



























































































## user max-number

### Description

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

### Syntax

**user max-number** *admin-num* *guest-num*

**no user max-number**

### Parameter

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

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

### Command Mode

Global Configuration Mode

### Example

Configure the number of the users as Admin and Guest logging on as 5 and 3:

```
TL-SL2428(config)# user max-num 5 3
```

## user idle-timeout

### Description

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

### Syntax

**user idle-timeout** *minutes*

**no user idle-timeout**

## Parameter

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

## Command Mode

Global Configuration Mode

## Example

Configure the timeout time of the switch as 15 minutes:

```
TL-SL2428(config)# user idle-timeout 15
```

# show user account-list

## Description

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

## Syntax

```
show user account-list
```

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the information of the current users:

```
TL-SL2428(config)# show user account-list
```

# show user configuration

## Description

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

## Syntax

```
show user configuration
```

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the security configuration information of the users:

```
TL-SL2428(config)# show user configuration
```

# Chapter 7 System Log Commands

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

## logging buffer

### Description

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

### Syntax

**logging buffer** *level*

**no logging buffer**

### Parameter

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

### Command Mode

Global Configuration Mode

### Example

Set the severity level as 6:

```
TL-SL2428(config)# logging buffer 6
```

## logging file flash

### Description

The **logging file flash** command is used to configure the level and the status of the log file input. To disable the logging file flash function, please use **no logging**

**file flash** command. The log file indicates the flash sector for saving system log. The information in the log file will not be lost after the switch is restarted and can be got by the [show logging flash](#) command. This command does not apply to TL-SL2452.

## Syntax

**logging file flash** *level*

**no logging file flash**

## Parameter

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

## Command Mode

Global Configuration Mode

## Example

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

```
TL-SL2428(config)# logging file flash 7
```

# logging file flash (for TL-SL2452)

## 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. This command only applies to TL-SL2452.

## Syntax

**logging file flash**

**no logging file flash**

## Command Mode

Global Configuration Mode

## Example

Enable the log file flash function:

```
TL-SL2452(config)#logging file flash
```

## logging file flash frequency

### Description

The **logging file flash frequency** command is used to specify the frequency to synchronize the system log file in the log buffer to the flash. To resume the default synchronizing frequency, please use the **no logging file flash frequency** command. This command only applies to TL-SL2452.

### Syntax

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

```
no logging file flash frequency
```

### Parameter

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

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

### Command Mode

Global Configuration Mode

### Example

Specify the log file synchronization frequency as 10 hours:

```
TL-SL2452(config)#logging file flash frequency 10
```

## logging file flash level

### Description

The **logging file flash level** command is used to specify the system log message severity level. Messages with a severity level equal to or higher than this value will be stored to the flash. To restore to the default level, please use

**no logging file flash level** command. This command only applies to TL-SL2452.

### Syntax

**logging file flash level** *level*  
**no logging file flash level**

### Parameter

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

### Command Mode

Global Configuration Mode

### Example

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

```
TL-SL2452(config)#logging file flash level 7
```

## clear logging

### Description

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

### Syntax

**clear logging** [ *buffer* | *flash* ]

### Parameter

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

### Command Mode

Global Configuration Mode

### Example

Clear the information in the log file:

```
TL-SL2428(config)# clear logging buffer
```

# logging host index

## Description

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

## Syntax

**logging host index** *idx* *host-ip* *level*

**no logging host index** *idx*

## Parameter

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

*host-ip* —— The IP for the log host.

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

## Command Mode

Global Configuration Mode

## Example

Enable log host 2 and set its IP address as 192.168.0.148, the level 5:

```
TL-SL2428(config)# logging host index 2 192.168.0.148 5
```

# show logging local-config

## Description

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

## Syntax

**show logging local-config**



## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the configuration of the Local Log:

```
TL-SL2428(config)# show logging local-config
```

# show logging loghost

## Description

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

## Syntax

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

## Parameter

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

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the configuration of the log host 2:

```
TL-SL2428(config)# show logging loghost 2
```

# show logging buffer

## Description

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

## Syntax

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

## Parameter

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

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

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

```
TL-SL2428(config)# show logging buffer level 5
```

# show logging flash

## Description

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

## Syntax

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

## Parameter

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

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

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

```
TL-SL2428(config)# show logging flash level 3
```

## Chapter 8 SSH Commands

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

### ip ssh server

#### Description

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

#### Syntax

**ip ssh server**

**no ip ssh server**

#### Command Mode

Global Configuration Mode

#### Example

Enable the SSH function:

```
TL-SL2428(config)# ip ssh server
```

### ip ssh version

#### Description

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

#### Syntax

**ip ssh version { v1 | v2 }**

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

#### Parameter

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

#### Command Mode

Global Configuration Mode

## Example

Enable SSH v2:

```
TL-SL2428(config)# ip ssh version v2
```

# ip ssh timeout

## Description

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

## Syntax

**ip ssh timeout** *value*

**no ip ssh timeout**

## Parameter

*value* — The Idle-timeout time. During this period, the system will automatically release the connection if there is no operation from the client. By default, this value is 120. For TL-SL2210, it ranges from 1 to 999 in seconds; and for TL-SL2218/ TL-SL2428/ TL-SL2452, it ranges from 1 to 120 in seconds.

## Command Mode

Global Configuration Mode

## Example

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

```
TL-SL2428(config)# ip ssh timeout 100
```

# ip ssh max-client

## Description

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

## Syntax

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

**no ip ssh max-client**

## Parameter

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

## Command Mode

Global Configuration Mode

## Example

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

```
TL-SL2428(config)# ip ssh max-client 3
```

# ip ssh download

## Description

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

## Syntax

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

## Parameter

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

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

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

## Command Mode

Global Configuration Mode

## Example

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

```
TL-SL2428(config)# ip ssh download v1 ssh-key ip-address 192.168.0.148
```

# show ip ssh

## Description

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

## Syntax

```
show ip ssh
```

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the global configuration of SSH:

```
TL-SL2428(config)# show ip ssh
```

## Chapter 9 SSL Commands

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

### ip http secure-server

#### Description

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

#### Syntax

**ip http secure-server**  
**no ip http secure-server**

#### Command Mode

Global Configuration Mode

#### Example

Enable the SSL function:

```
TL-SL2428(config)# ip http secure-server
```

### ip http secure-server download certificate

#### Description

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

#### Syntax

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

## Parameter

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

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

## Command Mode

Global Configuration Mode

## Example

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

```
TL-SL2428(config)# ip http secure-server download certificate ssl-cert  
ip-address 192.168.0.146
```

# ip http secure-server download key

## Description

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

## Syntax

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

## Parameter

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

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

## Command Mode

Global Configuration Mode

## Example

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

```
TL-SL2428(config)# ip http secure-server download key ssl-key ip-address  
192.168.0.146
```



# show ip http secure-server

## Description

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

## Syntax

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

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the global configuration of SSL:

```
TL-SL2428(config)# show ip http secure-server
```

# Chapter 10 MAC Address Commands

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

## mac address-table static

### Description

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

### Syntax

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

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

### Parameter

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

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

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

### Command Mode

Global Configuration Mode

### Example

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

```
TL-SL2428(config)# mac address-table static mac 00:02:58:4f:6c:23 vid 1  
interface fastEthernet 1/0/1
```

## mac address-table aging-time

### Description

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

### Syntax

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

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

### Parameter

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

### Command Mode

Global Configuration Mode

### Example

Configure the aging time as 500 seconds:

```
TL-SL2428(config)# mac address-table aging-time 500
```

## mac address-table filtering

### Description

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

### Syntax

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

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

### Parameter

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

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

## Command Mode

Global Configuration Mode

## Example

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

```
TL-SL2428(config)# mac address-table filtering mac 00:1e:4b:04:01:5d vid 1
```

# mac address-table max-mac-count

## Description

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

## Syntax

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

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

## Parameter

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

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

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

## Command Mode

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

## Example

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

```
TL-SL2428(config)# interface fastEthernet 1/0/1
TL-SL2428(config-if)# mac address-table max-mac-count max-number 30
mode static status enable
```

# show mac address-table address

## Description

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

## Syntax

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

## Parameter

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

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the information of all address entries:

```
TL-SL2428(config)# show mac address-table address all
```

# show mac address-table aging-time

## Description

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

## Syntax

```
show mac address-table aging-time
```

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the Aging Time of the MAC address:

```
TL-SL2428(config)# show mac address-table aging-time
```

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

## Description

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

## Syntax

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

## Parameter

*port* — The Fast/Gigabit Ethernet port number.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the security configuration of all Gigabit Ethernet ports:

```
TL-SL2428(config)# show mac address-table max-mac-count interface  
gigabitEthernet
```

Display the security configuration of port 1:

```
TL-SL2428(config)# show mac address-table max-mac-count interface  
fastEthernet 1/0/1
```

# show mac address-table interface

## Description

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

## Syntax

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

## Parameter

*port* — The Ethernet port number.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the address configuration of port 1:

```
TL-SL2428(config)# show mac address-table interface fastEthernet 1/0/1
```

# show mac address-table mac-num

## Description

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

## Syntax

```
show mac address-table mac-num
```

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the total amount of MAC address table:

```
TL-SL2428(config)# show mac address-table mac-num
```

# show mac address-table mac

## Description

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

## Syntax

```
show mac address-table mac mac-addr
```

## Parameter

*mac-addr* ——The specified MAC address.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

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

```
TL-SL2428(config)#show mac address-table mac 00:00:00:23:00:00
```

# show mac address-table vlan

## Description

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

## Syntax

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

## Parameter

*vid* ——The specified VLAN id.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the MAC address configuration of vlan 1:

```
TL-SL2428(config)# show mac address-table vlan 1
```



# Chapter 11 System Commands

System Commands can be used to configure the System information and System IP, reboot and reset the switch, upgrade the switch system and other operations.

## 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, MM/DD/YYYY-HH:MM:SS

### Command Mode

Global Configuration Mode

### Example

Configure the system mode as manual, and the time is 12/20/2010 17:30:35

```
TL-SL2428(config)# system-time manual 12/20/2010-17:30:35
```

## system-time ntp

### Description

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

### Syntax

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

### Parameter

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

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

UTC-12:00 — TimeZone for International Date Line West.

UTC-11:00 — TimeZone for Coordinated Universal Time-11.

UTC-10:00 — TimeZone for Hawaii.

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

## Command Mode

Global Configuration Mode

## Example

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

```
TL-SL2428(config)# system-time ntp UTC-12:00 133.100.9.2 139.79.100.163
11
```

# system-time dst predefined

## Description

The **system-time dst predefined** command is used to select a daylight saving time configuration from the predefined mode. The configuration can be used recurrently. To disable DST function, please use **no system-time dst** command.

## Syntax

```
system-time dst predefined {USA | Australia | Europe| New-Zealand}
```

```
no system-time dst
```

## Parameter

USA | Australia | Europe | New-Zealand — The mode of daylight saving time. There are 4 options which are USA, Australia, Europe and New-Zealand respectively. The default value is Europe.

Following are the time ranges of each option:

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

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

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

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

## Command Mode

Global Configuration Mode

## Example

Configure the daylight saving time as USA standard:

```
TL-SL2428(config)#system-time dst predefined USA
```

# system-time dst date

## Description

The **system-time dst date** command is used to configure the one-off daylight saving time. The start date is in the current year by default. The time range of the daylight saving time must be shorter than one year, but you can configure it to span years. To disable the DST function, please use **no system-time dst** command.

## Syntax

**system-time dst date** {*smonth*} {*sday*} {*stime*} {*emonth*} {*eday*} {*etime*} [*offset*]  
**no system-time dst**

## Parameter

*smonth* — The start month of the daylight saving time. There are 12 values showing as follows: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec.

*sday* — The start day of the daylight saving time, ranging from 1 to 31. Here you should show special attention to February and the differences between a solar month and a lunar month.

*stime* — The start moment of the daylight saving time, HH:MM.

*emonth* — The end month of the daylight saving time. There are 12 values showing as follows: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec.

*eday* — The end day of the daylight saving time, ranging from 1 to 31. Here you should show special attention to February and the differences between a solar month and a lunar month.

