CLI Guide

JetStream 24-Port 10/100Mbps + 4-Port Gigabit

L2 Managed Switch

T2500-28TC (TL-SL5428E)

REV2.0.0
1910011988

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CONTENTS

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 T2500-28TC 24-Port 10/100Mbps + 4-Port Gigabit JetStream L2 Managed Switch.

When using this guide, please notice that features of the switch may vary slightly depending on the model and software version you have, and on your location, language, and Internet service provider. All parameters and descriptions documented in this guide are used for demonstration only.

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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: PPPoE Circuit-ID Insertion Commands

Provide information about the commands used for configuring PPPoE Circuit-ID function.

Chapter 18: System Log Commands

Provide information about the commands used for configuring system log.

Chapter 19: SSH Commands

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

Chapter 20: SSL Commands

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

Chapter 21: MAC Address Commands

Provide information about the commands used for MAC address configuration.

Chapter 22: 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 23: IPv6 Address Configuration Commands

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

Chapter 24: Ethernet Configuration Commands

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

Chapter 25: QoS Commands

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

Chapter 26: Port Mirror Commands

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

Chapter 27: Port isolation Commands

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

Chapter 28: Loopback Detection Commands

Provide information about the commands used for loopback detection.

Chapter 29: DDM Commands

Provide information about the commands used for DDM (Digtal Diagnostic Monitoring) function.

Chapter 30: ACL Commands

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

Chapter 31: MSTP Commands

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

Chapter 32: Ethernet OAM Commands

Provide information about the commands used for configuring the Ethernet OAM (Operation, Administration, and Maintenance) function.

Chapter 33: DLDP Commands

Provide information about the commands used for configuring the DLDP (Device Link Detection Protocol).

Chapter 34: IGMP Snooping Commands

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

Chapter 35: MLD Snooping Commands

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

Chapter 36: SNMP Commands

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

Chapter 37: LLDP Commands

Provide information about the commands used for configuring the LLDP functions.

Chapter 38: Cluster Commands

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

Chapter 39: AAA Commands

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

Chapter 40: DHCP Relay Commands

Provide information about the commands used for configuring the DHCP Relay 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 three methods:

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

1.1.1 Logon by a console port

Take the following steps to log on to the switch by the console port.

1. Connect the PCs or Terminals to the console port on the switch by the provided cable.
2. Start the terminal emulation program (such as the HyperTerminal) on the PC.
3. Configure the terminal emulation program or the terminal to use the following settings:
   - Baud rate: 38400 bps
   - Data bits: 8
   - Parity: none
   - Stop bits: 1
   - Flow control: none
4. The DOS prompt “T2500-28TC>” will appear after pressing the Enter button as shown in Figure 1-1. It indicates that you can use the CLI now.

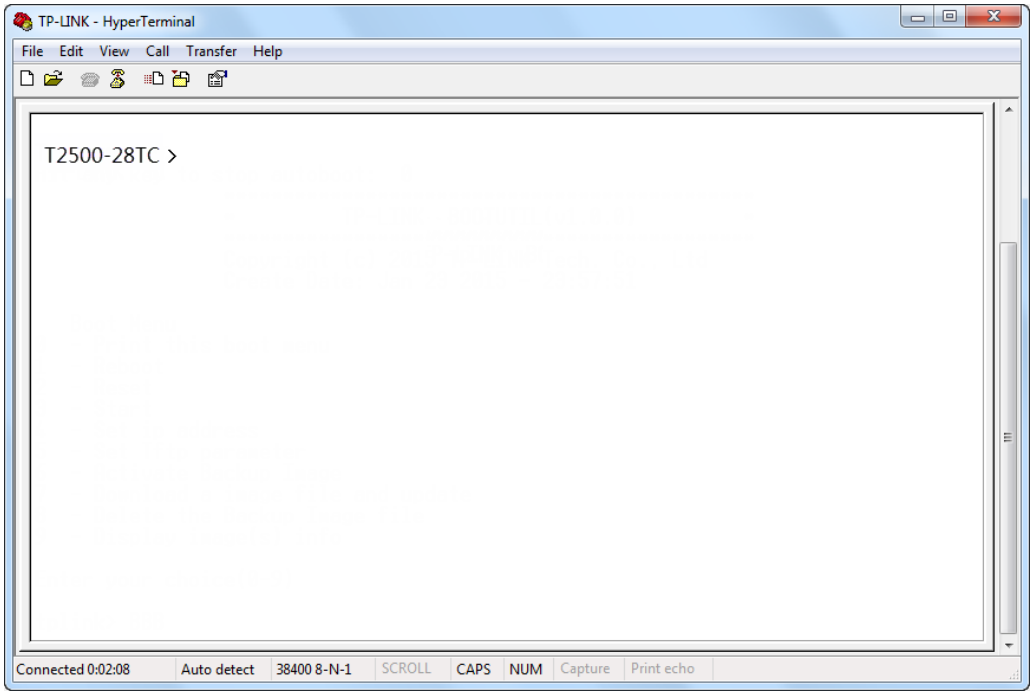


Figure 1-1 Log in the Switch

1.1.2 Logon by Telnet

For Telnet connection, you should also configure the Telnet login mode and login authentication information 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 doesn't require username and password, but a connection password is required.

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

- **Login Local Mode**

Firstly, configure the Telnet login mode as "**login local**" in the prompted DOS screen shown in Figure 1-2.

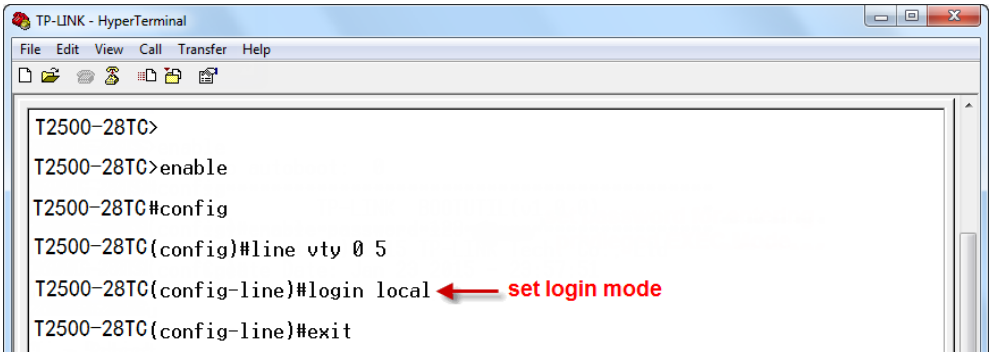


Figure 1-2 Configure login local mode

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

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

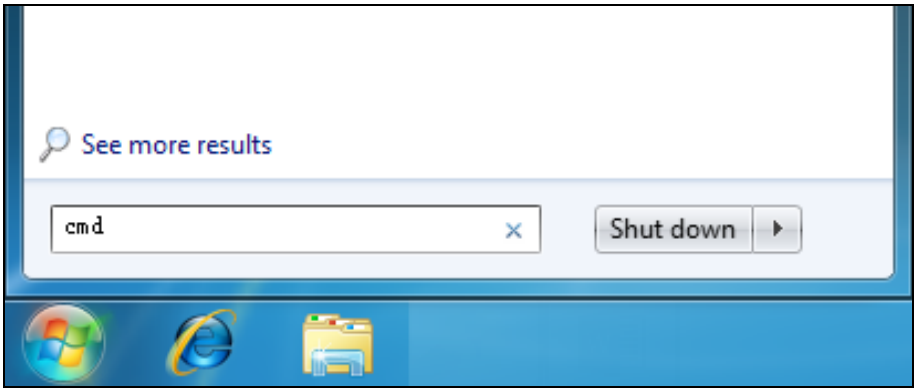


Figure 1-3 Run Window

2. Type **telnet 192.168.0.1** in the command prompt shown as Figure 1-4, and press the **Enter** button.

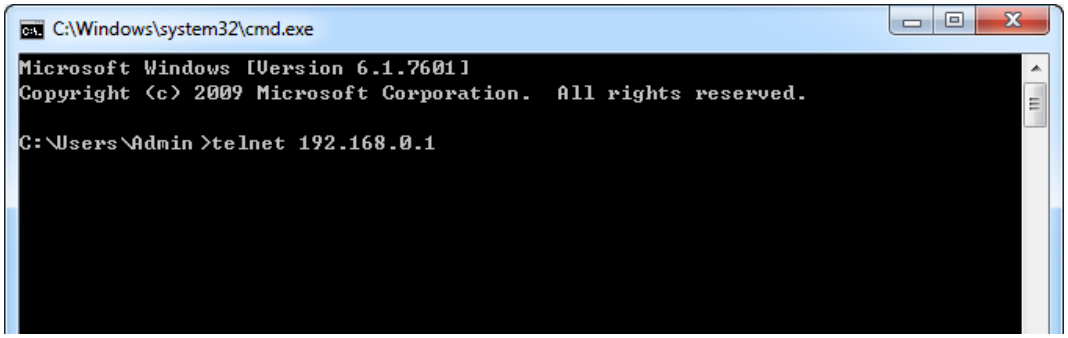


Figure 1-4 Connecting to the Switch

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

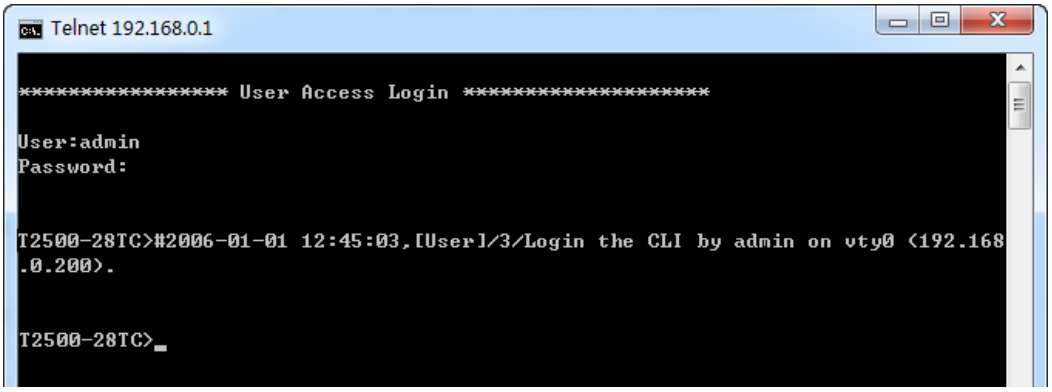


Figure 1-5 Enter into the User EXEC Mode

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

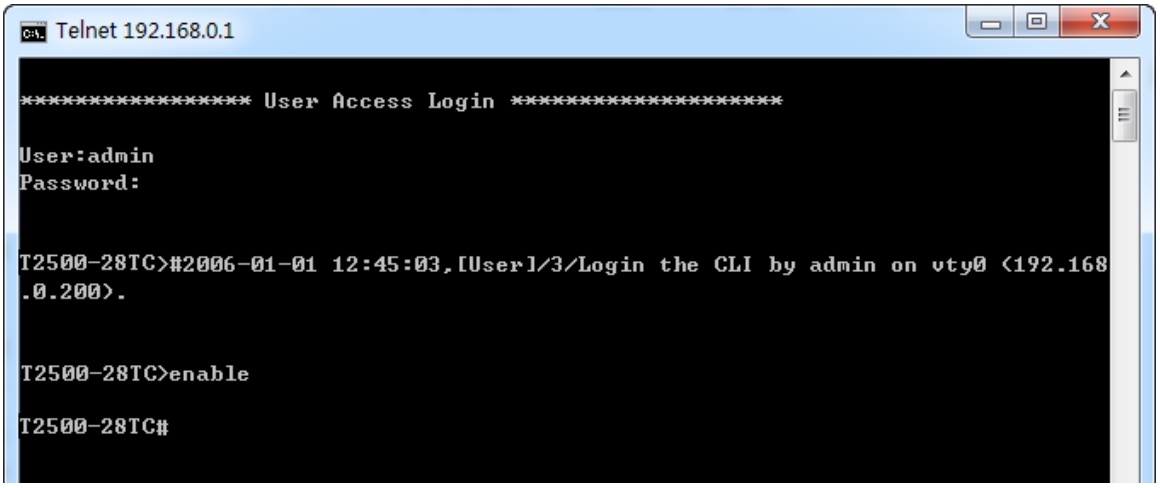


Figure 1-6 Enter into the Priviledged EXEC Mode

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

➢ **Login Mode**

Firstly configure the Telnet login mode as "**login**" and the connection password as **456** in the prompted DOS screen shown in Figure 1-7.

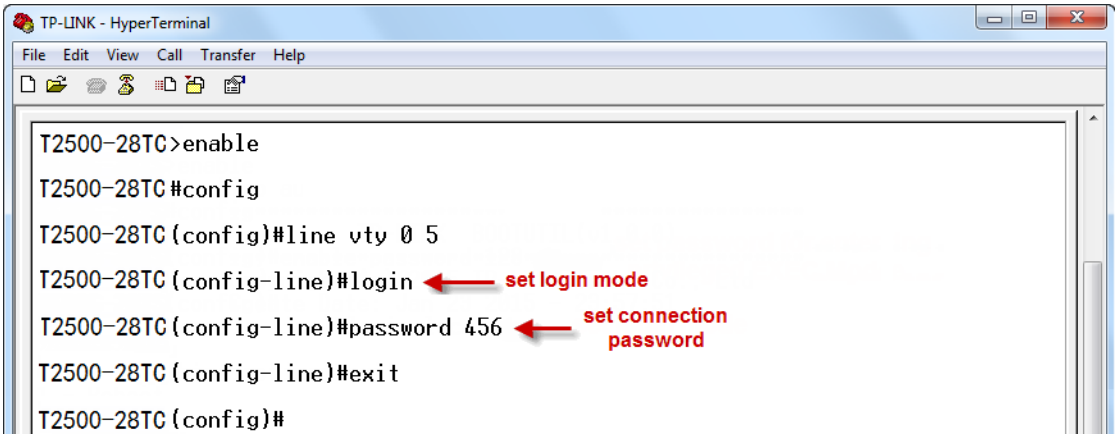


Figure 1-7 Configure login mode

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

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

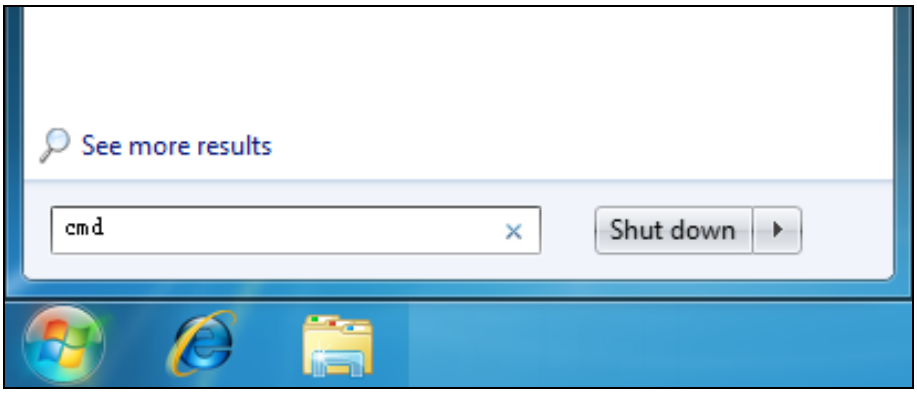


Figure 1-8 Run Window

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

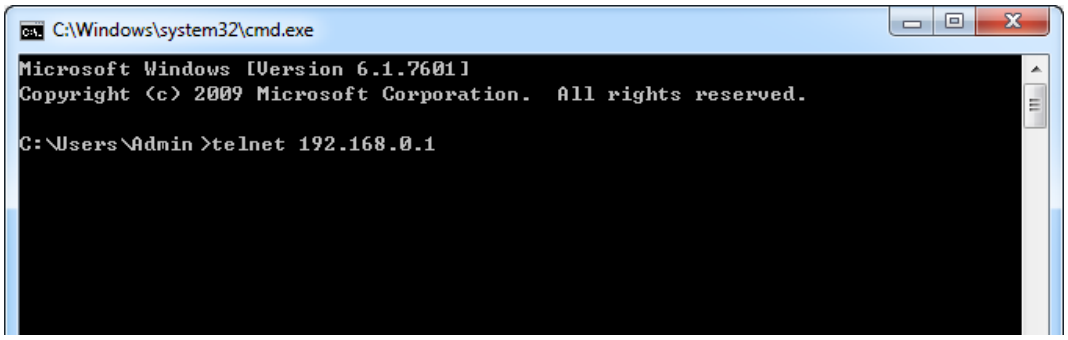


Figure 1-9 Connecting to the Switch

3. You are prompted to enter the connection password **456** you have set through Console port connection, and then you are in User EXEC Mode.

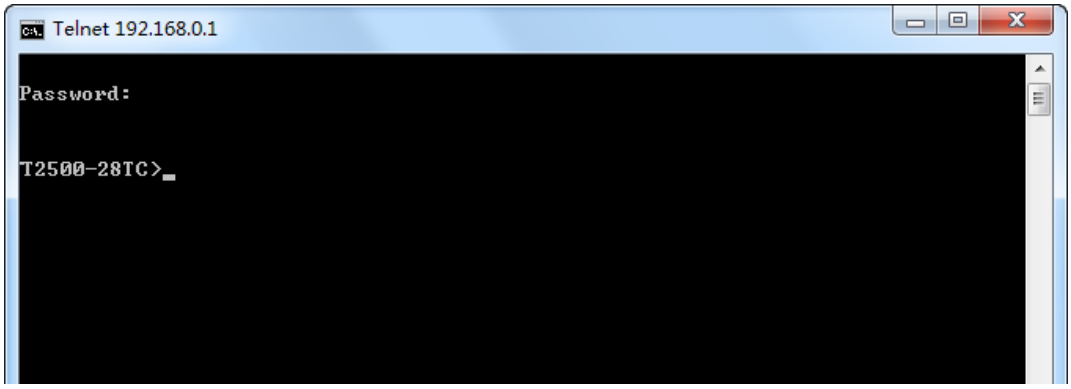


Figure 1-10 Enter into the User EXEC Mode

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

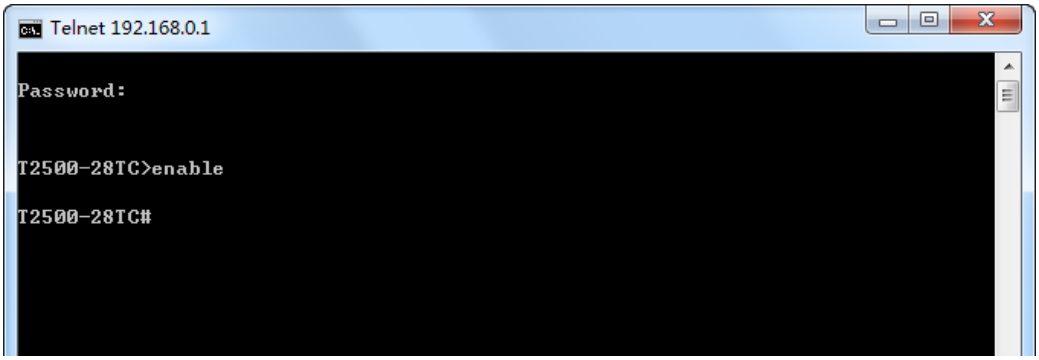


Figure 1-11 Enter into the Privileged EXEC Mode

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

Note:

You can refer to **Chapter 11 User Management Commands** for detailed commands information of the Telnet connection configuration.

