



CLI Reference Guide

TL-SL5428E

**24-Port 10/100Mbps + 4-Port Gigabit
JetStream L2 Managed Switch**



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Preface

This Guide is intended for network administrator to provide referenced information about CLI (Command Line Interface). The device mentioned in this Guide stands for TL-SL5428E JetStream L2 Managed Switch.

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: VLAN-VPN Commands

Provide information about the commands used for configuring VLAN-VPN (Virtual Private Network) function.

Chapter 7: Voice VLAN Commands

Provide information about the commands used for configuring Voice VLAN.

Chapter 8: Private VLAN Commands

Provide information about the commands used for configuring Private VLAN.

Chapter 9: GVRP Commands

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

Chapter 10: EtherChannel Commands

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

Chapter 11: User Manage Commands

Provide information about the commands used for user management.

Chapter 12: Binding Table Commands

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

Chapter 13: ARP Inspection Commands

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

Chapter 14: IP Verify Source Commands

Provide information about the commands used for guarding the IP Source by filtering the IP packets based on the IP-MAC Binding entries.

Chapter 15: DoS Defend Command

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

Chapter 16: IEEE 802.1X Commands

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

Chapter 17: System Log Commands

Provide information about the commands used for configuring system log.

Chapter 18: SSH Commands

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

Chapter 19: SSL Commands

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

Chapter 20: MAC Address Commands

Provide information about the commands used for MAC Address configuration.

Chapter 21: System Configuration Commands

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

Chapter 22: Ethernet Configuration Commands

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

Chapter 23: QoS Commands

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

Chapter 24: Port Mirror Commands

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

Chapter 25: Port isolation Commands

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

Chapter 26: Loopback Detection Commands

Provide information about the commands used for loopback detection.

Chapter 27: ACL Commands

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

Chapter 28: MSTP Commands

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

Chapter 29: IGMP Commands

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

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 a provided cable.
2. Click **Start** → **All Programs** → **Accessories** → **Communications** → **Hyper Terminal** to open the Hyper Terminal as the Figure 1-1 shown.

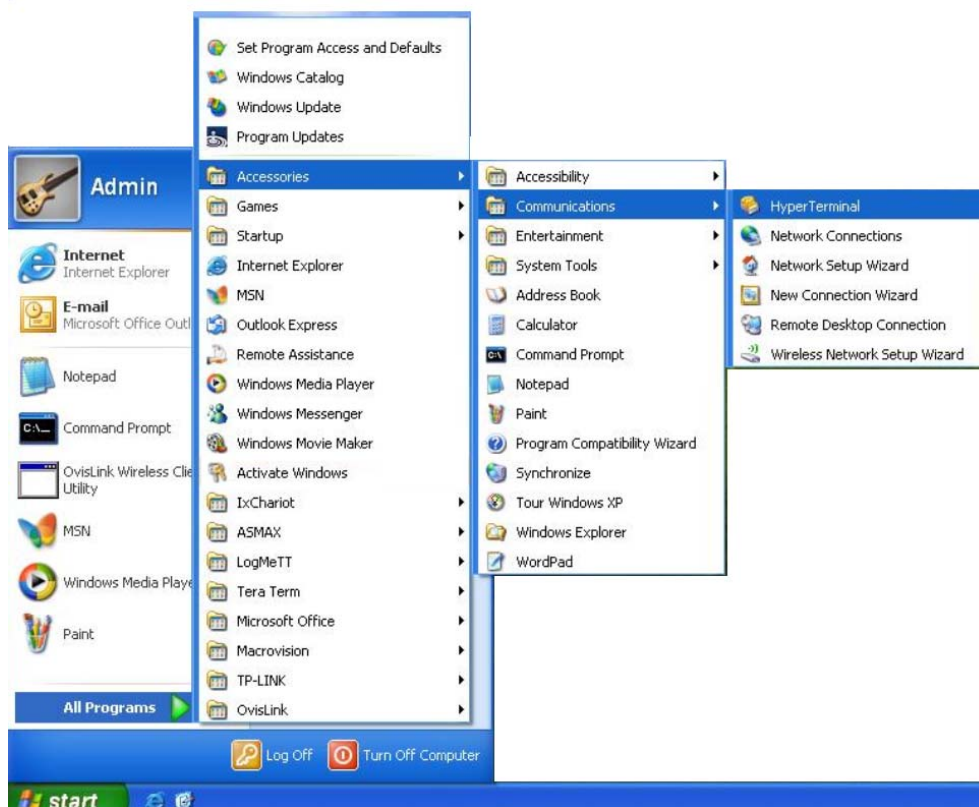


Figure 1-1 Open Hyper Terminal

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



Figure 1-2 Connection Description

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



Figure 1-3 Select the port to connect

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



Figure 1-4 Port Settings

- The DOS prompt "TL-SL5428E>" will appear after pressing the **Enter** button as Figure 1-5 shown. It indicates that you can use the CLI now.

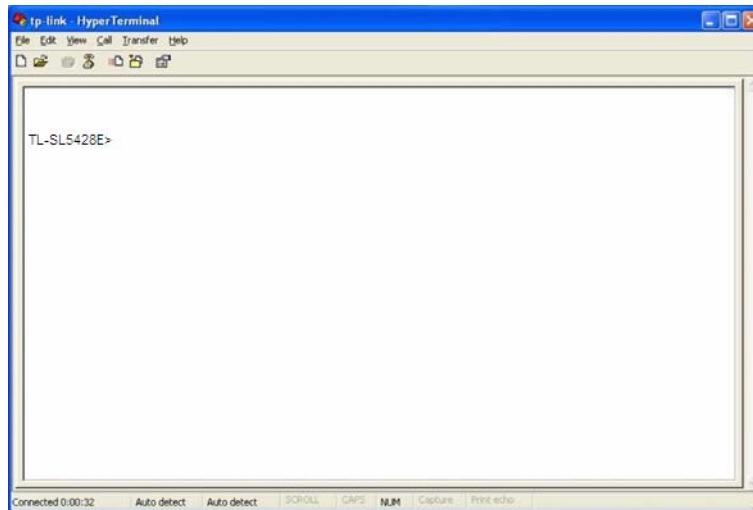


Figure 1-5 Log in the Switch

1.1.2 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**. The relevant CLI commands should be entered in the prompted DOS screen shown in Figure 1-5 Log in the Switch.
- You will enter to User EXEC Mode after Telnet connection is successfully created, but for switch security concerns, you are required to set a password which functions to further access to Privileged EXEC Mode when you configure the login mode.

➤ **Login Local Mode:**

Firstly, configure the Telnet login mode as "**login local**" and set the password for entering into the Privileged EXEC Mode as **123** in the prompted DOS screen shown in Figure 1-5.

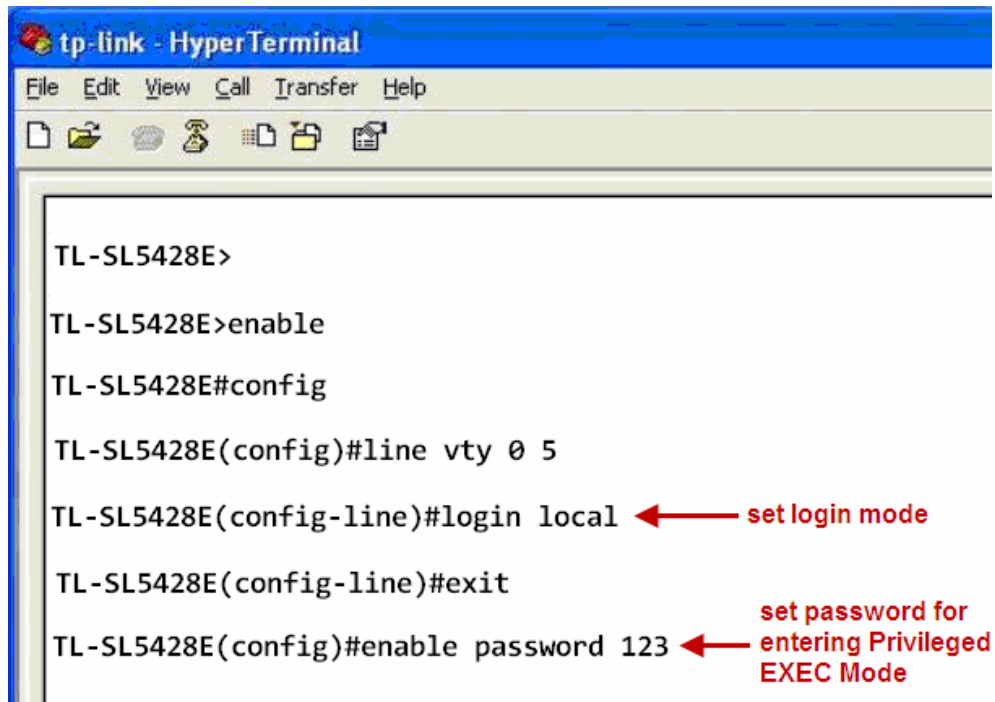


Figure 1-6 Configure login local mode

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

1. Make sure the switch and the PC are in the same LAN. Click **Start** → **Run** to open the **Run** window and type **cmd** in the prompt Run window as Figure 1-7 and click **OK**.

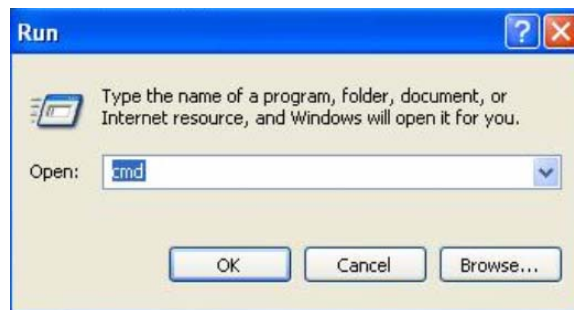


Figure 1-7 Run Window

2. Open Telnet, then type **telnet 192.168.0.1** in the command prompt shown as Figure 1-8, and press the **Enter** button.

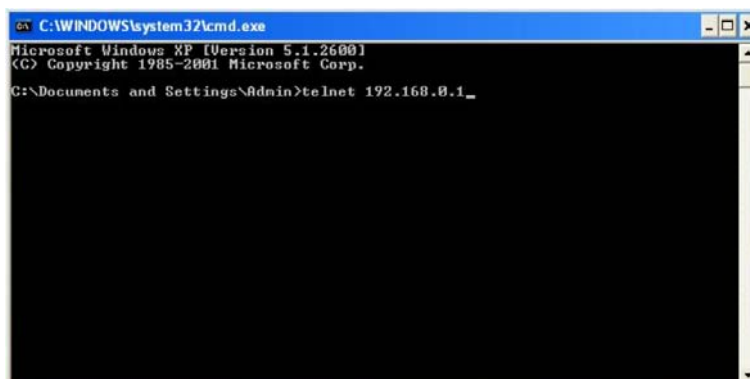


Figure 1-8 Connecting to the Switch

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

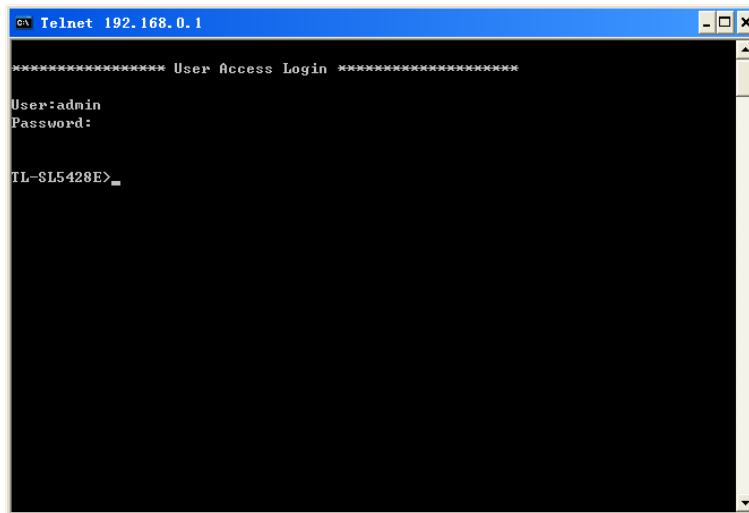


Figure 1-9 Enter into the User EXEC Mode

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

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

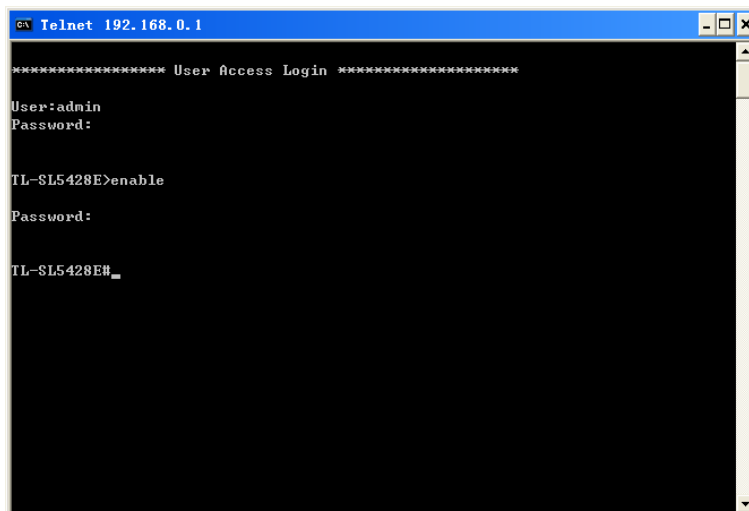
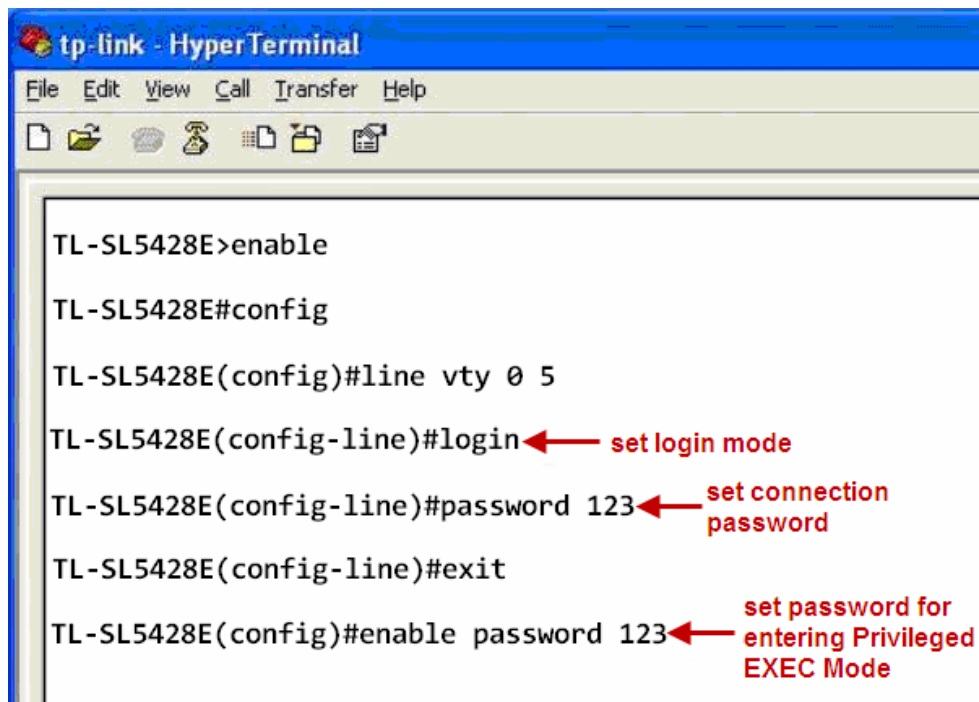


Figure 1-10 Enter to the Privileged EXEC Mode

➤ **Login Mode:**

Firstly configure the Telnet login mode as **“login”**, and both the connection password and the Privileged EXEC Mode password as **123** in the prompted DOS screen shown in Figure 1-11.