*etime* — The end moment of the daylight saving time, HH:MM.

*offset* — The number of minutes to add during the daylight saving time. 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 daylight saving time from zero clock, Apr 1st to zero clock Oct 1st and the offset is 30 minutes:

```
TL-SL2428(config)# system-time dst date Apr 1 00:00 Oct 1 00:00 30
```

# system-time dst recurring

## Description

The **system-time dst recurring** command is used to configure the recurring daylight saving time. It can be configured spanning years. To disable DST function, please use **no system-time dst** command.

## Syntax

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

```
no system-time dst
```

## Parameter

*sweek*—The start week of the daylight saving time. There are 5 values showing as follows: first, second, third, fourth, last.

*sday* — The start day of the daylight saving time. There are 7 values showing as follows: Sun, Mon, Tue, Wed, Thu, Fri, Sat.

*smonth* — The start month of the daylight saving time. There are 12 values showing as follows: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec.

*stime* — The start moment of the daylight saving time, HH:MM.

*eweeek* —The end week of the daylight saving time. There are 5 values showing as follows: first, second, third, fourth, last.

*eday* — The end day of the daylight saving time. There are 5 values showing as follows: Sun, Mon, Tue, Wed, Thu, Fri, Sat.

*emonth* — The end month of the daylight saving time. There are 12 values showing as following: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec.

*etime* — The end moment of the daylight saving time, HH:MM.

*offset* — The number of minutes to add during the daylight saving time. It is 60 minutes by default.

## Command Mode

Global Configuration Mode

## Example

Configure the daylight saving time from 2:00am, the first Sunday of May to 2:00am, the last Sunday of Oct and the offset is 45 minutes:

```
TL-SL2428(config)# system-time dst recurring first Sun May 02:00 last Sun
Oct 02:00 45
```

## hostname

### Description

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

### Syntax

```
hostname hostname
```

```
no hostname
```

### Parameter

*hostname* — System Name. The length of the name ranges from 1 to 32 characters. By default, it is the device name, for example “TL-SL2428”.

### Command Mode

Global Configuration Mode

### Example

Configure the system name as TPLINK:

```
TL-SL2428(config)# hostname TPLINK
```

## location

### Description

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

### Syntax

```
location location
```

```
no location
```

### Parameter

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

### Command Mode

Global Configuration Mode

## Example

Configure the system location as SHENZHEN:

```
TL-SL2428(config)# location SHENSHEN
```

## contact-info

### Description

The **contact-info** command is used to configure the system contact information.

To clear the system contact information, please use **no contact-info** command.

### Syntax

```
contact-info contact_info
```

```
no contact-info
```

### Parameter

*contact\_info* —— Contact Information. It consists of 32 characters at most. It is “www.tp-link.com” by default.

### Command Mode

Global Configuration Mode

### Example

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

```
TL-SL2428(config)# contact-info www.tp-link.com
```

## ip management-vlan

### Description

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

### Syntax

```
ip management-vlan vlan-id
```

### Parameter

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

### Command Mode

Global Configuration Mode

### Example

Set the VLAN 6 as IP management VLAN:

```
TL-SL2428(config)# ip management-vlan 6
```

## ip address

### Description

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

### Syntax

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

```
no ip address
```

### Parameter

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

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

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

### Command Mode

Interface Configuration Mode (interface vlan)

### Example

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

```
TL-SL2428(config)# interface vlan 1
```

```
TL-SL2428(config-if)# ip address 192.168.0.69 255.255.255.0
```

## ip address-alloc dhcp

### Description

The **ip address-alloc dhcp** command is used to enable the DHCP Client function. When this function is enabled, the switch will obtain IP from DHCP server. This command should be configured in the Interface Configuration Mode of the management VLAN.

### Syntax

```
ip address-alloc dhcp
```



## Command Mode

Interface Configuration Mode (interface vlan)

## Example

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

```
TL-SL2428(config)# interface vlan 1
TL-SL2428(config-if)# ip address-alloc dhcp
```

# ip address-alloc bootp

## Description

The **ip address-alloc bootp** command is used to enable the BOOTP Protocol. When the BOOTP Protocol is enabled, the switch will obtain IP address from BOOTP Server. This command should be configured in the Interface Configuration Mode of the management VLAN.

## Syntax

**ip address-alloc bootp**

## Command Mode

Interface Configuration Mode (interface vlan)

## Example

Enable the BOOTP Protocol to obtain IP address from BOOTP Server when the management VLAN of the switch is VLAN1:

```
TL-SL2428(config)# interface vlan 1
TL-SL2428(config-if)# ip address-alloc bootp
```

# reset

## Description

The **reset** command is used to reset the switch's software. After resetting, all configuration of the switch will restore to the factory defaults and your current settings will be lost.

## Syntax

**reset**

## Command Mode

Privileged EXEC Mode

## Example

Reset the software of the switch:

```
TL-SL2428# reset
```

# reboot

## Description

The **reboot** command is used to reboot the switch. To avoid damage, please don't turn off the device while rebooting.

## Syntax

```
reboot
```

## Command Mode

Privileged EXEC Mode

## Example

Reboot the switch:

```
TL-SL2428# reboot
```

# copy running-config startup-config

## Description

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

## Syntax

```
copy running-config startup-config
```

## Command Mode

Privileged EXEC Mode

## Example

Save current settings:

```
TL-SL2428# copy running-config startup-config
```

## copy startup-config tftp

### Description

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

### Syntax

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

### Parameter

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

*name* — Specify the name for the configuration file which would be backup.

### Command Mode

Privileged EXEC Mode

### Example

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

```
TL-SL2428# copy startup-config tftp ip-address 192.168.0.148 filename  
config
```

## copy tftp startup-config

### Description

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

### Syntax

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

### Parameter

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

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

### Command Mode

Privileged EXEC Mode

### Example

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

```
TL-SL2428# copy tftp startup-config ip-address 192.168.0.148 filename
config
```

## firmware upgrade

### Description

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

### Syntax

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

### Parameter

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

*name* — Specify the name for the firmware file.

### Command Mode

Privileged EXEC Mode

### Example

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

```
TL-SL2428# firmware upgrade ip-address 192.168.0.148 filename
firmware.bin
```

## ping

### Description

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

### Syntax

```
ping {ip_addr} [-n count] [-l count] [-i count]
```

### Parameter

*ip\_addr* — The IP address of the destination node for ping test.

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

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

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

### Command Mode

User EXEC Mode and Privileged EXEC Mode

### Example

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

```
TL-SL2428# ping 192.168.0.131 -n 8 -l 512
```

## tracert

### Description

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

### Syntax

```
tracert {ip-addr} [maxHops]
```

### Parameter

*ip-addr* — The IP address of the destination device.

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

### Command Mode

User EXEC Mode and Privileged EXEC Mode

### Example

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

```
TL-SL2428# tracert 192.168.0.131 20
```

# loopback interface

## Description

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

## Syntax

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

## Parameter

*port* — The Fast/Gigabit Ethernet port number.

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

## Command Mode

User EXEC Mode and Privileged EXEC Mode

## Example

Do an internal-type loopback test for Gigabit Ethernet port 27:

```
TL-SL2428# loopback interface gigabitEthernet 1/0/27 internal
```

Do an external-type loopback test for Gigabit Ethernet port 27:

```
TL-SL2428# loopback interface gigabitEthernet 1/0/27 external
```

# show system-info

## Description

The **show system-info** command is used to display System Description, Device Name, Device Location, System Contact, Hardware Version, Firmware Version, System Time, Run Time and so on.

## Syntax

**show system-info**

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the system information:

```
TL-SL2428# show system-info
```

## show running-config

### Description

The **show running-config** command is used to display the current operating configuration of the system or a specified port.

### Syntax

```
show running-config [ interface { fastEthernet port | gigabitEthernet port } ]
```

### Parameter

*port* — The Fast/Gigabit Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the system information:

```
TL-SL2428# show running-config
```

## show system-time

### Description

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

### Syntax

```
show system-time
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the time information of the switch

```
TL-SL2428# show system-time
```

## show system-time dst

### Description

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

### Syntax

```
show system-time dst
```

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the DST time information of the switch

```
TL-SL2428# show system-time dst
```

# show system-time ntp

## Description

The **show system-time ntp** command is used to display the NTP mode configuration information.

## Syntax

```
show system-time ntp
```

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the NTP mode configuration information of the switch:

```
TL-SL2428# show system-time ntp
```

# 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 port 3:

```
TL-SL2428# show cable-diagnostics interface fastEthernet 1/0/3
```

# Chapter 12 Ethernet Configuration Commands

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

## interface fastEthernet

### Description

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

### Syntax

**interface fastEthernet** *port*

### Parameter

*port* — The Fast/Gigabit Ethernet port number.

### Command Mode

Global Configuration Mode

### Example

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

```
TL-SL2428(config)#interface fastEthernet 1/0/2
```

## interface range fastEthernet

### Description

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

### Syntax

**interface range fastEthernet** *port-list*

### Parameter

*port-list* — The list of Fast Ethernet ports.

### Command Mode

Global Configuration Mode

## User Guidelines

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

## Example

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

```
TL-SL2428(config)#interface range fastEthernet 1/0/1-3,1/0/6-7,1/0/9
```

## interface gigabitEthernet

### Description

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

### Syntax

```
interface gigabitEthernet port
```

### Parameter

*port* — The Fast/Gigabit Ethernet port number.

### Command Mode

Global Configuration Mode

### Example

To enter the Interface gigabitEthernet Configuration Mode and configure Gigabit Ethernet port 27:

```
TL-SL2428(config)#interface gigabitEthernet 1/0/27
```

## 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 effect the execution on the other ports at all if the command results in an error on one port.

## Example

To enter the Interface Range gigabitEthernet Configuration Mode, and configure Gigabit Ethernet ports 27 and 28 at the same time by adding them to one port-list:

```
TL-SL2428(config)# interface range gigabitEthernet 1/0/27-28
```

# description

## Description

The **description** command is used to add a description to the Ethernet port. To clear the description of the corresponding port, please use **no description** command.

## Syntax

**description** *string*

**no description**

## Parameter

*string* — Content of a port description, ranging from 1 to 16 characters.

## Command Mode

Interface Configuration Mode ((interface fastEthernet / interface gigabitEthernet)

## Example

Add a description Port #5 to port 5:

```
TL-SL2428(config)# interface fastEthernet 1/0/5
```

```
TL-SL2428(config-if)# description Port#5
```

# shutdown

## Description

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

## Syntax

**shutdown**

**no shutdown**

## Command Mode

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

## Example

Disable port 3:

```
TL-SL2428(config)# interface fastEthernet 1/0/3
```

```
TL-SL2428(config-if)# shutdown
```

# flow-control

## Description

The **flow-control** command is used to enable the flow-control function for a port. To disable the flow-control function for this corresponding port, please use **no flow-control** command. With the flow-control function enabled, the Ingress Rate and Egress Rate can be synchronized to avoid packet loss in the network.

## Syntax

**flow-control**

**no flow-control**

## Command Mode

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

## Example

Enable the flow-control function for port 3:

```
TL-SL2428(config)# interface fastEthernet 1/0/3
```

```
TL-SL2428(config-if)# flow-control
```

## media-type

### Description

The **media-type** command is used to configure the media type of Combo port. For a Combo port, the media type should be configured before you set its speed and mode. This command does not apply to TL-SL2210/TL-SL2452 since TL-SL2210/TL-SL2452 has no Combo port.

### Syntax

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

### Parameter

rj45 | sfp — Media type.

### Command Mode

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

### Example

Configure the media type of Combo port 27T as “SFP”:

```
TL-SL2428(config)# interface gigabitEthernet 1/0/27
TL-SL2428 (config-if)# media-type sfp
```

## duplex

### Description

The **duplex** command is used to configure the Duplex Mode for an Ethernet port. To return to the default configuration, please use **no duplex** command.

### Syntax

```
duplex { full | half }
no duplex
```

### Parameter

full | half — The duplex mode of the Ethernet port. There are two options: full-duplex mode (default) and half-duplex mode.

### Command Mode

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

### Example

Configure the Duplex Mode as full-duplex for port 3:

```
TL-SL2428(config)# interface fastEthernet 1/0/3
TL-SL2428(config-if)# duplex full
```

## speed

### Description

The **speed** command is used to configure the Speed Mode for an Ethernet port. To return to the default configuration, please use **no speed** command.

### Syntax

```
speed { 10 | 100 | 1000 | auto }
no speed
```

### Parameter

10 | 100 | 1000 | auto — The speed mode of the Ethernet port. There are four options: 10Mbps, 100Mbps, 1000Mbps and Auto negotiation mode (default).

### Command Mode

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

### Example

Configure the Speed Mode as 100Mbps for port 3:

```
TL-SL2428(config)# interface fastEthernet 1/0/3
TL-SL2428(config-if)# speed 100
```

## storm-control broadcast

### Description

The **storm-control broadcast** command is used to enable the broadcast control function. To disable the broadcast control function, please use **no storm-control broadcast** command. Broadcast control function allows the switch to filter broadcast in the network. If the transmission rate of the broadcast packets exceeds the set bandwidth, the packets will be automatically discarded to avoid network broadcast storm.

### Syntax

```
storm-control broadcast [rate rate]
no storm-control broadcast
```

## Parameter

*rate* — Specify the bandwidth for receiving broadcast packets on the port. The packet traffic exceeding the bandwidth will be discarded. By default, the value is “128K”.

## Command Mode

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

## Example

Enable the broadcast control function for port 5:

```
TL-SL2428(config)# interface fastEthernet 1/0/5
TL-SL2428(config-if)# storm-control broadcast
```

# storm-control multicast

## Description

The **storm-control multicast** command is used to enable the multicast control function. To disable the multicast control function, please use **no storm-control multicast** command. Multicast control function allows the switch to filter multicast in the network. If the transmission rate of the multicast packets exceeds the set bandwidth, the packets will be automatically discarded to avoid network broadcast storm.

## Syntax

```
storm-control multicast [rate rate]
no storm-control multicast
```

## Parameter

*rate* — Select the bandwidth for receiving multicast packets on the port. The packet traffic exceeding the bandwidth will be discarded. By default, the value is “128K”.

## Command Mode

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

## Example

Enable the multicast control function for port 5:

```
TL-SL2428(config)# interface fastEthernet 1/0/5
TL-SL2428(config-if)# storm-control multicast
```



## storm-control unicast

### Description

The **storm-control unicast** command is used to enable the unicast control function. To disable the unicast control function, please use **no storm-control unicast** command. Unicast control function allows the switch to filter UL frame in the network. If the transmission rate of the UL frames exceeds the set bandwidth, the packets will be automatically discarded to avoid network broadcast storm.

### Syntax

```
storm-control unicast [rate rate]  
no storm-control unicast
```

### Parameter

*rate* — Select the bandwidth for receiving UL-Frame on the port. The packet traffic exceeding the bandwidth will be discarded. By default, the value is “128K”.

### Command Mode

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

### Example

Enable the unicast control function for port 5:

```
TL-SL2428(config)# interface fastEthernet 1/0/5  
TL-SL2428(config-if)# storm-control unicast
```

## bandwidth

### Description

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

### Syntax

```
bandwidth {[ ingress ingress-rate ] [ egress egress-rate ]}  
no bandwidth { all | ingress | egress }
```

## Parameter

*ingress-rate* — — Specify the bandwidth for receiving packets. Range: 1-1024000 for the gigaport.

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

## Command Mode

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

## Example

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

```
TL-SL2428(config)# interface fastEthernet 1/0/5
TL-SL2428(config-if)# bandwidth ingress 5120 egress 1024
```

# clear counters

## Description

The **clear counters** command is used to clear the statistic information of all the Ethernet ports.

## Syntax

```
clear counters
```

## Command Mode

Global Configuration Mode

## Example

Clear the statistic information of all ports

```
TL-SL2428(config)# clear counters
```

# show interface status

## Description

The **show interface status** command is used to display the connective-status of an Ethernet port.

## Syntax

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





















## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the configuration of QoS for port 5:

```
TL-SL2428# show qos interface fastEthernet 1/0/5
```

Display the configuration of QoS for ports 1-4:

```
TL-SL2428# show qos interface range fastEthernet 1/0/1-4
```

## show qos cos-map

### Description

The **show qos cos-map** command is used to display the configuration of IEEE 802.1P priority and the mapping relation between IEEE 802.1P priority and tc-id.

### Syntax

```
show qos cos-map
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration of IEEE 802.1P priority and the mapping relation between IEEE 802.1P priority and tc-id:

```
TL-SL2428# show qos cos-map
```

## show qos dscp-map

### Description

The **show qos dscp-map** command is used to display the configuration of DSCP Priority.

### Syntax

```
show qos dscp-map
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration of DSCP Priority:

```
TL-SL2428# show qos dscp-map
```

## show qos queue mode

### Description

The **show qos queue mode** command is used to display the schedule rule of the egress queues.

### Syntax

```
show qos queue mode
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the schedule rule of the egress queues:

```
TL-SL2428# show qos queue mode
```

## show qos status

### Description

The **show qos status** command is used to display the status of IEEE 802.1P priority and DSCP priority.

### Syntax

```
show qos status
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the status of IEEE 802.1P priority and DSCP priority:

```
TL-SL2428# show qos status
```

# Chapter 14 Port Mirror Commands

Port Mirror refers to the process of forwarding copies of packets from one port to a monitoring port. Usually, the monitoring port is connected to data diagnose device, which is used to analyze the monitored packets for monitoring and troubleshooting the network.

## monitor session destination interface

### Description

The **monitor session destination interface** command is used to configure the monitoring port. Each monitor session has only one monitoring port. To change the monitoring port, please use the **monitor session destination interface** command by changing the port value. The **no monitor session** command is used to delete the corresponding monitor session.

### Syntax

```
monitor session session_num destination interface { fastEthernet port | gigabitEthernet port }
```

```
no monitor session session_num
```

### Parameter

*session\_num* — The monitor session number, ranging from 1 to 4.

*port* — The Ethernet port number.

### Command Mode

Global Configuration Mode

### Example

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

```
TL-SL2428(config)# monitor session 1 destination interface fastEthernet  
1/0/1
```

Delete the monitor session 1:

```
TL-SL2428(config)# no monitor session 1
```

# monitor session source interface

## Description

The **monitor session source interface** command is used to configure the monitored port. To delete the corresponding monitored port, please use **no monitor session source interface** command.

## Syntax

```
monitor session session_num source interface { fastEthernet port-list | gigabitEthernet port-list } mode
```

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

## Parameter

*session\_num* — The monitor session number, ranging from 1 to 4.

*port-list* — List of monitored port. It is multi-optional.

*mode* — The monitor mode. There are three options: rx, tx and both. Rx (ingress monitoring mode), means the incoming packets received by the monitored port will be copied to the monitoring port. Tx (egress monitoring mode), indicates the outgoing packets sent by the monitored port will be copied to the monitoring port. Both (ingress and egress monitoring), presents the incoming packets received and the outgoing packets sent by the monitored port will both be copied to the monitoring port.

## Command Mode

Global Configuration Mode

## User Guidelines

1. The monitoring port is corresponding to current interface configuration mode.
2. Monitored ports number is not limited, but it can't be the monitoring port at the same time.
3. Whether the monitoring port and monitored ports are in the same VLAN or not is not demanded strictly.
4. The monitoring port and monitored ports cannot be link-aggregation member.

## Example

Create monitor session 1, then configure port 4, 5, 7 as monitored port and enable ingress monitoring:

```
TL-SL2428(config)# monitor session 1 source interface fastEthernet
1/0/4-5,1/0/7 rx
```

Delete port 4 in monitor session 1 and its configuration:

```
TL-SL2428(config)# no monitor session 1 source interface fastEthernet
1/0/4 rx
```

## show monitor session

### Description

The **show monitor session** command is used to display the configuration of port monitoring.

### Syntax

```
show monitor session [session_num]
```

### Parameter

*session\_num* — The monitor session number, ranging from 1 to 4. It is optional. By default, the monitoring configuration of all monitor sessions is displayed.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the monitoring configuration of monitor session 1:

```
TL-SL2428(config)# show monitor session 1
```

Display the monitoring configuration of all monitor sessions:

```
TL-SL2428(config)# show monitor session
```



# Chapter 15 Port Isolation Commands

Port Isolation provides a method of restricting traffic flow to improve the network security by forbidding the port to forward packets to the ports that are not on its forwarding port list.

## port isolation

### Description

The **port isolation** command is used to configure the forward port list of a port, so that this port can only communicate with the ports on its port list. To delete the corresponding configuration, please use **no port isolation** command.

### Syntax

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

### Parameter

*fa-forward-list* — Configure Fast Ethernet ports to the forward port list.  
*gi-forward-list* — Configure Gigabit Ethernet ports to the forward port list.

### Command Mode

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

### Example

Set port 1, 2, and 4 to the forward port list of port 5:

```
TL-SL2428(config)# interface fastEthernet 1/0/5  
TL-SL2428(config-if)# port isolation fa-forward-list 1/0/1-2,1/0/4
```

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

```
TL-SL2428(config)# interface fastEthernet 1/0/2  
TL-SL2428(config-if)# no port isolation
```

## show port isolation interface

### Description

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

## Syntax

**show port isolation interface** [ **fastEthernet** *port* | **gigabitEthernet** *port* ]

## Parameter

*port* — The number of Ethernet port you want to show its forward port list, in the format of 1/0/2.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the forward-list of port 2:

```
TL-SL2428# show port isolation interface fastEthernet 1/0/2
```

Display the forward-list of all Ethernet ports:

```
TL-SL2428# show port isolation interface
```

# Chapter 16 Loopback Detection Commands

With loopback detection feature enabled, the switch can detect loops using loopback detection packets. When a loop is detected, the switch will display an alert or further block the corresponding port according to the configuration.

## loopback-detection(global)

### Description

The **loopback-detection** command is used to enable the loopback detection function globally. To disable it, please use **no loopback detection** command.

### Syntax

**loopback-detection**

**no loopback-detection**

### Command Mode

Global Configuration Mode

### Example

Enable the loopback detection function globally:

```
TL-SL2428(config)# loopback-detection
```

## loopback-detection interval

### Description

The **loopback-detection interval** command is used to define the interval of sending loopback detection packets from switch ports to network, aiming at detecting network loops periodically.

### Syntax

**loopback-detection interval** *interval-time*

### Parameter

*interval-time* — The interval of sending loopback detection packets. It ranges from 1 to 1000 seconds. By default, this value is 30.

### Command Mode

Global Configuration Mode

## Example

Specify the interval-time as 50 seconds:

```
TL-SL2428(config)# loopback-detection interval 50
```

## loopback-detection recovery-time

### Description

The **loopback-detection recovery-time** command is used to configure the time after which the blocked port would automatically recover to normal status.

### Syntax

```
loopback-detection recovery-time recovery-time
```

### Parameter

*recovery-time* — The time after which the blocked port would automatically recover to normal status, and the loopback detection would restart. It is integral times of detection interval, ranging from 1 to 100 and the default value is 3.

### Command Mode

Global Configuration Mode

### Example

Configure the recovery-time as 5 times of detection interval:

```
TL-SL2428(config)# loopback-detection recovery-time 5
```

## loopback-detection(interface)

### Description

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

### Syntax

```
loopback-detection
```

```
no loopback-detection
```

### Command Mode

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

### Example

Enable the loopback detection function of ports 1-3:

```
TL-SL2428(config)# interface range fastEthernet 1/0/1-3
TL-SL2428(Config-if-range)# loopback-detection
```

## loopback-detection config

### Description

The **loopback-detection config** command is used to configure the process-mode and recovery-mode for the ports by which the switch copes with the detected loops.

### Syntax

```
loopback-detection config [ process-mode { alert | port-based }]
[ recovery-mode { auto | manual }]
```

### Parameter

process-mode — The mode how the switch processes the detected loops.

**Alert:** When a loop is detected, display an alert.

**Port based:** When a loop is detected, display an alert and block the port.

recovery-mode — The mode how the blocked port recovers to normal status.

**Auto:** Block status can be automatically removed after recovery time.

**Manual:** Block status can only be removed manually.

### Command Mode

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

### Example

Configure the loopback detection process-mode as port-based and recovery-mode as manual for port 2:

```
TL-SL2428(config)# interface fastEthernet 1/0/2
TL-SL2428(config-if)# loopback-detection config process-mode port-based
recovery-mode manual
```

## loopback-detection recover

### Description

The **loopback-detection recover** command is used to remove the block status of selected ports, recovering the blocked ports to normal status,

## Syntax

**loopback-detection recover**

## Command Mode

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

## Example

Recover the blocked port 2 to normal status:

```
TL-SL2428(config)# interface fastEthernet 1/0/2
TL-SL2428(config-if)# loopback-detection recover
```

# show loopback-detection global

## Description

The **show loopback-detection global** command is used to display the global configuration of loopback detection function such as loopback detection global status, loopback detection interval and loopback detection recovery time.

## Syntax

**show loopback-detection global**

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the global configuration of loopback detection function:

```
TL-SL2428# show loopback-detection global
```

# show loopback-detection interface

## Description

The **show loopback-detection interface** command is used to display the configuration of loopback detection function and the status of the specified Ethernet port.

## Syntax

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

## Parameter

*port* — The Ethernet port number.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

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

```
TL-SL2428# show loopback-detection interface
```

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

```
TL-SL2428# show loopback-detection interface fastEthernet 1/0/5
```

# Chapter 17 ACL Commands

## access-list create

### Description

The **access-list create** command is used to create standard-IP ACL and extend-IP ACL.

### Syntax

**access-list create** *access-list-num*

### Parameter

*access-list-num* — ACL ID, ranging from 100 to 299. The ID range of Standard-IP ACL ranges is 100-199 and the Extend-IP ACL is 200-299.

### Command Mode

Global Configuration Mode

### Example

Create a standard-IP ACL whose ID is 123:

```
TL-SL2428(config)# access-list create 123
```

## mac access-list

### Description

The **mac access-list** command is used to create MAC ACL. To set the detailed configurations for a specified MAC ACL, please use **mac access-list** command to access Mac Access-list Configuration Mode. To delete the MAC ACL, please use **no mac access-list**.

### Syntax

**mac access-list** *access-list-num*

**no mac access-list** *access-list-num*

### Parameter

*access-list-num* — ACL ID, ranging from 0 to 99.

### Command Mode

Global Configuration Mode

### Example

Create a MAC ACL whose ID is 23:



## access-list standard

### Description

The **access-list standard** command is used to add Standard-IP ACL rule. To delete the corresponding rule, please use **no access-list standard** command. Standard-IP ACLs analyze and process data packets based on a series of match conditions, which can be the source IP addresses and destination IP addresses carried in the packets.

### Syntax

```
access-list standard acl-id rule rule-id { deny | permit } [[ sip source-ip ] smask source-ip-mask] [[ dip destination-ip ] dmask destination-ip-mask ]
```

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

### Parameter

*acl-id* — The desired Standard-IP ACL for configuration.

*rule-id* — The rule ID.

deny — The operation to discard packets.

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

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

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

*destination-ip* — The destination IP address contained in the rule.

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

### Command Mode

Global Configuration Mode

### Example

Create a Standard-IP ACL whose ID is 120, and add Rule 10 for it. In the rule, the source IP address is 192.168.0.100, the source IP address mask is 255.255.255.0, and the packets match this rule will be forwarded by the switch:

```
TL-SL2428(config)# access-list create 120
```

```
TL-SL2428(config)# access-list standard 120 rule 10 permit sip
192.168.0.100 smask 255.255.255.0
```

# access-list extended

## Description

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

## Syntax

```
access-list extended acl-id rule rule-id { deny | permit } [[ sip source-ip ]  
smask source-ip-mask ] [[ dip destination-ip] dmask destination-ip-mask ]  
[ s-port s-port ] [ d-port d-port ] [ protocol protocol ]
```

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

## Parameter

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

*rule-id* — The rule ID.

deny — The operation to discard packets.

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

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

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

*destination-ip* — The destination IP address contained in the rule.

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

*s-port* — The source port number.

*d-port* — The destination port number.

*protocol* — Configure the value of the matching protocol.

## Command Mode

Global Configuration Mode

## Example

Create an Extended-IP ACL whose ID is 220, and add Rule 10 for it. In the rule, the source IP address is 192.168.0.100, the source IP address mask is 255.255.255.0, and the packets match this rule will be forwarded by the switch:

```
TL-SL2428(config)# access-list create 220  
TL-SL2428(config)# access-list extended 220 rule 10 permit sip  
192.168.0.100 smask 255.255.255.0
```

# 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 ]
```

```
no rule rule-id
```

## Parameter

*rule-id* — The rule ID.

deny — The operation to discard packets.

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

*source-mac* — The source MAC address contained in the rule.

*source-mac-mask* — The source MAC address mask. It is required if you typed the source MAC address.

*destination-mac* — The destination MAC address contained in the rule.

*destination-mac-mask* — The destination MAC address mask. It is required if you typed the destination MAC address.

## Command Mode

Mac Access-list Configuration Mode

## Example

Create a MAC ACL whose ID is 20, and add Rule 10 for it. In the rule, the source MAC address is 00:01:3F:48:16:23, the source MAC address mask is 11:11:11:11:11:00, and the packets match this rule will be forwarded by the switch:

```
TL-SL2428(config)# mac access-list 20  
TL-SL2428(config-mac-acl)# rule 10 permit smac 00:01:3F:48:16:23 smask  
11:11:11:11:11:00
```

# access-list policy name

## Description

The **access-list policy name** command is used to add Policy. To delete the corresponding Policy, please use **no access-list policy name** command. A

Policy is used to control the data packets those match the corresponding ACL rules by configuring ACLs and actions together for effect. The operations here include stream mirror, stream condition, QoS Remarking and redirect.

### Syntax

**access-list policy name** *name*

**no access-list policy name** *name*

### Parameter

*name* — The Policy Name, ranging from 1 to 16 characters.

### Command Mode

Global Configuration Mode

### Example

Add a Policy named policy1:

```
TL-SL2428(config)# access-list policy name policy1
```

## access-list policy action

### Description

The **access-list policy action** command is used to add ACLs and create actions for the policy. To set the detailed configuration of actions for a policy, please use **access-list policy action** command to access Action Configuration Mode. To delete the corresponding actions, please use **no access-list policy action** command.

### Syntax

**access-list policy action** *policy-name acl-id*

**no access-list policy action** *policy-name acl-id*

### Parameter

*policy-name* — The Policy Name, ranging from 1 to 16 characters.

*acl-id* — The ID of the ACL to which the above policy is applied.

### Command Mode

Global Configuration Mode

### Example

Add ACL whose ID is 120 to policy1 and create an action for them:

```
TL-SL2428(config)# access-list policy action policy1 120
```

## access-list bind(interface)

### Description

The **access-list bind** command is used to bind a policy to a specified port. To cancel the bind relation, please use **no access-list bind** command.

### Syntax

```
access-list bind policy-name  
no access-list bind policy-name
```

### Parameter

*policy-name* — The name of the policy desired to bind.

### Command Mode

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

### Example

Bind policy1 to port 2:

```
TL-SL2428(config)# interface fastEthernet 1/0/2  
TL-SL2428(config-if)# access-list bind policy1
```

## access-list bind(vlan)

### Description

The **access-list bind** command is used to bind a policy to a VLAN. To cancel the bind relation, please use **no access-list bind** command.

### Syntax

```
access-list bind policy-name  
no access-list bind policy-name
```

### Parameter

*policy-name* — The name of the policy desired to bind.

### Command Mode

Interface VLAN Mode

### Example

Bind policy1 to VLAN 2:

```
TL-SL2428(config)# interface vlan 2
```

```
TL-SL2428(config-if)# access-list bind policy1
```

## show access-list

### Description

The **show access-list** command is used to display configuration of ACL.

### Syntax

```
show access-list acl-id
```

### Parameter

*acl-id* — The ID of the ACL selected to display the configuration.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration of the MAC ACL whose ID is 20:

```
TL-SL2428(config)# show access-list 20
```

## show access-list policy

### Description

The **show access-list policy** command is used to display the information of a specified policy.

### Syntax

```
show access-list policy name
```

### Parameter

*name* — The Policy Name desired to show.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the information of a policy named policy1:

```
TL-SL2428(config)# show access-list policy policy1
```

# show access-list bind

## Description

The **show access-list bind** command is used to display the configuration of Policy bind.

## Syntax

**show access-list bind**

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the configuration of Policy bind:

```
TL-SL2428(config)# show access-list bind
```

## Chapter 18 DHCP Filtering Commands

DHCP Filtering functions to monitor the process of hosts obtaining IP addresses from DHCP Servers by configuring the desired port(s) as Trusted Port(s). Only the hosts connected to the trusted port(s) can receive DHCP packets from DHCP servers. In this way, the switch can avoid of DHCP cheating attack which will cause network confusion and security problem.

### ip dhcp filtering

#### Description

The **ip dhcp filtering** command is used to enable DHCP Filtering function. To disable please use **no ip dhcp filtering** command.

#### Syntax

**ip dhcp filtering**  
**no ip dhcp filtering**

#### Command Mode

Global Configuration Mode

#### Example

Enable the DHCP Filtering:

```
TL-SL2428(config)# ip dhcp filtering
```

### ip dhcp filtering trust

#### Description

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

#### Syntax

**ip dhcp filtering trust**  
**no ip dhcp filtering trust**

#### Command Mode

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



## Example

Configure port 1 to be a trusted port:

```
TL-SL2428(config)#interface fastEthernet 1/0/1
TL-SL2428(config-if)#ip dhcp filtering trust
```

## show ip dhcp filtering

### Description

The **show ip dhcp filtering** command is used to display the running status of DHCP Filtering.

### Syntax

```
show ip dhcp filtering
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the running status of DHCP Filtering:

```
TL-SL2428#show ip dhcp filtering
```

## show ip dhcp filtering interface

### Description

The **show ip dhcp filtering interface** command is used to display the DHCP Filtering configuration information of a desired port or of all ports.

### Syntax

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

### Parameters

*port* — The Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the DHCP Filtering configuration information of all Ethernet ports:

```
TL-SL2428#show ip dhcp filtering interface
```

Display the DHCP Filtering configuration information of port 5:

```
TL-SL2428#show ip dhcp filtering interface fastEthernet 1/0/5
```

# Chapter 19 MSTP Commands

MSTP (Multiple Spanning Tree Protocol), compatible with both STP and RSTP and subject to IEEE 802.1s, can disbranch a ring network. STP is to block redundant links and backup links as well as optimize paths.

## spanning-tree(global)

### Description

The **spanning-tree** command is used to enable STP function globally. To disable the STP function, please use **no spanning-tree** command.

### Syntax

**spanning-tree**  
**no spanning-tree**

### Command Mode

Global Configuration Mode

### Example

Enable the STP function:

```
TL-SL2428(config)# spanning-tree
```

## spanning-tree(interface)

### Description

The **spanning-tree** command is used to enable STP function for a port. To disable the STP function, please use **no spanning-tree** command.

### Syntax

**spanning-tree**  
**no spanning-tree**

### Command Mode

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

### Example

Enable the STP function for port 2:

```
TL-SL2428(config)# interface fastEthernet 1/0/2
```

```
TL-SL2428(config-if)# spanning-tree
```

## spanning-tree common-config

### Description

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

### Syntax

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

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

### Parameter

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

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

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

**portfast** — Enable/ Disable Edge Port. By default, it is disabled. The edge port can transit its state from blocking to forwarding rapidly without waiting for forward delay.

**point-to-point** — The P2P link status, with auto, open and close options. By default, the option is auto. If the two ports in the P2P link are root port or

designated port, they can transit their states to forwarding rapidly to reduce the unnecessary forward delay.

### Command Mode

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

### Example

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

```
TL-SL2428(config)# interface fastEthernet 1/0/1
TL-SL2428(config-if)# spanning-tree common-config port-priority 64
ext-cost 100 int-cost 100 portfast enable point-to-point open
```

## spanning-tree mode

### Description

The **spanning-tree mode** command is used to configure the STP mode of the switch. To return to the default configurations, please use **no spanning-tree mode** command.

### Syntax