1.1.3 Logon by SSH

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

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

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

Note:

Before SSH login, please follow the steps shown in Figure 1-12 to enable the SSH function through Telnet connection.

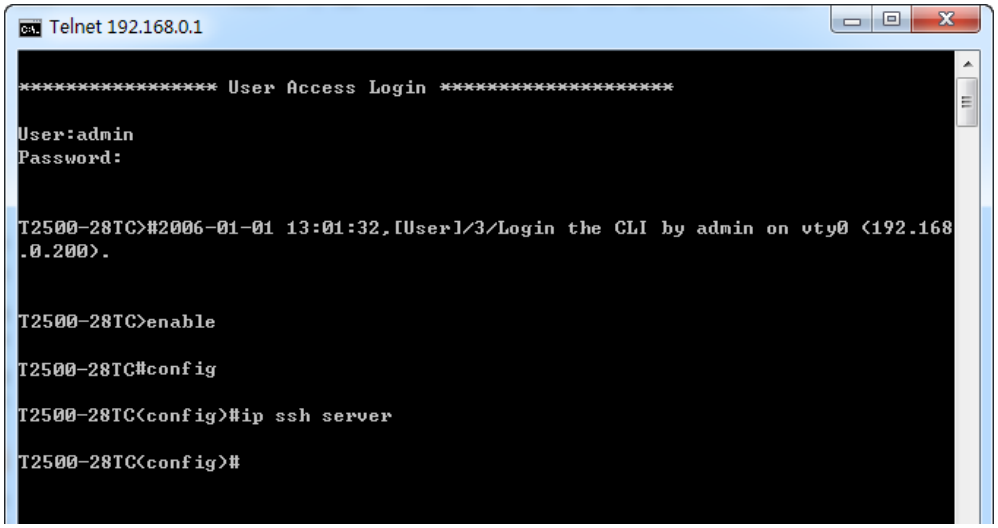


Figure 1-12 Enable SSH function

➢ **Password Authentication Mode**

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

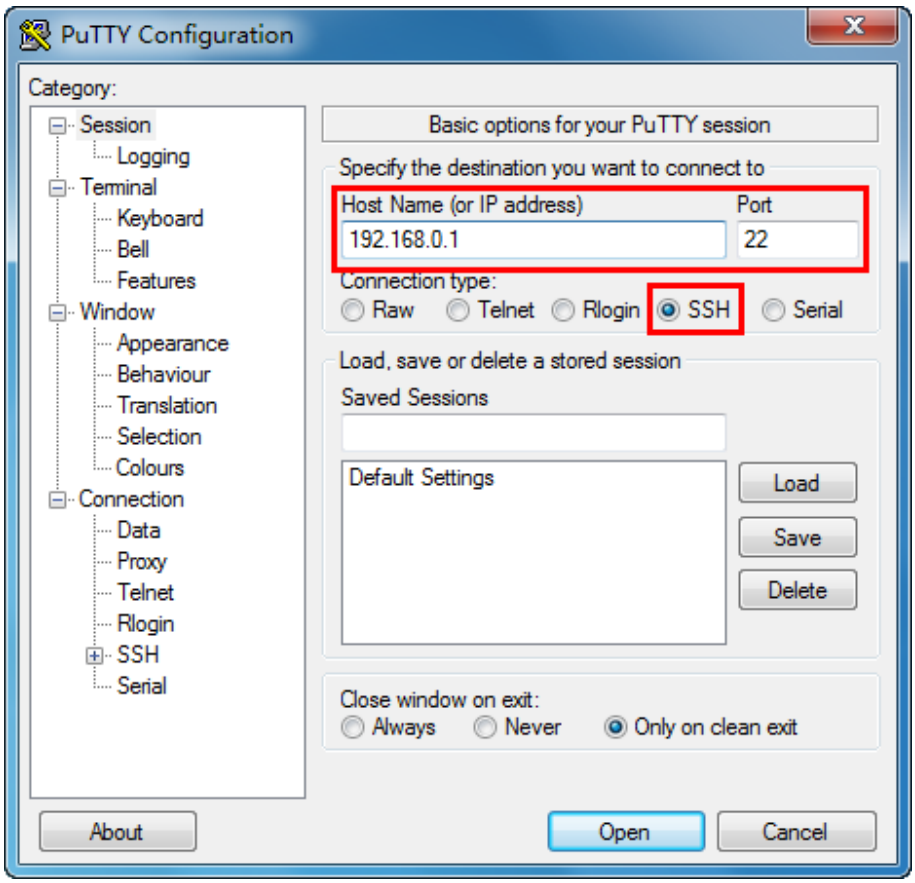


Figure 1-13 SSH Connection Config

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

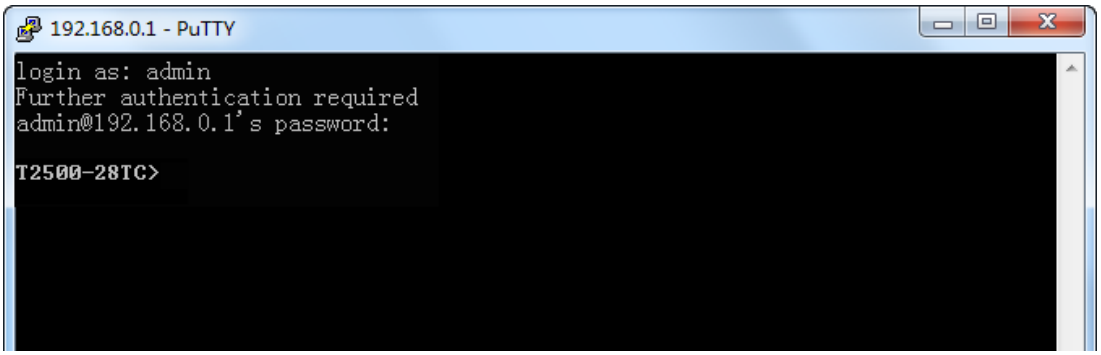


Figure 1-14 Log on the Switch

➢ **Key Authentication Mode**

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

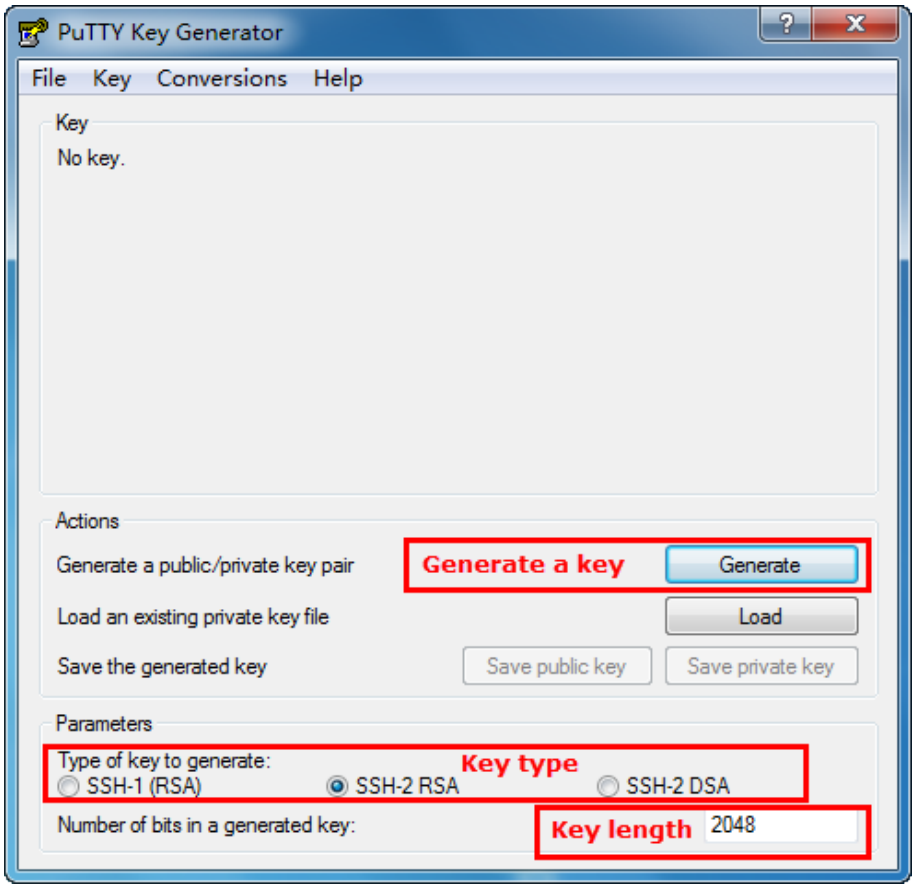


Figure 1-15 Generate SSH Key

Note:

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

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

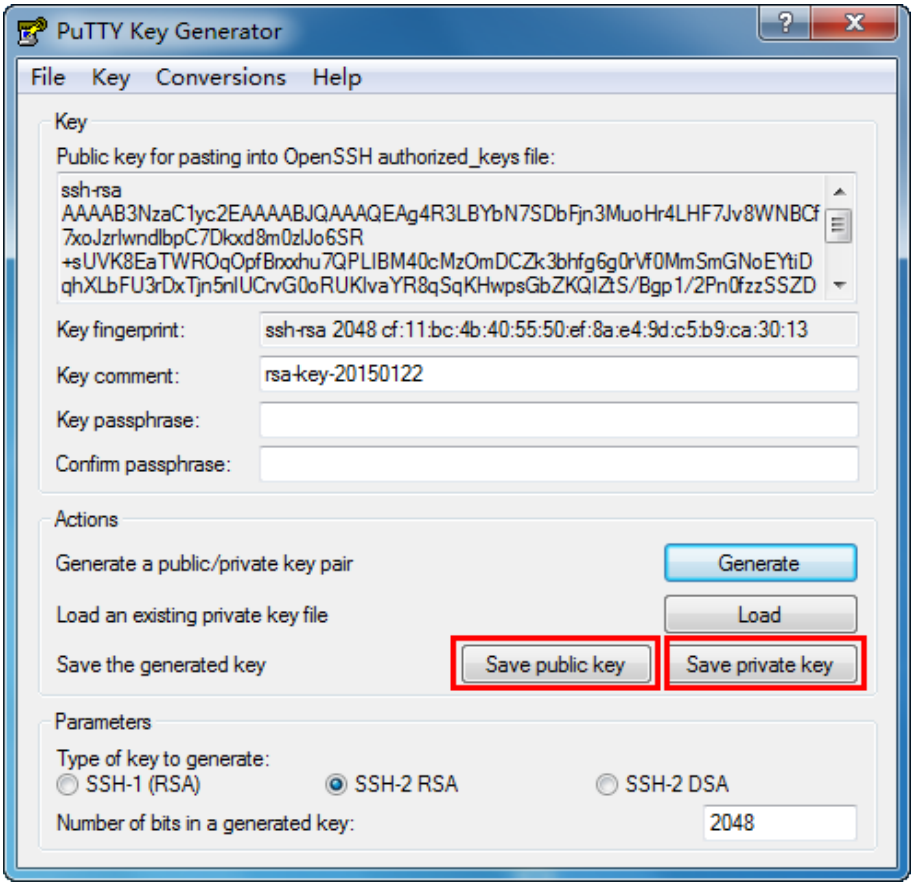


Figure 1-16 Save the Generated Key

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

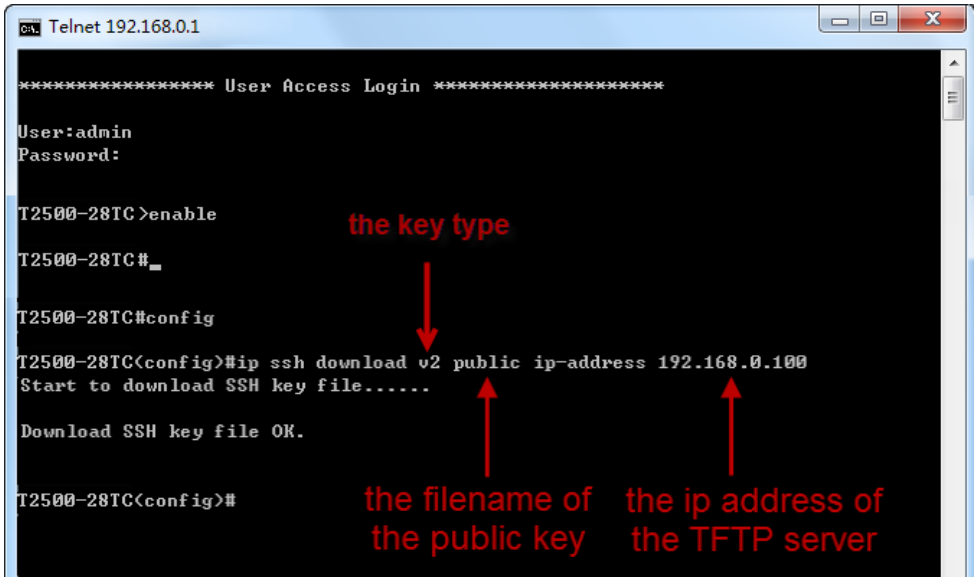


Figure 1-17 Download the Public Key

Note:

1. The key type should accord with the type of the key file.
2. The SSH key downloading can not be interrupted.

4. After the public key is downloaded, please log on to the interface of PuTTY and enter the IP address for login.

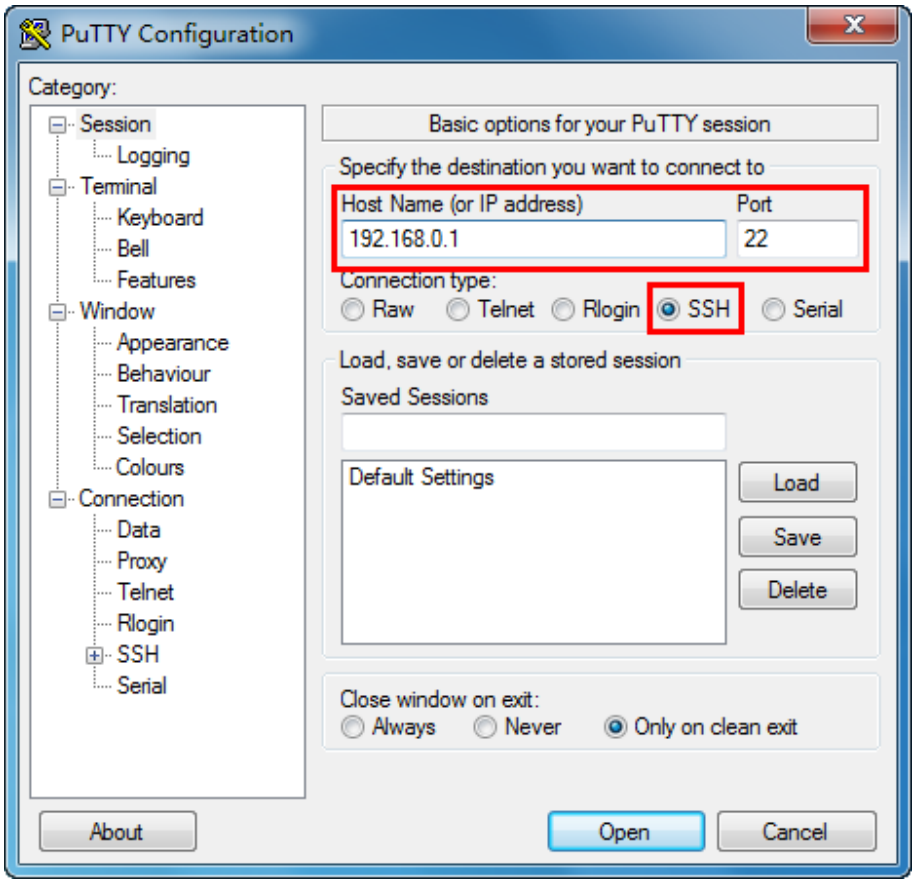


Figure 1-18 SSH Connection Config

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

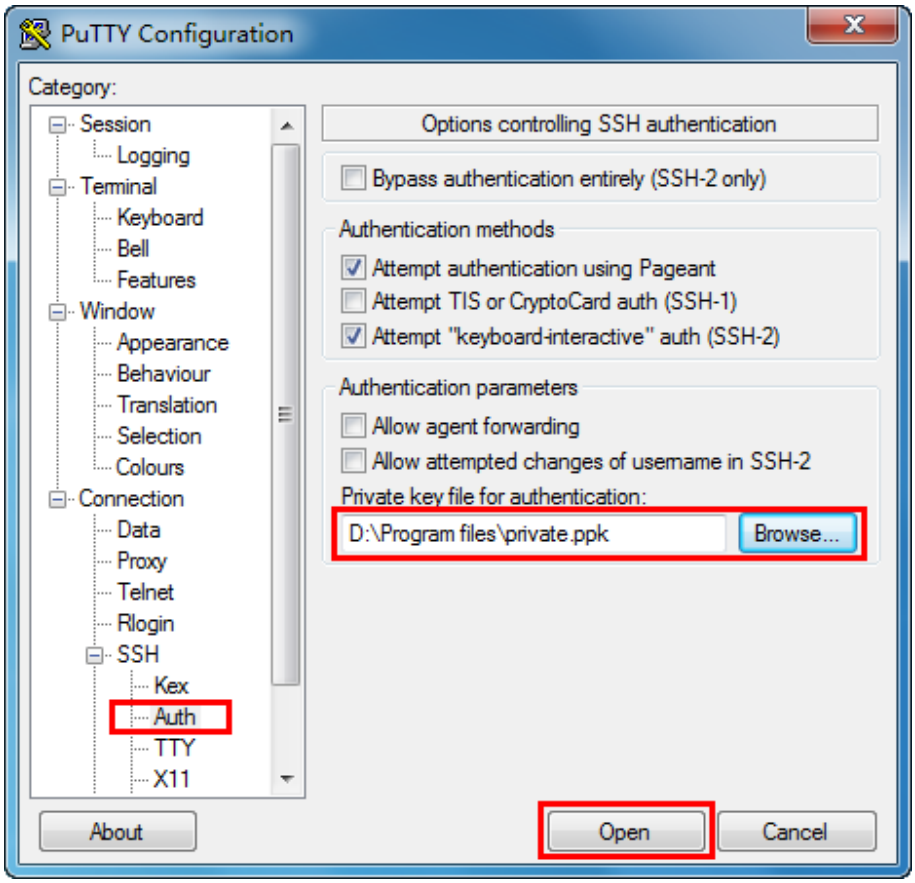


Figure 1-19 Download the Private Key

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

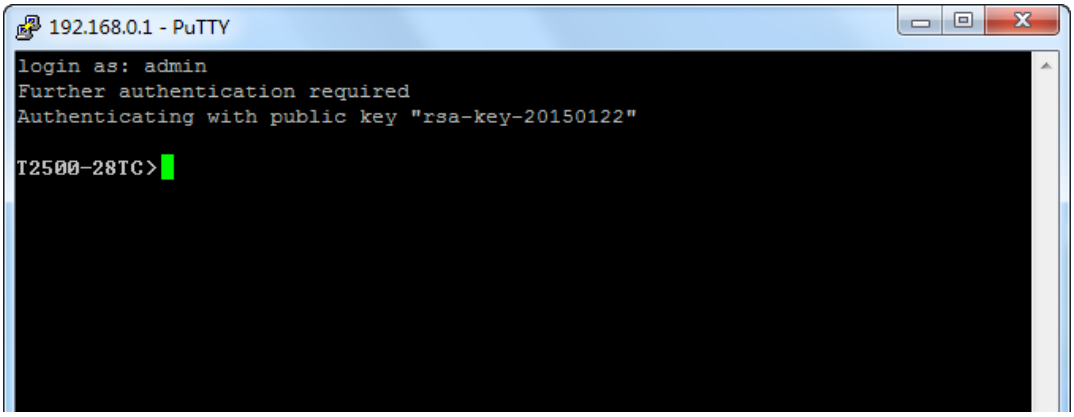
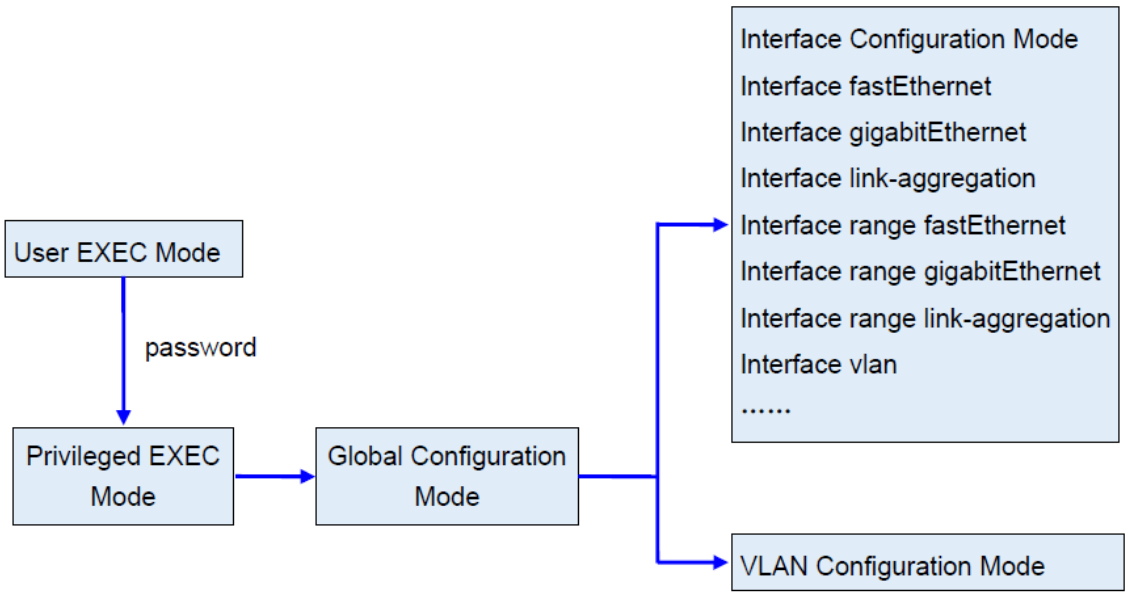


Figure 1-20 Log on the Switch

1.2 CLI Command Modes

The CLI is divided into different command modes: User EXEC Mode, Privileged EXEC Mode, Global Configuration Mode, Interface Configuration Mode and VLAN 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.	**T2500-28TC>**	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.	**T2500-28TC #**	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.	**T2500-28TC(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.	**T2500-28TC(config-if)#** **T2500-28TC(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.	**T2500-28TC(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: 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.

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 logging in by Telnet/SSH. 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:

```
T2500-28TC>enable
Enter password：
T2500-28TC#
```

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 “cipher”.

Command Mode

Global Configuration Mode

Example

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

```
T2500-28TC(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:

```
T2500-28TC#disable

T2500-28TC>
```

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:

```
T2500-28TC#configure

T2500-28TC(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:

```
T2500-28TC(config-if)#exit

T2500-28TC(config)#exit

T2500-28TC#
```

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:

```
T2500-28TC(config-if)#end

T2500-28TC#
```

history

Description

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

Syntax

history

Command Mode

Privileged EXEC Mode and any Configuration Mode

Example

Show the commands you have entered in the current mode:

```
T2500-28TC (config)# history
    1 history
```

history clear

Description

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

Syntax

history clear

Command Mode

Privileged EXEC Mode and any Configuration Mode

Example

Clear the commands you have entered in the current mode:

```
T2500-28TC(config)#history clear
```

Chapter 3 IEEE 802.1Q VLAN Commands

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

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:

```
T2500-28TC(config)#vlan 2-10,100
```

Delete VLAN 2:

```
T2500-28TC(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:

```
T2500-28TC(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”:

T2500-28TC(config)#vlan 2

T2500-28TC(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”:

T2500-28TC(config)#interface fastEthernet 1/0/3

T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/3

T2500-28TC(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* }

no switchport trunk 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.

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:

T2500-28TC(config)#interface fastEthernet 1/0/2

T2500-28TC(config-if)#switchport mode trunk

T2500-28TC(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”:

T2500-28TC(config)#interface fastEthernet 1/0/4

T2500-28TC(config-if)#switchport mode general

T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/3
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/3

T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(config)#interface gigabitEthernet 1/0/25
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/3
T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/3
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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** *descript*]

no voice vlan mac-address *mac-addr*

Parameter

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

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

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

Command Mode

Global Configuration Mode

Example

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

T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/3

T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/3

T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

T2500-28TC(config)#show voice vlan switchport fastEthernet 1/0/1

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

T2500-28TC(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:

T2500-28TC(config)#vlan 3

T2500-28TC(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:

T2500-28TC(config)#vlan 4

T2500-28TC(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:

T2500-28TC(config)#vlan 3

T2500-28TC(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”:

T2500-28TC(config)#interface fastEthernet 1/0/3

T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/3

T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/3

T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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 gigabitEhternet)

Example

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

T2500-28TC(config)#interface range fastEthernet 1/0/2-6

T2500-28TC(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 gigabitEhternet)

Example

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

T2500-28TC(config)#interface range fastEthernet 1/0/2-6

T2500-28TC(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 gigabitEhternet)

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:

T2500-28TC(config)#interface fastEthernet 1/0/6

T2500-28TC(config-if)#gvrp timer leaveall 2000

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(config)#show gvrp interface fastEthernet 1/0/1

Display the GVRP configuration information of all Ethernet ports:

T2500-28TC(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 gigabitEhternet)

Example

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

T2500-28TC(config)#interface range fastEthernet 1/0/2-4

T2500-28TC(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”:

T2500-28TC(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:

T2500-28TC(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 gigabitEhternet)

Example

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

T2500-28TC(config)#interface fastEthernet 1/0/1

T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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 "cipher".

Command Mode

Global Configuration Mode

Example

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

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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* [**secret** {simple | cipher}]

no password

Parameter

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

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

Command Mode

Line Configuration Mode

Example

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

T2500-28TC(config)#line console 0

T2500-28TC(config-line)#password tplink

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

T2500-28TC(config)#line vty 0 5

T2500-28TC(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:

```
T2500-28TC(config)#line console 0
T2500-28TC(config-line)#login
```

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

```
T2500-28TC(config)#line vty 0 5
T2500-28TC(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:

```
T2500-28TC(config)#line vty 0 5
T2500-28TC(config-line)#login local
```

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

```
T2500-28TC(config)#line console 0
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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

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

Example

Enable the Option 82 function of DHCP Snooping for port 2:

```
T2500-28TC(config)#interface fastEthernet 1/0/2
T2500-28TC(config-if)#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

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

Example

For port 2, replace the Option 82 field of the packets with the switch defined one and then send out:

T2500-28TC(config)#interface fastEthernet 1/0/2

T2500-28TC(config-if)#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

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

Example

For port 2, enable and configure the customized sub-option Remote ID for the Option 82 as tplink:

T2500-28TC(config)#interface fastEthernet 1/0/2

T2500-28TC(config-if)#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

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

Example

For port 2, enable and configure the customized sub-option Circuit ID for the Option 82 as “tplink”:

T2500-28TC(config)#interface fastEthernet 1/0/2

T2500-28TC(config-if)#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:

T2500-28TC(config)#interface fastEthernet 1/0/2

T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/2

T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/2
T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/2
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC#show ip dhcp snooping
```

show ip dhcp snooping information interface

Description

The **show ip dhcp snooping information interface** command is used to display the Option 82 configuration status of a desired Fast/Gigabit Ethernet ports or of all Ethernet ports.

Syntax

show ip dhcp snooping information 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 Option 82 configuration status of all Ethernet ports:

T2500-28TC#show ip dhcp snooping information interface

Display the Option 82 configuration status of Fast Ethernet port 5:

T2500-28TC#show ip dhcp snooping information interface fastEthernet 1/0/5

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:

T2500-28TC#show ip dhcp snooping interface

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

T2500-28TC#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:

```
T2500-28TC(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 gigabitEhternet)

Example

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

T2500-28TC(config)#interface range fastEthernet 1/0/2-5

T2500-28TC(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 gigabitEhternet)

Example

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

T2500-28TC(config)#interface range fastEthernet 1/0/2-6

T2500-28TC(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 gigabitEhternet)

Example

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

```
T2500-28TC(config)#interface fastEthernet 1/0/5
T2500-28TC(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 gigabitEhternet)

Example

Restore Fast Ethernet port 5 to the ARP transmit status:

```
T2500-28TC(config)#interface fastEthernet 1/0/5
T2500-28TC(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:

```
T2500-28TC(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:

T2500-28TC(config)#show ip arp inspection interface fastEthernet 1/0/1

Display the configuration of all Ethernet ports:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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 gigabitEhternet）

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:

T2500-28TC(config)#interface range fastEthernet 1/0/5-10

T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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 | ping-of-death }

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

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.

ping-of-death—— Ping of Death attack

Command Mode

Global Configuration Mode

Example

Enable the DoS Defend Type named Land attack:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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. An 802.1X system include three entities: supplicant, authenticator and authentication server.

- Supplicant: the device that requests access to the LAN.
- Authentication server: performs the actual authentication of the supplicant. It validates the identity of the supplicant and notifies the authenticator whether or not the supplicant is authorized to access the LAN.
- Authenticator: controls the physical access to the network based on the authentication status of the supplicant. It is usually an 802.1X-supported network device, such as this TP-Link switch. It acts as an intermediary (proxy) between the supplicant and the authentication server, requesting identity information from the supplicant, verifying that information with the authentication server, and relaying a response to the supplicant.

This chapter handles with the authentication process between the supplicant and the switch. To realize the authentication and accounting function, you should also enbable the AAA function and configure the RADIUS server. Go to Chapter 38 AAA Commands for more details.

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:

```
T2500-28TC(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”:

```
T2500-28TC(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:

```
T2500-28TC(config)#dot1x guest-vlan 5
```

dot1x accounting

Description

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

Syntax

dot1x accounting

no dot1x accounting

Command Mode

Global Configuration Mode

Example

Enable the 802.1X accounting function globally:

```
T2500-28TC(config)# dot1x accounting
```

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:

```
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/1
T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/2
T2500-28TC(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”:

```
T2500-28TC(config)#interface gigabitEthernet 1/0/25
T2500-28TC(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”:

T2500-28TC(config)#interface gigabitEthernet 1/0/25

T2500-28TC(config-if)#dot1x port-method port-based

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:

T2500-28TC(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:

T2500-28TC(config)#show dot1x interface gigabitEthernet 1/0/25

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

T2500-28TC(config)#show dot1x interface

Chapter 17 PPPoE Circuit-ID Insertion Commands

The PPPoE Circuit-ID Insertion feature provides a way to extract a Circuit-ID as an identifier for the authentication, authorization, and accounting (AAA) access requests on an Ethernet interface. When enabled, the switch attaches a tag to the PPPoE discovery packets, which is called the PPPoE Vendor-Specific tag and it contains a unique line identifier. The BRAS receives the tagged packet, decodes the tag, and uses the Circuit-ID field of that tag as a NAS-Port-ID attribute in the RADIUS server for PPP authentication and AAA (authentication, authorization, and accounting) access requests. The switch will remove the Circuit-ID tag from the received PPPoE Active Discovery Offer and Session-confirmation packets from the BRAS.

pppoe circuit-id(global)

Description

The **pppoe circuit-id** command is used to enable the PPPoE Circuit-ID Insertion function globally. To disable the PPPoE Circuit-ID Insertion function, please use **no pppoe circuit-id** command.

Syntax

pppoe circuit-id

no pppoe circuit-id

Command Mode

Global Configuration Mode

Example

Enable the PPPoE Circuit-ID Insertion function:

```
T2500-28TC(config)# pppoe circuit-id
```

pppoe circuit-id(interface)

Description

The **pppoe circuit-id** command is used to enable the PPPoE Circuit-ID Insertion function for a specified port. To disable the PPPoE Circuit-ID Insertion function on a specified port, please use **no pppoe circuit-id** command.

Syntax

pppoe circuit-id

no pppoe circuit-id

Command Mode

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

Example

Enable the PPPoE Circuit-ID Insertion function for the Fast Ethernet port 1/0/1:

T2500-28TC (config)# interface fastEthernet 1/0/1

T2500-28TC (config-if)# pppoe circuit-id

pppoe circuit-id type

Description

The **pppoe circuit-id type** command is used to configure the type of PPPoE Circuit-ID for a specified port. By default, the PPPoE Circuit-ID type is “ip”.

Syntax

pppoe circuit-id type { mac | ip | udf [*UDF Value*] }

Parameter

mac | ip | udf —— The type of PPPoE Circuit-ID for the port.

mac: The MAC address of the switch will be used to encode the Circuit-ID option.

ip: The IP address of the switch will be used to encode the Circuit-ID option. This is the default value.

udf: A user specified string with the maximum length of 32 characters will be used to encode the Circuit-ID option.

UDF Value —— The value of UDF. The maximum length is 32 characters.

Command Mode

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

Example

Configure the type of PPPoE Circuit-ID as “mac” for the Fast Ethernet port 1/0/1:

```
T2500-28TC (config)# interface fastEthernet 1/0/1
T2500-28TC (config-if)# pppoe circuit-id type mac
```

show pppoe circuit-id global

Description

The **show pppoe circuit-id global** command is used to display the global configuration of PPPoE Circuit-ID Insertion function.

Syntax

show pppoe circuit-id global

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration of PPPoE Circuit-ID Insertion function globally:

```
T2500-28TC # show pppoe circuit-id global
```

show pppoe circuit-id interface

Description

The **show pppoe circuit-id interface** command is used to display all ports’ or the specified port’s configuration information of PPPoE Circuit-ID Insertion function.

Syntax

show pppoe circuit-id 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 information of PPPoE Circuit-ID Insertion function of all Ethernet ports:

T2500-28TC# show pppoe circuit-id interface

Display the configuration of PPPoE Circuit-ID Insertion function of the Fast Ethernet port 1/0/1 :

T2500-28TC# show pppoe interface fastEthernet 1/0/1

Chapter 18 System Log Commands

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

logging buffer

Description

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

Syntax

logging buffer *level*

no logging buffer

Parameter

level —— Severity level of the log information output to each channel. There are 8 severity levels marked with values 0-7. The smaller value has the higher priority. Only the log with the same or smaller severity level value will be output. By default, it is 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:

```
T2500-28TC(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 disable the logging file flash funtion, 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

no logging file flash

Command Mode

Global Configuration Mode

Example

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

T2500-28TC(config)#logging file flash 7

logging file flash frequency

Description

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

Syntax

logging file flash frequency { **periodic** *periodic* | **immediate** }

no logging file flash frequency

Parameter

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

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

Command Mode

Global Configuration Mode

Example

Specify the log file synchronization frequency as 10 hours:

```
T2500-28TC(config)# logging file flash frequency periodic10
```

logging file flash level

Description

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

Syntax

logging file flash level *level*

no logging file flash level

Parameter

level —— Severity level of the log information. 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:

```
T2500-28TC(config)#logging file flash level 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:

T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

T2500-28TC(config)#show logging flash level 3

Chapter 19 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:

```
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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. Both IPv4 and IPv6 addresses are supported, for example 192.168.0.1 or fe80::1234.

Command Mode

Global Configuration Mode

Example

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

T2500-28TC(config)#ip ssh download v1 ssh-key **ip-address** 192.168.0.148

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

T2500-28TC(config)# ip ssh download v1 ssh-key **ip-address** fe80::1234

show ip ssh

Description

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

Syntax

show ip ssh

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the global configuration of SSH:

```
T2500-28TC(config)#show ip ssh
```

Chapter 20 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:

```
T2500-28TC(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. Both IPv4 and IPv6 addresses are supported, for example 192.168.0.1 or fe80::1234.

Command Mode

Global Configuration Mode

Example

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

T2500-28TC(config)#ip http secure-server download certificate ssl-cert **ip-address** 192.168.0.146

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

T2500-28TC(config)# ip http secure-server download certificate ssl-cert **ip-address** fe80::1234

ip http secure-server download key

Description

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

Syntax

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

Parameter

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

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

Command Mode

Global Configuration Mode

Example

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

T2500-28TC(config)# ip http secure-server download key ssl-key **ip-address** 192.168.0.146

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

T2500-28TC(config)# ip http secure-server download key ssl-key **ip-address** fe80::1234

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:

T2500-28TC(config)#show ip http secure-server

Chapter 21 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:

T2500-28TC(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:

T2500-28TC(config)#no mac address-table static vid 1

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

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/1

T2500-28TC(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:

T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(config)#show mac address-table max-mac-count interface gigabitEthernet
```

Display the security configuration of Gigabit Ethernet port 25:

```
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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 00:00:00:23:00:00:

```
T2500-28TC(config)#show mac address-table address 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:

```
T2500-28TC(config)#show mac address-table vlan 1
```

Chapter 22 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:

T2500-28TC(config)#system-time manual 02/14/2012-12:30:00

system-time ntp

Description

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

Syntax

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

Parameter

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

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

UTC-12:00 —— 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 Novosibrisk, 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, Welington.

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:

T2500-28TC(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:

T2500-28TC(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:

```
T2500-28TC(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*} {*eweek*} {*eday*} {*emonth*} {*etime*} [*offset*]

Parameter

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

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

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

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

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

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

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

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

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

Command Mode

Global Configuration Mode

Example

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

T2500-28TC(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 T2500-28TC.

Command Mode

Global Configuration Mode

Example

Configure the system name as TPLINK:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

```
T2500-28TC(config)# interface vlan 1
T2500-28TC(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:

```
T2500-28TC(config)# interface vlan 1
T2500-28TC(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:

```
T2500-28TC(config)# interface vlan 1
T2500-28TC(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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#copy running-config startup-config
```

copy startup-config tftp

Description

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

Syntax

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

Parameter

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

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

Command Mode

Privileged EXEC Mode

Example

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

T2500-28TC# copy startup-config tftp ip-address 192.168.0.148 **filename** config

Backup the configuration files to TFTP server with the IP fe80::1234 and name this file config:

T2500-28TC# copy startup-config tftp ip-address fe80::1234 **filename** config

copy tftp startup-config

Description

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

Syntax

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

Parameter

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

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

Command Mode

Privileged EXEC Mode

Example

Download the configuration file named as config to the switch from TFTP server with the IP 192.168.0.148:

T2500-28TC# copy tftp startup-config ip-address 192.168.0.148 **filename** config

Download the configuration file named as config to the switch from TFTP server with the IP fe80::1234

T2500-28TC# copy tftp startup-config ip-address fe80::1234 **filename** config

firmware upgrade

Description

The **firmware upgrade** command is used to upgrade the switch system file via the TFTP server.

