CLI Reference Guide

T3700G-28TQ/ T3700G-52TQ

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Preface

This Guide is intended for network administrator to provide referenced information about CLI (Command Line Interface). The device mentioned in this Guide stands for T3700G-28TQ/T3700G-52TQ. The commands in this guide apply to these models if not specially noted, and T3700G-52TQ is taken as an example model in the example commands.

Some models featured in this guide may be unavailable in your country or region. For local sales information, visit http://www.tp-link.com.

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Chapter 1 Using the CLI

1.1 Accessing the CLI

You can log in to the switch and access the CLI by the following three methods:

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

1.1.1 Logon by a console port

- Console Port

The switch has two console ports: an RJ-45 console port and a Micro-USB console port. Console output is active on devices connected to both console ports, but console input is only active on one console port at a time.

The Micro-USB connector takes precedence over the RJ-45 connector. When the switch detects a valid connection on the Micro-USB console port, input from the RJ-45 console port is immediately disabled, and input from the Micro-USB console port is enabled. Removing the Micro-USB connection immediately reenables input from the RJ-45 console connection.

- USB Console Driver

If you are using the USB port on the MAC OS X or Linux OS for console connection, there is no need to run a USB driver.

If you are using the switch's Micro-USB console port with the USB port of a Windows PC, a driver for the USB port is required. The USB driver is provided on the resource CD. Follow the InstallSheild Wizard to accomplish the installation.

The TP-Link USB Console Driver supports the following Windows operating systems:

- 32-bit Windows XP SP3
- 64-bit Windows XP
- 32-bit Windows Vista
- 64-bit Windows Vista
- 32-bit Windows 7
- 64-bit Windows 7
- 32-bit Windows 8

- 64-bit Windows 8
- 32-bit Windows 8.1
- 64-bit Windows 8.1

After the TP-Link USB Console Driver is installed, the PC's USB port will act as RS-232 serial port when the PC's USB port is connected to the switch's Micro-USB console port. And the PC's USB port will act as standard USB port when the PC's USB port is unplugged from the switch.

➢ Logon

Take the following steps to log in 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. Specify the connection COM port in the terminal emulation program. If the Micro-USB Console port is used, you can view which port is assigned to the USB serial port in the following path:

   Control Panel -> Hardware and Sound -> Device Manager -> Ports ->USB Serial Port.

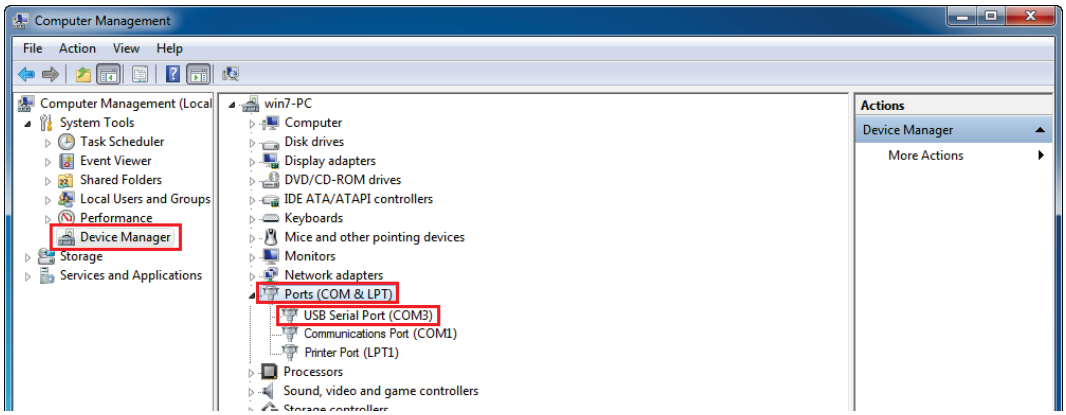

Figure 1-1 USB Serial Port Number

4. Configure the terminal emulation program or the terminal to use the following settings:
   - Baud rate: 38400 bps
   - Data bits: 8
   - Parity: none
   - Stop bits: 1
   - Flow control: none

5. The DOS prompt "T3700G-52TQ>" will appear after pressing the Enter button as shown in Figure 1-2. It indicates that you can use the CLI now.

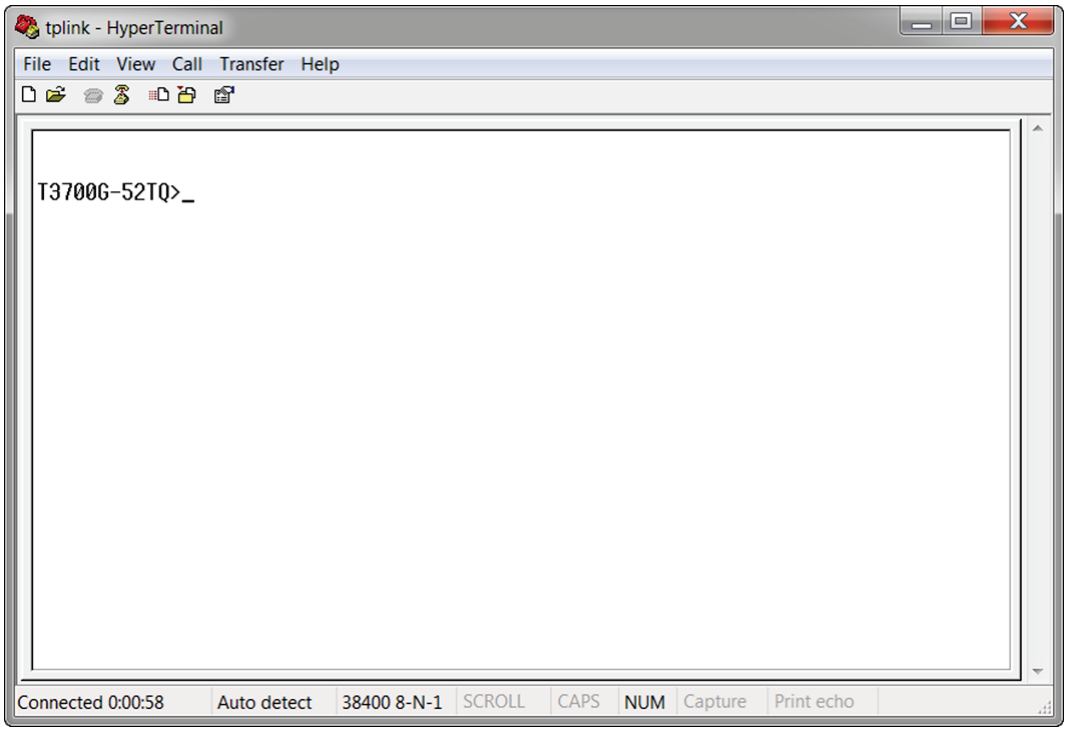

Figure 1-2 Log in the Switch

1.1.2 Configuring the Privileged EXEC Mode Password

To configure the switch remotely by a Telnet or SSH connection, please set a password for entering the Privileged EXEC Mode through the console connection first. Follow the steps in **1.1.1 Logon by a console port** to log in to the switch, and then follow the steps shown in Figure 1-3 to configure the Privileged EXEC Mode password.

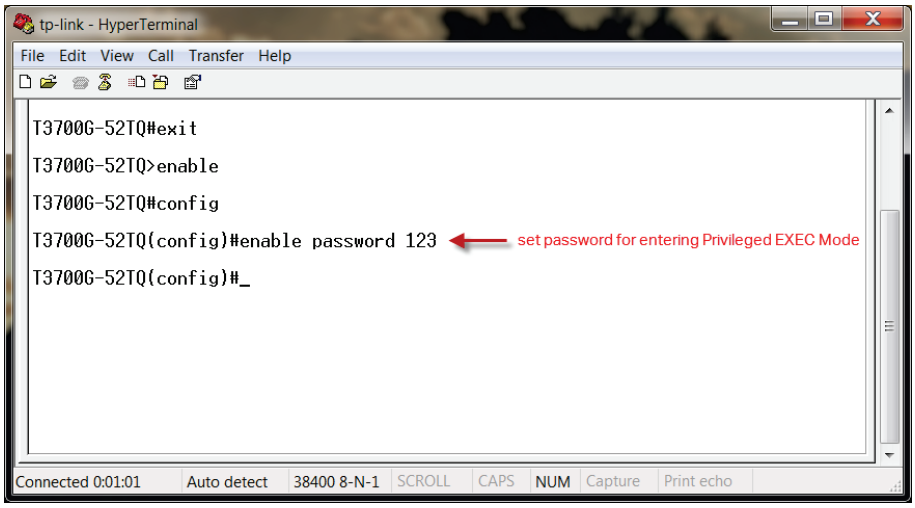

Figure 1-3 Configure the Privileged EXEC Mode Password

1.1.3 Logon by Telnet

By default, you can logon by Telnet in login local mode directly.

1. Make sure the switch and the PC are in the same LAN. Click **Start** and type **cmd** in the Search bar as Figure 1-4 and press **Enter**.

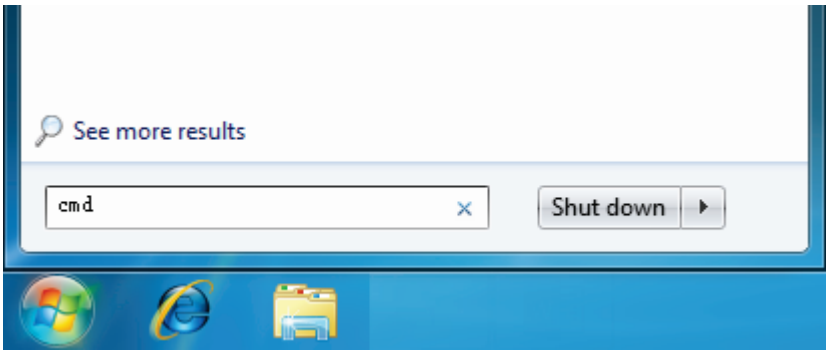

Figure 1-4 Run Window

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

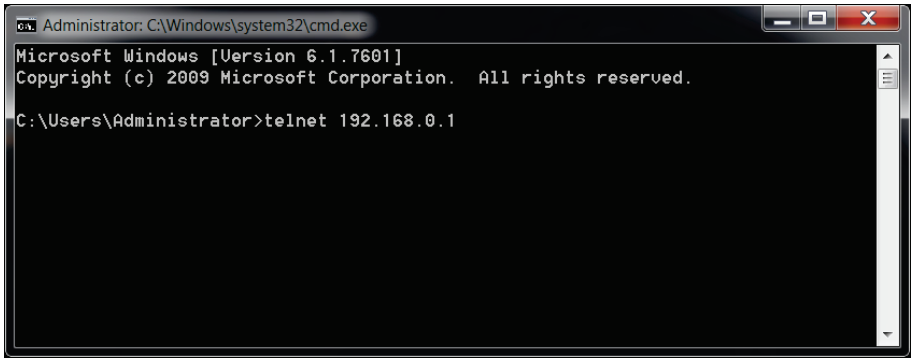

Figure 1-5 Connecting to the Switch

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

Figure 1-6 Enter into the User EXEC Mode

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

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

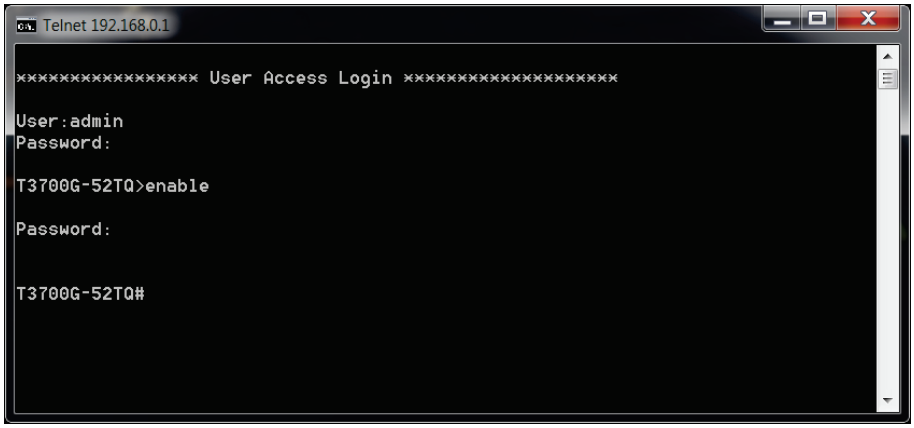

Figure 1-7 Enter into the Privileged EXEC Mode

Note:

You can refer to **Chapter 12 User Manage Commands** and **Chapter 48 AAA Commands** for detailed commands information of the Telnet connection configuration.

1.1.4 Logon by SSH

To log on by SSH, you can set up an SSH connection through Password Authentication Mode:

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

Note:

Before SSH login, you should download or generate the SSH key file, then follow the steps shown in Figure 1-8 to enable the SSH function through console connection. You can refer to **Chapter 19 SSH Commands** for detailed commands information.

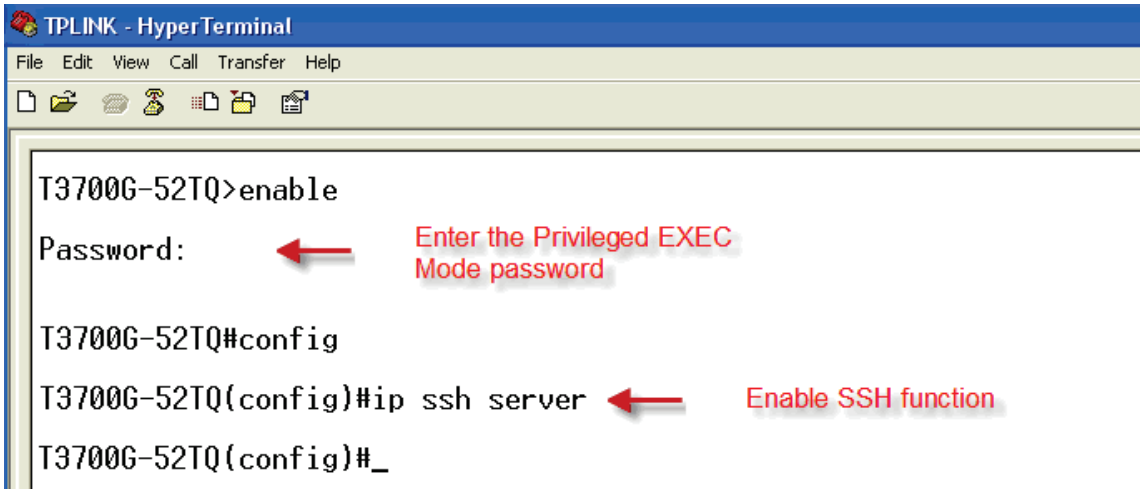

Figure 1-8 Enable SSH function

➢ **Password Authentication Mode**

1. Open the software to log in 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.

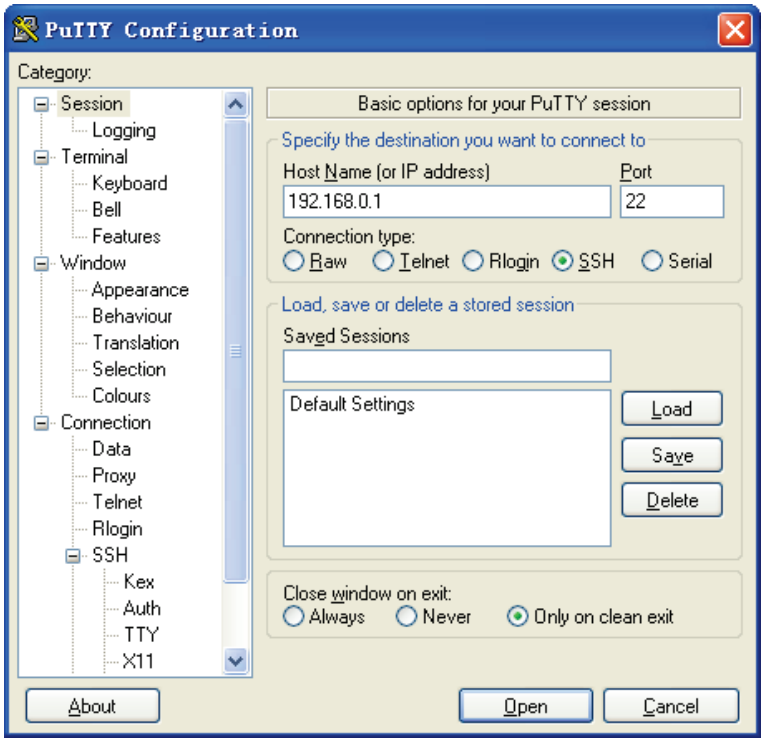

Figure 1-9 SSH Connection Config

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

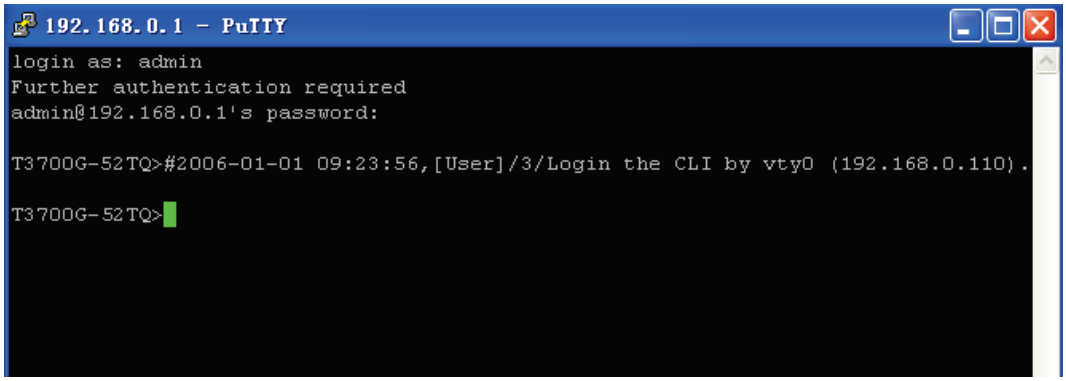

Figure 1-10 Log on the Switch

1.2 CLI Command Modes

The CLI is divided into different command modes: User EXEC Mode, Privileged EXEC Mode, Global Configuration Mode, Line Configuration Mode, VLAN Configuration Mode, Interface

Configuration Mode, Router Configuration Mode, DHCP Configuration Mode, MST Configuration Mode and Class-Map Configuration Mode. Interface Configuration Mode can also be divided into Interface gigabitEthernet, Interface link-aggregation and some other modes, which is shown as the following diagram.

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

Mode	Accessing Path	Prompt	Logout or Access the next mode
User EXEC Mode	Primary mode once it is connected with the switch.	**T3700G-52TQ>**	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.	**T3700G-52TQ#**	Enter the **disable** or **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.	**T3700G-52TQ(config)#**	Use the **exit** or the **end** command or press **Ctrl+Z** to return to Privileged EXEC mode. Use the **interface gigabitEthernet** *port* or **interface range gigabitEthernet** *port-list* command to access interface Configuration mode. Use the **vlan** *vlan-list* to access VLAN Configuration mode.
Line Configuration Mode	Use the **line vty** command from Global Configuration mode to specify a line.	**T3700G-52TQ(config- line)**	Use the **exit** command to exit to the global configuration mode. Press **Ctrl-Z** or enter **end** to return to priviledged EXEC mode.

Mode	Accessing Path	Prompt	Logout or Access the next mode
VLAN Configuration Mode	Use the **vlan** *vlan-list* command to enter this mode from Global Configuration mode.	**T3700G-52TQ(config- vlan)#**	Use the **end** command or press **Ctrl+Z** to return to Privileged EXEC mode. Enter the **exit** or the **#** command to return to Global configuration mode.
Router Configuration Mode	Use the **router ospf** *process-id* to enter OSPF Router mode from Global Configuration mode. Use the **router rip** command to enter RIP Router mode from Global Configuration mode.	**T3700G-52TQ(config- router)**	Use the **end** command or press **Ctrl+Z** to return to Privileged EXEC mode. Enter the **exit** or the **#** command to return to Global Configuration mode.
Interface Configuration Mode	Layer 2 Interface: Use the **interface gigabitEthernet** *port* or **interface range gigabitEthernet** *port-list* command to enter this mode from Global Configuration mode.	**T3700G-52TQ(config-if)#** **T3700G-52TQ(config-if-range)#**	Use the **end** command or press **Ctrl+Z** to return to Privileged EXEC mode. Enter the **exit** or the **#** command to return to Global Configuration mode. A port number must be specified in the **interface** command.
	Layer 3 Interface: Use the **no switchport** command to enter Routed Port mode from Interface Configuration mode. Use the **interface vlan** *vlan-id* command to enter VLAN Interface mode from Global Configuration mode. Use the **interface loopback** *id* command to enter Loopback Interface mode from Global Configuration mode.	**T3700G-52TQ(config-if)#** **T3700G-52TQ(config-if-range)#**	Use the **end** command or press **Ctrl+Z** to return to Privileged EXEC mode. Enter the **exit** or the **#** command to return to Global Configuration mode.
DHCP Configuration Mode	Use the **ip dhcp server pool** *pool-name* command to enter DHCP Configuration Mode from Global Configuration mode.	**T3700G-52TQ(config-dhcp)**	Use the **end** command or press **Ctrl+Z** to return to Privileged EXEC mode. Enter the **exit** or the **#** command to return to Global Configuration mode.

Mode	Accessing Path	Prompt	Logout or Access the next mode
MST Configuration Mode	Use the **spanning-tree mst configuration** command to enter this mode from Global Configuration mode.	**T3700G-52TQ(config- mst)#**	Use the **end** command or press **Ctrl+Z** to return to Privileged EXEC mode. Enter the **exit** or the **#** command to return to Global configuration mode.
Class-Map Configuration Mode	Use the **class-map** *class-map-name* command to enter this mode from Global Configuration mode.	**T3700G-52TQ(config- cmap)#**	Use the **end** command or press **Ctrl+Z** to return to Privileged EXEC mode. Enter the **exit** or the **#** 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 corresponds to different commands
  a). Interface gigabitEthernet/ten-gigabitEthernet: Configure parameters for an Ethernet port, such as Duplex-mode, flow control status.
  b). Interface range gigabitEthernet/ten-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 Loopback: Configure the parameters of the loopback interface.
  f). Interface vlan: Configure parameters for the vlan interface.
- **Vlan Configuration Mode:** In this mode, users can create a VLAN and add a specified port to the VLAN.

- **Router Configuration Mode:** In this mode, commands for configuring the Layer 3 functions are provided.

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 connecting console port with the switch or 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 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 | 10000 }
- Bold indicates an unalterable keyword. For example: **show logging**
- Normal Font indicates a constant (several options are enumerated and only one can be selected). For example: **switchport type** { access | trunk | general }
- Italic Font indicates a variable (an actual value must be assigned). For example: **bridge aging-time** *aging-time*

1.4.2 Special Characters

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

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

1.4.3 Parameter Format

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

- MAC Address must be entered in the format of xx:xx:xx:xx:xx:xx.
- One or several values can be typed for a port-list or a vlan-list using comma to separate. Use a hyphen to designate a range of values, for instance 1,3-5,7 indicates choosing 1,3,4,5,7.
- The port number should format as 1/0/3, meaning unit/slot/port. The unit number represents the unit ID of the switch in the stack. The slot number is either 0 or 1, with 0 representing ports on the front panel and 1 representing the two ports on the Interface Card inserted into the back panel. The port number is a variable (an actual value must be assigned).

Chapter 2 User Interface

2.1 enable

Description

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

Syntax

enable

Command Mode

User EXEC Mode

Example

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

```
T3700G-52TQ>enable
Password:
T3700G-52TQ#
```

2.2 service password-encryption

Description

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

Syntax

service password-encryption

no service password-encryption

Command Mode

Global Configuration Mode

Example

Enable the global encryption function:

```
T3700G-52TQ(config)# service password-encryption
```

2.3 enable password

Description

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

Syntax

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

Parameter

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

password —— Super password, a string from 1 to 31 alphanumeric characters or symbols. The password is case sensitive, allows spaces but ignores leading spaces, and cannot contain question marks. By default, it is empty.

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

encrypted-password —— A symmetric encrypted password with fixed length, which you can copy from another switch's configuration file. After the encrypted password is configured, you should use the corresponding unencrypted password access Privileged EXEC Mode from User EXEC Mode.

Command Mode

Global Configuration Mode

User Guidelines

1. If the password you configured here is unencrypted and the global encryption function is enabled in **service password-encryption**, the password in the configuration file will be displayed in the symmetric encrypted form.

2. If both the enable password and enable secret password are defined, only the latest configured password will take effect.

Example

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

```
T3700G-52TQ(config)#enable password 0 admin
```

2.4 enable secret

Description

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

Syntax

enable secret { [0] *password* **|** 5 *encrypted-password*}

no enable secret

Parameter

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

password —— Super password, a string from 1 to 31 alphanumeric characters or symbols. The password is case sensitive, allows spaces but ignores leading spaces, and cannot contain question marks. By default, it is empty. The password in the configuration file will be displayed in the MD5 encrypted form.

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

encrypted-password —— An MD5 encrypted password with fixed length, which you can copy from another switch's configuration file. After the encrypted password is configured, you should use the corresponding unencrypted password when you access Privileged EXEC Mode from User EXEC Mode.

Command Mode

Global Configuration Mode

User Guidelines

If both the **enable password** and **enable secret** are defined, only the latest configured password will take effect.

Example

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

T3700G-52TQ(config)#enable secret 0 admin

2.5 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:

T3700G-52TQ#configure

T3700G-52TQ(config)#

2.6 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:

```
T3700G-52TQ(config-if)#exit
T3700G-52TQ(config)#exit
T3700G-52TQ#
```

2.7 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:

```
T3700G-52TQ(config-if)#end
```

2.8 show history

Description

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

Syntax

show history

Command Mode

Privileged EXEC Mode and any Configuration Mode

Example

Show the commands you have entered in the current mode:

```
T3700G-52TQ(config)# show history

    1 show history
```

2.9 clear history

Description

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

Syntax

clear history

Command Mode

Privileged EXEC Mode and any Configuration Mode

Example

Clear the commands you have entered in the current mode:

```
T3700G-52TQ(config)# clear history
```

Chapter 3 Stack

The stack technology is to connect multiple stackable devices through their stack ports, forming a stack which works as a unified system and presents as a single entity to the network in Layer 2 and Layer 3 protocols. This chapter describes how to manage the T3700G-52TQ switch stacks.

3.1 boot auto-copy-sw

Description

The **boot auto-copy-sw** command is used to enable stack firmware synchronization. To disable stack firmware synchronization, please use **no boot auto-copy-sw** command.

Syntax

boot auto-copy-sw

no boot auto-copy-sw

Command Mode

Global Configuration Mode

Example

Enable stack firmware synchronization:

```
T3700G-52TQ(config)# boot auto-copy-sw
```

3.2 boot auto-copy-sw allow-downgrade

Description

The **boot auto-copy-sw allow-downgrade** command is used to enable downgrade of image on stack member. To disable downgrade of image on stack member, please use **no boot auto-copy-sw allow-downgrade** command.

Syntax

boot auto-copy-sw allow-downgrade

no boot auto-copy-sw allow-downgrade

Command Mode

Global Configuration Mode

Example

Enable downgrade of image on stack member:

```
T3700G-52TQ(config)# boot auto-copy-sw allow-downgrade
```

3.3 boot auto-copy-sw trap

Description

The **boot auto-copy-sw trap** command is used to enable stack firmware synchronization traps. To disable stack firmware synchronization traps on stack member, please use **no boot auto-copy-sw trap** command.

Syntax

boot auto-copy-sw trap

no boot auto-copy-sw trap

Command Mode

Global Configuration Mode

Example

Enable stack firmware synchronization traps:

```
T3700G-52TQ(config)# boot auto-copy-sw trap
```

3.4 switch master

Description

The **switch master** command is used to set the role of a specified switch in the stack as master.

Syntax

swtich *unitid* **master**

Parameter

unitid—— Specify the member number.

Command Mode

Global Configuration Mode

Example

Specify the unit 1's role as master in the stack:

```
T3700G-52TQ(config)# switch 1 master
```

3.5 switch standby

Description

The **switch standby** command is used to set the role of a specified switch in the stack as standby member. To cancel standby member setting, please use **no switch standby** command.

Syntax

swtich *unitid* **standby**

no switch standby

Parameter

unitid —— Specify the member number.

Command Mode

Global Configuration Mode

Example

Specify the unit 1's role as standby member in the stack:

```
T3700G-52TQ(config)# switch 1 standby
```

3.6 switch priority

Description

The **switch priority** command is specify the stack member number and the new priority for the stack member. To restore the priority of the specified stack member to the default setting as unassigned, please use **no switch priority** command.

Syntax

swtich *unitid* **priority** *priority*

no switch *unitid* **priority**

Parameter

unitid—— Specify the member number.

priority—— Specify the member's priority, ranging from 0 to 15.

Command Mode

Global Configuration Mode

Example

Specify the unit 1's priority as 10 in the stack:

```
T3700G-52TQ(config)# switch 1 priority 10
```

3.7 switch renumber

Description

The **switch renumber** command is modify the member number of a specified stack member.

Syntax

swtich *unitid* **renumber** { *newid* | **auto-numbering** }

Parameter

unitid—— Specify the member to be renumbered.

newid—— Specify the new stack member number for the stack member.

auto-numbering —— The specified member will obtain its stack number through auto-numbering.

Command Mode

Global Configuration Mode

Example

Modify the unit 1's new member number as 2:

```
T3700G-52TQ(config)# switch 1 renumber 2
```

3.8 switch stack-port

Description

The **switch stack-port** command is used to enable the stack port. To switch the stack port to Ethernet port, please use **no switch stack-port** command. Port 1/0/25 and 1/0/26 are in Stack Port Group 1 and 1/0/27 and 1/0/28 are in Stack Group 2. Stack feature can only be enabled in one group at a time.

Syntax

swtich stack-port interface ten-gigabitEthernet *port*

no switch stack-port interface ten-gigabitEthernet *port*

Parameter

port—— The ten-gigabit port number.

Command Mode

Global Configuration Mode

Example

Specify the ten-gigabit port 1/0/28 as a stack port:

T3700G-52TQ(config)# switch stack-port interface ten-gigabitEthernet 1/0/28

3.9 switch provision

Description

The **switch provision** command is used to configure the provisioned stack member. The provision configuration feature enables you to configure a new switch in advance before it joins the stack, which means you can configure the stack unit number and its switch type which is not currently the stack member.

The information of the provisioned member is manually created, or created/updated by the switch member when it joins the stack. The provisioned configuration retains in the stack when the stack member leaves the stack.

Syntax

swtich *unitid* **provision** *type*

no switch *unitid* **provision**

Parameter

unitid —— The stack member number of the provisioned switch.

type —— The device type of the provisioned switch.

Command Mode

Global Configuration Mode

Example

Create a provisioned switch whose stack member number is 2 and device type is T3700G-52TQRev1:

T3700G-52TQ(config)# switch 2 **provision** T3700G-52TQRev1

3.10 show switch

Description

The **show switch** command is used to display the current stack's information.

Syntax

show switch [*unitid* **| detail | neighbors | stack-ports | stack-ports counters | synchronization**]

Parameter

unitid —— Specify the member number.

detail —— Display the detailed information of the stack, including stack member, stack port and neighboring information.

neighbors —— Display the information of the stack neighbor.

stack-ports —— Display the information of the stack ports.

stack-ports counters —— Display the statistic information of the stack ports.

synchronization ——Display the synchronization information.

Command Mode

Privileged EXEC Mode and any Configuration Mode

Example

Display the detailed information of the current stack:

```
T3700G-52TQ(config)# show switch detail
```

3.11 show auto-copy-sw

Description

The **show auto-copy-sw** command is used to display the stack firmware synchronization configuration status.

Syntax

show auto-copy-sw

Command Mode

Privileged EXEC Mode and any Configuration Mode

Example

Display the stack firmware synchronization configuration status of the current stack:

```
T3700G-52TQ(config)# show auto-copy-sw
```

3.12 clear switch-synchronization

Description

The **clear switch-synchronization** command is used to clear the stack firmware synchronization information.

Syntax

clear switch-synchronization

Command Mode

Privileged EXEC Mode and any Configuration Mode

Example

Clear the stack firmware synchronization information:

```
T3700G-52TQ(config)# clear switch-synchronization
```

Chapter 4 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.

4.1 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 4093, in the format of 2-3, 5. It is multi-optional.

Command Mode

Global Configuration Mode

Example

Create VLAN 2-10 and VLAN 100:

T3700G-52TQ(config)#vlan 2-10,100

Delete VLAN 2:

T3700G-52TQ(config)#no vlan 2

4.2 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 4093.

Command Mode

Global Configuration Mode

Example

Create VLAN Interface 2:

T3700G-52TQ(config)#interface vlan 2

4.3 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":

T3700G-52TQ(config)#vlan 2

T3700G-52TQ(config-vlan)#name VLAN002

4.4 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/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Specify the Link Type of Gigabit Ethernet port 1/0/3 as "trunk":

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)#switchport mode trunk

4.5 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 4093.

Command Mode

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

Example

Configure Gigabit Ethernet port 1/0/3 whose link type is "access" to VLAN 2:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)#switchport access vlan 2

4.6 switchport trunk allowed vlan

Description

The **switchport trunk allowed vlan** command is used to add the desired Trunk port to IEEE 802.1Q VLAN. To 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 1 to 4093, 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/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

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

T3700G-52TQ(config)#interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)#switchport mode trunk

T3700G-52TQ(config-if)#switchport trunk allowed vlan 2

4.7 switchport general allowed vlan

Description

The **switchport general allowed vlan** command is used to add the desired General port to IEEE 802.1Q VLAN, 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 1 to 4093, 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/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Configure Gigabit Ethernet port 1/0/4 whose link type is “general” to VLAN 2 and its egress-rule as “tagged”:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/4

T3700G-52TQ(config-if)#switchport mode general

T3700G-52TQ(config-if)#switchport general allowed vlan 2 tagged

4.8 switchport pvid

Description

The **switchport pvid** command is used to configure the PVID for the switch General ports. To restore the PVID of the specified port as 1, please use the **no switchport pvid**.

Syntax

switchport pvid *vlan-id*

Parameter

vlan-id—— Specify IEEE 802.1Q VLAN ID, ranging from 1 to 4093.

Command Mode

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

Example

Specify the PVID of Gigabit Ethernet port 1/0/3 (General) as 1:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)#switchport pvid 1

4.9 switchport trunk native vlan

Description

The **switchport trunk native vlan** command is used to configure the PVID for the switch Trunk ports. To restore the PVID of the specified port as 1, please use the **no switchport trunk native vlan**.

Syntax

switchport trunk native vlan *vlan-id*

Parameter

vlan-id—— Specify IEEE 802.1Q VLAN ID, ranging from 1 to 4093.

Command Mode

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

Example

Specify the PVID of Gigabit Ethernet port 1/0/3 (Trunk) as 1:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)#switchport trunk native vlan 1

4.10 show interface switchport

Description

The **show interface switchport** command is used to display the information of one or all Ethernet ports.

Syntax

show interface switchport [**fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *lagid*]

Parameter

port——The Fast/Gigabit/Ten-Gigabit Ethernet port number.

lagid——The ID of the LAG.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the detailed information of Gigabit Ethernet port 1/0/3:

T3700G-52TQ(config)#show interface switchport gigabitEthernet 1/0/3

4.11 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:

```
T3700G-52TQ(config)#show vlan summary
```

4.12 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:

```
T3700G-52TQ(config)#show vlan brief
```

4.13 show vlan

Description

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

Syntax

show vlan [**id** *vlan-id*]

Parameter

vlan-id —— Specify IEEE 802.1Q VLAN ID, ranging from 1 to 4093. Using the **show vlan** command without parameter displays the detailed information of all the VLAN.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the detailed information of VLAN 2:

T3700G-52TQ(config)#show vlan id 2

Chapter 5 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.

5.1 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*

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 4093.

Command Mode

Global Configuration Mode

Example

Create VLAN 2 with the MAC address 00:11:11:01:01:12 :

T3700G-52TQ(config)#mac-vlan mac-address 00:11:11:01:01:12 **vlan** 2

5.2 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 4093.

Example

Display the information of all the MAC-based VLAN entry:

```
T3700G-52TQ(config)#show mac-vlan all
```

Chapter 6 Protocol VLAN Commands

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

6.1 protocol-vlan template

Description

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

Syntax

protocol-vlan template *template-idx* **name** *desc* **frame ether_2 ether-type** *ether-type*

no protocol-vlan template *template-idx*

Parameter

template-idx —— Give a template ID for the Protocol-based VLAN Template , which ranges from 1 to 128. You can get the template corresponding to the number by the **show protocol-vlan template** command.

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

ether-type —— Specify the Ethernet type.

Command Mode

Global Configuration Mode

Example

Create a Protocol-based VLAN template named "Temp1" whose ID is 1 and Ethernet protocol type is 0x0800:

T3700G-52TQ(config)#protocol-vlan template 1 **name** Temp1 **frame ether_2 ether-type** 0800

6.2 protocol-vlan vlan

Description

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

Syntax

protocol-vlan vlan *vlan-id* **template** *template-idx*

no protocol-vlan vlan *group-idx*

Parameter

vlan-vid—— Specify IEEE 802.1Q VLAN ID, ranging from 1-4093.

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:

```
T3700G-52TQ(config)# protocol-vlan vlan 2 template 3
```

6.3 protocol-vlan

Description

The **protocol-vlan** command is used to add the port to a specified protocol group. To remove the port from this protocol group, please use **no protocol-vlan group** command.

Syntax

protocol-vlan group *index*

no protocol-vlan group *index*

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Parameter

index —— Specify the protocol group ID.

Example

Add Gigabit Ethernet port 1/0/20 to protocol group 1:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/20

T3700G-52TQ(config-if)#protocol-vlan group 1

6.4 show protocol-vlan template

Description

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

Syntax

show protocol-vlan template

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of the Protocol-based VLAN templates:

T3700G-52TQ(config)# show protocol-vlan template

6.5 show protocol-vlan vlan

Description

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

Syntax

show protocol-vlan vlan

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display information of the Protocol-based VLAN entry:

```
T3700G-52TQ(config)# show protocol-vlan vlan
```

Chapter 7 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.

7.1 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 *tpid*
no dot1q-tunnel tpid

Parameter

tpid —— 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:

T3700G-52TQ(config)#dot1q-tunnel tpid 9100

7.2 switchport dot1q-tunnel mode nni

Description

The **switchport dot1q-tunnel mode nni** command is used to configure the VPN up-link port. To close this VPN up-link port, please use the **no switchport dot1q-tunnel mode** command. By default, no port has been configured as the VPN up-link port.

Syntax

switchport dot1q-tunnel mode nni

no switchport dot1q-tunnel mode

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Configure the Gigabit Ethernet port 1/0/3 as the VPN up-link port:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)#switchport dot1q-tunnel mode nni

7.3 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 configuration information of the VLAN VPN:

T3700G-52TQ(config)#show dot1q-tunnel

Chapter 8 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.

8.1 voice vlan

Description

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

Syntax

voice vlan *vlan-id*

no voice vlan

Parameter

vlan-id—— Specify IEEE 802.1Q VLAN ID, ranging from 2 to 4093.

Command Mode

Global Configuration Mode

Example

Enable the Voice VLAN function for VLAN 10:

T3700G-52TQ(config)#voice vlan 10

8.2 voice vlan (interface)

Description

The **voice vlan** command is used to enable Voice VLAN mode for the desired port. To disable Voice VLAN mode, please use **no voice vlan** command.

Syntax

voice vlan

no voice vlan

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable the Voice VLAN mode for the Gigabit Ethernet port 1/0/3:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)#voice vlan

8.3 voice vlan priority

Description

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

Syntax

voice vlan priority *pri*

no voice vlan priority

Parameter

pri—— Priority, ranging from 0 to 7.

Command Mode

Global Configuration Mode

Example

Configure the priority of the Voice VLAN as 5:

T3700G-52TQ(config)#voice vlan priority 5

8.4 voice vlan oui

Description

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

Syntax

voice vlan oui *oui-prefix*

no voice vlan oui *oui-prefix*

Parameter

oui-prefix —— The OUI address prefix of the voice device, in the format of XX:XX:XX.

Command Mode

Global Configuration Mode

Example

Create a Voice VLAN OUI with the OUI address prefix 00:11:11:

```
T3700G-52TQ(config)#voice vlan oui 00:11:11
```

8.5 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:

```
T3700G-52TQ(config)#show voice vlan
```

8.6 show voice vlan oui-table

Description

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

Syntax

show voice vlan oui-table

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration information of Voice VLAN OUI-Table:

```
T3700G-52TQ(config)#show voice vlan oui-table
```

8.7 show voice vlan interface

Description

The **show voice vlan interface** command is used to display the configuration information of all the ports.

Syntax

show voice vlan interface

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

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

```
T3700G-52TQ(config)#show voice vlan interface
```

Chapter 9 Private VLAN Commands

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

9.1 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 remove the primary VLAN property pf the current 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:

T3700G-52TQ(config)#vlan 3

T3700G-52TQ(config-vlan)#private-vlan primary

9.2 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 remove the community VLAN property pf the current 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:

```
T3700G-52TQ(config)#vlan 4
T3700G-52TQ(config-vlan)#private-vlan community
```

9.3 private-vlan isolated

Description

The **private-vlan isolated** command is used to configure the designated VLAN as the isolated VLAN of the Private VLAN. To remove the isolated VLAN property pf the current VLAN, please use **no private-vlan isolated** command.

Syntax

private-vlan isolated

no private-vlan isolated

Command Mode

VLAN Configuration Mode (VLAN)

Example

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

```
T3700G-52TQ(config)#vlan 3
T3700G-52TQ(config-vlan)#private-vlan isolated
```

9.4 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 4093.

Command Mode

VLAN Configuration Mode (VLAN)

Example

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

T3700G-52TQ(config)#vlan 3

T3700G-52TQ(config-vlan)#private-vlan association 4

9.5 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

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/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Configure Gigabit Ethernet port 3 as "host":

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)#switchport private-vlan host

9.6 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

Parameter

primary-vlan-id—— Primary VLAN ID, ranging from 2 to 4093.

secondary-vlan-id—— Secondary VLAN ID, ranging from 2 to 4093.

Command Mode

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

Example

Configure host type Gigabit Ethernet port 1/0/3 as a member of primary VLAN 3 and secondary VLAN 4:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)#switchport private-vlan host-association 3 4

9.7 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

Parameter

primary-vlan-id —— Primary VLAN ID, ranging from 2 to 4093.

secondary-vlan-id —— Secondary VLAN ID, ranging from 2 to 4093.