```
spanning-tree mode { stp | rstp | mstp }
```

```
no spanning-tree mode
```

### Parameter

stp — Spanning Tree Protocol, the default value.

rstp — Rapid Spanning Tree Protocol

mstp — Multiple Spanning Tree Protocol

### Command Mode

Global Configuration Mode

### Example

Configure the spanning-tree mode as mstp:

```
TL-SL2428(config)# spanning-tree mode mstp
```

# spanning-tree mst configuration

## Description

The **spanning-tree mst configuration** command is used to access MST Configuration Mode from Global Configuration Mode, as to configure the VLAN-Instance mapping, region name and revision level. To return to the default configuration of the corresponding Instance, please use **no spanning-tree mst configuration** command.

## Syntax

**spanning-tree mst configuration**

**no spanning-tree mst configuration**

## Command Mode

Global Configuration Mode

## Example

Enter into the MST configuration mode:

```
TL-SL2428(config)# spanning-tree mst configuration
```

```
TL-SL2428(Config-mst)#
```

# instance

## Description

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

## Syntax

**instance** *instance-id* **vlan** *vlan-id*

**no instance** *instance-id* [ **vlan** *vlan-id* ]

## Parameters

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

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

## Command Mode

MST Configuration Mode

## Example

Map the VLANs 1-100 to Instance 1:

```
TL-SL2428(config)# spanning-tree mst configuration
```

```
TL-SL2428(config-mst)# instance 1 vlan 1-100
```

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

```
TL-SL2428(config)# spanning-tree mst configuration
```

```
TL-SL2428(config-mst)# no instance 1
```

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

```
TL-SL2428(config)# spanning-tree mst configuration
```

```
TL-SL2428(config-mst)# no instance 1 vlan 1-50
```

## name

### Description

The **name** command is used to configure the region name of MST instance.

### Syntax

```
name name
```

### Parameters

*name* — The region name, used to identify MST region. It ranges from 1 to 32 characters.

### Command Mode

MST Configuration Mode

### Example

Configure the region name of MST as “region1”:

```
TL-SL2428(config)# spanning-tree mst configuration
```

```
TL-SL2428(config-mst)# name region1
```

## revision

### Description

The **revision** command is used to configure the revision level of MST instance.

### Syntax

```
revision revision
```

## Parameters

*revision* — The revision level for MST region identification, ranging from 0 to 65535.

## Command Mode

MST Configuration Mode

## Example

Configure the revision level of MST as 100:

```
TL-SL2428(config)# spanning-tree mst configuration
TL-SL2428(config-mst)# revision 100
```

# spanning-tree mst instance

## Description

The **spanning-tree mst instance** command is used to configure the priority of MST instance. To return to the default value of MST instance priority, please use **no spanning-tree mst instance** command.

## Syntax

```
spanning-tree mst instance instance-id priority pri
no spanning-tree mst instance instance-id priority
```

## Parameter

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

*pri* — MSTI Priority, which must be multiple of 4096 ranging from 0 to 61440. By default, it is 32768. MSTI priority is an important criterion on determining if the switch will be chosen as the root bridge in the specific instance.

## Command Mode

Global Configuration Mode

## Example

Enable the MST Instance 1 and configure its priority as 4096:

```
TL-SL2428(config)# spanning-tree mst instance 1 priority 4096
```

# spanning-tree mst

## Description

The **spanning-tree mst** command is used to configure MST Instance Port. To return to the default configuration of the corresponding Instance Port, please

use **no spanning-tree mst** command. A port can play different roles in different spanning tree instance. You can use this command to configure the parameters of the ports in different instance IDs as well as view status of the ports in the specified instance.

## Syntax

**spanning-tree mst instance** *instance-id* {[ **port-priority** *pri* ] | [ **cost** *cost* ]}

**no spanning-tree mst instance** *instance-id*

## Parameter

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

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

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

## Command Mode

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

## Example

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

```
TL-SL2428(config)# interface fastEthernet 1/0/1
TL-SL2428(config-if)# spanning-tree mst instance 1 port-priority 64 cost
2000
```

# spanning-tree priority

## Description

The **spanning-tree priority** command is used to configure the bridge priority. To return to the default value of bridge priority, please use **no spanning-tree priority** command.

## Syntax

**spanning-tree priority** *pri*

**no spanning-tree priority**

## Parameter

*pri* — Bridge priority, ranging from 0 to 61440. It is 32768 by default.



## Command Mode

Global Configuration Mode

## Example

Configure the bridge priority as 4096:

```
TL-SL2428(config)# spanning-tree priority 4096
```

# spanning-tree tc-defend

## Description

The **spanning-tree tc-defend** command is used to configure the TC Protect of Spanning Tree globally. To return to the default configuration, please use **no spanning-tree tc-defend** command. A switch removes MAC address entries upon receiving TC-BPDUs. If a malicious user continuously sends TC-BPDUs to a switch, the switch will be busy with removing MAC address entries, which may decrease the performance and stability of the network.

## Syntax

```
spanning-tree tc-defend threshold threshold period period  
no spanning-tree tc-defend
```

## Parameter

*threshold* — TC Threshold, ranging from 1 to 100 packets. By default, it is 20. TC Threshold is the maximum number of the TC-BPDUs received by the switch in a TC Protect Cycle.

*period* — TC Protect Cycle, ranging from 1 to 10 in seconds. By default, it is 5.

## Command Mode

Global Configuration Mode

## Example

Configure TC Threshold as 30 packets and TC Protect Cycle as 10 seconds:

```
TL-SL2428(config)# spanning-tree tc-defend threshold 30 period 10
```

# spanning-tree timer

## Description

The **spanning-tree timer** command is used to configure forward-time, hello-time and max-age of Spanning Tree. To return to the default configurations, please use **no spanning-tree timer** command.

## Syntax

```
spanning-tree timer {[ forward-time forward-time ] [ hello-time hello-time ]  
[ max-age max-age ]}  
no spanning-tree timer
```

## Parameter

*forward-time* — Forward Delay, which is the time for the port to transit its state after the network topology is changed. Forward Delay ranges from 4 to 30 in seconds and it is 15 by default. Otherwise,  $2 * (\text{Forward Delay} - 1) \geq \text{Max Age}$ .

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

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

## Command Mode

Global Configuration Mode

## Example

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

```
TL-SL2428(config)# spanning-tree timer forward-time 16 hello-time 3  
max-age 22
```

# spanning-tree hold-count

## Description

The **spanning-tree hold-count** command is used to configure the maximum number of BPDU packets transmitted per Hello Time interval. To return to the default configurations, please use **no spanning-tree hold-count** command.

## Syntax

```
spanning-tree hold-count value  
no spanning-tree hold-count
```

## Parameter

*value* — The maximum number of BPDU packets transmitted per Hello Time interval, ranging from 1 to 20 in pps. By default, it is 5.

## Command Mode

Global Configuration Mode

## Example

Configure the hold-count of STP as 8pps:

```
TL-SL2428(config)# spanning-tree hold-count 8
```

# spanning-tree max-hops

## Description

The **spanning-tree max-hops** command is used to configure the maximum number of hops that occur in a specific region before the BPDU is discarded. To return to the default configurations, please use **no spanning-tree max-hops** command.

## Syntax

**spanning-tree max-hops** *value*

**no spanning-tree max-hops**

## Parameter

*value* — The maximum number of hops that occur in a specific region before the BPDU is discarded, ranging from 1 to 40 in hop. By default, it is 20.

## Command Mode

Global Configuration Mode

## Example

Configure the max-hops of STP as 30:

```
TL-SL2428(config)# spanning-tree max-hops 30
```

# spanning-tree bpdudfilter

## Description

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

## Syntax

**spanning-tree bpdudfilter**

**no spanning-tree bpdudfilter**

## Command Mode

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

## Example

Enable the BPDU filter function for port 2:

```
TL-SL2428(config)# interface fastEthernet 1/0/2
TL-SL2428(config-if)# spanning-tree bpduguard
```

# spanning-tree bpduguard

## Description

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

## Syntax

```
spanning-tree bpduguard
no spanning-tree bpduguard
```

## Command Mode

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

## Example

Enable the BPDU protect function for port 2:

```
TL-SL2428(config)# interface fastEthernet 2
TL-SL2428(config-if)# spanning-tree bpduguard
```

# spanning-tree guard loop

## Description

The **spanning-tree guard loop** command is used to enable the Loop Protect function for a port. Loop Protect is to prevent the loops in the network brought by recalculating STP because of link failures and network congestions. To disable the Loop Protect function, please use **no spanning-tree guard loop** command.

## Syntax

**spanning-tree guard loop**

**no spanning-tree guard loop**

## Command Mode

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

## Example

Enable the Loop Protect function for port 2:

```
TL-SL2428(config)# interface fastEthernet 1/0/2
```

```
TL-SL2428(config-if)# spanning-tree guard loop
```

# spanning-tree guard root

## Description

The **spanning-tree guard root** command is used to enable the Root Protect function for a port. With the Root Protect function enabled, the root bridge will set itself automatically as ERROR-PORT when receiving BPDU packets with higher priority, in order to maintain the role of root ridge. To disable the Root Protect function, please use **no spanning-tree guard root** command.

## Syntax

**spanning-tree guard root**

**no spanning-tree guard root**

## Command Mode

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

## Example

Enable the Root Protect function for port 2:

```
TL-SL2428(config)# interface fastEthernet 1/0/2
```

```
TL-SL2428(config-if)# spanning-tree guard root
```

# spanning-tree guard tc

## Description

The **spanning-tree guard tc** command is used to enable the TC Protect of Spanning Tree function for a port. To disable the TC Protect of Spanning Tree

function, please use **no spanning-tree guard tc** command. A switch removes MAC address entries upon receiving TC-BPDUs. If a malicious user continuously sends TC-BPDUs to a switch, the switch will be busy with removing MAC address entries, which may decrease the performance and stability of the network. With the Protect of Spanning Tree function enabled, you can configure the number of TC-BPDUs in a required time, so as to avoid the process of removing MAC addresses frequently.

### Syntax

**spanning-tree guard tc**

**no spanning-tree guard tc**

### Command Mode

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

### Example

Enable the TC Protect of Spanning Tree for port 2:

```
TL-SL2428(config)# interface fastEthernet 1/0/2
```

```
TL-SL2428(config-if)# spanning-tree guard tc
```

## spanning-tree mcheck

### Description

The **spanning-tree mcheck** command is used to enable mcheck.

### Syntax

**spanning-tree mcheck**

### Command Mode

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

### Example

Enable mcheck for port 2:

```
TL-SL2428(config)# interface fastEthernet 1/0/2
```

```
TL-SL2428(config-if)# spanning-tree mcheck
```

## show spanning-tree active

### Description

The **show spanning-tree active** command is used to display the active information of spanning-tree.

### Syntax

```
show spanning-tree active
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the active information of spanning-tree:

```
TL-SL2428(config)# show spanning-tree active
```

## show spanning-tree bridge

### Description

The **show spanning-tree bridge** command is used to display the bridge parameters.