Syntax

firmware upgrade ip-address *ip-addr* **filename** *name*

Parameter

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

name —— Specify the name for the firmware file.

Command Mode

Privileged EXEC Mode

Example

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

T2500-28TC# firmware upgrade ip-address 192.168.0.148 **filename** firmware.bin

Upgrade the switch system file named as firmware.bin via the TFTP server with the IP address fe80::1234

T2500-28TC# firmware upgrade ip-address fe80::1234 **filename** firmware.bin

ping

Description

The **ping** command is used to test the connectivity between the switch and one node of the network.

Syntax

ping [ip | ipv6] { *ip_addr* } [**-n** *count*] [**-l** *count*] [**-i** *count*]

Parameter

ip —— The type of the IP address for ping test should be IPv4.

ipv6 —— The type of the IP address for ping test should be IPv6.

ip_addr —— The IP address of the destination node for ping test. If the parameter ip/ipv6 is not selected, both IPv4 and IPv6 addresses are supported, for example 192.168.0.100 or fe80::1234.

-n *count* —— The amount of times to send test data during Ping testing. It ranges from 1 to 10. By default, this value is 4.

-l *count* —— The size of the sending data during ping testing. It ranges from 1 to 1024 bytes. By default, this value is 64.

-i *count* —— The interval to send ICMP request packets. It ranges from 100 to 1000 milliseconds. By default, this value is 1000.

Command Mode

User EXEC Mode and Privileged EXEC Mode

Example

To test the connectivity between the switch and the network device with the IP 192.168.0.131, please specify the *count* (-l) as 512 bytes and *count* (-i) as 1000 milliseconds. If there is not any response after 8 times' Ping test, the connection between the switch and the network device is failed to establish:

T2500-28TC# ping 192.168.0.131 **–n** 8 **–l** 512

To test the connectivity between the switch and the network device with the IP fe80::1234, please specify the *count* (-l) as 512 bytes and *count* (-i) as 1000

milliseconds. If there is not any response after 8 times' Ping test, the connection between the switch and the network device is failed to establish:

T2500-28TC# ping fe80::1234 **–n** 8 **–l** 512

tracert

Description

The **tracert** command is used to test the connectivity of the gateways during its journey from the source to destination of the test data.

Syntax

tracert [ip | ipv6] *ip_addr* [*maxHops*]

Parameter

ip —— The type of the IP address for tracert test should be IPv4.

ipv6 —— The type of the IP address for tracert test should be IPv6.

ip_addr —— The IP address of the destination device. If the parameter ip/ipv6 is not selected, both IPv4 and IPv6 addresses are supported, for example 192.168.0.100 or fe80::1234.

maxHops —— The maximum number of the route hops the test data can pass though. It ranges from 1 to 30. By default, this value is 4.

Command Mode

User EXEC Mode and Privileged EXEC Mode

Example

Test the connectivity between the switch and the network device with the IP 192.168.0.131. If the destination device has not been found after 20 *maxHops*, the connection between the switch and the destination device is failed to establish:

T2500-28TC# tracert 192.168.0.131 20

Test the connectivity between the switch and the network device with the IP fe80::1234. If the destination device has not been found after 20 *maxHops*, the connection between the switch and the destination device is failed to establish:

T2500-28TC# tracert fe80::1234 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:

T2500-28TC# loopback interface gigabitEthernet 1/0/25 internal

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

T2500-28TC# 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:

T2500-28TC#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

```
T2500-28TC#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:

```
T2500-28TC#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, serial number, system time and running time.

Syntax

show system-info

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the system information:

```
T2500-28TC#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:

```
T2500-28TC#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:

T2500-28TC#show cable-diagnostics interface gigabitEthernet 1/0/25

Chapter 23 IPv6 Address Configuration Commands

The IPv6 address configuration commands are provided in the Interface VLAN Mode. Type **enable** →**configure**→**interface vlan** {*vlan-id*} to enter the Interface Configuration Mode of the management VLAN. By default the management VLAN is VLAN1. You can use the command **ip management-vlan** {*vlan-id*} in the Global Configuration Mode to configure the management VLAN.

ipv6 enable

Description

This command is used to enable the IPv6 function globally. The IPv6 function should be enabled before the IPv6 address configuration management. By default it is enabled. If the IPv6 function is disabled, the corresponding IPv6 netstack and IPv6-based modules will be invalid, for example SSHv6, SSLv6, TFTPv6 etc. To disable the IPv6 function, please use **no ipv6 enable** command.

Syntax

ipv6 enable
no ipv6 enable

Command Mode

Interface Configuration Mode（interface vlan）

Example

Enable the IPv6 function when the management VLAN of the switch is VLAN1：

```
T2500-28TC(config)# interface vlan 1
T2500-28TC(config-if)# ipv6 enable
```

ipv6 address autoconfig

Description

This command is used to enable the automatic configuration of the ipv6 link-local address. The switch has only one ipv6 link-local address, which can be configured automatically or manually. The general ipv6 link-local address has the prefix as fe80::/10. IPv6 routers cannot forward packets that have link-local source or destination addresses to other links. The autuconfigured ipv6 link-local address is in EUI-64 format. To verify the uniqueness of the link-local address, the manually

configured ipv6 link-local address will be deleted when the autoconfigured ipv6 link-local address takes effect.

Syntax

ipv6 address autoconfig

Configuration Mode

Interface Configuration Mode (interface vlan)

Example

Enable the automatic configuration of the ipv6 link-local address when the management VLAN of the switch is VLAN1:

```
T2500-28TC(config)# interface vlan 1
T2500-28TC(config-if)# ipv6 address autoconfig
```

ipv6 address link-local

Description

The **ipv6 address link-local** command is used to configure the system ipv6 link-local address manually. To delete the configured link-local address, please use **no ipv6 address link-local** command.

Syntax

ipv6 address *ipv6-addr* **link-local**

no ipv6 address *ipv6-addr* **link-local**

Parameter

ipv6-addr —— The link-local address of the switch. It should be a standardized IPv6 address with the prefix fe80::/10, otherwise this command will be invalid.

Configuration Mode

Interface Configuration Mode (Interface vlan)

Example

Configure the link-local address as fe80::1234 when the management VLAN of the switch is VLAN1:

```
T2500-28TC(config)# interface vlan 1
T2500-28TC(config-if)# ipv6 address fe80::1234 link-local
```

ipv6 address dhcp

Description

The **ipv6 address dhcp** command is used to enable the DHCPv6 Client function. When this function is enabled, the switch will try to obtain IP from DHCPv6 server. To delete the allocated IP from DHCPv6 server and disable the DHCPv6 Client function, please use **no ipv6 address dhcp** command.

Syntax

ipv6 address dhcp

no ipv6 address dhcp

Configuration Mode

Interface Configuration Mode (interface vlan)

Example

Enable the DHCP Client function when the management VLAN of the switch is VLAN1:

```
T2500-28TC(config)# interface vlan 1
T2500-28TC(config-if)# ipv6 address dhcp
```

ipv6 address ra

Description

This command is used to configure the switch's global IPv6 address according to the address prefix and other configuration parameters from its received RA(Router Advertisement) message. To disable this function, please use **no ipv6 address ra** command.

Syntax

ipv6 address ra

no ipv6 address ra

Configuration Mode

Interface Configuration Mode (interface vlan)

Example

Enable the automatic ipv6 address configuration function to obtain IPv6 address through the RA message when the management VLAN of the switch is VLAN1:

```
T2500-28TC(config)# interface vlan 1
T2500-28TC(config-if)# ipv6 address ra
```

ipv6 address eui-64

Description

This command is used to manually configure a global IPv6 address with an extended unique identifier (EUI) in the low-order 64 bits on the interface. Specify only the network prefix. The last 64 bits are automatically computed from the switch MAC address. To remove an EUI-64 IPv6 address from the interface, please use the **no ipv6 address eui-64** command.

Syntax

ipv6 address *ipv6-addr* **eui-64**

no ipv6 address *ipv6-addr* **eui-64**

Parameter

ipv6-addr —— Global IPv6 address with 64 bits network prefix, for example 3ffe::1/64.

Configuration Mode

Interface Configuration Mode (interface vlan)

Example

Configure an EUI-64 global address on the interface with the network prefix 3ffe::1/64

```
T2500-28TC(config)# interface vlan 1
T2500-28TC(config-if)# ipv6 address 3ffe::1/64 eui-64
```

ipv6 address

Description

This command is used to manually configure a global IPv6 address on the interface. To remove a global IPv6 address from the interface, please use **no ipv6 address** command.

Syntax

ipv6 address *ipv6-addr*

no ipv6 address *ipv6-addr*

Parameter

ipv6-addr —— Global IPv6 address with network prefix, for example 3ffe::1/64.

Configuration Mode

Interface Configuration Mode (interface vlan)

Example

Configure the global address 3001::1/64 on the interface:

```
T2500-28TC(config)# interface vlan 1
T2500-28TC(config-if)# ipv6 address 3001::1/64
```

show ipv6 interface vlan

Description

This command is used to display the configured ipv6 information of the management vlan,interface, including ipv6 function status, link-local address and global address, ipv6 multicast groups etc.

Syntax

show ipv6 interface vlan *vlan-id*

Parameter

vlan-id—— The VLAN ID of the management VLAN.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the ipv6 information of the management vlan interface:

```
T2500-28TC(config)# show ipv6 interface vlan 1
```

Chapter 24 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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/5

T2500-28TC(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:

T2500-28TC(config)#interface gigabitEthernet 1/0/25

T2500-28TC(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:

T2500-28TC(config)#interface gigabitEthernet 1/0/25

T2500-28TC(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":

T2500-28TC(config)# interface gigabitEthernet 1/0/28

T2500-28TC(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:

```
T2500-28TC(config)#interface gigabitEthernet 1/0/25
T2500-28TC(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:

```
T2500-28TC(config)#interface gigabitEthernet 1/0/25
T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/5

T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/5

```
T2500-28TC(config-if)#storm-control multicast
```

storm-control unicast

Description

The **storm-control unicast** command is used to enbale 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:

```
T2500-28TC(config)#interface fastEthernet 1/0/5
T2500-28TC(config-if)#storm-control unicast
```

bandwidth

Description

The **bandwidth** command is used to configure the bandwidth limit for an Ethernet port. To disable the bandwidth limit, please use **no bandwidth** command.

Syntax

bandwidth { [**ingress** *ingress-rate*] [**egress** *egress-rate*] }

no bandwidth { all | ingress | egress }

Parameter

ingress-rate ——Specify the bandwidth for receiving packets. Range: 1-100000 for the megaport, 1-1000000 for the gigaport.

egress-rate —— Specify the bandwidth for sending packets. Range:1-100000 for the megaport, 1- 1000000 for the gigaport.

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:

```
T2500-28TC(config)#interface fastEthernet 1/0/5
T2500-28TC(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

```
T2500-28TC(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:

```
T2500-28TC(config)#show interface status
```

Display the connective-status of Fast Ethernet port 1:

```
T2500-28TC(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:

```
T2500-28TC(config)#show interface counters
```

Display the statistic information of Gigabit Ethernet port 25:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC#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:

```
T2500-28TC(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:

```
T2500-28TC(config)#show storm-control interface gigabitEthernet 1/0/25
```

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

T2500-28TC(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:

T2500-28TC(config)#show bandwidth interface gigabitEthernet 1/0/25

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

T2500-28TC(config)#show bandwidth interface range fastEthernet 1/0/2,1/0/6-8

Chapter 25 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:

```
T2500-28TC(config)#interface fastEthernet 1/0/5
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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.:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(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:

T2500-28TC#show qos interface fastEthernet 1/0/5

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

T2500-28TC#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:

T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#show qos status
```

Chapter 26 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:

```
T2500-28TC(config)#monitor session 1 destination interface fastEthernet 1/0/1
```

Delete the monitor session 1:

```
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(config)#show monitor session 1

Chapter 27 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:

T2500-28TC(config)#interface range gigabitEthernet 1/0/28

T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/2

T2500-28TC(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:

T2500-28TC#show port isolation interface fastEthernet 1/0/3

Display the forward-list of all Ethernet ports:

T2500-28TC#show port isolation interface

Chapter 28 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:

```
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(config)#interface range gigabitEthernet 1/0/25-27

T2500-28TC(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:

T2500-28TC(config)#interface gigabitEthernet 1/0/25

T2500-28TC(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:

```
T2500-28TC(config)#interface gigabitEthernet 1/0/25
T2500-28TC(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:

```
T2500-28TC#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:

T2500-28TC#show loopback-detection interface fastEthernet 1/0/5

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

T2500-28TC#show loopback-detection interface

Chapter 29 DDM Commands

The DDM (Digital Diagnostic Monitoring) function allows the user to monitor the status of the SFP modules inserted into the SFP ports on the switch. The user can choose to shut down the monitoring SFP port automatically when specified parameter exceeds the alarm threshold or warning threshold. The monitoring parameters include: Temperature, Voltage, Bias Current, Tx Power and Rx Power.

ddm state enable

Description

The **ddm state enable** command is used to enable the DDM function on the specified SFP port.

Use the **no ddm state enable** command to disable the DDM function on this port.

Syntax

ddm state enable

no ddm state enable

Default Setting

Enabled on all the SFP ports.

Command Mode

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

Example

Enable DDM function on port 1/0/25:

```
T2500-28TC(config)#interface gigabitEthernet 1/0/25
T2500-28TC(config-if)#ddm state enable
```

ddm shutdown

Description

The **ddm shutdown** command is used to configure whether to shut down the port when an exceeding alarm threshold or warning threshold event is encountered.

Syntax

ddm shutdown { none | warning | alarm }

Parameter

none —— The port will never be shut down regardless of the exceeding alarm threshold and warning threshold events.

warning —— Shut down the port when an exceeding warning threshold event is encountered.

alarm —— Shut down the port when an exceeding alarm threshold event is encountered.

Default Setting

none, which means the port will never be shut down regardless of the exceeding alarm threshold and warning threshold events.

Command Mode

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

Example

Shut down the port 1/0/25 when an exceeding warning threshold event is encountered:

```
T2500-28TC(config)#interface gigabitEthernet 1/0/25
T2500-28TC(config-if)#ddm shutdown warning
```

ddm temperature_threshold

Description

The **ddm temperature_threshold** command is used to configure the threshold of the DDM temperature value.

Syntax

ddm temperature_threshold { high_alarm | high_warning | low_alarm | low_warning } *value*

Parameter

high_alarm —— Specify the highest threshold for the alarm. When the operating parameter rises above the value hereinafter, action associated with the alarm will be taken.

high_warning —— Specify the lowest threshold for the alarm. When the operating parameter falls below the value hereinafter, action associated with the alarm will be taken.

low_alarm —— Specify the highest threshold for the warning. When the operating parameter rises above the value hereinafter, action associated with the warning will be taken.

low_warning —— Specify the lowest threshold for the warning. When the operating parameter falls below the value hereinafter, action associated with the warning will be taken.

value —— Enter the threshold value in Celsius.

Default Setting

None.

Command Mode

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

Example

Configure the high_alarm threshold of DDM temperature on the port 1/0/25 as 5:

T2500-28TC(config)#interface gigabitEthernet 1/0/25

T2500-28TC(config-if)#ddm temperature_threshold high_alarm 5

ddm voltage_threshold

Description

The **ddm voltage_threshold** command is used to configure the threshold of the DDM voltage value.

Syntax

ddm voltage_threshold { high_alarm | high_warning | low_alarm | low_warning } *value*

Parameter

high_alarm —— Specify the highest threshold for the alarm. When the operating parameter rises above the value hereinafter, action associated with the alarm will be taken.

high_warning —— Specify the lowest threshold for the alarm. When the operating parameter falls below the value hereinafter, action associated with the alarm will be taken.

low_alarm —— Specify the highest threshold for the warning. When the operating parameter rises above the value hereinafter, action associated with the warning will be taken.

low_warning —— Specify the lowest threshold for the warning. When the operating parameter falls below the value hereinafter, action associated with the warning will be taken.

value —— Enter the threshold value in Volt.

Default Setting

None.

Command Mode

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

Example

Configure the high_alarm threshold of DDM voltage on the port 1/0/25 as 5:

T2500-28TC(config)#interface gigabitEthernet 1/0/25

T2500-28TC(config-if)#ddm voltage_threshold high_alarm 5

ddm bias_current_threshold

Description

The **ddm bias_current_threshold** command is used to configure the threshold of the DDM Bias Current value.

Syntax

ddm bias_current_threshold { high_alarm | high_warning | low_alarm | low_warning } *value*

Parameter

high_alarm —— Specify the highest threshold for the alarm. When the operating parameter rises above the value hereinafter, action associated with the alarm will be taken.

high_warning —— Specify the lowest threshold for the alarm. When the operating parameter falls below the value hereinafter, action associated with the alarm will be taken.

low_alarm —— Specify the highest threshold for the warning. When the operating parameter rises above the value hereinafter, action associated with the warning will be taken.

low_warning —— Specify the lowest threshold for the warning. When the operating parameter falls below the value hereinafter, action associated with the warning will be taken.

value —— Enter the threshold value in mA.

Default Setting

None.

Command Mode

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

Example

Configure the high_alarm threshold of DDM Bias Current on the port 1/0/25 as 5:

T2500-28TC(config)#interface gigabitEthernet 1/0/25

T2500-28TC(config-if)#ddm bias_current_threshold high_alarm 5

ddm tx_power_threshold

Description

The **ddm tx_power_threshold** command is used to configure the threshold of the DDM Tx Power value.

Syntax

ddm tx_power_threshold { high_alarm | high_warning | low_alarm | low_warning } *value*

Parameter

high_alarm —— Specify the highest threshold for the alarm. When the operating parameter rises above the value hereinafter, action associated with the alarm will be taken.

high_warning —— Specify the lowest threshold for the alarm. When the operating parameter falls below the value hereinafter, action associated with the alarm will be taken.

low_alarm —— Specify the highest threshold for the warning. When the operating parameter rises above the value hereinafter, action associated with the warning will be taken.

low_warning —— Specify the lowest threshold for the warning. When the operating parameter falls below the value hereinafter, action associated with the warning will be taken.

value —— Enter the threshold value in mW.

Default Setting

None.

Command Mode

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

Example

Configure the high_alarm threshold of DDM Tx Power on the port 1/0/25 as 5:

T2500-28TC(config)#interface gigabitEthernet 1/0/25

T2500-28TC(config-if)#ddm tx_power_threshold high_alarm 5

ddm rx_power_threshold

Description

The **ddm rx_power_threshold** command is used to configure the threshold of the DDM Rx Power value.

Syntax

ddm rx_power_threshold { high_alarm | high_warning | low_alarm | low_warning } *value*

Parameter

high_alarm —— Specify the highest threshold for the alarm. When the operating parameter rises above the value hereinafter, action associated with the alarm will be taken.

high_warning —— Specify the lowest threshold for the alarm. When the operating parameter falls below the value hereinafter, action associated with the alarm will be taken.

low_alarm —— Specify the highest threshold for the warning. When the operating parameter rises above the value hereinafter, action associated with the warning will be taken.

low_warning —— Specify the lowest threshold for the warning. When the operating parameter falls below the value hereinafter, action associated with the warning will be taken.

value —— Enter the threshold value in mW.