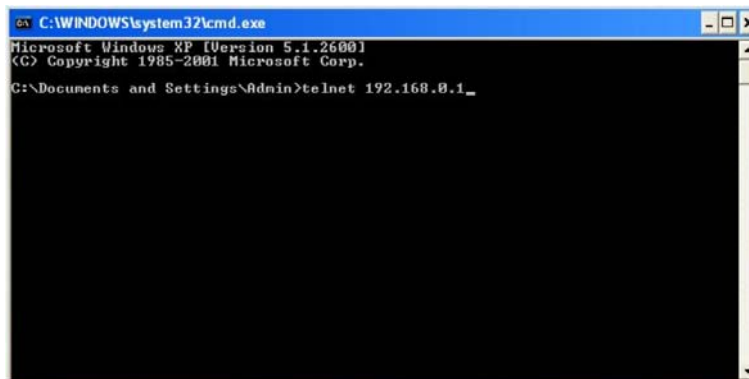
```
tp-link - HyperTerminal
File Edit View Call Transfer Help

TL-SL5428E>enable
TL-SL5428E#config
TL-SL5428E(config)#line vty 0 5
TL-SL5428E(config-line)#login ← set login mode
TL-SL5428E(config-line)#password 123 ← set connection password
TL-SL5428E(config-line)#exit
TL-SL5428E(config)#enable password 123 ← set password for entering Privileged EXEC Mode
```

Figure 1-11 Configure login mode

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

1. Open Telnet, then type **telnet 192.168.0.1** in the command prompt shown as Figure 1-12, and press the **Enter** button.



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

Figure 1-12 Connecting to the Switch

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

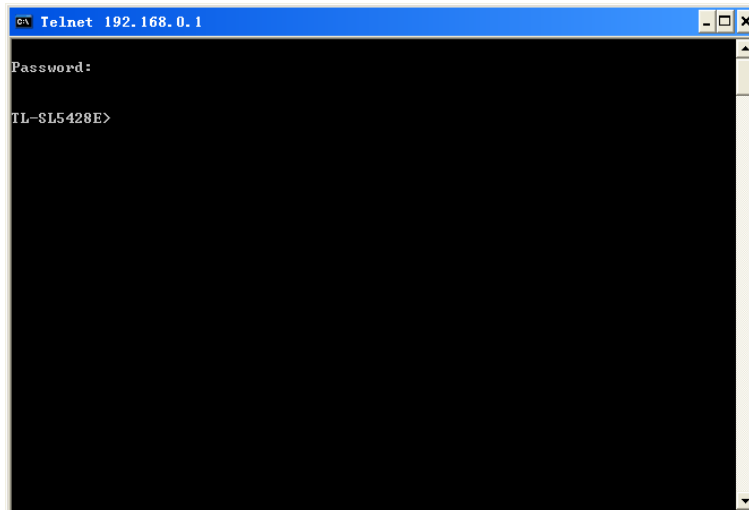


Figure 1-13 Enter into the User EXEC Mode

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

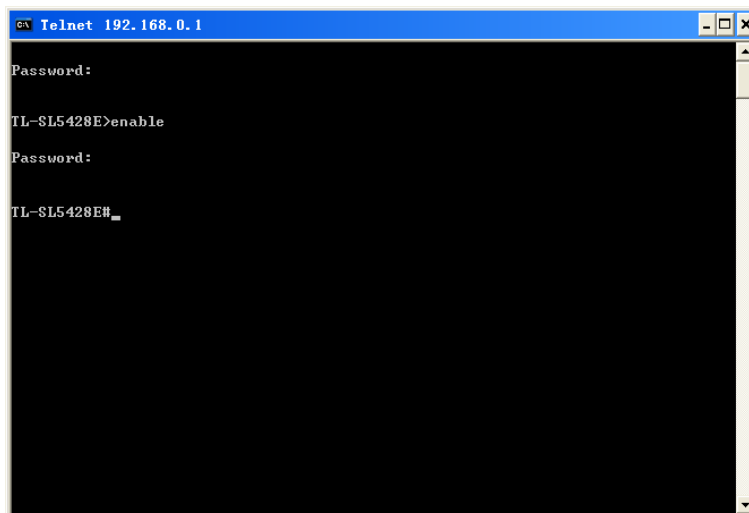


Figure 1-14 Enter into the Privileged EXEC Mode

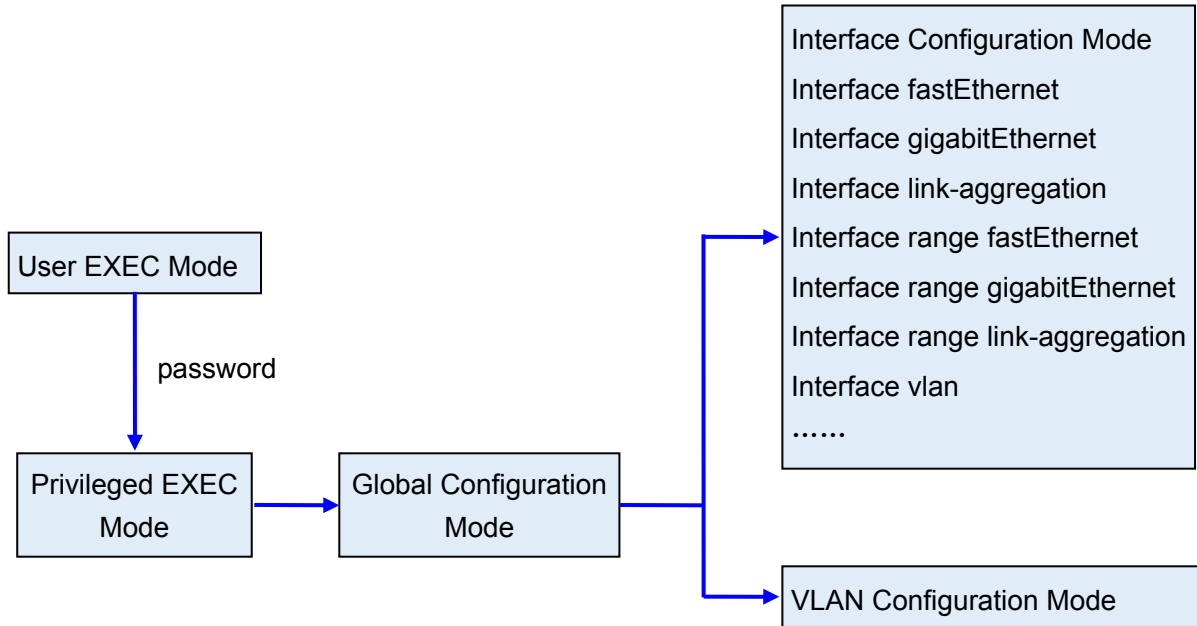
Now you can manage your switch with CLI commands through Telnet connection.

Note:

You can refer to [Chapter 11 User Manage Commands](#) for detailed commands information of the Telnet connection configuration.

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 Database (VLAN Configuration Mode). Interface Configuration Mode can also be divided into Interface fastEthernet, Interface gigabitEthernet, Interface link-aggregation and some other modes, which is shown as the following diagram.



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

Mode	Accessing Path	Prompt	Logout or Access the next mode
User EXEC Mode	Primary mode once it is connected with the switch.	TL-SL5428E>	Use the exit command to disconnect the switch (except that the switch is connected through the Console port). Use the enable command to access Privileged EXEC mode.
Privileged EXEC Mode	Use the enable command to enter this mode from User EXEC mode.	TL-SL5428E #	Enter the disable or the exit command to return to User EXEC mode. Enter configure command to access Global Configuration mode.
Global Configuration Mode	Use the configure command to enter this mode from Privileged EXEC mode.	TL-SL5428E(config)#	Use the exit or the end command or press Ctrl+Z to return to Privileged EXEC mode. Use the interface fastEthernet/gigabitEthernet port or interface range fastEthernet/gigabitEthernet port-list command to access interface Configuration mode. Use the vlan vlan-list to access VLAN Configuration mode.

Mode	Accessing Path	Prompt	Logout or Access the next mode
Interface Configuration Mode	Use the interface fastEthernet/gigabitEthernet port or interface range fastEthernet/gigabitEthernet port-list command to enter this mode from Global Configuration mode.	TL-SL5428E(config-if)# TL-SL5428E(config-if-range)#	Use the end command or press Ctrl+Z to return to Privileged EXEC mode. Enter exit or # command to return to Global Configuration mode. A port number must be specified in the interface command.
VLAN Configuration Mode	Use the vlan vlan-list command to enter this mode from Global Configuration mode.	TL-SL5428E(config-vlan)#	Use the end command or press Ctrl+Z to return to Privileged EXEC mode. Enter the exit or # command to return to Global configuration mode.

Note:

1. The user is automatically in User EXEC Mode after the connection between the PC and the switch is established by a console port or by a telnet connection.
2. Each command mode has its own set of specific commands. To configure some commands, you should access the corresponding command mode firstly.
 - **Global Configuration Mode:** In this mode, global commands are provided, such as the Spanning Tree, Schedule Mode and so on.
 - **Interface Configuration Mode:** In this mode, users can configure one or several ports. Different ports correspond to different commands
 - a). Interface fastEthernet/gigabitEthernet: Configure parameters for a Fast/Gigabit Ethernet port, such as Duplex-mode, flow control status.
 - b). Interface range fastEthernet/gigabitEthernet: The commands contained are the same as that of the Interface Ethernet. 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.

Users get the privilege to the User level once connecting console port with the switch or logging in by Telnet. However, Guest users are restricted to access the CLI.

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 " < > , \ & can not 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 enter 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, 1,3-5,7 indicates choosing 1,3,4,5,and 7.
- The port number must enter in the format of 1/0/3, meaning unit/slot/port. The unit number is always 1, and slot number is always 0 and the port number is a variable (an actual value must be assigned).

Chapter 2 User Interface

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-SL5428E>enable
Enter password:
TL-SL5428E#
```

enable password

Description

The **enable password** command is used to set the password for users to access Privileged EXEC Mode from User EXEC Mode. To return to the default configuration, please use **no enable password** command.

Syntax

enable password *password* [**secret** {simple | cipher}]
no enable password

Parameter

password — super password, which contains 31 characters at most, composing digits, English letters and underdashes only. By default, it is empty.

simple | cipher — The way of displaying password in configuration file. By default, it is “simple”.

Command Mode

Global Configuration Mode

Example

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

```
TL-SL5428E(config)#enable password 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-SL5428E#disable  
TL-SL5428E>
```

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-SL5428E#configure  
TL-SL5428E(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-SL5428E(config-if)#exit
TL-SL5428E(config)#exit
TL-SL5428E#
```

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-SL5428E(config-if)#end
TL-SL5428E#
```

show history

Description

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

Syntax

show history

Command Mode

Privileged EXEC Mode and any Configuration Mode

Example

Show the commands you have entered before:

```
TL-SL5428E(config-if)#show history
TL-SL5428E#
1 show history
```

clear history

Description

The **clear history** command is used to clear the commands you have entered before, 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 before:

```
TL-SL5428E(config-if)#clear history
TL-SL5428E(config-if)#
```


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 hereafter to access to 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 — 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-SL5428E(config)#vlan 2-10,100
```

Delete VLAN 2:

```
TL-SL5428E(config)#no vlan 2
```

interface vlan

Description

The **interface vlan** command is used to create VLAN Interface hereafter to access to Interface VLAN Mode.

Syntax

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

Parameter

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

Command Mode

Global Configuration Mode

Example

Create VLAN Interface 2:

```
TL-SL5428E(config)#interface vlan 2
```

name

Description

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

Syntax

```
name descript  
no name
```

Parameter

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

Command Mode

VLAN Configuration Mode (VLAN)

Example

Specify the description string of the VLAN 2 as “VLAN002”:

```
TL-SL5428E(config)#vlan 2
TL-SL5428E(config-vlan)#name VLAN002
```

switchport mode

Description

The **switchport mode** command is used to configure the Link Types 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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Specify the Link Type of Fast Ethernet port 3 as “trunk”:

```
TL-SL5428E(config)#interface fastEthernet 1/0/3
TL-SL5428E(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, or to remove a port from the corresponding VLAN.

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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure Fast Ethernet port 3 whose link type is “access” to VLAN 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/3
TL-SL5428E(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 remove a Trunk port from the corresponding VLAN, please use **no switchport trunk allowed vlan** command.

Syntax

```
switchport trunk allowed vlan {vlan-list | all}
no switchport trunk allowed vlan {vlan-list | all}
```

Parameter

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

all — Add the port to all of the existing VLANs.

Command Mode

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

Example

Configure the link type of port 2 as trunk and add it to VLAN 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
TL-SL5428E(config-if)#switchport mode trunk
```

```
TL-SL5428E(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, or to remove a port from the corresponding VLAN.

Syntax

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

Parameter

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

tagged | untagged — egress-rule.

Command Mode

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

Example

Configure Fast Ethernet port 4 whose link type is “general” to VLAN 2 and its egress-rule as “tagged”:

```
TL-SL5428E(config)#interface fastEthernet 1/0/4  
TL-SL5428E(config-if)#switchport mode general  
TL-SL5428E(config-if)#switchport general allowed vlan 2 tagged
```

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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Specify the PVID of Fast Ethernet port 3 as 1:

```
TL-SL5428E(config)#interface fastEthernet 1/0/3
```

```
TL-SL5428E(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-SL5428E(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-SL5428E(config)#show vlan brief
```

show vlan

Description

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

Syntax

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

Parameter

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

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the detailed information of VLAN 2-10:

```
TL-SL5428E(config)#show vlan id 2-10
```

Chapter 4 MAC-based VLAN Commands

MAC VLAN (Virtual Local Area Network) is the way to classify the VLANs based on MAC Address. A MAC address is relative to a single VLAN ID. The untagged packets and the priority-tagged packets coming 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 a 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 to the MAC address for identification, which contains 8 characters at most.

Command Mode

Global Configuration Mode

Example

Create VLAN 2, named “TP”, and the MAC address is 00:11:11:01:01:12:

```
TL-SL5428E(config)#mac-vlan mac-address 00:11:11:01:01:12 vlan 2  
description TP
```


mac-vlan

Description

The **mac-vlan** command is used to enable a port for the MAC-based VLAN feature. Only the port is enabled can the configured MAC-based VLAN take effect. To disable the MAC-based VLAN function, please use **no mac-vlan** command. All the ports are disabled by default.

Syntax

```
mac-vlan
no mac-vlan
```

Command Mode

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

Example

Enable the Fast Ethernet port 3 for the MAC-based VLAN feature:

```
TL-SL5428E(config)#interface fastEthernet 1/0/3
TL-SL5428E(config-if)#mac-vlan
```

show mac-vlan

Description

The **show mac-vlan** command is used to display the information of the MAC-based VLAN entry. 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 information of all the MAC-based VLAN entry:

```
TL-SL5428E(config)#show mac-vlan all
```

show mac-vlan interface

Description

The **show mac-vlan interface** command is used to display the port state of MAC-based VLAN.

Syntax

```
show mac-vlan interface
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the enable state of all the ports:

```
TL-SL5428E(config)#show mac-vlan interface
```

Chapter 5 Protocol-based VLAN Commands

Protocol VLAN (Virtual Local Area Network) is the way to classify VLANs based on Protocols. A Protocol is relative to a single 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  
no protocol-vlan template template-idx
```

Parameter

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

type — Enter the Ethernet protocol type field in the protocol template, composing of 4 Hex integers.

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:

```
TL-SL5428E(config)#protocol-vlan template name TP ether-type 2024
```

protocol-vlan vlan

Description

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

Syntax

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

Parameter

vlan-id —— 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-SL5428E(config)#protocol-vlan vlan 2 template 3
```

protocol-vlan

Description

The **protocol-vlan** command is used to enable the Protocol-based VLAN feature for a specified port. To disable the Protocol-based VLAN feature of this port, please use **no protocol-vlan** command. By default, the Protocol-based VLAN feature of all ports is disabled.

