping groups
```

Display all the multicast entries in VLAN 5:

```
TL-SG3424(config)#show ip igmp snooping groups vlan 5
```

Display the count of multicast entries in VLAN 5:

```
TL-SG3424(config)#show ip igmp snooping groups vlan 5 count
```

Display the dynamic multicast groups of VLAN 5

```
TL-SG3424(config)#show ip igmp snooping groups vlan 5 dynamic
```

Display the static multicast groups of VLAN 5

```
TL-SG3424(config)#show ip igmp snooping groups vlan 5 static
```

Display the count of dynamic multicast entries of VLAN 5

```
TL-SG3424(config)#show ip igmp snooping groups vlan 5 dynamic count
```

Display the count of static multicast entries of VLAN 5

```
TL-SG3424(config)#show ip igmp snooping groups vlan 5 static count
```

**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:

```
TL-SG3424(config)# show ip igmp snooping filter
```
Chapter 29  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.

**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:

```
TL-SG3424(config)# ipv6 mld snooping
```

**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:

```
TL-SG3424(config)# ipv6 mld snooping router-aging-time 100
```

**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:

```
TL-SG3424(config)# ipv6 mld snooping member-aging-time 100
```

**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:

```
TL-SG3424(config)# no ipv6 mld snooping report-suppression
```
**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**

```plaintext
ipv6 mld snooping unknown-filter
no ipv6 mld snooping unknown-filter
```

**Command Mode**

Global Configuration Mode

**Example**

Enable unknown multicast filter function:

```
TL-SG3424(config)# ipv6 mld snooping unknown-filter
```

**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**

```plaintext
ipv6 mld snooping last-listener query-inteval interval
no ipv6 mld snooping last-listener query-inteval
```

**Parameter**

```plaintext
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:

```
TL-SG3424(config)# ipv6 mld snooping last-listener query-inteval 3
```
**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**

```text
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:

```
TL-SG3424(config)# ipv6 mld snooping last-listener query-count 3
```

---

**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**

```text
ipv6 mld snooping multicast-vlan
no ipv6 mld snooping multicast-vlan
```

**Command Mode**

Global Configuration Mode

**Example**

Enable multicast VLAN:

```
TL-SG3424(config)# ipv6 mld snooping multicast-vlan
```
**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:

```
TL-SG3424(config)# ipv6 mld snooping multicast-vlan vlan-id 2
```
**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:

```
TL-SG3424(config)# ipv6 mld snooping vlan 2 router-aging-time 100
```

---

**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:

TL-SG3424(config)# ipv6 mld snooping vlan 2 member-aging-time 100

**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:

TL-SG3424(config)# ipv6 mld snooping vlan 2 immediate-leave

**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 ipv6 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:

```
TL-SG3424(config)# ipv6 mld snooping vlan 2 mrouter interface gigabitEthernet 1/0/2
```

**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 the `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:

```
TL-SG3424(config)# ipv6 mld snooping vlan 2 static ff80::1234 interface gigabitEthernet 1/0/2
```

**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 the `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:
TL-SG3424(config)# ipv6 mld snooping querier vlan 2

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:
TL-SG3424(config)# ipv6 mld snooping querier vlan 2 max-response-time 10
**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:

```
TL-SG3424(config)# ipv6 mld snooping querier vlan 2 query-interval 10
```

**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:

TL-SG3424(config)# ipv6 mld snooping querier vlan 2 query-source fe80::1234

**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:

TL-SG3424(config)# ipv6 mld snooping filter 2 ff80::1234 ff80::1235

**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:

TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# ipv6 mld snooping filter

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:

TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# ipv6 mld snooping filter-mode refuse

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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# ipv6 mld snooping filter-id 1,10
```

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:

```
TL-SG3424(config)# interface gigabitEthernet 1/0/2
TL-SG3424(config-if)# ipv6 mld snooping max-group 128
```

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:

TL-SG3424(config)# clear ipv6 mld snooping statistics

**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:

TL-SG3424(config)# show ipv6 mld snooping

**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:

TL-SG3424(config)# show ipv6 mld snooping vlan
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:

TL-SG3424(config)# show ipv6 mld snooping static-mcast

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:

TL-SG3424(config)# show ipv6 mld snooping group

show ipv6 mld snooping filter

Description
The show ipv6 mld snooping filter command is used to display the filter entries.
show ipv6 mld snooping filter

Syntax

show ipv6 mld snooping filter

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the filter entries:

TL-SG3424(config)# show ipv6 mld snooping filter

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:

TL-SG3424(config)# show ipv6 mld snooping interface

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:

TL-SG3424(config)# show ipv6 mld snooping interface filter

**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:

TL-SG3424(config)# show ipv6 mld snooping querier

**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:

TL-SG3424(config)# show ipv6 mld snooping statistics
Chapter 30  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.

**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:

```
TL-SG3424(config)# snmp-server
```

**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:

```
TL-SG3424(config)# snmp-server view view1 1.3.6.1.6.3.20 include
```

**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 the `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:

```
TL-SG3424(config)# snmp-server group
    group1
    smode v3
    slev authNoPriv
    read viewDefault
    write viewDefault
    notify viewDefault
```

Delete group 1:

```
TL-SG3424(config)# no snmp-server group
    group1
    smode v3
    slev authNoPriv
```

### 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:

```
TL-SG3424(config)# snmp-server user admin local group2 smode v3 slev
authPriv cmode MD5 cpwd 11111 emode DES epwd 22222
```
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:
```
TL-SG3424(config)# snmp-server community public read-write viewDefault
```

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:

```
TL-SG3424(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:

```bash
TL-SG3424(config)# snmp-server host fe80::1234 162 admin smode v2c
type inform retries 100 timeout 1000
```

### 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**

```bash
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:

```bash
TL-SG3424(config)# snmp-server engineID local 1234567890 remote abcdef123456
```
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:
```
TL-SG3424(config)# snmp-server traps snmp linkup
```

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:

TL-SG3424(config)# interface gigabitEthernet 1/0/3
TL-SG3424(config-if)# snmp-server traps link-status

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:

```
TL-SG3424(config)# snmp-server traps bandwidth-control
```

---

### 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:
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:
```
TL-SG3424(config)# snmp-server traps vlan
```
Enable VLAN-created trap only for the switch:
```
TL-SG3424(config)# snmp-server traps vlan create
```

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**

```plaintext
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:

```plaintext
TL-SG3424(config)# rmon history 1-3 interface gigabitEthernet 1/0/2
interval 100 owner owner1
```

**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**

```plaintext
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”.

*description* —— 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:

```
TL-SG3424(config)# rmon event 1-4 user user1 description description1

type log owner owner1
```

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 ...
```
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

```
TL-SG3424(config)# rmon alarm 1-3 interface gigabitEthernet 1/0/2 owner owner1 interval 100
```

**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:

```
TL-SG3424# show snmp-server
```

**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:

```
TL-SG3424# show snmp-server view
```

**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:

```
TL-SG3424# show snmp-server group
```

**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:

```
TL-SG3424# show snmp-server user
```

**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:

```
TL-SG3424# show snmp-server community
```
**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:
```
TL-SG3424# show snmp-server host
```

**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:
```
TL-SG3424# show snmp-server engineID
```

**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:

```
TL-SG3424# show rmon history
```

### 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:

```
TL-SG3424# show rmon event 1-4
```

### 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:

```
TL-SG3424# show rmon alarm 1-2
```
Chapter 31  LLDP Commands

Note: Only TL-SG3424P supports LLDP function.

LLDP function enables network devices to advertise their own device information periodically to neighbors on the same LAN. The information of the LLDP devices in the LAN can be stored by its neighbor in a standard MIB, so it is possible for the information to be accessed by a Network Management System (NMS) such as SNMP.

**lldp**

**Description**

The `lldp` command is used to enable LLDP function. To disable the LLDP function, please use `no lldp` command.

**Syntax**

```
lldp
no lldp
```

**Command Mode**

Global Configuration Mode

**Example**

Enable LLDP function globally:

```
TL-SG3424P(config)# lldp
```

**lldp hold-multiplier**

**Description**

The `lldp hold-multiplier` command is used to configure the Hold Multiplier parameter. The aging time of the local information in the neighbor device is determined by the actual TTL value used in the sending LLDPDU. TTL = Hold Multiplier * Transmit Interval. To return to the default configuration, please use `no lldp hold-multiplier` command.

**Syntax**

```
lldp hold-multiplier multiplier
no lldp hold-multiplier
```
Parameter

multiplier —— Configure the Hold Multiplier parameter. It ranges from 2 to 10. By default, it is 4.

Command Mode

Global Configuration Mode

Example

Specify Hold Multiplier as 5:

```
TL-SG3424P(config)# lldp hold-multiplier 5
```

**lldp timer**

Description

The **lldp timer** command is used to configure the parameters about transmission. To return to the default configuration, please use **no lldp timer** command.

Syntax

```
lldp timer { tx-interval tx-interval | tx-delay tx-delay | reinit-delay reinit-delay | notify-interval notify-interval | fast-count fast-count }
no lldp timer { tx-interval | tx-delay | reinit-delay | notify-interval | fast-count }
```

Parameter

- **tx-interval** —— Configure the interval for the local device to transmit LLDPDU to its neighbors. The value ranges from 5 to 32768 seconds and the default value is 30 seconds.
- **tx-delay** —— Configure a value from 1 to 8192 in seconds to specify the time for the local device to transmit LLDPDU to its neighbors after changes occur so as to prevent LLDPDU being sent frequently. By default, it is 2 seconds.
- **reinit-delay** —— This parameter indicates the amount of delay from when LLDP status becomes "disable" until re-initialization will be attempted. The value ranges from 1 to 10 seconds and the default value is 3 seconds.
- **notify-interval** —— Specify the interval of Trap message which will be sent from local device to network management system. The value ranges from 5 to 3600 seconds and the default value is 5 seconds.
- **fast-count** —— When the port's LLDP state transforms from Disable (or Rx_Only) to Tx&Rx (or Tx_Only), the fast start mechanism will be enabled, that is, the transmit interval will be shorten to a second, and several LLDPDUs will be sent
out (the number of LLDPDU equals this parameter). The value ranges from 1 to 10 and the default value is 3.

**Command Mode**
Global Configuration Mode

**Example**
Specify the Transmit Interval of LLDPDU as 45 seconds and Trap message to NMS as 120 seconds:

```
TL-SG3424P(config)# lldp timer tx-interval 45
TL-SG3424P(config)# lldp timer notify-interval 120
```

**lldp med-fast-count**

**Description**
The `lldp med-fast-count` command is used to configure the number of the LLDP-MED frames that will be sent out. When LLDP-MED fast start mechanism is activated, multiple LLDP-MED frames will be transmitted based on this parameter. The default value is 4. To return to the default configuration, please use `no lldp med-fast-count` command.

**Syntax**
```
lldp med-fast-count count
no lldp med-fast-count
```

**Parameter**
`count` — Configure the Fast Start Count parameter. It ranges from 1 to 10. By default, it is 4.

**Command Mode**
Global Configuration Mode

**Example**
Specify Fast Start Count as 5:

```
TL-SG3424P(config)# lldp med-fast-count 5
```

**lldp receive**

**Description**
The `lldp receive` command is used to enable the designated port to receive LLDPDU. To disable the function, please use `no lldp receive` command.
Syntax

lldp receive
no lldp receive

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable port 1 to receive LLDPDU:

TL-SG3424P(config)# interface gigabitEthernet 1/0/1
TL-SG3424P(config-if)# lldp receive

lldp transmit

Description

The lldp transmit command is used to enable the designated port to transmit LLDPDU. To disable the function, please use no lldp transmit command.

Syntax

lldp transmit
no lldp transmit

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable port 1 to transmit LLDPDU:

TL-SG3424P(config)# interface gigabitEthernet 1/0/1
TL-SG3424P(config-if)# lldp transmit

lldp snmp-trap

Description

The lldp snmp-trap command is used to enable the port’s SNMP notification. If enabled, the port will notify the trap event to network management system. To disable the ports’ SNMP notification, please use no lldp snmp-trap command.
Syntax

lldp snmp-trap
no lldp snmp-trap

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the SNMP notification for port 1:

```
TL-SG3424P(config)# interface gigabitEthernet 1/0/1
TL-SG3424P(config-if)# lldp snmp-trap
```

lldp tlv-select

Description

The `lldp tlv-select` command is used to configure TLVs to be included in outgoing LLDPDU. To exclude TLVs, please use `no lldp tlv-select` command. By default, All TLVs are included in outgoing LLDPDU.

Syntax

```
lldp tlv-select [ port-description | system-capability | system-description | system-name | management-address | port-vlan | protocol-vlan | vlan-name | link-aggregation | mac-phy-cfg | max-frame-size | power | all ]
no lldp tlv-select [ port-description | system-capability | system-description | system-name | management-address | port-vlan | protocol-vlan | vlan-name | link-aggregation | mac-phy-cfg | max-frame-size | power | all ]
```

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Exclude "management-address" and "port-vlan-id" TLVs in LLDPDU outgoing from port 1:

```
TL-SG3424P(config)# interface gigabitEthernet 1/0/1
TL-SG3424P(config-if)# no lldp tlv-select management-address port-vlan
```
lldp med-location

**Description**

The lldp med-location command is used to configure the Location Identification TLV's content in outgoing LLDPDU of the port.

**Syntax**

```
lldp med-location { emergency-number identifier | civic-address { [ language language ] [ province-state province-state ] [ county county ] [ city city ] [ street street ] [ house-number house-number ] [ name name ] [ postal-zip-code postal-zip-code ] [ room-number room-number ] [ post-office-box post-office-box ] [ additional additional ] [ country-code country-code ] [ what { dhcp-server | endpoint | switch } ] }
```

**Parameter**

- **emergency-number** —— Emergency Call Service ELIN identifier, which is used during emergency call setup to a traditional CAMA or ISDN trunk-based PSAP. The length of this field ranges from 10 to 25 characters.
- **civic-address** —— The civic address is defined to reuse the relevant sub-fields of the DHCP option for civic Address based Location Configuration Information as specified by IETF.

**Command Mode**

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

**Example**

Configure the civic address in the Location Identification TLV's content in outgoing LLDPDU of port 2. Configure the language as English and city as London:

```
TL-SG3424P(config)# interface gigabitEthernet 1/0/2
TL-SG3424P(config-if)# lldp med-location civic-address language English city London
```

lldp med-status

**Description**

The lldp med-status command is used to enable the LLDP-MED feature for the corresponding port. After the LLDP-MED feature is enabled, the port's Admin
Status will be changed to Tx&Rx. To disable the LLDP-MED feature for the corresponding port, please use \texttt{no lldp med-status} command.

\textbf{Syntax}

\begin{itemize}
  \item \texttt{lldp med-status}
  \item \texttt{no lldp med-status}
\end{itemize}

\textbf{Command Mode}

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

\textbf{Example}

Enable the LLDP-MED feature for port 2:

\begin{verbatim}
TL-SG3424P(config)# interface gigabitEthernet 1/0/2
TL-SG3424P(config-if)# lldp med-status
\end{verbatim}

\textbf{lldp med-tlv-select}

\textbf{Description}

The \texttt{lldp med-tlv-select} command is used to configure LLDP-MED TLVs to be included in outgoing LLDPDU for the corresponding port. To exclude LLDP-MED TLVs, please use \texttt{no lldp med-tlv-select} command. By default, All TLVs are included in outgoing LLDPDU.

\textbf{Syntax}

\begin{itemize}
  \item \texttt{lldp med-tlv-select} \{ [inventory-management] [location] [network-policy] [power-management] [all] \}
  \item \texttt{no lldp med-tlv-select} \{ [inventory-management] [location] [network-policy] [power-management] [all] \}
\end{itemize}

\textbf{Command Mode}

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

\textbf{Example}

Exclude “network policy” and “inventory” TLVs in LLDPDU outgoing from port 2:

\begin{verbatim}
TL-SG3424P(config)# interface gigabitEthernet 1/0/2
TL-SG3424P(config-if)# lldp med-tlv-select network-policy inventory-management
\end{verbatim}
**show lldp**

**Description**

The `show lldp` command is used to display the global configuration of LLDP and LLDP-MED fast start repeat count number.

**Syntax**

`show lldp`

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the global configuration of LLDP and LLDP-MED fast start repeat count number:

```
TL-SG3424P# show lldp
```

**show lldp interface**

**Description**

The `show lldp interface` command is used to display LLDP and LLDP-MED configuration of the corresponding port. By default, the configuration of all the ports will be displayed.

**Syntax**

`show lldp interface [ gigabitEthernet port ]`

**Parameter**

`port` —— The Ethernet port number.

**Command Mode**

Privileged EXEC Mode and Any Configuration Mode

**Example**

Display the LLDP and LLDP-MED configuration of port 1:

```
TL-SG3424P# show lldp interface gigabitEthernet 1/0/1
```
show lldp local-information interface

Description

The `show lldp local-information interface` command is used to display the LLDP and LLDP-MED local information of the corresponding port. By default, the information of all the ports will be displayed.

Syntax

`show lldp local-information interface [ gigabitEthernet port ]`

Parameter

`port` —— The Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the LLDP and LLDP-MED local information of port 1:

```
TL-SG3424P# show lldp local-information interface gigabitEthernet 1/0/1
```

show lldp neighbor-information interface

Description

The `show lldp neighbor-information interface` command is used to display the LLDP and LLDP-MED neighbor information of the corresponding port. By default, the neighbor information of all the ports will be displayed.

Syntax

`show lldp neighbor-information interface [ gigabitEthernet port ]`

Parameter

`port` —— The Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the LLDP and LLDP-MED neighbor information of port 1:

```
TL-SG3424P# show lldp neighbor-information interface gigabitEthernet 1/0/1
```
show lldp traffic interface

Description
The show lldp traffic interface command is used to display the LLDP statistic information between the local device and neighbor device of the corresponding port. By default, the LLDP statistic information of all the ports will be displayed.

Syntax
show lldp traffic interface [ gigabitEthernet port ]

Parameter
port —— The Ethernet port number.

Command Mode
Privileged EXEC Mode and Any Configuration Mode

Example
Display the LLDP statistic information of port 1:

TL-SG3424P# show lldp traffic interface gigabitEthernet 1/0/1
Chapter 32  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.

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:

TL-SG3424(config)# cluster ndp
cluster ndtp

Description

The `cluster ndtp` command is used to configure NTDP globally. To return to the default configuration, please use `no cluster ndtp` 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 ndtp
cluster ndtp timer { [ interval-time time ] [ hop-delay value ] [ port-delay value ] }
cluster ndtp hop hop-value
no cluster ndtp
no cluster ndtp timer { [ interval-time time ] [ hop-delay value ] [ port-delay value ] }
no cluster ndtp 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:

```
TL-SG3424(config)# cluster ntdp
TL-SG3424(config)# cluster ntdp timer interval-timer 30
TL-SG3424(config)# cluster ntdp hop 5
```

**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:

```
TL-SG3424(config)# cluster explore
```

**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:
  
  TL-SG3424(config)# interface gigabitEthernet 1/0/5
  TL-SG3424(config-if)# cluster ndp enable ntdp enable

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:
  
  TL-SG3424(config)# cluster candidate

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:

TL-SG3424(config)# cluster individual

**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:

```
TL-SG3424# show cluster ndp
```

Display the NDP configuration of all Ethernet ports:

```
TL-SG3424# show cluster ndp interface
```

Display the NDP configuration of port 2:

```
TL-SG3424# show cluster ndp interface gigabitEthernet 1/0/2
```

**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:

```
TL-SG3424# show cluster ntdp
```
Display the NTDP configuration of port 2:

```
TL-SG3424# show cluster ntdp interface gigabitEthernet 1/0/2
```
Display the information of device collected through NTDP:

```
TL-SG3424# show cluster ntdp device-list
```

### 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:

```
TL-SG3424# show cluster neighbour
```

### 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:

```
TL-SG3424(config)# show cluster manage role
```