Default Setting

None.

Command Mode

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

Example

Configure the high_alarm threshold of DDM Rx Power on the port 1/0/25 as 5:

```
T2500-28TC(config)#interface gigabitEthernet 1/0/25
T2500-28TC(config-if)#ddm rx_power_threshold high_alarm 5
```

show ddm configuration

Description

The **show ddm configuration** command is used to display the DDM configuration.

Syntax

show ddm configuration { state | temperature | voltage | bias_current | tx_power | rx_power }

Parameter

state —— Display the DDM configuration state.

temperature —— Displays the threshold of the DDM temperature value.

voltage —— Displays the threshold of the DDM Voltage value.

bias_current —— Displays the threshold of the DDM Bias Current value.

tx_power —— Displays the threshold of the DDM Tx Power value.

rx_power —— Displays the threshold of the DDM Rx Power value.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

View the DDM configuration state:

```
T2500-28TC(config)#show ddm configuration state
```

View the threshold of the DDM Voltage value:

```
T2500-28TC(config)#show ddm configuration voltage
```

show ddm status

Description

The **show ddm status** command is used to display the DDM status, which is the digital diagnostic monitoring status of SFP modules inserting into the switch's SFP ports.

Syntax

show ddm status

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

View the DDM status:

```
T2500-28TC(config)#show ddm status
```

Chapter 30 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:

```
T2500-28TC(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:

T2500-28TC(config)# time-range tSeg1

T2500-28TC(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:

```
T2500-28TC(config)#time-range tSeg1
T2500-28TC(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:

```
T2500-28TC(config)#time-range tSeg1
T2500-28TC(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:

```
T2500-28TC(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 399. 100-199 must be Standard-IP ACL, 200-299 must be Extend-IP ACL, and 300-399 must be Combined ACL.

Command Mode

Global Configuration Mode

Example

Create a standard-IP ACL whose ID is 123:

```
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(config)#access-list create 120

T2500-28TC(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:

T2500-28TC(config)#access-list create 220

T2500-28TC(config)#access-list extended 220 **rule** 10 permit **sip** 192.168.0.100 **smask** 255.255.255.0 **tseg** tSeg1

access-list combined

Description

The **access-list combined** command is used to add combined ACL rule. To delete the corresponding rule, please use **no access-list combined** command.

Syntax

access-list combined *acl-id* **rule** *rule-id* [permit | deny] [[**smac** *source-mac*] [**smask** *source-mac-mask*]] [[**dmac** *destination-mac]* [**dmask** *destination-mac-mask*]] [**vid** *vlan-id*] [**type** *ethertype*] [**pri** *priority*] [[**sip** *source-ip*] [**sip-mask** *source-ip-mask*]] [[**dip** *destination-ip*] [**dmask** *destination-ip-mask*]] [**frag** {disable | enable}] [**tseg** *time-segment*]

no access-list bind combined *acl-id* **rule** *rule-id*

Parameter

acl-id——The desired combined 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-mac —— The source 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.

ethertype —— The Ethernet type contained in the rule.

priority—— The user priority contained in the rule for the tagged packets to match. It ranges from 0 to 7.

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-address —— 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.

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.

time-segment —— The time-range for the rule to take effect. By default, it is not limited.

Command Mode

Global Configuration Mode

Example

Create a combined ACL whose ID is 320, 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:

T2500-28TC(config)#access-list create 320

T2500-28TC(config)#access-list combined 320 **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:

T2500-28TC(config)#mac access-list 20

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(config)#access-list policy action policy1 120

T2500-28TC(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:

T2500-28TC(config)#access-list policy action policy1 120

T2500-28TC(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:

```
T2500-28TC(config)#access-list policy action policy1 120
T2500-28TC(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:

```
T2500-28TC(config)#access-list policy action policy1 120
T2500-28TC(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:

T2500-28TC(config)#access-list policy action policy1 120

T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/2

T2500-28TC(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:

```
T2500-28TC(config)#interface vlan 2
T2500-28TC(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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#show access-list bind
```

Chapter 31 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:

```
T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/2
T2500-28TC(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 o 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 o 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:

```
T2500-28TC(config)#interface fastEthernet 1/0/1
T2500-28TC(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”:

```
T2500-28TC(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:

```
T2500-28TC(config)#spanning-tree mst configuration
T2500-28TC(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:

```
T2500-28TC(config)#spanning-tree mst configuration
T2500-28TC(config-mst)#instance 1 vlan 1-100
```

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

```
T2500-28TC(config)#spanning-tree mst configuration
T2500-28TC(config-mst)#no instance 1
```

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

```
T2500-28TC(config)#spanning-tree mst configuration
T2500-28TC(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”:

```
T2500-28TC(config)#spanning-tree mst configuration
T2500-28TC(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:

```
T2500-28TC(config)#spanning-tree mst configuration
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/1
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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 * (Forward Delay - 1) >= 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 * (Hello Time + 1) <= 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:

```
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(config)#spanning-tree max-hops 30
```

spanning-tree bpdufilter

Description

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

Syntax

spanning-tree bpdufilter

no spanning-tree bpdufilter

Command Mode

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

Example

Enable the BPDU filter function for Fast Ethernet port 2:

```
T2500-28TC(config)#interface fastEthernet 1/0/2
T2500-28TC(config-if)#spanning-tree bpdufilter
```

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:

```
T2500-28TC(config)#interface fastEthernet 1/0/2
T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/2
T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/2
T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/2
T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/2
T2500-28TC(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:

```
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(config)#show spanning-tree interface

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

T2500-28TC(config)#show spanning-tree interface gigabitEthernet 1/0/25

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

T2500-28TC(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:

T2500-28TC(config)#show spanning-tree interface-security

Display the protect information of Gigabit Ethernet port 25:

T2500-28TC(config)#show spanning-tree interface-security gigabitEthernet 1/0/25

Display the interface security bpdufilter information:

T2500-28TC(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:

T2500-28TC(config)#show spanning-tree mst configuration

Display the related information of MST Instance 1:

T2500-28TC(config)#show spanning-tree mst instance 1

Display all the ports information of MST Instance 1:

T2500-28TC(config)#show spanning-tree mst instance 1 **interface**

Chapter 32 Ethernet OAM Commands

Ethernet OAM (standing for Operation, Administration, and Maintenance) is Layer 2 protocol that is used for monitoring and troubleshooting Ethernet networks. It can report the network status to network administrators through the OAMPDUs exchanged between two OAM entities. The operation of OAM on an Ethernet interface does not adversely affect data traffic as OAM is a slow protocol with very limited bandwidth potential.

ethernet-oam

Description

The **ethernet-oam** command is used to enable the Ethernet OAM function for the desired port. To disable the Ethernet OAM function, please use **no ethernet-oam** command.

Syntax

ethernet-oam

no ethernet-oam

Command Mode

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

Example

Enable the Ethernet OAM function for Fast Ethernet port 2:

```
T2500-28TC(config)# interface fastEthernet 1/0/2
T2500-28TC(config-if)#ethernet-oam
```

ethernet-oam mode

Description

The **ethernet-oam mode** command is used to configure the OAM mode for the desired port. To return to the default configurations, please use **no ethernet-oam mode** command. The default mode is active.

Syntax

ethernet-oam mode { passive | active }

no ethernet-oam mode

Parameter

passive —— Specify the OAM mode as passive.

active ——Specify the OAM mode as active.

Command Mode

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

Example

Configure Ethernet OAM client to operate in passive mode for Fast Ethernet port 2:

T2500-28TC(config)# interface fastEthernet 1/0/2

T2500-28TC(config-if)#ethernet-oam mode passive

ethernet-oam link-monitor symbol-period

Description

The **ethernet-oam link-monitor symbol-period** command is used to configure the parameters about one of the link events, error symbol period event. To return to the default configurations, please use **no ethernet-oam link-monitor symbol-period** command.

Syntax

ethernet-oam link-monitor symbol-period { **threshold** *threshold* | **window** *window* | **notify** { disable | enable }}

no ethernet-oam link-monitor symbol-period { threshold | window | notify }

Parameter

threshold —— Configure the error threshold for generating error symbol-period event. The range is from 1 to 4294967295 and the default value is 1.

window —— Configure the error symbol-period event detection interval. The range is from 10 to 600, in terms of 100 ms intervals. The default value is 10.

notify —— Enable/Disable the event notification. By default, it is enabled.

threshold | window | notify —— The parameter that you want to return to the default configuration.

Command Mode

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

Example

For error symbol-period event, configure the error threshold as 5 and the event detection interval as 3 seconds on Fast Ethernet port 2:

T2500-28TC(config)# interface fastEthernet 1/0/2

T2500-28TC(config-if)# ethernet-oam link-monitor symbol-period threshold 5 **window** 30

ethernet-oam link-monitor frame

Description

The **ethernet-oam link-monitor frame** command is used to configure the parameters about one of the link events, error frame event. To return to the default configurations, please use **no ethernet-oam link-monitor frame** command.

Syntax

ethernet-oam link-monitor frame { [**threshold** *threshold*] [**window** *window*] [**notify** { disable | enable }] }

no ethernet-oam link-monitor frame { threshold | window | notify }

Parameter

threshold —— Configure the error threshold for generating error frame event. The range is from 1 to 4294967295 and the default value is 1.

window —— Configure the error symbol-period event detection interval. The range is from 10 to 600, in terms of 100 ms intervals. The default value is 10.

notify —— Enable/Disable the event notification. By default, it is enabled.

threshold | window | notify —— The parameter that you want to return to the default configuration.

Command Mode

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

Example

For error frame event, configure the error threshold as 6 and the event detection interval as 9 seconds on Fast Ethernet port 3:

T2500-28TC(config)# interface fastEthernet 1/0/3

T2500-28TC(config-if)# ethernet-oam link-monitor frame threshold 6 **window** 90

ethernet-oam link-monitor frame-period

Description

The **ethernet-oam link-monitor frame-period** command is used to configure the parameters about one of the link events, error frame period event. To return to the default configurations, please use **no ethernet-oam link-monitor frame-period** command.

Syntax

ethernet-oam link-monitor frame-period { [**threshold** *threshold*] [**window** *window*] [**notify** { disable | enable }] }

no ethernet-oam link-monitor frame-period { threshold | window | notify }

Parameter

threshold —— Configure the error threshold for generating error frame period event. The range is from 1 to 4294967295 and the default value is 1.

window —— Configure the error frame period event detection interval. The range is from 148810 to 89286000. The default value is 148810 for Fast Ethernet port and 1488100 for Gigabit Ethernet port.

notify —— Enable/Disable the event notification. By default, it is enabled.

threshold | window | notify —— The parameter that you want to return to the default configuration.

Command Mode

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

Example

For error frame period event, configure the error threshold as 6 and the event detection interval as 150000 frames on Fast Ethernet port 4:

T2500-28TC(config)# interface fastEthernet 1/0/4

T2500-28TC(config-if)# ethernet-oam link-monitor frame-period threshold 6 **window** 150000

ethernet-oam link-monitor frame-seconds

Description

The **ethernet-oam link-monitor frame-seconds** command is used to configure the parameters about one of the link events, error frame seconds event. To return to the default configurations, please use **no ethernet-oam link-monitor frame-seconds** command.

Syntax

ethernet-oam link-monitor frame-seconds { [**threshold** *threshold*] [**window** *window*] [**notify** { disable | enable }] }

no ethernet-oam link-monitor frame-seconds { threshold | window | notify }

Parameter

threshold —— Configure the error threshold for generating error frame seconds event. The range is from 1 to 900 and the default value is 1.

window —— Configure the error frame seconds event detection interval. The range is from 100 to 9000, in terms of 100 ms intervals. The default value is 600.

notify —— Enable/Disable the event notification. By default, it is enabled.

threshold | window | notify —— The parameter that you want to return to the default configuration.

Command Mode

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

Example

For error frame seconds event, configure the error threshold as 8 and the event detection interval as 30 seconds on Fast Ethernet port 5:

T2500-28TC(config)# interface fastEthernet 1/0/5

T2500-28TC(config-if)# ethernet-oam link-monitor frame-seconds threshold 8 **window** 300

ethernet-oam remote-failure

Description

The ethernet-oam remote-failure command is used to configure whether to notify the link faults or not. The link faults include dying gasp and critical event. To return to the default configurations, please use **no ethernet-oam remote-failure** command.

Syntax

ethernet-oam remote-failure { dying-gasp | critical-event } **notify** { disable | enable }

no ethernet-oam remote-failure { dying-gasp | critical-event } **notify**

Parameter

dying-gasp —— Dying Gasp link event. Dying gasp means an unrecoverable fault, such as power failure, occurs.

critical-event —— Critical Event. Critical-event means unspecified critical event occurs.

notify ——Enable/Disable the event notification. By default, it is enabled.

Command Mode

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

Example

Disable the Dying Gasp link event notification on Fast Ethernet port 7:

T2500-28TC(config)# interface fastEthernet 1/0/7

T2500-28TC(config-if)# ethernet-oam remote-failure dying-gasp **notify** disable

ethernet-oam remote-loopback received-remote-loopback

Description

The **ethernet-oam remote-loopback received-remote-loopback** command is used to configure the client to process or to ignore the received remote loopback request. To return to the default configurations, please use **no ethernet-oam remote-loopback received-remote-loopback** command.

Syntax

ethernet-oam remote-loopback received-remote-loopback { process | ignore }

no ethernet-oam remote-loopback received-remote-loopback

Parameter

process —— Process the received remote loopback request.

ignore —— Ignore the received remote loopback request.

Command Mode

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

Example

Configure the client to process the received remote loopback request on Fast Ethernet port 1:

T2500-28TC(config)# interface fastEthernet 1/0/1

T2500-28TC(config-if)# ethernet-oam remote-loopback received -remote-loopback process

ethernet-oam remote-loopback

Description

The **ethernet-oam remote-loopback** command is used to request the remote peer to start or stop the Ethernet OAM remote loopback mode.

Syntax

ethernet-oam remote-loopback { start | stop }

Parameter

start —— Request the remote peer to start the Ethernet OAM remote loopback mode.

stop —— Request the remote peer to stop the Ethernet OAM remote loopback mode.

Command Mode

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

Example

Request the remote peer to start the Ethernet OAM remote loopback mode on Fast Ethernet port 3:

T2500-28TC(config)# interface fastEthernet 1/0/3

T2500-28TC(config-if)# ethernet-oam remote-loopback start

clear ethernet-oam statistics

Description

The **clear ethernet-oam statistics** command is used to clear Ethernet OAM statistics.

Syntax

clear ethernet-oam statistics [**interface** { **fastEthernet** | **gigabitEthernet** } *port*]

Parameter

port —— The Fast/Gigabit Ethernet port number. By default, the Ethernet OAM statistics of all ports are cleared.

Command Mode

Global Configuration Mode

Example

Clear Ethernet OAM statistics of Fast Ethernet port 3:

```
T2500-28TC(config)# clear ethernet-oam statistics interface fastEthernet 1/0/3
```

clear ethernet-oam event-log

Description

The **clear ethernet-oam event-log** command is used to clear the Ethernet OAM event log.

Syntax

clear ethernet-oam event-log [**interface** { **fastEthernet | gigabitEthernet** } *port*]

Parameter

port ——The Fast/Gigabit Ethernet port number. By default, the Ethernet OAM event logs of all ports are cleared.

Command Mode

Global Configuration Mode

Example

Clear Ethernet OAM event log of Fast Ethernet port 3:

```
T2500-28TC(config)# clear ethernet-oam event-log interface fastEthernet 1/0/3
```

show ethernet-oam configuration

Description

The **show ethernet-oam configuration** command is used to display Ethernet OAM configuration information.

Syntax

show ethernet-oam configuration [**interface** { **fastEthernet** | **gigabitEthernet** } *port*]

Parameter

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

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display Ethernet OAM configuration information of Fast Ethernet port 2:

T2500-28TC(config)# show ethernet-oam configuration interface fastEthernet 1/0/2

show ethernet-oam event-log

Description

The **show ethernet-oam event-log** command is used to display the Ethernet OAM event log.

Syntax

show ethernet-oam event-log [**interface** { **fastEthernet | gigabitEthernet** } *port*]

Parameter

port —— The Fast/Gigabit Ethernet port number. By default, the Ethernet OAM event logs of all ports are displayed.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display Ethernet OAM event log of Fast Ethernet port 2:

```
T2500-28TC(config)# show ethernet-oam event-log interface fastEthernet 1/0/2
```

show ethernet-oam statistics

Description

The **show ethernet-oam statistics** command is used to display the Ethernet OAM statistics.

Syntax

show ethernet-oam statistics [**interface** { **fastEthernet | gigabitEthernet** } *port*]

Parameter

port —— The Fast/Gigabit Ethernet port number. By default, the Ethernet OAM statistics of all ports are displayed.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display Ethernet OAM statistics of Fast Ethernet port 2:

```
T2500-28TC(config)# show ethernet-oam statistics interface fastEthernet 1/0/2
```

show ethernet-oam status

Description

The **show ethernet-oam status** command is used to display the Ethernet OAM status of both the local and the remote client.

Syntax

show ethernet-oam status [**interface** { **fastEthernet | gigabitEthernet** } *port*]

Parameter

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

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display Ethernet OAM status of Fast Ethernet port 2:

T2500-28TC(config)# show ethernet-oam status interface fastEthernet 1/0/2

Chapter 33 DLDP Commands

DLDP (Device Link Detection Protocol) is used to monitor the link state of fiber-optic or twisted-pair Ethernet cables. When a unidirectional link is detected, the corresponding port will be shut down automatically or manually (depending on the shut mode configured).

dldp(global)

Description

The **dldp** command is used to enable the DLDP function globally. To disable it, please use **no dldp** command.

Syntax

dldp

no dldp

Command Mode

Global Configuration Mode

Example

Enable the DLDP function globally:

```
T2500-28TC(config)# dldp
```

dldp interval

Description

The **dldp interval** command is used to define the interval of sending advertisement packets on ports that are in the advertisement state.

Syntax

dldp interval *interval-time*

Parameter

interval-time —— The interval of sending advertisement packets. It ranges from 1 to 30 seconds. By default, it is 5 seconds.

Command Mode

Global Configuration Mode

Example

Specify the interval of sending advertisement packets as 10 seconds:

T2500-28TC(config)# dldp interval 10

dldp shut-mode

Description

The **dldp shut-mode** command is used to configure the shutdown mode when a unidirectional link is detected.

Syntax

dldp shut-mode { auto | manual }

Parameter

auto —— The switch automatically shuts down ports when a unidirectional link is detected. By default, the shut-mode is auto.

manual ——The switch displays an alert when a unidirectional link is detected.

Command Mode

Global Configuration Mode

Example

Configure the shut-mode as manual:

T2500-28TC(config)# dldp shut-mode manual

dldp reset(global)

Description

The **dldp reset** command is used to reset all the unidirectional links and restart the link detect process.

Syntax

dldp reset

Command Mode

Global Configuration Mode

Example

Reset the DLDP function globally:

```
T2500-28TC(config)# dldp reset
```

dldp(interface)

Description

The **dldp** command is used to enable the DLDP function of the specified port. To disable it, please use **no dldp** command.