Syntax

protocol-vlan

no protocol-vlan

Command Mode

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

Example

Enable the Protocol-based VLAN feature for the Gigabit Ethernet port 25:

```
TL-SL5428E(config)#interface gigabitEthernet 1/0/25
```

```
TL-SL5428E(config-if)#protocol-vlan
```

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-SL5428E(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-SL5428E(config)#show protocol-vlan vlan
```

show protocol-vlan interface

Description

The **show protocol-vlan interface** command is used to display port state and of Protocol-based VLAN interface.

Syntax

```
show protocol-vlan interface
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the port state and of Protocol-based VLAN interface:

```
TL-SL5428E(config)#show protocol-vlan interface
```

Chapter 6 VLAN-VPN Commands

VLAN-VPN (Virtual Private Network) function, the implement of a simple and flexible Layer 2 VPN technology, allows the packets with VLAN tags of private networks to be encapsulated with VLAN tags of public networks at the network access terminal of the Internet Service Provider. And these packets will be transmitted with double-tag across the public networks.

dot1q-tunnel

Description

The **dot1q-tunnel** command is used to enable the VLAN-VPN function globally. To disable the VLAN-VPN function, please use the **no dot1q-tunnel** command.

Syntax

```
dot1q-tunnel
no dot1q-tunnel
```

Command Mode

Global Configuration Mode

Example

Enable the VLAN-VPN function globally:

```
TL-SL5428E(config)#dot1q-tunnel
```

dot1q-tunnel tpid

Description

The **dot1q-tunnel tpid** command is used to configure Global TPID of the VLAN-VPN. To restore to the default value, please use the **no dot1q-tunnel tpid** command.

Syntax

```
dot1q-tunnel tpid num
no dot1q-tunnel tpid
```

Parameter

num — The value of Global TPID. It must be 4 Hex integers. By default, it is 8100.

Command Mode

Global Configuration Mode

Example

Configure Global TPID of the VLAN-VPN as 0x9100:

```
TL-SL5428E(config)#dot1q-tunnel tpid 9100
```

dot1q-tunnel mapping

Description

The **dot1q-tunnel mapping** command is used to add the VLAN Mapping entry. To delete the VLAN Mapping entry, please use the **no dot1q-tunnel mapping** command.

Syntax

```
dot1q-tunnel mapping c-vlan sp-vlan [descript]  
no dot1q-tunnel mapping c-vlan
```

Parameter

c-vlan — Customer VLAN ID, ranging from 1 to 4094.

sp-vlan — Service Provider VLAN ID, ranging from 1 to 4094.

descript — Give a description to the VLAN Mapping entry, which contains 15 characters at most.

Command Mode

Global Configuration Mode

Example

Add a VLAN Mapping entry named “TP” with the C-VLAN being 2 and the SP-VLAN being 10:

```
TL-SL5428E(config)#dot1q-tunnel mapping 2 10 TP
```


switchport dot1q-tunnel mapping

Description

The **switchport dot1q-tunnel mapping** command is used to enable the VLAN Mapping feature for a specified port. To disable the VLAN Mapping feature of this port, please use the **no switchport dot1q-tunnel mapping** command. By default, the VLAN Mapping feature of all ports is disabled.

Syntax

```
switchport dot1q-tunnel mapping  
no switchport dot1q-tunnel mapping
```

Command Mode

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

Example

Enable the VLAN Mapping feature for the Fast Ethernet port 3:

```
TL-SL5428E(config)#interface fastEthernet 1/0/3  
TL-SL5428E(config-if)#switchport dot1q-tunnel mapping
```

switchport dot1q-tunnel mode uplink

Description

The **switchport dot1q-tunnel mode uplink** command is used to configure a specified port as the VPN Up-link port. To cancel this VPN Up-link port, please use the **no switchport dot1q-tunnel mode uplink** command. By default, no port has been configured as the VPN Up-link port.

Syntax

```
switchport dot1q-tunnel mode uplink  
no switchport dot1q-tunnel mode uplink
```

Command Mode

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

Example

Configure the Fast Ethernet port 3 as the VPN Up-link ports:

```
TL-SL5428E(config)#interface fastEthernet 1/0/3
TL-SL5428E(config-if)#switchport dot1q-tunnel mode uplink
```

show dot1q-tunnel

Description

The **show dot1q-tunnel** command is used to display the global configuration information of the VLAN VPN.

Syntax

```
show dot1q-tunnel
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the global configuration information of the VLAN VPN:

```
TL-SL5428E(config)#show dot1q-tunnel
```

show dot1q-tunnel mapping

Description

The **show dot1q-tunnel mapping** command is used to display the information of VLAN Mapping entry.

Syntax

```
show dot1q-tunnel mapping
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of VLAN Mapping entry:

```
TL-SL5428E(config)#show dot1q-tunnel mapping
```

show dot1q-tunnel mapping interface

Description

The **show dot1q-tunnel mapping interface** command is used to display the VLAN Mapping port enable state of VLAN Mapping

Syntax

```
show dot1q-tunnel mapping interface
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the enable state of all VLAN Mapping ports:

```
TL-SL5428E(config)#show dot1q-tunnel mapping interface
```

show dot1q-tunnel uplink

Description

The **show dot1q-tunnel uplink** command is used to display the configuration information of the VLAN VPN Up-link ports.

Syntax

```
show dot1q-tunnel uplink
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration information of the VLAN VPN Up-link ports:

```
TL-SL5428E(config)# show dot1q-tunnel uplink
```

Chapter 7 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-SL5428E(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-SL5428E(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-SL5428E(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** *descriptf*]

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-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

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

```
TL-SL5428E(config)#interface fastEthernet 1/0/3
TL-SL5428E(config-if)#switchport voice vlan mode auto
```

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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the Fast Ethernet port 3 for Voice VLAN security feature:

```
TL-SL5428E(config)#interface fastEthernet 1/0/3
TL-SL5428E(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-SL5428E(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-SL5428E(config)#show voice vlan oui
```


show voice vlan switchport

Description

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

Syntax

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

Parameter

port —The Fast/Gigabit Ethernet port number selected to display the configuration information.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration information of Fast Ethernet port 1 in the Voice VLAN:

```
TL-SL5428E(config)#show voice vlan switchport fastEthernet 1/0/1
```

Display the configuration information of all the ports in the Voice VLAN:

```
TL-SL5428E(config)#show voice vlan switchport
```

Chapter 8 Private VLAN Commands

Private VLANs are configured specially for saving VLAN resource of uplink devices and decreasing broadcast.

private-vlan primary

Description

The **private-vlan primary** command is used to configure the designated VLAN as the primary VLAN of the Private VLAN. To abolish the currently primary VLAN, please use **no private-vlan primary** command.

Syntax

```
private-vlan primary
no private-vlan primary
```

Command Mode

VLAN Configuration Mode (VLAN)

Example

Configure the VLAN 3 as the primary VLAN of the private VLAN:

```
TL-SL5428E(config)#vlan 3
TL-SL5428E(config-vlan)#private-vlan primary
```

private-vlan community

Description

The **private-vlan community** command is used to configure the designated VLAN as the community VLAN of the Private VLAN. To invalid the currently community VLAN, please use **no private-vlan community** command.

Syntax

```
private-vlan community
no private-vlan community
```

Command Mode

VLAN Configuration Mode (VLAN)

Example

Configure the VLAN 4 as the community VLAN of the private VLAN:

```
TL-SL5428E(config)#vlan 4
TL-SL5428E(config-vlan)#private-vlan community
```

private-vlan association

Description

The **private-vlan association** command is used to associate primary VLAN with secondary VLAN. To exterminate the currently association, please use **no private-vlan association** command.

Syntax

```
private-vlan association vlan_list
no private-vlan association vlan_list
```

Parameter

vlan_list — Secondary VLAN ID, ranging from 2 to 4049.

Command Mode

VLAN Configuration Mode (VLAN)

Example

Associate primary VLAN 3 with community VLAN 4 as a private VLAN:

```
TL-SL5428E(config)#vlan 3
TL-SL5428E(config-vlan)#private-vlan association 4
```

switchport private-vlan

Description

The **switchport private-vlan** command is used to configure the private VLAN mode for the switchport. To invalid the configuration, please use **no switchport private-vlan** command.

Syntax

```
switchport private-vlan { promiscuous | host }
no switchport private-vlan { promiscuous | host }
```

Parameter

promiscuous | host — Configure the private VLAN mode for the switchport.

Command Mode

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

Example

Configure Fast Ethernet port 3 as “host”:

```
TL-SL5428E(config)#interface fastEthernet 1/0/3
TL-SL5428E(config-if)#switchport private-vlan host
```

switchport private-vlan host-association

Description

The **switchport private-vlan host-association** command is used to add host type port to private VLAN. To remove the port from Private VLAN, please use **no switchport private-vlan host-association** command.

Syntax

```
switchport private-vlan host-association primary_vlan_id secondary_vlan_id
no switchport private-vlan host-association primary_vlan_id
secondary_vlan_id
```

Parameter

primary-vlan-id — Primary VLAN ID, ranging from 2 to 4094.

secondary-vlan-id — Secondary VLAN ID, ranging from 2 to 4094.

Command Mode

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

Example

Configure host type Fast Ethernet port 3 as a member of primary VLAN 3 and secondary VLAN 4:

```
TL-SL5428E(config)#interface fastEthernet 1/0/3
TL-SL5428E(config-if)#switchport private-vlan host-association 3 4
```

switchport private-vlan mapping

Description

The **switchport private-vlan mapping** command is used to add promiscuous type port to private VLAN. To remove the port from Private VLAN, please use **no switchport private-vlan mapping** command.

Syntax

```
switchport private-vlan mapping primary_vlan_id secondary_vlan_id
no switchport private-vlan mapping primary_vlan_id secondary_vlan_id
```

Parameter

primary-vlan-id — Primary VLAN ID, ranging from 2 to 4094.

secondary-vlan-id — Secondary VLAN ID, ranging from 2 to 4094.

Command Mode

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

Example

Configure promiscuous type Fast Ethernet port 3 as a member of primary VLAN 3 and secondary VLAN 4:

```
TL-SL5428E(config)#interface fastEthernet 1/0/3
TL-SL5428E(config-if)#switchport private-vlan mapping 3 4
```

show vlan private-vlan

Description

The **show vlan private-vlan** command is used to display the Private VLAN configuration information of the switch.

Syntax

```
show vlan private-vlan
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration information of all Private VLAN:

```
TL-SL5428E(config)#show vlan private-vlan
```

Chapter 9 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

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-SL5428E(config)#gvrp
```

gvrp (interface)

Description

The **gvrp** command is used to enable the GVRP function for the desired port. To disable it, 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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the GVRP function for Fast Ethernet ports 2-6:

```
TL-SL5428E(config)#interface range fastEthernet 1/0/2-6
```

```
TL-SL5428E(config-if-range)#gvrp
```

gvrp registration

Description

The **gvrp registration** command is used to configure the GVRP registration type for 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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure the GVRP registration mode as “fixed” for Fast Ethernet ports 2-6:

```
TL-SL5428E(config)#interface range fastEthernet 1/0/2-6
```

```
TL-SL5428E(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*

no gvrp timer [leaveall | join | leave]

Parameter

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

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

Command Mode

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

Example

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

```
TL-SL5428E(config)#interface fastEthernet 1/0/6
TL-SL5428E(config-if)#gvrp timer leaveall 2000
TL-SL5428E(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-SL5428E(config)#show gvrp global
```

show gvrp interface

Description

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

Syntax

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

Parameter

port —The Fast/Gigabit Ethernet port number. By default, the GVRP configuration information of all the Ethernet ports is displayed.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the GVRP configuration information of Fast Ethernet port 1:

```
TL-SL5428E(config)#show gvrp interface fastEthernet 1/0/1
```

Display the GVRP configuration information of all Ethernet ports:

```
TL-SL5428E(config)#show gvrp interface
```

Chapter 10 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 14.

on — Enable the static LAG.

active — Enable the active LACP mode.

passive — Enable the passive LACP mode.

Command Mode

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

Example

Add the Fast Ethernet port 2-4 to EtherChannel Group 1 and enable the static LAG:

```
TL-SL5428E(config)#interface range fastEthernet 1/0/2-4
```

```
TL-SL5428E(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

```
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-SL5428E(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

```
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-SL5428E(config)#lacp system-priority 1024
```

lacp port-priority

Description

The **lacp port-priority** command is used to configure the LACP system priority globally. 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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure the LACP port priority as 1024 for Fast Ethernet port 1:

```
TL-SL5428E(config)#interface fastEthernet 1/0/1
```

```
TL-SL5428E(config-if)#lacp port-priority 1024
```

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 14. 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-SL5428E(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-SL5428E(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 14. 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-SL5428E(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-SL5428E(config)#show lacp sys-id
```

Chapter 11 User Manage Commands

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

user name

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.

Syntax

user name *user-name* **password** *password* [**type** {guest | admin}] [**status** disable | enable] [**secret** {simple | cipher}]

no user name *user-name*

Parameter

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

password —— Type a password for users' login, which contains 31 characters at most, composing digits, English letters and under dashes only.

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

disable | enable —— Enable/disable the user. The new added user is "enable" by default.

simple | cipher —— The way of displaying password in configuration file. By default, it is "simple".