### Syntax

```
show spanning-tree bridge [ forward-time | hello-time | hold-count | max-age |  
max-hops | mode | priority | state ]
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the bridge parameters:

```
TL-SL2428(config)# show spanning-tree bridge
```

## show spanning-tree interface

### Description

The **show spanning-tree interface** command is used to display the spanning-tree information of all ports or a specified port.

## Syntax

```
show spanning-tree interface [ fastEthernet port | gigabitEthernet port ]  
[ edge | ext-cost | int-cost | mode | p2p | priority | role | state | status ]
```

## Parameter

*port* — The Ethernet port number.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the spanning-tree information of all ports:

```
TL-SL2428(config)# show spanning-tree interface
```

Display the spanning-tree information of port 2:

```
TL-SL2428(config)# show spanning-tree interface fastEthernet 1/0/2
```

Display the spanning-tree mode information of port 2:

```
TL-SL2428(config)# show spanning-tree interface fastEthernet 1/0/2 mode
```

# show spanning-tree interface-security

## Description

The **show spanning-tree interface-security** command is used to display the protect information of all ports or a specified port.

## Syntax

```
show spanning-tree interface-security [ fastEthernet port | gigabitEthernet  
port ] [ bpdufilter | bpduguard | loop | root | tc | tc-defend ]
```

## Parameter

*port* — The Ethernet port number.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the protect information of all ports:

```
TL-SL2428(config)# show spanning-tree interface-security
```

Display the protect information of port 1:

```
TL-SL2428(config)# show spanning-tree interface-security fastEthernet  
1/0/1
```



Display the interface security bpdudfilter information:

```
TL-SL2428(config)# show spanning-tree interface-security bpdudfilter
```

## show spanning-tree mst

### Description

The **show spanning-tree mst** command is used to display the related information of MST Instance.

### Syntax

```
show spanning-tree mst { configuration [ digest ] | instance instance-id  
[ interface [ fastEthernet port | gigabitEthernet port ] }
```

### Parameter

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

*port* — The Ethernet port number.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

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

```
TL-SL2428(config)#show spanning-tree mst configuration
```

Display the related information of MST Instance 1:

```
TL-SL2428(config)#show spanning-tree mst instance 1
```

Display all the ports information of MST Instance 1:

```
TL-SL2428(config)#show spanning-tree mst instance 1 interface
```

## Chapter 20 IGMP Commands

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

### ip igmp snooping(global)

#### Description

The **ip igmp snooping** command is used to configure IGMP Snooping globally. To disable the IGMP Snooping function, please use **no ip igmp snooping** command.

#### Syntax

**ip igmp snooping**  
**no ip igmp snooping**

#### Command Mode

Global Configuration Mode

#### Example

Enable IGMP Snooping function:

```
TL-SL2428(config)# ip igmp snooping
```

### ip igmp snooping(interface)

#### Description

The **ip igmp snooping** command is used to enable the IGMP Snooping function for the desired port. To disable the IGMP Snooping function, please use **no ip igmp snooping** command.

#### Syntax

**ip igmp snooping**  
**no ip igmp snooping**

#### Command Mode

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

#### Example

Enable IGMP Snooping function of port 3:

```
TL-SL2428(config)# interface fastEthernet 1/0/3
TL-SL2428(config-if)# ip igmp snooping
```

## ip igmp snooping immediate-leave

### Description

The **ip igmp snooping immediate-leave** command is used to configure the Fast Leave function for port. To disable the Fast Leave function, please use **no ip igmp snooping immediate-leave** command.

### Syntax

```
ip igmp snooping immediate-leave
no ip igmp snooping immediate-leave
```

### Command Mode

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

### Example

Enable the Fast Leave function for port 3:

```
TL-SL2428(config)# interface fastEthernet 1/0/3
TL-SL2428(config-if)# ip igmp snooping immediate-leave
```

## ip igmp snooping drop-unknown

### Description

The **ip igmp snooping drop-unknown** command is used to process the unknown multicast as discard. To disable the operation of processing the unknown multicast as discard, please use **no ip igmp snooping drop-unknown** command.

### Syntax

```
ip igmp snooping drop-unknown
no ip igmp snooping drop-unknown
```

### Command Mode

Global Configuration Mode

### Example

Specify the operation to process unknown multicast as discard:

```
TL-SL2428(config)# ip igmp snooping drop-unknown
```

# ip igmp snooping vlan-config

## Description

The **ip igmp snooping vlan-config** command is used to enable VLAN IGMP Snooping function or to modify IGMP Snooping parameters, and to create static multicast IP entry. To disable the VLAN IGMP Snooping function, please use **no ip igmp snooping vlan-config** command.

## Syntax

```
ip igmp snooping vlan-config vlan-id-list [ rtime router-time | mtime member-time | ltime leave-time | rport interface { fastEthernet port | gigabitEthernet port } ]
```

```
ip igmp snooping vlan-config vlan-id static ip interface gigabitEthernet port  
no ip igmp snooping vlan-config vlan-id-list
```

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

## Parameter

*vlan-id-list* — The ID list of the VLAN desired to modify configuration, ranging from 2 to 4094, in the format of 1-3, 5.

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

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

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

*port* — The Ethernet port number.

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

*ip* — The static multicast IP address.

*port-list* — The list of Ethernet ports.

## Command Mode

Global Configuration Mode

## Example

Enable the IGMP Snooping function and modify Router Port Time as 300 seconds, Member Port Time as 200 seconds for VLAN 1-3, and set the Leave time as 15 seconds for VLAN 1-2:

```
TL-SL2428(config)# ip igmp snooping vlan-config 1-3 rtime 300
```

```
TL-SL2428(config)# ip igmp snooping vlan-config 1-3 mtime 200
```

```
TL-SL2428(config)# ip igmp snooping vlan-config 1-2 ltime 15
```

Add static multicast IP address 225.0.0.1, which corresponds to VLAN 2, and configure the forward port as port 1-3:

```
TL-SL2428(config)# ip igmp snooping vlan-config 2 static 225.0.0.1
```

```
interface fastEthernet 1/0/1-3
```

## ip igmp snooping multi-vlan-config

### Description

The **ip igmp snooping multi-vlan-config** command is used to create Multicast VLAN. To delete the corresponding Multicast VLAN, please use **no ip igmp snooping multi-vlan-config** command.

### Syntax

```
ip igmp snooping multi-vlan-config [ vlan-id ] [ rtime router-time | mtime member-time | ltime leave-time | rport interface { fastEthernet port | gigabitEthernet port } ]
```

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

### Parameter

*vid* — The ID of the VLAN desired to modify configuration, ranging from 2 to 4094.

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

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

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

*port* — The Ethernet port number.

## Command Mode

Global Configuration Mode

## Example

Enable Multicast VLAN 3, and configure Router Port Time as 100 seconds, Member Port Time 100 seconds, Leave Time 3 seconds, and Static Router Port port 3:

```
TL-SL2428(config)# ip igmp snooping multi-vlan-config 3 rtime 100
TL-SL2428(config)# ip igmp snooping multi-vlan-config 3 mtime 100
TL-SL2428(config)# ip igmp snooping multi-vlan-config 3 ltime 3
TL-SL2428(config)# ip igmp snooping multi-vlan-config 3 rport interface
fastEthernet 1/0/3
```

# ip igmp snooping filter add-id

## Description

The **ip igmp snooping filter add-id** command is used to configure the multicast IP-range desired to filter. To delete the corresponding IP-range, please use **no ip igmp snooping filter add-id** command. When IGMP Snooping is enabled, you can specified the multicast IP-range the ports can join so as to restrict users ordering multicast programs via configuring multicast filter rules. Multicast IP addresses ranges from 224.0.0.0 to 239.255.255.255. The range for receivers to join is from 224.0.1.0 to 239.255.255.255.

## Syntax

**ip igmp snooping filter addr-id** *addr-id list*

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

## Parameter

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

## Command Mode

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

## Example

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

```
TL-SL2428(config)# interface fastEthernet 1/0/3
TL-SL2428(config-if)# ip igmp snooping filter addr-id 2-6
```

## ip igmp snooping filter(global)

### Description

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

### Syntax

```
ip igmp snooping filter id start-ip end-ip
no ip igmp snooping filter id
```

### Parameter

*id* —— IP-range ID, ranging from 1 to 30.  
*start-ip* —— The start multicast IP of the IP-range.  
*end-ip* —— The end multicast IP of the IP-range.

### Command Mode

Global Configuration Mode

### Example

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

```
TL-SL2428(config)# ip igmp snooping filter 3 225.1.1.1 226.3.2.1
```

## ip igmp snooping filter(interface)

### Description

The **ip igmp snooping filter** command is used to configure Port Filter. To return to the default configuration, please use **no igmp snooping filter** command. When the switch receives IGMP report message, it examines the multicast filtering IP ID configured on the access port to determine if the port can join the multicast group. If the multicast IP is not filtered, the switch will add the port to the forward port list of the multicast group. Otherwise, the switch will drop the IGMP report message. In that way, you can control the multicast groups that users can access.

## Syntax

**ip igmp snooping filter**

**no ip igmp snooping filter**

## Command Mode

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

## Example

Enable IGMP Snooping filter function for port 3:

```
TL-SL2428(config)# interface fastEthernet 1/0/3
```

```
TL-SL2428(config-if)# ip igmp snooping filter
```

# ip igmp snooping filter maxgroup

## Description

The **ip igmp snooping filter maxgroup** command is used to specify the maximum number of multicast groups for a port to join in.

## Syntax

**ip igmp snooping filter maxgroup** *maxgroup*

## Parameter

*maxgroup* — The maximum number of multicast groups for a port to join in. It is used to prevent some ports taking up too much bandwidth.

## Command Mode

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

## Example

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

```
TL-SL2428(config)# interface range fastEthernet 1/0/2-5
```

```
TL-SL2428(config-if-range)# ip igmp snooping filter maxgroup 10
```

# ip igmp snooping filter mode

## Description

The **ip igmp snooping filter mode** command is used to configure the Action mode for the desired port.



## Syntax

**ip igmp snooping filter mode** *mode*

## Parameter

*mode* — Action Mode, with refuse and accept options. Refuse indicates only the multicast packets whose multicast IP is not in the IP-range will be processed, while accept indicates only the multicast packets whose multicast IP is in the IP-range will be processed. By default, the option is “accept”.

## Command Mode

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

## Example

Specify the Action Mode as accept for port 3:

```
TL-SL2428(config)# interface fastEthernet 1/0/3
TL-SL2428(config-if)# ip igmp snooping filter mode accept
```

# show ip igmp snooping

## Description

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

## Syntax

**show ip igmp snooping**

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the global configuration of IGMP:

```
TL-SL2428# show ip igmp snooping
```

# show ip igmp snooping interface

## Description

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

## Syntax

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

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

## Parameter

*port* — The Ethernet port number.

*port-list* — The list of Ethernet ports.

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

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the IGMP basic configuration of port 2:

```
TL-SL2428# show ip igmp snooping interface fastEthernet 1/0/2  
basic-config
```

Display the IGMP packet statistics of ports 1-4:

```
TL-SL2428# show ip igmp snooping interface fastEthernet 1/0/1-4  
packet-stat
```

# show ip igmp snooping vlan

## Description

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

## Syntax

```
show ip igmp snooping vlan [ vlan-id ]
```

## Parameter

*vlan-id* — The VLAN ID selected to display.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the IGMP snooping configuration information of VLAN 2:

```
TL-SL2428# show ip igmp snooping vlan 2
```

## show ip igmp snooping multi-vlan

### Description

The **show ip igmp snooping multi-vlan** command is used to display the Multicast VLAN configuration.

### Syntax

```
show ip igmp snooping multi-vlan
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the Multicast VLAN configuration:

```
TL-SL2428# show ip igmp snooping multi-vlan
```

## show ip igmp snooping groups

### Description

The **show ip igmp snooping groups** command is used to display the information of all IGMP snooping groups. It can be extended to some other commands to display the dynamic and static multicast information of a selected VLAN.

### Syntax

```
show ip igmp snooping groups [ vlan vlan-id ] [ count | dynamic | dynamic count | static | static count ]
```

### Parameter

*vlan-id* —The VLAN ID selected to display the information of all multicast items.

count— The numbers of all multicast groups.

dynamic— Display dynamic multicast groups.

dynamic count— The numbers of all dynamic multicast groups.

static— Display static multicast groups.

static count— The numbers of all static multicast groups.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the information of all IGMP snooping groups:

```
TL-SL2428#show ip igmp snooping groups
```

Display all the multicast entries in VLAN 5:

```
TL-SL2428(config)#show ip igmp snooping groups vlan 5
```

Display the count of multicast entries in VLAN 5:

```
TL-SL2428(config)#show ip igmp snooping groups vlan 5 count
```

Display the dynamic multicast groups of VLAN 5

```
TL-SL2428(config)#show ip igmp snooping groups vlan 5 dynamic
```

Display the static multicast groups of VLAN 5

```
TL-SL2428(config)#show ip igmp snooping groups vlan 5 static
```

Display the count of dynamic multicast entries of VLAN 5

```
TL-SL2428(config)#show ip igmp snooping groups vlan 5 dynamic count
```

Display the count of static multicast entries of VLAN 5

```
TL-SL2428(config)#show ip igmp snooping groups vlan 5 static count
```

## show ip igmp snooping filter

### Description

The **show ip igmp snooping filter** command is used to display the Multicast Filter Address table.