Command Mode

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

Example

Configure promiscuous type Gigabit Ethernet port 1/0/3 as a member of primary VLAN 3 and secondary VLAN 4:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/3
T3700G-52TQ(config-if)#switchport private-vlan mapping 3 4
```

9.8 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:

```
T3700G-52TQ(config)#show vlan private-vlan
```

9.9 show vlan private-vlan interface

Description

The **show vlan private-vlan interface** command is used to display the Private VLAN configuration information of the specified port(s).

Syntax

show vlan private-vlan interface [**fastEthernet** *port* | **gigabitEthernet** *port*]

Parameter

port —— The list of Ethernet ports.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration information of all the Ethernet ports:

```
T3700G-52TQ(config)#show vlan private-vlan interface
```

Chapter 10 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.

10.1 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:

```
T3700G-52TQ(config)#gvrp
```

10.2 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 gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable the GVRP function for Gigabit Ethernet ports 1/0/2-6:

T3700G-52TQ(config)#interface range gigabitEthernet 1/0/2-6

T3700G-52TQ(config-if-range)#gvrp

10.3 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 200 to 6000 centiseconds and the default value is 1000 centiseconds. The Join Timer ranges from 10 to 100 centiseconds and the default value is 20 centiseconds. The Leave Timer ranges from 20 to 600 centiseconds and the default value is 60 centiseconds.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Set the GARP leaveall timer of Gigabit Ethernet port 1/0/6 as 2000 centiseconds and restore the join timer of it to the default value:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/6
T3700G-52TQ(config-if)#gvrp timer leaveall 2000
T3700G-52TQ(config-if)#no gvrp timer join
```

10.4 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:

```
T3700G-52TQ(config)#show gvrp global
```

10.5 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 [**gigabitEthernet** *port* | **ten-gigabitEthernet** *port*]

Parameter

port ——The Gigabit/Ten-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 Gigabit Ethernet port 1:

T3700G-52TQ(config)#show gvrp interface gigabitEthernet 1/0/1

Display the GVRP configuration information of all Ethernet ports:

T3700G-52TQ(config)#show gvrp interface

Chapter 11 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.

11.1 channel-group

Description

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

Syntax

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

no channel-group

Parameter

num —— The number of the EtherChannel Group, ranging from 1 to 64.

on —— Enable the static LAG.

active —— Enable the active LACP mode.

passive —— Enable the passive LACP mode.

Command Mode

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

Example

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

```
T3700G-52TQ(config)#interface range gigabitEthernet 1/0/2-4
T3700G-52TQ(config-if-range)#channel-group 1 mode on
```

11.2 port-channel load-balance

Description

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

Syntax

port-channel load-balance {src-mac | drt-mac | src-dst-mac | src-ip | drt-ip | src-dst-ip}

no port-channel load-balance

Parameter

src-mac —— The computation is based on the source MAC addresses of the packets.

dst-mac —— The computation is based on the destination MAC addresses of the packets.

src-dst-mac —— The computation is based on the source and destination MAC addresses of the packets.

src-ip —— The computation is based on the source IP addresses of the packets.

dst-ip —— The computation is based on the destination IP addresses of the packets.

src-dst-ip —— The computation is 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”:

```
T3700G-52TQ(config)#port-channel load-balance src-dst-mac
```

11.3 lacp system-priority

Description

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

Syntax

lacp system-priority *pri*

no lacp system-priority

Parameter

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

Command Mode

Global Configuration Mode

Example

Configure the LACP system priority as 1024 globally:

T3700G-52TQ(config)#lacp system-priority 1024

11.4 lacp port-priority

Description

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

Syntax

lacp port-priority *pri*

no lacp port-priority

Parameter

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

Command Mode

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

Example

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

T3700G-52TQ(config)#interface gigabitEthernet 1/0/1

T3700G-52TQ(config-if)#lacp port-priority 1024

11.5 show etherchannel

Description

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

Syntax

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

Parameter

channel-group-num —— The EtherChannel Group number, ranging from 1 to 32. 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:

T3700G-52TQ(config)#show etherchannel 1 detail

11.6 show etherchannel load-balance

Description

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

Syntax

show etherchannel load-balance

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the Aggregate Arithmetic of LAG:

T3700G-52TQ(config)#show etherchannel load-balance

11.7 show lacp

Description

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

Syntax

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

Parameter

channel-group-num —— The EtherChannel Group number, ranging from 1 to 32. 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:

T3700G-52TQ(config)#show lacp 1 internal

11.8 show lacp sys-id

Description

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

Syntax

show lacp sys-id

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the LACP system priority:

```
T3700G-52TQ(config)#show lacp sys-id
```

Chapter 12 User Manage Commands

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

12.1 user name (password)

Description

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

Syntax

user name *name* [**privilege** admin | guest] **password** { [0] *password* | 7 *encrypted-password*}

no user name *name*

Parameter

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

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

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

password —— Users' login password, a string from 1 to 31 alphanumeric characters or symbols. The password is case sensitive, allows spaces but ignores leading spaces, and cannot contain question marks. By default, it is empty.

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

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

Command Mode

Global Configuration Mode

User Guidelines

1. If the password you configured here is unencrypted and the global encryption function is enabled in **service password-encryption**, the password in the configuration file will be displayed in the symmetric encrypted form.
2. If both the user's password and secret password are defined, only the latest configured password will take effect.

Example

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

T3700G-52TQ(config)#user name tplink **privilege** admin **password** 0 admin

12.2 user name (secret)

Description

The **user name** command is used to add a new user or modify the existed users' information. To delete the existed users, please use **no user name** command. The password of the user configured here will be displayed in the MD5 encrypted form in the configuration file.

Syntax

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

no user name *name*

Parameter

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

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

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

password ——Users' login password, a string from 1 to 31 alphanumeric characters or symbols. The password is case sensitive, allows spaces but ignores leading spaces, and cannot contain question marks. By default, it is empty. The password in the configuration file will be displayed in the MD5 encrypted form.

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

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

Command Mode

Global Configuration Mode

User Guidelines

If both the user name's password and secret password are defined, only the latest configured password will take effect.

Example

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

T3700G-52TQ(config)#user name tplink **privilege** admin **secret** 0 admin

12.3 user access-control ip-based

Description

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

Syntax

user access-control ip-based { *ip-addr ip-mask* } [snmp] [telnet] [ssh] [http] [https] [ping] [all]

no user access-control

Parameter

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

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

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

Command Mode

Global Configuration Mode

Example

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

T3700G-52TQ(config)# user access-control ip-based 192.168.0.148 255.255.255.255

12.4 user access-control mac-based

Description

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

Syntax

user access-control mac-based { *mac-addr* } [snmp] [telnet] [ssh] [http] [https] [ping] [all]

no user access-control

Parameter

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

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

Command Mode

Global Configuration Mode

Example

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

T3700G-52TQ(config)# user access-control mac-based 00:00:13:0A:00:01

12.5 user access-control port-based

Description

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

Syntax

user access-control port-based interface { **gigabitEthernet** *port-list* } [snmp] [telnet] [ssh] [http] [https] [ping] [all]

no user access-control

Parameter

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

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

Command Mode

Global Configuration Mode

Example

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

T3700G-52TQ(config)# user access-control port-based interface gigabitEthernet 1/0/2-6

12.6 media-type rj45

Description

The **media-type rj45** command is used to configure the console media type as RJ-45 for input. The switch has two console ports available —— an RJ-45 console port and a micro-USB console port. Console input is active on only one console port at a time. By default, the micro-USB connector takes precedence over the RJ-45 connector, which means that, when both the RJ-45 console connection and micro-USB console connection are valid, input from the RJ-45 console is disabled, and input from the micro-USB

console is enabled. To return to the default configuration, please use **no media-type rj45** command.

Syntax

media-type rj45

no media-type rj45

Command Mode

Line Configuration Mode

Example

Enable the RJ-45 console input:

```
T3700G-52TQ(config)# line console 0
T3700G-52TQ(config-line)# media-type rj45
```

Receive the micro-USB console input prior to the RJ-45 console input:

```
T3700G-52TQ(config)# line console 0
T3700G-52TQ(config-line)# no media-type rj45
```

12.7 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* **| ssh | telnet**]

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.

Command Mode

Global Configuration Mode

Example

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

```
T3700G-52TQ(config)#line console 0
```

12.8 password

Description

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

Syntax

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

no password

Parameter

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

password —— Connection password, a string from 1 to 31 alphanumeric characters or symbols. The password is case sensitive, allows spaces but ignores leading spaces, and cannot contain question marks. By default, it is empty.

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

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

Command Mode

Line Configuration Mode

User Guidelines

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

Example

Configure the connection password of Console port connection 0 as "tplink" and unencrypted:

```
T3700G-52TQ(config)#line console 0
T3700G-52TQ(config-line)#password 0 tplink
```

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

T3700G-52TQ(config)#line vty 0 5

T3700G-52TQ(config-line)#password 0 tplink

12.9 login local

Description

The **login local** command is used to configure the login mode of the switch which uses the user name and password to login.

Syntax

login local

Command Mode

Line Configuration Mode (Console)

Example

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

T3700G-52TQ(config)#line console 0

T3700G-52TQ(config-line)#login local

12.10 telnet

Description

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

Syntax

telnet enable

telnet disable

Command Mode

Global Configuration Mode

Example

Disable the Telnet function:

```
T3700G-52TQ (config)# telnet disable
```

12.11 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:

```
T3700G-52TQ(config)#show user account-list
```

12.12 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:

```
T3700G-52TQ(config)#show user configuration
```

12.13 show telnet-status

Description

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

Syntax

show telnet-status

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display whether the Telnet function is enabled:

```
T3700G-52TQ(config)# show telnet-status
```

Chapter 13 Binding Table Commands

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

13.1 ip source binding

Description

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

Syntax

ip source binding *sip mac* **vlan** *vlan-id* **interface** { **gigabitEthernet** *port* | **ten-gigabitEthernet** *port*}

no ip source binding *mac*

Parameter

sip—— The IP address of the Host.

mac —— The MAC address of the Host.

vlan-id——The VLAN ID needed to be bound, ranging from 1 to 4093.

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

Command Mode

Global Configuration Mode

Example

Bind an entry with the IP 192.168.0.1, MAC 00:00:00:00:00:01, VLAN ID 2 and the Port number 1/0/5 manually:

T3700G-52TQ(config)#ip source binding 192.168.0.1 00:00:00:00:00:01 **vlan** 2 **interface gigabitEthernet** 1/0/5

Delete the IP-MAC–VID-PORT entry with the IP 192.168.0.1, MAC 00:00:00:00:00:01, VLAN ID 2 and the Port number 1/0/5:

T3700G-52TQ(config)#no ip source binding 00:00:00:00:00:01

13.2 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:

T3700G-52TQ(config)#ip dhcp snooping

13.3 ip dhcp snooping vlan

Description

The **ip dhcp snooping vlan** command is used to enable DHCP Snooping function on a specified VLAN. To disable DHCP Snooping function on this VLAN, please use **no ip dhcp snooping vlan** command.

Syntax

ip dhcp snooping vlan *vlan-range*

no ip dhcp snooping vlan *vlan-range*

Parameter

vlan-range —— Specify the VLANs to enable the DHCP snooping function, in the format of 1-3, 5.

Command Mode

Global Configuration Mode

Example

Enable the DHCP Snooping function on VLAN 1,4,6-7:

T3700G-52TQ(config)#ip dhcp snooping vlan 1,4,6-7

13.4 ip dhcp snooping information option

Description

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

Syntax

ip dhcp snooping information option

no ip dhcp snooping information option

Command Mode

Global Configuration Mode

Example

Enable the Option 82 function of DHCP Snooping:

T3700G-52TQ(config)#ip dhcp snooping information option

13.5 ip dhcp snooping information strategy

Description

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

Syntax

ip dhcp snooping information strategy *strategy*

no ip dhcp snooping information strategy

Parameter

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

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

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

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

Command Mode

Global Configuration Mode

Example

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

T3700G-52TQ(config)#ip dhcp snooping information strategy replace

13.6 ip dhcp snooping information remote-id

Description

The **ip dhcp snooping information remote-id** command is used to 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 63 characters at most.

Command Mode

Global Configuration Mode

Example

Configure the customized sub-option Remote ID for the Option 82 as tplink:

T3700G-52TQ(config)#ip dhcp snooping information remote-id tplink

13.7 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 on a specified port/LAG. 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 gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable and configure the customized sub-option Circuit ID for the Option 82 as “tplink” on port 1/0/1:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/1

T3700G-52TQ(config-if)#ip dhcp snooping information circuit-id tplink

13.8 ip dhcp snooping trust

Description

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

Syntax

ip dhcp snooping trust

no ip dhcp snooping trust

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Configure the Gigabit Ethernet port 1/0/2 to be a Trusted Port:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)#ip dhcp snooping trust

13.9 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

Global Configuration Mode

Example

Enable the MAC Verify feature:

T3700G-52TQ(config)#ip dhcp snooping mac-verify

13.10 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 5/10/15/20/25/30 (packet/second). The default value is 0, which stands for "disable".

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Set the Flow Control of GigabitEthernet port 2 as 20 pps:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)#ip dhcp snooping limit rate 20

13.11 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:

```
T3700G-52TQ(config)#show ip source binding
```

13.12 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:

```
T3700G-52TQ#show ip dhcp snooping
```

13.13 show ip dhcp snooping interface

Description

The **show ip dhcp snooping interface** command is used to display the DHCP Snooping configuration of a desire Ethernet port/LAG or of all Ethernet ports/LAGs.

Syntax

show ip dhcp snooping interface [**gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *lagid*]

Parameters

port —— The Ethernet port number.

lagid —— The ID of the LAG.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the DHCP Snooping configuration of all Ethernet ports and LAGs:

T3700G-52TQ#show ip dhcp snooping interface

Display the DHCP Snooping configuration of Gigabit Ethernet port 1/0/5:

T3700G-52TQ#show ip dhcp snooping interface gigabitEthernet 1/0/5

Chapter 14 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.

14.1 ip arp inspection

Description

The **ip arp inspection** command is used to enable the ARP Detection function for the specified VLAN(s). To disable the ARP Detection function, please use **no ip arp detection** command.

Syntax

ip arp inspection vlan {*vlan-list*} **[logging]**

no ip arp inspection vlan {*vlan-list*} **[logging]**

Parameter

vlan-list —— The VLAN ID needed to enable the ARP Inspection function, ranging from 0 to 4093. 0 indicates that the function is disabled.

Command Mode

Global Configuration Mode

Example

Enable the ARP Detection function for VLAN 5 and enable the logging feature:

T3700G-52TQ(config)#ip arp inspection vlan 5 **logging**

14.2 ip arp inspection validate

Description

The **ip arp inspection validate** command is used to enable the switch to check the source MAC address, destination MAC address or IP address when receiving an ARP packet. To disable the function, please use **no ip arp inspection validate** command.

Syntax

ip arp inspection validate {src-mac|dst-mac|ip}

no ip arp inspection validate {src-mac|dst-mac|ip}

Parameter

src-mac ——Enable the switch to check whether the source MAC address and the Sender MAC address are the same when receiving an ARP packet. If not, the ARP packet will be discarded.

dst-mac ——Enable or disable the switch to check whether the Destination MAC address and the Target MAC address are the same when receiving an ARP Reply packet. If not, the ARP packet will be discarded.

ip ——Enable or disable the switch to check whether the Sender IP address of all ARP packets and the Target IP address of ARP Reply packets are legal. The illegal packets will be discarded.

Command Mode

Global Configuration Mode

Example

Enable the ARP Detection function for VLAN 5 and enable the logging feature:

T3700G-52TQ(config)#ip arp inspection vlan 5 **logging**

14.3 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

Example

Configure the Gigabit Ethernet ports 1/0/2-5 as the Trusted Port:

T3700G-52TQ(config)#interface range gigabitEthernet 1/0/2-5

T3700G-52TQ(config-if-range)#ip arp inspection trust

14.4 ip arp inspection limit-rate

Description

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

Syntax

ip arp inspection limit-rate { *pps* [**burst-interval** *seconds*] | **none**}

Parameter

pps ——The value to specify the maximum amount of the received ARP packets per second, ranging from 1 to 300 in pps(packet/second). By default, the value is 15.

seconds ——The value to specify a time range. If the average speed of received ARP packets in this time range reach the limit, the port will be shut down, ranging from 1 to 15 in seconds. By default, the value is 1.

none —— The speed of receiving ARP packets is not limited.

Command Mode

Interface Configuration Mode

Example

Configure the maximum amount of the received ARP packets per second as 50 pps for Gigabit Ethernet port 1/0/5:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/5

T3700G-52TQ(config-if)#ip arp inspection limit-rate 50

14.5 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

Example

Restore Gigabit Ethernet port 1/0/5 to the ARP transmit status:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/5
T3700G-52TQ(config-if)#ip arp inspection recover
```

14.6 show ip arp inspection

Description

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

Syntax

show ip arp inspection

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the ARP detection configuration globally:

```
T3700G-52TQ(config)#show ip arp inspection
```

14.7 show ip arp inspection interface

Description

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

Syntax

show ip arp inspection interface [**gigabitEthernet** *port* | **ten-gigabitEthernet** *port*]

Parameter

port——The Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration of Gigabit Ethernet port 1/0/1:

T3700G-52TQ(config)#show ip arp inspection interface gigabitEthernet 1/0/1

Display the configuration of all Ethernet ports:

T3700G-52TQ(config)#show ip arp inspection interface

14.8 show ip arp inspection statistics

Description

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

Syntax

show ip arp inspection statistics

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the number of the illegal ARP packets received:

```
T3700G-52TQ(config)#show ip arp inspection statistics
```

14.9 clear ip arp inspection statistics

Description

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

Syntax

clear ip arp inspection statistics

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Clear the statistic of the illegal ARP packets received:

```
T3700G-52TQ(config)#clear ip arp inspection statistics
```

Chapter 15 DoS Defend Commands

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.

15.1 ip dos-prevent type

Description

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

Syntax

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

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

Parameter

land —— Land attack.

scan-synfin —— Scan SYNFIN attack.

xma-scan —— Xma Scan attack.

null-scan —— NULL Scan attack.

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

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.

Command Mode

Global Configuration Mode

Example

Enable the DoS Defend Type named Land attack:

T3700G-52TQ(config)#ip dos-prevent type land

Chapter 16 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.

16.1 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 gigabitEthernet / interface range gigabitEthernet)

Example

Enable the IP Verify Source function for Gigabit 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:

T3700G-52TQ(config)#interface range gigabitEthernet 1/0/5-10

T3700G-52TQ(config-if-range)#ip verify source sip+mac

16.2 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:

```
T3700G-52TQ#show ip verify source
```

16.3 show ip verify source interface

Description

The **show ip verify source interface** command is used to display the IP verify source configuration of a desired Gigabit Ethernet port.

Syntax

show ip verify source interface gigabitEthernet *port*

Parameters

port—— The Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the IP verify source configuration of Gigabit Ethernet port 1/0/5:

```
T3700G-52TQ#show ip verify source interface gigabitEthernet 1/0/5
```

Chapter 17 IEEE 802.1X Commands

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

17.1 dot1x system-auth-control

Description

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

Syntax

dot1x system-auth-control

no dot1x system-auth-control

Command Mode

Global Configuration Mode

Example

Enable the IEEE 802.1X function:

```
T3700G-52TQ(config)#dot1x system-auth-control
```

17.2 dot1x timeout quiet-period

Description

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

Syntax

dot1x timeout quiet-period *time*

no dot1x timeout quiet-period

Parameter

time —— The length of the quiet-period time. If one user's authentication fails, its subsequent IEEE 802.1x authentication requests will not be processed during the quiet-period time. It ranges from 0 to 65535 seconds and the default value is 60 seconds.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable the quiet-period function and set the quiet-period as 5 seconds for Gigabit Ethernet port 1/0/1:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/1

T3700G-52TQ(config-if)#dot1x timeout quiet-period 5

17.3 dot1x timeout supplicant-timeout

Description

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

Syntax

dot1x timeout supplicant-timeout *time*

no dot1x timeout supplicant-timeout

Parameter

supplicant-timeout *time* ——the maximum time to wait for EAP-Response/MD5-challenge packet from the supplicant before timing out the supplicant, ranging from 1 to 65535 in seconds. By default, it is 30 seconds.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Configure the supplicant timeout value as 5 seconds for Gigabit Ethernet port 1/0/1:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/1

T3700G-52TQ(config-if)#dot1x timeout supplicant-timeout 5

17.4 dot1x timeout tx-period

Description

The **dot1x timeout tx-period** command is used to configure the transmit period on the specified port. To restore to the default, please use **no dot1x timeout tx-period** command.

Syntax

dot1x timeout tx-period *time*

no dot1x timeout tx-period

Parameter

time —— The transmit period which determines when an EAP-Request/Identity packet is to be transmitted, ranging from 1 to 65535 in second. By default, it is 30 seconds.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Configure the transmit period value as 10 seconds for Gigabit Ethernet port 1/0/1:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/1

T3700G-52TQ(config-if)#dot1x timeout tx-period 10

17.5 dot1x max-req

Description

The **dot1x max-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-req** command.

Syntax

dot1x max-req {*count*}

no dot1x max-req

Parameter

count —— The maximum transfer times of the repeated authentication request, ranging from 1 to 10 in times. By default, the value is 10.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Configure the maximum transfer times of the repeated authentication request as 5 on Gigabit Ethernet port 1/0/2:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)#dot1x max-req 5

17.6 dot1x

Description

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

Syntax

dot1x

no dot1x

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable the IEEE 802.1X function for the Gigabit Ethernet port 1/0/1:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/1

T3700G-52TQ(config-if)#dot1x

17.7 dot1x guest-vlan

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 {*gvid*}

no dot1x guest-vlan

Parameter

gvid —— The VLAN ID needed to enable the Guest VLAN function, ranging from 0 to 4093. 0 indicates that the Guest VLAN function is disabled. The supplicants in the Guest VLAN can access the specified network sources.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable the Guest VLAN function for VLAN 5 on Gigabit Ethernet port 1/0/2:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)#dot1x guest-vlan 5

17.8 dot1x timeout guest-vlan-period

Description

The **dot1x timeout guest-vlan-period** command is used to specify the Guest VLAN Period of the port. Once set the Guest VLAN on the port, after the Guest VLAN Period, the port will be included in the Guest VLAN. To set the value as default, please use **no dot1x timeout guest-vlan-period** command.

Syntax

dot1x timeout guest-vlan-period *{period}*

no dot1x timeout guest-vlan-period

Parameter

period —— Specify the period, ranging from 1 to 300s. The default value is 90s.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Set the Guest VLAN Period as 100s on Gigabit Ethernet port 1/0/2:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)# dot1x timeout guest-vlan-period 100

17.9 dot1x port-control

Description

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

Syntax

dot1x port-control {auto | authorized-force | unauthorized-force}

no dot1x port-control

Parameter

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

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

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

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

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Configure the Control Mode for Gigabit Ethernet port 1/0/20 as "authorized-force":

T3700G-52TQ(config)#interface gigabitEthernet 1/0/20

T3700G-52TQ(config-if)#dot1x port-control authorized-force

17.10 dot1x port-method

Description

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

Syntax

dot1x port-method { mac-based | port-based }

no dot1x port-method

Parameter

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

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

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

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Configure the Control Type for Gigabit Ethernet port 1/0/20 as "port-based":

T3700G-52TQ(config)#interface gigabitEthernet 1/0/20

T3700G-52TQ(config-if)#dot1x port-method port-based

17.11 dot1x accounting

Description

The **dot1x accounting** command is used to enable the accounting feature. To disable the accounting feature, please use **no dot1x accounting** command.

Syntax

dot1x accounting

no dot1x accounting

Command Mode

Global Configuration Mode

Example

Enable the accounting feature:

T3700G-52TQ(config)# dot1x accounting

17.12 show dot1x global

Description

The **show dot1x global** command is used to display the global configuration of 802.1X.

Syntax

show dot1x global

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration of 802.1X globally:

```
T3700G-52TQ(config)#show dot1x global
```

17.13 show dot1x interface

Description

The **show dot1x interface** command is used to display all ports or the specified port's configuration information of 802.1X.

Syntax

show dot1x interface [**gigabitEthernet** *port* | **ten-gigabitEthernet** *port*]

Parameter

port —— The Ethernet port number. If not specified, the information of all the ports will be displayed.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration information of 802.1X for Gigabit Ethernet port 1/0/20:

```
T3700G-52TQ(config)#show dot1x interface gigabitEthernet 1/0/20
```

Display the configuration information of 802.1X for all Ethernet ports:

```
T3700G-52TQ(config)#show dot1x interface
```

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.

18.1 logging buffer

Description

The **logging buffer** command is used to store the system log messages to an internal buffer. To disable the log buffer function, please use the **no logging buffer** command. Local Log is the system 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 flash memory. 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

no logging buffer

Command Mode

Global Configuration Mode

Example

Enable the system log buffer:

```
T3700G-52TQ(config)#logging buffer
```

18.2 logging buffer level

Description

The **logging buffer level** command is used to specify the severity level of the log information that should be saved to the buffer. To return to the default configuration, please use **no logging buffer level** command.

Syntax

logging buffer level *level*

no logging buffer level

Parameter

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

Command Mode

Global Configuration Mode

Example

Set the severity level as 5:

```
T3700G-52TQ(config)#logging buffer level 5
```

18.3 logging file flash

Description

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

Syntax

logging file flash

no logging file flash

Command Mode

Global Configuration Mode

Example

Enable the log file flash function:

```
T3700G-52TQ(config)#logging file flash
```

18.4 logging file flash level

Description

The **logging file flash level** command is used to specify the system log message severity level. Only the log with the same or smaller severity level value can be saved to the flash. To restore to the default level, please use **no logging file flash level** command.

Syntax

logging file flash level */level*

no logging file flash level

Parameter

level —— Severity level of the log message. There are 8 severity levels marked with values 0-7. The smaller value has the higher priority. Only the log with the same or smaller severity level value will be saved to the flash. By default, it is 1 indicating that the log message marked with 0-1 will be saved in the log flash.

Command Mode

Global Configuration Mode

Example

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

```
T3700G-52TQ(config)#logging file flash level 7
```

18.5 logging host

Description

The **logging host** command is used to enable logging to a host. To disable logging to a host, please use **no logging host** command.

Syntax

logging host

no logging host

Command Mode

Global Configuration Mode

Example

Enable logging to a host:

T3700G-52TQ(config)#logging host

18.6 logging host index

Description

The **logging host index** command is used to configure the syslog server hosts to receive logging messages. 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 8 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 log host's index as 2, IP address as 192.168.0.148 and the severity level as 5:

T3700G-52TQ(config)#logging host index 2 192.168.0.148 5

18.7 logging console

Description

The **logging console** command is used to send the system logs to the console port. To disable logging to the console, please use **no logging console** command. This function is enabled by default.

Syntax

logging console

no logging console

Command Mode

Global Configuration Mode

Example

Enable logging to the console port:

```
T3700G-52TQ(config)# logging console
```

18.8 logging console level

Description

The **logging console level** command is used to limit messages logged to the console port. System logs no higher than the set threshold level will be displayed on the console port. To restore the threshold level to default value, please use **no logging console level** command.

Syntax

logging console level */level/*

no logging monitor level

Parameter

/level/ —— Severity level of the log information output to the console port. 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 to the terminal devices. By default, it is 5 indicating that all the log information between level 0-5 will be output to the terminal devices.

Command Mode

Global Configuration Mode

Example

Output the log information with severity levels between 0-7 to the console port:

T3700G-52TQ(config)# logging console level 7

18.9 logging monitor

Description

The **logging monitor** command is used to display the system logs on the terminal devices. To disable logging to the terminal, please use **no logging monitor** command. This function is enabled by default.

Syntax

logging monitor

no logging monitor

Command Mode

Global Configuration Mode

Example

Disable logging to the terminal devices:

T3700G-52TQ(config)# no logging monitor

18.10 logging monitor level

Description

The **logging monitor level** command is used to limit messages logged to the terminal devices. System logs no higher than the set threshold level will be displayed on the terminal devices. To restore the threshold level to default value, please use **no logging monitor level** command.

Syntax

logging monitor level *level*

no logging monitor level

Parameter

level —— Severity level of the log information output to the terminal devices. 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 to the terminal devices. By default, it is 5 indicating that all the log information between level 0-5 will be output to the terminal devices.

Command Mode

Global Configuration Mode

Example

Output the log information with severity levels between 0-7 to the terminal devices:

```
T3700G-52TQ(config)# no logging monitor
```

18.11 clear logging

Description

The **clear logging** command is used to clear the syslog in the log buffer and log flash in the specified unit or the whole stack.

Syntax

clear logging [buffer | flash] [**unit** *unit-id*]

Parameter

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

unit-id —— The unit in which the syslog will be cleared. If not specified, all the syslog in the stack will be cleared.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Clear the syslog in the log buffer of all the switches in the stack:

```
T3700G-52TQ(config)#clear logging buffer
```

18.12 show logging config

Description

The **show logging config** command is used to display the configuration of the Local Log including the log buffer and the log file, the synchronization frequency etc.

Syntax

show logging config

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration of the Local Log:

T3700G-52TQ(config)#show logging config

18.13 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:

T3700G-52TQ(config)#show logging loghost 2

18.14 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:

T3700G-52TQ(config)#show logging buffer level 5

18.15 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:

T3700G-52TQ(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.

19.1 ip ssh server

Description

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

Syntax

ip ssh server

no ip ssh server

Command Mode

Global Configuration Mode

Example

Enable the SSH function:

```
T3700G-52TQ(config)# ip ssh server
```

19.2 ip ssh version

Description

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

Syntax

ip ssh version { v1 | v2 }

no ip ssh version { v1 | v2 }

Parameter

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

Command Mode

Global Configuration Mode

Example

Enable SSH v2:

T3700G-52TQ(config)# ip ssh version v2

19.3 ip ssh algorithm

Description

The **ip ssh algorithm** command is used to configure the algorithm in SSH function. To disable the specified algorithm, please use **no ip ssh algorithm** command.

Syntax

ip ssh algorithm { AES128-CBC | AES192-CBC | AES256-CBC | Blowfish-CBC | Cast128-CBC | 3DES-CBC | HMAC-SHA1 | HMAC-MD5 }

no ip ssh algorithm

Parameter

AES128-CBC | AES192-CBC | AES256-CBC | Blowfish-CBC | Cast128-CBC | 3DES-CBC | HMAC-SHA1 | HMAC-MD5 —— Specify the SSH algorithm.

Command Mode

Global Configuration Mode

Example

Specify the SSH algorithm as AES128-CBC:

T3700G-52TQ(config)# ip ssh algorithm AES128-CBC

19.4 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 **no ip ssh timeout** command.

Syntax

ip ssh timeout *value*

no ip ssh timeout

Parameter

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

Command Mode

Global Configuration Mode

Example

Specify the idle-timeout time of SSH as 30 seconds:

T3700G-52TQ(config)# ip ssh timeout 30

19.5 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:

T3700G-52TQ(config)# ip ssh max-client 3

19.6 ip ssh download

Description

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

Syntax

ip ssh download { rsa-v1 | rsa-v2 | dsa } *key-file* **ip-address** *ip-addr*

Parameter

rsa-v1 | rsa-v2 | dsa —— Select the type of SSH key to download, rsa-v1 represents SSH-1 RSA, rsa-v2 represents SSH-2 RSA, dsa represents SSH-2 DSA.

key-file —— The name of the key-file which is selected to download. The length of the name ranges from 1 to 25 characters. The key length of the downloaded file must be in the range of 512 to 3072 bits.

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

Command Mode

Global Configuration Mode

Example

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

T3700G-52TQ(config)# ip ssh download rsa-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:

T3700G-52TQ(config)# ip ssh download rsa-v1 ssh-key **ip-address** fe80::1234

19.7 crypto key generate

Description

The **crypto key generate** command is used to generate the DSA key or RSA key for SSH. The new key files will overwrite any existing generated or

downloaded DSA/RSA key files. To delete the DSA key or RSA key for SSH, please use **no crypto key generate** command.

Syntax

crypto key generate { dsa | rsa }

Parameter

dsa | rsa —— Select the type of SSH key to generate.

Command Mode

Global Configuration Mode

Example

Generate the DSA key:

```
T3700G-52TQ(config)# crypto key generate dsa
```

19.8 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:

```
T3700G-52TQ(config)# show ip ssh
```

Chapter 20 HTTP and HTTPS Commands

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

HTTP is the protocol to exchange or transfer hypertext.

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

20.1 ip http server

Description

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

Syntax

ip http server

no ip http server

Command Mode

Global Configuration Mode

Example

Disable the HTTP function:

```
T3700G-52TQ(config)# no ip http server
```

20.2 ip http session maxsessions

Description

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

Syntax

ip http session maxsessions *num*

no ip http session maxsessions

Parameter

num —— The maximum number of the users logging on to the HTTP server, ranging from 0 to 16. By default, the value is 16.

Command Mode

Global Configuration Mode

Example

Configure the maximum number of the users logging on to the HTTP server as 3:

T3700G-52TQ (config)# ip http session maxsessions 3

20.3 ip http session hard-timeout

Description

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

Syntax

ip http session hard-timeout *time*

no ip http session hard-timeout

Parameter

time ——The hard-timeout time, ranging from 1 to 168 in hours. By default, the value is 24.

Command Mode

Global Configuration Mode

Example

Configure the hard-timeout of the HTTP connection as 30 hours:

T3700G-52TQ(config)# ip http session hard-timeout 30

20.4 ip http session soft-timeout

Description

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

Syntax

ip http session soft-timeout *time*

no ip http session soft-timeout

Parameter

time ——The soft-timeout time, ranging from 1 to 60 in minutes. By default, the value is 5.

Command Mode

Global Configuration Mode

Example

Configure the soft-timeout of the HTTP connection as 30 minutes:

T3700G-52TQ(config)# ip http session soft-timeout 30

20.5 ip http secure-server

Description

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

Syntax

ip http secure-server

no ip http secure-server

Command Mode

Global Configuration Mode

Example

Disable the HTTP function:

T3700G-52TQ(config)# no ip http secure-server

20.6 ip http secure-protocol

Description

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

Syntax

ip http secure-protocol { [ssl3] [tls1] }

no ip http session

Parameter

ssl3 —— The SSL 3.0 protocol.

tls1 —— The TLS 1.0 protocol

Command Mode

Global Configuration Mode

Example

Configure the protocol of SSL connection as SSL 3.0:

T3700G-52TQ(config)# ip http secure-protocol ssl3

20.7 ip http secure-ciphersuite

Description

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

Syntax

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

no ip http secure-ciphersuite

Parameter

[3des-ede-cbc-sha] [rc4-128-md5] [rc4-128-sha] [des-cbc-sha] —— Specify the encryption algorithm and the digest algorithm to use on an SSL connection. By default, the switch supports all these ciphersuites.

Command Mode

Global Configuration Mode

Example

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

T3700G-52TQ(config)# ip http secure-ciphersuite 3des-ede-cbc-sha

20.8 ip http secure-session hard-timeout

Description

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

Syntax

ip http secure-session hard-timeout *time*

no ip http secure-session hard-timeout

Parameter

time ——The hard-timeout time, ranging from 1 to 168 in hours. By default, the value is 24.

Command Mode

Global Configuration Mode

Example

Configure the hard-timeout of the HTTPS connection as 30 hours:

T3700G-52TQ(config)# ip http secure-session hard-timeout 30

20.9 ip http secure-session soft-timeout

Description

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

Syntax

ip http secure-session soft-timeout *time*

no ip http secure-session soft-timeout

Parameter

time ——The soft-timeout time, ranging from 1 to 60 in minutes. By default, the value is 5.

Command Mode

Global Configuration Mode

Example

Configure the soft-timeout of the HTTPS connection as 30 minutes:

T3700G-52TQ(config)# ip http secure-session soft-timeout 30

20.10 ip http secure-session maxsessions

Description

The **ip http secure-session maxsessions** command is used to configure the maximum number of users that are allowed to connect to the HTTPS server.

To cancel this limitation, please use **no ip http secure-session maxsessions** command.

Syntax

ip http secure-session maxsessions *num*

no ip http secure-session maxsessions

Parameter

num —— The maximum number of the users logging on to the HTTP server, ranging from 0 to 16. By default, the value is 16.

Command Mode

Global Configuration Mode

Example

Configure the maximum number of the users logging on to the HTTPS server as 3:

T3700G-52TQ (config)# ip http secure-session maxsessions 3

20.11 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:

T3700G-52TQ(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

T3700G-52TQ(config)# ip http secure-server download certificate ssl-cert **ip-address** fe80::1234

20.12 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:

T3700G-52TQ(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

T3700G-52TQ(config)# ip http secure-server download key ssl-key **ip-address** fe80::1234

20.13 show ip http configuration

Description

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

Syntax

show ip http configuration

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration information of the HTTP server:

T3700G-52TQ(config)# show ip http configuration

20.14 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:

T3700G-52TQ(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.

21.1 mac address-table static

Description

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

Syntax

mac address-table static *mac-addr* **vid** *vid* **interface** { **fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port* }

no mac address-table static { *mac-addr* | **vid** *vid* / **mac** *mac-addr* **vid** *vid* | **interface** { **fastEthernet** *port* | **gigabitEthernet** *port* | **ten-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 4093.

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 Gigabit Ethernet port 1/0/1 together:

T3700G-52TQ(config)#mac address-table static 00:02:58:4f:6c:23 **vid** 1 **interface gigabitEthernet** 1/0/1

Delete the static address entry whose VLAN id is 1:

T3700G-52TQ(config)#no mac address-table static vid 1

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

T3700G-52TQ(config)#no mac address-table static 00:02:58:4f:6c:23

21.2 mac address-table aging-time

Description

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

Syntax

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

no mac address-table aging-time

Parameter

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

Command Mode

Global Configuration Mode

Example

Configure the aging time as 500 seconds:

T3700G-52TQ(config)#mac address-table aging-time 500

21.3 mac address-table filtering

Description

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

Syntax

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

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

Parameter

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

vid —— The corresponding VLAN ID of the MAC address. It ranges from 1 to 4093.

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:

T3700G-52TQ(config)#mac address-table filtering 00:1e:4b:04:01:5d **vid** 1

21.4 mac address-table max-mac-count

Description

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

Syntax

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

no mac address-table max-mac-count [max-number | mode | status]

Parameter

num —— The maximum number of MAC addresses that can be learned on the port. It ranges from 0 to 1024. By default this value is 1024.

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/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable Port Security function for Gigabit Ethernet port 1/0/1, select Static mode as the learn mode, and specify the maximum number of MAC addresses that can be learned on this port as 30:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/1

T3700G-52TQ(config-if)#mac address-table max-mac-count max-number 30 **mode** static **status** enable

21.5 show mac address-table

Description

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

Syntax

show mac address-table [dynamic | static | filtering]

Parameter

dynamic | static | filtering —— The type of your desired entry. By default all the entries are displayed.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of all address entries:

```
T3700G-52TQ(config)#show mac address-table
```

21.6 show mac address-table aging-time

Description

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

Syntax

show mac address-table aging-time

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the Aging Time of the MAC address:

```
T3700G-52TQ(config)#show mac address-table aging-time
```

21.7 show mac address-table max-mac-count

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 /ten-Gigabit Ethernet ports.

Syntax

show mac address-table max-mac-count { all **| interface** { **fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port* } }

Parameter

all —— Displays the security information of all the Fast/Gigabit/ten-Gigabit Ethernet ports.

port —— The Fast/Gigabit/ten-Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the security configuration of Gigabit Ethernet port 1/0/20:

T3700G-52TQ(config)#show mac address-table max-mac-count interface gigabitEthernet 1/0/20

21.8 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* | **ten-gigabitEthernet** *port* }

Parameter

port —— The Fast/Gigabit/ten-Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the address configuration of Gigabit Ethernet port 1/0/1:

T3700G-52TQ(config)#show mac address-table interface gigabitEthernet 1/0/1

21.9 show mac address-table count

Description

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

Syntax

show mac address-table count [**unit** *unit-id*] [**vlan** *vlan-id*]

Parameter

unit--id——Specify the unit-id of the switch in the stack.

vlan-id——Specify the VLAN which the switch belongs to.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the total amount of MAC address table in all the units of the stack sorted by VLAN:

T3700G-52TQ(config)#show mac address-table count

Display the total amount of MAC address table in unit 2 of the stack sorted by VLAN:

T3700G-52TQ(config)#show mac address-table count unit 2

Display the total amount of MAC address table in VLAN 1 of unit 2 of the stack:

T3700G-52TQ(config)#show mac address-table count unit 2 **vlan** 1

Display the total amount of MAC address table in VLAN 2 of all the units of the stack:

T3700G-52TQ(config)#show mac address-table count vlan 2

21.10 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* [**interface** { **fastEthernet** *port* | **gigabitEthernet** *port* /**ten-gigabitEthernet** *port* }] [**vid** *vlan-id*]

Parameter

mac-addr —— The specified MAC address.

port —— The Fast/Gigabit/ten-Gigabit Ethernet port number.

vlan-id —— Specify the VLAN which the entry belongs to.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of the MAC address 00:00:00:23:00:00 in VLAN 1:

T3700G-52TQ(config)#show mac address-table address 00:00:00:23:00:00 **vid** 1

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

T3700G-52TQ(config)#show mac address-table address 00:00:00:23:00:00

Display the information of the MAC address 00:00:00:23:00:00 on port 1/0/20:

T3700G-52TQ(config)#show mac address-table address 00:00:00:23:00:00 **interface gigabitEthernet** 1/0/20

21.11 show mac address-table vlan

Description

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

Syntax

show mac address-table vlan *vid*

Parameter

vid —— The specified VLAN id.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the MAC address configuration of vlan 1:

T3700G-52TQ(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.

22.1 system-time manual

Description

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

Syntax

system-time manual *time*

Parameter

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

Command Mode

Global Configuration Mode

Example

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

T3700G-52TQ(config)#system-time manual 02/14/2012-12:30:00

22.2 system-time ntp

Description

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

Syntax

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

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 Loui-tables.

UTC+04:30 —— TimeZone for Kabul.

UTC+05:00 —— TimeZone for Islamabad, Karachi, Tashkent.

UTC+05:30 —— TimeZone for Chennai, Kolkata, Mumbai, New Delhi.

UTC+05:45 —— TimeZone for Kathmandu.

UTC+06:00 —— TimeZone for Dhaka, Astana, Ekaterinburg.

UTC+06:30 —— TimeZone for Yangon (Rangoon).

UTC+07:00 —— TimeZone for Novosibirsk, Bangkok, Hanoi, Jakarta.

UTC+08:00—— TimeZone for Beijing, Chongqing, Hong Kong, Urumqi, Singapore.

UTC+09:00 —— TimeZone for Seoul, Irkutsk, Osaka, Sapporo, Tokyo.

UTC+09:30 —— TimeZone for Darwin, Adelaide.

UTC+10:00 —— TimeZone for Canberra, Melbourne, Sydney, Brisbane.

UTC+11:00 —— TimeZone for Solomon Is., New Caledonia, Vladivostok.

UTC+12:00 —— TimeZone for Fiji, Magadan, Auckland, Wellington.

UTC+13:00 —— TimeZone for Nuku'alofa, Samoa.

ntp-server —— The IP address for the Primary NTP Server.

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

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:

T3700G-52TQ(config)# system-time ntp UTC-12:00 133.100.9.2 139.79.100.163

22.3 system-time dst predefined

Description

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

Syntax

system-time dst predefined USA | Europe

Parameter

USA | Europe —— Predefined DST mode, with two options: USA and Europe. By default, the setting is "Europe".

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

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

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

Command Mode

Global Configuration Mode

Example

Configure the DST period of the switch as USA:

T3700G-52TQ(config)#system-time dst predefined USA

22.4 system-time dst date

Description

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

Syntax

system-time dst date {*smonth*} {*sday*} {*stime*} {*syear*} {*emonth*} {*eday*} {*etime*} {eyear}[*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.

syear ——Year to start, ranging from 2000 to 2099.

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.

eyear ——Year to end, ranging from 2000 to 2099.

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 of 2013, the end time as 00:00 am on October 1st of 2013 and the offset as 30 minutes:

T3700G-52TQ(config)#system-time dst date Apr 1 00:00 2013 Oct 1 00:00 2013 30

22.5 system-time dst recurring

Description

The **system-time dst recurring** command is used to specify the DST configuration in recurring mode. This configuration is recurring in use. The time period is 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:

T3700G-52TQ(config)#system-time dst recurring first Sun May 02:00 last Sun Oct 02:00 45

22.6 hostname

Description

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

Syntax

hostname *hostname*

no hostname

Parameter

hostname —— System Name, ranging from 1 to 32 characters. It is the product name by default. Here it is T3700G-52TQ.

Command Mode

Global Configuration Mode

Example

Configure the system name as TPLINK:

T3700G-52TQ(config)#hostname TPLINK

22.7 location

Description

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

Syntax

location *location*

no location

Parameter

location —— Device Location. It consists of 32 characters at most. It is SHENZHEN by default.

Command Mode

Global Configuration Mode

Example

Configure the system location as GUANGZHOU:

T3700G-52TQ(config)#location GUANGZHOU

22.8 contact-info

Description

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

Syntax

contact-info *contact_info*

no contact-info

Parameter

contact_info —— Contact Information. It consists of 32 characters at most. It is www.tp-link.com by default.

Command Mode

Global Configuration Mode

Example

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

T3700G-52TQ(config)#contact-info www.tp-link.com

22.9 ip address

Description

This **ip address** command is used to configure the IP address and IP subnet mask for the specified interface manually. The interface type includes: routed port, loopback interface and VLAN interface.

Syntax

ip address { *ip-addr* } { *mask* }

no ip address

Parameter

ip-addr —— The IP address of the Layer 3 interface.

mask —— The subnet mask of the Layer 3 interface.

Command Mode

Interface Configuration Mode

Example

Create the VLAN interface 2 with the IP address as 192.168.1.1 and subnet mask as 255.255.255.0:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip address 192.168.1.1 255.255.255.0
```

22.10 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 specified interface will obtain IP from DHCP Server. To disable the IP obtaining function on the specified interface, please use the **no ip address** command. This command applies to the routed port and the VLAN interface.