Syntax

dldp

no dldp

Command Mode

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

Example

Enable the DLDP function of ports 2-4:

```
T2500-28TC (config)# interface range fastEthernet 1/0/2-4
T2500-28TC (config-if-range)# dldp
```

dldp reset(interface)

Description

The **dldp reset** command is used to reset the specified port and restart the link detect process.

Syntax

dldp reset

Command Mode

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

Example

Reset the DLDP function of ports 2-4:

```
T2500-28TC (config)# interface range fastEthernet 1/0/2-4
T2500-28TC (config-if-range)# dldp reset
```

show dldp

Description

The **show dldp** command is used to display the global configuration of DLDP function such as DLDP global state, DLDP interval and shut mode.

Syntax

show dldp

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the global configuration of DLDP function:

```
T2500-28TC# show dldp
```

show dldp interface

Description

The **show dldp interface** command is used to display the configuration and state of the specified Ethernet port. By default, the configuration and state of all the ports will be displayed.

Syntax

show dldp 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 and state of all ports:

T2500-28TC# show dldp interface

Display the configuration and state of port 5:

T2500-28TC# show dldp interface fastEthernet 1/0/5

Chapter 34 IGMP Snooping Commands

IGMP Snooping (Internet Group Management Protocol Snooping) is a multicast control mechanism running on Layer 2 switch. It can effectively prevent multicast groups being broadcasted in the 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:

```
T2500-28TC(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:

T2500-28TC(config)#interface gigabitEthernet 1/0/25

T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/3

T2500-28TC(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”:

```
T2500-28TC(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 1 to 4094, in the format of 1-3, 5.

router-time —— Router Port Time. Within this time, if the switch does not receive IGMP query message from the router port, it will consider this port is not a router port any more. Router Port Time ranges from 60 to 600 in seconds. By default, it is 300.

member-time —— Member Port Time. Within this time, if the switch does not receive IGMP report message from the member port, it will consider this port is not a member port any more. Member Port Time ranges from 60 to 600 in seconds. By default, it is 260.

leave-time —— Leave Time, which is the interval between the switch receiving a leave message from a host and the switch removing the host from the multicast groups. Leave Time ranges from 1 to 30 in seconds. By default, it is 1.

port —— 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:

T2500-28TC(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* | **ltime** *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:

T2500-28TC(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 addr-id *addr-id list*

no ip igmp snooping filter addr-id *addr-id list*

Parameter

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

Command Mode

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

Example

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

T2500-28TC(config)#interface fastEthernet 1/0/3

T2500-28TC(config-if)#ip igmp snooping filter addr-id 2-6

ip igmp snooping filter(global)

Description

The **ip igmp snooping filter** command is used to add or modify the multicast filtering IP-range. To delete the multicast filtering IP-range, please use **no ip igmp snooping filter** command.

Syntax

ip igmp snooping filter *id start-ip end-ip*

no ip igmp snooping filter *id*

Parameter

id —— IP-range ID, ranging from 1 to 30.

start-ip —— The start multicast IP of the IP-range.

end-ip —— The end multicast IP of the IP-range.

Command Mode

Global Configuration Mode

Example

Modify the multicast IP-range whose ID is 3 as 225.1.1.1 - 226.3.2.1:

T2500-28TC(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:

```
T2500-28TC(config)#interface gigabitEthernet 1/0/26
T2500-28TC(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:

```
T2500-28TC(config)#interface range fastEthernet 1/0/2-5
T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/3
T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(config)#ip igmp snooping querier vlan 2 query-interval 200
T2500-28TC(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:

```
T2500-28TC(config)#ip igmp snooping querier vlan 2 last-member-query-interval 2
```

ip igmp snooping authentication

Description

The **ip igmp snooping authentication** command is used to enable IGMP Authentication for the desired port. To disable the IGMP Authentication function, please use **no ip igmp snooping authentication** command. By default, it is disabled.

Syntax

ip igmp snooping authentication

no ip igmp snooping authentication

Command Mode

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

User Guidelines

The IGMP Authentication feature will take effect only when AAA function is enabled and the RADIUS server is configured. For how to enable AAA function and configure RADIUS server, please refer to aaa enable and radius-server host.

Example

Enable the IGMP Authentication of port 1:

```
T2500-28TC(config)# interface fastEthernet 1/0/1
T2500-28TC(config-if)# ip igmp snooping authentication
```

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:

T2500-28TC#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:

T2500-28TC#show ip igmp snooping interface fastEthernet 1/0/2 basic-config

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

T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

T2500-28TC#show ip igmp snooping groups

Display all the multicast entries in VLAN 5:

T2500-28TC(config)#show ip igmp snooping groups vlan 5

Display the count of multicast entries in VLAN 5:

T2500-28TC(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:

T2500-28TC(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:

```
T2500-28TC(config)# show ip igmp snooping querier vlan 2, 4-5
```

show ip igmp snooping querier

Description

The **show ip igmp snooping querier vlan** 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:

```
T2500-28TC(config)# show ip igmp snooping querier
```

show ip igmp snooping interface authentication

Description

The **show ip igmp snooping interface authentication** command is used to display the IGMP Snooping authentication configurations of all ports.

Syntax

show ip igmp snooping querier

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the IGMP Snooping authentication configurations of all ports:

```
T2500-28TC(config)# show ip igmp snooping interface authentication
```

Chapter 35 MLD Snooping Commands

MLD Snooping (Multicast Listener Discovery Snooping) is a multicast control mechanism running on Layer 2 switch. It can effectively prevent multicast groups being broadcasted in the IPv6 network.

ipv6 mld snooping

Description

The **ipv6 mld snooping** command is used to enable MLD Snooping function globally. If this function is disabled, all related MLD Snooping function would not work. To disable this function, please use **no ipv6 mld snooping** command.

Syntax

ipv6 mld snooping

no ipv6 mld snooping

Command Mode

Global Configuration Mode

Example

Enable MLD Snooping:

```
T2500-28TC(config)# ipv6 mld snooping
```

ipv6 mld snooping router-aging-time

Description

The **ipv6 mld snooping router-aging-time** command is used to specify router port aging time globally. The default aging time is 260 seconds. To restore the default timer, please use **no ipv6 mld snooping router-aging-time** command.

Syntax

ipv6 mld snooping router-aging-time *timer*

no ipv6 mld snooping router-aging-time

Parameter

timer —— Specify the aging time in seconds, ranging from 1 to 1000.

Command Mode

Global Configuration Mode

Example

Specify MLD Snooping router port aging time as 100 seconds globally:

T2500-28TC(config)# ipv6 mld snooping router-aging-time 100

ipv6 mld snooping member-aging-time

Description

The **ipv6 mld snooping member-aging-time** command is used to specify member port aging time globally. The default aging time is 260 seconds. To restore the default timer, please use **no ipv6 mld snooping member-aging-time** command.

Syntax

ipv6 mld snooping member-aging-time *timer*

no ipv6 mld snooping member-aging-time

Parameter

timer —— Specify the aging time in seconds, ranging from 200 to 1000.

Command Mode

Global Configuration Mode

Example

Specify MLD Snooping member port aging time as 100 seconds globally:

T2500-28TC(config)# ipv6 mld snooping member-aging-time 100

ipv6 mld snooping report-suppression

Description

The **ipv6 mld snooping report-suppression** command is used to enable the Report message suppression function. By default, it is enabled. To disable this function, please use **no ipv6 mld snooping report-suppression** command.

Syntax

ipv6 mld snooping report-suppression

no ipv6 mld snooping report-suppression

Command Mode

Global Configuration Mode

Example

Disable Report message suppression function:

```
T2500-28TC(config)# no ipv6 mld snooping report-suppression
```

ipv6 mld snooping unknown-filter

Description

The **ipv6 mld snooping unknown-filter** command is used to enable the unknown multicast packets filter function. To disable this function, please use **no ipv6 mld snooping unknown-filter** command. By default, it is disabled.

Syntax

ipv6 mld snooping unknown-filter

no ipv6 mld snooping unknown-filter

Command Mode

Global Configuration Mode

Example

Enable unknown multicast filter function:

```
T2500-28TC(config)# ipv6 mld snooping unknown-filter
```

ipv6 mld snooping last-listener query-inteval

Description

The **ipv6 mld snooping last-listener query-inteval** command is used to specify the interval to send Specific Query Message. The default value is 1 second. To restore the default interval, please use **no ipv6 mld snooping last-listener query-inteval** command.

Syntax

ipv6 mld snooping last-listener query-inteval *interval*

no ipv6 mld snooping last-listener query-inteval

Parameter

interval —— Specify the interval to send Specific Query Message in seconds, ranging from 1 to 5.

Command Mode

Global Configuration Mode

Example

Specify the interval of Specific Query Message to 3 seconds:

```
T2500-28TC(config)# ipv6 mld snooping last-listener query-inteval 3
```

ipv6 mld snooping last-listener query-count

Description

The **ipv6 mld snooping last-listener query-count** command is used to specify the numbers of Specific Query Message to be sent. The default value is 2. To restore the default number, please use **no ipv6 mld snooping last-listener query-count** command.

Syntax

ipv6 mld snooping last-listener query-count *num*

no ipv6 mld snooping last-listener query-count

Parameter

num —— Specify the numbers of Specific Query Message to be sent, ranging from 1 to 7.

Command Mode

Global Configuration Mode

Example

Specify the number of Specific Query Message to 3:

```
T2500-28TC(config)# ipv6 mld snooping last-listener query-count 3
```

ipv6 mld snooping multicast-vlan

Description

The **ipv6 mld snooping multicast-vlan** command is used to enable the multicast VLAN function. To disable this function, please use **no ipv6 mld snooping multicast-vlan** command. By default it is disabled.

Syntax

ipv6 mld snooping multicast-vlan

no ipv6 mld snooping multicast-vlan

Command Mode

Global Configuration Mode

Example

Enable multicast VLAN:

```
T2500-28TC(config)# ipv6 mld snooping multicast-vlan
```

ipv6 mld snooping multicast-vlan vlan-id

Description

The **ipv6 mld snooping multicast-vlan vlan-id** command is used to specify the multicast VLAN ID. The default multicast VLAN is VLAN1. To restore the default VLAN, please use **no ipv6 mld snooping multicast-vlan vlan-id** command.

Syntax

ipv6 mld snooping multicast-vlan vlan-id *vid*

no ipv6 mld snooping multicast-vlan vlan-id

Parameter

vid —— The specified IEEE 802.1Q VLAN ID, ranging from 1 to 4094.

Command Mode

Global Configuration Mode

Example

Specify multicast VLAN as VLAN 2:

T2500-28TC(config)# ipv6 mld snooping multicast-vlan vlan-id 2

ipv6 mld snooping vlan

Description

The **ipv6 mld snooping vlan** command is used to enable MLD Snooping function on a specified VLAN. To disable it, please use **no ipv6 mld snooping vlan** command.

Syntax

ipv6 mld snooping vlan *vlan-id*

no ipv6 mld snooping vlan *vlan-id*

Parameter

vlan-id ——The specified VLAN ID to enable MLD Snooping function, ranging from 1 to 4094.

Command Mode

Global Configuration Mode

Example

Enable MLD Snooping function on VLAN 2:

T2500-28TC(config)# ipv6 mld snooping vlan 2

ipv6 mld snooping vlan router-aging-time

Description

The **ipv6 mld snooping vlan router-aging-time** command is used to specify router port aging time for a specified VLAN. If this time is set to 0, then the global router port aging time will be used. The default time is 0. To restore the default timer, please use **no ipv6 mld snooping vlan router-aging-time** command.

Syntax

ipv6 mld snooping vlan *vlan-id* **router-aging-time** *timer*

no ipv6 mld snooping vlan *vlan-id* **router-aging-time**

Parameter

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

timer —— Aging time of the router port in seconds, ranging from 0 to 1000.

Command Mode

Global Configuration Mode

Example

Specify the router port aging time as 100 seconds in VLAN 2:

T2500-28TC(config)# ipv6 mld snooping vlan 2 **router-aging-time** 100

ipv6 mld snooping vlan member-aging-time

Description

The **ipv6 mld snooping vlan member-aging-time** command is used to specify member port aging time for a specified VLAN. If this time is set to 0, then the global member port aging time will be used. The default time is 0. To restore the default timer, please use **no ipv6 mld snooping vlan member-aging-time** command.

Syntax

ipv6 mld snooping vlan *vlan-id* **member-aging-time** *timer*

no ipv6 mld snooping vlan *vlan-id* **member-aging-time**

Parameter

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

timer —— Aging time of the member port in seconds, ranging from 200 to 1000 and 0.

Command Mode

Global Configuration Mode

Example

Specify the member port aging time as 100 seconds in VLAN 2:

```
T2500-28TC(config)# ipv6 mld snooping vlan 2 member-aging-time 100
```

ipv6 mld snooping vlan immediate-leave

Description

The **ipv6 mld snooping vlan immediate-leave** command is used to enable the immediate leave function on a specified VLAN. To disable this funciton, please use **no ipv6 mld snooping vlan immediate-leave** command. By default, it is disabled.

Syntax

ipv6 mld snooping vlan *vlan-id* **immediate-leave**

no ipv6 mld snooping vlan *vlan-id* **immediate-leave**

Parameter

vlan-id —— The specified IEEE 802.1Q VLAN ID to enable the immediate leave function, ranging from 1 to 4094.

Command Mode

Global Configuration Mode

Example

Enable immediate leave function on VLAN 2:

```
T2500-28TC(config)# ipv6 mld snooping vlan 2 immediate-leave
```

ipv6 mld snooping vlan mrouter

Description

The **ipv6 mld snooping vlan mrouter** command is used to configure the static router port in a specified VLAN. To disable the static router port, please use **no mld snooping vlan mrouter** command.

Syntax

ipv6 mld snooping vlan *vlan-id* **mrouter interface gigabitEthernet** *port*

no ipv6 mld snooping vlan *vlan-id* **mrouter [interface gigabitEthernet** *port***]**

Parameter

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

port —— Interface number of the router port(s).

Command Mode

Global Configuration Mode

Example

Configure the gigabitEthernet 1/0/2 as static router port in VLAN 2:

T2500-28TC(config)# ipv6 mld snooping vlan 2 **mrouter interface gigabitEthernet** 1/0/2

ipv6 mld snooping vlan static

Description

The **ipv6 mld snooping vlan static** command is used to configure the static multicast groups. To disable the static multicast group, please use **no ipv6 mld snooping vlan static** command.

Syntax

ipv6 mld snooping vlan *vlan-id* **static** *ipv6_multicast_addr* **interface gigabitEthernet** *port*

no ipv6 mld snooping vlan *vlan-id* **static** *ipv6_multicast_addr* **[interface gigabitEthernet** *port***]**

Parameter

vlan-id —— The multicast group VLAN ID, ranging from 1 to 4094.

ipv6_multicast_addr —— IPv6 address of the static multicast group.

port —— Interface number of the member port(s).

Command Mode

Global Configuration Mode

Example

Configure the static multicast group ff80::1234 in VLAN 2 with the member port gigabitEthernet 1/0/2:

T2500-28TC(config)# ipv6 mld snooping vlan 2 **static** ff80::1234 **interface gigabitEthernet** 1/0/2

ipv6 mld snooping querier vlan

Description

The **ipv6 mld snooping querier vlan** command is used to enable the MLD Querier function. To disable this function, please use **no ipv6 mld snooping querier vlan** command.

Syntax

ipv6 mld snooping querier vlan *vlan-id*

no ipv6 mld snooping querier vlan *vlan-id*

Parameter

vlan-id —— The VLAN that enables the MLD querier function, ranging from 1 to 4094.

Command Mode

Global Configuration Mode

Example

Enable MLD Querier function on VLAN 2:

```
T2500-28TC(config)# ipv6 mld snooping querier vlan 2
```

ipv6 mld snooping querier vlan max-response-time

Description

The **ipv6 mld snooping querier vlan max-response-time** command is used to specify the max response time of the Query message. The default value is 10 seconds. To restore the default value, please use **no ipv6 mld snooping querier vlan max-response-time** command.

Syntax

ipv6 mld snooping querier vlan *vlan-id* **max-response-time** *time*

no ipv6 mld snooping querier vlan *vlan-id* **max-response-time**

Parameter

vlan-id —— The VLAN that enables the MLD Querier function, ranging from 1 to 4094.

time —— Specify the time in seconds, ranging from 1 to 25.

Command Mode

Global Configuration Mode

Example

Specify the max response time as 10s on VLAN 2:

```
T2500-28TC(config)# ipv6 mld snooping querier vlan 2 max-response-time
10
```

ipv6 mld snooping querier vlan query-interval

Description

The **ipv6 mld snooping querier vlan query-interval** command is used to specify the interval to send the Query Message. The default value is 25 seconds. To restore the default value, please use **no ipv6 mld snooping querier vlan query-interval** command.

Syntax

ipv6 mld snooping querier vlan *vlan-id* **query-interval** *interval*

no ipv6 mld snooping querier vlan *vlan-id* **query-interval**

Parameter

vlan-id ——The VLAN that enables the MLD Querier function, ranging from 1 to 4094.

interval —— Specify the interval to send the Query message in seconds, ranging from 2 to 300.

Command Mode

Global Configuration Mode

Example

Specify the interval to send the Query Message as 10s on VLAN 2:

```
T2500-28TC(config)# ipv6 mld snooping querier vlan 2 query-interval 10
```

ipv6 mld snooping querier vlan query-source

Description

The **ipv6 mld snooping querier vlan query-source** command is used to specify the source address which sends the Query message. The default value is FE80::02FF:FFFF:FE00:0001. To restore the default value, please use **no ipv6 mld snooping querier vlan query-source** command.

Syntax

ipv6 mld snooping querier vlan *vlan-id* **query-source** *ipv6-addr*

no ipv6 mld snooping querier vlan *vlan-id* **query-source**

Parameter

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

ipv6-addr —— Specify the IPv6 source address.

Command Mode

Global Configuration Mode

Example

Specify the source address which sends the Query message as fe80::1234 on VLAN 2:

T2500-28TC(config)# ipv6 mld snooping querier vlan 2 **query-source** fe80::1234

ipv6 mld snooping filter(global)

Description

The **ipv6 mld snooping filter** command is used to configure the multicast group filter entries in the format of ip-range. To disable the filter entry, please use **no ipv6 mld snooping filter** command.

Syntax

ipv6 mld snooping filter *filter-id start-ipv6 end-ipv6*

no ipv6 mld snooping filter *filter-id*

Parameter

filter-id —— Specify the filter ID, ranging from 1 to 30.

start-ipv6 —— Start IPv6 multicast address of the filter entry.

end-ipv6 —— End IPv6 multicast address of the filter entry.

Command Mode

Global Configuration Mode

Example

Create filter entry with filter ID as 2, start IP as ff80::1234 and end IP as ff80::1235:

T2500-28TC(config)# ipv6 mld snooping filter 2 ff80::1234 ff80::1235

ipv6 mld snooping filter(interface)

Description

The **ipv6 mld snooping filter** command is used to enable the filter function on the interface. To disable the filter function, please use **no ipv6 mld snooping filter** command.