### Syntax

```
show ip igmp snooping filter [ filter-addr-id-list ]
```

### Parameter

*filter-addr-id-list* —The multicast ID selected to display the multicast filter address information. It is optional.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display all the multicast filter address information:

```
TL-SL2428(config)# show ip igmp snooping filter
```

## Chapter 21 SNMP Commands

SNMP (Simple Network Management Protocol) functions are used to manage the network devices for a smooth communication, which can facilitate the network administrators to monitor the network nodes and implement the proper operation.

### snmp-server

#### Description

The **snmp-server** command is used to enable the SNMP function. By default, it is disabled. To return to the default configuration, please use **no snmp-server** command.

#### Syntax

```
snmp-server  
no snmp-server
```

#### Command Mode

Global Configuration Mode

#### Example

Enable the SNMP function:

```
TL-SL2428(config)# snmp-server
```

### snmp-server view

#### Description

The **snmp-server view** command is used to add View. To delete the corresponding View, please use **no snmp-server view** command. The OID (Object Identifier) of the SNMP packets is used to describe the managed objects of the switch, and the MIB (Management Information Base) is the set of the OIDs. The SNMP View is created for the SNMP management station to manage MIB objects.

#### Syntax

```
snmp-server view name mib-oid { include | exclude }  
no snmp-server view name mib-oid
```

#### Parameter

*name* — The entry name of View, ranging from 1 to 16 characters. Each View includes several entries with the same name.

*mib-oid* — MIB Object ID. It is the Object Identifier (OID) for the entry of View, ranging from 1 to 61 characters.

*include | exclude* — View Type, with *include* and *exclude* options. They represent the view entry can/cannot be managed by the SNMP management station individually.

## Command Mode

Global Configuration Mode

## Example

Add a View named *view1*, configuring the OID as 1.3.6.1.6.3.20, and this OID can be managed by the SNMP management station:

```
TL-SL2428(config)# snmp-server view view1 1.3.6.1.6.3.20 include
```

# snmp-server group

## Description

The **snmp-server group** command is used to manage and configure the SNMP group. To delete the corresponding SNMP group, please use **no snmp-server group** command. SNMP v3 provides the VACM (View-based Access Control Model) and USM (User-Based Security Model) mechanisms for authentication. The users in the SNMP Group can manage the device via the Read View, Write View and Notify View. And the authentication mode and the privacy mode guarantee the high security for the communication between the management station and the managed device.

## Syntax

```
snmp-server group name [ smode { v1 | v2c | v3 } ] [ slev { noAuthNoPriv | authNoPriv | authPriv } ] [ read read-view ] [ write write-view ] [ notify notify-view ]
```

```
no snmp-server group name smode { v1 | v2c | v3 } slev { noAuthNoPriv | authNoPriv | authPriv }
```

## Parameter

*name* — The SNMP Group name, ranging from 1 to 16 characters. The Group Name, Security Model and Security Level compose the identifier of the SNMP Group. These three items of the Users in one group should be the same.

*smode* — Security Model, with v1、v2c and v3 options. They represent SNMP v1, SNMP v2c and SNMP v3.

*slev* — The Security Level of SNMP v3 Group. There are three options, including noAuthNoPriv (no authorization and no encryption)、authNoPriv (authorization and no encryption) and authPriv (authorization and encryption).

By default, the Security Level is noAuthNoPriv. There is no need to configure this in SNMP v1 Mode and SNMP v2c Mode.

*read-view* — Select the View to be the Read View. The management access is restricted to read-only, and changes cannot be made to the assigned SNMP View.

*write-view* — Select the View to be the Write View. The management access is writing only and changes can be made to the assigned SNMP View. The View defined both as the Read View and the Write View can be read and modified.

*notify-view* — Select the View to be the Notify View. The management station can receive notification messages of the assigned SNMP view generated by the switch's SNMP agent.

## Command Mode

Global Configuration mode

## Example

Add a group, and configure the name as group 1, the Security Model as SNMP v3, the security level as authNoPriv, the management access to the assigned View viewDefault as read-write, besides the notification messages sent by View viewDefault can be received by Management station:

```
TL-SL2428(config)# snmp-server group group1 smode v3 slev authNoPriv
read viewDefault write viewDefault notify viewDefault
```

Delete group 1:

```
TL-SL2428(config)# no snmp-server group group1 smode v3 slev
authNoPriv
```

## snmp-server user

### Description

The **snmp-server user** command is used to add User. To delete the corresponding User, please use **no snmp-server user** command. The User in an SNMP Group can manage the switch via the management station software. The User and its Group have the same security level and access right.

### Syntax

```
snmp-server user name { local | remote } group-name [ smode { v1 | v2c | v3 } ]
[ slev { noAuthNoPriv | authNoPriv | authPriv } ] [ cmode { none | MD5 | SHA } ]
[ cpwd confirm-pwd ] [ emode { none | DES } ] [ epwd encrypt-pwd ]
no snmp-server user name
```

## Parameter

*name* — User Name, ranging from 1 to 16 characters.

*local* | *remote* — User Type, with *local* and *remote* options. *Local* indicates that the user is connected to a local SNMP engine, while *remote* means that the user is connected to a remote SNMP engine.

*group-name* — The Group Name of the User. The User is classified to the corresponding Group according to its Group Name, Security Model and Security Level.

*smode* — The Security Model of the User, with *v1*, *v2c* and *v3* options. By default, the option is *v1*. The Security Model of the User must be the same with that of the Group which the User belongs to.

*slev* — The Security Level of SNMP v3 Group. There are three options, including *noAuthNoPriv* (no authorization and no encryption), *authNoPriv* (authorization and no encryption) and *authPriv* (authorization and encryption). By default, the option is “*noAuthNoPriv*”. The Security Level of the User must be the same with that of the Group which the User belongs to.

*cmode* — The Authentication Mode of the SNMP v3 User, with *none*, *MD5* and *SHA* options. *None* indicates no authentication method is used, *MD5* indicates the port authentication is performed via HMAC-MD5 algorithm and *SHA* indicates the port authentication is performed via SHA (Secure Hash Algorithm). *SHA* authentication mode has a higher security than *MD5* mode. By default, the Authentication Mode is “*none*”.

*confirm-pwd* — Authentication Password, ranging from 1 to 16 characters.

*emode* — The Privacy Mode of the SNMP v3 User, with *none* and *DES* options. *None* indicates no privacy method is used, and *DES* indicates DES encryption method is used. By default, the Privacy Mode is “*none*”.

*encrypt-pwd* — Privacy Password, ranging from 1 to 16 characters.

## Command Mode

Global Configuration Mode

## Example

Add Local User *admin* to Group *group2*, and configure the Security Model of the user as *v3*, the Security Level of the group as *authPriv*, the Authentication Mode of the user as *MD5*, the Authentication Password as *11111*, the Privacy Mode as *DES*, and the Privacy Password as *22222*:

```
TL-SL2428(config)# snmp-server user admin local group2 smode v3 slev  
authPriv cmode MD5 cpwd 11111 emode DES epwd 22222
```



## snmp-server community

### Description

The **snmp-server community** command is used to add Community. To delete the corresponding Community, please use **no snmp-server community** command. SNMP v1 and SNMP v2c adopt community name authentication. The community name can limit access to the SNMP agent from SNMP network management station, functioning as a password.

### Syntax

```
snmp-server community name { read-only | read-write } mib-view  
no snmp-server community name
```

### Parameter

*name* — Community Name, ranging from 1 to 16 characters.

read-only | read-write — The access rights of the community, with read-only and read-write options.

*mib-view* — The MIB View for the community to access.

### Command Mode

Global Configuration Mode

### Example

Add community public, and the community has read-write management right to View viewDefault:

```
TL-SL2428(config)# snmp-server community public read-write viewDefault
```

## snmp-server host

### Description

The **snmp-server host** command is used to add Notification. To delete the corresponding Notification, please use **no snmp-server host** command.

### Syntax

```
snmp-server host ip udp-port user-name [ smode { v1 | v2c | v3 } ] [ slev  
{ noAuthNoPriv | authNoPriv | authPriv } ] [ type { trap | inform } ] [ retries retries ]  
[ timeout timeout ]  
no snmp-server host ip user-name
```

### Parameter

*ip* — The IP address of the management Host.

*udp-port* — UDP port, which is used to send notifications. The UDP port functions with the IP address for the notification sending. It ranges from 1 to 65535.

*user-name* — The User name of the management station.

*smode* — The Security Model of the management station, with v1, v2c and v3 options. By default, the option is v1.

*slev* — The Security Level of SNMP v3 Group. There are three options, including noAuthNoPriv (no authorization and no encryption), authNoPriv (authorization and no encryption) and authPriv (authorization and encryption). By default, the option is “noAuthNoPriv”.

*type* — The type of the notifications, with trap and inform options. Trap indicates traps are sent, while inform indicates informs are sent. The inform type has a higher security than the trap type and resend and timeout need to be configured if you select this option. You can only select the trap type in Security Model v1. By default, the type of the notifications is “trap”.

*retries* — The amount of times the switch retries an inform request, ranging from 1 to 255. The switch will resend the inform request if it doesn't get the response from the management station during the Timeout interval, and it will terminate resending the inform request if the resending times reach the specified Retry times.

*timeout* — The maximum time for the switch to wait for the response from the management station before resending a request, ranging from 1 to 3600 in seconds.

## Command Mode

Global Configuration Mode

## Example

Add a Notification entry, and configure the IP address of the management Host as 192.168.0.146, the UDP port as 162, the User name of the management station as admin, the Security Model of the management station as v2c, the type of the notifications as inform, the maximum time for the switch to wait as 1000 seconds, and the retries time as 100:

```
TL-SL2428(config)# snmp-server host 192.168.0.146 162 admin smode v2c  
type inform retries 100 timeout 1000
```

# snmp-server engineID

## Description

The **snmp-server engineID** command is used to configure the local and remote engineID of the switch. To restore to the default setting, please use **no snmp-server engineID** command.

## Syntax

```
snmp-server engineID { [ local local-engineID ] [ remote remote-engineID ] }  
no snmp-server engineID
```

## Parameter

*local-engineID* — Local Engine ID for local clients. The Engine ID is a unique alphanumeric string used to identify the SNMP engine on the switch. Its length ranges from 10 to 64 hexadecimal characters, which must be even number meanwhile.

*remote-engineID* — Remote Engine ID for the switch. The Engine ID is a unique alphanumeric string used to identify the SNMP engine on the remote device which receives informs from the switch. Its length ranges from 10 to 64 hexadecimal characters, which must be even number meanwhile. The **snmp-server engineID** will be disabled if the **local** and **remote** are both not configured.

## Command Mode

Global Configuration Mode

## Example

Specify the local engineID as 1234567890, and the remote engineID as abcdef123456:

```
TL-SL2428(config)# snmp-server engineID local 1234567890 remote  
abcdef123456
```

# snmp-server traps snmp

## Description

The **snmp-server traps snmp** command is used to enable SNMP standard traps which include four types: linkup, linkdown, warmstart and coldstart. To disable the sending of SNMP standard traps, please use **no snmp-server traps snmp** command.

## Syntax

**snmp-server traps snmp** [ linkup | linkdown | warmstart | coldstart ]

**no snmp-server traps snmp** [ linkup | linkdown | warmstart | coldstart ]

## Parameter

linkup — Enable linkup trap. It is sent when port status changes from linkdown to linkup. By default, it is enabled.

linkdown — Enable linkdown trap. It is sent when port status changes from linkup to linkdown. By default, it is enabled.

warmstart — Enable warmstart trap. It is sent upon SNMP function reboot. By default, it is enabled.

coldstart — Enable coldstart trap. It is sent upon switch reboot. By default, it is enabled.

## Command Mode

Global Configuration Mode

## Example

Enable SNMP standard linkup trap for the switch:

```
TL-SL2428(config)# snmp-server traps snmp linkup
```

# snmp-server traps link-status

## Description

The **snmp-server traps link-status** command is used to enable SNMP link status trap for the specified port. To disable the sending of SNMP link status trap, please use **no snmp-server traps link-status** command.

