## Command Line Interface

TP-SW4GBT-2SFP
TP-SW8GBT-2SFP

# USER GUIDE

## Introduction

The purpose of this document is to provide software engineers with general information about the use of switch source files in switch team chip development.

While every effort has been made to ensure that this document is up-to-date and accurate, more information may have been updated after the preparation of this guide.

## Revision Record

| Date | Version | Description |
|---|---|---|
| Nov. 27, 2020 | V1.0 | First Edition |
| Mar. 2, 2023 | V1.1 | Add hostname |

# Contents

# 1. AAA

## aaa accounting

### Syntax

**aaa accounting** { **console** | **telnet** | **ssh** } **tacacs** { [ **commands** *<priv_lvl>* ] [ **exec** ] }
**no aaa accounting** { **console** | **telnet** | **ssh** }

### Parameter

| | |
|---|---|
| **console** | Configure console command accounting |
| **telnet** | Configure telnet command accounting |
| **ssh** | Configure SSH command accounting |
| *<priv_lvl>* | Command privilege level. Commands equal and above this level are accounted |

### Default

### Mode

Global Configuration

### Usage

Use the aaa accounting command to configure the accounting methods.

### Example

(config)# **aaa accounting telnet tacacs commands 0 exec**

## aaa authentication

### Syntax

**aaa authentication login** { **console** | **telnet** | **ssh** | **http** } { { **local** | **radius** | **tacacs** } [ { **local** | **radius** | **tacacs** } [ { **local** | **radius** | **tacacs** } ] ] }
**no aaa authentication login** { **console** | **telnet** | **ssh** | **http** }

### Parameter

| | |
|---|---|
| **console** | Configure Console authentication |
| **telnet** | Configure Telnet authentication |

| | |
|---|---|
| **ssh** | Configure SSH authentication |
| **http** | Configure HTTP authentication |
| **local** | Use local database for authentication |
| **radius** | Use RADIUS for authentication |
| **tacacs** | Use TACACS+ for authentication |

### Default

### Mode

Global Configuration

### Usage

Use the aaa authentication login command to configure the authentication methods.

### Example

(config)# **aaa authentication login telnet local radius tacacs**

## aaa authorization

### Syntax

**aaa authorization** { **console** | **telnet** | **ssh** } **tacacs commands** *<priv_lvl>* [ **config-commands** ]
**no aaa authorization** { **console** | **telnet** | **ssh** }

### Parameter

| | |
|---|---|
| **console** | Configure Console command authorization |
| **telnet** | Configure Telnet command authorization |
| **ssh** | Configure SSH command authorization |
| *<priv_lvl>* | Command privilege level. Commands equal and above this level are authorized |

### Default

### Mode

Global Configuration

### Usage

Use the aaa authorization command to configure the authorization methods.

### Example

(config)# **aaa authorization telnet tacacs commands 0**

## clear dot1x statistics

### Syntax

**clear dot1x statistics** { **eapol** | **radius** | **all** } [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Clear dot1x statistics.

### Example

This example shows how to clear dot1x statistics:
# **show dot1x statistics radius interface GigabitEthernet 1/1-2**

## dot1x authentication timer inactivity

### Syntax

**dot1x authentication timer inactivity** *<v_10_to_100000>*
**no dot1x authentication timer inactivity**

### Parameter

| | |
|---|---|
| *<v_10_to_100000>* | Seconds |

### Default

### Mode

Global Configuration

### Usage

Time in seconds between check for activity on successfully authenticated MAC addresses..

### Example

(config)# **dot1x authentication timer inactivity 13**

## dot1x authentication timer re-authenticate

### Syntax

**dot1x authentication timer re-authenticate** *<v_1_to_3600>*
**no dot1x authentication timer re-authenticate**

### Parameter

| | |
|---|---|
| *<v_1_to_3600>* | Seconds |

### Default

### Mode

Global Configuration

### Usage

The period between re-authentication attempts in seconds.

### Example

(config)# **dot1x authentication re-authenticate 5**

## dot1x feature

### Syntax

**dot1x feature** { [ **guest-vlan** ] [ **radius-qos** ] [ **radius-vlan** ] }
**no dot1x feature**

### Parameter

| | |
|---|---|
| **guest-vlan** | Globally enables/disables state of guest-VLAN. |
| **radius-qos** | Globally enables/disables state of RADIUS-assigned QoS. |
| **radius-vlan** | Globally enables/disables state of RADIUS-assigned VLAN. |

### Default

### Mode

Global Configuration

### Usage

Globally enables/disables a dot1x feature functionality.

### Example

(config)# **dot1x feature guest-vlan**

## dot1x guest-vlan(Global)

### Syntax

**dot1x guest-vlan** *<value>*
**no dot1x guest-vlan**

### Parameter

| | |
|---|---|
| *<value>* | Guest VLAN ID used when entering the Guest VLAN. |

### Default

### Mode

Global Configuration

### Usage

Configure guest VLAN.

### Example

(config)# **dot1x guest-vlan 5**

## dot1x guest-vlan(Interface)

### Syntax

**dot1x guest-vlan**
**no dot1x guest-vlan**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Enables/disables guest VLAN.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **dot1x guest-vlan**

## dot1x guest-vlan supplicant

### Syntax

**dot1x guest-vlan supplicant**
**no dot1x guest-vlan supplicant**

### Parameter

### Default

Default supplicant is disabled.

### Mode

Global Configuration

### Usage

The switch remembers if an EAPoL frame has been received on the port for the life-time of the port. Once the switch considers whether to enter the Guest VLAN, it will first check if this option is enabled or disabled. If disabled (unchecked, default), the switch will only enter the Guest VLAN if an EAPoL frame has not been received on the port for the life-time of the port.

If enabled (checked), the switch will consider entering the Guest VLAN even if an EAPoL frame has been received on the port for the life-time of the port..

### Example

(config)# **dot1x guest-vlan supplicant**

## dot1x initialize

### Syntax

**dot1x initialize** [ **interface** ( *<port_type>* [ *<plist>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<plist>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Force re-authentication immediately.

### Example

# **dot1x initialize**

## dot1x max-reauth-req

### Syntax

**dot1x max-reauth-req** *<value>*
**no dot1x max-reauth-req**

### Parameter

| | |
|---|---|
| *<value>* | Number of times |

### Default

### Mode

Global Configuration

### Usage

The number of times a Request Identity EAPoL frame is sent without response before considering entering the Guest VLAN.

### Example

(config)# **dot1x max-reauth-req 22**

## dot1x port-control

### Syntax

**dot1x port-control** { **force-authorized** | **force-unauthorized** | **auto** | **single** | **multi** | **mac-based** }
**no dot1x port-control**

### Parameter

| | |
|---|---|
| **force-authorized** | Port access is allowed |
| **force-unauthorized** | Port access is not allowed |
| **auto** | Port-based 802.1X Authentication |
| **single** | Single Host 802.1X Authentication |
| **multi** | Multiple Host 802.1X Authentication |
| **mac-based** | Switch authenticates on behalf of the client |

### Default

### Mode

Interface Configuration

### Usage

Sets the port security state.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **dot1x port-control force-authorized**

## dot1x radius-qos

### Syntax

**dot1x radius-qos**
**no dot1x radius-qos**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Enables/disables per-port state of RADIUS-assigned QoS.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **dot1x radius-qos**

## dot1x radius-vlan

### Syntax

**dot1x radius-vlan**
**no dot1x radius-vlan**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Enables/disables per-port state of RADIUS-assigned VLAN.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **dot1x radius-vlan**

## dot1x re-authenticate

### Syntax

**dot1x re-authenticate**
**no dot1x re-authenticate**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Refresh (restart) 802.1X authentication process.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **dot1x re-authenticate**

## dot1x re-authentication

### Syntax

**dot1x re-authentication**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Set Re-authentication state.

### Example

(config)# **dot1x re-authentication**

## dot1x system-auth-control

### Syntax

**dot1x system-auth-control**
**no dot1x system-auth-control**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Set the global NAS state.