Syntax

ip address-alloc dhcp

no ip address

Command Mode

Interface Configuration Mode

Example

Enable the DHCP Client function on the Lay 3 routed port 1/0/1:

```
T3700G-52TQ(config)# interface gigabitEthernet 1/0/1
T3700G-52TQ(config-if)# no switchport
T3700G-52TQ(config-if)# ip address-alloc dhcp
```

Disable the IP address obtaining function on the VLAN interface 2:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# no ip address
```

22.11 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:

```
T3700G-52TQ#reset
```

22.12 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 [*unitid*]

Parameter

unitid —— Specify the unit in the stack to reboot. If not specified, reboot all members in the stack.

Command Mode

Privileged EXEC Mode

Example

Reboot all members in the stack:

```
T3700G-52TQ#reboot
```

22.13 boot application

Description

The **boot application** command is used to configure the image file as startup image or backup image.

Syntax

boot application filename { image1 | image 2 } { startup | backup } [*unitid*]

no boot application

Parameter

image1 | image2 —— Specify the image file to be configured. By default, the image1.bin is the startup image and the image2.bin is the backup image.

startup | backup —— Specify the property of the image, either startup image or backup image.

unitid —— Specify the unit in the stack whose image file would be configured. If not specified, image files of all the members in the stack will be configured.

Command Mode

Global Configuration Mode

Example

Configure the image2.bin as the startup image in all the switches in the stack:

```
T3700G-52TQ(config)# boot application filename image2 startup
```

22.14 copy running-config startup-config

Description

The **copy running-config startup-config** command is used to save the current settings as the startup configuration file.

Syntax

copy running-config startup-config

Command Mode

Privileged EXEC Mode

Example

Save current settings:

T3700G-52TQ#copy running-config startup-config

22.15 copy startup-config tftp

Description

The **copy startup-config tftp** command is used to upload the backup 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.

name —— Specify the name for the startup configuration file which would be saved. The uploaded configuration files will be named in the format as *name_unitid*.cfg, for example config_1.cfg, config_2.cfg, etc.

Command Mode

Privileged EXEC Mode

Example

Save the startup configuration file of the switch to TFTP server with the IP 192.168.0.148 and name the file as config:

T3700G-52TQ#copy startup-config tftp ip-address 192.168.0.148 **filename** config

22.16 copy startup-config usb

Description

The **copy startup-config usb** command is used to upload the backup configuration file to the USB stick.

Syntax

copy startup-config usb *usb:filename*

Parameter

usb:filename —— Specify the configuration file location in the format of usb://filepath/filename.

Command Mode

Privileged EXEC Mode

Example

Save the startup configuration file of the switch to the USB stick and specify the configuration file location as usb://building/l3:

T3700G-52TQ#copy startup-config usb usb://building/l3

22.17 copy tftp startup-config

Description

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

Syntax

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

Parameter

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

name —— Specify the name of the configuration file which would be downloaded. The configuration file with the name *name_unitid*.cfg will be downloaded to the switch with corresponding unit ID in the stack.

Command Mode

Privileged EXEC Mode

Example

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

T3700G-52TQ#copy tftp startup-config ip-address 192.168.0.148 **filename** config

22.18 copy usb

Description

The **copy usb** command is used to copy the configuration file from the USB device to the switch as the startup configuration file.

Syntax

copy usb { *usb:filename* } **startup-config**

Parameter

usb:filename —— Specify the configuration file location in the format of usb://filepath/filename.

Command Mode

Privileged EXEC Mode

Example

Copy the configuration file named as l3 to the switch as its startup configuration file from the USB device:

T3700G-52TQ# copy usb usb://building/l3.cfg **startup-config**

22.19 remove backup-image

Description

The **remove backup-image** command is used to delete the backup-image.

Syntax

remove backup-image [*unitid*]

Parameter

unitid —— Specify the member's unit in the stack from which the backup image file would be deleted . If not specified, the backup image files of all the switches in the stack will be deleted.

Command Mode

Privileged EXEC Mode

Example

Delete the backup image files of all the members in the stack:

T3700G-52TQ# remove backup-image

22.20 firmware upgrade

Description

The **firmware upgrade** command is used to upgrade the switch's backup image file via the TFTP server. The uploaded firmware file will take place of the Backup Image, and user can chose whether to reboot the switch will the Backup Image.

Syntax

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

Parameter

ip-addr —— IP Address of the TFTP server.

name —— Specify the name for the firmware file.

Command Mode

Privileged EXEC Mode

Example

Upgrade the switch's backup image file with the file firmware.bin in the TFTP server with the IP address 192.168.0.148, and reboot the switch with this firmware:

T3700G-52TQ# firmware upgrade ip-address 192.168.0.148 **filename** firmware.bin

It will only upgrade the backup image. Continue? (Y/N):y

Operation OK!

```
Reboot with the backup image? (Y/N): y
```

22.21 firmware upgrade bootloader

Description

The **firmware upgrade bootloader** command is used to upgrade the uboot.

Syntax

firmware upgrade bootloader [*unitid*]

Parameter

unitid —— Specify the member's unit in the stack. If not specified, the uboot of all the switches in the stack will be upgraded.

Command Mode

Privileged EXEC Mode

Example

Upgrade the uboot of all the switches in the stack:

```
T3700G-52TQ#firmware upgrade bootloader
```

22.22 firmware upgrade xmodem

Description

The **firmware upgrade xmodem** command is used to upgrade the switch's backup image file by xmodem.

Syntax

firmware upgrade xmodem

Command Mode

Privileged EXEC Mode

Example

Upgrade the switch's backup image file by xmodem:

```
T3700G-52TQ# firmware upgrade xmodem
```

22.23 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 1500 bytes. By default, this value is 64.

-i *count* —— The interval to send ICMP request packets. It ranges from 1 to 60 seconds. By default, this value is 1.

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

T3700G-52TQ # ping 192.168.0.131 **–n** 8 **–l** 10

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

T3700G-52TQ # ping fe80::1234 **–n** 8 **–l** 512

22.24 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:

```
T3700G-52TQ # 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:

```
T3700G-52TQ # tracert fe80::1234 20
```

22.25 show system-time

Description

The **show system-time** command is used to display the current system time and its source.

Syntax

show system-time

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the system time information of the switch:

```
T3700G-52TQ#show system-time
```

22.26 show system-time detail

Description

The **show system-time detail** command is used to display the detail system time information of the switch.

Syntax

show system-time detail

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the detail system time information of the switch:

```
T3700G-52TQ#show system-time detail
```

22.27 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:

T3700G-52TQ#show system-time ntp

22.28 show system-info

Description

The **show system-info** command is used to display system description, system name, device location, system contact, hardware version, firmware version, system time, run time and so on.

Syntax

show system-info

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the system information:

T3700G-52TQ#show system-info

22.29 show environment

Description

The **show environment** command is used to display system description, system name, device location, system contact, hardware version, firmware version, system time, run time and so on.

Syntax

show environment{ all | fan | power | temperature } [*unitid*]

Parameter

all | fan | power | temperature —— Specify the system's running environmental status to be displayed. "all" represents all the environmental information; "fan" represents the fans' running status; "power" represents the power's running status; "temperature" represents the system's environmental temperature.

unitid —— Specify the unit in the stack whose environmental information will be displayed. If not specified, the environmental information of all the switches in the stack will be displayed.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the system's running temperature of all the switches in the stack:

T3700G-52TQ#show environment temperature

22.30 show usb

Description

The **show usb** command is used to display the USB information.

Syntax

show usb

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the USB information:

T3700G-52TQ#show usb

22.31 show files-in-usb

Description

The **show files-in-usb** command is used to display the directories and files in USB device.

Syntax

show files-in-usb

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the directories and files in USB device:

```
T3700G-52TQ#show files-in-usb
```

22.32 show fiber-ports

Description

The **show fiber-ports** command is used to display the information of optical transceiver module .

Syntax

show fiber-ports

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of optical transceiver module:

```
T3700G-52TQ#show fiber-ports
```

22.33 show image-info

Description

The **show image-info** command is used to display the information of image files in the system.

Syntax

show image-info

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the system image files' information of the switch:

```
T3700G-52TQ#show image-info
```

22.34 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 [*unitid*]

Parameter

unitid —— Specify the unit in the stack to display its operating configuration. If not specified, all the members' operating configurations will be displayed in the stack.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display all the members' current operating configuration in the stack:

```
T3700G-52TQ#show running-config
```

22.35 show startup-config

Description

The **show startup-config** command is used to display the current configuration saved in the switch. These configuration settings will not be lost the next time you reboot the switch.

Syntax

show startup-config

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the saved configuration:

```
T3700G-52TQ# show startup-config
```

22.36 show boot

Description

The **show boot** command is used to display the current boot configuration of the system.

Syntax

show boot

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the system boot configuration information of the switch:

T3700G-52TQ#show boot

22.37 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 20:

T3700G-52TQ#show cable-diagnostics interface gigabitEthernet 1/0/20

22.38 show cpu-utilization

Description

The **show cpu-utilization** command is used to display the system's CPU utilization in the last 5 seconds/1minute/5minutes.

Syntax

show cpu-utilization

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the CPU utilization information of the switch:

```
T3700G-52TQ#show cpu-utilization
```

22.39 show memory-utilization

Description

The **show memory-utilization** command is used to display the system's memory utilization in the last 5 seconds/1minute/5minutes.

Syntax

show memory-utilization

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the memory utilization information of the switch:

```
T3700G-52TQ#show memory-utilization
```

Chapter 23 Ethernet Configuration Commands

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

23.1 interface gigabitEthernet

Description

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

Syntax

interface gigabitEthernet *port*

Parameter

port—— The Gigabit Ethernet port number.

Command Mode

Global Configuration Mode

Example

To enter the Interface gigabitEthernet Configuration Mode and configure Gigabit Ethernet port 20:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/20

23.2 interface range gigabitEthernet

Description

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

Syntax

interface range gigabitEthernet *port-list*

Parameter

port-list —— The list of 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 10, 11 and 18 at the same time by adding them to one port-list:

T3700G-52TQ(config)# interface range gigabitEthernet 1/0/10-11,1/0/18

23.3 interface ten-gigabitEthernet

Description

The **interface ten-gigabitEthernet** command is used to enter the interface ten-gigabitEthernet Configuration Mode and configure the corresponding Ten Gigabit Ethernet port.

Syntax

interface ten-gigabitEthernet *port*

Parameter

port —— The Ten Gigabit Ethernet port number.

Command Mode

Global Configuration Mode

Example

To enter the Interface gigabitEthernet Configuration Mode and configure Ten-Gigabit Ethernet port 49:

T2700G-52TQ(config)#interface ten-gigabitEthernet 1/0/49

23.4 interface range ten-gigabitEthernet

Description

The **interface range ten-gigabitEthernet** command is used to enter the interface range ten-gigabitEthernet Configuration Mode and configure multiple Ten Gigabit Ethernet ports at the same time.

Syntax

interface range ten-gigabitEthernet *port-list*

Parameter

port-list —— The list of Ten Gigabit Ethernet ports.

Command Mode

Global Configuration Mode

User Guidelines

Command in the **Interface Range ten-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 ten-gigabitEthernet Configuration Mode, and configure Ten Gigabit Ethernet ports 25 and 26 at the same time by adding them to one port-list:

```
T3700G-52TQ(config)# interface range ten-gigabitEthernet 1/0/49-50
```

23.5 description

Description

The **description** command is used to add a description to the Ethernet port. To clear the description of the corresponding port, please use **no description** command.

Syntax

description *string*

no description

Parameter

string—— Content of a port description, ranging from 1 to 16 characters.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Add a description Port #5 to Gigabit Ethernet port 1/0/5:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/5

T3700G-52TQ(config-if)#description Port#5

23.6 shutdown

Description

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

Syntax

shutdown

no shutdown

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Disable Gigabit Ethernet port 20:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/20

T3700G-52TQ(config-if)#shutdown

23.7 flow-control

Description

The **flow-control** command is used to enable the flow-control function for a port. To disable the flow-control function for this corresponding port, please use **no flow-control** command. With the flow-control function enabled, the Ingress Rate and Egress Rate can be synchronized to avoid packet loss in the network.

Syntax

flow-control

no flow-control

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable the flow-control function for Gigabit Ethernet port 20:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/20
T3700G-52TQ(config-if)#flow-control
```

23.8 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 { auto | full | half }

no duplex

Parameter

auto | full | half —— The duplex mode of the Ethernet port. There are three options: auto-negotiation mode, full-duplex mode and half-duplex mode. By

default the Gigabit Ethernet port is auto-negotiation mode and the Ten Gigabit Ethernet port is full-dulplex mode.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Configure the Duplex Mode as full-duplex for Gigabit Ethernet port 1/0/20:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/20

T3700G-52TQ(config-if)#duplex full

23.9 jumbo

Description

The **jumbo** command is used to configure the value of MTU, allowing the port to send jumbo frames. To return to the default configuration, please use **no mtu** command. The default MTU is 1518 bytes.

Syntax

mtu *number*

no mtu

Parameter

number —— The length of the frame that is allowed to be transmitted on the port. The valid value ranges from 1518 to 13312.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Configure the MTU as 12288 for Gigabit Ethernet port 1/0/20:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/20

T3700G-52TQ(config-if)#mtu 12288

23.10 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 | 10000 | auto }

no speed

Parameter

10 | 100 | 1000 | 10000 | auto —— The speed mode of the Ethernet port. There are four options: 10Mbps, 100Mbps, 1000Mbps, 10000Mbps and Auto negotiation mode. By default, the gigabitEthernet port works in Auto negotiation mode and the ten-gigabiteEthernet port works in 10000Mbps mode.

Command Mode

Interface Configuration Mode (interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Configure the Speed Mode as 100Mbps for Gigabit Ethernet port 20:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/20

T3700G-52TQ(config-if)#speed 100

23.11 storm-control

Description

The **storm-control** command is used to enable the broadcast, multicast and unicast control functions. To disable the control function, please use **no storm-control** command.

Syntax

storm-control { broadcast | multicast | unicast **} {** *rate* **}**

no storm-control

Parameter

broadcast —— The 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.

multicast —— 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.

unicast —— 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.

rate —— Specify the bandwidth in units of pps for receiving packets on the port. The packet traffic exceeding the bandwidth will be discarded. For gigabit ports, valid values are from 1 to 1488000 pps, and for ten-gigabit ports, valid values are from 1 to 14880000 pps.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable the broadcast control function for Gigabit Ethernet port 1/0/5 and set the bandwidth for receiving broadcast packets as 256 kbps:

T23700G-52TQ(config)#interface gigabitEthernet 1/0/5

T3700G-52TQ(config-if)#storm-control broadcast kbps 256

23.12 bandwidth

Description

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

Syntax

bandwidth egress *rate*

no bandwidth

Parameter

rate —— Specify the bandwidth for sending packets. Range: 1-1000000 kbps for the gigaport, 1 to 10000000 kbps for the ten-gigabit port.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Configure the egress rate as 1024kbps for Gigabit Ethernet port 5:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/5

T3700G-52TQ(config-if)#bandwidth egress 1024

23.13 clear counters

Description

The **clear counters** command is used to clear the statistic information of the specified Ethernet ports.

Syntax

clear counters

clear counters [**interface** [**gigabitEthnernet** *port*][**ten-gigabitEthernet** *port*][**port-channel** *lagid*]]

Parameter

port —— The port number.

lagid —— The ID of LAG.

Command Mode

Global Configuration Mode

Example

Clear the statistic information of all Ethernet ports:

T3700G-52TQ(config)#clear counters

Clear the statistic information of port 1/0/3:

T3700G-52TQ(config)#clear counters interface gigabitEthernet 1/0/3

23.14 show interface status

Description

The **show interface status** command is used to display the connective-status of an Ethernet port.

Syntax

show interface status [**gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *lagid*]

Parameter

port——The port number or port list.

lagid—— The ID of LAG.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the connective-status of all Ethernet ports:

T3700G-52TQ(config)#show interface status

Display the connective-status of Gigabit Ethernet port 1:

T3700G-52TQ(config)#show interface status gigabitEthernet 1/0/1

23.15 show interface counters

Description

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

Syntax

show interface counters [**gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *lagid*]

Parameter

port——The port number or port list.

lagid—— The ID of LAG.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the statistic information of all Ethernet ports:

T3700G-52TQ(config)#show interface counters

Display the statistic information of Gigabit Ethernet port 20:

T3700G-52TQ(config)#show interface counters gigabitEthernet 1/0/20

23.16 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 configuration [**gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *lagid*]

Parameter

port——The port number or port list.

lagid—— The ID of LAG.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configurations of Gigabit Ethernet port 20:

T3700G-52TQ(config)#show interface configuration gigabitEthernet 1/0/20

23.17 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 [**gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *lagid*]

Parameter

port——The port number or port list.

lagid—— The ID of LAG.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the storm-control information of port Gigabit Ethernet port 1/0/20:

T3700G-52TQ(config)#show storm-control interface gigabitEthernet 1/0/20

23.18 show bandwidth

Description

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

Syntax

show bandwidth interface [**gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *lagid*]

Parameter

port——The port number or port list.

lagid—— The ID of LAG.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the bandwidth-limit information of Gigabit Ethernet port 1/0/20:

T3700G-52TQ(config)#show bandwidth interface gigabitEthernet 1/0/20

Chapter 24 Class of Service Commands

CoS (Class of Service) function is used to optimize the network performance. It provides you with network service experience of a better quality. The switch implements three priority modes based on port, on 802.1p and on DSCP, and supports three queue scheduling algorithms.

24.1 classofservice trust

Description

The **classofservice trust** command is used to configure the trust mode of CoS (Class of Service) function. The default trust mode is 802.1p mode. To return to the default configuration, please use **no classofservice trust** command.

Syntax

classofservice trust { dot1p | ip-dscp | untrusted }

no classofservice trust

Parameter

dot1p——Trust 802.1p mode. In this mode, data will be classified into different services based on the 802.1p priority and the 802.1p/CoS mapping.

ip-dscp ——Trust ip-dscp mode. In this mode, data will be classified into different services based on the dscp priority and the DSCP-mapping.

untrusted ——Untrusted mode. In this mode, data will be classified into different services based on the port priority and the 802.1p/CoS mapping.

Command Mode

Global Configuration Mode

Example

Configure the trust mode of CoS (Class of Service) function as dot1p:

```
T3700G-52TQ(config)#classofservice trust dot1p
```

24.2 classofservice priority

Description

The **classofservice priority** command is used to configure CoS (Class of Service) based on port. To return to the default configuration, please use **no classofservice priority** command.

Syntax

classofservice priority *cos-id*

no classofservice priority

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/ interface ten-gigabitEthernet / interface range ten-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 802.1p/CoS mapping.

Example

Configure the priority of port 5 as 3:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/5

T3700G-52TQ(config-if)#classofservice priority 3

24.3 classofservice queue cos-map

Description

The **classofservice 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 classofservice 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

classofservice queue cos-map *cos-id tc-id*

no classofservice queue cos-map

Parameter

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 6, which represents TC queue from TC0 to TC6 respectively.

Command Mode

Global Configuration Mode

User Guidelines

1. By default, the mapping relation between tag/cos and the egress queue is: 0-TC1, 1-TC0, 2-TC0, 3-TC1, 4-TC2, 5-TC2, 6-TC3, 7-TC3.
2. Among the priority levels TC0-TC6, the bigger value, the higher priority.

Example

Map CoS 5 to TC 2.:

```
T3700G-52TQ(config)#classofservice queue cos-map 5 2
```

24.4 classofservice queue dscp-map

Description

The **classofservice 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 classofservice 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

classofservice queue dscp-map *dscp-list tc-id*

no classofservice 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 6, which represents TC queue from TC0 to TC6 respectively.

Command Mode

Global Configuration Mode

User Guidelines

1. By default, the mapping relation between tag and the CoS Priority is: (0-7)-TC1, (8-23)-TC0, (24-31)-TC1, (32-47)- TC2, (48-63)- TC3.
2. Among the priority levels TC0-TC6, the bigger value, the higher priority.

Example

Map DSCP values 10-12 to TC2:

T3700G-52TQ(config)#classofservice queue dscp-map 10-12 2

24.5 classofservice queue mode

Description

The **classofservice queue mode** command is used to configure the Schedule Mode. To return to the default configuration, please use **no classofservice 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,TC2 ... TC6.

Syntax

classofservice queue mode { sp | wrr | spwrr }

no classofservice 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, TC3, TC4, TC5 and TC6 is 1:2:3:4:5:6:7.

spwrr —— 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, TC6 is the SP group; TC0 to TC5 belong to the WRR group and the weight value ratio of TC0 to TC5 is 1:2:3:4:5:6. In this way, when scheduling queues, the switch allows TC6 to occupy the whole bandwidth following the SP mode and TC0 to TC5 in the WRR group will take up the bandwidth according to their ratio 1:2:3:4:5:6.

Command Mode

Global Configuration Mode

Example

Specify the Schedule Mode as Weight Round Robin Mode:

T3700G-52TQ(config)#classofservice queue mode wrr

24.6 classofservice queue min-bandwith

Description

The **classofservice queue min-bandwith** command is used to configure the minimum guaranteed bandwidth allocated to the specified queue. A value of 0 means there is no guaranteed minimum bandwidth in effect (best-effort service). The default value is 0. The sum of all bandwidth values for the queues must not exceed 100%.

Syntax

classofservice queue min-bandwith *tc-id bw*

Parameter

tc-id —— The egress queue the packets with tag are mapped to. It ranges from 0 to 6, which represents TC queue from TC0 to TC6 respectively.

bw —— The minimum bandwidth percentage for queue, ranging from 0 to 100 in increments of 1. By default, it is 0.

Command Mode

Global Configuration Mode

Example

Map CoS 5 to TC 2.:

```
T3700G-52TQ(config)#classofservice queue min-bandwith 5 2
```

24.7 show classofservice interface

Description

The **show classofservice interface** command is used to display the configuration of Classofservice based on port priority.

Syntax

show classofservice interface [**fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *lagid*]

Parameter

port—— The Fast/Gigabit/ten-Gigabit Ethernet port number.

lagid——The ID of the LAG.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration of Classofservice for Gigabit Ethernet port 1/0/5:

```
T3700G-52TQ#show classofservice interface gigabitEthernet 1/0/5
```

24.8 show classofservice cos-map

Description

The **show classofservice 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 classofservice 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:

```
T3700G-52TQ#show classofservice cos-map
```

24.9 show classofservice dscp-map

Description

The **show classofservice dscp-map** command is used to display the configuration of DSCP Priority.

Syntax

show classofservice dscp-map

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration of DSCP Priority:

```
T3700G-52TQ#show classofservice dscp-map
```

24.10 show classofservice queue mode

Description

The **show classofservice queue mode** command is used to display the schedule rule of the egress queues.

Syntax

show classofservice queue mode

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the schedule rule of the egress queues:

```
T3700G-52TQ#show classofservice queue mode
```

24.11 show classofservice queue trust

Description

The **show classofservice queue trust** command is used to display the class of service trust mode information.

Syntax

show classofservice queue trust

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the class of service trust mode information:

```
T3700G-52TQ#show classofservice queue trust
```

Chapter 25 Differentiated Services Commands

Differentiated Services (DiffServ) allows traffic to be classified into streams and given certain QoS treatment in accordance with defined per-hop behaviors. Packets are classified and processed based on defined criteria. The classification criteria is defined by a class. The processing is defined by a policy's attributes. Policy attributes may be defined on a per-class instance basis, and it is these attributes that are applied when a match occurs. A policy can contain multiples classes. When the policy is active, the actions taken depend on which class matches the packet.

25.1 diffserv

Description

The **diffserv** command is used to enable the administrative mode of Differentiated Services (DiffServ) function. To disable the administrative mode of Differentiated Services (DiffServ) function, please use **no diffserv** command.

Syntax

diffserv

no diffserv

Command Mode

Global Configuration Mode

Example

Enable the administrative mode of Differentiated Services (DiffServ) function:

```
T3700G-52TQ(config)# diffserv
```

25.2 class-map

Description

The **class-map** command is used to enter the Class-Map Config mode for an existing DiffServ class.

Syntax

class-map *class-map-name*

Parameter

class-map-name —— The name of an existing DiffServ class, ranging from 1 to 31 characters.

Command Mode

Global Configuration Mode

Example

Enter the Class-Map Config mode for class tp:

T3700G-52TQ(config)#class-map tp

25.3 class-map match-all

Description

The **class-map match-all** command is used to create a class. Only the packet that meets all the criteria included in the class can be considered as the member of the class. To delete a class, please use **no class-map** command.

Syntax

class-map match-all *class-map-name* [***ipv4 / ipv6***]

no class-map *class-map-name*

Parameter

class-map-name —— Specify the name of the class, ranging from 1 to 31 characters.

ipv4 / ipv6 —— Specify the type of the class. By default, it is ipv4. Choosing "ipv4" means only ipv4 packets can match the corresponding class.

Command Mode

Global Configuration Mode

Example

Create a class whose name is "tp":

T3700G-52TQ(config)#class-map match-all tp

25.4 class-map rename

Description

The **class-map rename** command is used to rename a class.

Syntax

class-map rename *class-map-name new-class-map-name*

Parameter

class-map-name —— The old name of the class.

new-class-map-name ——The new name of the class, ranging from 1 to 31 characters.

Command Mode

Global Configuration Mode

Example

Rename class "tp" as class "Market":

T3700G-52TQ(config)#class-map rename tp Market

25.5 match any

Description

The **match any** command defines a match condition whereby all packets are considered to belong to the class.

Syntax

match any

Command Mode

Class-Map Configuration Mode

Example

Create a class whose name is "tp" and definite that all packets belong to the class:

T3700G-52TQ(config)# class-map match-all tp

T3700G-52TQ(config-cmap)#match any

25.6 match class-map

Description

The **match class-map** command is used to add the match criteria based on a referenced class. To remove the match criteria based on a referenced class, please use **no match class-map** command.

Syntax

match class-map *rf-class-map-name*

no match class-map *rf-class-map-name*

Parameter

rf-class-map-name —— The name of the class to which you desire to refer.

Command Mode

Class-Map Configuration Mode

Example

Create a class whose name is "Market", add the match criteria based on class "tp":

T3700G-52TQ(config)#class-map match-all Market

T3700G-52TQ(config-cmap)#match class-map tp

25.7 match dstl4port

Description

The **match dstl4port** command defines a match condition based on the destination TCP/UDP port of a packet using a port number or a port keyword.

Syntax

match dstl4port { *port-num* | *port-key* }

Parameter

port-num —— The TCP/UDP port number, ranging from 0 to 65535.

port-key —— The supported port keyword (domain / echo / ftp / ftpdata / http / smtp / snmp / telnet / tftp / www).

Command Mode

Class-Map Configuration Mode

Example

Create a class whose name is "Market", and define a match condition that the packets's destination TCP/UDP port number should be 80:

T3700G-52TQ(config)#class-map match-all Market

T3700G-52TQ(config-cmap)#match dstl4port 80

25.8 match srcl4port

Description

The **match srcl4port** command defines a match condition based on the source TCP/UDP port of a packet using a port number or a port keyword.

Syntax

match srcl4port { *port-num* | *port-key* }

Parameter

port-num —— The TCP/UDP port number, ranging from 0 to 65535.

port-key —— The supported port keyword (domain / echo / ftp / ftpdata / http / smtp / snmp / telnet / tftp / www).

Command Mode

Class-Map Configuration Mode

Example

Create a class whose name is "Market", and define a match condition that the packets's source TCP/UDP port number should be 80:

T3700G-52TQ(config)#class-map match-all Market

T3700G-52TQ(config-cmap)#match srcl4port 80

25.9 match protocol

Description

The **match protocol** command defines a match condition based on the value of the IP Protocol field in a packet using a protocol number or a protocol name.

Syntax

match protocol { *protocol-num* | *protocol-name* }

Parameter

protocol-num —— The protocol number is a standard value assigned by IANA, ranging from 0 to 255.

protocol-name —— The supported protocol name. For an ipv4 class, the supported values are: icmp, igmp, ip, tcp, udp. For an ipv6 class, the supported values are: icmpv6, ipv6, tcp, udp.

Command Mode

Class-Map Configuration Mode

Example

Create a class whose name is "Market", and define a match condition that the packets should match TCP protocol:

T3700G-52TQ(config)#class-map match-all Market

T3700G-52TQ(config-cmap)#match protocol TCP

25.10 match dstip6

Description

The **match dstip6** command defines a match condition based on the destination IPv6 address of a packet. The match condition only apply to an IPv6 class.

Syntax

match dstip6 *destination-ipv6 /prefix-length*

Parameter

destination-ipv6 —— The destination IPv6 address.

prefix-length —— The prefix length of the destination IPv6 address.

Command Mode

Class-Map Configuration Mode(IPv6)

Example

Create an IPv6 class whose name is "Market", and define a match condition that the packets's destination IPv6 address should be AD80:0000:0000:0000:ABAA:0000:00C2:0002/96:

T3700G-52TQ(config)#class-map match-all Market ipv6

T3700G-52TQ(config-cmap)#match dstip6

AD80:0000:0000:0000:ABAA:0000:00C2:0002/96

25.11 match srcip6

Description

The **match srcip6** command defines a match condition based on the source IPv6 address of a packet. The match condition only apply to an IPv6 class.

Syntax

match srcip6 *source-ipv6 /prefix-length*

Parameter

source-ipv6 —— The source IPv6 address.

prefix-length —— The prefix length of the source IPv6 address.

Command Mode

Class-Map Configuration Mode(IPv6)

Example

Create an IPv6 class whose name is "Market", and define a match condition that the packets's source IPv6 address should be AD80:0000:0000:0000: ABAA:0000:00C2:0002/96:

T3700G-52TQ(config)#class-map match-all Market ipv6

T3700G-52TQ(config-cmap)#match srcip6

AD80:0000:0000:0000:ABAA:0000:00C2:0002/96

25.12 match ip dscp

Description

The **match ip dscp** command defines a match condition based on the value of the IP DiffServ Code Point (DSCP) field in a packet. The match condition only apply to an IPv6 class.

Syntax

match ip dscp *dscp-value*

Parameter

dscp-value —— The value of the IP DiffServ Code Point (DSCP) field in a packet, ranging from 0 to 63.

Command Mode

Class-Map Configuration Mode(IPv6)

Example

Create an IPv6 class whose name is "Market", and define a match condition that the value of the IP DiffServ Code Point (DSCP) field in a packet should be 23:

T3700G-52TQ(config)#class-map match-all Market ipv6

```
T3700G-52TQ(config-cmap)#match ip dscp 23
```

25.13 match ip6flowlbl

Description

The **match ip6flowlbl** command defines a match condition based on the IPv6 flow label of a packet. The match condition only apply to an IPv6 class.

Syntax

match ip6flowlbl *label*

Parameter

label—— The IPv6 flow label of a packet, ranging from 0 to 1048575.

Command Mode

Class-Map Configuration Mode (IPv6)

Example

Create an IPv6 class whose name is "Market", and define a match condition that the IPv6 flow label of a packet should be 1000:

```
T3700G-52TQ(config)#class-map match-all Market ipv6
T3700G-52TQ(config-cmap)#match ip6flowlbl 1000
```

25.14 match cos

Description

The **match cos** command defines a match condition based on the Class of Service(Cos) value(the only tag in a single tagged packet or the first 802.1Q tag of a double VLAN tagged packet). The match condition only apply to an IPv4 class.

Syntax

match cos *cos-value*

Parameter

cos-value —— The Class of Service(Cos) value in an Ethernet frame header, ranging from 0 to 7.

Command Mode

Class-Map Configuration Mode(IPv4)

Example

Create an IPv4 class whose name is "Market", and define a match condition that the Class of Service(Cos) value should be 3:

T3700G-52TQ(config)#class-map match-all Market ipv4

T3700G-52TQ(config-cmap)#match cos 3

25.15 match secondary-cos

Description

The **match secondary-cos** command defines a match condition based on the secondary Class of Service(Cos) value (the secondary 802.1Q tag of a double VLAN tagged packet). The match condition only apply to an IPv4 class.

Syntax

match secondary-cos *cos-value*

Parameter

cos-value —— The secondary Class of Service(Cos) value in an Ethernet frame header, ranging from 0 to 7.

Command Mode

Class-Map Configuration Mode(IPv4)

Example

Create an IPv4 class whose name is "Market", and define a match condition that the secondary Class of Service(Cos) value should be 3:

T3700G-52TQ(config)#class-map match-all Market ipv4

T3700G-52TQ(config-cmap)#match secondary-cos 3

25.16 match destination-address mac

Description

The **match destination-address mac** command defines a match condition based on the destination MAC address of a packet.

Syntax

match destination-address mac *mac-address mac-mask*

Parameter

mac-address —— The destination MAC address.

mac-mask —— The mask of the destination MAC address.

Command Mode

Class-Map Configuration Mode

Example

Create an IPv4 class whose name is "Market", and define a match condition that the destination MAC address should be 01:80:c2:00:00:00, the mask should be ff:ff:ff:00:00:00:

T3700G-52TQ(config)#class-map match-all Market ipv4

T3700G-52TQ(config-cmap)#match destination-address mac

01:80:c2:00:00:00 ff:ff:ff:00:00:00

25.17 match source-address mac

Description

The **match source-address mac** command defines a match condition based on the source MAC address of a packet.

Syntax

match source-address mac *mac-address mac-mask*

Parameter

mac-address —— The source MAC address.

mac-mask —— The mask of the source MAC address.

Command Mode

Class-Map Configuration Mode

Example

Create an IPv4 class whose name is "Market", and define a match condition that the source MAC address should be 01:80:c2:00:00:00, the mask should be ff:ff:ff:00:00:00:

T3700G-52TQ(config)#class-map match-all Market ipv4

T3700G-52TQ(config-cmap)#match source-address mac

01:80:c2:00:00:00 ff:ff:ff:00:00:00

25.18 match dstip

Description

The **match dstip** command defines a match condition based on the destination IPv4 address of a packet. The match condition only apply to an IPv4 class.

Syntax

match dstip *destination-ip destination-ip-mask*

Parameter

destination-ip —— The destination IP address.

destination-ip-mask —— The destination IP address mask.

Command Mode

Class-Map Configuration Mode(IPv4)

Example

Create an IPv4 class whose name is "Market", and define a match condition that the packets's destination IPv4 address should be 192.168.0.123, the mask should be 255.255.255.0:

T3700G-52TQ(config)#class-map match-all Market ipv4

T3700G-52TQ(config-cmap)#match dstip 192.168.0.123 255.255.255.0

25.19 match srcip

Description

The **match srcip** command defines a match condition based on the source IPv4 address of a packet. The match condition only apply to an IPv4 class.

Syntax

match srcip *source-ip source-ip-mask*

Parameter

source-ip —— The source IP address.

source-ip-mask —— The source IP address mask.

Command Mode

Class-Map Configuration Mode(IPv4)

Example

Create an IPv4 class whose name is "Market", and define a match condition that the packets's source IPv4 address should be192.168.0.123, the mask should be 255.255.255.0:

T3700G-52TQ(config)#class-map match-all Market ipv4

T3700G-52TQ(config-cmap)#match srcip 192.168.0.123 255.255.255.0

25.20 match ethertype

Description

The **match ethertype** command defines a match condition based on the value of the ethertype of a packet. The match condition only apply to an IPv4 class.

Syntax

match ethertype { *ethertype-value* | *ethertype-key* }

Parameter

ethertype-value —— Enter a four-digit hexadecimal number in the range of 0x0600 to 0xffff to specify a custom Ethertype value.

ethertype-key —— Enter one of the following keywords to specify an Ethertype (appletalk, arp, ibmsna, ipv4, ipv6, ipx, mplsmcast, mplsucast, NetBIOS, novell, pppoe, rarp).

Command Mode

Class-Map Configuration Mode(IPv4)

Example

Create an IPv4 class whose name is "Market", and define a match condition that the value of the ethertype should be 0x0806(ARP):

T3700G-52TQ(config)#class-map match-all Market ipv4

T3700G-52TQ(config-cmap)#match ethertype 0x0806

25.21 match ip

Description

The **match ip** command defines a match condition based on an IP value (DSCP, precedence, tos). The match condition only apply to an IPv4 class.

Syntax

match ip { **dscp | precedence | tos** } *value*

Parameter

value(dscp)—— Enter a DSCP value in the range of 0 to 63.

value(precedence)—— Enter an IP precedence value in the range of 0 to 7.

value(tos)—— Enter a two-digit hexadecimal number in the range of 00 to ff.

Command Mode

Class-Map Configuration Mode(IPv4)

Example

Create an IPv4 class whose name is "Market", and define a match condition that the DSCP value is 23:

T3700G-52TQ(config)#class-map match-all Market ipv4

T3700G-52TQ(config-cmap)#match ip dscp 23

25.22 match vlan

Description

The **match vlan** command defines a match condition based on the VLAN ID. The match condition only apply to an IPv4 class.

Syntax

match vlan *vlan-id*

Parameter

vlan-id—— The VLAN ID, ranging from 1 to 4093.

Command Mode

Class-Map Configuration Mode(IPv4)

Example

Create an IPv4 class whose name is "Market", and define a match condition that the VLAN ID should be 3:

T3700G-52TQ(config)#class-map match-all Market ipv4

T3700G-52TQ(config-cmap)#match vlan 3

25.23 match secondary vlan

Description

The **match secondary vlan** command defines a match condition based on the secondary VLAN ID. The match condition only apply to an IPv4 class.

Syntax

match secondary vlan *vlan-id*

Parameter

vlan-id—— The secondary VLAN ID, ranging from 1 to 4093.

Command Mode

Class-Map Configuration Mode(IPv4)

Example

Create an IPv4 class whose name is "Market", and define a match condition that the secondary VLAN ID should be 3:

T3700G-52TQ(config)#class-map match-all Market ipv4

T3700G-52TQ(config-cmap)#match secondary vlan 3

25.24 policy-map

Description

The **policy-map** command is used to enter the Policy-Map Config mode for an existing DiffServ policy.

Syntax

policy-map *policy-map-name*

Parameter

policy-map-name—— The name of an existing DiffServ policy.

Command Mode

Global Configuration Mode

Example

Enter the Policy-Map Config mode for a policy named tp:

T3700G-52TQ(config)#policy-map tp

25.25 policy-map in

Description

The **policy-map in** command is used to create a policy specified to inbound traffic. To delete a policy, please use **no policy-map** command.

Syntax

policy-map *policy-map-name* **in**

no policy-map *policy-map-name*

Parameter

policy-map-name —— Specify the name of the policy, ranging from 1 to 31 alphanumetric characters.

Command Mode

Global Configuration Mode

Example

Create a policy named tp and specify it to inbound traffic:

T3700G-52TQ(config)#policy-map tp **in**

25.26 policy-map out

Description

The **policy-map out** command is used to create a policy specified to outbound traffic. To delete a policy, please use **no policy-map** command.

Syntax

policy-map *policy-map-name* **out**

no policy-map *policy-map-name*

Parameter

policy-map-name —— Specify the name of the policy, ranging from 1 to 31 alphanumetric characters.

Command Mode

Global Configuration Mode

Example

Create a policy named tp and specify it to outbound traffic:

T3700G-52TQ(config)#policy-map tp **out**

25.27 class

Description

The **class** command is used to add an existing DiffServ class to the policy. To remove a class from the policy, please use **no class** command.

Syntax

class *class-map-name*

no class *class-map-name*

Parameter

class-map-name —— Specify the name of the class, ranging from 1 to 31 characters.

Command Mode

Policy-Map Configuration Mode

Example

Create a policy named tp and specify it to inbound traffic, then add a class named market to the policy:

T3700G-52TQ(config)#policy-map tp **in**

T3700G-52TQ(config-pmap)#class market

25.28 assign-queue

Description

The **assign-queue** command is used to assign the matching packets to the specific queue.

Syntax

assign-queue *queue-id*

Parameter

queue-id—— The ID of the assigned queue, ranging from 0 to 6.

Command Mode

Policy-Class-Map Configuration Mode

Example

Enter the Policy-Map Config mode for a policy named tp, then add a class named market to the policy, assign the matching packets to queue 3:

T3700G-52TQ(config)#policy-map tp

T3700G-52TQ(config-pmap)#class market

T3700G-52TQ(config-pmap-c)#assign-queue 3

25.29 conform-color

Description

The **conform-color** command is used to enable color-aware traffic policing so that the matching packets can be labeled as conform-color (red) or exceed-color (yellow). To disable color-aware traffic policing, please use **no conform-color** command.

Syntax

conform-color *class-map-name* [**exceed-color** *class-map-name*]

no conform-color *class-map-name*

Parameter

class-map-name —— The name of an existing DiffServ class, ranging from 1 to 31 characters.

Command Mode

Policy-Class-Map Configuration Mode

Example

Enter the Policy-Map Config mode for a policy named tp, then add a class named market to the policy and enter Policy-Class-Map Configuration Mode.

Label the packets matching class named 2 as conform-color, the packets matching class named 3 as exceed-color:

T3700G-52TQ(config)#policy-map tp

T3700G-52TQ(config-pmap)#class market

T3700G-52TQ(config-pmap-c)#conform-color 2 **exceed-color 3**

25.30 drop

Description

The **drop** command is used to drop the matching packets.

Syntax

drop

Command Mode

Policy-Class-Map Configuration Mode

Example

Enter the Policy-Map Config mode for a policy named tp, then add a class named market to the policy and enter Policy-Class-Map Configuration Mode.

Drop the packets matching class named market:

```
T3700G-52TQ(config)#policy-map tp
T3700G-52TQ(config-pmap)#class market
T3700G-52TQ(config-pmap-c)#drop
```

25.31 mark cos

Description

The **mark cos** command is used to mark the matching packets with the specified Class of Service (CoS) value(the only tag in a single tagged packet or the first 802.1Q tag of a double VLAN tagged packet) in the priority field of the 802.1p header.

Syntax

mark cos *cos-value*

Parameter

cos-value —— The CoS value, ranging from 0 to 7.

Command Mode

Policy-Class-Map Configuration Mode

Example

Enter the Policy-Map Config mode for a policy named tp, then add a class named market to the policy and enter Policy-Class-Map Configuration Mode.

Mark the matching packets with the cos value 3:

```
T3700G-52TQ(config)#policy-map tp
T3700G-52TQ(config-pmap)#class market
T3700G-52TQ(config-pmap-c)#mark cos 3
```

25.32 mark cos-as-sec-cos

Description

The **mark cos-as-sec-cos** command is used to mark outer VLAN tag priority as the inner VLAN tag priority, that is to say, mark CoS value as secondary CoS value.

Syntax

mark cos-as-sec-cos

Command Mode

Policy-Class-Map Configuration Mode

Example

Enter the Policy-Map Config mode for a policy named tp, then add a class named market to the policy and enter Policy-Class-Map Configuration Mode.

Mark CoS value as secondary CoS value:

T3700G-52TQ(config)#policy-map tp

T3700G-52TQ(config-pmap)#class market

T3700G-52TQ(config-pmap-c)#mark cos-as-sec-cos

25.33 mirror

Description

The **mirror** command is used to forward copies of matching packets to the specific port.

Syntax

mirror *interface-num*

Parameter

interface-num—— The interface number.

Command Mode

Policy-Class-Map Configuration Mode

Example

Enter the Policy-Map Config mode for a policy named tp, then add a class named market to the policy and enter Policy-Class-Map Configuration Mode.

Forward copies of matching packets to port 1/0/3:

```
T3700G-52TQ(config)#policy-map tp
T3700G-52TQ(config-pmap)#class market
T3700G-52TQ(config-pmap-c)#mirror 1/0/3
```

25.34 redirect

Description

The **redirect** command is used to redirect copies of matching packets to the specific port.

Syntax

redirect *port*

Parameter

port—— The Fast/Gigabit/ten-Gigabit Ethernet port number.

Command Mode

Policy-Class-Map Configuration Mode

Example

Enter the Policy-Map Config mode for a policy named tp, then add a class named market to the policy and enter Policy-Class-Map Configuration Mode.

Redirect copies of matching packets to port 1/0/3:

```
T3700G-52TQ(config)#policy-map tp
T3700G-52TQ(config-pmap)#class market
T3700G-52TQ(config-pmap-c)#redirect 1/0/3
```

25.35 redirect lag

Description

The **redirect lag** command is used to redirect copies of matching packets to the specific LAG.

Syntax

redirect lag *lagid*

Parameter

lagid——The ID of the LAG.

Command Mode

Policy-Class-Map Configuration Mode

Example

Enter the Policy-Map Config mode for a policy named tp, then add a class named market to the policy and enter Policy-Class-Map Configuration Mode.

Redirect copies of matching packets to LAG 3:

T3700G-52TQ(config)#policy-map tp

T3700G-52TQ(config-pmap)#class market

T3700G-52TQ(config-pmap-c)#redirect lag 3

25.36 simple

Description

The **simple** command is used to configure simple traffic policing action. The priority queue uses a token bucket that measures the offered load and ensures that the traffic stream conforms to the configured rate.

Syntax

simple *CIR CBS* **conform** { drop | set-cos-as-sec-cos | set-cos-transmit | set-dscp-transmit | set-prec-transmit | transmit } [*cos* | *dscp* | *prec*] **violate** { drop | set-cos-as-sec-cos | set-cos-transmit | set-dscp-transmit | set-prec-transmit | transmit } [*cos* | *dscp* | *prec*]

Parameter

CIR ——Specify the token's generation rate in Kbps. It ranges from 1 to 1000000.

CBS ——Specify the maximum capacity of the token bucket in Kbytes. It ranges from 1 to 128.

drop ——Drop the conforming traffic.

set-cos-as-sec-cos —— Set Cos value as secondary Cos value for conforming traffic.

set-cos-transmit ——Enter Cos marking action for conforming traffic.

set-dscp-transmit ——Enter IP DSCP marking action for conforming traffic.

set-prec-transmit —— Enter IP precedence marking action on conforming traffic.

transmit ——Transmit the conforming traffic.

cos —— The Class of Service(Cos) value in an Ethernet frame header, ranging from 0 to 7.

dscp —— Enter a DSCP value in the range of 0 to 63.

prec —— Enter an IP precedence value in the range of 0 to 7.

Command Mode

Policy-Class-Map Configuration Mode

Example

Enter the Policy-Map Config mode for a policy named tp, then add a class named market to the policy and enter Policy-Class-Map Configuration Mode.

Set the token's generation rate as 1000 Kbps, the maximum capacity of the token bucket as 100 Kbytes, transmit the conforming traffic and drop the nonconforming traffic:

T3700G-52TQ(config)#policy-map tp

T3700G-52TQ(config-pmap)#class market

T3700G-52TQ(config-pmap-c)#simple 1000 100 **conform** transmit **violate** drop

25.37 single-rate

Description

The **single-rate** command is used to configure single-rate traffic policing action.

Syntax

single-rate *CIR CBS EBS* **conform** { drop | *set-cos-as-sec-cos* | set-cos-transmit | set-dscp-transmit | set-prec-transmit | transmit } [*cos* | *dscp* | *prec*] **exceed** { drop | *set-cos-as-sec-cos* | set-cos-transmit | set-dscp-transmit | set-prec-transmit | transmit } [*cos* | *dscp* | *prec*] **violate** { drop | *set-cos-as-sec-cos* | set-cos-transmit | set-dscp-transmit | set-prec-transmit | transmit } [*cos* | *dscp* | *prec*]

Parameter

CIR ——Specify the token's generation rate in Kbps for token bucket C. It ranges from 1 to 1000000.

CBS ——Specify the maximum capacity in Kbytes for token bucket C. It ranges from 1 to 128.

EBS ——Specify the maximum capacity in Kbytes for token bucket E. It ranges from 1 to 128.

drop ——Drop the conforming traffic.

set-cos-as-sec-cos —— Set Cos value as secondary Cos value for conforming traffic.

set-cos-transmit ——Enter Cos marking action for conforming traffic.

set-dscp-transmit ——Enter IP DSCP marking action for conforming traffic.

set-prec-transmit —— Enter IP precedence marking action on conforming traffic.

transmit ——Transmit the conforming traffic.

cos —— The Class of Service(Cos) value in an Ethernet frame header, ranging from 0 to 7.

dscp —— Enter a DSCP value in the range of 0 to 63.

prec —— Enter an IP precedence value in the range of 0 to 7.

Command Mode

Policy-Class-Map Configuration Mode

Example

Enter the Policy-Map Config mode for a policy named tp, then add a class named market to the policy and enter Policy-Class-Map Configuration Mode.

For token bucket C, set the token's generation rate as 1000 Kbps and the maximum capacity as 64 Kbytes. For token bucket E, set the maximum capacity as 128 Kbytes. Set the conform action as transmit, the exceed action as mark the packets with the specified IP Precedence value(4), the violate action as drop:

T3700G-52TQ(config)#policy-map tp

T3700G-52TQ(config-pmap)#class market

T3700G-52TQ(config-pmap-c)#single-rate 1000 64 128 **conform** transmit

exceed set-prec-transmit 4 **violate** drop

25.38 two-rate

Description

The **two-rate** command is used to configure two-rate traffic policing action.

Syntax

two-rate *CIR CBS PIR PBS* **conform** { drop | *set-cos-as-sec-cos* | set-cos-transmit | set-dscp-transmit | set-prec-transmit | transmit } [*cos* | *dscp* | *prec*] **exceed** { drop | *set-cos-as-sec-cos* | set-cos-transmit | set-dscp-transmit | set-prec-transmit | transmit } [*cos* | *dscp* | *prec*] **violate** { drop | *set-cos-as-sec-cos* | set-cos-transmit | set-dscp-transmit | set-prec-transmit | transmit } [*cos* | *dscp* | *prec*]

Parameter

CIR —— Specify the token's generation rate in Kbps for token bucket C. It ranges from 1 to 1000000.

CBS —— Specify the maximum capacity in Kbytes for token bucket C. It ranges from 1 to 128.

PIR —— Specify the token's generation rate in Kbps for token bucket P. It ranges from 1 to 1000000.

PBS —— Specify the maximum capacity in Kbytes for token bucket P. It ranges from 1 to 128.

drop ——Drop the conforming traffic.

set-cos-as-sec-cos —— Set Cos value as secondary Cos value for conforming traffic.

set-cos-transmit ——Enter Cos marking action for conforming traffic.

set-dscp-transmit —— Enter IP DSCP marking action for conforming traffic.

set-prec-transmit —— Enter IP precedence marking action on conforming traffic.

transmit —— Transmit the conforming traffic.

cos —— The Class of Service(Cos) value in an Ethernet frame header, ranging from 0 to 7.

dscp —— Enter a DSCP value in the range of 0 to 63.

prec —— Enter an IP precedence value in the range of 0 to 7.

Command Mode

Policy-Class-Map Configuration Mode

Example

Enter the Policy-Map Config mode for a policy named tp, then add a class named market to the policy and enter Policy-Class-Map Configuration Mode.

For token bucket C, set the token's generation rate as 1000 Kbps and the maximum capacity as 64 Kbytes. For token bucket P, set the token's

generation rate as 2000 Kbps and the maximum capacity as 128 Kbytes. Set the conform action as transmit, the exceed action as mark the packets with the specified IP Precedence value(4), the violate action as drop:

T3700G-52TQ(config)#policy-map tp

T3700G-52TQ(config-pmap)#class market

T3700G-52TQ(config-pmap-c)#two-rate 1000 64 2000 128 **conform** transmit **exceed** set-prec-transmit 4 **violate** drop

25.39 service-policy

Description

The **service-policy** command is used to apply a specific policy to inbound or outbound traffic globally. To delete the configuration, please use **no service-policy** command.

Syntax

service-policy { in | out } *policy-map-name*

no service-policy { in | out } *policy-map-name*

Parameter

service-policy-name —— Specify the name of the policy, ranging from 1 to 31 alphanumetric characters.

Command Mode

Global Configuration Mode

Example

Apply a policy named tp to inbound traffic globally:

T3700G-52TQ(config)#service-policy tp **in**

25.40 service-policy (interface)

Description

The **service-policy** command is used to apply a specific policy to inbound or outbound traffic on the interface. To delete the configuration, please use **no service-policy** command.

Syntax

service-policy { in | out } *policy-map-name*

no service-policy { in | out } *policy-map-name*

Parameter

service-policy-name —— Specify the name of the policy, ranging from 1 to 31 alphanumetric characters.

Command Mode

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

Example

Apply a policy named tp to inbound traffic on port 5:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/5
T3700G-52TQ(config-if)#service-policy tp in
```

25.41 show diffserv

Description

The **show diffserv** command is used to display the configuration of Differentiated Services (DiffServ).

Syntax

show diffserv

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration of Differentiated Services (DiffServ):

```
T3700G-52TQ(config)#show diffserv
```

25.42 show diffserv service brief

Description

The **show diffserv service brief** command is used to display the policy summary information.

Syntax

show diffserv service brief

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the policy summary information:

T3700G-52TQ(config)#show diffserv service brief

25.43 show diffserv service

Description

The **show diffserv service** command is used to display the information of policy applied to the specific interface.

Syntax

show diffserv service *interface-num* {in | out}

Parameter

interface-num ——The Gigabit/Ten-Gigabit Ethernet port number.

in | out ——The traffic flow direction to which the policy is applied.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of policy applied to port 1/0/10, the policy's type is in:

T3700G-52TQ(config)#show diffserv service 1/0/10 **in**

25.44 show class-map

Description

The **show class-map** command is used to display the Diffserv class information.

Syntax

show class-map [*class-map-name*]

Parameter

class-map-name —— The name of an existing DiffServ class, ranging from 1 to 31 characters.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of all the Diffserv classes:

```
T3700G-52TQ(config)#show class-map
```

25.45 show policy-map

Description

The **show policy-map** command is used to display the Diffserv policy information.

Syntax

show policy-map [*policy-map-name*]

Parameter

policy-map-name —— The name of an existing DiffServ policy, ranging from 1 to 31 characters.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of all the Diffserv policys:

```
T3700G-52TQ(config)#show policy-map
```

25.46 show policy-map interface

Description

The **show policy-map interface** command is used to display the information of policy applied to the specific interface.

Syntax

show policy-map interface *interface-num* {in | out}

Parameter

interface-num ——The Gigabit/Ten-Gigabit Ethernet port number.

in | out ——The traffic flow direction to which the policy is applied.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of policy applied to port 1/0/10 and inbound traffic:

```
T3700G-52TQ(config)#show policy-map interface 1/0/10 in
```

25.47 show policy-map interface lag

Description

The **show policy-map interface lag** command is used to display the information of policy applied to the specific LAG.

Syntax

show policy-map interface lag *lagid* {in | out}

Parameter

lagid——The ID of the LAG.

in | out ——The traffic flow direction to which the policy is applied.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of policy applied to LAG 1 and inbound traffic:

```
T3700G-52TQ(config)#show policy-map interface lag 1 in
```

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.

26.1 monitor session destination interface

Description

The **monitor session destination interface** command is used to configure the monitoring port. Each monitor session has only one monitoring port. To change the monitoring port, please use the **monitor session destination interface** command by changing the port value. To delete the corresponding monitor session configuration, please use **no monitor session** command.

Syntax

monitor session *session_num* **destination interface** { **gigabitEthernet** *port* / **ten-gigabitEthernet** *port*}

no monitor session *session_num*

Parameter

session_num —— The monitor session number. The valid value is from 1 to 4.

port —— The Gigabit/Ten-Gigabit Ethernet port number.

Command Mode

Global Configuration Mode

Example

Create monitor session 1 and configure Gigabit Ethernet port 1/0/1 as the monitoring port:

T3700G-52TQ(config)#monitor session 1 **destination interface gigabitEthernet** 1/0/1

Delete the monitor session 1:

T3700G-52TQ(config)#no monitor session 1

26.2 monitor session source interface

Description

The **monitor session source interface** command is used to configure the monitored port. To delete the corresponding monitored port, please use **no monitor session source interface** command.

Syntax

monitor session *session_num* **source interface** { **gigabitEthernet** *port* / **ten-gigabitEthernet** *port* /**port-channel** *lagid*} *mode*

no monitor session *session_num* **source interface** { **gigabitEthernet** *port-list* /**ten-gigabitEthernet** *port* /**port-channel** *lagid*} *mode*

Parameter

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

port —— The Gigabit/Ten-Gigabit Ethernet port number.

lagid —— Specify the ID of the LAG.

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. Monitored ports number is not limited, but it can't be the monitoring port at the same time.
2. Whether the monitoring port and monitored ports are in the same VLAN or not is not demanded strictly.
3. The monitoring port cannot be link-aggregation member.

Example

Create monitor session 1, then configure Gigabit Ethernet port 4 as monitored ports and enable ingress monitoring:

T3700G-52TQ(config)#monitor session 1 **source interface gigabitEthernet** 1/0/4 rx

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

T3700G-52TQ(config)#no monitor session 1 **source interface gigabitEthernet** 1/0/4 rx

26.3 show monitor session

Description

The **show monitor session** command is used to display the configuration of port monitoring.

Syntax

show monitor session [*session_num*]

Parameter

session_num —— The monitor session number. The valid value is from 1 to 4.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the monitoring configuration of monitor session 1:

T3700G-52TQ(config)#show monitor session 1

Chapter 27 Port Protection Commands

This feature is used to restrict the communication between the specific ports. A port that is a member of a protected ports group is a protected port. Protected ports in the same protected ports group cannot forward traffic to each other, even if they are in the same VLAN. But the protected ports can forward traffic to the unprotected ports and the ports that are in a different group.

27.1 switchport protected name

Description

The **switchport protected name** command is used to configure the descriptions for the protected ports groups. To delete configuration of the group, please use **no switchport protected** command.

Syntax

switchport protected *group-num* **name** *name*

no switchport protected *group-num*

Parameter

group-number —— Specify a protected ports group for configuration. The valid value is 0 to 2.

name —— Specify a name for the group for identification. It should be no more than 32 characters.

Command Mode

Global Configuration Mode

Example

Give a description "GroupA" for the protected ports group 1:

T3700G-52TQ(config)# switchport protected 1 **name** GroupA

27.2 switchport protected

Description

The **switchport protected** command is used to add the specified port into a protected ports group. To drop the port out of the protected ports group, please use **no switchport protected** command.

Syntax

switchport protected *group-num*

no switchport protected *group-num*

Parameter

group-number —— Specify a protected ports group for configuration. The valid value is 0 to 2.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Add Gigabit Ethernet ports 1/0/3-5 into group 2:

T3700G-52TQ(config)#interface range gigabitEthernet 1/0/3-5

T3700G-52TQ(config-if)#switchport protected 2

27.3 show switchport protected

Description

The **show switchport protected** command is used display the information of protected ports groups.

Syntax

show switchport protected [*group-num*]

Parameter

group-number —— Specify a protected ports group to display. The valid value is 0 to 2.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Displays the information of all protected ports groups:

T3700G-52TQ#show switchport protected

Displays the information of protected ports group 0:

T3700G-52TQ#show switchport protected 0

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.

28.1 loopback-detection (global)

Description

The **loopback-detection** command is used to enable the loopback detection function globally. To disable it, please use **no loopback detection** command.

Syntax

loopback-detection

no loopback-detection

Command Mode

Global Configuration Mode

Example

Enable the loopback detection function globally:

```
T3700G-52TQ(config)# loopback-detection
```

28.2 loopback-detection interval

Description

The **loopback-detection interval** command is used to define the interval of sending loopback detection packets from switch ports to network, aiming at detecting network loops periodically.

Syntax

loopback-detection interval *interval-time*

Parameter

interval-time —— The interval of sending loopback detection packets. It ranges from 1 to 1000 seconds. By default, this value is 30 seconds.

Command Mode

Global Configuration Mode

Example

Specify the interval-time as 50 seconds:

T3700G-52TQ(config)# loopback-detection interval 50

28.3 loopback-detection recovery-time

Description

The **loopback-detection recovery-time** command is used to configure the time after which the blocked port would automatically recover to normal status.

Syntax

loopback-detection recovery-time *recovery-time*

Parameter

recovery-time —— The time after which the blocked port would automatically recover to normal status, and the loopback detection would restart. It is integral times of detection interval, ranging from 1 to 100 and the default value is 3.

Command Mode

Global Configuration Mode

Example

Configure the recovery-time as 3 times of detection interval:

T3700G-52TQ(config)# loopback-detection recovery-time 3

28.4 loopback-detection (interface)

Description

The **loopback-detection** command is used to enable the loopback detection function of the specified port or LAG. 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 / interface ten-gigabitEthernet / interface range ten-gigabitEthernet / interface port-channel)

Example

Enable the loopback detection function of ports 1-3:

T3700G-52TQ(config)# interface range gigabitEthernet 1/0/1-3

T3700G-52TQ(config-if-range)# loopback-detection

28.5 loopback-detection config

Description

The **loopback-detection config** command is used to configure the process-mode and recovery-mode for the ports or LAGs by which the switch copes with the detected loops.

Syntax

loopback-detection config process-mode { alert | port-based } **recovery-mode** { auto | manual }

Parameter

alert | port-based —— The mode how the switch processes the detected loops. Alert: When a loop is detected, display an alert. Port based: When a loop is detected, display an alert and block the port.

auto | manual —— The mode how the blocked port recovers to normal status. Auto: Block status can be automatically removed after recovery time. Manual: Block status can only be removed manually.

Command Mode

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

interface ten-gigabitEthernet / interface range ten-gigabitEthernet / interface port-channel)

Example

Configure the loopback detection process-mode as port-based and recovery-mode as manual for port 2:

T3200G-52TQ(config)# interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)# loopback-detection config process-mode port-based **recovery-mode** manual

28.6 loopback-detection recover

Description

The **loopback-detection recover** command is used to remove the block status of selected ports or LAGs, thus 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 / interface ten-gigabitEthernet / interface range ten-gigabitEthernet / interface port-channel)

Example

Recover the blocked port 2 to normal status:

T3700G-52TQ(config)# interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)# loopback-detection recover

28.7 show loopback-detection global

Description

The **show loopback-detection global** command is used to display the global configuration of loopback detection function such as loopback detection

global status, loopback detection interval and loopback detection recovery time.

Syntax

show loopback-detection global

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the global configuration of loopback detection function:

T3700G-52TQ# show loopback-detection global

28.8 show loopback-detection interface

Description

The **show loopback-detection interface** command is used to display the configuration of loopback detection function and the status of the specified Ethernet port.

Syntax

show loopback-detection interface [**fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *port-channel-id*]

Parameter

port —— The Ethernet port number.

port-channel-id —— The ID of the port channel.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

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

T3700G-52TQ# show loopback-detection interface

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

T3700G-52TQ# show loopback-detection interface gigabitEthernet 1/0/5

Chapter 29 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.

29.1 time-range

Description

The **time-range** command is used to add Time-Range. To delete the corresponding Time-Range, please use **no time-range** command. A time-range based ACL enables you to implement ACL control over packets by differentiating the time-ranges. A time-range can be specified in each rule in an ACL. The rule takes effect only when the specified time-range is configured and the system time is within the time-range.

Syntax

time-range *name*

no time-range *name*

Parameter

name —— The Time-Range name, ranging from 1 to 31 characters.

Command Mode

Global Configuration Mode

Example

Add a time-range named tSeg1:

T3700G-52TQ (config)# time-range tSeg1

29.2 absolute

Description

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

Syntax

absolute start *start-date start-time* **end** *end-date end-time*

no absolute

Parameter

start-date —— The start date in Absoluteness Mode, in the format of MM/DD/YYYY. By default, it is 01/01/1970.

start-time—— The start time in Absoluteness Mode, in the format of HH:MM. Valid values for HH are 00 to 23, and for MM are 00 to 59.

end-date —— The end date in Absoluteness Mode, in the format of MM/DD/YYYY. By default, it is 12/31/2099. The Absoluteness Mode will be disabled if the start date and end date are both in default value.

end-time—— The end time in Absoluteness Mode, in the format of HH:MM. Valid values for HH are 00 to 23, and for MM are 00 to 59.

Command Mode

Time-range Configuration Mode

User Guidelines

To present the last minute of a day, you can specify the end time as 00:00 of the next day.

Example

Create a time segment with the name tSeg1, and specify the time range as the full day of May 5, 2012:

T3700G-52TQ(config)# time-range tSeg1

T3700G-52TQ(config-time-range)# absolute start 05/05/2012 00:00 **end** 05/06/2012 00:00

29.3 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-slice** *time-slice*

no periodic week-date *week-day* **time-slice** *time-slice*

Parameter

week-day —— Specify the day(s) of the week. Valid inputs can be numbers from 1 to 7, and the words **daily**, **weekend**, **weekdays**. The numbers indicate

the corresponding days of the week, that is, 1 means Monday, 2 means Tuesday, and so on. To present more than one day in the week, you can enter a series of numbers separated by commas, or a range of numbers separated by hyphens.

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

Command Mode

Time-range Configuration Mode

Example

Create a time segment with the name tSeg1, and specify the time range as 08:30 to 12:00 from Monday to Wednesday:

T3700G-52TQ(config)#time-range tSeg1

T3700G-52TQ(config-time-range)#periodic week-date 1-3 **time-slice** 08:30-12:00

29.4 access-list create

Description

The **access-list create** command is used to create standard-IP ACL and extend-IP ACL.

Syntax

access-list create *acl-id*

Parameter

acl-id —— ACL ID, ranging from 1 to 199. 1-99 must be Standard-IP ACL, and 100-199 must be Extend-IP ACL.

Command Mode

Global Configuration Mode

Example

Create a standard-IP ACL whose ID is 12:

T3700G-52TQ(config)#access-list create 12

29.5 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 *name*

no mac access-list *name*

Parameter

name —— The name of MAC ACL, which may include alphabetic, numeric, dash, dot or underscore characters only and must start with a letter and the size of the name string must be less than or equal to 31 characters.

Command Mode

Global Configuration Mode

Example

Create a MAC ACL whose ID is tplink:

T3700G-52TQ(config)#mac access-list tplink

29.6 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.

Syntax

access-list standard *acl-id* **rule** *rule-id* { permit | deny } [**sip** *source-ip* **smask** *source-ip-mask*] [**tseg** *time-segment*] [**qos-remark** *value*] [**s-condition** *rate-limit*] [**s-mirror interface** { **gigabitEthernet** *mirror-port* | **ten-gigabitEthernet** *mirror-port*} | **redirect interface** { **gigabitEthernet** *redirect-port* | **ten-gigabitEthernet** *redirect-port*}]

no access-list standard *acl-id* **rule** *rule-id*

Parameter

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

rule-id —— The rule ID.

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

deny —— The operation to discard packets.

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.

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

value —— The COS queue ID, ranging from 1 to 6.

rate-limit—— The rate of Stream Condition, ranging from 1 to 10000000kbps.

mirror-port —— The Mirror Port number of Stream Mirror.

redirect-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

Global Configuration Mode

Example

Create a Standard-IP ACL whose ID is 12, 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:

T3700G-52TQ(config)#access-list create 12

T3700G-52TQ(config)#access-list standard 12 **rule** 10 permit **sip** 192.168.0.100 **smask** 255.255.255.0 **tseg** tSeg1

29.7 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 { permit | deny } [**sip** *source-ip* **smask** *source-ip-mask*] [**dip** *destination-ip* **dmask** *destination-ip-mask*] [**tseg** *time-segment*] [**dscp** *dscp*] [**s-port** *s-port*] [**d-port** *d-port*] [**tcpflag** *tcpflag*] [**protocol** *protocol*] [**tos** *tos*] [**pre** *pre*] [**frag** { enable /disable }] [**s-condition** *rate-limit*] [**qos-remark** *value*] [**icmptype** *icmptype*] [**icmpcode** *icmptcode*] [**s-mirror interface** { **gigabitEthernet** *mirror-port* | **ten-gigabitEthernet** *mirror-port* } | **redirect interface** { **gigabitEthernet** *redirect-port* | **ten-gigabitEthernet** *redirect-port* }]

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

Parameter

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

rule-id—— The rule ID.

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

deny —— The operation to discard packets.

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

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

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

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

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

dscp —— Specify the dscp value, ranging from 0 to 63.

s-port —— The source port number.

d-port —— The destination port number.

tcpflag —— Specify the flag value when using TCP protocol.

protocol —— Configure the value of the matching protocol.

tos—— Enter the IP ToS contained in the rule.

pre —— Enter the IP Precedence contained in the rule.

enable —— The corresponding rule will take effect on the fragment packets. All the fragments and the last piece of fragment will be always forwarded.

disable —— The corresponding rule will not take effect on the fragment packets.

rate-limit —— The rate of Stream Condition, ranging from 1 to 10000000kbps.

value —— The COS queue ID, ranging from 1 to 6.

icmptype —— The predefined ICMP type.

icmpcode —— The predefined ICMP code.

mirror-port —— The Mirror Port number of Stream Mirror.

redirect-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

Global Configuration Mode

Example

Create an Extended-IP ACL whose ID is 110, 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:

T3700G-52TQ(config)#access-list create 110

T3700G-52TQ(config)#access-list extended 110 **rule** 10 permit **sip** 192.168.0.100 **smask** 255.255.255.0 **tseg** tSeg1

29.8 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*] [**type** *ethernet-type*] [**pri** *user-pri*] [**tseg** *time-segment*] [**vid** *vlan-id*] [**s-condition** *rate-limit*] [**qos-remark** *value*] [**s-mirror interface** { **gigabitEthernet** *mirror-port* | **ten-gigabitEthernet** *mirror-port*} | **redirect interface** { **gigabitEthernet** *redirect-port* | **ten-gigabitEthernet** *redirect-port*}]

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.

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.

vlan-id —— The VLAN ID, ranging from 1 to 4093.

rate-limit—— The rate of Stream Condition, ranging from 1 to 10000000kbps.

value —— The COS queue ID, ranging from 1 to 6.

redirect-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.

mirror-port —— The Mirror Port number of Stream Mirror.

Command Mode

Mac Access-list Configuration Mode

Example

Create a MAC ACL whose ID is tplink, 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 ff: ff: ff: ff:ff:00, 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:

T3700G-52TQ(config)#mac access-list tplink

T3700G-52TQ(config-mac-acl)#rule 10 permit **smac** 00:01:3F:48:16:23 **smask** ff: ff: ff: ff:ff:00 **pri** 5 **tseg** tSeg1

29.9 access-list bind acl (interface)

Description

The **access-list bind acl** command is used to bind the ACL to a specified port. To cancel the bind relation, please use **no access-list bind acl** command.

Syntax

access-list bind acl *acl*

no access-list bind acl *acl*

Parameter

acl—— The name or ID of the ACL.

Command Mode

Interface Configuration Mode (interface fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet / interface port-channel)

Example

Bind acl1 to Gigabit Ethernet port 1/0/2:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)#access-list bind acl acl1

29.10 access-list bind acl (vlan)

Description

The **access-list bind acl** command is used to bind the ACL to a specified VLAN. To cancel the bind relation, please use **no access-list bind acl** command.

Syntax

access-list bind acl *acl*

no access-list bind acl *acl*

Parameter

acl—— The name or ID of the ACL.

Command Mode

Interface VLAN Mode

Example

Bind acl1 to VLAN 2:

```
T3700G-52TQ(config)#interface vlan 2
T3700G-52TQ(config-if)#access-list bind acl acl1
```

29.11 access-list resequence

Description

The **access-list resequence** command is used to resequence rules of the ACL.

Syntax

access-list resequence *acl sequence-start sequence-step*

Parameter

acl—— The name or ID of the ACL.

sequence-start —— Specify the starting sequence number for resequencing the existing rules. It ranges from 1 to 2147483647.

sequence-step—— Specify the increment of sequence numbers for resequencing the existing rules. It ranges from 1 to 2147483647.

Command Mode

Global Configuration Mode

Example

Resequence rules of the ACL 20, specify the starting sequence number as 1, the increment of sequence numbers as 5:

```
T3700G-52TQ# access-list resequence 20 1 5
```

29.12 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:

```
T3700G-52TQ#show time-range
```

29.13 show access-list

Description

The **show access-list** command is used to display configuration of ACL.

Syntax

show access-list [*acl*]

Parameter

acl—— The name or ID of the ACL.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration of the Standard-IP ACL whose ID is 20:

```
T3700G-52TQ#show access-list 20
```

29.14 show access-list bind

Description

The **show access-list bind** command is used to display the ACL binding information.

Syntax

show access-list bind

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the ACL binding information:

```
T3700G-52TQ#show access-list bind
```

Chapter 30 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.

30.1 spanning-tree (global)

Description

The **spanning-tree** command is used to enable STP function globally. To disable the STP function, please use **no spanning-tree** command.

Syntax

spanning-tree

no spanning-tree

Command Mode

Global Configuration Mode

Example

Enable the STP function:

```
T3700G-52TQ(config)#spanning-tree
```

30.2 spanning-tree (interface)

Description

The **spanning-tree** command is used to enable STP function for a port. To disable the STP function, please use **no spanning-tree** command.

Syntax

spanning-tree

no spanning-tree

Command Mode

Interface Configuration Mode (interface fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet / interface port-channel)

Example

Enable the STP function for Gigabit Ethernet port 1/0/2:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)#spanning-tree

30.3 spanning-tree common-config

Description

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

Syntax

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

no spanning-tree common-config

Parameter

priority —— 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 / interface ten-gigabitEthernet / interface range ten-gigabitEthernet / interface port-channel)

Example

Enable the STP function of Gigabit Ethernet port 1/0/1, and configure the Port Priority as 64, ExtPath Cost as 100, IntPath Cost as 100, and then enable Edge Port:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/1

T3700G-52TQ(config-if)#spanning-tree common-config port-priority 64 **ext-cost** 100 **int-cost** 100 **portfast enable point-to-point** open

30.4 spanning-tree mode

Description

The **spanning-tree mode** command is used to configure the STP mode of the switch. To return to the default configurations, please use **no spanning-tree mode** command.

Syntax

spanning-tree mode {stp | rstp | mstp}

no spanning-tree mode

Parameter

stp —— Spanning Tree Protocol, the default value.

rstp —— Rapid Spanning Tree Protocol

mstp —— Multiple Spanning Tree Protocol

Command Mode

Global Configuration Mode

Example

Configure the spanning-tree mode as “mstp”:

```
T3700G-52TQ(config)#spanning-tree mode mstp
```

30.5 spanning-tree mst configuration

Description

The **spanning-tree mst configuration** command is used to access MST Configuration Mode from Global Configuration Mode, as to configure the VLAN-Instance mapping, region name and revision level. To return to the default configuration of the corresponding Instance, please use **no spanning-tree mst configuration** command.

Syntax

spanning-tree mst configuration

no spanning-tree mst configuration

Command Mode

Global Configuration Mode

Example

Enter into the MST Configuration Mode:

```
T3700G-52TQ(config)#spanning-tree mst configuration
```

30.6 instance

Description

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

Syntax

instance *instance-id* **vlan** *vlan*-id

no instance *instance-id* [**vlan** *vlan-id*]

Parameters

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

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

Command Mode

MST Configuration Mode

Example

Map the VLANs 1-100 to Instance 1:

```
T3700G-52TQ(config)#spanning-tree mst configuration
T3700G-52TQ(config-mst)#instance 1 vlan 1-100
```

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

```
T3700G-52TQ(config)#spanning-tree mst configuration
T3700G-52TQ(config-mst)#no instance 1
```

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

```
T3700G-52TQ(config)#spanning-tree mst configuration
T3700G-52TQ(config-mst)#no instance 1 vlan 1-50
```

30.7 name

Description

The **name** command is used to configure the region name of MST instance.

Syntax

name *name*

Parameters

name —— The region name, used to identify MST region. It ranges from 1 to 32 characters.

Command Mode

MST Configuration Mode

Example

Configure the region name of MST as “region1”:

```
T3700G-52TQ(config)#spanning-tree mst configuration
T3700G-52TQ(config-mst)#name region1
```

30.8 revision

Description

The **revision** command is used to configure the revision level of MST instance.

Syntax

revision *revision*

Parameters

revision —— The revision level for MST region identification, ranging from 0 to 65535.

Command Mode

MST Configuration Mode

Example

Configure the revision level of MST as 100:

T3700G-52TQ(config)#spanning-tree mst configuration

T3700G-52TQ(config-mst)#revision 100

30.9 spanning-tree mst instance

Description

The **spanning-tree mst instance** command is used to configure the priority of MST instance. To return to the default value of MST instance priority, please use **no spanning-tree mst instance** command.

Syntax

spanning-tree mst instance *instance-id* **priority** *priority*

no spanning-tree mst instance *instance-id* **priority**

Parameter

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

priority —— 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:

T3700G-52TQ(config)#spanning-tree mst instance 1 **priority** 4096

30.10 spanning-tree mst

Description

The **spanning-tree mst** command is used to configure MST Instance Port. To return to the default configuration of the corresponding Instance Port, please use **no spanning-tree mst** command. A port can play different roles in different spanning tree instance. You can use this command to configure the parameters of the ports in different instance IDs as well as view status of the ports in the specified instance.

Syntax

spanning-tree mst instance *instance-id* { [**port-priority** *priority*] [**cost** *cost*] }

no spanning-tree mst instance *instance-id*

Parameter

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

priority—— 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 2000000. 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 / interface ten-gigabitEthernet / interface range ten-gigabitEthernet / interface port-channel)

Example

Configure the priority of Gigabit Ethernet port 1/0/1 in MST Instance 1 as 64, and path cost as 2000:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/1

T3700G-52TQ(config-if)#spanning-tree mst instance 1 **port-priority** 64 **cost** 2000

30.11 spanning-tree priority

Description

The **spanning-tree priority** command is used to configure the bridge priority. To return to the default value of bridge priority, please use **no spanning-tree priority** command.

Syntax

spanning-tree priority *priority*

no spanning-tree priority

Parameter

priority —— Bridge priority, ranging from 0 to 61440. The priority must be an integral multiple of 4096 and it is 32768 by default.

Command Mode

Global Configuration Mode

Example

Configure the bridge priority as 4096:

T3700G-52TQ(config)#spanning-tree priority 4096

30.12 spanning-tree timer

Description

The **spanning-tree timer** command is used to configure forward-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*] [**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.

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 max-age for Spanning Tree as 16 seconds and 22 seconds respectively:

T3700G-52TQ(config)#spanning-tree timer forward-time 16 **max-age** 22

30.13 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:

T3700G-52TQ(config)#spanning-tree hold-count 8

30.14 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:

T3700G-52TQ(config)#spanning-tree max-hops 30

30.15 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/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet / interface port-channel)

Example

Enable the BPDU filter function for Gigabit Ethernet port 1/0/2:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)#spanning-tree bpdufilter

30.16 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/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet / interface port-channel)

Example

Enable the BPDU protect function for Gigabit Ethernet port 1/0/2:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/2
T3700G-52TQ(config-if)#spanning-tree bpduguard
```

30.17 spanning-tree bpduflood

Description

The **spanning-tree bpduflood** command is used to enable the BPDU flood function for a port, it takes effect only when spanning tree function is globally disabled. With the function enabled, the port can forward BPDU packets to other BPDU-flood-enabled ports. To disable the BPDU flood function, please use **no spanning-tree bpduflood** command.

Syntax

spanning-tree bpduflood

no spanning-tree bpduflood

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet/interface port-channel/interface range port-channel)

Example

Enable the BPDU flood function for Gigabit Ethernet port 1/0/2:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/2
T3700G-52TQ(config-if)#spanning-tree bpduflood
```

30.18 spanning-tree guard loop

Description

The **spanning-tree guard loop** command is used to enable the Loop Protect function for a port. Loop Protect is to prevent the loops in the network brought by recalculating STP because of link failures and network congestions. To disable the Loop Protect function, please use **no spanning-tree guard loop** command.

Syntax

spanning-tree guard loop

no spanning-tree guard loop

Command Mode

Interface Configuration Mode (interface fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet / interface port-channel)

Example

Enable the Loop Protect function for Gigabit Ethernet port 1/0/2:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)#spanning-tree guard loop

30.19 spanning-tree guard root

Description

The **spanning-tree guard root** command is used to enable the Root Protect function for a port. With the Root Protect function enabled, the root bridge will set itself automatically as ERROR-PORT when receiving BPDU packets with higher priority, in order to maintain the role of root 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/

interface ten-gigabitEthernet / interface range ten-gigabitEthernet / interface port-channel)

Example

Enable the Root Protect function for Gigabit Ethernet port 1/0/2:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/2
T3700G-52TQ(config-if)#spanning-tree guard root
```

30.20 spanning-tree guard tc

Description

The **spanning-tree guard tc** command is used to enable the TC Protect 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, the switch will drop TC-BPDUs.

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 / interface ten-gigabitEthernet / interface range ten-gigabitEthernet / interface port-channel)

Example

Enable the TC Protect of Spanning Tree for Gigabit Ethernet port 1/0/2:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/2
T3700G-52TQ(config-if)#spanning-tree guard tc
```

30.21 spanning-tree mcheck

Description

The **spanning-tree mcheck** command is used to enable MCheck.

Syntax

spanning-tree mcheck

Command Mode

Interface Configuration Mode (interface fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet / interface ten-gigabitEthernet / interface range ten-gigabitEthernet / interface port-channel)

Example

Enable MCheck for Gigabit Ethernet port 1/0/2:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/2
T3700G-52TQ(config-if)#spanning-tree mcheck
```

30.22 show spanning-tree active

Description

The **show spanning-tree active** command is used to display the active information of spanning-tree.

Syntax

show spanning-tree active

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the active information of spanning-tree:

```
T3700G-52TQ(config)#show spanning-tree active
```

30.23 show spanning-tree bridge

Description

The **show spanning-tree bridge** command is used to display the bridge parameters.

Syntax

show spanning-tree bridge [forward-time | hello-time | hold-count | max-age | max-hops | mode | priority | state]

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the bridge parameters:

```
T3700G-52TQ(config)#show spanning-tree bridge
```

30.24 show spanning-tree interface

Description

The **show spanning-tree interface** command is used to display the spanning-tree information of all ports or a specified port.

Syntax

show spanning-tree interface [**fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port*] [edge | ext-cost | int-cost | mode | p2p | priority | role | state | status]

Parameter

port—— The Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the spanning-tree information of all ports:

```
T3700G-52TQ(config)#show spanning-tree interface
```

Display the spanning-tree information of Gigabit Ethernet port 1/0/2:

```
T3700G-52TQ(config)#show spanning-tree interface gigabitEthernet
1/0/2
```

Display the spanning-tree mode information of Gigabit Ethernet port 1/0/2:

```
T3700G-52TQ(config)#show spanning-tree interface gigabitEthernet
1/0/2 mode
```

30.25 show spanning-tree interface-security

Description

The **show spanning-tree interface-security** command is used to display the protect information of all ports or a specified port.

Syntax

show spanning-tree interface-security [**fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port*] [bpdufilter | bpduguard | loop | root | tc | tc-defend]

Parameter

port—— The Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the protect information of all ports:

T3700G-52TQ(config)#show spanning-tree interface-security

Display the protect information of Gigabit Ethernet port 1/0/1:

T3700G-52TQ(config)#show spanning-tree interface-security gigabitEthernet 1/0/1

Display the interface security bpdufilter information:

T3700G-52TQ(config)# show spanning-tree interface-security bpdufilter

30.26 show spanning-tree mst

Description

The **show spanning-tree mst** command is used to display the related information of MST Instance.

Syntax

show spanning-tree mst {**configuration** [**digest**] | **instance** *instance-id* [**interface** [**fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port*]] }

Parameter

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

port —— The Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

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

T3700G-52TQ(config)#show spanning-tree mst configuration

Display the related information of MST Instance 1:

T3700G-52TQ(config)#show spanning-tree mst instance 1

Display all the ports information of MST Instance 1:

T3700G-52TQ(config)#show spanning-tree mst instance 1 **interface**

Chapter 31 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.

31.1 ip igmp snooping (global)

Description

The **ip igmp snooping** command is used to configure IGMP Snooping globally. To disable the IGMP Snooping function, please use **no ip igmp snooping** command.

Syntax

ip igmp snooping

no ip igmp snooping

Command Mode

Global Configuration Mode

Example

Enable IGMP Snooping function:

```
T3700G-52TQ(config)#ip igmp snooping
```

31.2 ip igmp snooping (interface)

Description

The **ip igmp snooping** command is used to enable the IGMP Snooping function for the desired port. To disable the IGMP Snooping function, please use **no ip igmp snooping** command.

Syntax

ip igmp snooping

no ip igmp snooping

Command Mode

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

Example

Enable IGMP Snooping function of Gigabit Ethernet port 23:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/23
T3700G-52TQ(config-if)#ip igmp snooping
```

31.3 ip igmp snooping header-validation

Description

The **ip igmp snooping header-validation** command is used to enable the validation of 3 igmp header fields: TTL (Time To Live), ToS (Type of Service), and Router Alert options. For IGMPv1, only the TTL field is validated. For IGMPv2, TTL and Router Alert fields are validated. For IGMPv3, TTL, ToS, and Router Alert fields are validated. To disable the IGMP Snooping header validation function, please use **no ip igmp snooping header-validation** command.