## Syntax

**snmp-server traps link-status**

**no snmp-server traps link-status**

## Command Mode

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

## Example

Enable SNMP link status trap for port 3:

```
TL-SL2428(config)# interface fastEthernet 1/0/3
```

```
TL-SL2428(config-if)# snmp-server traps link-status
```

# snmp-server traps

## Description

The **snmp-server traps** command is used to enable SNMP extended traps. To disable the sending of SNMP extended traps, please use **no snmp-server traps** command.

## Syntax

```
snmp-server traps { bandwidth-control | cpu | flash | ipaddr-change  
|loopback-detection | storm-control | spanning-tree }
```

```
no snmp-server traps { bandwidth-control | cpu | flash | ipaddr-change  
|loopback-detection | storm-control | spanning-tree }
```

## Parameter

bandwidth-control — Enable bandwidth-control trap. It is sent when the rate limit function is enabled and the bandwidth exceeds the predefined value.

cpu — Allow CPU-related trap. It is sent when CPU usage exceeds the predefined threshold. By default, the CPU usage threshold of the switch is 80%.

flash — Enable flash trap. It is sent when flash is modified during operations such as backup, reset, firmware upgrade, configuration import, etc.

ipaddr-change — Enable ipaddr-change trap. It is sent when IP address is changed such as user manually modifies the IP address or the switch obtains a new IP address from DHCP.

loopback-detection — Enable loopback-detection trap. It is sent when the switch detects loopback or loopback is cleared.

storm-control — Enable storm-control trap. It is sent when the multicast or broadcast rate exceeds the predefined value.

spanning-tree — Enable spanning-tree trap. It is sent when the port forwarding status changes or the port receives TCN packet or packet with TC flag.

## Command Mode

Global Configuration Mode

## Example

Enable SNMP extended bandwidth-control trap for the switch:

```
TL-SL2428(config)# snmp-server traps bandwidth-control
```

## snmp-server traps mac

### Description

The **snmp-server traps mac** command is used to enable SNMP extended MAC address-related traps which include four types: new, full, learn-mode-change and max-learned. To disable the sending of SNMP extended MAC address related traps, please use **no snmp-server traps mac** command.

### Syntax

**snmp-server traps mac** [ new | full | learn-mode-change | max-learned ]

**no snmp-server traps mac** [ new | full | learn-mode-change | max-learned ]

### Parameter

new — Enable new MAC address trap. It is sent when the switch learns new MAC address including dynamic address, static address and filter address.

full — Enable MAC address table trap. It is sent when the MAC address table is full.

learn-mode-change — Enable MAC address learn-mode-change trap. It is sent when MAC address learning mode of the switch changes.

max-learned — Enable MAC address max-learned trap. It is sent when the amount of learned MAC address reaches the limit which is configured in port security module.

### Command Mode

Global Configuration Mode

### Example

Enable all SNMP extended MAC address-related traps for the switch:

```
TL-SL2428(config)# snmp-server traps mac
```

Enable new MAC address trap only for the switch:

```
TL-SL2428(config)# snmp-server traps mac new
```

## snmp-server traps vlan

### Description

The **snmp-server traps vlan** command is used to enable SNMP extended VLAN-related traps which include two types: create and delete. To disable this function, please use **no snmp-server traps vlan** command.

## Syntax

**snmp-server traps vlan** [ create | delete ]

**no snmp-server traps vlan** [create | delete ]

## Parameter

**create** — Enable VLAN-created trap. It is sent when new VLAN is created successfully.

**delete** — Enable VLAN-deleted traps. It is sent when VLAN is deleted successfully.

## Command Mode

Global Configuration Mode

## Example

Enable all SNMP extended VLAN-related traps for the switch:

```
TL-SL2428(config)# snmp-server traps vlan
```

Enable VLAN-created trap only for the switch:

```
TL-SL2428(config)# snmp-server traps vlan create
```

# rmon history

## Description

The **rmon history** command is used to configure the history sample entry. To return to the default configuration, please use **no rmon history** command. RMON (Remote Monitoring), basing on SNMP architecture, functions to monitor the network. History Group is one of the commonly used RMON Groups. After a history group is configured, the switch collects network statistics information periodically, based on which the management station can monitor network effectively.

## Syntax

**rmon history** *index* **interface** { **fastEthernet** *port* | **gigabitEthernet** *port* }  
[ **interval** *seconds* ] [ **owner** *owner-name* ]

**no rmon history** *index*

## Parameter

*index* — The index number of the entry, ranging from 1 to 12, in the format of 1-3,5.

*port* —The Ethernet port number.

*seconds* — The interval to take samplings from the port, ranging from 10 to 3600 in seconds. By default, it is 1800.

*owner-name* — The owner of the history sample entry, ranging from 1 to 16 characters. By default, it is “monitor”.

## Command Mode

Global Configuration Mode

## Example

Configure the sample port as Gi1/0/2 and the sample interval as 100 seconds for the entry 1-3:

```
TL-SL2428(config)# rmon history 1-3 interface fastEthernet 1/0/2 interval
100 owner owner1
```

# rmon event

## Description

The **rmon event** command is used to configure the entries of SNMP-RMON Event. To return to the default configuration, please use **no rmon event** command. Event Group, as one of the commonly used RMON Groups, is used to define RMON events. Alarms occur when an event is detected.

## Syntax

```
rmon event index [ user user-name ] [ description descript ] [ type { none | log  
| notify | log-notify } ] [ owner owner-name ]
```

```
no rmon event index
```

## Parameter

*index* — The index number of the event entry, ranging from 1 to 12. You can only select one entry for each command.

*user-name* — The name of the User to which the event belongs, ranging from 1 to 16 characters. By default, it is “public”.

*descript* — The description of the event, ranging from 1 to 16 characters. By default, it is empty.

*type* — The event type, with none, log, notify and both options. None indicates no processing, log indicates logging the event, notify indicates sending trap messages to the management station, and both indicates logging the event and sending trap messages to the management station.

*owner-name* — The owner of the event entry, ranging from 1 to 16 characters. By default, it is “monitor”.



## Command Mode

Global Configuration Mode

## Example

Configure the user name of entry 1, 2, 3 and 4 as user1, the description of the event as description1, the type of event as log and the owner of the event as owner1:

```
TL-SL2428(config)# rmon event 1-4 user user1 description description1
type log owner owner1
```

## rmon alarm

### Description

The **rmon alarm** command is used to configure SNMP-RMON Alarm Management. To return to the default configuration, please use **no rmon alarm** command. Alarm Group is one of the commonly used RMON Groups. RMON alarm management allows monitoring the specific alarm variables. When the value of a monitored variable exceeds the threshold, an alarm event is generated, which triggers the switch to act in the set way.

### Syntax

```
rmon alarm index interface { fastEthernet port | gigabitEthernet port }
[ alarm-variable { drop | revbyte | revpkt | bpkt | mpkt | crc-lign | undersize |
oversize | fragment | jabber | collision | 64 | 65-127 | 128-511 | 512-1023 |
1024-10240 } ] [ s-type { absolute | delta } ] [ rising-threshold r-hold ]
[ rising-event-index r-event ] [ falling-threshold f-hold ] [ falling-event-index
f-event ] [ a-type { rise | fall | all } ] [ owner owner-name ] [ interval interval ]
no rmon alarm index
```

### Parameter

*index* — The index number of the Alarm Management entry, ranging from 1 to 12, in the format of 1-3,5.

*port* — The Ethernet port number.

alarm-variable — The alarm variable. By default, the option is “drop”.

s-type — Sample Type, which is the sampling method for the selected variable and comparing the value against the thresholds. There are two options, absolute and delta. Absolute indicates comparing the values directly with the thresholds at the end of the sampling interval. Delta indicates subtracting the

last sampled value from the current value, and then comparing the difference in the values with the threshold. By default, the Sample Type is “absolute”.

*r-hold* — The rising counter value that triggers the Rising Threshold alarm, ranging from 1 to 65535. By default, it is 100.

*r-event* — Rise Event, which is the index of the corresponding event which will be triggered if the sampled value is larger than the Rising Threshold. It ranges from 1 to 12.

*f-hold* — The falling counter value that triggers the Falling Threshold alarm, ranging from 1 to 65535. By default, it is 100.

*f-event* — Fall Event, which is the index of the corresponding event which will be triggered if the sampled value is lower than the Falling Threshold. It ranges from 1 to 12.

*a-type* — Alarm Type, with rise, fall and all options. Rise indicates that the alarm event will be triggered when the sampled value exceeds the Rising Threshold, fall indicates that the alarm event will be triggered when the sampled value is under the Falling Threshold, and all indicates that the alarm event will be triggered either the sampled value exceeds the Rising Threshold or is under the Falling Threshold. By default, the Alarm Type is “all”.

*owner-name* — The owner of the entry, ranging from 1 to 16 characters. By default, it is “monitor”.

*interval* — The alarm interval time, ranging from 10 to 3600 in seconds. By default, it is 1800.

## Command Mode

Global Configuration Mode

## Example

Configure the port of entries of 1,2 and 3 as port 2, the owners as owner1 and the alarm intervals as 100 seconds

```
TL-SL2428(config)# rmon alarm 1-3 interface fastEthernet 1/0/2 owner  
owner1 interval 100
```

## show snmp-server

### Description

The **show snmp-server** command is used to display SNMP configuration globally.

### Syntax

```
show snmp-server
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display SNMP configuration globally:

```
TL-SL2428# show snmp-server
```

## show snmp-server view

### Description

The **show snmp-server view** command is used to display the View table.

### Syntax

```
show snmp-server view
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the View table:

```
TL-SL2428# show snmp-server view
```

## show snmp-server group

### Description

The **show snmp-server group** command is used to display the Group table.

### Syntax

```
show snmp-server group
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the Group table:

```
TL-SL2428# show snmp-server group
```

## show snmp-server user

### Description

The **show snmp-server user** command is used to display the User table.

### Syntax

```
show snmp-server user
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the User table:

```
TL-SL2428# show snmp-server user
```

## show snmp-server community

### Description

The **show snmp-server community** command is used to display the Community table.

### Syntax

```
show snmp-server community
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the Community table:

```
TL-SL2428# show snmp-server community
```

## show snmp-server host

### Description

The **show snmp-server host** command is used to display the Host table.

### Syntax

```
show snmp-server host
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the Host table:

```
TL-SL2428# show snmp-server host
```

## show snmp-server engineID

### Description

The **show snmp-server engineID** command is used to display the engineID of the SNMP.

### Syntax

```
show snmp-server engineID
```

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the engineID:

```
TL-SL2428# show snmp-server engineID
```

## show rmon history

### Description

The **show rmon history** command is used to display the configuration of the history sample entry.

### Syntax

```
show rmon history [ index ]
```

### Parameter

*index* — The index number of the entry selected to display the configuration, ranging from 1 to 12, in the format of 1-3, 5. You can select more than one entry for each command. By default, the configuration of all history sample entries is displayed.

### Command Mode

Privileged EXEC Mode and Any Configuration Mode

### Example

Display the configuration of all history sample entries:

```
TL-SL2428# show rmon history
```

## show rmon event

## Description

The **show rmon event** command is used to display the configuration of SNMP-RMON Event.

## Syntax

```
show rmon event [ index ]
```

## Parameter

*index* — The index number of the entry selected to display the configuration, ranging from 1 to 12, in the format of 1-3, 5. You can select more than one entry for each command. By default, the configuration of all SNMP-RMON enabled entries is displayed.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the Event configuration of entry1-4:

```
TL-SL2428# show rmon event 1-4
```

# show rmon alarm

## Description

The **show rmon alarm** command is used to display the configuration of the Alarm Management entry.

## Syntax

```
show rmon alarm [ index ]
```

## Parameter

*index* — The index number of the entry selected to display the configuration, ranging from 1 to 12, in the format of 1-3, 5. You can select more than one entry for each command. By default, the configuration of all Alarm Management entries is displayed.

## Command Mode

Privileged EXEC Mode and Any Configuration Mode

## Example

Display the configuration of the Alarm Management entry 1-2:

```
TL-SL2428# show rmon alarm 1-2
```