### Example

(config)# **dot1x system-auth-control**

## dot1x timeout quiet-period

### Syntax

**dot1x timeout quiet-period** *<v_10_to_1000000>*
**no dot1x timeout quiet-period**

### Parameter

| | |
|---|---|
| *<v_10_to_1000000>* | Seconds |

### Default

Default quiet-period is 10.

### Mode

Global Configuration

### Usage

Time in seconds before a MAC-address that failed authentication gets a new authentication chance.

### Example

(config)# **dot1x timeout quiet-period 11**

## dot1x timeout tx-period

### Syntax

**dot1x timeout tx-period** *<v_1_to_65535>*
**no dot1x timeout tx-period**

### Parameter

| | |
|---|---|
| *<v_1_to_65535>* | Seconds |

### Default

### Mode

Global Configuration

### Usage

The time between EAPoL retransmissions.

### Example

(config)# **dot1x timeout tx-period 4**

## radius-server attribute 32

### Syntax

**radius-server attribute 32** *<id>*
**no radius-server attribute 32**

### Parameter

| | |
|---|---|
| *<id>* | NAS-Identifier |

### Default

### Mode

Global Configuration

### Usage

NAS Identifier attributes configuration.

### Example

(config)# **radius-server attribute 32 abc**

## radius-server attribute 4

### Syntax

**radius-server attribute 4** *<ipv4>*
**no radius-server attribute 4**

### Parameter

| | |
|---|---|
| *<ipv4>* | NAS-IP-Address |

### Default

### Mode

Global Configuration

### Usage

NAS IP address attributes configuration.

### Example

(config)# **radius-server attribute 4 192.168.1.254**

## radius-server attribute 95

### Syntax

**radius-server attribute 95** *<ipv6>*
**no radius-server attribute 95**

### Parameter

| | |
|---|---|
| *<ipv6>* | NAS-IPv6-Address |

### Default

### Mode

Global Configuration

### Usage

NAS IPv6 address attributes configuration.

### Example

(config)# **radius-server attribute 95 2001:1000::1**

## radius-server deadtime

### Syntax

**radius-server deadtime** *<minutes>*
**no radius-server deadtime**

### Parameter

| | |
|---|---|
| *<minutes>* | Time in minutes |

### Default

### Mode

Global Configuration

### Usage

Use the radius-server deadtime command to configure the global RADIUS deadtime value.

### Example

(config)# **radius-server deadtime 10**

## radius-server host

### Syntax

**radius-server host** *<host_name>* [ **auth-port** *<auth_port>* ] [ **acct-port** *<acct_port>* ] [ **timeout** *<seconds>* ] [ **retransmit** *<retries>* ] [ **key** *<key>* ]
**no radius-server host** *<host_name>* [ **auth-port** *<auth_port>* ] [ **acct-port** *<acct_port>* ]

### Parameter

| | |
|---|---|
| *<host_name>* | Hostname or IP address |
| *<auth_port>* | UDP port number or 0 to disable authentication |
| *<acct_port>* | UDP port number or 0 to disable accounting |
| *<seconds>* | Wait time in seconds |
| *<retries>* | Number of retries for a transaction |
| *<key>* | The shared key |

### Default

### Mode

Global Configuration

### Usage

Use the radius-server host command to add a new RADIUS host.

### Example

(config)# **radius-server host abc**

## radius-server key

### Syntax

**radius-server key** *<key>*
**no radius-server key**

### Parameter

| | |
|---|---|
| *<key>* | The shared key |

### Default

### Mode

Global Configuration

### Usage

Use the radius-server key command to configure the global RADIUS key.

### Example

(config)# **radius-server key hr_abc**

## radius-server retransmit

### Syntax

**radius-server retransmit** *<retries>*
**no radius-server retransmit**

### Parameter

| | |
|---|---|
| *<retries>* | Number of retries for a transaction |

### Default

### Mode

Global Configuration

### Usage

Use the radius-server retransmit command to configure the global RADIUS retransmit value.

### Example

(config)# **radius-server retransmit 10**

## radius-server timeout

### Syntax

**radius-server timeout** *<seconds>*
**no radius-server timeout**

### Parameter

| | |
|---|---|
| *<seconds>* | Wait time in seconds |

### Default

### Mode

Global Configuration

### Usage

Use the radius-server timeout command to configure the global RADIUS timeout value.

### Example

(config)# **radius-server timeout 10**

## show aaa

### Syntax

**show aaa**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Use the show aaa command to view the currently active authentication login methods.

### Example

```
# show aaa
Authentication :
   console : local
   telnet   : local
   ssh       : local
   http      : local
Authorization :
   console : no, commands disabled
   telnet   : no, commands disabled
```

```
    ssh        : no, commands disabled
Accounting :
    console : no, commands disabled, exec disabled
    telnet  : no, commands disabled, exec disabled
    ssh        : no, commands disabled, exec disabled
```

## show dot1x statistics

### Syntax

**show dot1x statistics** { **eapol** | **radius** | **all** } [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | interface |
| *<v_port_type_list>* | Port list in 1/1-4 |

### Default

### Mode

Privileged EXEC

### Usage

Show dot1x statistics.

### Example

```
# show dot1x statistics radius
                Rx Access    Rx Other     Rx Auth.     Rx Auth.     Tx           MAC
Interface       Challenges   Requests     Successes    Failures     Responses    Address
----------      -----------  -----------  -----------  -----------  -----------  -----------
-----------------
Gi 1/1                   0            0            0            0            0  -
Gi 1/2                   0            0            0            0            0  -
Gi 1/3                   0            0            0            0            0  -
Gi 1/4                   0            0            0            0            0  -
2.5G 1/1                 0            0            0            0            0  -
2.5G 1/2                 0            0            0            0            0  -
```

## show dot1x status

### Syntax

**show dot1x status** [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) ] [ **brief** ]

### Parameter

| | |
|---|---|
| *<port_type>* | interface |
| *<v_port_type_list>* | Port list in 1/1-4 |

### Default

### Mode

Privileged EXEC

### Usage

Show dot1x status.

### Example

```
# show dot1x status
Interface    Admin Port State        Last Src          Last ID           QOS VLAN Guest
---------- ----- --------------- ---------------- ---------------- --- ---- ---
Gi 1/1       Auth  Disabled         -                 -                 -   -    -
Gi 1/2       Auth  Disabled         -                 -                 -   -    -
Gi 1/3       Auth  Disabled         -                 -                 -   -    -
Gi 1/4       Auth  Disabled         -                 -                 -   -    -
2.5G 1/1     Auth  Disabled         -                 -                 -   -    -
2.5G 1/2     Auth  Disabled         -                 -                 -   -    -
```

## show radius-server statistics

### Syntax

**show radius-server** [ **statistics** ]

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Use the show radius-server command to view the current RADIUS configuration and statistics.

### Example

```
# show radius-server statistics
Global RADIUS Server Timeout          : 5 seconds
Global RADIUS Server Retransmit     : 3 times
Global RADIUS Server Deadtime         : 0 minutes
Global RADIUS Server Key                :
Global RADIUS Server Attribute 4    :
Global RADIUS Server Attribute 95 :
Global RADIUS Server Attribute 32 :
No servers configured!
```

## show tacacs-server

### Syntax

**show tacacs-server**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Use the show tacacs-server command to view the current TACACS+ configuration.

### Example

```
# show tacacs-server
Global TACACS+ Server Timeout          : 5 seconds
Global TACACS+ Server Deadtime         : 0 minutes
Global TACACS+ Server Key                :
No servers configured!
```

## tacacs-server deadtime

### Syntax

**tacacs-server deadtime** *<minutes>*
**no tacacs-server deadtime**

### Parameter

| | |
|---|---|
| *<minutes>* | Time in minutes |

### Default

### Mode

Global Configuration

### Usage

Use the tacacs-server deadtime command to configure the global TACACS+ deadtime value.