Command Mode

Global Configuration Mode

Example

Add and enable a new admin user named "tplink", of which the password is "password":


```
TL-SL5428E(config)#user name tplink password password type admin
status enable
```

user access-control ip-based

Description

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

Syntax

```
user access-control ip-based ip-addr ip-mask
no user access-control
```

Parameter

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

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

Command Mode

Global Configuration Mode

Example

Configure that only the user with the IP address 192.168.0.148 is allowed to login:

```
TL-SL5428E(config)#user access-control ip-based 192.168.0.148 255.255.255.255
```

user access-control mac-based

Description

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

Syntax

```

user access-control mac-based mac-addr
no user access-control

```

Parameter

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

Command Mode

Global Configuration Mode

Example

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

```
TL-SL5428E(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 for login. To cancel the user access limit, please use **no user access-control** command.

Syntax

```

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

```

Parameter

port — The Fast/Gigabit Ethernet port number.

port-list — The list group of Ethernet ports. You can appoint 5 ports at most.

Command Mode

Global Configuration Mode

Example

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

```
TL-SL5428E(config)#user access-control port-based interface range  
fastEthernet 1/0/2-6
```

user max-number

Description

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

Syntax

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

Parameter

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

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

Command Mode

Global Configuration Mode

Example

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

```
TL-SL5428E(config)#user max-num 5 3
```

user idle-timeout

Description

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

Syntax

```
user idle-timeout minutes  
no user idle-timeout
```

Parameter

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

Command Mode

Global Configuration Mode

Example

Configure the timeout time of the switch as 15 minutes:

```
TL-SL5428E(config)#user idle-timeout 15
```

line

Description

The **line** command is used to enter the Line Configuration Mode and make related configurations 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 on 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 on the same manner.

Command Mode

Global Configuration Mode

Example

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

```
TL-SL5428E(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-SL5428E(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 password
```

```
no password
```

Parameter

password — Configure the connection password, which contains 16 characters at most, composing digits, English letters and under dashes only.

Command Mode

Line Configuration Mode

Example

Configure the connection password of Console port connection 0 as “tplink”:

```
TL-SL5428E(config)#line console 0
```

```
TL-SL5428E(config-line)#password tplink
```

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

```
TL-SL5428E(config)#line vty 0 5
```

```
TL-SL5428E(config-line)#password tplink
```

login

Description

The **login** command is used to configure the login of a switch not to use the 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-SL5428E(config)#line console 0
```

```
TL-SL5428E(config-line)#login
```

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

```
TL-SL5428E(config)#line vty 0 5
```

```
TL-SL5428E(config-line)#login
```

login local

Description

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

Syntax

login local

Command Mode

Line Configuration Mode

Example

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

```
TL-SL5428E(config)#line vty 0 5
```

```
TL-SL5428E(config-line)#login local
```

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

```
TL-SL5428E(config)#line console 0
```

```
TL-SL5428E(config-line)#login local
```

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-SL5428E(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-SL5428E(config)#show user configuration
```

Chapter 12 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 and IP verify source 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 vlan-id interface
{ fastEthernet port | gigabitEthernet port } { none | arp-detection |
ip-verify-source | both } [ 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.

vlan-id —— The VLAN ID needed to be bound, ranging from 1 to 4094.

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

none | arp-detection | ip-verify-source | both —— The protect type for the entry. “arp-detection” indicates ARP detection; “ip-verify-source” indicates IP source filter; “none” indicates applying none; “both” indicates applying both.

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. 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 display in an arranged order.

Command Mode

Global Configuration Mode

Example

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

```
TL-SL5428E(config)#ip source binding host1 192.168.0.1 00:00:00:00:00:01
vlan 2 interface fastEthernet 1/0/5 both
```

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

```
TL-SL5428E(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 { fastEthernet port | gigabitEthernet port} | none |
arp-detection | ip-verify-source | both }
```

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 | ip-verify-source | both ——The modified protect type for the entry. “arp-detection” indicates ARP detection; “ip-verify-source” indicates IP source filter; “none” indicates applying none; “both” indicates applying both.

Command Mode

Global Configuration Mode

Example

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

```
TL-SL5428E(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-SL5428E(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 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-SL5428E(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:

```
TL-SL5428E(config)#ip dhcp snooping information option
```

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-SL5428E(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-SL5428E(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-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure the Fast Ethernet port 2 to be a Trusted Port:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2  
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the MAC Verify feature for the Fast Ethernet port 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
```

```
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Set the Flow Control of Fast Ethernet port 2 as 20 pps:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the Decline Protect feature of Fast Ethernet port 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
TL-SL5428E(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-SL5428E(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-SL5428E#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-SL5428E#show ip dhcp snooping information
```

show ip dhcp snooping interface

Description

The **show ip dhcp snooping interface** command is used to display the DHCP-Snooping configuration of a desired Fast/Gigabit Ethernet ports or of all Ethernet ports.

Syntax

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

Parameters

port —The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the DHCP-Snooping configuration of all Ethernet ports:

```
TL-SL5428E#show ip dhcp snooping interface
```

Display the DHCP-Snooping configuration of Fast Ethernet port 5:

```
TL-SL5428E#show ip dhcp snooping interface fastEthernet 1/0/5
```

Chapter 13 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-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure the Fast Ethernet ports 2-5 as the Trusted Port:

```
TL-SL5428E(config)#interface range fastEthernet 1/0/2-5
```

```
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the arp defend function for the Fast Ethernet ports 2-6:

```
TL-SL5428E(config)#interface range fastEthernet 1/0/2-6
```

```
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

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

```
TL-SL5428E(config)#interface fastEthernet 1/0/5  
TL-SL5428E(config-if)#ip arp inspection limit-rate 50
```

ip arp inspection recover

Description

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

Syntax

```
ip arp inspection recover
```

Command Mode

Interface Configuration Mode (Interface fastEthernet / Interface range fastEthernet / Interface gigabitEthernet / Interface range gigabitEthernet)

Example

Restore Fast Ethernet port 5 to the ARP transmit status:

```
TL-SL5428E(config)#interface fastEthernet 1/0/5
TL-SL5428E(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-SL5428E(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 [ fastEthernet port | gigabitEthernet port]
```

Parameter

port —The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration of Fast Ethernet port 1:

```
TL-SL5428E(config)#show ip arp inspection interface fastEthernet 1/0/1
```

Display the configuration of all Ethernet ports:

```
TL-SL5428E(config)#show ip arp inspection interface
```

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-SL5428E(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-SL5428E(config)#clear ip arp inspection statistics
```

Chapter 14 IP Verify Source Commands

IP Verify Source is to filter the IP packets based on the IP-MAC Binding entries. Only the packets matched to the IP-MAC Binding rules can be processed, which can enhance the bandwidth utility.

ip verify source

Description

The **ip verify source** command is used to configure the IP Verify Source mode for a specified port. To disable the IP Verify Source function, please use **no ip verify source** command.

Syntax

```
ip verify source {sip | sip+mac}
no ip verify source
```

Parameter

sip | sip+mac—— Security type. “sip” indicates that only the packets with its source IP address and port number matched to the IP-MAC binding rules can be processed. “sip+mac” indicates that only the packets with its source IP address, source MAC address and port number matched to the IP-MAC binding rules can be processed.

Command Mode

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

Example

Enable the IP Verify Source function for Fast Ethernet ports 5-10. Configure that only the packets with its source IP address, source MAC address and port number matched to the IP-MAC binding rules can be processed:

```
TL-SL5428E(config)#interface range fastEthernet 1/0/5-10
TL-SL5428E(config-if-range)#ip verify source sip+mac
```


show ip verify source

Description

The **show ip verify source** command is used to display the IP Verify Source configuration information.

Syntax

```
show ip verify source
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the IP Verify Source configuration information:

```
TL-SL5428E(config)#show ip verify source
```

Chapter 15 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-SL5428E(config)#ip dos-prevent
```

ip dos-prevent ping-rate

Description

The **ip dos-prevent ping-rate** command is used to configure the transmission rate of the Ping packets. To restore to default, please use **no ip dos-prevent ping-rate** command.

Syntax

```
ip dos-prevent ping-rate ping-rate
no ip dos-prevent ping-rate
```

Parameter

ping-rate — Specify the transmission rate of the Ping packets when the Defend Type Ping Flooding is enabled. The options are 128k、256k、512k、1m、2m、4m in bps. By default, the value is 128k.

Command Mode

Global Configuration Mode

Example

Specify the transmission rate of the Ping packets as 256k:

```
TL-SL5428E(config)#ip dos-prevent ping-rate 256k
```

ip dos-prevent syn-rate

Description

The **ip dos-prevent syn-rate** command is used to configure the transmission rate of the SYN/SYN-ACK packets. To restore to default, please use **no ip dos-prevent syn-rate** command.

Syntax

```
ip dos-prevent syn-rate syn-rate
```

```
no ip dos-prevent syn-rate
```

Parameter

syn-rate — Specify the transmission rate of the SYN/SYN-ACK packets when the Defend Type SYN/SYN-ACK Flooding is enabled. The options are 128k、256k、512k、1m、2m、4m in bps. By default, the value is 128k.

Command Mode

Global Configuration Mode

Example

Specify the transmission rate of the SYN/SYN-ACK packets as 1m:

```
TL-SL5428E(config)#ip dos-prevent syn-rate 1m
```

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 | smurf | blat | ping-flood | syn-flood | win-nuke }

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

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.

smurf — Smurf attack.

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.

win-nuke — winNuke Attack attack.

Command Mode

Global Configuration Mode

Example

Enable the DoS Defend Type named Land attack:

```
TL-SL5428E(config)#ip dos-prevent type land
```

ip dos-prevent detect

Description

The **ip dos-prevent detect** command is used to configure the detect time for each DoS attack type except the flooding attack type.

Syntax

```
ip dos-prevent detect detect-time
```

Parameter

detect-time — Specify the detect time for each DoS attack type except the flooding attack type, ranging from 1 to 5 in second.

Command Mode

Global Configuration Mode

Example

Detect the DoS attack and specify the detect time for each DoS attack type except the flooding attack type as 5 seconds:

```
TL-SL5428E(config)#ip dos-prevent detect 5
```

clear ip dos-prevent detect statistics

Description

The **clear ip dos-prevent detect statistics** command is used to clear the information statistic of the detected DoS attack.

Syntax

```
clear ip dos-prevent detect statistics
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Clear the information statistic of the detected DoS attack:

```
TL-SL5428E(config)#clear ip dos-prevent detect statistics
```

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, the count of the attack, etc.

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-SL5428E(config)#show ip dos-prevent
```

Chapter 16 IEEE 802.1X Commands

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

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-SL5428E(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.

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

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

Command Mode

Global Configuration Mode

Example

Configure the Authentication Method of IEEE 802.1X as “pap”:

```
TL-SL5428E(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 2 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-SL5428E(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-SL5428E(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:

```
TL-SL5428E(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

```
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:

```
TL-SL5428E(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

```
dot1x
no dot1x
```

Command Mode

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

Example

Enable the IEEE 802.1X function for the Fast Ethernet port 1:

```
TL-SL5428E(config)#interface fastEthernet 1/0/1
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the Guest VLAN function for Fast Ethernet port 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
TL-SL5428E(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

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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure the Control Mode for Gigabit Ethernet port 25 as “authorized-force”:

```
TL-SL5428E(config)#interface gigabitEthernet 1/0/25
TL-SL5428E(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

```
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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure the Control Type for Gigabit Ethernet port 25 as “port-based”:

```
TL-SL5428E(config)#interface gigabitEthernet 1/0/25
TL-SL5428E(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] [auth-key keyvalue]
[acct-pri ip] [acct-sec ip] [acct-port port] [acct-key keyvalue] [timeout value] }
no radius { auth-port | auth-key | acct-port | acct-key | timeout }
```

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.

auth-key *keyvalue* — The shared password for the switch and the authentication servers to exchange messages which contains 15 characters at most.

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.

acct-key *keyvalue* — The shared password for the switch and the accounting servers to exchange messages which contains 15 characters at most.

timeout *value* — The maximum time for the switch to wait for the response 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 IP address of the accounting server as 10.20.1.100 and password as tlink:

```
TL-SL5428E(config)#radius auth-pri 10.20.1.100 auth-key tlink
```

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-SL5428E(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-SL5428E(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 [ fastEthernet port | gigabitEthernet port ]
```

Parameter

port — The Fast/Gigabit Ethernet port number. 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 Gigabit Ethernet port 25:

```
TL-SL5428E(config)#show dot1x interface gigabitEthernet 1/0/25
```

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

```
TL-SL5428E(config)#show dot1x interface
```

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-SL5428E(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-SL5428E(config)#show radius authentication
```


Chapter 17 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 return to the default configuration, 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 7 indicating that all the log information will be saved in the log buffer.

Command Mode

Global Configuration Mode

Example

Set the severity level as 6:

```
TL-SL5428E(config)#logging buffer 6
```

logging file flash

Description

The **logging file flash** command is used to configure the level and the status of the log file input. To restore to the default configuration, please use **no logging file flash** command. The log file indicates the flash sector for saving system log. The information in the log file will not be lost after the switch is restarted and can be got by the [show logging flash](#) command.

Syntax

logging file flash *level*

no logging file flash

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 2 indicating that the log information marked with 0~2 will be saved in the log buffer.

Command Mode

Global Configuration Mode

Example

Enable the log file function and set the severity as 7:

```
TL-SL5428E(config)#logging file flash 7
```

clear logging

Description

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

Syntax

clear logging [*buffer* | *flash*]

Parameter

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

Command Mode

Global Configuration Mode

Example

Clear the information in the log file:

```
TL-SL5428E(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.

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-SL5428E(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-SL5428E(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. 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-SL5428E(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-SL5428E(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-SL5428E(config)#show logging flash level 3
```

Chapter 18 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-SL5428E(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-SL5428E(config)#ip ssh version v2
```

ip ssh timeout

Description

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

Syntax

ip ssh timeout *value*

no ip ssh timeout

Parameter

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

Command Mode

Global Configuration Mode

Example

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

```
TL-SL5428E(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-SL5428E(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 256 to 3072 bits.

ip-addr — The IP address of the TFTP server.

Command Mode

Global Configuration Mode

Example

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

```
TL-SL5428E(config)#ip ssh download v1 ssh-key ip-address 192.168.0.148
```

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-SL5428E(config)#show ip ssh
```

Chapter 19 SSL Commands

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

ip http secure-server

Description

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

Syntax

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

Command Mode

Global Configuration Mode

Example

Enable the SSL function:

```
TL-SL5428E(config)#ip http secure-server
```

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.

Command Mode

Global Configuration Mode

Example

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

```
TL-SL5428E(config)#ip http secure-server download certificate ssl-cert
ip-address 192.168.0.146
```

ip http secure-server download key

Description

The **ip http secure-server download key** command is used to download a 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.

Command Mode

Global Configuration Mode

Example

Download a SSL Key named *ssl-key* from TFTP server with the IP Address of 192.168.0.146:

```
TL-SL5428E(config)#ip http secure-server download key ssl-key ip-address
192.168.0.146
```

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-SL5428E(config)#show ip http secure-server
```

Chapter 20 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 vid interface { fastEthernet port | gigabitEthernet port }
```

```
no mac address-table static { mac-addr | vid vid | mac mac-addr vid vid | interface { fastEthernet port | 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 Fast/Gigabit Ethernet port number.

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 Fast Ethernet port 1 together:

```
TL-SL5428E(config)#mac address-table static 00:02:58:4f:6c:23 vid 1
interface fastEthernet 1/0/1
```

Delete the static address entry whose VLAN id is 1:

```
TL-SL5428E(config)#no mac address-table static vid 1
```

Delete the static address entry whose MAC address is 00:02:58:4f:6c:23:

```
TL-SL5428E(config)#no mac address-table static 00:02:58:4f:6c:23
```

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-SL5428E(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-SL5428E(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 can not access to the network via this port.

Syntax

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

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

Parameter

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

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

influence of the aging time and can only be deleted manually too. However, the learned entries will be saved even the switch is rebooted.

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

Command Mode

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

Example

Enable Port Security function for Fast Ethernet 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-SL5428E(config)#interface fastEthernet 1/0/1
TL-SL5428E(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 all address entries.

Syntax

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

Parameter

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

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of all Address entries:

```
TL-SL5428E(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-SL5428E(config)#show mac address-table aging-time
```

show mac address-table max-mac-count interface

Description

The **show mac address-table max-mac-count interface** command is used to display the security configuration of an Ethernet port or of all Fast/Gigabit Ethernet ports.

Syntax

```
show mac address-table max-mac-count interface { fastEthernet [port] |  
gigabitEthernet [port] }
```

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the security configuration of all Gigabit Ethernet ports:

```
TL-SL5428E(config)#show mac address-table max-mac-count interface  
gigabitEthernet
```

Display the security configuration of Gigabit Ethernet port 25:

```
TL-SL5428E(config)#show mac address-table max-mac-count interface  
gigabitEthernet 1/0/25
```

show mac address-table interface

Description

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

Syntax

```
show mac address-table interface { fastEthernet port | gigabitEthernet port }
```

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the address configuration of Fast Ethernet port 1:

```
TL-SL5428E(config)#show mac address-table interface fastEthernet 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-SL5428E(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 a 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 00:00:00:00:23:00:00:

```
TL-SL5428E(config)#show mac address-table 00:00:00:00:23:00:00:
```

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-SL5428E(config)#show mac address-table vlan 1
```

Chapter 21 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-SL5428E(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 a NTP Server.

Syntax

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

Parameter

timezone — Your local time-zone, and it ranges from UTC-12:00 to UTC+13:00.

The detailed information that each time-zone means are displayed as follow:

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

backup-ntp-server — The IP Address for the Secondary NTP Server.

fetching-rate — Specify the rate fetching time from NTP server.

Command Mode

Global Configuration Mode

Example

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

```
TL-SL5428E(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 | European | New-Zealand]

Parameter

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

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.