Syntax

ipv6 mld snooping filter

no ipv6 mld snooping filter

Command Mode

Interface Configuration Mode

Example

Enable filter function on interface gigabitEthernet 1/0/2:

```
T2500-28TC(config)# interface gigabitEthernet 1/0/2
T2500-28TC(config-if)# ipv6 mld snooping filter
```

ipv6 mld snooping filter-mode

Description

The **ipv6 mld snooping filter-mode** command is used to configure the filter mode of the interface. The default mode is accept. To restore the default mode, please use **no ipv6 mld snooping filter-mode** command.

Syntax

ipv6 mld snooping filter-mode {accept **|** refuse**}**

no ipv6 mld snooping filter-mode

Parameter

accept —— Accept the multicast groups within the filter entry.

refuse —— Refuse the multicast groups within the filter entry.

Command Mode

Interface Configuration Mode

Example

Configure the filter mode as refuse on interface gigabitEthernet 1/0/2:

```
T2500-28TC(config)# interface gigabitEthernet 1/0/2
T2500-28TC(config-if)# ipv6 mld snooping filter-mode refuse
```

ipv6 mld snooping filter-id

Description

The **ipv6 mld snooping filter-id** command is used to specify the filter id on the interface. To disable this configuration, please use **no ipv6 mld snooping filter-id** command.

Syntax

ipv6 mld snooping filter-id *filter-list*

no ipv6 mld snooping filter-id

Parameter

filter-list —— Specify the filter id list, in format of 1,3,10.

Command Mode

Interface Configuration Mode

Example

Specify the filter id as 1 and 10 on interface gigabitEthernet 1/0/2:

T2500-28TC(config)# interface gigabitEthernet 1/0/2

T2500-28TC(config-if)# ipv6 mld snooping filter-id 1,10

ipv6 mld snooping max-group

Description

The **ipv6 mld snooping max-group** command is used to specify the limit number of groups for a port to join in. The default value is 256. To restore the default value, please use **no ipv6 mld snooping max-group** command.

Syntax

ipv6 mld snooping max-group *limit*

no ipv6 mld snooping max-group

Parameter

limit —— Specify the max number of multicast groups on a port, ranging from 0 to 256.

Command Mode

Interface Configuration Mode

Example

Specify the limit group as 128 on interface gigabitEthernet 1/0/2:

T2500-28TC(config)# interface gigabitEthernet 1/0/2

T2500-28TC(config-if)# ipv6 mld snooping max-group 128

clear ipv6 mld snooping statistics

Description

The **clear ipv6 mld snooping statistics** command is used to clear the statistics of the MLD packets.

Syntax

clear ipv6 mld snooping statistics

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Clear the statistics of the MLD packets:

```
T2500-28TC(config)# clear ipv6 mld snooping statistics
```

show ipv6 mld snooping

Description

The **show ipv6 mld snooping** command is used to display the global configuration of MLD Snooping.

Syntax

show ipv6 mld snooping

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the global configuration of MLD Snooping:

```
T2500-28TC(config)# show ipv6 mld snooping
```

show ipv6 mld snooping vlan

Description

The **show ipv6 mld snooping vlan** command is used to display VLAN information of MLD Snooping.

Syntax

show ipv6 mld snooping vlan [*vlan-id***]**

Parameter

vlan-id —— The VLAN ID selected to display, ranging from 1 to 4094.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display all of the VLAN information:

```
T2500-28TC(config)# show ipv6 mld snooping vlan
```

show ipv6 mld snooping static-mcast

Description

The **show ipv6 mld snooping static-mcast** command is used to display the static multicast groups configured by users.

Syntax

show ipv6 mld snooping static-mcast

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display static multicast groups:

```
T2500-28TC(config)# show ipv6 mld snooping static-mcast
```

show ipv6 mld snooping group

Description

The **show ipv6 mld snooping group** command is used to display multicast groups.

Syntax

show ipv6 mld snooping group [dynamic | static][**vlan** *vlan-id*]

Parameter

dynamic —— Display dynamic groups.

static —— Display static groups.

vlan-id ——The VLAN ID selected to display, ranging from 1 to 4094.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display all of the multicast groups:

```
T2500-28TC(config)# show ipv6 mld snooping group
```

show ipv6 mld snooping filter

Description

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

Syntax

show ipv6 mld snooping filter

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the filter entries:

```
T2500-28TC(config)# show ipv6 mld snooping filter
```

show ipv6 mld snooping interface

Description

The **show ipv6 mld snooping interface** command is used to display the interface information of MLD Snooping.

Syntax

show ipv6 mld snooping interface [**gigabitEthernet** *port*]

Parameter

port —— Specify the port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display all of the interface information:

```
T2500-28TC(config)# show ipv6 mld snooping interface
```

show ipv6 mld snooping interface filter

Description

The **show ipv6 mld snooping interface filter** command is used to display the filter ids bounded to the interface.

Syntax

show ipv6 mld snooping interface filter [gigabitEthernet *port***]**

Parameter

port —— Specify the port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display all filter ids bounded to all interface:

```
T2500-28TC(config)# show ipv6 mld snooping interface filter
```

show ipv6 mld snooping querier

Description

The **show ipv6 mld snooping querier** command is used to display the Querier configuration of VLAN.

Syntax

show ipv6 mld snooping querier [vlan *vlan-id***]**

Parameter

vlan-id ——The VLAN ID selected to display, ranging from 1 to 4094.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display all Querier information:

```
T2500-28TC(config)# show ipv6 mld snooping querier
```

show ipv6 mld snooping statistics

Description

The **show ipv6 mld snooping statistics** command is used to display the statistics of the MLD packets.

Syntax

show ipv6 mld snooping statistics [interface gigabitEthernet *port***]**

Parameter

port —— Specify the port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display statistics of MLD packets:

```
T2500-28TC(config)# show ipv6 mld snooping statistics
```

Chapter 36 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:

```
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(config)#snmp-server group group1 **smode** v3 **slev** authNoPriv **read** viewDefault **write** viewDefault **notify** viewDefault

Delete Group group 1:

T2500-28TC(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:

T2500-28TC(config)#snmp-server user admin local group2 **smode** v3 **slev** authPriv **cmode** MD5 **cpwd** 11111 **emode** DES **epwd** 22222

snmp-server community

Description

The **snmp-server community** command is used to add Community. To delete the corresponding Community, please use **no snmp-server community** command. SNMP v1 and SNMP v2c adopt community name authentication. The community name can limit access to the SNMP agent from SNMP network management station, functioning as a password.

Syntax

snmp-server community *name* { read-only | read-write } *mib-view*

no snmp-server community *name*

Parameter

name —— Community Name, ranging from 1 to 16 characters.

read-only | read-write —— The access rights of the community, with “read-only” and “read-write” options.

mib-view —— The MIB View for the community to access.

Command Mode

Global Configuration Mode

Example

Add community public, and the community has read-write management right to View viewDefault:

T2500-28TC(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. Both IPv4 and IPv6 addresses are supported, for example 192.168.0.100 or fe80::1234.

udp-port —— UDP port, which is used to send notifications. The UDP port functions with the IP address for the notification sending. 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:

T2500-28TC(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** l*ocal-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:

T2500-28TC(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 five types: linkup, linkdown, warmstart, coldstart, and auth-failure. To disable the sending of SNMP standard traps, please use **no snmp-server traps snmp** command.

Note:

The **snmp-server traps snmp** command without any parameter is used to enable all the five types of traps. And the **no snmp-server traps snmp** command without any parameter is used to disable all the five types of traps.

Syntax

snmp-server traps snmp [linkup | linkdown | warmstart | coldstart | auth-failure]

no snmp-server traps snmp [linkup | linkdown | warmstart | coldstart | auth-failure]

Parameter

linkup —— Enable the linkup trap. It is sent when port status changes from linkdown to linkup. By default, it is enabled.

linkdown ——Enable the linkdown trap. It is sent when port status changes from linkup to linkdown. By default, it is enabled.

warmstart —— Enable the warmstart trap. It is sent upon SNMP function reboot. By default, it is enabled.

coldstart —— Enable the coldstart trap. It is sent upon switch reboot. By default, it is enabled.

auth-failure —— Enable the auth-failure trap. It is sent when a received SNMP request fails the authentication. By default, it is enabled.

Command Mode

Global Configuration Mode

Example

Enable the linkup trap for the switch:

T2500-28TC(config)# snmp-server traps snmp linkup

snmp-server traps security

Description

The **snmp-server traps security** command is used to enable SNMP security traps which include four types: dhcp-filter, ip-duplicate, ip-mac-binding, and port-access. To disable the sending of SNMP security traps, please use **no snmp-server traps security** command.

Note:

The **snmp-server traps security** command without any parameter is used to enable all the four types of traps. And the **no snmp-server traps security** command without any parameter is used to disable all the four types of traps.

Syntax

snmp-server traps security [dhcp-filter | ip-duplicate | ip-mac-binding | port-access]

no snmp-server traps security [dhcp-filter | ip-duplicate | ip-mac-binding | port-access]

Parameter

dhcp-filter —— Enable the dhcp-filter trap. It is sent when the device receives a DHCP packet from an untrusted port. By default, it is disabled.

ip-duplicate ——Enable the ip-duplicate trap. It is sent when another host uses the switch's IP address. By default, it is disabled.

ip-mac-binding —— Enable the ip-mac-binding trap. It is sent when it receives a packet from the host that does not match the entries in IP-MAC binding table. By default, it is disabled. To view the IP-MAC binding table, please enter the **show ip source binding** command.

port-access —— Enable the port-access trap. It is sent when some users try to log on to the web management page via ports that have no authority. By default, it is disabled.

Command Mode

Global Configuration Mode

Example

Enable the dhcp-filter trap for the switch:

T2500-28TC(config)# snmp-server traps security dhcp-filter

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:

T2500-28TC(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 memory usage exceeds 80%.

Command Mode

Global Configuration Mode

Example

Enable SNMP extended bandwidth-control trap for the switch:

```
T2500-28TC(config)# snmp-server traps bandwidth-control
```

snmp-server traps ddm

Description

The **snmp-server traps ddm** command is used to enable SNMP DDM traps. DDM function is used to monitor the status of the SFP modules inserted into the SFP ports on the switch.

To disable the sending of SNMP DDM traps, use **no snmp-server traps ddm** command.

Syntax

snmp-server traps ddm [temperature | voltage | bias_current | tx_power | rx_power]

no snmp-server traps ddm [temperature | voltage | bias_current | tx_power | rx_power]

Parameter

temperature —— Enable DDM Temperature trap. It is sent when the DDM temperature value exceeds the alarm threshold or warning threshold.

voltage —— Enable DDM Voltage trap. It is sent when the DDM voltage value exceeds the alarm threshold or warning threshold.

bias_current —— Enable DDM Bias Current trap. It is sent when the DDM bias current value exceeds the alarm threshold or warning threshold.

tx_power —— Enable DDM Tx Power trap. It is sent when the DDM Tx power value exceeds the alarm threshold or warning threshold.

rx_power —— Enable DDM Rx Power trap. It is sent when the DDM Rx power value exceeds the alarm threshold or warning threshold.

User guidelines

The **snmp-server traps ddm** command without any parameter is used to enable all the types of DDM traps. And the **no snmp-server traps ddm** command without any parameter is used to disable all the types of DDM traps.

For more instructions about the alarm threshold or warning threshold, refer to Chapter 29 DDM Commands.

Command Mode

Global Configuration Mode

Example

Enable all the SNMP DDM traps for the switch:

```
T2500-28TC(config)# snmp-server traps ddm
```

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.

Note:

The **snmp-server traps mac** command without any parameter is used to enable all the four types of traps. And the **no snmp-server traps mac** command without any parameter is used to disable all the four types of traps

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:

```
T2500-28TC(config)# snmp-server traps mac
```

Enable new MAC address trap only for the switch:

```
T2500-28TC(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.

Note:

The **snmp-server traps vlan** command without any parameter is used to enable the both traps. And the **no snmp-server traps vlan** command without any parameter is used to disable the the both traps.

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：

```
T2500-28TC(config)# snmp-server traps vlan
```

Enable VLAN-created trap only for the switch:

```
T2500-28TC(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:

T2500-28TC(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”:

T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

T2500-28TC#show rmon alarm 1-2

Chapter 37 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.

lldp

Description

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

Syntax

lldp

no lldp

Command Mode

Global Configuration Mode

Example

Enable LLDP function globally:

```
T2500-28TC(config)#lldp
```

lldp hold-multiplier

Description

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

Syntax

lldp hold-multiplier *multiplier*

no lldp hold-multiplier

Parameter

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

Command Mode

Global Configuration Mode

Example

Specify Hold Multiplier as 5:

T2500-28TC(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:

```
T2500-28TC(config)#lldp timer tx-interval 45
T2500-28TC(config)#lldp timer notify-interval 120
```

lldp receive

Description

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

Syntax

lldp receive

no lldp receive

Command Mode

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

Example

Enable Fast Ethernet port 1 to receive LLDPDU:

```
T2500-28TC(config)#interface fastEthernet 1/0/1
T2500-28TC(config-if)#lldp receive
```

lldp transmit

Description

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

Syntax

lldp transmit

no lldp transmit

Command Mode

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

Example

Enable Fast Ethernet port 1 to transmit LLDPDU:

```
T2500-28TC(config)# interface fastEthernet 1/0/1
T2500-28TC(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:

```
T2500-28TC(config)#interface fastEthernet 1/0/1
T2500-28TC(config-if)#lldp snmp-trap
```

lldp tlv-select

Description

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

Syntax

lldp tlv-select [port-description | system-capability | system-description | system-name | management-address | port-vlan | protocol-vlan | vlan-name | link-aggregation | mac-phy-cfg | max-frame-size | power | all]

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

Command Mode

Interface Configuration Mode (interface 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:

T2500-28TC(config)# interface fastEthernet 1/0/1

T2500-28TC(config-if)# no lldp tlv-select management-address port-vlan

lldp med-fast-count

Description

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

Syntax

lldp med-fast-count *count*

no lldp med-fast-count

Parameter

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

Command Mode

Global Configuration Mode

Example

Specify Fast Start Count as 5:

T2500-28TC(config)# lldp med-fast-count 5

lldp med-status

Description

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

Syntax

lldp med-status

no lldp med-status

Command Mode

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

Example

Enable the LLDP-MED feature for port 1/0/2:

T2500-28TC(config)# interface fastEthernet 1/0/2

T2500-28TC(config-if)# lldp med-status

lldp med-tlv-select

Description

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

Syntax

lldp med-tlv-select { [inventory-management] [location] [network-policy] [power-management] [all] }

no lldp med-tlv-select { [inventory-management] [location] [network-policy] [power-management] [all] }

Command Mode

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

Example

Exclude “network policy” and “inventory” TLVs in LLDPDU outgoing from port 1/0/2:

T2500-28TC(config)# interface fastEthernet 1/0/2

T2500-28TC(config-if)# no lldp med-tlv-select network-policy inventory-management

lldp med-location

Description

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

Syntax

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

Parameter

emergency-number —— Emergency Call Service ELIN identifier, which is used during emergency call setup to a traditional CAMA or ISDN trunk-based PSAP. The length of this field ranges from 10 to 25 characters.

civic-address —— The civic address is defined to reuse the relevant sub-fields of the DHCP option for civic Address based Location Configuration Information as specified by IETF.

Command Mode

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

Example

Configure the civic address in the Location Identification TLV's content in outgoing LLDPDU of port 1/0/2. Configure the language as English and city as London:

T2500-28TC (config)# interface fastEthernet 1/0/2

T2500-28TC(config-if)# lldp med-location civic-address language English city London

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:

T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#show lldp traffic interface fastEthernet 1/0/1
```

Chapter 38 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 disable this function, 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:

T2500-28TC(config)#cluster ndp

T2500-28TC(config)#cluster ndp timer hello 50 **aging** 120

cluster ntdp

Description

The **cluster ntdp** command is used to configure NTDP globally. To return to the default configuration, please use **no cluster ntdp** command. NTDP (Neighbor Topology Discovery Protocol) is used to collect the NDP information and neighboring connection information of each device in a specific network range. It provides the commander switch with the information of devices which can join the cluster and collects topology information of devices within the specified hops.

Syntax

cluster ntdp

cluster ntdp timer { [**interval-time** *time*] [**hop-delay** *value*] [**port-delay** *value*] }

cluster ntdp hop *hop-value*

no cluster ntdp

no cluster ntdp timer { [**interval-time** *time*] [**hop-delay** *value*] [**port-delay** *value*] }

no cluster ntdp hop *hop-value*

Parameter

time —— NTDP Interval Time, which is the interval to collect topology information. NTDP Interval Time ranges from 1 to 60 in minutes. By default, it is 1.

hop-delay *value* —— NTDP Hop Delay, which is the time between the switch receiving NTDP request packets and the switch forwarding NTDP request packets for the first time. NTDP Hop Delay ranges from 1 to 1000 in milliseconds. By default, it is 200.

port-delay *value* —— NTDP Port Delay, which is the time between the port forwarding NTDP request packets and its adjacent port forwarding NTDP request packets over. NTDP Port Delay ranges from 1 to 100 in milliseconds. By default, it is 20.

hop-value —— NTDP Hops, which is the hop count the switch topology collects. NTDP Hops ranges from 1 to 16. By default, it is 3.

Command Mode

Global Configuration Mode

Example

Enable NTDP function globally, and specify NTDP Hops as 5, NTDP Interval Time as 30 minutes:

```
T2500-28TC(config)#cluster ntdp
T2500-28TC(config)#cluster ntdp timer interval-timer 30
T2500-28TC(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:

```
T2500-28TC(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:

T2500-28TC(config)#interface fastEthernet 1/0/5

T2500-28TC(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:

T2500-28TC(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:

```
T2500-28TC(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:

```
T2500-28TC(config)#cluster manage holdtime 50
T2500-28TC(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:

T2500-28TC(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:

T2500-28TC(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:

```
T2500-28TC(config)#cluster individual
```

show cluster ndp

Description

The **show cluster ndp** command is used to display the NDP information.

Syntax

show cluster ndp [**interface** [**fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port*]]

Parameter

port —— Specify the Ethernet port number. The NDP information of all ports will be displayed if the port number is not specified here.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the global NDP information of the switch:

```
T2500-28TC(config)#show cluster ndp
```

Display the NDP information of all the ports of the switch:

```
T2500-28TC(config)#show cluster ndp interface
```

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:

```
T2500-28TC#show cluster ntdp
```

Display the NTDP configuration of all Ethernet ports:

```
T2500-28TC#show cluster ntdp interface
```

Display the device table of NTDP:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC#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:

```
T2500-28TC(config)#show cluster manage role
```

show cluster neighbor

Description

The **show cluster neighbor** command is used to display the cluster's neighbor information.

Syntax

show cluster neighbor

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the cluster's neighbor information:

```
T2500-28TC(config)#show cluster neighbor
```

Chapter 39 AAA Commands

AAA stands for authentication, authorization and accounting. This feature is used to authenticate users trying to log in to the switch or trying to access the administrative level privilege.

- **Applicable Access Application**

The authentication can be applied on the following access applications: Console, Telnet, SSH and HTTP.

- **Authentication Method List**

A method list describes the authentication methods and their sequence to authenticate a user. The switch supports Login List for users to gain access to the switch, and Enable List for normal users to gain administrative privileges.

- **RADIUS/TACACS+ Server**

User can configure the RADIUS/TACACS+ servers for the connection between the switch and the server.

- **Server Group**

User can define the authentication server group with up to several servers running the same secure protocols, either RADIUS or TACACS+. Users can set these servers in a preferable order, which is called the server group list. When a user tries to access the switch, the switch will ask the first server in the server group list for authentication. If no response is received, the second server will be queried, and so on.

aaa enable

Description

The **aaa enable** command is used to enable the AAA function globally. To disable the AAA function globally, please use the **no aaa enable** command. The global AAA function is disabled by default.

Syntax

aaa enable

no aaa enable

Command Mode

Global Configuration Mode

Example

Enable the AAA function globally:

```
T2500-28TC(config)# aaa enable
```

tacacs-server host

Description

The **tacacs-server host** command is used to configure a new TACACS+ server. To delete the specified TACACS+ server, please use **no tacacs-server host** command.

Syntax

tacacs-server host *ip-address* [**port** *port-id*] [**timeout** *time*] [**key** { [0] *string* | 7 *encryped-string* }]

no tacacs-server host *ip-address*

Parameter

ip-address —— Specify the IP address of the TACACS+ server.

port-id —— Specify the server's port number for AAA. By default it is 49.

time —— Specify the time in seconds the switch waits for the server's response before it times out. The time ranges from 1 to 9 seconds. The default is 5 seconds.

[0] *string* | 7 *encrypted-string* —— 0 and 7 are the encryption type. 0 indicates that an unencrypted key will follow. 7 indicates that a symmetric encrypted key with a fixed length will follow. By default, the encryption type is 0. "*string*" is the shared key for the switch and the authentication servers to exchange messages which contains 31 characters at most. The question marks and spaces are not allowed. "*encrypted-string*" is a symmetric encrypted key with a fixed length, which you can copy from another switch's configuration file. The key or encrypted-key you configured here will be displayed in the encrypted form. Always configure the key as the last item of this command.

Command Mode

Global Configuration Mode

User Guidelines

The TACACS+ servers you configured are added in the server group "tacacs" by default.

Example

Configure a TACACS+ server with the IP address as 1.1.1.1, TCP port as 1500, timeout as 6 seconds, and the unencrypted key string as 12345.

T2500-28TC(config)# tacacs-server host 1.1.1.1 **port** 1500 **timeout** 6 **key** 12345

show tacacs-server

Description

This **show tacacs-server** command is used to display the summary information of the TACACS+ servers.

Syntax

show tacacs-server

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of all the TACACS+ servers:

T2500-28TC(config)# show tacacs-server

radius-server host

Description

The **radius-server host** command is used to configure a new RADIUS server. To delete the specified RADIUS server, please use **no radius-server host** command.

Syntax

radius-server host *ip-address* [**auth-port** *port-id*] [**acct-port** *port-id*] [**timeout** *time*] [**retransmit** *number*] [**key** { [0] *string* | 7 *encrypted-string* }]

no radius-server host *ip-address*

Parameter

ip-address —— Specify the IP address of the RADIUS server.

auth-port *port-id* —— Specify the UDP destination port for authentication requests. By default it is 1812.

acct-port *port-id* —— Specify the UDP destination port for accouting requests. By deault it is 1813.

time —— Specify the time in seconds the switch waits for the server's response before it times out. The time ranges from 1 to 9 seconds. The default is 5 seconds.

number —— Specify the number of times a RADIUS request is resent to a server if the server is not responding in time. By default it is 2 times.

[0] *string* | 7 *encrypted-string* —— 0 and 7 are the encryption type. 0 indicates that an unencrypted key will follow. 7 indicates that a symmetric encrypted key with a fixed length will follow. By default, the encryption type is 0. "*string*" is the shared key for the switch and the authentication servers to exchange messages which contains 31 characters at most. The question marks and spaces are not allowed. "*encrypted-string*" is a symmetric encrypted key with a fixed length, which you can copy from another switch's configuration file. The key or encrypted-key you configured here will be displayed in the encrypted form. Always configure the key as the last item of this command.

Command Mode

Global Configuration Mode

User Guidelines

The RADIUS servers you configured are added in the server group "radius" by default.

Example

Configure a RADIUS server with the IP address as 1.1.1.1, authentication port as 1200, timeout as 6 seconds, retransmit times as 3, and the unencrypted key string as 12345.

T2500-28TC(config)# radius-server host 1.1.1.1 **auth-port** 1200 **timeout** 6 **retransmit** 3 **key** 12345

show radius-server

Description

This **show radius-server** command is used to display the summary information of the RADIUS servers.

Syntax

show radius-server

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of all the RADIUS servers:

T2500-28TC(config)# show radius-server

aaa group

Description

This **aaa group** command is used to create AAA server groups to group existing TACACS+/RADIUS servers for authentication. This command puts the switch in the server group subconfiguration mode.

To delete the corresponding AAA group, please use the **no aaa group** command.

Syntax

aaa group { radius | tacacs } *group-name*
no aaa group { radius | tacacs } *group-name*

Parameter

radius | tacacs —— Specify the server group type as RADIUS or TACACS+.

group-name —— Specify the server group name.

Command Mode

Global Configuration Mode

Example

Create a RADIUS server group with the name radius1:

T2500-28TC(config)# aaa group radius radius1

server

Description

This **server** command is used to add the existing server in the defined server group. To remove the specified server from the server group, please use the **no server** command.

Syntax

server *ip-address*
no server *ip-address*

Parameter

ip-address —— Specify the server's IP address.

Command Mode

Server Group Configuration Mode

Example

Create the RADIUS server 1.1.1.1 to RADIUS server group "radius1":

T2500-28TC(config)# aaa group radius radius1
T2500-28TC(aaa-group)# server 1.1.1.1

show aaa group

Description

This **show aaa group** command is used to display the summary information of the AAA groups. All the servers in this group will be listed if you specify the group name.

Syntax

show aaa group [*group-name*]

Parameter

group-name —— Specify the server group name.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of all the server groups:

T2500-28TC(config)# show aaa group

aaa authentication login

Description

This **aaa authentication login** command is used to configure a login authentication method list. A method list describes the authentication methods and their sequence to authenticate a user. To delete the specified authentication method list, please use the **no aaa authentication login** command.

Syntax

aaa authentication login { *method-list* } { *method1* } [*method2*] [*method3*] [*method4*]

no aaa authentication login *method-list*

Parameter

method-list —— Specify the method list name.

method1, method2, method3, method4 —— Specify the authentication methods in order. The next authentication method is tried only if the previous method does not respond, not if it fails.

The preset methods include radius, tacacs, local and none. “radius” means the RADIUS server group “radius”; “tacacs” means the RACACS+ server group “tacacs”; “local” means local username database are used; “none” means no authentication is used for login.

Users can aslo define new method with the aaa group command.

Command Mode

Global Configuration Mode

User Guidelines

By default the login authentication method list is “default” with “local” as method1.

Example

Configure a login authentication method list “list1” with the priority1 method as radius and priority2 method as local:

T2500-28TC(config)# aaa authenticaiton login list1 radius local

aaa authentication enable

Description

This **aaa authentication enable** command is used to configure a privilege authentication method list. A method list describes the authentication methods and their sequence to elevate a user's privilege. To delete the specified authentication method list, please use the **no aaa authentication enable** command.

Syntax

aaa authentication enable { *method-list* } { *method1* } [*method2*] [*method3*] [*method4*]

no aaa authentication enable *method-list*

Parameter

method-list —— Specify the method list name.

method1, method2, method3, method4 —— Specify the authentication methods in order. The next authentication method is tried only if the previous method does not respond, not if it fails.

The preset methods include radius, tacacs, local and none. "radius" means the RADIUS server group "radius"; "tacacs" means the RACACS+ server group "tacacs"; "local" means local username database are used; "none" means no authentication is used for privilege elevation.

Users can aslo define new method with the aaa group command.

Command Mode

Global Configuration Mode

User Guidelines

By default the enable authentication method is "default" with "none" as method1.

Example

Configure a privilege authentication method list "list2" with the priority1 method as radius and priority2 method as local:

T2500-28TC(config)# aaa authenticaiton enable list2 radius local

aaa authentication dot1x default

Description

This **aaa authentication dot1x default** command is used to configure an 802.1X authentication method list. A method list describes the authentication methods for users' login in 802.1X. To delete the default authentication method list, please use the **no aaa authentication dot1x default** command.

Syntax

aaa authentication dot1x default { *method* }

no aaa authentication dot1x default

Parameter

method —— Specify the method name. Only RADIUS server group is supported, and the default method is server group "radius".

Command Mode

Global Configuration Mode

Example

Configure the default 802.1X authentication method as "radius1":

T2500-28TC(config)# aaa authentication dot1x default radius1

aaa accounting dot1x default

Description

This **aaa accounting dot1x default** command is used to configure an 802.1X accounting method list. To delete the default accounting method list, please use the **no aaa accounting dot1x default** command.

Syntax

aaa accounting dot1x default { *method* }

no aaa accounting dot1x default

Parameter

method —— Specify the method name. Only RADIUS server group is supported, and the default method is server group "radius".

Command Mode

Global Configuration Mode

Example

Configure the default 802.1X accounting method as “radius1”:

T2500-28TC(config)# aaa accounting dot1x default radius1

show aaa authentication

Description

This **show aaa authentication** command is used to display the summary information of the authentication login, enable and dot1x metheod list.

Syntax

show aaa authentication [login | enable | dot1x]

Parameter

login | enable | dot1x —— Specify the method list type.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of all the authentication method lists:

T2500-28TC(config)# show aaa authentication

show aaa accounting

Description

This **show aaa accounting** command is used to display the summary information of the accounting metheod list.

Syntax

show aaa accounting [dot1x]

Parameter

dot1x —— Specify the method list type.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of the default 802.1X accounting method list:

T2500-28TC(config)# show aaa accounting

line console

Description

The **line console** command is used to enter the Line Configuration Mode configure the console port to which you want to apply the authentication list.

Syntax

line console { *linenum* }

Parameter

linenum —— The number of users allowed to login through console port. Its value is 0 in general, for the reason that console input is only active on one console port at a time.

Command Mode

Global Configuration Mode

Example

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

T2500-28TC(config)#line console 0

login authentication(console)

Description

The **login authentication** command is used to apply the login authentication method list to the console port. To restore to the default authentication method list, please use the **no login authentication** command.

Syntax

login authentication { *method-list* }

no login authentication

Parameter

method-list —— Specify the login method list on the console port. It is “default” by default, which contains the method “local”.

Command Mode

Line Configuration Mode

Example

Configure the login authentication method list on the console port as “list1”:

T2500-28TC(config)# line console 0

T2500-28TC(config-line)# login authentication list1

enable authentication(console)

Description

The **enable authentication** command is used to apply the privilege authentication method list to the console port. To restore to the default authentication method list, please use the **no enable authentication** command.

Syntax

enable authentication { *method-list* }

no enable authentication

Parameter

method-list —— Specify the enable method list on the console port. It is “default” by default, which contains the method “none”.

Command Mode

Line Configuration Mode

Example

Configure the enable authentication method list on the console port as “list2”:

T2500-28TC(config)# line console 0

T2500-28TC(config-line)# enable authentication list2

line telnet

Description

The **line telnet** command is used to enter the Line Configuration Mode configure the telnet terminal line to which you want to apply the authentication list.

Syntax

line telnet

Command Mode

Global Configuration Mode

Example

Enter the telnet terminal line configuration mode:

```
T2500-28TC(config)#line telnet
```

login authentication(telnet)

Description

The **login authentication** command is used to apply the login authentication method list to the telnet terminal line. To restore to the default authentication method list, please use the **no login authentication** command.

Syntax

login authentication { *method-list* }

no login authentication

Parameter

method-list —— Specify the login method list on the telnet terminal line. It is “default” by default, which contains the method “local”.

Command Mode

Line Configuration Mode

Example

Configure the login authentication method list on the telnet terminal line as “list1”:

```
T2500-28TC(config)#line telnet
T2500-28TC(config-line)# login authentication list1
```

enable authentication(telnet)

Description

The **enable authentication** command is used to apply the privilege authentication method list to the telnet terminal line. To restore to the default authentication method list, please use the **no enable authentication** command.

Syntax

enable authentication { *method-list* }

no enable authentication

Parameter

method-list —— Specify the enable method list on the telnet terminal line. It is “default” by default, which contains the method “none”.

Command Mode

Line Configuration Mode

Example

Configure the enable authentication method list on the telnet terminal line as “list2”:

```
T2500-28TC(config)#line telnet
T2500-28TC(config-line)# enable authentication list2
```

line ssh

Description

The **line ssh** command is used to enter the Line Configuration Mode configure the ssh terminal line to which you want to apply the authentication list.

Syntax

line ssh

Command Mode

Global Configuration Mode

Example

Enter the ssh terminal line configuration mode:

T2500-28TC(config)#line ssh

login authentication(ssh)

Description

The **login authentication** command is used to apply the login authentication method list to the ssh terminal line. To restore to the default authentication method list, please use the **no login authentication** command.

Syntax

login authentication { *method-list* }

no login authentication

Parameter

method-list —— Specify the login method list on the ssh terminal line. It is "default" by default, which contains the method "local".

Command Mode

Line Configuration Mode

Example

Configure the login authentication method list on the ssh terminal line as "list1":

T2500-28TC(config)# line ssh

T2500-28TC(config-line)# login authentication list1

enable authentication(ssh)

Description

The **enable authentication** command is used to apply the privilege authentication method list to the ssh terminal line. To restore to the default authentication method list, please use the **no enable authentication** command.

Syntax

enable authentication { *method-list* }

no enable authentication

Parameter

method-list —— Specify the enable method list on the ssh terminal line. It is “default” by default, which contains the method “none”.

Command Mode

Line Configuration Mode

Example

Configure the enable authentication method list on the ssh terminal line as “list2”:

T2500-28TC(config)# line ssh

T2500-28TC(config-line)# enable authentication list2

ip http login authentication

Description

The **ip http login authentication** command is used to apply the login authentication method list to users accessing through HTTP. To restore to the default authentication method list, please use the **no ip http login authentication** command.

Syntax

ip http login authentication { *method-list* }

no ip http login authentication

Parameter

method-list —— Specify the login method list on the HTTP access. It is “default” by default, which contains the method “local”.

Command Mode

Global Configuration Mode

Example

Configure the login authentication method list on the HTTP access as “list1”:

T2500-28TC(config)# ip http login authentication list1

ip http enable authentication

Description

The **ip http enable authentication** command is used to apply the privilege authentication method list to users accessing through HTTP. To restore to the default authentication method list, please use the **no ip http enable authentication** command.

Syntax

ip http enable authentication { *method-list* }

no ip http enable authentication

Parameter

method-list —— Specify the enable method list on the HTTP access. It is "default" by default, which contains the method "none".

Command Mode

Line Configuration Mode

Example

Configure the enable authentication method list on the HTTP access as "list2":

T2500-28TC(config)# ip http enable authentication list2

show aaa global

Description

This **show aaa global** command is used to display global status of AAA function and the login/enable method lists of different application modules: console, telnet, ssh and HTTP.

Syntax

show aaa global

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the AAA function's global status and each application's method list:

T2500-28TC(config)# show aaa global

Chapter 40 DHCP Relay Commands

A DHCP Relay is a Layer 3 device that forwards DHCP packets between clients and servers. DHCP Relay forward requests and replies between clients and servers when they are not on the same physical subnet.

ip dhcp relay

Description

The **ip dhcp relay** command is used to enable DHCP Relay function globally. To disable DHCP Relay function, please use **no ip dhcp relay** command.

Syntax

ip dhcp relay

no ip dhcp relay

Command Mode

Global Configuration Mode

Example

Enable DHCP Relay function globally:

```
T2500-28TC(config)# ip dhcp relay
```

ip dhcp relay helper-address

Description

The **ip dhcp relay helper-address** command is used to specify the DHCP server address. The switch will forward DHCP packets to the specified DHCP server. To delete the server address, please use **no ip dhcp relay helper-address** command.

Syntax

ip dhcp relay helper-address *ip-address* [server-*name*]

no ip dhcp relay helper-address *ip-address*

Parameter

ip-address —— DHCP Server address.

server-name ——Specify the DHCP Server name.

Command Mode

Global Configuration Mode

Example

Add two DHCP Servers with IP addresses 192.168.2.1 and 192.168.3.1 to the switch:

```
T2500-28TC (config)# ip dhcp relay helper-address 192.168.2.1
T2500-28TC (config)# ip dhcp relay helper-address 192.168.3.1
```

ip dhcp relay information option

Description

The **ip dhcp relay information option** command is used to enable option 82 support in DHCP Relay. To disable this function, please use **no ip dhcp relay information option** command.

Syntax

ip dhcp relay information option

no ip dhcp relay information option

Command Mode

Global Configuration Mode

Example

Enable option 82 support in DHCP Relay:

```
T2500-28TC(config)# ip dhcp relay information option
```

ip dhcp relay information strategy

Description

The **ip dhcp relay information strategy** command is used to specify 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 relay information strategy** command.

Syntax

ip dhcp relay information strategy { drop | keep | replace }

no ip dhcp relay information strategy

Parameter

drop | keep | replace ——The operations for Option 82 field of the DHCP request packets from the Host. The default operation is keep.

drop: Discard the packet with the Option 82 field.

keep: Keep the Option 82 field in the packet.

replace: Replace the option 82 field with the system option defined by the switch.

Command Mode

Global Configuration Mode

Example

Specify the option 82 policy as replace to replace the Option 82 field with the local parameter on receiving the DHCP request packet:

T2500-28TC(config)# ip dhcp relay information strategy replace

ip dhcp relay information circuit-id

Description

The **ip dhcp relay information circuit-id** command is used to specify the custom circuit ID when option 82 customization is enabled. To clear the circuit ID, please use **no ip dhcp relay information circuit-id** command.

Syntax

ip dhcp relay information circuit-id *circuitID*

no ip dhcp relay information circuit-id

Parameter

circuitID —— Specify the circuit ID, ranging from 1 to 63 characters.

Command Mode

Global Configuration Mode

Example

Specify the circuit ID as “TP-Link”:

T2500-28TC(config)# ip dhcp relay information circuit-id TP-Link

ip dhcp relay information remote-id

Description

The **ip dhcp relay information remote-id** command is used to specify the custom remote ID when option 82 customization is enabled. To clear the remote ID, please use **no ip dhcp relay information remote-id** command.

Syntax

ip dhcp relay information remote-id *remoteID*

no ip dhcp relay information remote-id

Parameter

remoteID —— Specify the remote ID, ranging from 1 to 63 characters.

Command Mode

Global Configuration Mode

Example

Specify the remote ID as “TP-Link”:

T2500-28TC(config)# ip dhcp relay information remote-id TP-Link

show ip dhcp relay

Description

The **show ip dhcp relay** command is used to display the global status and Option 82 configuration of DHCP Relay.

Syntax

show ip dhcp relay

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration of DHCP Relay:

T2500-28TC(config)# show ip dhcp relay

show ip dhcp relay helper-address

Description

The **show ip dhcp relay helper-address** command is used to display the IP address of the DHCP server.

Syntax

show ip dhcp relay helper-address

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the IP address of the DHCP server:

T2500-28TC(config)# show ip dhcp relay helper-address