### Example

(config)# **tacacs-server deadtime 100**

## tacacs-server host

### Syntax

**tacacs-server host** *<host_name>* [ **port** *<port>* ] [ **timeout** *<seconds>* ] [ **key** *<key>* ]
**no tacacs-server host** *<host_name>* [ **port** *<port>* ]

### Parameter

| | |
|---|---|
| *<host_name>* | Hostname or IP address |
| *<port>* | TCP port number |
| *<seconds>* | Wait time in seconds |
| *<key>* | The shared key |

### Default

### Mode

Global Configuration

### Usage

Use the tacacs-server host command to add a new TACACS+ host.

### Example

(config)# **tacacs-server host abc**

## tacacs-server key

### Syntax

**tacacs-server key** *<key>*
**no tacacs-server key**

### Parameter

| | |
|---|---|
| *<key>* | The shared key |

### Default

### Mode

Global Configuration

### Usage

Use the tacacs-server key command to configure the global TACACS+ key.

### Example

(config)# **tacacs-server key abc**

## tacacs-server timeout

### Syntax

**tacacs-server timeout** *<seconds>*
**no tacacs-server timeout**

### Parameter

| | |
|---|---|
| *<seconds>* | Wait time in seconds |

### Default

### Mode

Global Configuration

### Usage

Use the tacacs-server timeout command to configure the global TACACS+ timeout value.

### Example

(config)# **tacacs-server timeout 100**

# 2. DHCP

## clear ip dhcp detailed statistics

### Syntax

**clear ip dhcp detailed statistics** { **server** | **client** | **snooping** | **relay** | **helper** | **all** } [ **interface** ( *<port_type>* [ *<in_port_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<in_port_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Use the clear ip dhcp detailed statistics privileged EXEC command to clear the statistics, or particularly the IP DHCP statistics for the interface. Notice that except for clear statistics on all interfaces, clear the statistics on specific port may not take effect on global statistics since it gathers the different layer overview.

### Example

This example shows how to clear all ip dhcp statistics

# **clear ip dhcp detailed statistics all**

## clear ip dhcp snooping statistics

### Syntax

**clear ip dhcp snooping statistics** [ **interface** ( *<port_type>* [ *<in_port_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<in_port_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Use the clear ip dhcp snooping statistics privileged EXEC command to clear the statistics maintained by IP DHCP snooping, or particularly the IP DHCP snooping statistics for the interface.

### Example

This example shows how to clear all ip dhcp snooping statistics
# **clear ip dhcp snooping statistics**

## ip dhcp pool

### Syntax

**ip dhcp pool** *<pool_name>*

### Parameter

| | |
|---|---|
| *<pool_name>* | Pool name in 32 characters |

### Default

### Mode

Global Configuration

### Usage

Configure DHCP address pools.

### Example

(config)# **ip dhcp pool abc**
(config-dhcp-pool)#

## ip dhcp retry

### Syntax

**ip dhcp retry interface vlan** *<vlan_id>*

### Parameter

| | |
|---|---|
| *<vlan_id>* | VLAN ID |

### Default

### Mode

Privileged EXEC

### Usage

Restart the dhcp client.

### Example

# **ip dhcp pool retry interface vlan 1**

## ip dhcp snooping

### Syntax

**ip dhcp snooping**
**no ip dhcp snooping**

### Parameter

### Default

DHCP snooping is disabled.

### Mode

Global Configuration

### Usage

Use the ip dhcp snooping global configuration command to globally enable DHCP snooping. Use the no form of this command to globally disable DHCP snooping.

### Example

This example shows how to enable DHCP snooping
(config)# **ip dhcp snooping**

## ip dhcp snooping trust

### Syntax

**ip dhcp snooping trust**
**no ip dhcp snooping trust**

### Parameter

### Default

DHCP snooping trust is enabled.

### Mode

Interface Configuration

### Usage

Use the ip dhcp snooping trust interface configuration command to configure a port as trusted for DHCP snooping purposes. Use the no form of this command to configure a port as untrusted.

### Example

This example shows how to enable DHCP snooping trust on a port
(config)# **interface GigabitEthernet 1/1**
(config-if)# **ip dhcp snooping trust**

## ip dns proxy

### Syntax

**ip dns proxy**
**no ip dns proxy**

### Parameter

### Default

DNS proxy is disabled by default.

### Mode

Global Configuration

### Usage

Use the ip dns proxy command to configure DNS proxy.

### Example

(config)# **ip dns proxy**

## ip domain name

### Syntax

**ip domain name** { *<v_domain_name>* | **dhcp** [ **ipv4** | **ipv6** ] [ **interface vlan** *<v_vlan_id_dhcp>* ] }
**no ip domain name**

### Parameter

| | |
|---|---|
| *<v_domain_name>* | Default domain name |
| **dhcp** | Dynamic Host Configuration Protocol |
| *<v_vlan_id_dhcp>* | VLAN identifier (VID) |

### Default

### Mode

Global Configuration

### Usage

ip domain name.

### Example

(config)# **ip domain name abc**

## ip name-server

### Syntax

**ip name-server** [ *<order>* ] { *<v_ipv4_ucast>* | { *<v_ipv6_ucast>* [ **interface vlan** *<v_vlan_id_static>* ] } | **dhcp** [ **ipv4** | **ipv6** ] [ **interface vlan** *<v_vlan_id_dhcp>* ] }
**no ip name-server** [ *<order>* ]

### Parameter

| | |
|---|---|
| *<order>* | Preference of DNS server. Default selection is 0 |
| *<v_ipv4_ucast>* | A valid IPv4 unicast address |
| *<v_ipv6_ucast>* | A valid IPv6 unicast address |
| *<v_vlan_id_static>* | VLAN identifier (VID) |
| **ipv4** | DNS setting is derived from DHCPv4. Default selection. |
| **ipv6** | DNS setting is derived from DHCPv6 |
| *<v_vlan_id_dhcp>* | VLAN identifier (VID) |

### Default

### Mode

Global Configuration

### Usage

Set the DNS server for resolving domain names.

### Example

(config)# **ip name-server 0 192.168.10.1**

## ipv6 address

### Syntax

**ipv6 address** *<subnet>*

**no ipv6 address** [ *<subnet>* ]

### Parameter

| | |
|---|---|
| *<subnet>* | IPv6 prefix x:x::y/z |

### Default

### Mode

VLAN Interface Configuration

### Usage

Configure the IPv6 address of an interface.

### Example

(config)# **interface vlan 100**
(config)# **ipv6 address 2001:1000::1/64**

## show ip dhcp detailed statistics

### Syntax

**show ip dhcp detailed statistics** { **server** | **client** | **snooping** | **relay** | **normal-forward** | **combined** } [ **interface** ( *<port_type>* [ *<in_port_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<in_port_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Use the show ip dhcp detailed statistics user EXEC command to display statistics. Notice that the normal forward per-port TX statistics isn't increased if the incoming DHCP packet is done by L3 forwarding mechanism. Notice that the normal forward per-port TX statistics isn't increased if the incoming DHCP packet is done by L3 forwarding mechanism.

### Example

```
# show ip dhcp detailed statistics client
GigabitEthernet 1/1 Statistics:
-------------------------------
Rx Discover:                    0    Tx Discover:                    0
Rx Offer:                       0    Tx Offer:                       0
Rx Request:                     0    Tx Request:                     0
Rx Decline:                     0    Tx Decline:                     0
Rx ACK:                         0    Tx ACK:                         0
Rx NAK:                         0    Tx NAK:                         0
Rx Release:                     0    Tx Release:                     0
Rx Inform:                      0    Tx Inform:                      0
Rx Lease Query:                 0    Tx Lease Query:                 0
Rx Lease Unassigned:            0    Tx Lease Unassigned:            0
Rx Lease Unknown:               0    Tx Lease Unknown:               0
Rx Lease Active:                0    Tx Lease Active:                0
Rx Discarded checksum error:    0
```

## show ip dhcp snooping interface

### Syntax

**show ip dhcp snooping** [ **interface** ( *<port_type>* [ *<in_port_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<in_port_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Use the show ip dhcp snooping user EXEC command to display the DHCP snooping configuration.