European: 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 European:

```
TL-SL5428E(config)#system-time dst predefined European
```

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-SL5428E(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 not restricted to be within one year.

Syntax

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

Parameter

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

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

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

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

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

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

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

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

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

Command Mode

Global Configuration Mode

Example

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

```
TL-SL5428E(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 *hostname*

Parameter

hostname —— System Name, ranging from 1 to 32 characters. It is the product name by default. Here it is TL-SL5428E.

Command Mode

Global Configuration Mode

Example

Configure the system name as TPLINK:

```
TL-SL5428E(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 *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 GUANGZHOU:

```
TL-SL5428E(config)#location GUANGZHOU
```

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 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-SL5428E(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-SL5428E(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-SL5428E(config)# interface vlan 1
```

```
TL-SL5428E(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 obtain IP from DHCP Client 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-SL5428E(config)# interface vlan 1
TL-SL5428E(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 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-SL5428E(config)# interface vlan 1
TL-SL5428E(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-SL5428E#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-SL5428E#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-SL5428E#copy running-config startup-config
```

copy startup-config tftp

Description

The **copy startup-config tftp** command is used to backup the configuration file from TFTP server.

Syntax

```
copy startup-config tftp ip-address ip-addr filename name
```

Parameter

ip-addr — IP Address of the TFTP server.

name — Specify the name for the configuration file which would be backedup.

Command Mode

Privileged EXEC Mode

Example

Backup the configuration files from TFTP server with the IP 192.168.0.148 and name this file config:

```
TL-SL5428E#copy startup-config tftp ip-address 192.168.0.148 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.

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 to the switch from TFTP server with the IP 192.168.0.148:

```
TL-SL5428E#copy tftp startup-config ip-address 192.168.0.148 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.

name — Specify the name for the firmware file.

Command Mode

Privileged EXEC Mode

Example

Upgrade the switch system file named as firmware.bin from the TFTP server with the IP address 192.168.0.148:

```
TL-SL5428E#firmware upgrade ip-address 192.168.0.148 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_addr [-n count] [-l count] [-i count]
```

Parameter

ip_addr — The IP address of the destination node for ping test.

-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-SL5428E#ping 192.168.0.131 -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_addr [-w waitTime ] [-h maxHops ]
```

Parameter

ip_addr — The IP address of the destination device.

waitTime — The maximum time for the test data to wait before timeout. It ranges from 1 to 10000ms.

maxHops — The maximum number of the route hops the test data can pass through. 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-SL5428E#tracert 192.168.0.131 -h 20
```

loopback interface

Description

The **loopback interface** command is used to test whether the port is available or not.

Syntax

```
loopback interface { fastEthernet port | gigabitEthernet port } { internal | external }
```

Parameter

port — The Fast/Gigabit Ethernet port number.

internal | external — Loopback Type. There are two options: “internal” and “external”.

Command Mode

User EXEC Mode and Privileged EXEC Mode

Example

Do an internal-type loopback test for Gigabit Ethernet port 25:

```
TL-SL5428E# loopback interface gigabitEthernet 1/0/25 internal
```

Do an external-type loopback test for Gigabit Ethernet port 25:

```
TL-SL5428E# loopback interface gigabitEthernet 1/0/25 external
```

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-SL5428E#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-SL5428E#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:

```
TL-SL5428E#show system-time ntp
```

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-SL5428E#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 { fastEthernet port | gigabitEthernet port } ]
```

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the system current operating configuration:

```
TL-SL5428E#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 { fastEthernet port | 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 Gigabit Ethernet port 25:

```
TL-SL5428E#show cable-diagnostics interface gigabitEthernet 1/0/25
```

Chapter 22 Ethernet Configuration Commands

Ethernet Configuration Commands can be used to configure the Bandwidth Control, Negotiation Mode and Storm Control for Ethernet ports.

interface fastEthernet

Description

The **interface fastEthernet** command is used to enter the interface fastEthernet Configuration Mode and configure the corresponding Fast Ethernet port.

Syntax

```
interface fastEthernet port
```

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Global Configuration Mode

Example

To enter the Interface fastEthernet Configuration Mode and configure Fast Ethernet port 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
```

interface range fastEthernet

Description

The **interface range fastEthernet** command is used to enter the interface range fastEthernet Configuration Mode and configure multiple Fast Ethernet ports at the same time.

Syntax

```
interface range fastEthernet port-list
```

Parameter

port-list — The list of Fast Ethernet ports.

Command Mode

Global Configuration Mode

User Guidelines

Command in the **Interface Range fastEthernet** Mode is executed independently on all ports in the range. It does not effect the execution on the other ports at all if the command results in an error on one port.

Example

To enter the Interface Range fastEthernet Configuration Mode, and configure ports 1, 2, 3, 6, 7 and 9 at the same time by adding them to one port-list:

```
TL-SL5428E(config)#interface range fastEthernet 1/0/1-3,1/0/6-7,1/0/9
```

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 Fast/Gigabit Ethernet port number.

Command Mode

Global Configuration Mode

Example

To enter the Interface gigabitEthernet Configuration Mode and configure Gigabit Ethernet port 25:

```
TL-SL5428E(config)#interface gigabitEthernet 1/0/25
```

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 Gigabit 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 Gigabit Ethernet ports 25, 26 and 28 at the same time by adding them to one port-list:

```
TL-SL5428E(config)# interface range gigabitEthernet 1/0/25-26,1/0/28
```

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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Add a description Port #5 to Fast Ethernet port 5:

```
TL-SL5428E(config)#interface fastEthernet 1/0/5
```

```
TL-SL5428E(config-if)#description Port#5
```


shutdown

Description

The **shutdown** command is used to disable an Ethernet port. To enable this port again, please use **no shutdown** command.

Syntax

shutdown

no shutdown

Command Mode

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

Example

Disable Gigabit Ethernet port 25:

```
TL-SL5428E(config)#interface gigabitEthernet 1/0/25
```

```
TL-SL5428E(config-if)#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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the flow-control function for Gigabit Ethernet port 25:

```
TL-SL5428E(config)#interface gigabitEthernet 1/0/25
```

```
TL-SL5428E(config-if)#flow-control
```

media-type

Description

The **media-type** command is used to configure the media type of Combo port. For a Combo port, the media type should be configured before you set its speed and mode.

Syntax

```
media-type { rj45 | sfp }
```

Parameter

rj45 | *sfp* — Media type.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure the media type of Combo port 28T as “SFP”:

```
TL-SL5428E(config)# interface gigabitEthernet 1/0/28
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure the Duplex Mode as full-duplex for Gigabit Ethernet port 25:

```
TL-SL5428E(config)#interface gigabitEthernet 1/0/25
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure the Speed Mode as 100Mbps for Gigabit Ethernet port 25:

```
TL-SL5428E(config)#interface gigabitEthernet 1/0/25
TL-SL5428E(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. By default, the value is “128K”.

Command Mode

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

Example

Enable the broadcast control function for Fast Ethernet port 5:

```
TL-SL5428E(config)#interface fastEthernet 1/0/5
TL-SL5428E(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. By default, the value is “128K”.

Command Mode

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

Example

Enable the multicast control function for Fast Ethernet port 5:

```
TL-SL5428E(config)#interface fastEthernet 1/0/5
```

```
TL-SL5428E(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. By default, the value is “128K”.

Command Mode

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

Example

Enable the unicast control function for Fast Ethernet port 5:

```
TL-SL5428E(config)#interface fastEthernet 1/0/5  
TL-SL5428E(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: 1-102400 for the megaport, 1-1024000 for the gigaport.

egress-rate — Specify the bandwidth for sending packets. Range:1-102400 for the megaport, 1-1024000 for the gigaport.

Command Mode

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

Example

Configure the ingress-rate as 5120Kbps and egress-rate as 1024Kbps for Fast Ethernet port 5:

```
TL-SL5428E(config)#interface fastEthernet 1/0/5
TL-SL5428E(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 Ethernet ports

```
TL-SL5428E(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 [fastEthernet port | gigabitEthernet port] status
```

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the connective-status of all Ethernet ports:

```
TL-SL5428E(config)#show interface status
```

Display the connective-status of Fast Ethernet port 1:

```
TL-SL5428E(config)#show interface fastEthernet 1/0/1 status
```

show interface counters

Description

The **show interface counters** command is used to display the statistic information of an Ethernet port.

Syntax

```
show interface [fastEthernet port | gigabitEthernet port] counters
```

Parameter

port — The Fast/Gigabit Ethernet port number. By default, the statistic information of all ports is displayed.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the statistic information of all Ethernet ports:

```
TL-SL5428E(config)#show interface counters
```

Display the statistic information of Gigabit Ethernet port 25:

```
TL-SL5428E(config)#show interface gigabitEthernet 1/0/25 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 [fastEthernet port | gigabitEthernet port] description
```

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the description of all Ethernet ports:

```
TL-SL5428E(config)#show interface 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 [ fastEthernet port | gigabitEthernet port ] flowcontrol
```

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the flow-control information of all Ethernet ports:

```
TL-SL5428E#show interface flowcontrol
```


show interface configuration

Description

The **show interface configuration** command is used to display the configurations of an Ethernet port, including Port-status, Flow Control, Negotiation Mode and Port-description.

Syntax

```
show interface [ fastEthernet port | gigabitEthernet port ] configuration
```

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configurations of all Ethernet ports:

```
TL-SL5428E(config)#show interface configuration
```

show storm-control

Description

The **show storm-control** command is used to display the storm-control information of an Ethernet port.

Syntax

```
show storm-control [ interface { fastEthernet port | gigabitEthernet port |  
range fastEthernet port-list | range gigabitEthernet port-list } ]
```

Parameter

port — The Fast/Gigabit Ethernet port number.

port-list — The list of Fast/Gigabit Ethernet ports.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the storm-control information of port Gigabit Ethernet port 25:

```
TL-SL5428E(config)#show storm-control interface gigabitEthernet 1/0/25
```

Display the storm-control information of port Fast Ethernet ports 4,5,6,7:

```
TL-SL5428E(config)#show storm-control interface range fastEthernet
1/0/4-7
```

show bandwidth

Description

The **show bandwidth** command is used to display the bandwidth-limit information of Ethernet port.

Syntax

```
show bandwidth [ interface { fastEthernet port | gigabitEthernet port | range
fastEthernet port-list | range gigabitEthernet port-list } ]
```

Parameter

port — The Fast/Gigabit Ethernet port number.

port-list — The list of Fast/Gigabit Ethernet ports.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the bandwidth-limit information of Gigabit Ethernet port 25:

```
TL-SL5428E(config)#show bandwidth interface gigabitEthernet 1/0/25
```

Display the bandwidth-limit information of Fast Ethernet ports 2, 6, 7, 8:

```
TL-SL5428E(config)#show bandwidth interface range fastEthernet
1/0/2,1/0/6-8
```

Chapter 23 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 fastEthernet / interface range fastEthernet / 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 IEEE 802.1P.

Example

Configure the priority of port 5 as 3:

```
TL-SL5428E(config)#interface gigabitEthernet 1/0/5
TL-SL5428E(config-if)#qos 3
```

qos cos

Description

The **qos cos** command is used to enable the mapping relation between IEEE802.1P Priority and TC egress queue. To disable the mapping relation, please use **no qos cos** command.

Syntax

```
qos cos
no qos cos
```

Command Mode

Global Configuration Mode

User Guidelines

IEEE 802.1P gives the Pri field in IEEE 802.1Q tag a recommended definition. When the mapping relation between IEEE 802.1P Priority and TC egress queue is enabled, the data will be classified into the egress queue based on this mapping relation.

Example

Enable the mapping relation between IEEE 802.1P Priority and egress queue:

```
TL-SL5428E(config)#qos cos
```

qos dscp

Description

The **qos dscp** command is used to enable the mapping relation between DSCP Priority and TC egress queue. 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 TC egress queue.

Example

Enable the mapping relation between DSCP Priority and egress queue:

```
TL-SL5428E(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-TC0, 1-TC0, 2-TC1, 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-SL5428E(config)#qos queue cos-map 5 2
```

qos queue dscp-map

Description

The **qos queue dscp-map** command is used to configure the mapping relation between DSCP Priority and the TC egress queue. To return to the default configuration, please use **no qos queue dscp-map** command. DSCP (DiffServ Code Point) is a new definition to IP ToS field given by IEEE. This field is used to

divide IP datagram into 64 priorities. When DSCP Priority is enabled, IP datagram are mapped to different priority levels based on DSCP priority mode; non-IP datagram with IEEE 802.1Q tag are mapped to different priority levels based on IEEE 802.1P priority mode if IEEE 802.1P Priority is enabled; the untagged non-IP datagram are mapped based on port priority mode.

Syntax

```
qos queue dscp-map dscp-list tc-id
```

```
no qos queue dscp-map
```

Parameter

dscp-list — List of DSCP value. One or several DSCP values can be typed using comma to separate. Use a hyphen to designate a range of values, for instance, 1,4-7,11 indicates choosing 1,4,5,6,7,11. The DSCP value ranges from 0 to 63.

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 and the egress queue is: (0-15)-TC0, (16-31)-TC1, (32-47)-TC2, (48-63)-TC3
2. Among the priority levels TC0-TC3, the bigger value, the higher priority.

Example

Map DSCP values 10-12 to TC 2:

```
TL-SL5428E(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 }

no qos queue mode

Parameter

sp — Strict-Priority Mode. In this mode, the queue with higher priority will occupy the whole bandwidth. Packets in the queue with lower priority are sent only when the queue with higher priority is empty.

wrr — Weight Round Robin Mode. In this mode, packets in all the queues are sent in order based on the weight value for each queue. The weight value ratio of TC0, TC1, TC2 and TC3 is 1:2:4:8.

sp+wrr — Strict-Priority + Weight Round Robin Mode. In this mode, the switch provides two scheduling groups, SP group and WRR group. Queues in SP group and WRR group are scheduled strictly based on Strict-Priority mode while the queues inside WRR group follow the WRR mode. In SP + WRR mode, TC3 is the SP group; TC0, TC1 and TC2 belong to the WRR group and the weight value ratio of TC0, TC1 and TC2 is 1:2:4. In this way, when scheduling queues, the switch allows TC3 to occupy the whole bandwidth following the SP mode and the TC0, TC1 and TC2 in the WRR group will take up the bandwidth according to their ratio 1:2:4.

equ — Equal-Mode. In this mode, all the queues occupy the bandwidth equally. The weight value ratio of all the queues is 1:1:1:1.

Command Mode

Global Configuration Mode

Example

Specify the Schedule Mode as Weight Round Robin Mode:

```
TL-SL5428E(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 [ fastEthernet port | gigabitEthernet port | range
fastEthernet port-list | range gigabitEthernet port-list ]
```

Parameter

port — The Fast/Gigabit 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 Fast Ethernet port 5:

```
TL-SL5428E#show qos interface fastEthernet 1/0/5
```

Display the configuration of QoS for Fast Ethernet ports 7 to 16:

```
TL-SL5428E#show qos interface range fastEthernet 1/0/7-16
```

show qos cos-map

Description

The **show qos cos-map** command is used to display the configuration of IEEE802.1P 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-SL5428E#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-SL5428E#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-SL5428E#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-SL5428E#show qos status
```

Chapter 24 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. To delete the corresponding monitor session configuration, please use **no monitor session** command.