Syntax

ip igmp snooping header-validation

no ip igmp snooping header-validation

Command Mode

Global Configuration Mode

Example

Enable the IGMP Snooping header validation function:

```
T3700G-52TQ(config)#ip igmp snooping header-validation
```

31.4 ip igmp snooping rtime

Description

The **ip igmp snooping rtime** command is used to specify router port aging time globally. To restore the default timer, please use **no ip igmp snooping rtime** command.

Syntax

ip igmp snooping rtime *rtime*

no ip igmp snooping rtime

Parameter

rtime —— Specify the aging time in seconds, ranging from 0 to 3600. The default aging time is 300 second.

Command Mode

Global Configuration Mode

Example

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

T3700G-52TQ(config)# ip igmp snooping rtime 100

31.5 ip igmp snooping rtime (interface)

Description

The **ip igmp snooping rtime** command is used to specify router port aging time for the desired port. To restore the default timer, please use **no ip igmp snooping rtime** command.

Syntax

ip igmp snooping rtime *rtime*

no ip igmp snooping rtime

Parameter

rtime —— Specify the aging time in seconds, ranging from 0 to 3600. The default aging time is 300 second.

Command Mode

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

Example

Specify IGMP Snooping router port aging time as 100 seconds for Gigabit Ethernet port 1/0/3:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)#ip igmp snooping rtime 100

31.6 ip igmp snooping mtime

Description

The **ip igmp snooping mtime** 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 ip igmp snooping mtime** command.

Syntax

ip igmp snooping mtime *mtime*

no ip igmp snooping mtime

Parameter

mtime —— Specify the aging time in seconds, ranging from 2 to 3600. The default aging time is 260 seconds.

Command Mode

Global Configuration Mode

Example

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

T3700G-52TQ(config)# ip igmp snooping mtime 100

31.7 ip igmp snooping mtime (interface)

Description

The **ip igmp snooping mtime** command is used to specify member port aging time for the desired port. The default aging time is 260 seconds. To restore the default timer, please use **no ip igmp snooping mtime** command.

Syntax

ip igmp snooping mtime *mtime*

no ip igmp snooping mtime

Parameter

mtime —— Specify the aging time in seconds, ranging from 2 to 3600. The default aging time is 260 seconds.

Command Mode

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

Example

Specify IGMP Snooping member port aging time as 100 seconds for Gigabit Ethernet port 1/0/3:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)# ip igmp snooping mtime 100

31.8 ip igmp snooping immediate-leave

Description

The **ip igmp snooping immediate-leave** command is used to configure the Fast Leave function for the desired 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/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable the Fast Leave function for Gigabit Ethernet port 1/0/3:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)#ip igmp snooping immediate-leave

31.9 ip igmp snooping max-response-time

Description

The **ip igmp snooping max-response-time** command is used to configure the number of seconds the interface should wait after sending a query if it does not receive a report for a particular group.

Syntax

ip igmp snooping max-response-time *max-response-time*

Parameter

max-response-time —— Specify the maximum responding time in seconds, ranging from 1 to 25. The default aging time is 10 seconds.

Command Mode

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

Example

Configure the maximum responding time as 15 seconds for Gigabit Ethernet port 1/0/3:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)#ip igmp snooping max-response-time 15

31.10 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":

T3700G-52TQ(config)#ip igmp snooping drop-unknown

31.11 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. To disable the VLAN IGMP Snooping function, please use **no ip igmp snooping vlan-config** command.

Syntax

ip igmp snooping vlan-config *vlan-list* [**immediate-leave** | **max-response-time** *max-response-time* | **rtime** *rtime* | **mtime** *mtime* | **rport interface** { **fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *port-channel-id*} | **report-suppression**]

no ip igmp snooping vlan-config *vlan-list* [**immediate-leave** | **max-response-time** | **rtime** | **mtime** | **rport interface** { **fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *port-channel-id*} | **report-suppression**]

Parameter

vlan-list —— The ID list of the VLAN desired to modify configuration, ranging from 1 to 4093, in the format of 1-3, 5.

immediate-leave —— Configure the Fast Leave function.

max-response-time —— Specify the maximum responding time in seconds, ranging from 1 to 25. The default aging time is 10 seconds.

rtime —— Specify the aging time in seconds, ranging from 0 to 3600. The default aging time is 0 second.

mtime —— Specify the aging time in seconds, ranging from 2 to 3600. The default aging time is 260 seconds.

port —— Static Router Port, which is mainly used in the network with stable topology.

port-channel-id —— The ID of the port channel.

report-suppression —— Enable the IGMP report suppression function. When it is enabled, the switch forwards only the first IGMP report message per mulicast group to the Layer 3 device, and the subsequent IGMP reports from the same multicast group are discarded.

Command Mode

Global Configuration Mode

Example

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

```
T3700G-52TQ(config)#ip igmp snooping vlan-config 1-3 mtime 200
```

31.12 ip igmp snooping querier

Description

The **ip igmp snooping querier** command is used to enable the IGMP Snooping Querier function. To disable the IGMP Snooping Querier function, please use **no ip igmp snooping querier** command.

Syntax

ip igmp snooping querier

no ip igmp snooping querier

Command Mode

Global Configuration Mode

Example

Enable the IGMP Snooping Querier function:

```
T3700G-52TQ(config)#ip igmp snooping querier
```

31.13 ip igmp snooping querier address

Description

The **ip igmp snooping querier address** command is used to configure the General Query Message source IP address.To delete the General Query Message source IP address, please use **no ip igmp snooping querier address** command.

Syntax

ip igmp snooping querier address *ip-addr*

no ip igmp snooping querier address *ip-addr*

Parameter

ip-addr — The General Query Message source IP address.

Command Mode

Global Configuration Mode

Example

Configure the General Query Message source IP address as 192.168.0.1:

```
T3700G-52TQ(config)#ip igmp snooping querier address 192.168.0.1
```

31.14 ip igmp snooping querier query-interval

Description

The **ip igmp snooping querier query-interval** command is used to configure the Query message interval time. The Querier will send General Query Message with this interval. To return to the default configuration, please use **no ip igmp snooping querier query-interval** command.

Syntax

ip igmp snooping querier query-interval *query-interval*

no ip igmp snooping querier query-interval *query-interval*

Parameter

query-interval —— The Query message interval time, ranging from 1 to 1800 seconds. By default, it is 60 seconds.

Command Mode

Global Configuration Mode

Example

Configure the Query message interval time as 60 seconds:

T3700G-52TQ(config)#ip igmp snooping querier query-interval 60

31.15 ip igmp snooping querier timer expiry

Description

The **ip igmp snooping querier timer expiry** command is used to configure the Expiry Interval which is amount of time the device remains in non-querier mode after it has discovered that there is a multicast querier in the network. To return to the default configuration, please use **no ip igmp snooping querier timer expiry** command.

Syntax

ip igmp snooping querier timer expiry *timer-expiry*

no ip igmp snooping querier timer expiry

Parameter

timer-expiry —— The IGMP Querier timer expiration period, ranging from 60 to 300 seconds. By default, it is 125 seconds.

Command Mode

Global Configuration Mode

Example

Configure the IGMP Querier timer expiration period as 70 seconds:

T3700G-52TQ(config)#ip igmp snooping querier timer expiry 70

31.16 ip igmp snooping querier version

Description

The **ip igmp snooping querier version** command is used to configure the IGMP version which used in periodic IGMP queries. To return to the default configuration, please use **no ip igmp snooping querier version** command.

Syntax

ip igmp snooping querier version { 1|2 }

no ip igmp snooping querier version

Parameter

1|2 —— The IGMP version which used in periodic IGMP queries.

Command Mode

Global Configuration Mode

Example

Configure the IGMP version of the query as 1:

T3700G-52TQ(config)#ip igmp snooping querier version 1

31.17 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), specify the source IP address of the IGMP Snooping Querier, or to enable the IGMP Snooping Querier to participate in the Querier Election process. To delete the configuration, please use **no ip igmp snooping querier vlan** command.

Syntax

ip igmp snooping querier vlan *vlan-id* [**address** *ip-addr* | **election participate**]

no ip igmp snooping querier vlan *vlan-id* [**address** | **election participate**]

Parameter

vlan-id —— VLAN ID, ranging from 1 to 4093.

ip-addr —— Specify the source IP address of the IGMP Snooping Querier for the VLAN.

election participate —— Enable the IGMP Snooping Querier to participate in the Querier Election process.

Command Mode

Global Configuration Mode

Example

Enable the IGMP Snooping Querier function of VLAN1, specify the source IP address of the IGMP Snooping Querier as 192.168.0.1 and enable the IGMP Snooping Querier to participate in the Querier Election process:

T3700G-52TQ(config)# ip igmp snooping querier vlan 1

T3700G-52TQ(config)#ip igmp snooping querier vlan 1 **address** 192.168.0.1

T3700G-52TQ(config)#ip igmp snooping querier vlan 1 **election participate**

31.18 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:

T3700G-52TQ#show ip igmp snooping

31.19 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* | **ten-gigabitEthernet** *port* | **port-channel** *port-channel-id*] **basic-config**

show ip igmp snooping interface [**fastEthernet** *port-list* | **gigabitEthernet** *port-list* | **ten-gigabitEthernet** *port*–list] **basic-config**

Parameter

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

port-channel-id —— The ID of port channel.

basic-config —— The basic 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 Gigabit Ethernet port 2:

T3700G-52TQ#show ip igmp snooping interface gigabitEthernet 1/0/2 **basic-config**

Display the IGMP basic configuration of Gigabit Ethernet ports 2-4:

T3700G-52TQ#show ip igmp snooping interface gigabitEthernet 1/0/2-4 **basic-config**

31.20 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, ranging from 1 to 4093.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the IGMP snooping configuration information of VLAN 2:

```
T3700G-52TQ#show ip igmp snooping vlan 2
```

31.21 show ip igmp snooping ssm

Description

The **show ip igmp snooping ssm** command is used to display the information of Multicast groups.

Syntax

show ip igmp snooping ssm { **entries | groups** | **stats** }

Parameter

entries —— Displays the entries in the multicast forwarding database (MFDB).

groups —— Displays information about IGMP snooping and MLD snooping for source specific multicast.

stats —— Displays statistics about the source specific multicast forwarding database (SSMFDB).

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Displays the entries in the multicast forwarding database (MFDB):

```
T3700G-52TQ#show ip igmp snooping ssm entries
```

31.22 show ip igmp snooping querier

Description

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

Syntax

show ip igmp snooping querier [**detail**]

Parameter

detail —— Display IGMP Snooping Querier detailed information. The IGMP Snooping Querier configurations of all VLANs will be displayed.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display IGMP Snooping Querier detailed information:

```
T3700G-52TQ(config)# show ip igmp snooping querier detail
```

31.23 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-id*

Parameter

vlan-id —— Specify the ID of the VLAN to display the configurations of its IGMP Snooping Querier. The value ranges from 1 to 4093.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configurations of IGMP Snooping Querier of VLAN 2:

```
T3700G-52TQ(config)#show ip igmp snooping querier vlan 2
```

31.24 show ip igmp profile

Description

The **show ip igmp profile** command is used to display the configuration information of all the profiles or a specific profile.

Syntax

show ip igmp profile [*id*]

Parameter

id —— Specify the ID of the profile, ranging from 1 to 999.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration information of all profiles:

```
T3700G-52TQ(config)# show ip igmp profile
```

31.25 clear ip igmp snooping statistics

Description

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

Syntax

clear ip igmp snooping statistics

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Clear the statistics of the IGMP packets:

```
T3700G-52TQ#clear ip igmp snooping statistics
```

Chapter 32 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.

32.1 ipv6 mld snooping (global)

Description

The **ipv6 mld snooping** command is used to configure MLD Snooping globally. To disable the MLD Snooping 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 function:

```
T3700G-52TQ(config)#ipv6 mld snooping
```

32.2 ipv6 mld snooping (interface)

Description

The **ipv6 mld snooping** command is used to enable the MLD Snooping function for the desired port. To disable the MLD Snooping function, please use **no ipv6 mld snooping** command.

Syntax

ipv6 mld snooping

no ipv6 mld snooping

Command Mode

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

Example

Enable MLD Snooping function of Gigabit Ethernet port 23:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/23
T3700G-52TQ(config-if)#ipv6 mld snooping
```

32.3 ipv6 mld snooping rtime

Description

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

Syntax

ipv6 mld snooping rtime *rtime*

no ipv6 mld snooping rtime

Parameter

rtime —— Specify the aging time in seconds, ranging from 0 to 3600. The default aging time is 0 second.

Command Mode

Global Configuration Mode

Example

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

```
T3700G-52TQ(config)# ipv6 mld snooping rtime 100
```

32.4 ipv6 mld snooping rtime (interface)

Description

The **ipv6 mld snooping rtime** command is used to specify router port aging time for the desired port. To restore the default timer, please use **no ipv6 mld snooping rtime** command.

Syntax

ipv6 mld snooping rtime *rtime*

no ipv6 mld snooping rtime

Parameter

rtime —— Specify the aging time in seconds, ranging from 0 to 3600. The default aging time is 0 second.

Command Mode

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

Example

Specify MLD Snooping router port aging time as 100 seconds for Gigabit Ethernet port 1/0/3:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)#ipv6 mld snooping rtime 100

32.5 ipv6 mld snooping mtime

Description

The **ipv6 mld snooping mtime** 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 mtime** command.

Syntax

ipv6 mld snooping mtime *mtime*

no ipv6 mld snooping mtime

Parameter

mtime —— Specify the aging time in seconds, ranging from 2 to 3600. The default aging time is 260 seconds.

Command Mode

Global Configuration Mode

Example

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

T3700G-52TQ(config)# ipv6 mld snooping mtime 100

32.6 ipv6 mld snooping mtime (interface)

Description

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

Syntax

ipv6 mld snooping mtime *mtime*

no ipv6 mld snooping mtime

Parameter

mtime —— Specify the aging time in seconds, ranging from 2 to 3600. The default aging time is 260 seconds.

Command Mode

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

Example

Specify MLD Snooping member port aging time as 100 seconds for Gigabit Ethernet port 1/0/3:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)# ipv6 mld snooping mtime 100

32.7 ipv6 mld snooping immediate-leave

Description

The **ipv6 mld snooping immediate-leave** command is used to configure the Fast Leave function for the desired port. To disable the Fast Leave function, please use **no ipv6 mld snooping immediate-leave** command.

Syntax

ipv6 mld snooping immediate-leave

no ipv6 mld snooping immediate-leave

Command Mode

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

Example

Enable the Fast Leave function for Gigabit Ethernet port 1/0/3:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)#ipv6 mld snooping immediate-leave

32.8 ipv6 mld snooping max-response-time

Description

The **ipv6 mld snooping max-response-time** command is used to configure the number of seconds the interface should wait after sending a query if it does not receive a report for a particular group.

Syntax

ipv6 mld snooping max-response-time *max-response-time*

Parameter

max-response-time —— Specify the maximum responding time in seconds, ranging from 1 to 25. The default aging time is 10 seconds.

Command Mode

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

Example

Configure the maximum responding time as 15 seconds for Gigabit Ethernet port 1/0/3:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/3
T3700G-52TQ(config-if)#ipv6 mld snooping max-response-time 15
```

32.9 ipv6 mld snooping drop-unknown

Description

The **ipv6 mld 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 ipv6 mld snooping drop-unknown** command.

Syntax

ipv6 mld snooping drop-unknown

no ipv6 mld snooping drop-unknown

Command Mode

Global Configuration Mode

Example

Specify the operation of processing unknown multicast as “discard”:

```
T3700G-52TQ(config)#ipv6 mld snooping drop-unknown
```

32.10 ipv6 mld snooping vlan-config

Description

The **ipv6 mld snooping vlan-config** command is used to enable VLAN MLD Snooping function or to modify MLD Snooping parameters. To disable the VLAN MLD Snooping function, please use **no ipv6 mld snooping vlan-config** command.

Syntax

ipv6 mld snooping vlan-config *vlan-list* [**immediate-leave** | **max-response-time** *max-response-time* | **rtime** *rtime* | **mtime** *mtime* | **rport interface** { **fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *port-channel-id*}]

no ipv6 mld snooping vlan-config *vlan-list* [**immediate-leave** | **max-response-time** | **rtime** | **mtime** | **rport interface** { **fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *port-channel-id*}]

Parameter

vlan-list —— The ID list of the VLAN desired to modify configuration, ranging from 1 to 4093, in the format of 1-3, 5.

immediate-leave —— Configure the Fast Leave function.

max-response-time —— Specify the maximum responding time in seconds, ranging from 1 to 25. The default aging time is 10 seconds.

rtime —— Specify the aging time in seconds, ranging from 0 to 3600. The default aging time is 0 second.

mtime —— Specify the aging time in seconds, ranging from 2 to 3600. The default aging time is 260 seconds.

port —— Static Router Port, which is mainly used in the network with stable topology.

port-channel-id —— The ID of the port channel.

Command Mode

Global Configuration Mode

Example

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

```
T3700G-52TQ(config)#ipv6 mld snooping vlan-config 1-3 mtime 200
```

32.11 ipv6 mld snooping querier

Description

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

Syntax

ipv6 mld snooping querier

no ipv6 mld snooping querier

Command Mode

Global Configuration Mode

Example

Enable the MLD Snooping Querier function:

T3700G-52TQ(config)#ipv6 mld snooping querier

32.12 ipv6 mld snooping querier address

Description

The **ipv6 mld snooping querier address** command is used to configure the General Query Message source IP address.To delete the General Query Message source IP address, please use **no ipv6 mld snooping querier address** command.

Syntax

ipv6 mld snooping querier address *ipv6-addr*

no ipv6 mld snooping querier address *ipv6-addr*

Parameter

ip-addr — The General Query Message source IPv6 address.

Command Mode

Global Configuration Mode

Example

Configure the General Query Message source IPv6 address as fe80::1:

T3700G-52TQ(config)#ipv6 mld snooping querier address fe80::1

32.13 ipv6 mld snooping querier query-interval

Description

The **ipv6 mld snooping querier query-interval** command is used to configure the Query message interval time. The Querier will send General Query Message with this interval. To return to the default configuration, please use **no ipv6 mld snooping querier query-interval** command.

Syntax

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

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

Parameter

query-interval —— The Query message interval time, ranging from 1 to 1800 seconds. By default, it is 60 seconds.

Command Mode

Global Configuration Mode

Example

Configure the Query message interval time as 60 seconds:

T3700G-52TQ(config)#ipv6 mld snooping querier query-interval 60

32.14 ipv6 mld snooping querier timer expiry

Description

The **ipv6 mld snooping querier timer expiry** command is used to configure the Expiry Interval which is amount of time the device remains in non-querier mode after it has discovered that there is a multicast querier in the network. To return to the default configuration, please use **no ipv6 mld snooping querier timer expiry** command.

Syntax

ipv6 mld snooping querier timer expiry *timer-expiry*

no ipv6 mld snooping querier timer expiry

Parameter

timer-expiry —— The IGMP Querier timer expiration period, ranging from 60 to 300 seconds. By default, it is 60 seconds.

Command Mode

Global Configuration Mode

Example

Configure the IGMP Querier timer expiration period as 70 seconds:

T3700G-52TQ(config)#ipv6 mld snooping querier timer expiry 70

32.15 ipv6 mld snooping querier vlan

Description

The **ipv6 mld snooping querier vlan** command is used to enable the MLD Snooping Querier function of the VLAN(s), specify the source IP address of the MLD Snooping Querier, or to enable the MLD Snooping Querier to participate in the Querier Election process. To delete the configuration, please use **no ipv6 mld snooping querier vlan** command.

Syntax

ipv6 mld snooping querier vlan *vlan-id* [**address** *ipv6-addr* | **election participate**]

no ipv6 mld snooping querier vlan *vlan-id* [**address** | **election participate**]

Parameter

vlan-id—— VLAN ID, ranging from 1 to 4093.

ipv6-addr —— Specify the source IP address of the MLD Snooping Querier for the VLAN.

election participate —— Enable the MLD Snooping Querier to participate in the Querier Election process.

Command Mode

Global Configuration Mode

Example

Enable the MLD Snooping Querier function of VLAN1, specify the source IP address of the MLD Snooping Querier as fe80::1 and enable the MLD Snooping Querier to participate in the Querier Election process:

T3700G-52TQ(config)# ipv6 mld snooping querier vlan 1

T3700G-52TQ(config)#ipv6 mld snooping querier vlan 1 **address** fe80::1

T3700G-52TQ(config)#ipv6 mld snooping querier vlan 1 **election participate**

32.16 ipv6 mld profile

Description

The **ipv6 mld profile** command is used to create the configuration profile. To delete the corresponding profile, please use **no ipv6 mld profile** command.

Syntax

ipv6 mld profile *id*

no ipv6 mld profile *id*

Parameter

id —— Specify the id of the configuration profile, ranging from 1 to 999.

Command Mode

Global Configuration Mode

Example

Create the profile 1:

```
T3700G-52TQ(config)# ipv6 mld profile 1
```

32.17 deny

Description

The **deny** command is used to configure the filtering mode of profile as deny.

Syntax

deny

Command Mode

Profile Configuration Mode

Example

Configure the filtering mode of profile 1 as deny:

```
T3700G-52TQ(config)# ipv6 mld profile 1
T3700G-52TQ(config-igmp-profile)#deny
```

32.18 permit

Description

The **permit** command is used to configure the filtering mode of profile as permit.

Syntax

permit

Command Mode

Profile Configuration Mode

Example

Configure the filtering mode of profile 1 as permit:

```
T3700G-52TQ(config)# ipv6 mld profile 1
T3700G-52TQ(config-igmp-profile)#permit
```

32.19 range

Description

The **range** command is used to configure the range of the profile's filtering multicast address. To delete the corresponding filtering multicast address, please use **no range** command. A profile contains 16 filtering IP-range entries at most.

Syntax

range *start-ip end-ip*

no range *start-ip end-ip*

Parameter

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

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

Command Mode

Profile Configuration Mode

Example

Configure one of the filter multicast address entry as range ff80::1234 to ff80::1235 in profile 1:

T3700G-52TQ(config)# ipv6 mld profile 1
T3700G-52TQ(config-igmp-profile)#range ff80::1234 ff80::1235

32.20 ipv6 mld filter

Description

The **ipv6 mld filter** command is used to bind the specified profile to the interface. To delete the binding, please use **no ipv6 mld filter** command.

Syntax

ipv6 mld filter *profile-id*

no ipv6 mld filter

Parameter

profile-id—— Specify the profile ID, ranging from 1 to 999.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet / interface port-channel / interface range port-channel)

Example

Bind profile 1 to interface gigabitEthernet 1/0/2:

T3700G-52TQ(config)# interface gigabitEthernet 1/0/2
T3700G-52TQ(config-if)# ipv6 mld filter 1

32.21 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:

T3700G-52TQ#show ipv6 mld snooping

32.22 show ipv6 mld snooping interface

Description

The **show ipv6 mld snooping interface** command is used to display the port configuration of IGMP.

Syntax

show ipv6 mld snooping interface [**fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *port-channel-id*] **basic-config**

show ipv6 mld snooping interface [**fastEthernet** *port-list* | **gigabitEthernet** *port-list* | **ten-gigabitEthernet** *port*–list] **basic-config**

Parameter

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

port-channel-id —— The ID of port channel.

basic-config —— The basic 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 Gigabit Ethernet port 2:

T3700G-52TQ#show ipv6 mld snooping interface gigabitEthernet 1/0/2 **basic-config**

Display the IGMP basic configuration of Gigabit Ethernet ports 2-4:

T3700G-52TQ#show ipv6 mld snooping interface gigabitEthernet 1/0/2-4 **basic-config**

32.23 show ipv6 mld snooping vlan

Description

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

Syntax

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

Parameter

vlan-id——The VLAN ID selected to display, ranging from 1 to 4093.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the MLD Snooping configuration information of VLAN 2:

```
T3700G-52TQ#show ipv6 mld snooping vlan 2
```

32.24 show ipv6 mld snooping ssm

Description

The **show ipv6 mld snooping ssm** command is used to display the information of Multicast groups.

Syntax

show ipv6 mld snooping ssm { **entries | groups** | **stats** }

Parameter

entries —— Displays the entries in the multicast forwarding database (MFDB).

groups —— Displays information about MLD Snooping and MLD snooping for source specific multicast.

stats —— Displays statistics about the source specific multicast forwarding database (SSMFDB).

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Displays the entries in the multicast forwarding database (MFDB):

```
T3700G-52TQ#show ipv6 mld snooping ssm entries
```

32.25 show ipv6 mld snooping querier

Description

The **show ipv6 mld snooping querier** command is used to display the configurations of MLD Snooping Querier.

Syntax

show ipv6 mld snooping querier [**detail**]

Parameter

detail —— Display MLD Snooping Querier detailed information. The MLD Snooping Querier configurations of all VLANs will be displayed.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display MLD Snooping Querier detailed information:

```
T3700G-52TQ(config)# show ipv6 mld snooping querier detail
```

32.26 show ipv6 mld snooping querier vlan

Description

The **show ipv6 mld snooping querier vlan** command is used to display the configurations of MLD Snooping Querier of the specified VLAN.

Syntax

show ipv6 mld snooping querier vlan *vlan-id*

Parameter

vlan-id —— Specify the ID of the VLAN to display the configurations of its MLD Snooping Querier. The value ranges from 1 to 4093.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configurations of MLD Snooping Querier of VLAN 2:

```
T3700G-52TQ(config)#show ipv6 mld snooping querier vlan 2
```

32.27 show ipv6 mld profile

Description

The **show ipv6 mld profile** command is used to display the configuration information of all the profiles or a specific profile.

Syntax

show ipv6 mld profile [*id*]

Parameter

id —— Specify the ID of the profile, ranging from 1 to 999.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration information of all profiles:

```
T3700G-52TQ(config)# show ipv6 mld profile
```

32.28 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:

```
T3700G-52TQ#clear ipv6 mld snooping statistics
```

Chapter 33 MVR Commands

MVR (Multicast VLAN Registration) is intended to solve the problem of receivers in different VLANs. It uses a dedicated manually configured VLAN, called the multicast VLAN to forward multicast traffic over a Layer 2 network in conjunction with IGMP snooping.

33.1 mvr

Description

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

Syntax

mvr

no mvr

Command Mode

Global Configuration Mode

Example

Enable MVR function:

```
T3700G-52TQ(config)#mvr
```

33.2 mvr (interface)

Description

The **mvr** command is used to enable MVR function for the desired port. To disable the MVR function for the desired port, please use **no mvr** command.

Syntax

mvr

no mvr

Command Mode

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

Example

Enable MVR function of Gigabit Ethernet port 2:

```
T3700G-52TQ(config)#interface gigabitEthernet 1/0/2
T3700G-52TQ(config-if)#mvr
```

33.3 mvr mode

Description

The **mvr mode** command is used to specify the MVR mode. To return to the default configuration, please use **no mvr mode** command.

Syntax

mvr mode { compatible | dynamic }

no mvr mode

Parameter

compatible | dynamic——Specify the MVR mode.

Command Mode

Global Configuration Mode

Example

Specify the MVR mode type as dynamic:

```
T3700G-52TQ(config)#mvr mode dynamic
```

33.4 mvr vlan

Description

The **mvr vlan** command is used to set the MVR multicast VLAN. To return to the default configuration, please use **no mvr vlan** command.

Syntax

mvr vlan *vlan-id*

no mvr vlan

Parameter

vlan-id—— VLAN ID, ranging from 1 to 4093.

Command Mode

Global Configuration Mode

Example

Set the MVR multicast VLAN as VLAN 2:

T3700G-52TQ(config)#mvr vlan 2

33.5 mvr vlan (interface)

Description

The **mvr vlan** command is used to set the MVR multicast VLAN for the desired port. To return to the default configuration, please use **no mvr vlan** command.

Syntax

mvr vlan vlan-id **group** *ip-addr*

no mvr vlan vlan-id **group** *ip-addr*

Parameter

vlan-id—— VLAN ID, ranging from 1 to 4093.

ip-addr—— MVR group multicast IP address.

Command Mode

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

Example

Set the MVR multicast VLAN as VLAN 2, MVR multicast group as 224.1.1.1 for Gigabit Ethernet port 2 :

T3700G-52TQ(config)#interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)#mvr vlan 2 **group** 224.1.1.1

33.6 mvr group

Description

The **mvr group** command is used to create an MVR group. To delete the MVR group, please use **no mvr group** command.

Syntax

mvr group *ip-addr* [*count*]

no mvr group *ip-addr* [*count*]

Parameter

ip-addr—— The multicast group address.

count——The number of incremental multicast groups being added, ranging from 1 to 256.

Command Mode

Global Configuration Mode

Example

Set the MVR multicast group as 224.1.1.1, the number of incremental multicast groups being added is 10:

T3700G-52TQ(config)# mvr group 224.1.1.1 10

33.7 mvr type

Description

The **mvr type** command is used to specify the MVR port type. When a port is set as source, it is the port to which the multicast traffic flows using the multicast VLAN. When a port is set to receiver, it is the port where a listening host is connected to the switch. To delete the MVR port type, please use **no mvr type** command.

Syntax

mvr type { source | receiver }

no mvr type

Parameter

source | receiver——Specify the MVR type.

Command Mode

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

Example

Specify the MVR port type as source for Gigabit Ethernet port 23:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/23

T3700G-52TQ(config)#mvr type source

33.8 mvr immediate

Description

The **mvr immediate** command is used to enable MVR immediate leave mode. To disable MVR immediate leave mode, please use **no mvr immediate** command.

Syntax

mvr immediate

no mvr immediate

Command Mode

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

Example

Enable MVR immediate leave mode for Gigabit Ethernet port 23:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/23

T3700G-52TQ(config)#mvr immediate

33.9 show mvr

Description

The **show mvr** command is used to display the global configuration of MVR.

Syntax

show mvr

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the global configuration of MVR:

T3700G-52TQ#show mvr

33.10 show mvr interface

Description

The **show mvr interface** command is used to display the port configuration of MVR.

Syntax

show mvr interface [**fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *port-channel-id*]

Parameter

port —— The port number.

port-channel-id —— The ID of the port channel.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration of MVR for Gigabit Ethernet port 2:

T3700G-52TQ#show mvr interface gigabitEthernet 1/0/2

33.11 show mvr members

Description

The **show mvr members** command is used to display the MVR membership groups allocated.

Syntax

show mvr members [*ip-addr*]

Parameter

ip-addr —— MVR group multicast IP address.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the members of the MVR group whose multicast IP address is 224.1.1.1:

T3700G-52TQ#show mvr members 224.1.1.1

33.12 show mvr traffic

Description

The **show mvr traffic** command is used to display statistical information about IGMP packets intercepted by MVR.

Syntax

show mvr traffic

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display statistical information about IGMP packets intercepted by MVR:

```
T3700G-52TQ#show mvr traffic
```

Chapter 34 Static Multicast MAC Address Table Commands

Static multicast MAC address table allows you to create static multicast entries and view Multicast Forwarding Database (MFDB) table information .

34.1 multicast mac-address-table

Description

The **multicast mac-address-table** command is used to configure the static multicast table. To delete the configuration, please use **no multicast mac-address-table** command.

Syntax

multicast mac-address-table *mac-addr* **vid** *vlan-id* [**interface** | **src-ports interface**] { **fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *lagid*}

no multicast mac-address-table *mac-addr* **vid** *vlan-id* [**interface** | **src-ports interface**] { **fastEthernet** *port* | **gigabitEthernet** *port* | **ten-gigabitEthernet** *port* | **port-channel** *lagid*}

Parameter

mac-addr——The multicast MAC address.

vlan-id—— VLAN ID, ranging from 1 to 4093.

port—— The port number.

lagid—— The ID of LAG.

Command Mode

Global Configuration Mode

Example

For Gigabit Ethernet port 2, create a static multicast entry that the MAC address is 01:00:5e:00:00:01 and the VLAN ID is 1:

```
T3700G-52TQ(config)# multicast mac-address-table 01:00:5e:00:00:01 vid
1 interface gigabitEthernet 1/0/2
```

34.2 show multicast mac-address-table

Description

The **show multicast mac-address-table** command is used to display Multicast Forwarding Database (MFDB) table information.

Syntax

show multicast mac-address-table [**igmpsnooping** | **mldsnooping | static | stats**]

Parameter

igmpsnooping——Display IGMP Snooping entries in the MFDB table.

mldsnooping ——Display MLD Snooping entries in the MFDB table.

static ——Display Static entries in the MFDB table.

stats——Display MFDB statistics.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display IGMP Snooping entries in the MFDB table:

```
T3700G-52TQ(config)# show multicast mac-address-table igmpsnooping
```

Chapter 35 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.

35.1 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:

```
T3700G-52TQ(config)#snmp-server view view1 1.3.6.1.6.3.20 include
```

35.2 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 Default as read-write, besides the trap messages sent by View Default can be received by Management station:

T3700G-52TQ(config)#snmp-server group group1 **smode** v3 **slev** authNoPriv **read** Default **write** Default **notify** Default

Delete Group group1:

T3700G-52TQ(config)#no snmp-server group group1 **smode** v3 **slev** authNoPriv

35.3 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 group-name* { local | remote } [**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.

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.

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.

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. The question marks and spaces are not allowed. This password in the configuration file will be displayed in the symmetric encrypted form.

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. The question marks and spaces are not allowed. This password in the configuration file will be displayed in the symmetric encrypted form.

Command Mode

Global Configuration Mode

Example

Add Local User admin to Group group2, and configure the Authentication Mode of the user as MD5, the Authentication Password as 11111, the Privacy Mode as DES, and the Privacy Password as 22222:

T3700G-52TQ(config)#snmp-server user admin group2 local **cmode** MD5 **cpwd** 11111 **emode** DES **epwd** 22222

35.4 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. By default, it is Default.

Command Mode

Global Configuration Mode

Example

Add community public, and the community has read-write management right to View Default:

T3700G-52TQ(config)#snmp-server community public read-write Default

35.5 snmp-server host

Description

The **snmp-server host** command is used to add Notification. To delete the corresponding Notification, please use **no snmp-server host** command. With the Notification function enabled, the switch can initiatively report to the management station about the important events that occur on the Views, which allows the management station to monitor and process the events in time.

Syntax

snmp-server host *ip udp-port user-name* [**smode** { v1 | v2c | v3 }] [**slev** { noAuthNoPriv | authNoPriv | authPriv }] [**type** { trap | inform }] [**retries** *retries*] [**timeout** *timeout*]

no snmp-server host *ip user-name*

Parameter

ip —— The IP address of the management Host.

udp-port —— UDP port, which is used to send notifications. The UDP port functions with the IP address for the notification sending. By default, it is 162.

user-name —— The User name of the management station.

smode —— The Security Model of the management station, with v1, v2c and v3 options. By default, the option is v1.

slev —— The Security Level of SNMP v3 Group. There are three options, including noAuthNoPriv (no authorization and no encryption), authNoPriv (authorization and no encryption) and authPriv (authorization and encryption). By default, the option is "noAuthNoPriv".

type —— The type of the notifications, with trap and inform options. Trap indicates traps are sent, while inform indicates informs are sent. The inform type has a higher security than the trap type and resend and timeout need to be configured if you select this option. You can only select the trap type in Security Model v1. By default, the type of the notifications is "trap".

retries —— The amount of times the switch retries an inform request, ranging from 1 to 255. The switch will resend the inform request if it doesn't get the response from the management station during the Timeout interval, and it will terminate resending the inform request if the resending times reach the specified Retry times.

timeout —— The maximum time for the switch to wait for the response from the management station before resending a request, ranging from 1 to 3600 in seconds.

Command Mode

Global Configuration Mode

Example

Add a Notification entry, and configure the IP address of the management Host as 192.168.0.146, the UDP port as 162, the User name of the management station as admin, the Security Model of the management station as v2c, the type of the notifications as inform, the maximum time for the switch to wait as 1000 seconds, and the retries time as 100:

T3700G-52TQ(config)#snmp-server host 192.168.0.146 162 admin **smode** v2c **type** inform **retries** 100 **timeout** 1000

35.6 snmp-server engineID

Description

The **snmp-server engineID** command is used to configure the local and remote engineID of the switch. To restore to the default setting, please use **no snmp-server engineID** command.

Syntax

snmp-server engineID { [**local** |*local-engineID*] [**remote** *remote-engineID*] }

no snmp-server engineID

Parameter

local —— Local Engine ID for local clients. The Engine ID is a unique alphanumeric string used to identify the SNMP engine on the switch. Its length ranges from 6 to 32 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 6 to 32 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:

T3700G-52TQ(config)#snmp-server engineID local 1234567890 **remote** abcdef123456

35.7 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 [cpu-threshold | fan | inventory | link-mode | mac-lock-violation | memory-threshold | multi-users | pim | power | spanning-tree | storm-control | temperature | vlan | vrrp]

no snmp-server traps [cpu-threshold | fan | inventory | link-mode | mac-lock-violation | memory-threshold | multi-users | pim | power | spanning-tree | storm-control | temperature | vlan | vrrp]

Parameter

cpu-threshold —— Enable SNMP cpu threshold traps. It is sent when CPU usage exceeds the predefined threshold. By default, the CPU usage threshold of the switch is 80%.

fan —— Enable SNMP fan traps.

inventory —— Enable card/stack/SFS traps.

link-mode —— Enable SNMP Link up/down traps.

mac-lock-violation —— Enable SNMP mac-lock-violation traps. It is sent when a packet with a disallowed MAC address is received on a locked port.

memory-threshold —— Enable SNMP memory traps. It is sent when CPU usage exceeds 80%.

multi-users —— Enable SNMP multi users traps. It is sent when the same user ID is logged into the switch more than once at the same time.

pim —— Enable SNMP pim traps.

power —— Enable SNMP power traps.

spanning-tree —— Enable SNMP MSTP traps. It is sent when the status of STP changes.

storm-control ——Enable storm-control traps. It is sent when the multicast or broadcast rate exceeds the predefined value.

temperature —— Enable SNMP temperature traps.

vlan —— Enable SNMP VLAN traps. It is sent when a VLAN is created or deleted.

vrrp —— Enable SNMP VRRP traps.

Command Mode

Global Configuration Mode

Example

Enable SNMP extended vrrp traps for the switch:

```
T3700G-52TQ(config)# snmp-server traps vrrp
```

35.8 snmp-server traps ospf all

Description

The **snmp-server traps ospf all** command is used to enable OSPF traps. To disable the sending of OSPF traps, please use **no snmp-server traps ospf all** command.

Syntax

snmp-server traps ospf all

no snmp-server traps ospf all

Command Mode

Global Configuration Mode

Example

Enable all the OSPF traps for the switch:

```
T3700G-52TQ(config)# snmp-server traps ospf all
```

35.9 snmp-server traps ospf errors

Description

The **snmp-server traps ospf errors** command is used to enable error traps. To disable the sending of error traps, please use **no snmp-server traps ospf errors** command.

Syntax

snmp-server traps ospf errors [authentication-failure | bad-packet | config-error | virt-authentication-failure | virt-bad-packet | virt-config-error]

no snmp-server traps ospf errors [authentication-failure | bad-packet | config-error | virt-authentication-failure | virt-bad-packet | virt-config-error]

Parameter

authentication-failure —— Enable authentication failure traps on non-virtual interfaces.

bad-packet —— Enable packet parse failure traps on non-virtual interfaces.

config-error —— Enable config mismatch error traps on non-virtual interfaces.

virt-authentication-failure ——Enable authentication failure traps on virtual interfaces.

virt-bad-packet ——Enable packet parse failure traps on virtual interfaces.

virt-config-error —— Enable config mismatch errors on virtual interfaces.

Command Mode

Global Configuration Mode

Example

Enable authentication-failure traps for the switch:

```
T3700G-52TQ(config)# snmp-server traps ospf errors
authentication-failure
```

35.10 snmp-server traps ospf lsa

Description

The **snmp-server traps ospf lsa** command is used to enable lsa related traps. To disable the sending of lsa related traps, please use **no snmp-server traps ospf lsa** command.

Syntax

snmp-server traps ospf lsa [lsa-maxage | lsa-originate | all]

no snmp-server traps ospf lsa [lsa-maxage | lsa-originate | all]

Parameter

lsa-maxage —— Enable lsa-maxage traps. It is sent when one of the LSAs in the link-state database has aged to maxage.

lsa-originate ——Enable lsa- originate traps. It is sent when OSPF originates a new LSA.

all —— Enable all the lsa related traps.

Command Mode

Global Configuration Mode

Example

Enable all the lsa related traps for the switch:

```
T3700G-52TQ(config)# snmp-server traps ospf lsa all
```

35.11 snmp-server traps ospf overflow

Description

The **snmp-server traps ospf overflow** command is used to enable overflow traps. To disable the sending of overflow traps, please use **no snmp-server traps ospf overflow** command.

Syntax

snmp-server traps ospf overflow [all | lsdb-approaching-overflow | lsdb-overflow]

no snmp-server traps ospf overflow [all | lsdb-approaching-overflow | lsdb-overflow]

Parameter

all —— Enable all the overflow traps.

lsdb-approaching-overflow —— Enable lsdb approaching overflow traps. It is sent when the number of LSAs in the link-state database is approaching overflow.

lsdb-overflow —— Enable lsdb overflow traps. It is sent when the number of LSAs in the link-state database overflows.

Command Mode

Global Configuration Mode

Example

Enable all the overflow traps for the switch:

```
T3700G-52TQ(config)# snmp-server traps ospf overflow all
```

35.12 snmp-server traps ospf retransmit

Description

The **snmp-server traps ospf retransmit** command is used to enable retransmit traps. To disable the sending of retransmit traps, please use **no snmp-server traps ospf retransmit** command.

Syntax

snmp-server traps ospf retransmit [all | packets | virt-packets]

no snmp-server traps ospf retransmit [all | packets | virt-packets]

Parameter

all —— Enable all the retransmit traps.

packets —— Enable packet retransmission traps on non-virtual interfaces.

virt-packets ——Enable packet retransmission traps on virtual interfaces.

Command Mode

Global Configuration Mode

Example

Enable all the retransmit traps for the switch:

T3700G-52TQ(config)# snmp-server traps ospf retransmit all

35.13 snmp-server traps ospf state-change

Description

The **snmp-server traps ospf state-change** command is used to enable state-change traps. To disable the sending of state-change traps, please use **no snmp-server traps ospf state-change** command.

Syntax

snmp-server traps ospf state-change [all | if-state-change | neighbor-state-change | virtif-state-change | virtneighbor-state-change]

no snmp-server traps ospf state-change [all | if-state-change | neighbor-state-change | virtif-state-change | virtneighbor-state-change]

Parameter

all —— Enable all the state-change traps.

if-state-change —— Enable non-virtual interface state changes traps.

neighbor-state-change ——Enable non-virtual neighbor state changes traps.

virtif-state-change ——Enable virtual interface state changes traps.

virtneighbor-state-change ——Enable virtual neighbor state changes traps.