### Example

```
# show ip dhcp snooping
Switch DHCP snooping is enabled
DHCP snooping is configured on following
```

GigaEthernet 1/1 trust
GigaEthernet 1/2 trust
GigaEthernet 1/3 untrust

## show ip dhcp snooping table

### Syntax

**show ip dhcp snooping table**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Use the show ip dhcp snooping table user EXEC command to display the IP assigned information that is obtained from DHCP server except for local VLAN interface IP addresses.

### Example

# **show ip dhcp snooping table**
DHCP Snooping IP Assigned Information :
---
Entry 1 :
---
MAC Address : 00-10-60-2b-66-63
VLAN ID : 1
Source Port : GigabitEthernet 1/2
IP Address : 192.168.2.1
IP Subnet Mask : 255.255.255.0
DHCP Server Address : 192.168.2.250

## show ip interface brief

### Syntax

**show ip interface brief**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Brief IP interface status.

### Example

```
# show ip interface brief
Interface          Address                  Method   Status
---------------- -------------------- -------- ------
VLAN 1             192.168.0.2/24           Manual   UP
```

## show ip name-server

### Syntax

**show ip name-server**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Display the active domain name server information.

### Example

```
# show ip name-server
Current DNS server is not set.
Configured DNS server 0 is set by NONE:
No address is used for DNS lookup.
Configured DNS server 1 is set by NONE:
No address is used for DNS lookup.
Configured DNS server 2 is set by NONE:
No address is used for DNS lookup.
```

Configured DNS server 3 is set by NONE:
No address is used for DNS lookup.

## show ipv6 interface vlan

### Syntax

**show ipv6 interface** [ **vlan** *<v_vlan_list>* { **brief** | **statistics** } ]

### Parameter

| | |
|---|---|
| *<v_vlan_list>* | IPv6 interface VLAN list |

### Default

### Mode

Privileged EXEC

### Usage

Brief IPv6 interface status.

### Example

```
# show ipv6 interface
IPv6 Vlan1 interface is up.
   Internet address is fe80::1e2a:a3ff:fe01:23c6
   Static address is not set
   IP stack index (IFID) is 2
   Routing is enabled on this interface
   MTU is 1500 bytes

   IPv6 Statistics on Interface VLAN: 1
   Rcvd:   438 total in 26152 bytes
            438 local destination, 0 forwarding
            0 header error, 0 address error, 0 unknown protocol
            0 no route, 0 truncated, 0 discarded
   Sent:   10 total in 696 bytes
            10 generated, 0 forwarded
            0 discarded
   Frags: 0 reassemble (0 reassembled, 0 couldn't reassemble)
            0 fragment (0 fragmented, 0 couldn't fragment)
            0 fragment created
   Mcast: 438 received in 26152 bytes
            10 sent in 696 bytes
```

Bcast: 0 received, 0 sent

# 3. ERPS

## clear erps

### Syntax

**clear erps** [ *<groups>* ] **statistics**

### Parameter

| | |
|---|---|
| *<groups>* | The ERPS group number |

### Default

### Mode

Privileged EXEC

### Usage

Clear statistics for ERPS groups.

### Example

This example shows how to clear statistics for ERPS
# **clear erps 1 statistics**

## clear evc

### Syntax

**clear evc statistics** { [ *<evc_id>* | **all** ] } [ **ece** [ *<ece_id>* ] ] [ **interface** ( *<port_type>* [ *<port_list>* ] ) ] [ **pw** *<pw_num_list>* ]

### Parameter

| | |
|---|---|
| *<evc_id>* | EVC identifier |
| *<ece_id>* | ECE identifier |
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<port_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |
| *<pw_num_list>* | List of MPLS-TP Pseudo-Wire numbers |

### Default

### Mode

Privileged EXEC

### Usage

### Example

# **clear evc statistics interface GigabitEthernet 1/1**

## clear mep

### Syntax

**clear mep** *<inst>* { **lm** | **dm** | **tst** | **bfd** }

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance. |

### Default

### Mode

Privileged EXEC

### Usage

Clear measuring or statistics information. What measuring / statistics information to be cleared can be selected to be one of the supported 'functionality configuration'.

### Example

# **clear mep 1 lm**

## erps

### Syntax

**erps** *<group>* **command** { **force** | **manual** | **clear** } { **port0** | **port1** }
**no erps** *<group>* **command** [ **port0** ] [ **port1** ]

### Parameter

| | |
|---|---|
| *<group>* | ERPS group number |
| **force** | Force command |
| **manual** | Manual command |
| **clear** | Clear command |
| **port0** | ERPS Port 0 interface |
| **port1** | ERPS Port 1 interface |

### Default

### Mode

Privileged EXEC

### Usage

Set/clear ERPS administrative command..

### Example

# **erps 1 command clear port0**

## erps guard

### Syntax

**erps** *<group>* **guard** *<guard_time_ms>*
**no erps** *<group>* **guard**

### Parameter

| | |
|---|---|
| *<group>* | ERPS group number |
| *<guard_time_ms>* | Guard time in ms |

### Default

### Mode

Global Configuration

### Usage

Configure ERPS guard time.

### Example

(config)# **erps 1 guard 500**

## erps holdoff

### Syntax

**erps** *<group>* **holdoff** *<holdoff_time_ms>*
**no erps** *<group>* **holdoff**

### Parameter

| | |
|---|---|
| *<group>* | ERPS group number |
| *<holdoff_time_ms>* | Hold-off time in ms |

### Default

### Mode

Global Configuration

### Usage

Configure ERPS hold off time.

### Example

(config)# **erps 1 holdoff 100**

## erps major

### Syntax

**erps** *<group>* **major port0 interface** *<port_type>* *<port0>* **port1 interface** *<port_type>* *<port1>* [ **interconnect** ]

### Parameter

| | |
|---|---|
| *<group>* | ERPS group number |
| **major** | Major ring |
| **port0** | ERPS Port 0 interface |
| **port1** | ERPS Port 1 interface |
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |

| | |
|---|---|
| *<port0>* | Port ID in the format of switch-no/port-no |
| **interconnect** | Major ring is interconnected |

### Default

### Mode

Global Configuration

### Usage

Configure ERPS group.

### Example

(config)# **erps 1 major port0 interface GigabitEthernet 1/1 port1 interface GigabitEthernet 1/2**

## erps mep

### Syntax

**erps** *<group>* **mep port0 sf** *<p0_sf>* **aps** *<p0_aps>* **port1 sf** *<p1_sf>* **aps** *<p1_aps>*
**no erps** *<group>* **mep**

### Parameter

| | |
|---|---|
| *<group>* | ERPS group number |
| **mep** | MEP |
| **port0** | ERPS Port 0 interface |
| **port1** | ERPS Port 1 interface |
| *<p0_sf>* | Index of Port 0 SignalFail MEP |
| *<p0_aps>* | Index of Port 0 APS MEP |
| *<p1_sf>* | Index of Port 1 SignalFail MEP |
| *<p1_aps>* | Index of Port 1 APS MEP |

### Default

### Mode

Global Configuration

### Usage

Configure MEPs for ERPS group.