Syntax

```
monitor session session_num destination interface { fastEthernet port | gigabitEthernet port }  
no monitor session session_num
```

Parameter

session_num — The monitor session number, the value of which is 1.
port — The Fast/Gigabit Ethernet port number.

Command Mode

Global Configuration Mode

Example

Create monitor session 1 and configure Fast Ethernet port 1 as the monitoring port:

```
TL-SL5428E(config)#monitor session 1 destination interface fastEthernet  
1/0/1
```

Delete the monitor session 1:

```
TL-SL5428E(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 { fastEthernet port-list | gigabitEthernet port-list } mode
```

```
no monitor session session_num source interface { fastEthernet port-list | gigabitEthernet port-list } mode
```

Parameter

session_num — The monitor session number, the value of which is 1.

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 Fast Ethernet port 4, 5, 7 as monitored ports and enable ingress monitoring:

```
TL-SL5428E(config)#monitor session 1 source interface fastEthernet  
1/0/4-5,1/0/7 rx
```

Delete the Fast Ethernet port 4 in monitor session 1 and its configuration:

```
TL-SL5428E(config)#no monitor session 1 source interface fastEthernet  
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, the value of which is 1.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the monitoring configuration of monitor session 1:

```
TL-SL5428E(config)#show monitor session 1
```

Chapter 25 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 { [fa-forward-list fa-forward-list] [gi-forward-list gi-forward-list] }  
no port isolation
```

Parameter

fa-forward-list —— Configure Fast Ethernet ports to the forward port list. It is optional.

gi-forward-list —— Configure Gigabit Ethernet ports to the forward port list. It is optional.

Command Mode

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

Example

Set Gigabit Ethernet ports 25-27 to the forward port list of Gigabit Ethernet 28:

```
TL-SL5428E(config)#interface range gigabitEthernet 1/0/28  
TL-SL5428E(config-if-range)#port isolation gi-forward-list 1/0/25-27
```

Set all the Ethernet ports to forward port list of Fast Ethernet port 2, namely restore to the default setting:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2  
TL-SL5428E(config-if-range)#no port isolation
```

show port isolation

Description

The **show port isolation** command is used to display the forward port list of a port.

Syntax

```
show port isolation interface [ fastEthernet port | 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 Fast Ethernet port 3:

```
TL-SL5428E#show port isolation interface fastEthernet 1/0/3
```

Display the forward-list of all Ethernet ports:

```
TL-SL5428E#show port isolation interface
```

Chapter 26 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-SL5428E(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-SL5428E(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 3 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-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the loopback detection function of Gigabit Ethernet ports 25-27:

```
TL-SL5428E(config)#interface range gigabitEthernet 1/0/25-27
TL-SL5428E(config-if-range)#loopback-detection
```

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

process-mode — 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.

recovery-mode — 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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure the loopback detection process-mode as port-based and recovery-mode as manual for Gigabit Ethernet port 25:

```
TL-SL5428E(config)#interface gigabitEthernet 1/0/25
TL-SL5428E(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, recovering the blocked ports to normal status,

Syntax

```
loopback-detection recover
```

Command Mode

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

Example

Recover the blocked Gigabit Ethernet port 25 to normal status:

```
TL-SL5428E(config)#interface gigabitEthernet 1/0/25
TL-SL5428E(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-SL5428E#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 all ports or of a specified Fast/Gigabit Ethernet port.

Syntax

```
show loopback-detection interface [ fastEthernet port | gigabitEthernet port]
```

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

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

```
TL-SL5428E#show loopback-detection interface fastEthernet 1/0/5
```

Display the configuration of loopback detection function and the status of all ports:

```
TL-SL5428E#show loopback-detection interface
```

Chapter 27 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-SL5428E(config)# time-range tSeg1
```

absolute

Description

The **absolute** command is used to configure a time-range into an Absoluteness Mode. To delete the corresponding absolute mode time-range, please use **no absolute** command.

Syntax

```
absolute start start-date end end-date
```

no absolute

Parameter

start-date — The start date in Absolute Mode, in the format of MM/DD/YYYY. By default, it is 01/01/2000.

end-date — The end date in Absolute Mode, in the format of MM/DD/YYYY. By default, it is 01/01/2000. The Absolute Mode will be disabled if the start date and end date are both in default value.

Command Mode

Time-range Create Configuration Mode

Example

Configure the time-range tSeg1 with time from May 5, 2012 to Oct. 5, 2012:

```
TL-SL5428E(config)# time-range tSeg1
```

```
TL-SL5428E(config-time-range)# absolute start 05/05/2012 end 10/05/2012
```

periodic

Description

The **periodic** command is used to configure the time-range into periodic mode. To delete the corresponding Periodic Mode time-range, please use **no periodic** command.

Syntax

```
periodic [week-date week-day] [time-slice1 time-slice] [time-slice2 time-slice]  
[time-slice3 time-slice] [time-slice4 time-slice]
```

```
no periodic
```

Parameter

week-day — Periodic Mode, in the format of 1-3,6 or daily, off-day, working-day. 1-3, 6 represent Monday, Tuesday, Wednesday and Saturday; daily represents every day; off-day represents weekend and working-day represents working day. By default, the Periodic Mode is disabled.

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

Command Mode

Time-range Create Configuration Mode

Example

Configure the time-range tSeg1 with time from 8:30 to 12:00 at weekend:

```
TL-SL5428E(config)#time-range tSeg1
TL-SL5428E(config-time-range)#periodic week-date off-day time-slice1
08:30-12:00
```

holiday

Description

The **holiday** command is used to configure the time-range into Holiday Mode under Time-range Create Configuration Mode. To delete the corresponding Holiday Mode time-range, please use **no holiday** command.

Syntax

```
holiday
no holiday
```

Command Mode

Time-range Create Configuration Mode

Example

Configure the time-range tSeg1 into Holiday Mode:

```
TL-SL5428E(config)#time-range tSeg1
TL-SL5428E(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

```
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-SL5428E(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. 100-199 must be Standard-IP ACL, and 200-299 must be Extend-IP ACL.

Command Mode

Global Configuration Mode

Example

Create a standard-IP ACL whose ID is 123:

```
TL-SL5428E(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-SL5428E(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] [ frag {disable | enable} ]
```

```
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.

frag — Enable/Disable Fragment. By default, it is disabled. If Fragment is enabled, this rule will process all the fragments and the last piece of fragment will be always forwarded.

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-SL5428E(config)#access-list create 120
TL-SL5428E(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] [frag {disable | enable}] [dscp dscp] [s-port s-port] [d-port d-port]
[tcpflag tcpflag] [protocol protocol] [icmptype icmptype] [icmpcode icmpcode]
[tos tos] [pri pri]
```

```
no access-list extended acl-id rule rule-id
```

Parameter

acl-id — The desired Extended-IP ACL for configuration.

rule-id — The rule ID.

deny — The operation to discard packets.

permit — The operation to forward packets. It is the default value.

source-ip — The source IP address contained in the rule.

source-ip-mask — The source IP address mask. It is required if you typed the source IP address.

- destination-ip* — The destination IP address contained in the rule.
- destination-ip-mask* — The destination IP address mask. It is required if you typed the destination IP address.
- time-segment* — The time-range for the rule to take effect. By default, it is not limited.
- frag* — Enable/Disable Fragment. By default, it is disabled. If Fragment is enabled, this rule will process all the fragments and the last piece of fragment will be always forwarded.
- 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.
- icmptype* — Configure the predefined ICMP type.
- icmpcode* — Configure the predefined ICMP code.
- 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-SL5428E(config)#access-list create 220
TL-SL5428E(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]
```

```
no rule rule-id
```

Parameter

rule-id — The rule ID.

deny — The operation to discard packets.

permit — The operation to forward packets. By default, it is “permit”.

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:

```
TL-SL5428E(config)#mac access-list 20
```

```
TL-SL5428E(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:

```
TL-SL5428E(config)#access-list policy name 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-SL5428E(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 { fastEthernet port | gigabitEthernet port }
```

Parameter

port — The Destination Port of Redirect. The data packets matching the corresponding ACL will be forwarded to the specific port. By default, it is All Ports.

Command Mode

Action Configuration Mode

Example

Edit the actions for policy1. Forward the data packets matching ACL 120 in the policy to Fast Ethernet port 2:

```
TL-SL5428E(config)#access-list policy action policy1 120
```

```
TL-SL5428E(config-action)#redirect interface fastEthernet 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-SL5428E(config)#access-list policy action policy1 120
TL-SL5428E(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-SL5428E(config)#access-list policy action policy1 120
TL-SL5428E(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 { fastEthernet port | 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 as Fast Ethernet port 2 for the data packets matching ACL 120:

```
TL-SL5428E(config)#access-list policy action policy1 120
```

```
TL-SL5428E(config-action)#s-mirror interface fastEthernet 1/0/2
```

qos-remark

Description

The **qos-remark** command is used to configure QoS Remark function of policy action.

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-SL5428E(config)#access-list policy action policy1 120
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Bind policy1 to Fast Ethernet port 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
TL-SL5428E(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-SL5428E(config)#interface vlan 2
TL-SL5428E(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-SL5428E#show time-range
```

show holiday

Description

The **show holiday** command is used to display the defined holidays.

Syntax

```
show holiday
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the defined holidays:

```
TL-SL5428E#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-SL5428E#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-SL5428E#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-SL5428E#show access-list bind
```

Chapter 28 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-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the STP function for Fast Ethernet port 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
```

```
TL-SL5428E(config-if)#spanning-tree
```

spanning-tree common-config

Description

The **spanning-tree common-config** command is used to configure the parameters of the ports for comparison in the CIST and the common parameters of all instances. To return to the default configuration, please use **no spanning-tree common-config** command. CIST (Common and Internal Spanning Tree) is the spanning tree in a switched network, connecting all devices in the network.

Syntax

```
spanning-tree common-config [port-priority pri] [ext-cost ext-cost] [int-cost int-cost] [portfast {enable | disable}] [point-to-point {auto | open | close}]
```

```
no spanning-tree common-config
```

Parameter

pri — Port Priority, which must be multiple of 16 ranging from 0 to 240. By default, the port priority is 128. Port Priority is an important criterion on determining if the port connected to this port will be chosen as the root port. In the same condition, the port with the highest priority will be chosen as the root port. The lower value has the higher priority.

ext-cost — External Path Cost, which is used to choose the path and calculate the path costs of ports in different MST regions. It is an important criterion on determining the root port. The lower value has the higher priority. It ranges from 0 to 2000000. By default, it is 0 which is mean auto.

int-cost — Internal Path Cost, which is used to choose the path and calculate the path costs of ports in an MST region. It is an important criterion on determining the root port. The lower value has the higher priority. By default, it is automatic. It ranges from 0 to 2000000. By default, it is 0 which is mean auto.

portfast — 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.

point-to-point — 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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the STP function of Fast Ethernet port 1, and configure the Port Priority as 64, ExtPath Cost as 100, IntPath Cost as 100, and then enable Edge Port:

```
TL-SL5428E(config)#interface fastEthernet 1/0/1
TL-SL5428E(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-SL5428E(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

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

Command Mode

Global Configuration Mode

Example

Enter into the MST Configuration Mode:

```
TL-SL5428E(config)#spanning-tree mst configuration
TL-SL5428E(config-mst)#
```

instance

Description

The **instance** command is used to configure the VLAN-Instance mapping. To remove the VLAN-instance mapping or disable the corresponding instance, please use **no instance** command. When an instance is disabled, the related mapping VLANs will be removed.

Syntax

```
instance instance-id vlan vlan-id
no instance instance-id [vlan vlan-id]
```

Parameters

instance-id —— Instance ID, ranging from 1 to 8.

vlan-id —— The VLAN ID selected to mapping with the corresponding instance.

Command Mode

MST Configuration Mode

Example

Map the VLANs 1-100 to Instance 1:

```
TL-SL5428E(config)#spanning-tree mst configuration
```

```
TL-SL5428E(config-mst)#instance 1 vlan 1-100
```

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

```
TL-SL5428E(config)#spanning-tree mst configuration
```

```
TL-SL5428E(config-mst)#no instance 1
```

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

```
TL-SL5428E(config)#spanning-tree mst configuration
```

```
TL-SL5428E(config-mst)#no 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-SL5428E(config)#spanning-tree mst configuration
```

```
TL-SL5428E(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-SL5428E(config)#spanning-tree mst configuration
```

```
TL-SL5428E(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

```
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-SL5428E(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

```
spanning-tree mst instance instance-id { [port-priority pri] [cost cost] }
no spanning-tree mst instance instance-id
```

Parameter

instance-id — Instance ID, ranging from 1 to 8.

pri — Port Priority, which must be multiple of 16 ranging from 0 to 240. By default, it is 128. Port Priority is an important criterion on determining if the port will be chosen as the root port by the device connected to this port.

cost — Path Cost, ranging from 0 to 200000. The lower value has the higher priority. Its default value is 0 meaning “auto”.

Command Mode

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

Example

Configure the priority of Fast Ethernet port 1 in MST Instance 1 as 64, and path cost as 2000:

```
TL-SL5428E(config)#interface fastEthernet 1/0/1
TL-SL5428E(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-SL5428E(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-SL5428E(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, $2 * (\text{Forward Delay} - 1) \geq \text{Max Age}$.

hello-time — Hello Time, which is the interval to send BPDU packets, and used to test the links. Hello Time ranges from 1 to 10 in seconds and it is 2 by default. Otherwise, $2 * (\text{Hello Time} + 1) \leq \text{Max Age}$.

max-age — The maximum time the switch can wait without receiving a BPDU before attempting to reconfigure, ranging from 6 to 40 in seconds. By default, it is 20.

Command Mode

Global Configuration Mode

Example

Configure forward-time, hello-time and max-age for Spanning Tree as 16 seconds, 3 seconds and 22 seconds respectively:

```
TL-SL5428E(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-SL5428E(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-SL5428E(config)#spanning-tree max-hops 30
```

spanning-tree bpdudfilter

Description

The **spanning-tree bpdudfilter** command is used to enable the BPDU filter function for a port. With the function enabled, the port can be prevented from receiving and sending any BPDU packets. To disable the BPDU filter function, please use **no spanning-tree bpdudfilter** command.

Syntax

spanning-tree bpdudfilter

no spanning-tree bpdudfilter

Command Mode

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

Example

Enable the BPDU filter function for Fast Ethernet port 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
```

```
TL-SL5428E(config-if)#spanning-tree bpdudfilter
```

spanning-tree bpduguard

Description

The **spanning-tree bpduguard** command is used to enable the BPDU protect function for a port. With the BPDU protect function enabled, the port will set itself automatically as ERROR-PORT when it receives BPDU packets, and the port will disable the forwarding function for a while. To disable the BPDU protect function, please use **no spanning-tree bpduguard** command.