Command Mode

Global Configuration Mode

Example

Enable all the state-change traps for the switch:

T3700G-52TQ(config)# snmp-server traps ospf state-change all

35.14 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 fastEthernet / interface range fastEthernet / interface gigabitEthernet / interface range gigabitEthernet/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable SNMP link status trap for port 1/0/3:

T3700G-52TQ(config)# interface gigabitEthernet 1/0/3

T3700G-52TQ (config-if)# snmp-server traps link-status

35.15 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* | **ten-gigabitEthernet** *port* } [**interval** *seconds*] [**owner** *owner-name*] [**buckets** *buckets-number*]

no rmon history *index*

Parameter

index —— The index number of the entry, ranging from 1 to 12.

port —— The Fast/Gigabit/Ten-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.

buckets-number ——The maximum number of buckets desired for the RMON history group of statistics, ranging from 1 to 65535. The default is 50 buckets.

Command Mode

Global Configuration Mode

Example

Configure the sample port as 1/0/2 and the sample interval as 100 seconds for the entry 1:

T3700G-52TQ(config)#rmon history 1 **interface gigabitEthernet** 1/0/2 **interval** 100 **owner** owner1

35.16 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* { [**community** *community-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.

community-name —— The name of the user or community to which the event belongs, ranging from 1 to 16 characters.

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 “log-notify” options. “None” indicates no processing, “log” indicates logging the event, “notify”

indicates sending trap messages to the management station, and "log-notify" 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.

Command Mode

Global Configuration Mode

Example

Configure the community name of entry 1 as "community1", the description of the event as "description1", the type of event as log and the owner of the event as "owner1":

T3700G-52TQ(config)#rmon event 1 **community** community1 **description** description1 **type** log **owner** owner1

35.17 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* | **ten-gigabitEthernet** *port* } { **stats-index** *sindex* } [**alarm-variable** { revbyte | revpkt | bpkt | mpkt | crc-lign | undersize | oversize | jabber | collision | 64 | 65-127 | 128-255 | 256-511 | 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 entry, ranging from 1 to 20.

port —— The Fast/Gigabit/Ten-Gigabit Ethernet port number.

sindex —— Specify the statistics index. It ranges from 1 to 480.

alarm-variable —— The alarm variable. By default, the option is revbyte.

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 2147483647. 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 2147483647. 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.

interval —— The alarm interval time, ranging from 10 to 3600 in seconds. By default, it is 1800.

Command Mode

Global Configuration Mode

User Guidelines

Before configuring alarm entries, please complete configurations of Event entries, because the Alarm entries must be associated with Event entries.

Example

Configure the sample port as 1/0/2, the owner as owner1 and the alarm intervals as 100 seconds for rmon alarm entry 1:

```
T3700G-52TQ(config)#rmon alarm 1 interface gigabitEthernet 1/0/2 owner owner1 interval 100
```

35.18 show snmp-server traps global

Description

The **show snmp-server traps global** command is used to display SNMP traps globally.

Syntax

show snmp-server traps global

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display SNMP traps globally:

```
T3700G-52TQ#show snmp-server traps global
```

35.19 show snmp-server traps ospf

Description

The **show snmp-server traps ospf** command is used to display OSPF traps.

Syntax

show snmp-server traps ospf

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display OSPF traps:

```
T3700G-52TQ#show snmp-server traps ospf
```

35.20 show snmp-server traps port

Description

The **show snmp-server traps port** command is used to display link status traps for the ports.

Syntax

show snmp-server traps port

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display link status traps for the ports:

```
T3700G-52TQ#show snmp-server traps port
```

35.21 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:

```
T3700G-52TQ#show snmp-server view
```

35.22 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:

```
T3700G-52TQ#show snmp-server group
```

35.23 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:

```
T3700G-52TQ#show snmp-server user
```

35.24 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:

```
T3700G-52TQ#show snmp-server community
```

35.25 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:

```
T3700G-52TQ#show snmp-server host
```

35.26 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:

```
T3700G-52TQ#show snmp-server engineID
```

35.27 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. 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:

```
T3700G-52TQ#show rmon history
```

35.28 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. 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:

```
T3700G-52TQ#show rmon event 1
```

35.29 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. 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:

```
T3700G-52TQ#show rmon alarm 1
```

Chapter 36 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.

36.1 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:

T3700G-52TQ(config)#lldp hold-multiplier 5

36.2 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* /**reinit-delay** *reinit-delay* /**notify-interval** *notify-interval*}

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

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.

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 2 seconds.

notify-interval —— Specify the interval of Trap message which will be sent from local device to network management system. The value ranges from 5 to 3600 and the default value is 5 seconds.

Command Mode

Global Configuration Mode

Example

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

T3700G-52TQ(config)#lldp timer tx-interval 45

T3700G-52TQ(config)#lldp timer notify-interval 120

36.3 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/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable Gigabit Ethernet port 1/0/1 to receive LLDPDU:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/1

T3700G-52TQ(config-if)#lldp receive

36.4 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/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable Gigabit Ethernet port 1/0/1 to transmit LLDPDU:

T3700G-52TQ(config)# interface gigabitEthernet 1/0/1

T3700G-52TQ(config-if)#lldp transmit

36.5 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/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable the SNMP notification for Gigabit Ethernet port 1/0/1:

T3700G-52TQ(config)#interface gigabitEthernet 1/0/1

T3700G-52TQ(config-if)#lldp snmp-trap

36.6 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] [max-frame-size] [all] }

no lldp tlv-select { [port-description] [system-capability] [system-description] [system-name] [management-address] [port-vlan] [protocol-vlan] [vlan-name] [link-aggregation] [max-frame-size] [all] }

Command Mode

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

Example

Exclude “management-address” and “port-vlan-id” TLVs in LLDPDU outgoing from Gigabit Ethernet port 1/0/1:

T3700G-52TQ(config)# interface gigabitEthernet 1/0/1

T3700G-52TQ(config-if)# no lldp tlv-select management-address port-vlan

36.7 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 3. 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 3.

Command Mode

Global Configuration Mode

Example

Specify Fast Start Count as 5:

T3700G-52TQ(config)# lldp med-fast-count 5

36.8 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/ interface ten-gigabitEthernet / interface range ten-gigabitEthernet)

Example

Enable the LLDP-MED feature for port 1/0/2:

T3700G-52TQ(config)# interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)# lldp med-status

36.9 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] [network-policy] [all] }

no lldp med-tlv-select { [inventory-management] [network-policy] [all] }

Command Mode

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

Example

Exclude “network policy” and “inventory” TLVs in LLDPDU outgoing from port 1/0/2:

T3700G-52TQ(config)# interface gigabitEthernet 1/0/2

T3700G-52TQ(config-if)# no lldp med-tlv-select network-policy inventory-management

36.10 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:

```
T3700G-52TQ#show lldp
```

36.11 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* | **ten-gigabitEthernet** *port*]

Parameter

port—— The Fast/Gigabit/Ten-Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the LLDP configuration of Gigabit Ethernet port 1/0/1:

```
T3700G-52TQ#show lldp interface gigabitEthernet 1/0/1
```

36.12 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* | **ten-gigabitEthernet** *port*]

Parameter

port—— The Fast/Gigabit/Ten-Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the LLDP information of Gigabit Ethernet port 1/0/1:

T3700G-52TQ#show lldp local-information interface gigabitEthernet 1/0/1

36.13 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* | **ten-gigabitEthernet** *port*]

Parameter

port—— The Fast/Gigabit/Ten-gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the neighbor information of Gigabit Ethernet port 1/0/1:

T3700G-52TQ#show lldp neighbor-information interface gigabitEthernet 1/0/1

36.14 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* | **ten-gigabitEthernet** *port*]

Parameter

port—— The Fast/Gigabit/Ten-Gigabit Ethernet port number.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the LLDP statistic information of Gigabit Ethernet port 1/0/1:

T3700G-52TQ#show lldp traffic interface gigabitEthernet 1/0/1

36.15 clear lldp statistics

Description

The **clear lldp statistics** command is used to clear the statistics information of LLDP.

Syntax

clear lldp statistics

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Clear the statistics information of LLDP:

T3700G-52TQ(config)# clear lldp statistics

Chapter 37 Static Routes Commands

37.1 interface vlan

Description

This **interface vlan** command is used to create the VLAN interface. To delete the specified VLAN interface, please use the **no interface vlan** command.

Syntax

interface vlan { *vid*}

no interface vlan { *vid*}

Parameter

vid—— The ID of the VLAN.

Command Mode

Global Configuration Mode

Example

Create the VLAN interface 2:

T3700G-52TQ(config)# interface vlan 2

37.2 interface loopback

Description

This **interface loopback** command is used to create the loopback interface. To delete the specified loopback interface, please use the **no interface loopback** command.

Syntax

interface loopback { *id*}

no interface loopback { *id*}

Parameter

id—— The ID of the loopback interface, ranging from 0 to 63.

Command Mode

Global Configuration Mode

Example

Create the loopback interface 1:

T3700G-52TQ(config)# interface loopback 1

37.3 interface range port-channel

Description

This **interface range port-channel** command is used to create multiple port-channel interfaces.

Syntax

interface range port-channel *port-channel-list*

Parameter

port-channel-list —— The list of the port-channel interface, ranging from 1 to 64, in the format of 1-3, 5.

Command Mode

Global Configuration Mode

Example

Create the port-channel interfaces 1,3,4 and 5:

T3700G-52TQ ((config)# interface range port-channel 1,3-5

37.4 interface port-channel

Description

This **interface port-channel** command is used to create the port-channel interface. To delete the specified port-channel interface, please use the **no interface port-channel** command.

Syntax

interface port-channel { *port-channel-id*}

no interface port-channel { *port-channel-id*}

Parameter

port-channel-id —— The ID of the port-channel interface, ranging from 1 to 64.

Command Mode

Global Configuration Mode

Example

Create the port-channel interface 1:

T3700G-52TQ (config)# interface port-channel 1

37.5 switchport

Description

This **switchport** command is used to switch the Layer 3 interface into the Layer 2 port. To switch the Layer 2 port into the Layer 3 routed port, please use the **no switchport** command.

Syntax

switchport

no switchport

Command Mode

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

Example

Switch the gigabitEthernet port 1/0/9 into the routed port:

T3700G-52TQ(config)# interface gigabitEthernet 1/0/9
T3700G-52TQ(config-if)# no switchport

37.6 shutdown

Description

This **switchport** command is used to shut down the specified interface. The interface type include: routed port, loopback interface and VLAN interface. To enable the specified interface, please use the **no shutdown** command.

Syntax

shutdown

no shutdown

Command Mode

Interface Configuration Mode

Example

Shut down the routed port 1/0/9 :

```
T3700G-52TQ(config)# interface gigabitEthernet 1/0/9
T3700G-52TQ(config-if)# no switchport
T3700G-52TQ(config-if)# shutdown
```

37.7 ip route

Description

This **ip route** command is configure the static route. To clear the corresponding entry, please use the **no ip route** command.

Syntax

ip route { *dest-address* } { *mask* } { *next-hop-address* } [**distance** { *distance* }]

no ip route { *dest-address* } { *mask* } { *next-hop-address* }

Parameter

dest-address —— The destination IP address.

mask —— The subnet mask.

next-hop-address —— The address of the next-hop.

distance —— The distance metric of this route. The smaller the distance is, the higher the priority is.

Command Mode

Global Configuration Mode

Example

Create a static route with the destination IP address as 192.168.2.0, the subnet mask as 255.255.255.0 and the next-hop address as 192.168.0.2:

```
T3700G-52TQ(config)# ip route 192.168.2.0 255.255.255.0 192.168.0.2
```

37.8 ip routing

Description

This **ip routing** command is used to enable the Lay 3 routing function. To disable this function, please use the **no ip routing** command.

Syntax

ip routing

no ip routing

Command Mode

Global Configuration Mode

Example

Disable the Layer 3 ip routing function :

```
T3700G-52TQ(config)# no ip routing
```

37.9 show interface vlan

Description

The **show interface vlan** command is used to display the information or a specified interface VLAN.

Syntax

show interface vlan *vid*

Parameter

vid—— The VLAN ID.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of VLAN 2:

```
T3700G-52TQ(config)#show interface vlan 2
```

37.10 show ip interface

Description

This **show ip interface** command is used to display the detailed information of the specified Layer 3 interface.

Syntax

show ip interface { { fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* | **port-channel** *port-channel-id* | **loopback** *id* | **vlan** *vlan-id* }

Parameter

fastEthernet | gigabitEthernet | ten-gigabitEthernet —— The port type of the interface.

port —— The port number.

port-channel-id —— The ID of the port channel. Member ports in this port channel should all be routed ports.

id —— The loopback interface ID.

vlan-id —— The VLAN interface ID.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the detailed information of the VLAN interface 2:

```
T3700G-52TQ(config)# show ip interface vlan 2
```

37.11 show ip interface brief

Description

This **show ip interface brief** command is used to display the summary information of the Layer 3 interfaces.

Syntax

show ip interface brief

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the summary information of the Layer 3 interfaces:

T3700G-52TQ(config)# show ip interface brief

37.12 show ip route

Description

This **show ip route** command is used to display the route entries of the specified type.

Syntax

show ip route { static | connected | rip | ospf }

Parameter

static | connected | rip | ospf —— Specify the route type.

static: The static routes.

connected: The connected routes.

rip: The routes generated from the RIP protocol.

ospf: The routes generated from the OSPF protocol.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the static routes:

T3700G-52TQ(config)# show ip route static

37.13 show ip route specify

Description

This **show ip route specify** command is used to display the invalid routing information to the specified IP address or network segments.

Syntax

show ip route specify { *ip* } [*mask*] [**longer-prefixes**]

Parameter

ip —— Specify the destination IP address.

mask —— Specify the destination IP address together with the parameter *ip*.

longer-prefixes —— Specify the destination subnets that match the network segment determined by the ip and mask parameters.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the shortest route to 192.168.0.100:

T3700G-52TQ(config)# show ip route specify 192.168.0.100

Look up the route entry with the destination as 192.168.0.0/24:

T3700G-52TQ(config)# show ip route specify 192.168.0.0 255.255.255.0

Display the routes to all the subnets that belongs to 192.168.0.0/16:

T3700G-52TQ(config)# show ip route specify 192.168.0.0 255.255.0.0 **longer-prefix**

37.14 show ip route summary

Description

This **show ip route summary** command is used to display the summary information of the route entries classified by their sources.

Syntax

show ip route summary

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the summary information of route entries:

T3700G-52TQ(config)# show ip route summary

Chapter 38 DHCP Server Commands

DHCP (Dynamic Host Configuration Protocol) is a network configuration protocol for hosts on TCP/IP networks, and it provides a framework for distributing configuration information to hosts. DHCP server assigns IP addresses from specified address pools on a switch or router to DHCP clients and manages them.

38.1 service dhcp server

Description

The **service dhcp server** command is used to enable DHCP service globally. To disable DHCP server service, please use **no service dhcp server** command.

Syntax

service dhcp server

no service dhcp server

Command Mode

Global Configuration Mode

Example

Enable DHCP server service globally:

```
T3700G-52TQ(config)# service dhcp server
```

38.2 option code

Description

The **option code** command is used to configure DHCP Server options. To delete the DHCP Server options, please use **no option code** command.

Syntax

option *code* **{ascii | hex | ip-address }** *content*

no option *code*

Parameter

code ——Specify the extend option code. It ranges from 1 to 254.

content ——Specify the extend option value.

Command Mode

DHCP Configuration Mode

Example

Set the extend option code as 100, the extend option type as ip address, the extend option value as 192.168.10.1 in the address pool "product":

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(config-dhcp)# option code 100 **ip-address** 192.168.10.1

38.3 extend-option capwap-ac-ip

Description

The **extend-option capwap-ac-ip** command is used to configure the IP address of the remote DHCP server. To delete the remote DHCP server's IP address, please use **no extend-option capwap-ac-ip** command.

Syntax

extend-option capwap-ac-ip *ip-address*

no extend-option capwap-ac-ip

Parameter

ip-address —— Specify the IP address of the remote server.

Command Mode

DHCP Configuration Mode

Example

Set the remote DHCP server's IP address as 192.168.3.1 in the address pool "product":

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(config-dhcp)# extend-option capwap-ac-ip 192.168.3.1

38.4 extend-option vendor-class-id

Description

The **extend-option vendor-class-id** command is used to configure the class ID of the packets from DHCP server in a different network segment. To delete the class ID settings, please use **no extend-option vendor-class-id** command.

Syntax

extend-option vendor-class-id *class-id*

no extend-option vendor-class-id

Parameter

class-id —— Specify the class ID of the DHCP packets from another network segment.

Command Mode

DHCP Configuration Mode

Example

Set the class ID of the DHCP packets from another network segment as 34 in the address pool "product":

```
T3700G-52TQ(config)# ip dhcp server pool product
T3700G-52TQ(config-dhcp)# extend-option vendor-class-id 34
```

38.5 ip dhcp server conflict-logging

Description

The **ip dhcp server conflict-logging** command is used to enable conflict logging on DHCP server. To disable conflict logging on DHCP server, please use **no ip dhcp server conflict-logging** command.

Syntax

ip dhcp server conflict-logging

no ip dhcp server conflict-logging

Command Mode

Global Configuration Mode

Example

Enable conflict logging on DHCP server:

```
T3700G-52TQ(config)# ip dhcp server conflict-logging
```

38.6 ip dhcp server exclude-address

Description

The **ip dhcp server exclude-address** command is used to specify the reserved IP addresses which are forbidden to allocate, such as the gateway address, the network segment broadcast address, the server address etc. To delete the reserved IP addresses, please use **no ip dhcp server exclude-address** command.

Syntax

ip dhcp server exclude-address *start-ip-address end-ip-address*

no ip dhcp server exclude-address *start-ip-addr end-ip-address*

Parameter

start-ip-address —— Specify the start IP address of the reserved IP pool.

end-ip-address —— Specify the end IP address of the reserved IP pool. Only one IP address will be reserved if the end IP address and the start IP address are the same.

Command Mode

Global Configuration Mode

Example

Set the reserved IP addresses from 192.168.1.1 to 192.168.1.9:

T3700G-52TQ(config)# ip dhcp server exclude-address 192.168.1.1 192.168.1.9

38.7 ip dhcp server pool

Description

The **ip dhcp server pool** command is used to create the address pool of DHCP Server and enter the dhcp configuration mode. To delete the address pool, please use **no ip dhcp server pool** command.

Syntax

ip dhcp server pool *pool-name*

no ip dhcp server pool *pool-name*

Parameter

pool-name —— Specify the address pool name, ranging from 1 to 8 characters.

Command Mode

Global Configuration Mode

Example

Create the address pool of name POOL1:

T3700G-52TQ(config)# ip dhcp server pool POOL1

38.8 ip dhcp server ping packets

Description

The **ip dhcp server ping packets** command is used to specify the number of PING packets sent. If this value is set to 0, the PING process will be disabled. To resume the default value, please use **no ip dhcp server ping packets** command.

Syntax

ip dhcp server ping packets *num*

Parameter

num —— Specify the PING packets' number, ranging from 0 to 10. By default it's 1.

Command Mode

Global Configuration Mode

Example

Specify the PING packets' number as 2:

T3700G-52TQ(config)# ip dhcp server ping packets 2

38.9 network

Description

The **network** command is used to specify the address and subnet of the network pool.

Syntax

network *network-address subnet-mask*

Parameter

network-address —— Specify the network address of the pool, with the format A.B.C.D. All the IP addresses in the same subnet are allocatable except the reserved addresses and specific addresses.

subnet-mask —— Specify the subnet mask of the pool, with the format A.B.C.D.

Command Mode

DHCP Configuration Mode

Example

Specify the address pool "product" as 192.168.1.0 255.255.255.0:

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(config-dhcp)# network 192.168.1.0 255.255.255.0

38.10 no network

Description

The **no network** command is used to clear the address and subnet of the network pool.

Syntax

no network

Command Mode

DHCP Configuration Mode

Example

Clear the address and subnet of the network pool:

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(config-dhcp)# no network

38.11 lease

Description

The **lease** command is used to specify the lease time of the address pool.

Syntax

lease ***{****days [hours [minutes]]* **/infinite***}*

Parameter

days ——Specify the days parameter of lease time, ranging from 0 to 59 days.

hours ——Specify the *hours* parameter of lease time, ranging from 0 to 23 hours.

minutes ——Specify the *minutes* parameter of lease time, ranging from 0 to 59 minutes.

infinite ——Specify the lease time as infinite.

Command Mode

DHCP Configuration Mode

Example

Specify the lease time of address pool "product" as 10 minutes:

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(config-dhcp)# lease 0 0 10

38.12 address hardware-address

Description

The **address hardware-address** command is used to reserve the static address bound with hardware address in the address pool. To delete the binding, please use **no address**.

Syntax

address *ip-address mask* **hardware-address** *hardware-address* **hardware-type** { ethernet | ieee802 }

no address *ip-address*

Parameter

ip-address —— Specify the static binding IP address.

mask—— Specify the static binding IP address mask.

hardware-address —— Specify the hardware address, in the format XX:XX:XX:XX:XX:XX.

ethernet | ieee802 —— Specify the hardware type.

Command Mode

DHCP Configuration Mode

Example

Reserve the IP address 192.168.0.10 in the address pool "product" for the device with the MAC address as 5e:4c:a6:31:24:01 and the hardware type as ethernet:

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(config-dhcp)# address 192.168.0.10 255.255.255.0

hardware-address 5e:4c:a6:31:24:01 **hardware-type** ethernet

38.13 address client-identifier

Description

The **address client-identifier** command is used to specify the static address bound with client ID in the address pool. To delete the binding, please use **no address** command.

Syntax

address *ip-address mask* **client-identifier** *client-id* [**ascii**]

no address *ip-address*

Parameter

ip-address —— Specify the static binding IP address.

mask—— Specify the static binding IP address mask.

client-id —— Specify the client ID, in the format of hex value.

ascii —— The client ID is entered with ascii characters.

Command Mode

DHCP Configuration Mode

Example

Reserve the IP address 192.168.0.10 in the address pool "product" for the device with the client ID as abc in ascii:

T3700G-52TQ(config)# ip dhcp pool product

T3700G-52TQ(dhcp-config)# address 192.168.0.10 255.255.255.0

client-identifier abc **ascii**

38.14 default-gateway

Description

The **default-gateway** command is used to specify the default gateway of the address pool. To delete the configuration, please use **no default-gateway**.

Syntax

default-gateway *gateway-list*

no default-gateway

Parameter

gateway-list —— Specify the gateway list, with the format of A.B.C.D,E.F.G.H. At most 8 gateways can be configured, separated by comma.

Command Mode

DHCP Configuration Mode

Example

Specify the address pool product's default gateways as 192.168.0.1 and 192.168.1.1:

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(dhcp-config)# default-gateway *192.168.0.1,192.168.1.1*

38.15 dns-server

Description

The **dns-server** command is used to specify the DNS server of the address pool. To delete this configuration, please use **no dns-server** command.

Syntax

dns-server *dns-list*

no dns-server

Parameter

dns-list —— Specify the DNS server list, with the format of A.B.C.D,E.F.G.H. At most 8 DNS servers can be configured, separated by comma.

Command Mode

DHCP Configuration Mode

Example

Specify the address pool's DNS servers as 192.168.0.1 and 192.168.1.1:

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(config-dhcp)# dns-server 192.168.0.1,192.168.1.1

38.16 ntp-server

Description

The **ntp-server** command is used to specify the NTP server address of the client. To delete this configuration, please use **no ntp-server** command.

Syntax

ntp-server *ip-address*

no ntp-server

Parameter

ip-address —— Specify the NTP server address of the client, with the format of A.B.C.D.

Command Mode

DHCP Configuration Mode

Example

Specify the NTP server address of the client as 133.100.9.2:

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(config-dhcp)# ntp-server 133.100.9.2

38.17 netbios-name-server

Description

The **netbios-name-server** command is used to specify the Netbios server's IP address. To delete the Netbios servers, please use **no netbios-name-server** command.

Syntax

netbios-name-server *NBNS-list*

no netbios-name-server

Parameter

NBNS-list —— Specify the Netbios server list, with the format of A.B.C.D,E.F.G.H. At most 8 Netbios servers can be configured, separated by comma.

Command Mode

DHCP Configuration Mode

Example

Specify the address pool's Netbios servers as 192.168.0.1 and 192.168.1.1:

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(config-dhcp)# netbios-name-server

192.168.0.1,192.168.1.1

38.18 netbios-node-type

Description

The **netbios-node-type** command is used to specify the Netbios server's node type. To delete the node type setttings, please use **no netbios-node-type** command.

Syntax

netbios-node-type *type*

no netbios-node-type

Parameter

type —— Specify the node type as b-node, h-node, m-node or p-node.

Command Mode

DHCP Configuration Mode

Example

Specify the address pool's Netbios server type as b-node:

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(config-dhcp)# netbios-node-type b-node

38.19 next-server

Description

The **next-server** command is used to specify the next DHCP server's address during the DHCP boot process. To delete the next server, please use **no next-server** command.

Syntax

next-server *ip-address*

next-server

Parameter

ip-address —— Specify the IP address of the next server.

Command Mode

DHCP Configuration Mode

Example

Specify the next server's IP address as 192.168.2.1:

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(config-dhcp)# next-server 192.168.2.1

38.20 domain-name

Description

The **domain-name** command is used to specify the domain name for the DHCP client. To delete the domain name, please use **no domain-name** command.

Syntax

domain-name *domainname*

no domain-name

Parameter

domainname —— Specify the domain name for the DHCP client.

Command Mode

DHCP Configuration Mode

Example

Specify the DHCP client's domain name as edu:

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(config-dhcp)# domain-name edu

38.21 bootfile

Description

The **bootfile**command is used to specify the name of the DHCP client's bootfile. To delete the bootfile, please use **no bootfile** command.

Syntax

bootfile *file-name*

no bootfile

Parameter

file-name —— Specify the name of the DHCP client's bootfile.

Command Mode

DHCP Configuration Mode

Example

Specify the name of the DHCP client's bootfile as boot1:

T3700G-52TQ(config)# ip dhcp server pool product

T3700G-52TQ(config-dhcp)# bootfile boot1

38.22 show ip dhcp server conflictLogging

Description

The **show ip dhcp server conflictLogging** command is used to display address conflicts logged by the DHCP Server. If no IP address is specified, all the conflicting addresses are displayed.

Syntax

show ip dhcp server conflictLogging [**ip** *ip-address*]

Parameter

ip-address —— Specify the conflict IP address.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display all the address conflicts logged by the DHCP Server:

```
T3700G-52TQ(config)# show ip dhcp server conflictLogging
```

38.23 show ip dhcp server status

Description

The **show ip dhcp server status** command is used to display the status of the DHCP service.

Syntax

show ip dhcp server status

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the status of DHCP service:

```
T3700G-52TQ(config)# show ip dhcp server status
```

38.24 show ip dhcp server statistics

Description

The **show ip dhcp server statistics** command is used to display the DHCP packets received and sent by DHCP server.

Syntax

show ip dhcp server statistics

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the statistics of DHCP packets received and sent by the DHCP server:

```
T3700G-52TQ(config)# show ip dhcp server statistics
```

38.25 show ip dhcp server pool

Description

The **show ip dhcp server pool** command is used to display the configuration of the address pool.

Syntax

show ip dhcp server pool

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configured address pool:

```
T3700G-52TQ(config)# show ip dhcp server pool
```

38.26 show ip dhcp server excluded-address

Description

The **show ip dhcp server excluded-address** command is used to display the configuration of reserved addresses.

Syntax

show ip dhcp server excluded-address

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configured reserved addresses:

```
T3700G-52TQ(config)# show ip dhcp server excluded-address
```

38.27 show ip dhcp server binding

Description

The **show ip dhcp server binding** command is used to display the binding entries.

Syntax

show ip dhcp server binding [**ip** *ip-address*]

Parameter

ip-address —— Specify the binding IP address.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the address binding entries:

```
T3700G-52TQ(config)# show ip dhcp server binding
```

38.28 clear ip dhcp server conflictLogging

Description

The **clear ip dhcp server conflictLogging** command is used to clear address conflicts logged by the DHCP Server. If no IP address is specified, all the conflicting addresses will be cleared.

Syntax

clear ip dhcp server conflictLogging [**ip** *ip-address*]

Parameter

ip-address —— Specify the conflict IP address.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Clear all the address conflicts logged by the DHCP Server:

```
T3700G-52TQ(config)# clear ip dhcp server conflictLogging
```

38.29 clear ip dhcp server statistics

Description

The **clear ip dhcp server statistics** command is used to clear the statistics information of DHCP packets.

Syntax

clear ip dhcp server statistics

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Clear the packet statistics:

```
T3700G-52TQ(config)# clear ip dhcp server statistics
```

38.30 clear ip dhcp server binding

Description

The **clear ip dhcp server binding** command is used to clear the binding information.

Syntax

clear ip dhcp server binding [*ip-address*]

Parameter

ip-address —— Specify the binding IP address.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Clear all the binding addresses:

```
T3700G-52TQ(config)# clear ip dhcp server binding
```

Chapter 39 DHCP Relay

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.

39.1 service dhcp relay

Description

The **service dhcp relay** command is used to enable DHCP Relay function globally. To disable DHCP Relay function, please use **no service dhcp relay** command.

Syntax

service dhcp relay

no service dhcp relay

Command Mode

Global Configuration Mode

Example

Enable DHCP Relay function globally:

```
T3700G-52TQ(config)# service dhcp relay
```

39.2 ip helper-address

Description

The **ip helper-address** command is used to add DHCP Server address to the Layer 3 interface. To delete the server address, please use **no ip helper-address** command.

Syntax

ip helper-address *ip-address*

no ip helper-address [*ip-address*]

Parameter

ip-address —— DHCP Server address.

Command Mode

Interface Configuration Mode

Example

Add DHCP Server address 192.168.2.1 to interface VLAN 1:

```
T3700G-52TQ(config)# interface vlan 1
T3700G-52TQ(config-if)# ip helper-address 192.168.2.1
```

39.3 ip dhcp relay information

Description

The **ip dhcp relay information** command is used to enable option 82 support in DHCP Relay. To disable this function, please use **no ip dhcp relay information** command.

Syntax

ip dhcp relay information

no ip dhcp relay information

Command Mode

Global Configuration Mode

Example

Enable option 82 support in DHCP Relay:

```
T3700G-52TQ(config)# ip dhcp relay information
```

39.4 ip dhcp relay information policy

Description

The **ip dhcp relay information policy** command is used to specify the policy when receiving DHCP request packets with Option 82 field. To resume the default policy, please use **no ip dhcp relay information policy** command.

Syntax

ip dhcp relay information policy [drop | keep | replace]

no ip dhcp relay information policy

Parameter

drop | keep | replace —— Specify the policy. The default policy 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:

T3700G-52TQ(config)# ip dhcp relay information policy replace

39.5 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 32 characters.

Command Mode

Global Configuration Mode

Example

Specify the circuit ID as “tplink”:

T3700G-52TQ(config)# ip dhcp relay information circuit-id tplink

39.6 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 32 characters.

Command Mode

Global Configuration Mode

Example

Specify the remote ID as "tplink":

T3700G-52TQ(config)# ip dhcp relay information remote-id tplink

39.7 show ip dhcp relay

Description

The **show ip dhcp relay** command is used to display the 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:

T3700G-52TQ(config)# show ip dhcp relay

Chapter 40 Proxy ARP Commands

The switch uses Proxy ARP to help hosts learn MAC addresses of hosts on other networks or subnets.

40.1 ip proxy-arp

Description

The **ip proxy-arp** command is used to enable Proxy ARP function on the specified VLAN interface or routed port. To disable Proxy ARP function on this interface, please use **no ip proxy-arp** command.

Syntax

ip proxy-arp

no ip proxy-arp

Command Mode

Interface Configuration Mode

Example

Enable the Proxy ARP function on Interface VLAN 2:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip proxy-arp
```

Enable the Proxy ARP function on routed port 1/0/2:

```
T3700G-52TQ(config)# interface gigabitEthernet 2
T3700G-52TQ(config-if)# no switchport
T3700G-52TQ(config-if)# ip proxy-arp
```

40.2 ip local-proxy-arp

Description

The **ip local-proxy-arp** command is used to enable Local Proxy ARP function on the specified VLAN interface or routed port. To disable Local Proxy ARP function on this interface, please use **no ip local-proxy-arp** command.

Syntax

ip local-proxy-arp

no ip local-proxy-arp

Command Mode

Interface Configuration Mode

Example

Enable the Local Proxy ARP function on Interface VLAN 2:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip local-proxy-arp
```

Enable the Local Proxy ARP function on routed port 1/0/2:

```
T3700G-52TQ(config)# interface gigabitEthernet 2
T3700G-52TQ(config-if)# no switchport
T3700G-52TQ(config-if)# ip local-proxy-arp
```

40.3 show ip proxy-arp

Description

The **show ip proxy-arp** command is used to display the Proxy ARP status.

Syntax

show ip proxy-arp

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the Proxy ARP status:

```
T3700G-52TQ(config)# show ip proxy-arp
```

40.4 show ip local-proxy-arp

Description

The **show ip local-proxy-arp** command is used to display the Local Proxy ARP status.

Syntax

show ip local-proxy-arp

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the Local Proxy ARP status:

```
T3700G-52TQ(config)# show ip local-proxy-arp
```

Chapter 41 IGMP Commands

Internet Group Management Protocol (IGMP) is used between hosts on a LAN and the routers on this LAN to track the multicast groups of which hosts are multicast members.

41.1 ip igmp (global)

Description

The **ip igmp** command is used to enable IGMP function globally. To disable IGMP function globally, please use **no ip igmp** command.

Syntax

ip igmp

no ip igmp

Command Mode

Interface Configuration Mode

Example

Enable the IGMP function globally:

```
T3700G-52TQ(config)#ip igmp
```

41.2 ip igmp (interface)

Description

The **ip igmp** command is used to enable IGMP function on the specified interface. To disable IGMP function on this interface, please use **no ip igmp** command.

Syntax

ip igmp

no ip igmp

Command Mode

Interface Configuration Mode

Example

Enable the IGMP function on Interface VLAN 2:

```
T3700G-52TQ(config)#interface vlan 2
T3700G-52TQ(config-if)#ip igmp
```

41.3 ip igmp header-validation

Description

The **ip igmp header-validation** command is used to enable the validation of 3 igmp header fields: TTL (Time To Live), ToS (Type of Service), and Router Alert options. For IGMPv1, only the TTL field is validated. For IGMPv2, TTL and Router Alert fields are validated. For IGMPv3, TTL, ToS, and Router Alert fields are validated. To disable the IGMP Snooping header validation function, please use **no ip igmp header-validation** command.

Syntax

ip igmp header-validation

no ip igmp header-validation

Command Mode

Global Configuration Mode

Example

Enable header validation for all IGMP messages:

```
T3700G-52TQ(config)#ip igmp header-validation
```

41.4 ip igmp version

Description

The **ip igmp version** command is used to configure the version of IGMP on specified interface. To restore to the default IGMPv3, please use **no ip igmp version** command.

Syntax

ip igmp version { 1 | 2 | 3 }

no ip igmp version

Parameter

1 | 2 | 3 —— Specify the version of the IGMP. The default version is 3.

Command Mode

Interface Configuration Mode

Example

Configure the IGMP version as version 2 on Interface VLAN 2:

T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip igmp version 2

41.5 ip igmp last-member-query-count

Description

The **ip igmp last-member-query-count** command is used to configure the number of Specific Query Messages that the switch sends on specified interface. To restore to the default value on this interface, please use **no ip igmp last-member- query-count** command.

Syntax

ip igmp last-member-query-count *count*
no ip igmp last-member-query-count

Parameter

count —— Specify the number of Specific Query Messages that the switch sends, ranging from 1 to 20. The default value is 2.

Command Mode

Interface Configuration Mode

Example

Configure the number of Specific Query Messages that the switch sends as 3 on Interface VLAN 2:

T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip igmp last-member-query-count *3*

41.6 ip igmp last-member-query-interval

Description

The **ip igmp last-member-query-interval** command is used to configure the interval of Specific Query Messages that the switch sends on specified

interface. To restore to the default value on this interface, please use **no ip igmp last-member-query-interval** command.

Syntax

ip igmp last-member-query-interval *interval*

no ip igmp last-member-query-interval

Parameter

interval —— Specify the interval of Specific Query Messages that the switch sends, ranging from 0 to 255 seconds. The default value is 10 seconds.

Command Mode

Interface Configuration Mode

Example

Configure the interval of Specific Query Messages that the switch sends as 20 seconds on Interface VLAN 2:

T3700G-52TQ(config)# interface vlan 2

T3700G-52TQ(config-if)# ip igmp last-member-query-interval 20

41.7 ip igmp query-interval

Description

The **ip igmp query-interval** command is used to configure the interval of General Query Messages that the switch sends on specified interface. To restore to the default value on this interface, please use **no ip igmp query-interval** command.

Syntax

ip igmp query-interval *interval*

no ip igmp query-interval

Parameter

interval —— Specify the interval of General Query Messages that the switch sends, ranging from 1 to 3600 seconds. The default value is 125 seconds.

Command Mode

Interface Configuration Mode

Example

Configure the interval of General Query Messages that the switch sends as 50 seconds on interface VLAN 2:

T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip igmp query-interval 50

41.8 ip igmp query-max-response-time

Description

The **ip igmp query-max-response-time** command is used to specify the max response time to the General Query message on specified interface. To restore to the default value on this interface, please use **no igmp query-max-response-time** command.

Syntax

ip igmp query-max-response-time *time*
no ip igmp query-max-response-time

Parameter

time —— Specify the max response time to the General Query message, ranging from 0 to 255. The default value is 100 (10 seconds)

Command Mode

Interface Configuration Mode

Example

Configure the max response time to the General Query message as 5 seconds on Interface VLAN 2:

T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip igmp query-max-response-time 50

41.9 ip igmp robustness

Description

The **ip igmp robustness** used to configure the existing time of the non-querier on specified interface. To restore to the default value on this interface, please use **no ip igmp robustness** command.

Syntax

ip igmp robustness *robustness*

no ip igmp robustness

Parameter

robustness —— Specify the robustness of IGMP, ranging from 1 to 255. The default value is 2.

Command Mode

Interface Configuration Mode

Example

Configure the robustness of IGMP as 3 on Interface VLAN 2:

T3700G-52TQ(config)# interface vlan 2

T3700G-52TQ(config-if)# ip igmp robustness 3

41.10 ip igmp startup-query-interval

Description

The **ip igmp startup-query-interval** command is used to configure the interval of Startup Query Messages that the switch sends on specified interface. To restore to the default value on this interface, please use **no ip igmp startup-query-interval** command.

Syntax

ip igmp startup-query-interval *interval*

no ip igmp startup-query-interval

Parameter

interval —— Specify the interval of Startup Query Messages that the switch sends, ranging from 1 to 300 seconds. The default value is 31 seconds.

Command Mode

Interface Configuration Mode

Example

Configure the interval of Startup Query Messages that the switch sends as 10 seconds on Interface VLAN 2:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip igmp query-interval 10
```

41.11 ip igmp startup-query-count

Description

The **ip igmp startup-query-count** command is used to configure the number of Startup Query Messages that the switch sends on specified interface. To restore to the default value on this interface, please use **no ip igmp startup-query-count** command.

Syntax

ip igmp startup-query-count *count*

no ip igmp startup-query-count

Parameter

count —— Specify the number of Startup Query Messages that the switch sends, ranging from 1 to 20. The default value is 2.

Command Mode

Interface Configuration Mode

Example

Configure the number of Startup Query Messages that the switch sends as 3 on Interface VLAN 2:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip igmp last-member-query-count 3
```

41.12 ip igmp profile

Description

The **ip igmp profile** command is used to create the configuration profile. To delete the corresponding profile, please use **no ip igmp profile** command.

Syntax

ip igmp profile *id*

no ip igmp profile *id*

Parameter

id —— Specify the id of the configuration profile, ranging from 1 to 999.

Command Mode

Global Configuration Mode

Example

Create the profile 1:

```
T3700G-52TQ(config)# ip igmp profile 1
```

41.13 deny

Description

The **deny** command is used to configure the filtering mode of profile as deny.

Syntax

deny

Command Mode

Profile Configuration Mode

Example

Configure the filtering mode of profile 1 as deny:

```
T3700G-52TQ(config)# ip igmp profile 1
T3700G-52TQ(config-igmp-profile)#deny
```

41.14 permit

Description

The **permit** command is used to configure the filtering mode of profile as permit.

Syntax

permit

Command Mode

Profile Configuration Mode

Example

Configure the filtering mode of profile 1 as permit:

T3700G-52TQ(config)# ip igmp profile 1
T3700G-52TQ(config-igmp-profile)#permit

41.15 range

Description

The **range** command is used to configure the range of the profile's filtering multicast address. To delete the corresponding filtering multicast address, please use **no range** command.

Syntax

range *start-ip* [*end-ip*]

no range *start-ip* [*end-ip*]

Parameter

start-ip —— The start filtering multicast IP address.

end-ip —— The end filtering multicast IP address.

Command Mode

Profile Configuration Mode

Example

Configure one of the filter multicast address entry as range 225.1.1.1 to 226.3.2.1 in profile 1:

T3700G-52TQ(config)# ip igmp profile 1
T3700G-52TQ(config-igmp-profile)#range 225.1.1.1 226.3.2.1

41.16 ip igmp filter

Description

The **ip igmp filter** command is used to bind a profile to the specified VLAN interface or routed port. To delete the profile-port binding entry, please use **no ip igmp filter** command.

Syntax

ip igmp filter *profile-id*

no ip igmp filter *profile-id*

Parameter

profile-id—— Specify the profile ID to be bound.