### Example

(config)# **erps 1 mep port0 sf 2 aps 2 port1 sf 3 aps 3**

## erps revertive

### Syntax

**erps** *<group>* **revertive** *<wtr_time_minutes>*
**no erps** *<group>* **revertive**

### Parameter

| | |
|---|---|
| *<group>* | ERPS group number |
| *<wtr_time_minutes>* | MEP |
| *<p1_aps>* | Wait-to-restore time in minutes |

### Default

### Mode

Global Configuration

### Usage

Enable ERPS revertive and set timeout.

### Example

(config)# **erps 1 revertive 1**

## erps rpl

### Syntax

**erps** *<group>* **rpl** { **owner** | **neighbor** } { **port0** | **port1** }
**no erps** *<group>* **rpl**

### Parameter

| | |
|---|---|
| *<group>* | ERPS group number |
| **owner** | Owner role |
| **neighbor** | Neighbor role |
| **port0** | ERPS Port 0 interface |

| | |
|---|---|
| **port1** | ERPS Port 1 interface |

### Default

### Mode

Global Configuration

### Usage

Configure ERPS Ring Protection Link.

### Example

(config)# **erps 1 rpl owner port0**

## erps sub

### Syntax

**erps** *<group>* **sub port0 interface** *<port_type>* *<port0>* { { **port1 interface** *<port_type>* *<port1>* } | { **interconnect** *<major_ring_id>* } } [ **virtual-channel** ]

### Parameter

| | |
|---|---|
| *<group>* | ERPS group number |
| **sub** | Sub-ring |
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<port0>* | Port ID in the format of switch-no/port-no |
| **interconnect** | Sub-ring is interconnected |
| *<major_ring_id>* | Major ring group number |
| **virtual-channel** | Enable virtual channel for sub-ring |

### Default

### Mode

Global Configuration

### Usage

Configure ERPS sub ring group.

### Example

(config)# **erps 1 1 sub port0 interface GigabitEthernet 1/2 port1 interface GigabitEthernet 1/3**

## erps topology

### Syntax

**erps** *<group>* **topology-change propagate**
**no erps** *<group>* **topology-change propagate**

### Parameter

| | |
|---|---|
| *<group>* | ERPS group number |

### Default

### Mode

Global Configuration

### Usage

Configure ERPS topology change propagation.

### Example

(config)# **erps 1 topology-change propagate**

## erps version

### Syntax

**erps** *<group>* **version { 1 | 2 }**
**no erps** *<group>* **version**

### Parameter

| | |
|---|---|
| *<group>* | ERPS group number |

### Default

### Mode

Global Configuration

### Usage

Set ERPS version.

### Example

(config)# **erps 1 version 2**

## erps vlan

### Syntax

**erps** *<group>* **vlan** { **none** | [ **add** | **remove** ] *<vlans>* }
**no erps** *<group>* **vlan**

### Parameter

| | |
|---|---|
| *<group>* | ERPS group number |
| *<vlans>* | List of VLANs |

### Default

### Mode

Global Configuration

### Usage

Configure set of protected VLANs in ERPS group.

### Example

(config)# **erps 1 vlan 1**

# mep

## Syntax

**mep** *<inst>* [ **mip** ] { **up** | **down** } **domain** { **port** | **evc** | **vlan** | **tp-link** | **tunnel-tp** | **pw** | **lsp** } [ **vid** *<vid>* ] [ **flow** *<flow>* ] **level** *<level>* [ **interface** *<port_type>* *<port>* ]
**no mep** *<inst>*

## Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| **mip** | This MEP instance is a half-MIP |
| **up** | This MEP is an Up-MEP |
| **down** | This MEP is a Down-MEP |
| **domain** | The domain of the MEP |
| *<vid>* | The port Domain MEP or EVC domain customer MIB VID |
| *<flow>* | The VLAN, EVC, MPLS-TP link, MPLS-TP tunnel, MPLS-TP LSP or MPLS-TP Pseudo-Wire flow instance number |
| *<level>* | The MEG level value |
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<port>* | Port ID in the format of switch-no/port-no |

## Default

## Mode

Global Configuration

## Usage

Create a MEP instance.

## Example

(config)# **mep 1 down domain port level 0 interface GigabitEthernet 1/2**

# mep ais

## Syntax

**mep** *<inst>* **ais** [ **fr1s** | **fr1m** ] [ **protect** ]
**no mep** *<inst>* **ais**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| **fr1s** | Frame rate is 1 f/s |
| **fr1m** | Frame rate is 1 f/min |
| **protect** | The AIS can be used for protection. At the point of state change three AIS PDU is transmitted as fast as possible |

### Default

### Mode

Global Configuration

### Usage

Configure Alarm Indication Signal.

### Example

(config)# **mep 1 ais fr1s**

## mep aps

### Syntax

**mep** *<inst>* **aps** *<prio>* [ **multi** | **uni** ] { **laps** | { **raps** [ **octet** *<octet>* ] } }
**no mep** *<inst>* **aps**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<prio>* | Priority in case of tagged OAM. In the MPLS and EVC domain this is the COS-ID |
| **multi** | OAM PDU is transmitted with multicast MAC. Must me 'multi' in case of RAPS |
| **uni** | OAM PDU is transmitted with unicast MAC. The MAC is taken from peer MEP MAC database. Only possible in case of LAPS |
| **laps** | Linear Automatic Protection Switching protocol |
| **raps** | Ring Automatic Protection Switching protocol |
| *<octet>* | Last OCTET value |

### Default

### Mode

Global Configuration

### Usage

Configuration of Automatic Protection Switching protocol.

### Example

(config)# **mep 1 aps 0 raps**

## mep cc

### Syntax

**mep** *<inst>* **cc** *<prio>* [ **fr300s** | **fr100s** | **fr10s** | **fr1s** | **fr6m** | **fr1m** | **fr6h** ]
**no mep** *<inst>* **cc**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<prio>* | Priority in case of tagged OAM. In the MPLS and EVC domain this is the COS-ID |
| **fr300s** | Frame rate is 300 f/s |
| **fr100s** | Frame rate is 100 f/s |
| **fr10s** | Frame rate is 10 f/s |
| **fr1s** | Frame rate is 1 f/s |
| **fr6m** | Frame rate is 6 f/min |
| **fr1m** | Frame rate is 1 f/min |
| **fr6h** | Frame rate is 6 f/hour |

### Default

### Mode

Global Configuration

### Usage

Configuration of Continuity Check.

### Example

(config)# **mep 1 cc 0 fr300s**

## mep ccm-tlv

### Syntax

**mep** *<inst>* **ccm-tlv**
**no mep** *<inst>* **ccm-tlv**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |

### Default

### Mode

Global Configuration

### Usage

Enable CCM TLV insertion.

### Example

(config)# **mep 1 ccm-tlv**

## mep client

### Syntax

**mep** *<inst>* **client domain** { **evc** | **vlan** | **lsp** } **flow** *<cflow>* [ **level** *<level>* ] [ **ais-prio** [ *<aisprio>* | **ais-highest** ] ] [ **lck-prio** [ <lckprio> | **lck-highest** ] ]
**no mep** *<inst>* **client domain** { **evc** | **vlan** | **lsp** } **flow** { *<cflow>* | **all** }

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| **evc** | EVC client flow |
| **vlan** | VLAN client flow |
| **lsp** | MPLS-TP LSP client flow |
| *<cflow>* | Client flow instance number value |
| *<level>* | The MEG level value |
| *<aisprio>* | AIS injection priority value |
| **ais-highest** | Request the highest possible AIS priority |

| | |
|---|---|
| <lckprio> | LCK injection priority value |
| **lck-highest** | Request the highest possible LCK priority |

### Default

### Mode

Global Configuration

### Usage

Configuration of client flow instance.