Syntax

spanning-tree bpduguard

no spanning-tree bpduguard

Command Mode

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

Example

Enable the BPDU protect function for Fast Ethernet port 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
TL-SL5428E(config-if)#spanning-tree bpduguard
```

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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the Loop Protect function for Fast Ethernet port 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
TL-SL5428E(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 bridge. 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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the Root Protect function for Fast Ethernet port 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the TC Protect of Spanning Tree for Fast Ethernet port 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable MCheck for Fast Ethernet port 2:

```
TL-SL5428E(config)#interface fastEthernet 1/0/2
TL-SL5428E(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-SL5428E(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-SL5428E(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 [ fastEthernet port | gigabitEthernet port ]  
[edge | ext-cost | int-cost | mode | p2p | priority | role | state | status]
```

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the spanning-tree information of all ports:

```
TL-SL5428E(config)#show spanning-tree interface
```

Display the spanning-tree information of Gigabit Ethernet port 25:

```
TL-SL5428E(config)#show spanning-tree interface gigabitEthernet 1/0/25
```

Display the spanning-tree mode information of Gigabit Ethernet port 25:

```
TL-SL5428E(config)#show spanning-tree interface gigabitEthernet 1/0/25  
mode
```

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 [ fastEthernet port | gigabitEthernet port ]  
[ bpdufilter | bpduguard | loop | root | tc | tc-defend ]
```

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the protect information of all ports:

```
TL-SL5428E(config)#show spanning-tree interface-security
```

Display the protect information of Gigabit Ethernet port 25:

```
TL-SL5428E(config)#show spanning-tree interface-security gigabitEthernet
1/0/25
```

Display the interface security bpdufilter information:

```
TL-SL5428E(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 [ fastEthernet port | gigabitEthernet port] ] }
```

Parameter

instance-id — Instance ID desired to show, ranging from 1 to 8.

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the region information and mapping information of VLAN and MST Instance:

```
TL-SL5428E(config)#show spanning-tree mst configuration
```

Display the related information of MST Instance 1:

```
TL-SL5428E(config)#show spanning-tree mst instance 1
```

Display all the ports information of MST Instance 1:

```
TL-SL5428E(config)#show spanning-tree mst instance 1 interface
```

Chapter 29 IGMP 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 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-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable IGMP Snooping function of Gigabit Ethernet port 25:

```
TL-SL5428E(config)#interface gigabitEthernet 1/0/25
TL-SL5428E(config-if)#ip igmp snooping
```

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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the Fast Leave function for Fast Ethernet port 3:

```
TL-SL5428E(config)#interface fastEthernet 1/0/3
TL-SL5428E(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 of processing unknown multicast as “discard”:

```
TL-SL5428E(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-list [ rtime router-time | mtime member-time | ltime leave-time | rport interface { fastEthernet port | gigabitEthernet port } ]
```

```
ip igmp snooping vlan-config vlan-id static ip interface { fastEthernet port | gigabitEthernet port }
```

```
no ip igmp snooping vlan-config vlan-id list
```

```
no ip igmp snooping vlan-config vlan-id static ip
```

Parameter

vlan-list — The ID list of the VLAN desired to modify configuration, ranging from 2 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 — Static Router Port, which is mainly used in the network with stable topology. There are two types of port: Fast Ethernet port, ranging from 1 to 24, in

the format of 1/0/2; Gigabit Ethernet port, ranging from 1-4, in the format of 1/0/2.

vlan-id — The VLAN ID of the multicast IP, ranging from 1 to 4094.

ip — The static multicast IP address.

port-list — The forward port list of the multicast group.

Command Mode

Global Configuration Mode

Example

Enable the IGMP Snooping function and modify Member Port Time as 200 seconds for VLAN1-3:

```
TL-SL5428E(config)#ip igmp snooping vlan-config 1-3 mtime 200
```

ip igmp snooping multi-vlan-config

Description

The **ip igmp snooping multi-vlan-config** command is used to create and configure a 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 | itime leave-time | rport interface { fastEthernet port | gigabitEthernet port } }
```

```
no ip igmp snooping multi-vlan-config
```

Parameter

vlan-id — 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 — Static Router Port, which is mainly used in the network with stable topology. There are two types of port: Fast Ethernet port, ranging from 1 to 24, in the format of 1/0/2; Gigabit Ethernet port, ranging from 25 to 28, in the format of 1/0/25.

Command Mode

Global Configuration Mode

Example

Enable Multicast VLAN 3, and configure Router Port Time as 100 seconds:

```
TL-SL5428E(config)#ip igmp snooping multi-vlan-config 3 rtime 100
```

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 add-id addr-id list
```

```
no ip igmp snooping filter add-id addr-id list
```

Parameter

addr-id list — The filtering address ID to be bound.

Command Mode

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

Example

Bind the filtering address ID 2-6 to Fast Ethernet port 3:

```
TL-SL5428E(config)#interface fastEthernet 1/0/3
```

```
TL-SL5428E(config-if)#ip igmp snooping filter add-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-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable IGMP Snooping filter function for Gigabit Ethernet port 26:

```
TL-SL5428E(config)#interface gigabitEthernet 1/0/26
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Specify the maximum number of multicast groups for Fast Ethernet ports 2-5 to join in as 10:

```
TL-SL5428E(config)#interface range fastEthernet 1/0/2-5
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Specify the Action Mode as “accept” for Fast Ethernet port 3:

```
TL-SL5428E(config)#interface fastEthernet 1/0/3
TL-SL5428E(config-if)#ip igmp snooping filter mode accept
```

ip igmp snooping querier vlan

Description

The **ip igmp snooping querier vlan** command is used to enable the IGMP Snooping Querier function of the VLAN(s). To disable the IGMP Snooping Querier function of certain VLANs, please use **no ip igmp snooping querier vlan** command; to disable the IGMP Snooping Querier function of all VLANs, please use **no ip igmp snooping querier** command.

Syntax

```
ip igmp snooping querier vlan vlan-list
no ip igmp snooping querier [vlan vlan-list ]
```

Parameter

vlan-list — VLAN ID list, ranging from 1 to 4094, in the format of 1-3, 5. It is multi-optional.

Command Mode

Global Configuration Mode

Example

Enable the IGMP Snooping Querier function of VLAN1-3:

```
TL-SL5428E(config)#ip igmp snooping querier vlan 1-3
```

ip igmp snooping querier vlan (general query)

Description

The **ip igmp snooping querier vlan** command is used to configure the parameters for IGMP Snooping Querier to send a general query frame. To return to the default configuration, please use **no ip igmp snooping querier vlan** command.

Syntax

```
ip igmp snooping querier vlan vlan-list {query-interval interval |  
max-response-time response-time | general-query source-ip ip-addr }  
no ip igmp snooping querier vlan vlan-list {query-interval |  
max-response-time | general-query source-ip}
```

Parameter

vlan-list—— VLAN ID list, ranging from 1 to 4094, in the format of 1-3, 5. It is multi-optional.

interval—— The time interval to send a general query frame by IGMP Snooping Querier, ranging from 1 to 300 (Seconds). By default, it is 60 seconds.

response-time—— The maximal time for the host to respond to a general query frame, ranging from 1 to 25 (Seconds). By default, it is 10 Seconds.

ip-addr—— The source IP of the general query frame sent by IGMP Snooping Querier. It should not be a multicast IP or a broadcast IP. By default, it is 192.168.0.1.

Command Mode

Global Configuration Mode

Example

For VLAN 2, specify its query-interval as 200 seconds, and the response-time as 20 seconds:

```
TL-SL5428E(config)#ip igmp snooping querier vlan 2 query-interval 200  
TL-SL5428E(config)#ip igmp snooping querier vlan 2 max-response-time  
20
```

ip igmp snooping querier vlan (specific query)

Description

The **ip igmp snooping querier vlan** command is used to configure the parameters for IGMP Snooping Querier to send a specific query frame. To return to the default configuration, please use **no ip igmp snooping querier vlan** command.

Syntax

```
ip igmp snooping querier vlan vlan-list {last-member-query-interval interval
| last-member-query-count count | special-query source-ip ip-addr }
no ip igmp snooping querier vlan vlan-list {last-member-query-interval |
last-member-query-count | special-query source-ip}
```

Parameter

vlan-list—— VLAN ID list, ranging from 1 to 4094, in the format of 1-3, 5. It is multi-optional.

interval—— The time interval of sending specific query frames by IGMP Snooping Querier, ranging from 1 to 5 (Seconds). By default, it is 1. A specific query will be sent on condition that “immediate-leave” is not enabled and a leave frame is received.

count—— The times of sending specific query frames by IGMP Snooping Querier, ranging from 1 to 5. By default, it is 2. The switch will still treat the port as group member until the specific frames number sent by the querier reaches “last-member-query-count” and no report frame is received from the port.

ip-addr—— The source IP of the specific query frame sent by IGMP Snooping Querier. It should not be a multicast IP or a broadcast IP. By default, it is 192.168.0.1.

Command Mode

Global Configuration Mode

Example

For VLAN 2, specify its last-member-query-interval as 2:

```
TL-SL5428E(config)#ip igmp snooping querier vlan 2
last-member-query-interval 2
```

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 Snooping:

```
TL-SL5428E#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.

Syntax

```
show ip igmp snooping interface { fastEthernet port | gigabitEthernet port }  
{ basic-config | filter | packet-stat }
```

```
show ip igmp snooping interface { fastEthernet port-list | gigabitEthernet  
port-list } { basic-config | filter | packet-stat }
```

Parameter

port — The Fast/Gigabit Ethernet port number. By default, the configuration of all ports is displayed.

basic-config | filter | packet-stat — The related configuration information selected to display.

port-list — The list group of Ethernet ports.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the IGMP basic configuration of Fast Ethernet port 2:

```
TL-SL5428E#show ip igmp snooping interface fastEthernet 1/0/2 basic-config
```

Display the IGMP filter configuration of Fast Ethernet ports 2-4:

```
TL-SL5428E#show ip igmp snooping interface fastEthernet 1/0/2-4 filter
```

show ip igmp snooping vlan

Description

The **show ip igmp snooping vlan** command is used to display the VLAN configuration of IGMP.

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-SL5428E#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-SL5428E#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-SL5428E#show ip igmp snooping groups
```

Display all the multicast entries in VLAN 5:

```
TL-SL5428E(config)#show ip igmp snooping groups vlan 5
```

Display the count of multicast entries in VLAN 5:

```
TL-SL5428E(config)#show ip igmp snooping groups vlan 5 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-SL5428E(config)#show ip igmp snooping filter
```

show ip igmp snooping querier vlan

Description

The **show ip igmp snooping querier vlan** command is used to display the configurations of IGMP Snooping Querier of the specified VLAN.

Syntax

```
show ip igmp snooping querier vlan vlan-list
```

Parameter

vlan-list —The ID of the VLAN selected to display the configurations of IGMP Snooping Querier. It is multi-optional.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configurations of IGMP Snooping Querier of VLAN 2, 4 and 5:

```
TL-SL5428E(config)# show ip igmp snooping querier vlan 2, 4-5
```

show ip igmp snooping querier

Description

The **show ip igmp snooping querier** command is used to display the IGMP Snooping Querier configurations of all VLANs.

Syntax

```
show ip igmp snooping querier
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configurations of IGMP Snooping Querier of all VLANs

```
TL-SL5428E(config)# show ip igmp snooping querier
```

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-SL5428E(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 can include 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-SL5428E(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 **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.

smode — Security Model, with v1、v2c and v3 options. They represent SNMP v1, SNMP v2c and SNMP v3.

slev — 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 Model and SNMP v2c Model.

read — Read-only view. The management access is restricted to read-only, and changes cannot be made to the assigned SNMP View.

write — Write-only 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 — Notify view. The management station software can receive trap messages of the assigned SNMP view generated by the Switch's SNMP agent.

Command Mode

Global Configuration mode

Example

Add group 1, and configure the Security Model as SNMP v3, the security level as *authNoPriv*, the management access to the assigned View *viewDefault* as read-write, besides the trap messages sent by View *viewDefault* can be received by Management station:

```
TL-SL5428E(config)#snmp-server group group1 smode v3 slev authNoPriv
read viewDefault write viewDefault notify viewDefault
```

Delete Group group 1:

```
TL-SL5428E(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 indicates 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 — 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 — 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 — 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 — 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-SL5428E(config)#snmp-server user admin local group2 smode v3 slew
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-SL5428E(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. With the Notification function enabled, the switch can initiatively report to the management station about the important events that occur on the Views, which allows the management station to monitor and process the events in time.

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.

udp-port — UDP port, which is used to send notifications. The UDP port functions with the IP address for the notification sending. By default, it is 162.

user-name — The User name of the management station.

smode — The Security Model of the management station, with v1, v2c and v3 options. By default, the option is v1.

slev — 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 — 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-SL5428E(config)#snmp-server host 192.168.0.146 162 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

```
snmp-server engineID { [local local-engineID] [remote remote-engineID] }
no snmp-server engineID
```

Parameter

local — 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 — 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.

Command Mode

Global Configuration Mode

Example

Specify the local engineID as 1234567890, and the remote engineID as abcdef123456:

```
TL-SL5428E(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 ]
```

```
no snmp-server traps snmp [ linkup | linkdown | warmstart | coldstart ]
```

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.

Command Mode

Global Configuration Mode

Example

Enable SNMP standard linkup trap for the switch:

```
TL-SL5428E(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-SL5428E(config)# interface gigabitEthernet 1/0/3
TL-SG3424P(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-SL5428E(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:

```
TL-SL5428E(config)# snmp-server traps mac
```

Enable new MAC address trap only for the switch:

```
TL-SL5428E(config)# snmp-server traps mac new
```

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-SL5428E(config)# snmp-server traps vlan
```

Enable VLAN-created trap only for the switch:

```
TL-SL5428E(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

```
rmon history index interface { fastEthernet port | 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 Fast/Gigabit 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 2 and the sample interval as 100 seconds for the entry 1-3:

```
TL-SL5428E(config)#rmon history 1-3 interface fastEthernet 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

```
rmon event index { [ user user-name ] [ description descript ] [ type {none | log | notify | log-notify } ] [ owner owner-name ] }
```

```
no rmon event index
```

Parameter

index — The index number of the event entry, ranging from 1 to 12. You can only select one entry for each command.

user-name — The name of the User to which the event belongs, ranging from 1 to 16 characters. By default, it is “public”.

descript — The description of the event, ranging from 1 to 16 characters. By default, it is empty.

type — The event type, with “none”, “log”, “notify” and “both” options. “None” indicates no processing, “log” indicates logging the event, “notify” indicates sending trap messages to the management station, and “both” indicates logging the event and sending trap messages to the management station.

owner-name — The owner of the event entry, ranging from 1 to 16 characters. By default, it is “monitor”.

Command Mode

Global Configuration Mode

Example

Configure the user name of entry 1, 2, 3 and 4 as user1, the description of the event as “description1”, the type of event as log and the owner of the event as “owner1”:

```
TL-SL5428E(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 { fastEthernet port | gigabitEthernet port }
[ alarm-variable { drop | revbyte | revpkt | bpkt | mpkt | crc-lign | undersize |
oversize | fragment | jabber | collision | 64 | 65-127 | 128-511 | 512-1023 |
1024-10240 }] [ s-type { absolute | delta} ] [ rising-threshold r-hold ]
[ rising-event-index r-event] [ falling-threshold f-hold] [ falling-event-index
f-event] [ a-type {rise | fall | all}] [ owner owner-name ] [ interval interval]

no rmon alarm index
```

Parameter

index — The index number of the Alarm Management entry, ranging from 1 to 12, in the format of 1-3,5.

port — String for the port on which the Alarm entry acts, format as module/slot/port, for example 1/0/24.

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 ports of entries of 1-3 as Gi1/0/2, the owners as owner1 and the alarm intervals as 100 seconds:

```
TL-SL5428E(config)#rmon alarm 1-3 interface fastEthernet 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-SL5428E#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-SL5428E#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-SL5428E#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-SL5428E#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-SL5428E#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-SL5428E#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-SL5428E#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-SL5428E#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-SL5428E#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-SL5428E#show rmon alarm 1-2
```

Chapter 31 LLDP Commands

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) using SNMP.

Ildp

Description

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

Syntax

```
ildp
no ildp
```

Command Mode

Global Configuration Mode

Example

Enable LLDP function globally:

```
TL-SL5428E(config)#ildp
```

Ildp hold-multiplier

Description

The **ildp 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. $TTL = \text{Hold Multiplier} * \text{Transmit Interval}$. To return to the default configuration, please use **no ildp hold-multiplier** command.

Syntax

```
ildp hold-multiplier multiplier
no ildp 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-SL5428E(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 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 and the default value is 3.