Command Mode

Interface Configuration Mode

Example

Bind profile 1 to the Interface VLAN 2:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip igmp filter 1
```

Bind profile 1 to the routed port 1/0/1:

```
T3700G-52TQ(config)# interface gigabitEthernet 1/0/1
T3700G-52TQ(config-if)# no switchport
T3700G-52TQ(config-if)# ip igmp filter 1
```

41.17 show ip igmp

Description

The **show ip igmp** command is used to display the IGMP information.

Syntax

show ip igmp

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the IGMP information:

```
T3700G-52TQ(config)# show ip igmp
```

41.18 show ip igmp profile

Description

The **show ip igmp profile** command is used to display the configuration information of all the profiles or a specific profile.

Syntax

show ip igmp profile [*id*]

Parameter

id —— Specify the ID of the profile.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration information of all profiles:

```
T3700G-52TQ(config)# show ip igmp profile
```

41.19 show ip igmp groups

Description

The **show ip igmp groups** command is used to display the information of all the dynamic multicast groups or the specified multicast group.

Syntax

show ip igmp groups [*group-address*] [**detail**]

Parameter

group-address —— Specify the multicast group address.

detail —— The detailed information of the dynamic multicast groups.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the configuration information of all the dynamic multicast groups:

```
T3700G-52TQ(config)# show ip igmp groups
```

41.20 show ip igmp groups interface

Description

The **show ip igmp groups interface** command is used to display the information of all the dynamic multicast groups on the specified port.

Syntax

show ip igmp groups interface { fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* [**detail**]

Parameter

fastEthernet | gigabitEthernet | ten-gigabitEthernet —— Specify the port type.

port —— Specify the port number.

detail —— The detailed information of the dynamic multicast groups.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the detailed information of the dynamic multicast groups on the gigabitEthernet 1/0/1:

T3700G-52TQ(config)# show ip igmp groups interface gigabitEthernet 1/0/1 **detail**

41.21 show ip igmp groups interface vlan

Description

The **show ip igmp groups interface vlan** command is used to display the information of all the dynamic multicast groups on the specified Interface.

Syntax

show ip igmp groups interface vlan *vlan-id* [**detail**]

Parameter

vlan-id —— Specify the interface VLAN ID.

detail —— The detailed information of the

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of the dynamic multicast groups on interface VLAN 1:

T3700G-52TQ(config)# show ip igmp groups interface vlan 1

41.22 show ip igmp interface

Description

The **show ip igmp interface** command is used to display the IGMP configuration information on the specified port.

Syntax

show ip igmp interface { fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* [stats]

Parameter

fastEthernet | gigabitEthernet | ten-gigabitEthernet —— Specify the port type.

port —— Specify the port number.

stats —— The IGMP packet statistics received on the specified port.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the statistics of the IGMP packets received on the gigabitEthernet 1/0/1:

T3700G-52TQ(config)# show ip igmp interface gigabitEthernet 1/0/1 stats

41.23 show ip igmp interface vlan

Description

The **show ip igmp interface vlan** command is used to display the IGMP configuration information on the specified interface VLAN.

Syntax

show ip igmp interface vlan *vlan-id* [stats]

Parameter

vlan-id—— Specify the interface VLAN ID.

stats —— The IGMP packet statistics received on the specified interface VLAN.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the IGMP configuration information on the Interface VLAN 2:

T3700G-52TQ(config)# show ip igmp interface vlan 2

Chapter 42 PIM Commands

The Protocol Independent Multicast (PIM) protocol is multicast routing protocol which uses unicast routing information to perform the multicast forwarding function in the three-layer network. PIM can operate in dense mode or sparse mode.

42.1 ip multicast-routing

Description

The **ip multicast-routing** command is used to enable ip multicast routing function. To disable the ip multicast routing function and delete all the multicast routing entries, please use **no ip multicast-routing** command.

Syntax

ip multicast-routing

no ip multicast-routing

Command Mode

Global Configuration Mode

Example

Enable the IP multicast routing function globally:

```
T3700G-52TQ(config)#ip multicast-routing
```

42.2 ip pim (global)

Description

The **ip pim** command is used to configure PIM mode globally. To disable the PIM DM or SM mode, please use **no ip pim** command.

Syntax

ip pim {dense-mode **|** sparse-mode}

no ip pim [dense-mode **|** sparse-mode]

Parameter

dense-mode —— Enable PIM with dense mode.

sparse-mode —— Enable PIM with sparse mode.

Command Mode

Global Configuration Mode

Example

Enable PIM dense mode globally:

```
T3700G-52TQ(config)# ip pim dense-mode
```

42.3 ip pim (interface)

Description

The **ip pim** command is used to enable PIM on the specified interface. To disable PIM on this interface, please use **no ip pim** command.

Syntax

ip pim

no ip pim

Command Mode

Interface Configuration Mode

Example

Enable PIM on VLAN interface 1:

```
T3700G-52TQ(config)# interface vlan 1
T3700G-52TQ(config-if)# ip pim
```

42.4 ip pim ssm

Description

The **ip pim ssm** command is used to enable PIM SSM function on the specified group. To disable the PIM SSM function on this interface, please use **no ip pim ssm** command.

Syntax

ip pim ssm default

no ip pim ssm default

ip pim ssm *group-address group-mask*

no ip pim ssm *group-address group-mask*

Parameter

default —— Enable PIM SSM in the default multicast groups: 232.0.0.0 255.0.0.0..

group-address —— Enable PIM SSM in the specified multicast group.

group-mask —— Enable PIM SSM in the specified multicast group with this mask.

Command Mode

Global Configuration Mode

Example

Enable PIM SSM function in the default multicast group:

T3700G-52TQ(config)# ip pim ssm default

42.5 ip pim bsr-candidate interface

Description

The **ip pim bsr-candidate interface** command is used to configure the candidate BSR on specified interface. To disable the candidate BSR, please use **no ip pim bsr-candidate** command.

Syntax

ip pim bsr-candidate interface { { fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* | **vlan** *vlan-id* } [*hash-mask-length*] [*priority*] [*interval*]

no ip pim bsr-candidate

Parameter

fastEthernet | gigabitEthernet | ten-gigabitEthernet —— The port type of the interface.

port —— The port number.

vlan-id —— The interface VLAN ID.

hash-mask-length —— Hash function mask length, ranging from 0 to 32.

priority —— The priority of the BSR, ranging from 0 to 255.

interval ——The BSR Advertisement interval, ranging from 1 to 16383 seconds.

Command Mode

Global Configuration Mode

Example

Configure the candidate BSR on interface VLAN 2:

T3700G-52TQ(config)# ip pim bsr-candidate interface vlan 2 10 20 45

42.6 ip pim rp-candidate interface

Description

The **ip pim rp-candidate interface** command is used to configure the candidate RP in specified multicast group. To disable the candidate RP in this gorup, please use **no ip pim rp-candidate interface** command.

Syntax

ip pim rp-candidate interface { { fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* | **vlan** *vlan-id* } { *group-address* } { *group-mask* } [**interval** *interval*]

no ip pim rp-candidate interface { { fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* /**vlan** *vlan-id*} { *group-address* } { *group-mask*}

Parameter

fastEthernet | gigabitEthernet | ten-gigabitEthernet —— The port type of the interface.

port —— The port number.

vlan-id —— The interface VLAN ID.

group-address —— The group address in which the candidate RP functions.

group-mask —— The mask of the multicast group.

interval —— The interval of RP advertisement interval. It ranges from 1 to 255 seconds.

Command Mode

Global Configuration Mode

Example

Configure the candidate RP on interface VLAN 2 in the multicast group 225.0.0.1/255.0.0.0 and the interval of RP advertisement interval as 70s:

T3700G-52TQ(config)# ip pim rp-candidate interface vlan 2 225.0.0.1 255.0.0.0 **interval** 70

42.7 ip pim rp-address

Description

The **ip pim rp-address** command is used to configure the static RP. To disable the static RP, please use **no ip pim rp-address** command.

Syntax

ip pim rp-address *rp-addr group-address group-mask* [**override**]

no ip pim rp-address *ip-addr group-address group-mask*

Parameter

rp-addr —— Specify the IP address of the static RP.

group-address —— Specify the multicast group in which the RP functions.

group-mask —— Specify the mask of the multicast group.

override —— The RP configured with this command prevails if there is a conflict between the RP configured with this command and one learned by BSR.

Command Mode

Global Configuration Mode

Example

Configure the IP address of the static RP as 20.20.20.2 in group 224.1.1.1/255.0.0.0:

T3700G-52TQ(config)# ip pim rp-address 20.20.20.2 224.1.1.1 255.0.0.0

42.8 ip pim bsr-border

Description

The **ip pim bsr-border** command is used to configure the border of the BSR packet on each interface that connects to other bordering PIM domains. To disable the border of BSR on this interface, please use **no ip pim bsr-border** command.

Syntax

ip pim bsr-border

no ip pim bsr-border

Command Mode

Interface Configuration Mode

Example

Configure the BSR border on VLAN interface 2:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip pim bsr-border
```

42.9 ip pim dr-priority

Description

The **ip pim dr-priority** command is used to configure the priority of DR. To restore to the default value of DR priority, please use **no ip pim dr-priority** command.

Syntax

ip pim dr-priority *pri*

no ip pim dr-priority

Parameter

pri—— Specify the priority of DR, ranging from 0 to 2147483647. The default value is 1.

Command Mode

Interface Configuration Mode

Example

Configure the DR priority on interface VLAN 2 as 100:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip pim dr-priority 100
```

42.10 ip pim join-prune-interval

Description

The **ip pim join-prune-interval** command is used to configure the interval of join/prune packet. To restore to the default value, please use **no ip pim join-prune-interval** command.

Syntax

ip pim join-prune-interval *interval*

no ip pim join-prune-interval

Parameter

interval —— Specify the interval of join/prune packet. It ranges from 1 to 18000 seconds. The default value is 60 seconds.

Command Mode

Interface Configuration Mode

Example

Configure the interval of join/prune packet as100s on vlan interface 2:

T3700G-52TQ(config)# interface vlan 2

T3700G-52TQ(config-if)# ip pim join-prune-interval 100

42.11 ip pim hello-interval

Description

The **ip pim hello-interval** command is used to configure the interval of Hello packet. To restore to the default value of Hello packet interval, please use **no ip pim hello-interval** command.

Syntax

ip pim hello-interval *interval*

no ip pim hello-interval

Parameter

interval —— Specify the interval of Hello packet. It ranges from 1 to 18725 seconds, and the default is 30 seconds.

Command Mode

Interface Configuration Mode

Example

Configure the interval of Hello packet of 100s on VLAN interface 2:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip pim hello-interval 100
```

42.12 show ip multicast

Description

The **show ip multicast** command is used to display the IP multicast information.

Syntax

show ip multicast

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display ip multicast information:

```
T3700G-52TQ(config)# show ip multicast
```

42.13 show ip mroute

Description

The **show ip mroute** command is used to display the IP multicast routing table.

Syntax

show ip mroute [[**group** *ip-addr*] | [**source** *ip-addr*] | **detail** | **static** [source *source-ip*] | [**summary**]]

Parameter

group *ip-addr* —— Displays the multicast routing table with specified group IP address.

source *ip-addr* —— Displays the multicast routing table with specified source IP address.

detail —— Displays the detailed multicast routing table.

static [source *source-ip*] —— Displays all the static multicast routing entries or the static multicast routing entries with specified source IP address.

summary —— Displays the summary information of the multicast routing table.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display all IP multicast routing entries:

```
T3700G-52TQ(config)# show ip mroute
```

42.14 show ip mfc

Description

The **show ip mfc** command is used to display the information of the multicast forwarding table.

Syntax

show ip mfc

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display ip multicast forwarding table information:

```
T3700G-52TQ(config)# show ip mfc
```

42.15 show ip pim interface

Description

The **show ip pim interface** command is used to display the specified PIM interface information. Using the **show ip pim interface** command without parameters displays the detailed information of all the PIM interfaces.

Syntax

show ip pim interface [{ fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* /**vlanId** *vlan-id*]

Parameter

fastEthernet | gigabitEthernet | ten-gigabitEthernet —— The port type of the interface.

port —— The port number.

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

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of all PIM interfaces:

```
T3700G-52TQ(config)# show ip pim interface
```

42.16 show ip pim neighbor

Description

The **show ip pim neighbor** command is used to display PIM neighbor information.

Syntax

show ip pim neighbor [**interface** [{ fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* | **vlanId** *vlan-id*]]

Parameter

fastEthernet | gigabitEthernet | ten-gigabitEthernet —— The port type of the interface.

port —— The port number.

vlan-id —— The interface VLAN ID.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of all the PIM neighbors:

T3700G-52TQ(config)# show ip pim neighbor

42.17 show ip pim bsr-router

Description

The **show ip pim bsr-router** command is used to display the candidate BSR and RP information.

Syntax

show ip pim bsr-router

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the BSR and RP settings:

T3700G-52TQ(config)# show ip pim bsr-router

42.18 show ip pim rp mapping

Description

The **show ip pim rp mapping** command is used to display the RP information of the specified multicast group.

Syntax

show ip pim rp mapping [*rp-address* | candidate | static]

Parameter

rp-address —— Specify the RP to be displayed.

candidate —— Displays all the candidate RPs' information.

static —— Displays all the staic RPs' information.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the candidate RP information of all the multicast groups:

T3700G-52TQ(config)# show ip pim rp mapping candidate

42.19 show ip pim rp hash

Description

The **show ip pim rp hash** command is used to display the hash result of specified multicast group.

Syntax

show ip pim rp hash *ip-addr*

Parameter

ip-addr —— Specify the multicast group address to display its RP hash result.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the RP hash result of multicast group 224.1.1.2:

T3700G-52TQ(config)# show ip pim rp hash 224.1.1.2

42.20 show ip pim ssm

Description

The **show ip pim ssm** command is used to display the information of PIM SM.

Syntax

show ip pim ssm

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display PIM SSM information:

T3700G-52TQ(config)# show ip pim ssm

42.21 show ip pim statistic

Description

The **show ip pim statistic** command is used to display the statistics of the PIM packets. Using the **show ip pim statistic** command without parameters displays the detailed statistics of all the PIM interfaces.

Syntax

show ip pim statistic [**interface** [{ fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* /**vlanId** *vlan-id*]]

Parameter

fastEthernet | gigabitEthernet | ten-gigabitEthernet —— The port type of the interface.

port —— The port number.

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

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the statistics of all PIM interfaces:

```
T3700G-52TQ(config)# show ip pim statistic
```

Chapter 43 Static Multicast Routing Commands

Multicast routing table uses the RPF (Reverse Path Forwarding) mechanism to determine the upstream and downstream neighbors basing on the unicast route and the static multicast route. The RPF feature checks the multicast routing entries and ensures the correct forwarding paths of the multicast packets. Static multicast routing entry works to change or to connect the RPF routes, and provides important basis for the RPF check.

43.1 ip mroute

Description

The **ip mroute** command is used to add or modify the static multicast routing entries. To delete the specified entry, please use **no ip mroute** command.

Syntax

ip mroute { *source-address* } {*mask*} { *rpf-address* } [*distance*]

no ip mroute { *source-address*} { *mask* }

Parameter

source-address —— The IP address of the multicast source, in the format as 192.168.0.1.

mask —— The mask of the multicast source IP address.

rpf-address —— The interface of the specified RPF entry.

distance —— The administrative distance of the static multicast routing entry, ranging from 0 to 255. If the value of the static multicast routing entry is smaller than that of other RPF entries, then the static multicast routing entry will take effect. The default value is 0.

Command Mode

Global Configuration Mode

Example

Add a static multicast routing entry with the source address as 192.168.0.1, mask as 255.255.255.255, rpf-address as 192.168.1.1 and distance as 1:

```
T3700G-52TQ(config)#ip mroute 192.168.0.1 255.255.255.255 192.168.1.1
1
```

43.2 show ip mroute static

Description

The **show ip mroute static** command is used to display all the static multicast routing entries.

Syntax

show ip mroute static [**source** *source-ip*]

Parameter

source-ip —— Displays the static multicast routing entries with specified source IP address.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Displays all the static multicast routing entries:

```
T3700G-52TQ(config)# show ip mroute static
```

Chapter 44 VRRP Commands

The Virtual Router Redundancy protocol is designed to handle default router failures by providing a scheme to dynamically elect a backup router. The driving force was to minimize "black hole" periods due to the failure of the default gateway router during which all traffic directed towards it is lost until the failure is detected. Though static configuration of default routes is popular, such an approach is susceptible to a single point of failure when the default router fails. VRRP advocates the concept of a "virtual router" associated with one or more IP addresses that serve as default gateways. In the event that the VRRP router controlling these IP addresses (formally known as the Master) fails, the group of IP addresses and the default forwarding role is taken over by a backup VRRP router.

44.1 ip vrrp vrid

Description

This command is used to enable the VRRP protocol on an interface and designates a virtual router ID for it. To disable VRRP protocol of a specified virtual router on an interface, please use **no ip vrrp vrid** command.

Syntax

ip vrrp vrid *vrid*

no ip vrrp vrid *vrid*

Parameter

vrid—— The virtual router ID which has an integer value range from 1 to 255.

Command Mode

Interface Configuration Mode

Example

Enable the VRRP protocol on interface VLAN 3 and specify the vrid as 4:

T3700G-52TQ(config)#interface vlan 3

T3700G-52TQ(config-if)#ip vrrp vrid 4

44.2 ip vrrp vrid virtual-ip

Description

This command is used to add a primary virtual IP for the virtual router. Each virtual router has only one primary virtual IP which cannot be deleted.

Syntax

ip vrrp vrid *vrid* **virtual-ip** *virtual-ip*

Parameter

vrid —— The virtual router ID.

virtual-ip —— The IP address configured to the virtual router, which must be in the same subnet with the interface.

Command Mode

Interface Configuration Mode

Example

Add a primary IP address as 192.168.0.7 for vrid 4 on interface VLAN 3:

T3700G-52TQ(config)#interface vlan 3
T3700G-52TQ(config-if)#ip vrrp vrid 4 **virtual-ip** 192.168.0.7

44.3 ip vrrp vrid virtual-ip (secondary)

Description

This command is used to add a secondary virtual IP for the virtual router. Up to 32 IP addresses can be configured to a virtual router. To delete the corresponding secondary virtual IP, please use **no ip vrrp vrid virtual-ip secondary** command.

Syntax

ip vrrp vrid *vrid* **virtual-ip** *virtual-ip* **secondary**
no ip vrrp vrid *vrid* **virtual-ip** *virtual-ip* **secondary**

Parameter

vrid —— The virtual router ID.

virtual-ip —— The IP address configured to the virtual router, which must be in the same subnet with the interface.

Command Mode

Interface Configuration Mode

Example

Add a secondary IP address as 192.168.0.8 for vrid 4 on interface VLAN 3:

T3700G-52TQ(config)#interface vlan 3
T3700G-52TQ(config-if)#ip vrrp vrid 4 **virtual-ip** 192.168.0.8

44.4 ip vrrp vrid description

Description

This command is used to configure or modify the description for the virtual router.

Syntax

ip vrrp vrid *vrid* **description** *description*

Parameter

vrid—— The virtual router ID.

description ——String to describe the virtual router, which contains 8 characters at most, composing digits, English letters and under dashes only.

Command Mode

Interface Configuration Mode

Example

Name the vrid 4 as vr4 on interface VLAN 3:

T3700G-52TQ(config)#interface vlan 3
T3700G-52TQ(config-if)#ip vrrp vrid 4 **description** vr4

44.5 ip vrrp vrid priority

Description

This command is used to set the priority value for the virtual router configured on a specified interface. To restore to the default priority, please use **no ip vrrp vrid priority** command.

Syntax

ip vrrp vrid *vrid* **priority** *pri*

no ip vrrp vrid *vrid* **priority**

Parameter

vrid—— The virtual router ID.

pri—— Priority, ranging from 1 to 254. By default, the priority value is 100.

Command Mode

Interface Configuration Mode

Example

Configure the priority for the interface VLAN 3 as 123 in vrid 4:

T3700G-52TQ(config)#interface vlan 3

T3700G-52TQ(config-if)#ip vrrp vrid 4 **priority** 123

44.6 ip vrrp vrid timer-advertise

Description

This command sets the frequency, in seconds, that an interface on the specified virtual router sends a virtual router advertisement. To restore the advertisement interval to default value for an interface, please use **no ip vrrp vrid timer-advertise** command.

Syntax

ip vrrp vrid *vrid* **timer-advertise** *adver-interval*

no ip vrrp vrid *vrid* **timer-advertise**

Parameter

vrid—— The virtual router ID.

adver-interval—— Advertisement interval, ranging from 1 to 255 in seconds. By default, it's 1 second.

Command Mode

Interface Configuration Mode

Example

Configure the advertisement interval for the interface VLAN 3 as 12 seconds in vrid 4:

T3700G-52TQ(config)#interface vlan 3
T3700G-52TQ(config-if)#ip vrrp vrid 4 **timer-advertise** 12

44.7 ip vrrp vrid preempt-mode

Description

This command sets the preemption mode and the delay time for the virtual router configured on a specified interface. To set non-preempt mode for the virtual router configured on a specified interface, please use **no ip vrrp vrid preempt-mode** command. The virtual router is in non-preempt mode by default.

Syntax

ip vrrp vrid *vrid* **preempt-mode** [**timer-delay** *delay-value*]
no ip vrrp vrid *vrid* **preempt-mode**

Parameter

vrid —— The virtual router ID.

delay-value —— The time that a backup router has to wait for before setting itself as the master when the current master is considered to be unavailable. It ranges from 0 to 255 in seconds. By default, it's 0.

Command Mode

Interface Configuration Mode

Example

Enable the preempt mode and configure the delay time as 12 seconds for the interface VLAN 3 in vrid 4:

T3700G-52TQ(config)#interface vlan 3
T3700G-52TQ(config-if)#ip vrrp vrid 4 **preempt-mode timer-delay** 12

44.8 ip vrrp vrid authentication-mode

Description

This command is used to configure the authorization mode for the virtual router configured on a specified interface. To restore to the default authorization mode for the virtual router on the specified interface, please use **no ip vrrp vrid authentication-mode** command.

Syntax

ip vrrp vrid *vrid* **authentication-mode** { simple **|** md5 } { *password*}

no ip vrrp vrid *vrid* **authentication-mode**

Parameter

vrid—— The virtual router ID.

simple | md5 —— Authentication mode. By default, it's none and no authentication will be performed. "simple" means authentication will be performed using a text password. "md5" means authentication will be performed via a text password and MD5 algorithm. This authentication mode has a higher security than Simple mode.

password—— Super password, a string from 1 to 8 alphanumeric characters or symbols. The password is case sensitive, allows spaces but ignores leading spaces, and cannot contain question marks. By default, it is empty.

Command Mode

Interface Configuration Mode

User Guidelines

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

Example

Configure the authentication Mode as md5 and configure the key as 123 for the interface VLAN 3 in vrid 4:

```
T3700G-52TQ(config)#interface vlan 3

T3700G-52TQ(config-if)#ip vrrp vrid 4 authentication-mode md5 123
```

44.9 ip vrrp vrid track interface

Description

This command is used to add tracked interfaces for the virtual router. To disable the track function on the specified interface, please use **no ip vrrp vrid track interface** command.

Syntax

ip vrrp vrid *vrid* **track interface** { { fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* | **vlan** *vlan-id*} [**reduce-priority** *pri*]

no ip vrrp vrid *vrid* **track interface** { { fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* | **vlan** *vlan-id*}

Parameter

vrid—— The virtual router ID.

fastEthernet | gigabitEthernet | ten-gigabitEthernet —— The port type of the interface.

port—— The port number.

vlan-id—— The interface VLAN ID.

pri—— The priority decrement for the tracking interface. The valid range is 1 – 254. The default value is 10.

Command Mode

Interface Configuration Mode

Example

Configure the tracked interface as vlan2 and the priority decrement as 10 for the tracking interface:

```
T3700G-52TQ(config)#interface vlan 3
T3700G-52TQ(config-if)#ip vrrp vrid 4 track interface vlan 2 reduce-priority 10
```

44.10 clear ip vrrp statistics

Description

This command is used to clear all the statistics about vrrp on the switch.

Syntax

clear ip vrrp statistics

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Clear all the statistics about vrrp on the switch:

T3700G-52TQ(config)# clear ip vrrp statistics

44.11 show ip vrrp

Description

This command is used to display the basic configuration information of all the virtual routers or a specified virtual router.

Syntax

show vrrp [**vrid** *vrid*][**interface** {{ fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* | **vlan** *vlan-id* }]

Parameter

vrid —— The virtual router ID.

fastEthernet | gigabitEthernet | ten-gigabitEthernet —— The port type of the interface.

port —— The port number.

vlan-id —— The interface VLAN ID.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the vrrp information of virtual router 4 on interface VLAN 3:

T3700G-52TQ(config)# show ip vrrp vrid 4 **interface vlan** 3

44.12 show ip vrrp statistics

Description

This command is used to display the statistics of a virtual router on a specified interface or all the virtual routers on the switch.

Syntax

show ip vrrp statistics [**vrid** *vrid*][**interface** {{ fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* /**vlan** *vlan-id*}]

Parameter

vrid—— The virtual router ID.

fastEthernet | gigabitEthernet | ten-gigabitEthernet —— The port type of the interface.

port—— The port number.

vlan-id—— The interface VLAN ID.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the statistics of virtual router 4 on interface 3:

```
T3700G-52TQ(config)# show ip vrrp statistics vrid 4 interface vlan 3
```

Chapter 45 RIP Commands

The Routing Information Protocol (RIP)is an interior gateway protocol (IGP) created for use in small and homogeneous networks. It is a distance-vector routing protocol that uses broadcast User Datagram Protocol (UDP) data packets to exchange routing information.

45.1 router rip

Description

The **router rip** command is used to enable the RIP function and enter router configuration mode. To disable the RIP function, please use **no router rip** command.

Syntax

router rip

no router rip

Command Mode

Global Configuration Mode

Example

Enable the RIP function and enter router configuration mode.

```
T3700G-52TQ(config)# router rip
T3700G-52TQ(config-router)#
```

45.2 network

Description

The **network** command is used to enable RIP function on interfaces of the desired network. To disable the RIP protocol on these interfaces, please use **no network** command.

Syntax

network *network number*

no network *network number*

Parameter

network number ——The network number of the network, in the format of 192.168.0.0.

Command Mode

Router Configuration Mode (router rip)

Example

Enable RIP function on interfaces of the network 192.168.0.0:

```
T3700G-52TQ(config)# router rip
T3700G-52TQ(config-router)# network 192.168.0.0
```

45.3 version

Description

The **version** command is used to specify the RIP version globally. By default, the switch sends RIPv1 packets and receives both RIPv1 and RIPv2 packets. To return to the default configuration, please use **no version** command.

Syntax

version { 1 | 2 }

no version

Parameter

1 —— Send and receive RIPv1 packets.

2 —— Send and receive RIPv2 packets.

Command Mode

Router Configuration Mode (router rip)

Example

Specify the RIP version as RIPv2:

```
T3700G-52TQ(config)# router rip
T3700G-52TQ(config-router)# version 2
```

45.4 timer basic

Description

The **timer basic** command is used to configure the RIP protocol timers.

Syntax

timer basic { **update** *update-value* | **timeout** *timeout-value* | **garbage-collect** *garbage-collect-value* }

Parameter

update-value —— Specify the interval between route updates, ranging from 1 to 100 in seconds. By default, it is 30 seconds.

timeout-value —— Specify the route aging time, ranging from 1 to 300 in seconds. By default, it is 180 seconds.

garbage-collect-value —— Specify the interval between the routing entry is invalidated or marked as unreachable and is removed from the routing table. It ranges from 1 to 500. By default, it is 240 seconds.

Command Mode

Router Configuration Mode (router rip)

Example

Configure the update timer as 80 seconds:

T3700G-52TQ(config)# router rip

T3700G-52TQ(config-router)# timer basic update 80

45.5 distance

Description

The **distance** command is used to configure the distance for RIP routes.

Syntax

distance *distance*

Parameter

distance —— Set the administrative distance for RIP, ranging from 1 to 255. By default, It is 120.

Command Mode

Router Configuration Mode (router rip)

Example

Configure the administrative distance of RIP as 20:

T3700G-52TQ(config)# router rip

T3700G-52TQ(config-router)# distance 20

45.6 auto-summary

Description

The **auto-summary** command is used to enable the Auto Summary mode for RIPv2. In Auto Summary mode, groups of adjacent routes will be summarized into single entries, in order to reduce the total number of entries. To disable the Auto Summary mode, please use **no auto-summary** command.

Syntax

auto-summary

no auto-summary

Command Mode

Router Configuration Mode (router rip)

Example

Configure the RIP version as RIPv2 and disable its Auto Summary mode:

T3700G-52TQ(config)# router rip

T3700G-52TQ(config-router)# version 2

T3700G-52TQ(config-router)# no auto-summary

45.7 default-metric

Description

The **default-metric** command is used to configure the default metric of redistributed routes. If a router runs RIP and other routing protocols, you can configure RIP to redistribute external routes. To return to the default configuration, please use **no default-metric** command.

Syntax

default-metric *metric*

no default-metric

Parameter

metric —— Specify the default metric, ranging from 1 to 15. By default, it is 1.

Command Mode

Router Configuration Mode (router rip)

Example

Configure the default metric of RIP as 5:

```
T3700G-52TQ(config)# router rip
T3700G-52TQ(config-router)# default-metric 5
```

45.8 redistribute

Description

The **redistribute** command is used to enable RIP to redistribute external routes. By default, it is disabled. To return to the default configuration, please use **no redistribute** command.

Syntax

redistribute { static | ospf } **metric** *metric-value*

no redistribute { static | ospf } **metric**

Parameter

static —— Enable RIP to redistribute the external static routes.

ospf —— Enable RIP to redistribute the external OSPF routes.

metric-value —— Configure the metric for the added external route.

Command Mode

Router Configuration Mode (router rip)

Example

Enable RIP to redistribute the external static routes and specify the metric as 5:

```
T3700G-52TQ(config)# router rip
T3700G-52TQ(config-router)# redistribute static metric 5
```

45.9 poison-reverse

Description

The **poison-reverse** command is used to enable poison reverse function on the desired interface. To disable the poison reverse function, please use **no poison-reverse** command.

Syntax

poison-reverse

no poison-reverse

Command Mode

Router Configuration Mode (router rip)

Example

Enable poison reverse function on the interface VLAN2:

```
T3700G-52TQ(config)# router rip
T3700G-52TQ(config-router)# poison-reverse
```

45.10 split-horizon

Description

The **split-horizon** command is used to enable split horizon function on the desired interface. To disable the split horizon function, please use **no split-horizon** command.

Syntax

split-horizon

no split-horizon

Command Mode

Router Configuration Mode (router rip)

Example

Enable split horizon function on the interface VLAN2:

```
T3700G-52TQ(config)# router rip
T3700G-52TQ(config-router)# split-horizon
```

45.11 ip rip receive version

Description

The **ip rip receive version** command is used to specify the RIP receive version on the desired interface. To return to the default configuration, please use **no rip receive version** command. The interfaces use the global configuration (configured with **version** command) before you specify its own RIP send/receive version.

Syntax

ip rip receive version [1|2]

no ip rip receive version

Parameter

1 | 2 —— Specify the RIP receive version. By default, it receives both version 1 and version 2 packets.

Command Mode

Interface Configuration Mode

Example

Configure the interface VLAN2 to receive RIPv1 packets only:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip rip receive version 1
```

45.12 ip rip send version

Description

The **ip rip send version** command is used to specify the RIP send version on the desired interface. To return to the default configuration, please use **no rip send version** command. The interfaces use the global configuration

(configured with **version** command) before you specify its own RIP send/receive version.

Syntax

ip rip send version {1 | 2 | rip1c}

no ip rip send version

Parameter

1 | 2 | rip1c —— Specify the version of RIP control packets the interface should send. By default, it sends version 1 packets. "rip1c" means the interface will send RIPv2 broadcast packets.

Command Mode

Interface Configuration Mode

Example

Configure the interface VLAN2 to send RIPv1 packets only:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip rip send version 1
```

45.13 ip rip authentication-mode

Description

The **ip rip authentication-mode** command is used to configure the authentication mode of RIP on the desired interface. By default, the authentication mode is none.

Syntax

ip rip authentication-mode { simple *key-string* **| md5** *key-id key-string* **| none }**

Parameter

key-string —— A string from 1 to 16 alphanumeric characters or symbols. "simple" means authentication will be performed using a text password. "md5" means authentication will be performed via a text password and MD5 algorithm.

key-id —— Specify the key ID used in MD5 authentication mode. The key ID ranges from 1 to 255.

none —— Configure the authentication mode as none.

Command Mode

Interface Configuration Mode

Example

Configure the RIP authentication mode of interface VLAN2 as simple, and specify its key as 123:

T3700G-52TQ(config)# interface vlan 2

T3700G-52TQ(config-if)# ip rip authentication-mode simple 123

45.14 show ip rip

Description

The **show ip rip** command is used to display the RIP configurations.

Syntax

show ip rip [interface]

Parameter

interface —— Display the RIP interface basic information.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the RIP routing information:

T3700G-52TQ(config)# show ip rip

Chapter 46 OSPF Commands

OSPF is an Interior Gateway Protocol (IGP) designed expressly for IP networks, supporting IP subnetting and tagging of externally derived routing information. OSPF also allows packet authentication and uses IP multicast when sending and receiving packets.

46.1 router ospf

Description

The **router ospf** command is used to create an OSPF routing process and enter the router configuration mode. Each OSPF routing process is an independent instance running the OSPF protocol, and they works separately. To delete the specified OSPF routing process, please use the **no router ospf** command.

Syntax

router ospf *process-id*

no router ospf *process-id*

Parameter

process-id —— Process ID, ranging from 1 to 65535. Five processes can be created at most.

Command mode

Global Configuration Mode

Example

Create an OSPF routing process with the process ID as 1:

T3700G-52TQ(config)# router ospf 1

46.2 router-id

Description

The **router-id** command is used to configure the router ID. The **no router-id** command is used to delete the configured router ID. If no router ID is configured manually or the configured router ID is deleted, the highest IP address among all loopback interfaces will be chosen as the router ID.

Syntax

router-id *router-id*

no router-id

Parameter

router-id —— The route ID in the format of dotted decimal notation. 0.0.0.0 is illegal.

Command mode

Router Configuration Mode

Example

Configure the router ID of OSPF routing process 1 as 1.1.1.1:

T3700G-52TQ(config)# router ospf 1

T3700G-52TQ(config-router)# router-id 1.1.1.1

46.3 network

Description

The **network** command is used to configure the network of a specified area. All the interfaces fallen into the configured network will belong to this area. To delete the specified network and its corresponding interfaces from this area, please use the **no network** command.

Syntax

network *ip-address wildcard-mask* **area** *area-id*

no network *ip-address wildcard-mask* **area** *area-id*

Parameter

ip-address —— The IP address of the network.

wildcard-mask —— The wildcard mask of the network (such as 0.0.0.255). The subnet mask is also compatible (such as 255.0.0.0).

area-id ——The area ID, in the format of an IP address in dotted decimal notation or decimal value ranging from 0 to 4294967295.

Command Mode

Router Configuration Mode

Example

Configure the network 192.168.0.0/24 in the area 0.0.0.0:

```
T3700G-52TQ(config)# router ospf 1
T3700G-52TQ(config-router)# network 192.168.0.0 255.255.255.0 area 0.0.0.0
```

46.4 maximum-paths

Description

The **maximum-paths** command is used to configure the maximum number of the equal-cost multipath routings. To restore to default value, please use the **no maximum-paths** command.

Syntax

maximum-paths *number*

no maximum-paths

Parameter

number —— The maximum number of the equal-cost multipath routings, ranging from 1 to 16. The default value is 16.

Command Mode

Router Configuration Mode

Example

Configure the maximum number of the equal-cost multipath routings as 2:

```
T3700G-52TQ(config)# router ospf 1
T3700G-52TQ(config-router)# maximum-paths 2
```

46.5 redistribute

Description

The **redistribute** command is used to configure the ASBR to redistribute the external routes from other routing protocols to the OSPF domain in type-5 LSAs. To cancel this redistribution, please use the **no redistribute** command without any optional parameters. To restore the certain optional parameters

to default values, please use the **no redistribute** command with corresponding parameters.

Syntax

redistribute { **connected** | **static** / **rip** | **ospf** *process-id* } [**metric** *cost*] [**metric-type** *type*] [**tag** *tag*]

no redistribute { **connected** | **static** / **rip** | **ospf** *process-id* } [**metric** *cost*] [**metric-type** *type*] [**tag** *tag*]

Parameter

connected —— Specify the external route type as connected.

static —— Specify the external route type as static.

rip —— Specify the external route type as RIP.

ospf *process-id*—— The ospf routing process ID, ranging from 1 to 65535。

cost —— The cost of the external routes, ranging from 1 to 16777214. Its default value is defined in the command **default-metric**.

type —— The type of the external routes, either 1 or 2. The default value is 2.

tag —— The identifier of the summary route, which can be used by the routing strategy to control the advertisement of the routes. It ranges from 0 to 4294967295 and the default value is 0.

Command Mode

Router Configuration Mode

Example

Redistribute the RIP routes from the external and advertise them as type 1 external routes in the OSPF domain.

```
T3700G-52TQ(config)# router ospf 1
T3700G-52TQ(config-router)# redistribute rip metric-type 1
```

46.6 default-metric

Description

The **default-metric** command is used to configure the default cost of the redistributing external route. To restore to the default value, please use the **no default-metric** command.

Syntax

default-metric *cost*

no default-metric

Parameter

cost —— The default cost of the redistributing external route, ranging form 1 to 16777214.

Command Mode

Router Configuration Mode

Example

Configure the default cost of the redistributing external route as 12:

T3700G-52TQ(config)# router ospf 1

T3700G-52TQ(config-router)# default-metric 12

46.7 default-information originate

Description

The **default-information originate** command is used to advertise the default route as AS-External LSA. To cancel the advertisement of the default route, please use the **no default-information originate** command without any optional parameters. To restore the certain parameters to default values, please use the **no default-information originate** command with corresponding parameters.

Syntax

default-information originate [**always**] [**metric** *cost*] [**metric-type** *type*]

no default-information originate [**always**] [**metric** *cost*] [**metric-type** *type*]

Parameter

always —— OSPF will advertise the default route whether there is default route is the IP routing table or not. If the parameter is not configured, OSPF will advertise the default route only when there is default route in the IP routing table.

cost——The default cost of the default route, ranging form 1 to 16777214. Its default value is 1.

type —— The type of the external routes, either 1 or 2. The default value is 2.

Command Mode

Router Configuration Mode

Example

Configure OSPF to advertise the default route whether there is default route is the IP routing table or not:

T3700G-52TQ(config)# router ospf 1

T3700G-52TQ(config-router)# default-information originate always

46.8 auto-cost

Description

The **auto-cost** command is used to enable the auto computing function of the interface cost and configure the reference bandwidth. The interface cost is the ratio of the reference bandwidth to the interface bandwidth. To restore the reference bandwidth to default value, please use the **no auto-cost reference-bandwidth** command. To disable the auto computing function of the interface cost, please use the **no auto-cost** command without parameters.

Syntax

reference-bandwidth *bandwidth*

no reference-bandwidth bandwidth

Parameter

bandwidth —— The reference bandwidth, ranging from 1 to 4294967 Mbps. Its default value is 100Mbps.

Command Mode

Router Configuration Mode

Example

Enable the auto computing function of the interface cost and configure the reference bandwidth as 10000 Mbps:

T3700G-52TQ(config)# router ospf 1

T3700G-52TQ(config-router)# auto-cost reference-bandwidth 10000

46.9 distance

Description

The **distance** command is used to configure the OSPF administrative distance. To restore to the default distance, please use the **no distance** command. The administrative distance represents the priority of the routes. The smaller administrative distance corresponds to higher priority. When different routing protocols possess the same route to the same destination, the route with the highest priority will be selected to add to the IP routing table according to the administrative distance.

Syntax

distance *administrative-distance*

no distance

Parameter

administrative-distance —— Routing administrative distance, ranging from 0 to 255. Its default value is 110.

Command Mode

Router Configuration Mode

Example

Configure the OSPF routing administrative distance as 100:

T3700G-52TQ(config)# router ospf 1

T3700G-52TQ(config-router)# distance 100

46.10 timers throttle spf

Description

The **timers throttle spf** command is used to configure the computing delay and interval of the SPF, thus preventing the consumption of the CPU and memory caused by frequent SPF computing. To restore to the default value, please use the **no timers throttle spf** command.

Syntax

timers throttle spf *spf-delay spf-holdtime*

no timers throttle spf

Parameter

spf-delay—— The delay time of the SPF computing, ranging from 1 to 600 seconds. The default value is 5 seconds.

spf-holdtime —— The minimum interval between two SPF computings, ranging from 1 to 600 seconds. The default value is 10 seconds

Command Mode

Router Configuration Mode

Example

Configure the computing delay and interval of the SPF as 10 seconds:

```
T3700G-52TQ(config)# router ospf 1
T3700G-52TQ(config-router)# timers throttle spf 10 10
```

46.11 compatible rfc1583

Description

The **compatible rfc 1583** command is used to configure the OSPF's compatibility for the routing rules in the RFC 1583. To cancel the compatibility, please use the **no compatible rfc1583** command. It is compatible by default.

Syntax

compatible rfc1583

no compatible rfc1583

Command Mode

Router Configuration Mode

Example

Configure the OSPF's compatibility for the routing rules in RFC 1583:

```
T3700G-52TQ(config)# router ospf 1
T3700G-52TQ(config-router)# compatible rfc1583
```

46.12 passive-interface

Description

The **passive-interface** command is used to prevent an interface from sending OSPF packets. To restore to the default settings, please use **no passive-interface** command. The interface is allowed to send OSPF packets by default.

Syntax

passive-interface { {fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* | **loopback** *id* | **vlan** *vlan-id*}

no passive-interface { {fastEthernet | gigabitEthernet | ten-gigabitEthernet } *port* | **loopback** *id* | **vlan** *vlan-id*}

Parameter

fastEthernet | gigabitEthernet | ten-gigabitEthernet —— The port type of the interface.

port —— The port number.

id —— The interface loopback ID.

vlan-id —— The interface VLAN ID.

Command Mode

Router Configuration Mode

Example

Prevent interface VLAN 1 from sending OSPF packets in routing process 1:

```
T3700G-52TQ(config)# router ospf 1
```

```
T3700G-52TQ(config-router)# passive-interface vlan 1
```

46.13 passive-interface default

Description

The **passive-interface default** command is used to prevent all the interfaces from sending OSPF packets. To restore to the default settings, please use **no passive-interface default** command. All the interfaces are allowed to send OSPF packets by default.

Syntax

passive-interface default

no passive-interface default

Command Mode

Router Configuration Mode

Example

Prevent all the interfaces from sending OSPF packets in routing process 1:

```
T3700G-52TQ(config)# router ospf 1
T3700G-52TQ(config-router)# passive-interface default
```

46.14 no area

Description

The **no area** command is used to delete the specified area. Only areas containing no networks can be deleted.

Syntax

no area *area-id*

Parameter

area-id ——The area ID, in the format of an IP address in dotted decimal notation or decimal value ranging from 0 to 4294967295.

Command Mode

Router Configuration Mode

Example

Delete the OSPF area 1:

T3700G-52TQ(config)# router ospf 1

T3700G-52TQ(config-router)#no area 1

46.15 area stub

Description

The **area stub** command is used to define an area as a stub area. To restore the stub area to a normal one, please use the **no area stub** command.

Syntax

area *area-id* **stub [no-summary]**

no area *area-id* **stub [no-summary]**

Parameter

area-id ——The area ID, in the format of an IP address in dotted decimal notation or decimal value ranging from 0 to 4294967295.

no-summary —— Configure the stub are as a totally stub area, where the ABR advertises neither the destinations in other areas nor the external routes. The stub area is not a totally stub area by default.

Command Mode

Router Configuration Mode

Example

Configure the area 1 as a totally stub area:

T3700G-52TQ(config)# router ospf 1

T3700G-52TQ(config-router)# area 1 **stub no-summary**

46.16 area nssa

Description

The **area nssa** command is used to define an area as a nssa area. To restore the stub area to a normal one, please use the no area stub command without

any optional parameters. To restore the certain parameters to default values, please use the **no area nssa** command with corresponding parameters.

Syntax

area *area-id* **nssa** [**no-redistribution**] [**no-summary**] [**default-information-originate** [**metric** *cost*] [**metric-type** *type*]]

no area *area-id* **nssa** [**no-redistribution**] [**no-summary**] [**default-information-originate** [**metric** *cost*] [**metric-type** *type*]]

Parameter

area-id —— The area ID, in the format of an IP address in dotted decimal notation or decimal value ranging from 0 to 4294967295.

no-redistribution —— Select to not import routes into the NSSA.

no-summary —— Select to not send summary LSAs into the NSSA.

default-information-originate —— Select on an ABR to allow importing default route as type 7 LSAs into the NSSA.

cost—— The default route cost with the default value as 1. It ranges from 1 to 16777214.

type—— The default route type with the default value as 2. It is either 1 or 2.