### Example

(config)# **mep 1 client domain vlan flow 1**

## mep dm

### Syntax

**mep** *<inst>* **dm** *<prio>* [ **multi** | { **uni mep-id** *<mepid>* } ] [ **single** | **dual** ] [ **rdtrp** | **flow** ] **interval** *<interval>* **last-n** *<lastn>*
**no mep** *<inst>* **dm**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| **dm** | Delay Measurement |
| **multi** | OAM PDU is transmitted with multicast MAC |
| *<mepid>* | Peer MEP ID value |
| **single** | Delay Measurement based on DMM/DMR PDU |
| **dual** | Delay Measurement based on 1DM PDU transmission |
| **rdtrp** | The two way delay is calculated as round trip delay. The far end residence time is not subtracted |
| **flow** | The two way delay is calculated as round trip symmetrical flow delay. The far end residence time is subtracted |
| *<interval>* | Interval value |
| *<lastn>* | The last N value |

### Default

### Mode

Global Configuration

### Usage

Configuration of Delay Measurement.

### Example

(config)# **mep 1 dm 0 flow uni mep-id 1 single interval 10 last-n 10**

## mep dm bin fd

### Syntax

**mep** *<inst>* **dm bin fd** *<num_fd_var>*
**no mep** *<inst>* **dm bin fd** *<num_fd_var>*

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<num_fd_var>* | The number of FD Measurement Bins |

### Default

### Mode

Global Configuration

### Usage

Configuration the number of FD Measurement Bins.

### Example

(config)# **mep 1 dm bin fd 2**

## mep dm bin ifdv

### Syntax

**mep** *<inst>* **dm bin ifdv** *<num_ifdv_var>*
**no mep** *<inst>* **dm bin ifdv** *<num_ifdv_var>*

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<num_ifdv_var>* | The number of IFDV Measurement Bins |

### Default

### Mode

Global Configuration

### Usage

Configuration the number of IFDV Measurement Bins.

### Example

(config)# **mep 1 dm bin ifdv 2**

## mep dm bin threshold

### Syntax

**mep** *<inst>* **dm bin threshold** *<threshold_var>*
**no mep** *<inst>* **dm bin threshold** *<threshold_var>*

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<threshold_var>* | the threshold for each Delay Measurement Binning |

### Default

### Mode

Global Configuration

### Usage

Configuration the measurement threshold for each Delay Measurement Bin.

### Example

(config)# **mep 1 dm bin threshold 200**

## mep dm ns

### Syntax

**mep** *<inst>* **dm ns**

**no mep** *<inst>* **dm ns**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |

### Default

### Mode

Global Configuration

### Usage

Configuration of Delay Measurement results represented in Nano Seconds.

### Example

(config)# **mep 1 dm ns**

## mep dm overflow-reset

### Syntax

**mep** *<inst>* **dm overflow-reset**
**no mep** *<inst>* **dm overflow-reset**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |

### Default

### Mode

Global Configuration

### Usage

Configuration of reset of all Delay Measurement results on total delay counter overflow.

### Example

(config)# **mep 1 dm overflow-reset**

## mep dm proprietary

### Syntax

**mep** *<inst>* **dm proprietary**
**no mep** *<inst>* **dm proprietary**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |

### Default

### Mode

Global Configuration

### Usage

Configuration of proprietary Delay Measurement. In order to achieve higher accuracy an proprietary OAM PDU type is used to sen follow-up timestamps.

### Example

(config)# **mep 1 dm proprietary**

## mep dm synchronized

### Syntax

**mep** *<inst>* **dm synchronized**
**no mep** *<inst>* **dm synchronized**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |

### Default

### Mode

Global Configuration

### Usage

Configuration of synchronized Delay Measurement results. Near end and far end is real-time synchronized and therefore one way delay measurement result can be calculated based on DMM/DMR PDU timestamps.

### Example

(config)# **mep 1 dm synchronized**

## mep lb

### Syntax

**mep** *<inst>* **lb** *<prio>* [ **dei** ] [ **multi** | { **uni** { { **mep-id** *<mepid>* } | { **mac** *<mac>* } } } | **mpls ttl** *<mpls_ttl>* ] **count** *<count>* **size** *<size>* **interval** *<interval>*
**no mep** *<inst>* **lb**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<prio>* | Priority in case of tagged OAM. In the MPLS and EVC domain this is the COS-ID |
| **dei** | Drop Eligible Indicator in case of tagged OAM |
| **multi** | OAM PDU is transmitted with multicast MAC. Not used for MPLS-TP |
| **uni** | OAM PDU is transmitted with unicast MAC. The MAC is taken from peer MEP MAC database. Not used for MPLS-TP |
| *<mepid>* | Peer MEP ID value. Not used for MPLS-TP |
| *<mac>* | Loop Back target unicast MAC value |
| *<mpls_ttl>* | Time-To-Live value used for an MPLS-TP OAM LBM PDU |
| *<count>* | Number of LBM PDUs to send value |
| *<size>* | The number of bytes in the LBM frame |
| *<interval>* | The interval between transmitting LBM PDU |

### Default

### Mode

Global Configuration

### Usage

Configuration of Loop Back.

### Example

(config)# **mep 1 lb 0 dei count 10 size 64 interval 100**

## mep lck

### Syntax

**mep** *<inst>* **lck** [ **fr1s** | **fr1m** ]
**no mep** *<inst>* **lck**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| **fr1s** | Frame rate is 1 f/s |
| **fr1m** | Frame rate is 1 f/min |

### Default

### Mode

Global Configuration

### Usage

Configure Locked Signal.

### Example

(config)# **mep 1 lck fr1s**

## mep level

### Syntax

**mep** *<inst>* **level** *<level>*

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<level>* | The MEG level value |

### Default

### Mode

Global Configuration

### Usage

Configure the MEG Level.

### Example

(config)# **mep 1 level 0**

## mep link-state-tracking

### Syntax

**mep** *<inst>* **link-state-tracking**
**no mep** *<inst>* **link-state-tracking**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |

### Default

### Mode

Global Configuration

### Usage

Enable the Link State Tracking feature.

### Example

(config)# **mep 1 link-state-tracking**

## mep lm

### Syntax

**mep** *<inst>* **lm** *<prio>* [ **synthetic** ] [ **multi** | { **uni** [ **mep-id** *<mepid>* ] } ] [ **single** | **dual** ] [ **fr100s** | **fr10s** | **fr1s** | **fr6m** ] [ **size** *<size>* ] [ **flr** *<flr>* ] [ **meas** *<meas>* ] [ **threshold** *<loss_th>* ]

**no mep** *<inst>* **lm**

## Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<prio>* | Priority in case of tagged OAM. In the MPLS and EVC domain this is the COS-ID |
| **synthetic** | Do synthetic LM using SLM/1SL OAM PDUs. Synthetic LM allows multiple peer MEP configured. Service frame LM allows only one peer MEP |
| **multi** | OAM PDU is transmitted with multicast MAC |
| **uni** | OAM PDU is transmitted with unicast MAC. The MAC is taken from peer MEP MAC database. In case of 'not synthetic' LM there is only one peer MEP |
| *<mepid>* | Peer MEP ID value |
| **single** | Single ended LM is based on LMM/LMR PDU or SLM/SLR PDU in case of 'synthetic' |
| **dual** | Dual ended LM is based on CCM PDU or 1SL PDU in case of 'synthetic' |
| **fr100s** | Frame rate is 100 f/s. Is only allowed for 'synthetic' LM |
| **fr10s** | Frame rate is 10 f/s. |
| **fr1s** | Frame rate is 1 f/s |
| **fr6m** | Frame rate is 6 f/min. Is not allowed for dual ended 'service frame' LM (CCM PDU based) |
| *<size>* | The number of bytes in the SLM frame. |
| *<flr>* | The Frame Loss Ratio interval value in number of measurement intervals |
| *<meas>* | The measurement interval value in milliseconds |
| *<loss_th>* | Frame Loss threshold value. Default 1 |

## Default

## Mode

Global Configuration

## Usage

Enable Loss Measurement initiator. Initiator is transmitting/receiving CCM or LMM/LMR or SLM/SLR/1SL PDUs and doing loss calculation.