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 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 LLDPDUs 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-SL5428E(config)#lldp timer tx-interval 45
TL-SL5428E(config)#lldp timer notify-interval 120
```

Ildp 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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable Fast Ethernet port 1 to receive LLDPDU:

```
TL-SL5428E(config)#interface fastEthernet 1/0/1
TL-SL5428E(config-if)#lldp receive
```

Ildp 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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable Fast Ethernet port 1 to transmit LLDPDU:

```
TL-SL5428E(config)# interface fastEthernet 1/0/1
TL-SL5428E(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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Enable the SNMP notification for Fast Ethernet port 1:

```
TL-SL5428E(config)#interface fastEthernet 1/0/1
TL-SL5428E(config-if)#lldp snmp-trap
```

Ildp tlv-select

Description

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

Syntax

ildp 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 ildp 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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet)

Example

Exclude “management-address” and “port-vlan-id” TLVs in LLDPDU outgoing from Fast Ethernet port 1:

```
TL-SL5428E(config)# interface fastEthernet 1/0/1
TL-SL5428E(config-if)# no ildp tlv-select management-address port-vlan
```

show lldp

Description

The **show lldp** command is used to display the global configuration of LLDP.

Syntax

show lldp

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the global configuration of LLDP:

```
TL-SL5428E#show lldp
```

show lldp interface

Description

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

Syntax

```
show lldp interface [ fastEthernet port | gigabitEthernet port]
```

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the LLDP configuration of Fast Ethernet port 1:

```
TL-SL5428E#show lldp interface fastEthernet 1/0/1
```

show lldp local-information interface

Description

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

Syntax

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

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the LLDP information of Fast Ethernet port 1:

```
TL-SL5428E#show lldp local-information interface fastEthernet 1/0/1
```

show lldp neighbor-information interface

Description

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

Syntax

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

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the neighbor information of Fast Ethernet port 1:

```
TL-SL5428E#show lldp neighbor-information interface fastEthernet 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 [ fastEthernet port | gigabitEthernet port ]
```

Parameter

port — The Fast/Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the LLDP statistic information of Fast Ethernet port 1:

```
TL-SL5428E#show lldp traffic interface fastEthernet 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-SL5428E(config)#cluster ndp
```

```
TL-SL5428E(config)#cluster ndp timer hello 50 aging 120
```

cluster ndp

Description

The **cluster ndp** command is used to configure NTDP globally. To return to the default configuration, please use **no cluster ndp** 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 ndp
```

```
cluster ndp timer { [interval-time time] [hop-delay value] [port-delay value] }
```

```
cluster ndp hop hop-value
```

```
no cluster ndp
```

```
no cluster ndp timer { [interval-time time] [hop-delay value] [port-delay value] }
```

```
no cluster ndp 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-SL5428E(config)#cluster ntdp
TL-SL5428E(config)#cluster ntdp timer interval-timer 30
TL-SL5428E(config)#cluster ntdp hop 5
```

cluster explore

Description

The **cluster explore** command is used to enable the topology information collecting function manually.

Syntax

```
cluster explore
```

Command Mode

Global Configuration Mode

Example

Enable the topology information collecting function manually:

```
TL-SL5428E(config)#cluster explore
```

cluster

Description

The **cluster** command is used to configure cluster functions of a specified port. To return to the default configuration, please use **no cluster** command.

Syntax

```
cluster [ndp { disable | enable }] [ntdp { disable | enable }]
no cluster
```

Parameter

ndp — Enable/ Disable NDP function for the port. By default, it is enabled.

ntdp — Enable/ Disable NTDP function for the port. By default, it is enabled.

Command Mode

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

Example

Enable NDP and NTDP function for Fast Ethernet port 5:

```
TL-SL5428E(config)#interface fastEthernet 1/0/5
TL-SL5428E(config-if)#cluster ndp enable ntdp enable
```

cluster ip pool

Description

The **cluster ip pool** command is used to create a new cluster. If no specified cluster name is set through **cluster commander** command, the newly created cluster will enjoy the system default name “tplink-cluster”.

Syntax

cluster ip pool *ip mask*

Parameter

ip —— The cluster IP address pool.

mask —— The cluster IP address mask.

Command Mode

Global Configuration Mode

Example

Create a cluster and configure its IP address pool as 192.168.10.1~192.168.0.254:

```
TL-SL5428E(config)#cluster ip pool 192.168.10.1 255.255.255.0
```

cluster commander

Description

The **cluster commander** command is used to specify the cluster name, and you can only specify the cluster name when you create the cluster. To delete a cluster, please use **no cluster commander** command.

Syntax

cluster commander *name*

no cluster commander

Parameter

name —— The cluster name, ranging from 1 to 16 characters.

Command Mode

Global Configuration Mode

Example

Configure the newly created cluster name as tp:

```
TL-SL5428E(config)#cluster commander tp
```

cluster manage

Description

The **cluster manage** command is used to configure the hold time and interval to send handshake packets of the cluster. To return to the default configuration, please use **no cluster manage** command.

Syntax

```
cluster manage [ holdtime hold-time | timer interval-time ]
```

```
no cluster manage [ holdtime | timer ]
```

Parameter

hold-time —— Hold Time, which is the time for the switch to keep the cluster information. Hold Time ranges from 1 to 255 in seconds. It is 20 by default.

interval-time —— Interval Time, which is the interval to send handshake packets. Interval Time ranges from 1 to 255 in seconds. It is 20 by default.

Command Mode

Global Configuration Mode

Example

Specify the Hold Time and Interval Time of the cluster as 50 seconds:

```
TL-SL5428E(config)#cluster manage holdtime 50
```

```
TL-SL5428E(config)#cluster manage timer 50
```

cluster member

Description

The **cluster member** command is used to add member switch. To delete the corresponding member, please use **no cluster member** command. The add/delete operations of member switches should be implemented by the commander switch according to the MAC address.

Syntax

```
cluster member {mac-address mac-address}
```

```
no cluster member {mac-address mac-address}
```

Parameter

mac-address — The MAC address of the member switch desired to join in or to be deleted from the cluster.

Command Mode

Global Configuration Mode

Example

Add the switch whose MAC address is 0e-3f-4g-5e-6d-7b to the cluster:

```
TL-SL5428E(config)#cluster member mac address 0e-3f-4g-5e-6d-7b
```

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-SL5428E(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-SL5428E(config)#cluster individual
```

cluster time-segment

Description

The **cluster time-segment** command is used to create time-segment entry and enter cluster time-segment configuration mode. To delete a time-segment entry, please use **no cluster time-segment** command. The time-segment is needed in [cluster manage batch-management user-config auto-backup](#) command. After the time-segment entry is created, you can use the [absolute](#), [periodic](#) and [backup-time](#) command to further specify its effective time. By default, its effective time is 00:00 every day.

Syntax

```
cluster time-segment time-segment-name
```

```
no cluster time-segment time-segment-name
```

Parameter

time-segment-name ——Type a name for the time segment, which contains 16 characters at most, composing digits, English letters and under dashes only.

Command Mode

Global Configuration Mode

Example

Create a time segment with the name "t1".

```
TL-SL5428E(config)# cluster time-segment t1
```

absolute

Description

The **absolute** command is used to configure a time-segment into an Absolute Mode and specify/modify its start & end date. To delete the corresponding Absolute Mode time-segment, please use **no absolute** command.

Syntax

```
absolute start start-date end end-date
```

```
no absolute
```

Parameter

start-date — The start date in Absolute Mode, in the format of MM/DD/YYYY. By default, it is 01/01/2000.

end-date — The end date in Absolute Mode, in the format of MM/DD/YYYY. By default, it is 01/01/2000. The Absolute Mode will be disabled if the start date and end date are both in default value.

Command Mode

Cluster Time-segment Configuration Mode (cluster time-segment)

Example

Configure the time-segment t1 with time from May 5, 2012 to Oct. 5, 2012:

```
TL-SL5428E(config)# cluster time-segment t1
TL-SL5428E(config-cluster-timeseg)# absolute start 05/05/2012 end
10/05/2012
```

periodic

Description

The **periodic** command is used to configure the time-segment into Periodic Mode. To delete the corresponding Periodic Mode time-range, please use **no periodic** command.

Syntax

periodic week-date *week-day*

no periodic

Parameter

week-day — Periodic Mode, in the format of 1-3,6 or daily, off-day, working-day. 1-3, 6 represent Monday, Tuesday, Wednesday and Saturday; daily represents every day; off-day represents weekend and working-day represents working day. By default, the Periodic Mode is disabled.

Command Mode

Cluster Time-segment Configuration Mode (cluster time-segment)

Example

Configure the time-segment t1 with time from Monday to Thursday:

```
TL-SL5428E(config)# cluster time-segment t1
TL-SL5428E(config-cluster-timeseg)# periodic week-date 1-4
```

backup-time

Description

The **backup-time** command is used to specify the backup time. The switch will backup its configurations only when its system time is right at the backup time. By default, it is 00:00. To return to the default configuration, please use **no backup-time** command.

Syntax

backup-time *backup-time*

no backup-time

Parameter

backup-time —— Specify the backup-time, in the format of HH:MM

Command Mode

Cluster Time-segment Configuration Mode (cluster time-segment)

Example

Configure the time-segment t1 with the backup-time 08:00:

```
TL-SL5428E(config)# cluster time-segment t1
```

```
TL-SL5428E(config-cluster-timeseg)# backup-time 08:00
```

cluster manage tftp-server

Description

The **cluster manage tftp-server** command is used to configure the TFTP server for the switch. The switch can backup its configurations to the TFTP server or download the configuration file from the TFTP server. To delete the TFTP server, please use **no cluster manage tftp-server** command.

Syntax

cluster manage tftp-server *tftp-server*

no cluster manage tftp-server

Parameter

tftp-server —— Enter the IP address of the TFTP server.

Command Mode

Global Configuration Mode

Example

Configure the TFTP server as 192.168.0.6:

```
TL-SL5428E(config)# cluster manage tftp-server 192.168.0.6
```

cluster manage batch-management user-config backup

Description

The **cluster manage batch-management user-config backup** command is used to backup the configurations of the switch to the TFTP server.

Syntax

```
cluster manage batch-management user-config backup index index  
filename filename
```

Parameter

index —— Specify the index of the desired switch in cluster, it ranges from 0 to 31.

filename —— Type a name for the configuration file, which contains 59 characters at most.

Command Mode

Global Configuration Mode

Example

Backup the configurations of the switch with the index 1, and specify the filename as "TL-SL5428E":

```
TL-SL5428E(config)# cluster manage batch-management user-config  
backup index 1 filename TL-SL5428E
```

cluster manage batch-management user-config restore

Description

The **cluster manage batch-management user-config restore** command is used to download the configuration file from TFTP server and then restore the switch with the file.

Syntax

cluster manage batch-management user-config restore index *index*
filename *filename*

Parameter

index —— Specify the index of the desired switch in cluster, it ranges from 0 to 31.

filename —— Specify the filename of the configuration file.

Command Mode

Global Configuration Mode

Example

Restore the switch with the index 1 to the configuration file with the filename “TL-SL5428E”:

```
TL-SL5428E(config)# cluster manage batch-management user-config
restore index 1 filename TL-SL5428E
```

cluster manage batch-management user-config auto-backup

Description

The **cluster manage batch-management user-config auto-backup** command is used to backup the configuration to TFTP server according to the related time-segment automatically. To auto backup the switch, you should define a time-segment with the [cluster time-segment](#) command first.

Syntax

cluster manage batch-management user-config auto-backup index *index*
timeseg *time-segment-name*

Parameter

index —— Specify the index of the desired switch in cluster, it ranges from 0 to 31.

time-segment-name —— The time-segment for the auto-backup rule to take effect.

Command Mode

Global Configuration Mode

Example

Auto backup the switch with the index 1 to the TFTP server, and specify its effective time as t1:

```
TL-SL5428E(config)# cluster manage batch-management user-config
auto-backup index 1 timeseg t1
```

cluster manage batch-management cancel

Description

The **cluster manage batch-management cancel** command is used to cancel the auto-backup operation of the desired switch.

Syntax

```
cluster manage batch-management cancel index index
```

Parameter

index — Specify the index of the desired switch in cluster, it ranges from 0 to 31.

Command Mode

Global Configuration Mode

Example

Cancel the auto backup operation of the switch with index 1:

```
TL-SL5428E(config)# cluster manage batch-management cancel index 1
```

show cluster ntdp

Description

The **show cluster ntdp** command is used to display NTDP configuration information.

Syntax

```
show cluster ntdp [ interface [fastEthernet port | gigabitEthernet port ] |
device-list ]
```

Parameter

port — The Fast/Gigabit Ethernet port number. By default, the configuration of all Fast / Gigabit Ethernet ports is displayed.

device-list — To display the device table of NTDP.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the global information of NTDP:

```
TL-SL5428E#show cluster ntdp
```

Display the NTDP configuration of all Ethernet ports:

```
TL-SL5428E#show cluster ntdp interface
```

Display the device table of NTDP:

```
TL-SL5428E#show cluster ntdp device-list
```

show cluster

Description

When the current switch is Commander Switch, the **show cluster** command is used to display the global configuration of Cluster.

Syntax

```
show cluster
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the global configuration of Cluster:

```
TL-SL5428E#show cluster
```

show cluster member

Description

The **show cluster member** command is used to display the member information.

Syntax

```
show cluster member
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the member information:

```
TL-SL5428E#show cluster member
```

show cluster manage role

Description

The **show cluster manage role** command is used to display the 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-SL5428E(config)#show cluster manage role
```

show cluster time-segment

Description

The **show cluster time-segment** command is used to display the information of the time-segment entry.

Syntax

```
show cluster time-segment
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of the time-segment entry:

```
TL-SL5428E(config)#show cluster time-segment
```

show cluster manage batch-management

Description

The **show cluster manage batch-management** command is used to display the batch-management status of the switches in cluster.

Syntax

```
show cluster manage batch-management
```

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the status of the switches in cluster:

```
TL-SL5428E(config)#show cluster manage batch-management
```