Command Mode

Router Configuration Mode

Example

Configure Area 1 as a total NSSA area:

```
T3700G-52TQ(config)# router ospf 1
T3700G-52TQ(config-router)# area 1 nssa no-summary
```

46.17 area default-cost

Description

The area default-cost command is to configure the cost of default summary route sent from ABR to STUB or NSSA area.

Syntax

area *area-id* **default-cost** *cost*

no area *area-id* **default-cost**

Parameter

area-id —— The area ID, in the format of an IP address in dotted decimal notation or decimal value ranging from 0 to 4294967295.

cost—— The cost value. It ranges from 1 to 16777214 and the default value is 1.

Command Mode

Router Configuration Command

Example

Configure the cost of default summary route sent to Area 1 as 10:

```
T3700G-52TQ(config)# router ospf 1
T3700G-52TQ(config-router)# area 1 default-cost 10
```

46.18 area range

Description

The **area range** is to configure a summary route. To delete this route, please use the **no area range** command. By default no route is summarized.

This command is only used with the ABR to summarize the route information of a certain area. The ABR only sends one summarized route of the routes in the aggregated segment to the other areas. An area can be configured with multiple summary segments, which can be aggregated by OSPF.

If the **no area range** command is configured, the formally summarized routes will be redistributed.

Syntax

area *area-id* **range** *ip-address mask* [**cost** *cost*] [**not-advertise**]

no area *area-id* **range** *ip-address mask* [**cost** *cost*] [**not-advertise**]

Parameter

area-id —— The area ID, in the format of an IP address in dotted decimal notation or decimal value ranging from 0 to 4294967295.

ip-address—— The destination of the aggregated route.

mask—— The network mask of the aggregated route, in the format of dotted decimal notation.

cost—— The cost of the aggregated route, ranging from 1 to 16777214. The default value is the maximum one of all the aggregated routes.

Command Mode

Router Configuration Mode

Example

Configure one aggregated route 100.100.0.0/16 with the cost 10 in the Area 0:

```
T3700G-52TQ(config)# router ospf 1
T3700G-52TQ(config-router)# area 0 range 100.100.0.0 255.255.0.0 cost 10
```

46.19 area virtual-link

Description

The **area virtual-link** command is used to configure the virtual-link. To delete the configured virtual-link, please use the no area virtual-link without any optional parameters. To restore the certain parameters to default values, please use the **no area virtual-link** command with corresponding parameters.

Syntax

area *transit-area* **virtual-link** *router-id* [**dead-interval** *dead-interval*] [**hello-interval** *hello-interval*] [**retransmit-interval** *rtx-interval*] [**transmit-delay** *trans-delay*]

no area *transit-area* **virtual-link** *router-id* [**dead-interval** *dead-interval*] [**hello-interval** *hello-interval*] [**retransmit-interval** *rtx-interval*] [**transmit-delay** *trans-delay*]

Parameter

transit-area —— The transition area ID in the format of an IP address in dotted decimal notation or decimal value ranging from 0 to 4294967295.

router-id—— The ID of the neighboring router on the opposite end of the virtual link, in the format of dotted decimal notation.

hello-interval—— The interval of the hello packets, ranging from 1 to 65535 seconds and the default value is 10 seconds.

dead-interval —— The time after which the neighbor becomes invalid. It ranges from 1 to 65535 seconds and the default value is 4 times as the hello-interval.

rtx-interval—— The retransmission interval of the LSA, DD and LSR packets. It ranges from 1 to 65535 seconds and the default value is 5 seconds.

trans-delay —— The LSA transmission delay. It ranges from 1 to 65535 seconds and the default value is 1 seconds.

Command Mode

Router Configuration Mode

Example

Configure a virtual-link with the transmission area as Area 1 and the ID of the neighboring router on the other endpoint as 1.1.1.1:

```
T3700G-52TQ(config)# router ospf 1
T3700G-52TQ(config-router)# area 1 virtual-link 1.1.1.1
```

46.20 area virtual-link authentication

Description

The **area virtual-link authentication** command is used to configure the authentication type of the virtual link. The virtual link is not authenticated by default. To restore to default value, please use the **no area virtual-link authentication** command.

Syntax

area *transit-area* **virtual-link** *router-id* **authentication** [message-digest | null]

no area *transit-area* **virtual-link** *router-id* **authentication**

Parameter

transit-area —— The transition area ID in the format of an IP address in dotted decimal notation or decimal value ranging from 0 to 4294967295.

router-id—— The ID of the neighboring router on the other endpoint of the virtual link, in the format of dotted decimal notation.

message-digest —— Configure the configuration type as MD5.

null —— No authentication. By default it is no authentication.

If no authentication mode is specified here, the default mode will be simple authentication.

Command Mode

Router Configuration Mode

Example

Configure simple authentication as the authentication mode of a virtual-link with the transmission area as Area 2 and the ID of the neighboring router on the other endpoint as 3.3.3.3:

```
T3700G-52TQ(config)# router ospf 1
T3700G-52TQ(config-router)# area 2 virtual-link 3.3.3.3 authentication
```

46.21 area virtual-link authentication-key

Description

The **area virtual-link authentication-key** command is used to configure the simple authentication key. To delete the key, please use the **no area virtual-link authentication-key** command.

Syntax

area *transit-area* **virtual-link** *router-id* **authentication-key** *password*

no area *transit-area* **virtual-link** *router-id* **authentication-key**

Parameter

transit-area —— The transition area ID, in the format of an IP address in dotted decimal notation or decimal value ranging from 0 to 4294967295.

router-id —— The ID of the neighboring router on the other endpoint of the virtual link, in the format of dotted decimal notation.

password —— A string from 1 to 8 alphanumeric characters or symbols. The password is case sensitive, allows spaces but ignores leading spaces, and cannot contain question marks. By default, it is empty.

Command Mode

Router Configuration Mode

Example

Configure the authentication mode of a virtual-link as simple authentication, with the transmission area as Area 2 and the ID of the neighboring router on the other endpoint as 3.3.3.3, and the authentication key as 123456:

T3700G-52TQ(config)# router ospf 1

T3700G-52TQ(config-router)# area 2 **virtual-link** 3.3.3.3 **authentication-key** 123456

46.22 area virtual-link message-digest-key

Description

The **area virtual-link message-digest-key** is used to configure the MD5 authentication ID and key of the virtual-link. To delete the specified configuration, please use the **no area virtual-link message-digest- key** command.

Syntax

area *transit-area* **virtual-link** *router-id* **message-digest-key** *id* **md5** *password*

no area *transit-area* **virtual-link** *router-id* **message-digest-key** *id*

Parameter

transit-area —— The transition area ID, in the format of an IP address in dotted decimal notation or decimal value ranging from 0 to 4294967295.

router-id —— The ID of the neighboring router on the other endpoint of the virtual link, in the format of dotted decimal notation.

id—— The key ID of the MD5, ranging from 1 to 255.

password —— A string from 1 to 16 alphanumeric characters or symbols. The password is case sensitive, allows spaces but ignores leading spaces, and cannot contain question marks. By default, it is empty.

Command Mode

Router Configuration Mode

Example

Configure the authentication mode of a virtual-link as md5 authentication, with the transmission area as Area 2 and the ID of the neighboring router on the other endpoint as 3.3.3.3, with the authentication ID as 2 and the authentication key as 123456:

T3700G-52TQ(config)# router ospf 1

T3700G-52TQ(config-router)# area 2 **virtual-link** 3.3.3.3 **message-digest-key** 2 **md5** 123456

46.23 ip ospf cost

Description

The **ip ospf cost** is used to configure the interface cost. To restore to the default value, please use the **no ip ospf cost** command.

Syntax

ip ospf cost *cost*

no ip ospf cost

Parameter

cost —— The interface cost, ranging from 1 to 65535. The default value is calculated according to the bandwidth.

Command Mode

Interface Configuration Mode

Example

Configure the cost of interface VLAN 2 as 10:

T3700G-52TQ(config)# interface vlan 2

T3700G-52TQ(config-if)# ip ospf cost 10

46.24 ip ospf retransmit-interval

Description

The **ip ospf retransmit-interval** command is used to configure the interval to retransmit the LSA, DD and LSR packets on the specified interface. To restore to default value, please use the **no ip ospf retransmit-interval** command.

Syntax

ip ospf retransmit-interval *interval*

no ip ospf retransmit-interval

Parameter

interval—— The retransmit interval, ranging from 1 to 65535 seconds. The default value is 5 seconds.

Command Mode

Interface Configuration Mode

Example

Configure the retransmission interval of interface VLAN 2 as 10 seconds:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip ospf retransmit-interval 10
```

46.25 ip ospf transmit-delay

Description

The **ip ospf transmit-delay** is used to configure the transmission delay of LSA on the specified interface. To restore to default value, please use the **no ip ospf transmit-delay**.

Syntax

ip ospf transmit-delay *delay*

no ip ospf transmit-delay

Parameter

delay—— The LSA transmission delay, ranging from 1 to 65535 seconds. The default value is 1 second.

Command Mode

Interface Configuration Mode

Example

Configure the LSA transmission delay of interface VLAN 2 as 2 seconds.

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip ospf retransmit-delay 2
```

46.26 ip ospf priority

Description

The **ip ospf priority** is used to configure the priority of the specified interface. To restore to the default value, please use the **no ip ospf priority** command.

Syntax

ip ospf priority *pri*

no ip ospf priority

Parameter

pri —— The priority of the interface, ranging from 0 to 255 and the default value is 1. Interface with the priority 0 cannot be elected as DR or BDR.

Command Mode

Interface Configuration Mode

Example

Configure the priority of the interface VLAN 2 as 1:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip ospf priority 1
```

46.27 ip ospf hello-interval

Description

The **ip ospf hello-interval** is used to configure the hello intervals on the specified interface. To restore to the default value, please use the **no ip ospf hello-interval** command.

Syntax

ip ospf hello-interval *interval*

no ip ospf hello-interval

Parameter

Interval —— The interval of the hello packets, ranging from 1 to 65535 seconds and the default value is 10 seconds.

Command Mode

Interface Configuration Mode

Example

Configure the interval of the hello packets sent on interface VLAN 2 as 20 seconds:

T3700G-52TQ(config)# interface vlan 2

T3700G-52TQ(config-if)# ip ospf hello-interval 20

46.28 ip ospf dead-interval

Description

The **ip ospf dead-interval** command is used to set the number of seconds after the last device hello packet was seen before its neighbors declare the OSPF router to be down. To restore to default value, please use the **no ip ospf dead-interval** command.

Syntax

ip ospf dead-interval *interval*

no ip ospf dead-interval

Parameter

interval—— The neighbor's failure interval, ranging from 1 to 65535 seconds and the default is 4 times the hello interval.

Command Mode

Interface Configuration Mode

Example

Configure the neighbor's failure interval on interface VLAN 2 as 50 seconds:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip ospf dead-interval 50
```

46.29 ip ospf authentication

Description

The **ip ospf authentication** command is used to configure the authentication mode of the specified interface. To restore to default value, please use the **no ip ospf authentication** command.

Syntax

ip ospf authentication [**message-digest**] [**null**]

no ip ospf authentication

Parameter

message-digest—— Specify the authentication type as MD5.

null —— No authentication. By default it is no authentication.

If no authentication mode is specified here, the default mode will be simple authentication.

Command Mode

Interface Configuration Mode

Example

Configure the authentication type of interface VLAN 2 as MD5:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip ospf authentication message-digest
```

46.30 ip ospf authentication-key

Description

The **ip ospf authentication-key** command is used to configure the key of the simple authentication. To cancel this configuration, please use the **no ip ospf authentication-key** command.

Syntax

ip ospf authentication-key *password*

no ip ospf authentication-key

Parameter

password —— Super password, a string from 1 to 8 alphanumeric characters or symbols. The password is case sensitive, allows spaces but ignores leading spaces, and cannot contain question marks. By default, it is empty.

Command Mode

Interface Configuration Mode

Example

Configure the authentication mode of interface VLAN 2 as simple authentication, and the password as 123:

T3700G-52TQ(config)#interface vlan 2

T3700G-52TQ(config-if)# ip ospf authentication-key 123

46.31 ip ospf message-digest-key

Description

The **ip ospf message-digest-key** is used to configure the ID and password of the md5 authentication on the specified interface. To cancel the configuration, please use **no ip ospf message-digest-key** command.

Syntax

ip ospf message-digest-key *id* **md5** *password*

no ip ospf message-digest-key *id*

Parameter

id —— The ID of the md5 authentication key, ranging from 1 to 255.

password —— A string from 1 to 16 alphanumeric characters or symbols. The password is case sensitive, allows spaces but ignores leading spaces, and cannot contain question marks. By default, it is empty.

Command Mode

Interface Configuration Mode

Example

Configure md5 authentication key ID as 1 and password as abc on interface VLAN 2:

```
T3700G-52TQ(config)#interface vlan 2

T3700G-52TQ(config-if)# ip ospf message-digest-key 1 md5 abc
```

46.32 ip ospf network

Description

The **ip ospf network** command is used to configure the network type on the specified interface. To restore to default, please use the **no ip ospf network** command.

Syntax

ip ospf network { broadcast | point-to-point }

no ip ospf network

Parameter

broadcast —— The broadcast network type. It is the default value.

point-to-point —— The point-to-point network type.

Command Mode

Interface Configuration Mode

Example

Configure the network type on interface VLAN 2 as broadcast::

```
T3700G-52TQ(config)# interface vlan 2
```

```
T3700G-52TQ(config-if)# ip ospf network broadcast
```

46.33 ip ospf database-filter all out

Description

The **ip ospf database-filter all out** command is used to block the flooding of the LSA packets on the specified interface. To restore to default, please use the **no ip ospf database-filter all out** command. By default, OSPF floods new LSAs over all interfaces in the same area, except the interface on which the LSA arrives.

Syntax

ip ospf database-filter all out

no ip ospf database-filter all out

Command Mode

Interface Configuration Mode

Example

Block the flooding of the LSA packets on interface VLAN 2:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip ospf database-filter all out
```

46.34 ip ospf mtu-ignore

Description

The **ip ospf mtu-ignore** command is used to ignore the MTU check in the DD exchanging process. This check is scheduled by default and the adjacency relationship will not establish if the MTUs are not matched. To restore to the default value, please use the **no ip ospf mtu-ignore** command.

Syntax

ip ospf mtu-ignore

no ip ospf mtu-ignore

Command Mode

Interface Configuration Mode

Example

Configure interface VLAN 2 to ignore the MTU field check in the DD exchange process:

```
T3700G-52TQ(config)# interface vlan 2
T3700G-52TQ(config-if)# ip ospf mtu-ignore
```

46.35 clear ip ospf

Description

The **clear ip ospf** command is used to reset the OSPF process, which will clear all the dynamic information. The **clear ip ospf process** command will reset all the OSPF processes.

Syntax

clear ip ospf [*process-id*]

clear ip ospf process

Parameter

process-id—— The process ID, ranging from 1 to 65535.

Command Mode

Privileged EXEC Mode

Example

Reset all the OSPF processes:

```
T3700G-52TQ# clear ip ospf process
```

46.36 show ip ospf

Description

The **show ip ospf** is used to display the global information of the OSPF process.

Syntax

show ip ospf [*process-id*]

Parameter

process-id —— The process ID, ranging from 1 to 65535. The global information of all the OSPF processes will be displayed if no process-id is specified.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the global information of all the OSPF processes:

T3700G-52TQ# show ip ospf

46.37 show ip ospf database

Description

The **show ip ospf database** command is used to display the LSDB. The detailed LSA information will be displayed if the LSA type is specified. The LSDB summary information will be displayed if the LSA type is not specified.

Syntax

show ip ospf [*process-id*] **database** [asbr-summary | external | network | nssa-external | router | summary]

Parameter

process-id —— The process ID, ranging from 1 to 65535. The LSDBs of all processes will be displayed if no process ID is specified.

asbr-summary | external | network | nssa-external | router | summary —— The LSA type.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the detailed information of router-LSA in process 1:

T3700G-52TQ# show ip ospf 1 **database router**

46.38 show ip ospf interface

Description

The **show ip ospf interface** command is used to display the interface information.

Syntax

show ip ospf [*process-id*] **interface** [**brief** | *interface-name interface-number*]

Parameter

process-id —— The process ID. The information of all the processes will be displayed if process ID is not specified.

brief—— Display the summary information of the interface.

interface-name interface-number —— Specify the interface name and number to display the interface's detailed information.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the information of the interfaces in all the OSPF processes:

```
T3700G-52TQ# show ip ospf interface
```

46.39 show ip ospf neighbor

Description

The **show ip ospf neighbor** command is used to display information of the OSPF neighbor.

Syntax

show ip ospf [*process-id*] **neighbor** [**detail** | *interface-name interface-number*]

Parameter

process-id —— The process ID, ranging from 1 to 65535. The neighbors' information of all processes will be displayed if no process ID is specified.

detail—— The detailed information of the neighbor.

interface-name interface-number——Specify the interface name and number to display the neighbor's detailed information on this interface.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the neighbors' detailed information in process 1:

```
T3700G-52TQ# show ip ospf 1 neighbor detail
```

46.40 show ip ospf virtual-links

Description

The **show ip ospf virtual-links** is used to display the virtual links.

Syntax

show ip ospf [*process-id*] **virtual-links**

Parameter

process-id —— The process ID, ranging from 1 to 65535. The virtual links of all processes will be displayed if no process ID is specified.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the virtual links of all the OSPF processes:

```
T3700G-52TQ# show ip ospf virtual-links
```

46.41 show ip ospf border-routers

Description

The **show ip ospf border-routers** is used to display the routing tables of the ABR/ASBR.

Syntax

show ip ospf [*process-id*] **border-routers**

Parameter

process-id —— The process ID, ranging from 1 to 65535. The ABR/ASBR routing tables of all processes will be displayed if no process ID is specified.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the ABR/ASBR routing tables of all the OSPF processes:

```
T3700G-52TQ# show ip ospf border-routers
```

46.42 show ip route ospf

Description

The **show ip route ospf** command is used to display the OSPF routing table.

Syntax

show ip route ospf

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the routing tables of OSPF:

```
T3700G-52TQ# show ip route ospf
```

46.43 show ip ospf area database

Description

The **show ip ospf area database** command is used to display the LSDB of the specified area. The detailed LSA information will be displayed if the LSA type is specified. The LSDB summary information will be displayed if the LSA type is not specified.

Syntax

show ip ospf *process-id* **area** *area-id* **database** [asbr-summary | network | nssa-external | router | summary]

Parameter

process-id—— The process ID, ranging from 1 to 65535.

area-id —— The area ID, in the format of an IP address in dotted decimal notation or decimal value ranging from 0 to 4294967295.

asbr-summary | network | nssa-external | router | summary —— The LSA type.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the LSDB summary information of Area 0 in process 1:

```
T3700G-52TQ# show ip ospf 1 area 0 database
```

46.44 show ip ospf area interface

Description

The **show ip ospf area interface** command is used to display the interface information of the specified area.

Syntax

show ip ospf *process-id* **area** *area-id* **interface** [**brief |** *interface-name interface-number*]

Parameter

process-id—— The process ID, ranging from 1 to 65535.

area-id ——The area ID, in the format of an IP address in dotted decimal notation or decimal value ranging from 0 to 4294967295.

brief—— Display the summary information of the interface.

interface-name interface-number—— Specify the interface name and number to display the detailed information of this interface.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the detailed information of all the interfaces of Area 0 in process 1:

T3700G-52TQ# show ip ospf 1 **area 0 interface**

46.45 show ip ospf area neighbor

Description

The **show ip ospf are neighbor** command is used to display the neighbor information of the specified area.

Syntax

show ip ospf *process-id* **area** *area-id* **neighbor** [**detail |** *interface-name interface-number*]

Parameter

process-id—— The process ID, ranging from 1 to 65535.

area-id ——The area ID, in the format of an IP address in dotted decimal notation or decimal value ranging from 0 to 4294967295.

detail—— The detailed information of the neighbor.

interface-name interface-number—— Specify the interface name and number to display the detailed neighbor's information on this interface.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the summary information of the neighbors of Area 0 in process1:

T3700G-52TQ# show ip ospf 1 **area** 0 **neighbor**

Chapter 47 SDM Template Commands

This chapter describes how to configure the Switch Database Management (SDM) templates to allocate hardware resources on the switch for different uses.

47.1 sdm prefer

Description

The **sdm prefer** command is used to configure the SDM template. The SDM template is used to allocate system resources to best support the features being used in your application. The template change will takes effect after a reboot.

Syntax

sdm prefer { dual-ipv4-and-ipv6 default | ipv4-routing default | ipv4-routing data-center default }

Parameter

dual-ipv4-and-ipv6 default —— Specify the SDM template used in the switch as “dual-ipv4-and-ipv6”.

ipv4-routing default —— Specify the SDM template used in the switch as “ipv4-routing default”.

ipv4-routing data-center default —— Specify the SDM template used in the switch as “ipv4 data center”.

Command Mode

Global Configuration Mode

Example

Specify the SDM template as “dual-ipv4-and-ipv6”:

T3700G-52TQ(config)# sdm prefer dual-ipv4-and-ipv6 default

47.2 show sdm prefer dual-ipv4-and-ipv6 default

Description

The **show sdm prefer dual-ipv4-and-ipv6 default** command is used to display parameters for the SDM template supports ipv4 routing and ipv6 routing.

Syntax

show sdm prefer dual-ipv4-and-ipv6 default

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display parameters for the SDM template supports ipv4 routing and ipv6 routing:

T3700G-52TQ(config)#show sdm prefer dual-ipv4-and-ipv6 default

47.3 show sdm prefer ipv4-routing

Description

The **show sdm prefer ipv4-routing** command is used to display parameters for the SDM template supports ipv4 routing.

Syntax

show sdm prefer ipv4-routing {default | data-center default }

Parameter

default —— Display parameters for template with default bias.

data-center default —— Display parameters for data center template.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display parameters for data center template:

T3700G-52TQ(config)#show sdm prefer ipv4-routing data-center default

Chapter 48 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.

48.1 tacacas-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.

T3700G-52TQ(config)# tacacs-server host 1.1.1.1 **port** 1500 **timeout** 6 **key** 12345

48.2 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:

T3700G-52TQ(config)# show tacacs-server

48.3 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.

T3700G-52TQ(config)# radius-server host 1.1.1.1 **auth-port** 1200 **timeout** 6 **retransmit** 3 **key** 12345

48.4 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:

T3700G-52TQ(config)# show radius-server

48.5 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 authentication login *method-list*

Parameter

method-list —— Specify the method list name. The preset method lists include defaultList, networkList, noauthList and httpList.

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, line, local, enable and none. "radius" means using the RADIUS server to authenticate the users; "tacacs" means using the TACACS+ server to authenticate the users; "line" means using the locally configured Line password to authenticate the users. "local" means using the local username database to authenticate the users; "enable" means using the locally configured Enable password to authenticate the users. "none" means no authentication is used for login.

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 "defaultList" with the priority1 method as radius and priority2 method as local:

T3700G-52TQ(config)# aaa authenticaiton login defaultList radius local

48.6 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 authentication enable *method-list*

Parameter

method-list —— Specify the method list name. The preset method lists include defaultList, networkList, noauthList and httpList.

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, line, deny, enable and none. "radius" means using the RADIUS server to authenticate the users; "tacacs" means using the TACACS+ server to authenticate the users; "line" means using the locally configured Line password to authenticate the users. "deny" means denying the authentication of the users; "enable" means using the locally configured Enable password to authenticate the users. "none" means no authentication is used for getting the administrative privileges.

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 "defaultList" with the priority1 method as radius and priority2 method as enable:

T3700G-52TQ(config)# aaa authenticaiton enable defaultList radius enable

48.7 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.

Command Mode

Global Configuration Mode

Example

Configure the default 802.1X authentication method as "radius":

T3700G-52TQ(config)# aaa authentication dot1x default radius

48.8 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.

Command Mode

Global Configuration Mode

Example

Configure the default 802.1X accounting method as “radius”:

T3700G-52TQ(config)# aaa accounting dot1x default radius

48.9 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:

T3700G-52TQ(config)# show aaa authentication

48.10 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:

```
T3700G-52TQ(config)# show aaa accounting
```

48.11 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:

```
T3700G-52TQ(config)#line console 0
```

48.12 login authentication (console)

Description

The **login authentication** command is used to apply the login authentication method list to the console port.

Syntax

login authentication { *method-list* }

no login authentication

Parameter

method-list —— Specify the login method list on the console port. It is "noauthList" by default, which contains the method "none".

Command Mode

Line Configuration Mode

Example

Configure the login authentication method list on the console port as "defaultList":

T3700G-52TQ(config)# line console 0

T3700G-52TQ(config-line)# login authentication defaultList

48.13 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 "noenableList" by default, which contains the method "none".

Command Mode

Line Configuration Mode

Example

Configure the enable authentication method list on the console port as "defaultList":

T3700G-52TQ(config)# line console 0

T3700G-52TQ(config-line)# enable authentication defaultList

48.14 line telnet

Description

The **line telnet** command is used to enter the Line Configuration Mode to 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:

```
T3700G-52TQ(config)#line telnet
```

48.15 login authentication (telnet)

Description

The **login authentication** command is used to apply the login authentication method list to the telnet terminal line.

Syntax

login authentication { *method-list* }

no login authentication

Parameter

method-list —— Specify the login method list on the telnet terminal line. It is "networkList" 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 "defaultList":

T3700G-52TQ(config)#line telnet

T3700G-52TQ(config-line)# login authentication defaultList

48.16 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 "enableList" by default, which contains the priority 1 method "enable" and priority 2 method "none".

Command Mode

Line Configuration Mode

Example

Configure the enable authentication method list on the telnet terminal line as "defaultList":

T3700G-52TQ(config)#line telnet

T3700G-52TQ(config-line)# enable authentication defaultList

48.17 line ssh

Description

The **line ssh** command is used to enter the Line Configuration Mode to 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:

T3700G-52TQ(config)#line ssh

48.18 login authentication (ssh)

Description

The **login authentication** command is used to apply the login authentication method list to the ssh terminal line.

Syntax

login authentication { *method-list* }

no login authentication

Parameter

method-list —— Specify the login method list on the ssh terminal line. It is "networkList" 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 "defaultList":

T3700G-52TQ(config)# line ssh

T3700G-52TQ(config-line)# login authentication defaultList

48.19 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 "enableList" by default, which contains the priority 1 method "enable" and priority 2 method "none".

Command Mode

Line Configuration Mode

Example

Configure the enable authentication method list on the ssh terminal line as "defaultList":

T3700G-52TQ(config)# line ssh

T3700G-52TQ(config-line)# enable authentication defaultList

48.20 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:

```
T3700G-52TQ(config)# show aaa global
```

Chapter 49 ARP Commands

Address Resolution Protocol (ARP) is used to resolve an IP address into an Ethernet MAC address. The swich maintains an ARP mapping table to record the IP-to-MAC mapping relations, which is used for forwarding packets. An ARP mapping table contains two types of ARP entries: dynamic and static. An ARP dynamic entry is automatically created and maintained by ARP. A static ARP entry is manually configured and maintained.

49.1 arp

Description

This **arp** command is used to add a static ARP entry. To delete the specified ARP entry, please use the **no arp** command.

Syntax

arp *ip mac type*

no arp *ip type*

Parameter

ip —— The IP address of the static ARP entry.

mac —— The MAC address of the static ARP entry.

type —— The ARP type. Configure it as “arpa”.

Command Mode

Global Configuration Mode

Example

Create a static ARP entry with the IP as 192.168.0.1 and the MAC as 00:11:22:33:44:55:

T3700G-52TQ(config)# arp 192.168.0.1 00:11:22:33:44:55 arpa

49.2 clear arp-cache

Description

This **clear arp-cache** command is used to clear all the dynamic ARP entries.

Syntax

clear arp-cache

Command Mode

Privileged EXEC Mode

Example

Clear all the dynamic ARP entries:

T3700G-52TQ (config)# clear arp-cache

49.3 arp timeout

Description

This **arp timeout** command is used to configure the ARP aging time. To restore to the default value, please use the **no arp timeout** command.

Syntax

arp timeout *timeout*

no arp timeout

Parameter

timeout —— Specify the aging time, ranging from 15 to 21600 seconds. The default value is 1200 seconds.

Command Mode

Global Configuration Mode

Example

Configure the ARP aging time as 60 seconds:

T3700G-52TQ(config)# arp timeout 60

49.4 arp resptime

Description

This **arp resptime** command is used to configure the ARP request response timeout. To restore to the default value, please use the **no arp resptime** command.

Syntax

arp resptime *resptime*

no arp resptime

Parameter

resptime —— Specify the ARP request response timeout, ranging from 1 to 10 seconds. The default value is 1 seconds.

Command Mode

Global Configuration Mode

Example

Configure the ARP request response timeout as 3 seconds:

T3700G-52TQ(config)# arp resptime 3

49.5 arp retries

Description

This **arp retries** command is used to configure the maximum retry count of ARP requests. To restore to the default value, please use the **no arp retries** command.

Syntax

arp retries *retries*

no arp retries

Parameter

retries —— Specify the maximum retry count of ARP requests, ranging from 0 to 10. The default value is 4.

Command Mode

Global Configuration Mode

Example

Configure the maximum retry count of ARP requests as 3 seconds:

T3700G-52TQ(config)# arp retries 3

49.6 arp dynamic-renew

Description

This **arp dynamic-renew** command is used to enable automatic update of dynamic arp entries. To disable automatic update of dynamic arp entries, please use the **no arp dynamic-renew** command.

Syntax

arp dynamic-renew

no arp dynamic-renew

Command Mode

Global Configuration Mode

Example

Enable automatic update of dynamic arp entries:

T3700G-52TQ(config)#arp dynamic-renew

49.7 show arp

Description

This **show arp** command is used to display the active ARP entries. If no parameter is speicified, all the active ARPA entries will be displayed.

Syntax

show arp [*ip*] [*mac*]

show ip arp [*ip*] [*mac*]

Parameter

ip —— Specify the IP address of your desired ARP entry.

mac —— Specify the MAC address of your desired ARP entry.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the ARP entry with the IP as 192.168.0.2:

T3700G-52TQ(config)# show ip arp 192.168.0.2

49.8 show ip arp (interface)

Description

This **show arp** command is used to display the active ARP entries associated with a specified Layer 3 interface.

Syntax

show ip arp { **fastEthernet** *port* | **gigabitEthernet** *port* | **port-channel** *lagid* | **vlan** *id*}

Parameter

port—— Specify the number of the routed port.

lagid—— Specify the ID of the LAG.

id —— Specify the VLAN interface ID.

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the ARP entry associated with VLAN interface 2 :

```
T3700G-52TQ(config)# show ip arp vlan 2
```

49.9 show ip arp summary

Description

This **show ip arp summary** command is used to display the number of the active ARP entries.

Syntax

show ip arp summary

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the number of the ARP entries:

```
T3700G-52TQ(config)# show ip arp summary
```

Chapter 50 IPv6 Address Configuration Commands

The IPv6 address configuration commands are provided in the Interface Configuration Mode, which includes the routed port, the port-channel interface and the VLAN interface. Enter the configuration mode of these Layer 3 interfaces and configure their IPv6 parameters.

50.1 ipv6 enable

Description

This command is used to enable the IPv6 function on the speicified Layer 3 interface. IPv6 function should be enabled before the IPv6 address configuration management. By default it is enabled on VLAN interface 1. IPv6 function can only be enabled on one Layer 3 interface at a time.

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

Example

Enable the IPv6 function on the VLAN interface 1：

```
T3700G-52TQ(config)# interface vlan 1
T3700G-52TQ(config-if)# ipv6 enable
```

50.2 ipv6 address autoconfig

Description

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

Example

Enable the automatic configuration of the ipv6 link-local address on VLAN interface 1:

T3700G-52TQ(config)# interface vlan 1

T3700G-52TQ(config-if)# ipv6 address autoconfig

50.3 ipv6 address link-local

Description

The **ipv6 address link-local** command is used to configure the ipv6 link-local address manually on a specified interface. 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 interface. It should be a standardized IPv6 address with the prefix fe80::/10, otherwise this command will be invalid.

Configuration Mode

Interface Configuration Mode

Example

Configure the link-local address as fe80::1234 on the VLAN interface 1:

T3700G-52TQ(config)# interface vlan 1

T3700G-52TQ(config-if)# ipv6 address fe80::1234 **link-local**

50.4 ipv6 address dhcp

Description

The **ipv6 address dhcp** command is used to enable the DHCPv6 Client function. When this function is enabled, the Layer 3 interface 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

Example

Enable the DHCP Client function on VLAN interface 1:

```
T3700G-52TQ(config)# interface vlan 1
T3700G-52TQ(config-if)# ipv6 address dhcp
```

50.5 ipv6 address ra

Description

This command is used to configure the interface'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

Example

Enable the automatic ipv6 address configuration function to obtain IPv6 address through the RA message on VLAN interface 1:

T3700G-52TQ(config)# interface vlan 1

T3700G-52TQ(config-if)# ipv6 address ra

50.6 ipv6 address eui-64

Description

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

Syntax

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

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

Parameter

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

Configuration Mode

Interface Configuration Mode

Example

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

T3700G-52TQ(config)# interface vlan 1

T3700G-52TQ(config-if)# ipv6 address 3ffe::/64 **eui-64**

50.7 ipv6 address

Description

This command is used to manually configure a global IPv6 address on the interface. The interface type includes: routed port and VLAN 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

Example

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

```
T3700G-52TQ(config)# interface vlan 1
T3700G-52TQ(config-if)# ipv6 address 3001::1/64
```

50.8 ipv6 gateway

Description

This command is used to configure an IPv6 gateway for the interface. The interface type includes: routed port and VLAN interface. To remove the IPv6 gateway, please use **no ipv6 address** command.

Syntax

ipv6 gateway *ipv6-addr*

no ipv6 gateway

Parameter

ipv6-addr —— The IPv6 address of the gateway.

Configuration Mode

Interface Configuration Mode

Example

Configure the IPv6 gateway address as 3001::1234 for VLAN interface 1:

```
T3700G-52TQ(config)# interface vlan 1
T3700G-52TQ(config-if)# ipv6 gateway 3001::1234
```

50.9 show ipv6 interface

Description

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

Syntax

show ipv6 interface

Command Mode

Privileged EXEC Mode and Any Configuration Mode

Example

Display the ipv6 information of the management interface:

```
T3700G-52TQ(config)# show ipv6 interface
```

Chapter 51 Management Port Commands

51.1 management-port protocol

Description

This **management-port protocol** command is used to specify the management port configuration protocol.

Syntax

management-port protocol { dhcp | none }

Parameter

dhcp —— Specify the management port configuration protocol as DHCP.

none ——Specify the management port configuration protocol as None.

Command Mode

Global Configuration Mode

Example

Specify the management port configuration protocol as DHCP:

T3700G-52TQ(config)# management-port protocol dhcp

51.2 management-port protocol dhcp client-id

Description

This **management-port protocol dhcp client-id** command is used to enable the management port to carry with client ID option (Option 61) when the management port obtains an IP address from the DHCP server. The client ID option can be the unique identifier for a DHCP client. To disable the management port to carry with client ID option (Option 61), please use the **no management-port protocol dhcp client-id** command.

Syntax

management-port protocol dhcp client-id

no management-port protocol dhcp client-id

Command Mode

Global Configuration Mode

Example

Enable the management port to carry with client ID option (Option 61) when the management port obtains an IP address from the DHCP server:

T3700G-52TQ(config)# management-port protocol dhcp client-id

51.3 management-port ip

Description

This **management-port ip** command is used to configure the ip address of the management port if the management port configuration protocol is None.

Syntax

management-port ip *ip-address subnet-mask* [*gateway*]

no management-port ip

Parameter

ip-address —— Specify the ip address of the management port.

subnet-mask —— Specify the subnet mask of the IP address.

gateway —— Specify the gateway address of the management port.

Command Mode

Global Configuration Mode

Example

Specify the ip address of the management port as 192.168.10.1,and the subnet mask as 255.255.255.0:

T3700G-52TQ(config)# management-port ip 192.168.10.1 255.255.255.0

51.4 management-port ipv6 enable

Description

This **management-port ipv6 enable** command is used to enable the IPv6 function on the management port. To disable the IPv6 function on the management port, please use **no management-port ipv6 enable** command.

Syntax

management-port ipv6 enable

no management-port ipv6 enable

Command Mode

Global Configuration Mode

Example

Enable the IPv6 function on the management port:

T3700G-52TQ(config)# management-port ipv6 enable

51.5 management-port ipv6 address

Description

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

Syntax

management-port ipv6 address *ipv6-addr*

no management-port ipv6 address *ipv6-addr*

Parameter

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

Configuration Mode

Global Configuration Mode

Example

Configure the global IPv6 address 3001::1/64 on the management port:

T3700G-52TQ(config)# management-port ipv6 address 3001::1/64

51.6 management-port ipv6 address eui-64

Description

This **management-port ipv6 address** *ipv6-addr* **eui-64** command is used to manually configure a global IPv6 address with an extended unique identifier (EUI) in the low-order 64 bits on the management port. 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 management port, please use the **no management-port ipv6 address eui-64** command.

Syntax

management-port ipv6 address *ipv6-addr* **eui-64**

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

Parameter

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

Configuration Mode

Global Configuration Mode

Example

Configure an EUI-64 global IPv6 address on the management port with the network prefix 3ffe::/64:

```
T3700G-52TQ(config)# ipv6 address 3ffe::/64 eui-64
```

51.7 management-port ipv6 gateway

Description

This **management-port ipv6 gateway** command is used to configure the ipv6 gateway address of the management port. To remove the IPv6 gateway address from the management port, please use the **no management-port ipv6 gateway** command.

Syntax

management-port ipv6 gateway *ipv6-addr*

no management-port ipv6 gateway

Parameter

ipv6-addr —— Specify the ipv6 gateway address of the management port.

Command Mode

Global Configuration Mode

Example

Specify the ip address of the management port as 192.168.10.1,and the subnet mask as 255.255.255.0:

T3700G-52TQ(config)# management-port ip 192.168.10.1 255.255.255.0

51.8 management-port ipv6 address dhcp

Description

The **management-port ipv6 address dhcp** command is used to enable the DHCPv6 Client function. When this function is enabled, the management port 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 management-port ipv6 address dhcp** command.

Syntax

management-port ipv6 address dhcp

no management-port ipv6 address dhcp

Configuration Mode

Global Configuration Mode

Example

Enable the DHCPv6 Client function on the management port:

T3700G-52TQ(config)# management-port ipv6 address dhcp

51.9 management-port ipv6 address autoconfig

Description

This **management-port ipv6 address autoconfig** command is used to enable the automatic configuration of the ipv6 global address on the management port. To disable the automatic configuration of the ipv6 global

address on the management port, please use **no management-port ipv6 address autoconfig** command.

Syntax

management-port ipv6 address autoconfig

no management-port ipv6 address autoconfig

Configuration Mode

Global Configuration Mode

Example

Enable the automatic configuration of the ipv6 global address on the management port:

```
T3700G-52TQ(config)# management-port ipv6 address autoconfig
```

Chapter 52 Auto VoIP Commands

The Auto VoIP feature is used to prioritize the transmission of voice traffic. Voice over Internet Protocol (VoIP) enables telephone calls over a data network, and the Auto VoIP feature helps provide a classification mechanism for voice packets. When Auto VoIP is configured on a port that receives both voice and data traffic, this feature can help ensure that the sound quality of an IP phone does not deteriorate when data traffic on the port is heavy.

52.1 auto-voip

Description

The **auto-voip** command is used to enable the Auto VoIP function globally.

To disable the Auto VoIP function, use **no auto-voip** command.

Syntax

auto-voip

no auto-voip

Command Mode

Global Configuration Mode

Example

Enable the Auto VoIP function globally:

```
T3700G-52TQ(config)# auto-voip
```

52.2 auto-voip

Description

The **auto-voip** command is used to specify Auto VoIP VLAN ID for ports.

Syntax

auto-voip *vlan-id*

no auto-voip

Parameter

vlan-id——Specify the Auto VoIP VLAN ID.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Set Auto VoIP VLAN 3 for port 3:

```
T3700G-52TQ(config)# interface gigabitEthernet 1/0/3
T3700G-52TQ(config-if)# auto-voip 3
```

52.3 auto-voip dot1p

Description

The **auto-voip dot1p** command is used to set the 802.1p priority of Auto VoIP on specified ports.

Syntax

auto-voip dot1p *dot1p*

Parameter

dot1p——Set the 802.1p priority of Auto VoIP on specified ports. It ranges from 0 to 7.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Set Auto VoIP VLAN 3 for port 3:

```
T3700G-52TQ(config)# interface gigabitEthernet 1/0/3
T3700G-52TQ(config-if)# auto-voip 3
```

52.4 auto-voip dscp

Description

The **auto-voip dscp** command is used to set the DSCP value of Auto VoIP on specified ports.

Syntax

auto-voip dscp *value*

Parameter

value——Set the DSCP value of Auto VoIP on specified ports. It ranges from 0 to 64. By default, it is 0.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Set DSCP value of Auto VoIP on port 3 as 33:

T3700G-52TQ(config)# interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)# auto-voip dscp 33

52.5 auto-voip untagged

Description

The **auto-voip untagged** command is used to instruct voice devices to send untagged packets.

Syntax

auto-voip untagged

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Instruct voice devices that are connected to port 3 to send untagged packets:

T3700G-52TQ(config)# interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)# auto-voip untagged

52.6 auto-voip none

Description

The **auto-voip none** command is used to instruct voice devices to send untagged packets based on settings of themselves.

Syntax

auto-voip none

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Instruct voice devices that are connected to port 3 to send untagged packets based on settings of themselves:

T3700G-52TQ(config)# interface gigabitEthernet 1/0/3

T3700G-52TQ(config-if)# auto-voip none

52.7 auto-voip auth

Description

The **auto-voip auth** command is used to allow packets to be sent on unauthorized ports or not.

Syntax

auto-voip auth { disable | enable }

Parameter

enable——Packets are permitted on unauthorized Auto VoIP ports.

disable——Packets are denied on unauthorized Auto VoIP ports.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Allow packets to be sent on unauthorized Auto VoIP port 3:

```
T3700G-52TQ(config)# interface gigabitEthernet 1/0/3
T3700G-52TQ(config-if)# auto-voip auth enable
```

52.8 auto-voip priority

Description

The **auto-voip data priority** command is used to configure the switch to trust the CoS value in the arriving packet or not.

Syntax

auto-voip data priority { trust | untrust }

Parameter

trust——The switch trusts the CoS value in the arriving packet.

untrust——The switch ignores the CoS value in the arriving packet.

Command Mode

Interface Configuration Mode (interface gigabitEthernet / interface range gigabitEthernet)

Example

Configure the switch to trust the CoS value in the arriving packet on port 3:

```
T3700G-52TQ(config)# interface gigabitEthernet 1/0/3
T3700G-52TQ(config-if)# auto-voip data priority trust
```

52.9 show auto-voip

Description

The **show auto-voip** command is used to display the Auto VoIP configuration information.

Syntax

show auto-voip [interface]

Parameter

interface——Displays the Auto VoIP configuration information of ports. When no parameter is entered, displays the global Auto VoIP configuration information.

Command Mode

Privileged EXEC Mode and any Configuration Mode

Example

Displays the global Auto VoIP configuration information:

```
T3700G-52TQ(config)# show auto-voip
```