## Example

(config)# **mep 1 lm 0 synthetic threshold 0**

## mep lm flow-counting

### Syntax

**mep** *<inst>* **lm flow-counting**
**no mep** *<inst>* **lm flow-counting**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |

### Default

### Mode

Global Configuration

### Usage

Loss Measurement is counting service frames per flow - all priority in one.

### Example

(config)# **mep 1 lm flow-counting**

## mep lm oam-counting

### Syntax

**mep** *<inst>* **lm oam-counting** { [ **y1731** | **all** ] }
**no mep** *<inst>* **lm oam-counting** { [ **y1731** | **all** ] }

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| **y1731** | Loss Measurement is counting OAM frames as service frames as described in Y1731 |
| **all** | Loss Measurement is counting all OAM frames as service frames |

### Default

### Mode

Global Configuration

### Usage

Loss Measurement can count OAM frames in different ways.

### Example

(config)# **mep 1 lm oam-counting all**

## mep lm rx

### Syntax

**mep** *<inst>* **lm rx** [ **synthetic** ] [ **fr100s** | **fr10s** | **fr1s** | **fr6m** ] [ **flr** *<flr>* ] [ **meas** *<meas>* ] [ **threshold** *<loss_th>* ]
**no mep** *<inst>* **lm rx**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| **rx** | Receive LM PDUs and calculate LM status |
| **synthetic** | This is to indicate synthetic LM |
| **fr100s** | Frame rate is 100 f/s. |
| **fr10s** | Frame rate is 10 f/s. |
| **fr1s** | Frame rate is 1 f/s |
| **fr6m** | Frame rate is 6 f/min. |
| *<flr>* | The Frame Loss Ratio interval. |
| *<meas>* | The measurement interval value in milliseconds |
| *<loss_th>* | Frame Loss threshold value. Default 1 |

### Default

### Mode

Global Configuration

### Usage

Enable loss calculation when receiving LM PDUs (LMM/SLM/1SL). This command is ignored when LM is enabled.

### Example

(config)# **mep 1 lm rx synthetic threshold 0**

## mep lm slm-testid

### Syntax

**mep** *<inst>* **lm slm-testid** *<slm_test_id>*

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<slm_test_id>* | The SLM Test-ID value |

### Default

Default slm-testid is 0.

### Mode

Global Configuration

### Usage

Specify a G.8013 section 9.22.1 Test-ID for use in SLM PDUs.

### Example

(config)# **mep 1 lm slm-testid 0**

## mep lm-avail interval

### Syntax

**mep** *<inst>* **lm-avail interval** *<interval>* **flr-threshold** *<flr_th>*
**no mep** *<inst>* **lm-avail**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<interval>* | Availability interval - number of measurements with same availability in order to change Availability state |
| *<flr_th>* | Availability FLR Threshold in per mile. |

### Default

### Mode

Global Configuration

### Usage

Configuration of Availability for Loss Measurement.

### Example

(config)# **mep 1 lm-avail interval 10 flr-threshold 10**

## mep lm-avail maintenance

### Syntax

**mep** *<inst>* **lm-avail maintenance**
**no mep** *<inst>* **lm-avail maintenance**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |

### Default

### Mode

Global Configuration

### Usage

Set the Availability Maintenance indicator.

### Example

(config)# **mep 1 lm-avail maintenance**

## mep lm-hli flr-threshold

### Syntax

**mep** *<inst>* **lm-hli flr-threshold** *<flr_th>* **interval** *<interval>*
**no mep** *<inst>* **lm-hli**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<flr_th>* | High Loss Interval FLR Threshold in permille |
| *<interval>* | High Loss Interval consecutive interval (number of measurements) |

### Default

### Mode

Global Configuration

### Usage

Configuration of High Loss Interval for Loss Measurement.

### Example

(config)# **mep 1 lm-hli flr-threshold 100 interval 100**

## mep lm-notif los-int-cnt-holddown

### Syntax

**mep** *<inst>* **lm-notif los-int-cnt-holddown** *<los_int_cnt_holddown>* **los-th-cnt-holddown** *<los_th_cnt_holddown>* **hli-cnt-holddown** *<hli_cnt_holddown>*
**no mep** *<inst>* **lm-notif**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<los_int_cnt_holddown>* | Hold down timer for JSON notification updates for near and far end frame loss interval count |
| *<los_th_cnt_holddown>* | Hold down timer for JSON notification updates for near and far end frame loss threshold count |
| *<hli_cnt_holddown>* | Hold down timer for JSON notification updates for near and far end High Loss Interval count |

### Default

### Mode

Global Configuration

### Usage

Configuration of holddown timers for Loss Measurement JSON notifications.

### Example

(config)# **mep 1 lm-notif los-int-cnt-holddown 10 los-th-cnt-holddown 10 hli-cnt-holddown 10**

## mep lm-sdeg tx-min

### Syntax

**mep** *<inst>* **lm-sdeg tx-min** *<tx_min>* **flr-threshold** *<flr_th>* **bad-threshold** *<bad_th>* **good-threshold** *<good_th>*
**no mep** *<inst>* **lm-sdeg**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<tx_min>* | Minimum number of frames that must be transmitted in a measurement before FLR is tested against the SDEG FLR threshold |
| *<flr_th>* | Signal Degrade FLR threshold in permille |
| *<bad_th>* | Number of consecutive bad interval measurements required to set degrade state |
| *<good_th>* | Number of consecutive good interval measurements required to clear degrade state. |

### Default

### Mode

Global Configuration

### Usage

Configuration of Signal Degrade for Loss Measurement.

### Example

(config)# **mep 1 lm-sdeg tx-min 0 flr-threshold 10 bad-threshold 10 good-threshold 10**

## mep lt

### Syntax

**mep** *<inst>* **lt** *<prio>* { { **mep-id** *<mepid>* } | { **mac** *<mac>* } } **ttl** *<ttl>*
**no mep** *<inst>* **lt**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<prio>* | Priority in case of tagged OAM. In the EVC domain this is the COS-ID |
| *<mepid>* | Peer MEP ID value |

| | |
|---|---|
| *<mac>* | Link Trace target unicast MAC value |
| *<ttl>* | Time To Live value |

### Default

### Mode

Global Configuration

### Usage

Configuration of Link Trace.

### Example

(config)# **mep 1 lt 0 mep-id 0 ttl 10**

## mep meg-id

### Syntax

**mep** *<inst>* **meg-id** *<megid>* [ { **itu** | **itu-cc** | { **ieee** [ **name** *<name>* ] } } ]

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<megid>* | The MEG-ID string. This is either the ITU MEG-ID or the IEEE Short MA, depending on the selected MEG-ID format. The ITU max. is 13 characters. The ITU-CC max. is 15 characters. The IEEE max. is 16 characters |
| **itu** | The MEG-ID has ITU format (ICC - UMC). The MEG-ID max. is 13 characters |
| **itu-cc** | The MEG-ID has ITU Country Code format (CC - ICC - UMC). The MEG-ID max. is 15 characters |
| **ieee** | The MEG-ID (Short MA Name) has IEEE Character String format. The MEG-ID max. is 16 characters |
| *<name>* | Maintenance Domain Name string. The max is 16 characters |

### Default

### Mode

Global Configuration

### Usage

Configuring the MEG-ID.

### Example

(config)# **mep 1 meg-id abc itu**

## mep mep-id

### Syntax

**mep** *<inst>* **mep-id** *<mepid>*

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<mepid>* | The MEP ID value |

### Default

### Mode

Global Configuration

### Usage

Configure the MEP-ID.

### Example

(config)# **mep 1 mep-id 1**

## mep peer-mep-id

### Syntax

**mep** *<inst>* **peer-mep-id** *<mepid>* [ **mac** *<mac>* ]
**no mep** *<inst>* **peer-mep-id** { *<mepid>* | **all** }

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<mepid>* | The peer MEP ID value |
| *<mac>* | The peer MAC string |

### Default

### Mode

Global Configuration

### Usage

Configuration of a peer MEP.

### Example

(config)# **mep 1 peer-mep-id 0 mac 00-00-00-00-00-01**

## mep performance-monitoring

### Syntax

**mep** *<inst>* **performance-monitoring**
**no mep** *<inst>* **performance-monitoring**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |

### Default

### Mode

Global Configuration

### Usage

Enable the PM Data Set contribution.

### Example

(config)# **mep 1 performance-monitoring**

## mep syslog

### Syntax

**mep** *<inst>* **syslog**
**no mep** *<inst>* **syslog**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |

### Default

### Mode

Global Configuration

### Usage

Configure Syslog to be enabled.

### Example

(config)# **mep 1 syslog**

## mep tst

### Syntax

**mep** *<inst>* **tst** *<prio>* [ **dei** ] **mep-id** *<mepid>* [ **sequence** ] [ **all-zero** | **all-one** | **one-zero** ] **rate** *<rate>* **size** *<size>*

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<prio>* | Priority in case of tagged OAM. In the MPLS and EVC domain this is the COS-ID |
| **dei** | Drop Eligible Indicator in case of tagged OAM |
| *<mepid>* | Peer MEP ID value |
| **sequence** | Enable sequence number in TST PDU |
| **all-zero** | Test pattern is set to all zero |
| **all-one** | Test pattern is set to all one |
| **one-zero** | Test pattern is set to 10101010 |
| *<rate>* | Transmission rate value |
| *<size>* | The number of bytes in the TST frame |

### Default

### Mode

Global Configuration

### Usage

Configuration of Test Signal.

### Example

(config)# **mep 1 tst 0 dei mep-id 1 rate 100 size 100**

## mep tst rx

### Syntax

**mep** *<inst>* **tst rx**
**no mep** *<inst>* **tst rx**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |

### Default

### Mode

Global Configuration

### Usage

Enable RX of Test Signal.

### Example

(config)# **mep 1 tst rx**

## mep tst tx

### Syntax

**mep** *<inst>* **tst tx**
**no mep** *<inst>* **tst tx**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |

### Default

### Mode

Global Configuration

### Usage

Enable/Disable TX of Test Signal.

### Example

(config)# **mep 1 tst tx**

## mep vid

### Syntax

**mep** *<inst>* **vid** *<vid>*
**no mep** *<inst>* **vid**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |
| *<vid>* | The MEP VID value |

### Default

### Mode

Global Configuration

### Usage

Configuration of the MEP VID. This will add a tag in the port domain. This will be the EVC subscriber MIP VID expected behind the EVC tag.

### Example

(config)# **mep 1 vid 1**

## mep voe

### Syntax

**mep** *<inst>* **voe**
**no mep** *<inst>* **voe**

### Parameter

| | |
|---|---|
| *<inst>* | The MEP instance number |

### Default

### Mode

Global Configuration

### Usage

Configuration of MEP to be VOE based. Require VOE supporting platform.

### Example

(config)# **mep 1 voe**

## mep os-tlv oui

### Syntax

**mep os-tlv oui** *<oui>* **sub-type** *<subtype>* **value** *<value>*

### Parameter

| | |
|---|---|
| *<oui>* | |
| *<subtype>* | Sub-Type value - one octet |
| *<value>* | Value - one octet |

### Default

### Mode

Global Configuration

### Usage

Configure the transmitted Organization-Specific TLV.

### Example

(config)# **mep os-tlv oui 0x0600 sub-type 0x00 value 0x0F**

## show erps

### Syntax

**show erps** { [ *<groups>* ] } [ **detail** | **statistics** ]

### Parameter

| | |
|---|---|
| *<groups>* | Zero or more ERPS group numbers |

### Default

### Mode

Privileged EXEC

### Usage

Show information about ERPS groups.

### Example

```
# show erps
(L=Link Up/Down; B=Blocked/Unblocked)          Maj RPL    RPL      RPL    FSM      R-APS
Gr Typ V Rev Port 0        L B Port 1        L B Grp Role Port    Blck State TX RX FOP
--+---+-+---+----------+-+-+----------+-+-+---+----+-----+----+-----+--+-
 1 Maj 2 Rev Gi 1/1        U B Gi 1/2        U U -     -      -       -      PEND    Y        N
```

## show mep

### Syntax

**show mep** [ *<inst>* ] [ **peer** | **cc** | **lm** | **dm** | **lt** | **lb** | **tst** | **aps** | **client** | **ais** | **lck** | **pm** | **syslog** | **tlv** | **bfd** | **rt** | **lst** | **lm-avail** ] [ **lm-hli** ] [ **detail** ]

### Parameter

| | |
|---|---|
| *<inst>* | The range of MEP instances |

### Default

### Mode

Privileged EXEC

### Usage

Show the state of a list of MEP instances. What state to be shown can be selected to be 'basic configuration' or one of the supported 'functionality configuration'.

### Example

# **show mep**
MEP state is:
Inst cLevel cMeg cMep cAis cLck cLoop cConf cSsf aBlk aTsd aTsf Peer MEP cLoc cRdi cPeriod cPrio cDeg

# 4. Interface Configuration

## aggregation group

### Syntax

**aggregation group** *<v_uint>*
**no aggregation group**

### Parameter

| | |
|---|---|
| *<v_uint>* | The aggregation group id |

### Default

### Mode

Interface Configuration

### Usage

Use the aggregation group command to configure port members in group.

### Example

(config)# **interface GigabitEthernet 1/1-8**
(config-if)# **aggregation group 2**

## aggregation mode

### Syntax

**aggregation mode** { [ **smac** ] [ **dmac** ] [ **ip** ] [ **port** ] }
**no aggregation mode**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Use the aggregation group command to configure Traffic distribution mode.

### Example

(config)# **aggregation mode smac dmac ip port**

## clear lacp statistics

### Syntax

**clear lacp statistics**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Clear all LACP statistics.

### Example

# **clear lacp statistics**

## clear statistics

### Syntax

**clear statistics** [ **interface** ] ( *<port_type>* [ *<v_port_type_list>* ] )

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Clear the statistics of the interface.

### Example

# **clear statistics GigabitEthernet 1/1**

## ddmi

### Syntax

**ddmi**
**no ddmi**

### Parameter

### Default

The DDMI is enabled.

### Mode

Global Configuration

### Usage

DDMI switch.

### Example

This example shows how to enable the DDMI
(config)# **ddmi**

## description

### Syntax

**description** *<v_line>*
**no description**

### Parameter

| | |
|---|---|
| *<v_line>* | Up to 256 ASII characters describing this interface |

### Default

### Mode

Interface Configuration

### Usage

Set the description of the interface.

### Example

(config)# interface g1/2
(config-if)# description b32 floor to b33 floor

## duplex

### Syntax

**duplex** { **half** | **full** | **auto** [ **half** | **full** ] }
**no duplex**

### Parameter

| | |
|---|---|
| **half** | Forced half duplex |

| | |
|---|---|
| **full** | Forced full duplex |
| **auto** | Auto negotiation of duplex mode |

### Default

Default duplex is auto

### Mode

Interface Configuration

### Usage

Use duplex to configure interface duplex mode.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **duplex full**

## excessive-restart

### Syntax

**excessive-restart**
**no excessive-restart**

### Parameter

### Default

Excessive-restart is no excessive-restart (Discard frame after 16 collisions).

### Mode

Interface Configuration

### Usage

Use excessive-restart to configure back off algorithm in half duplex mode.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **excessive-restart**

## flowcontrol

### Syntax

**flowcontrol** { **on** | **off** }
**no flowcontrol**

### Parameter

### Default

Flow control receive and send is off.

### Mode

Interface Configuration

### Usage

Use flowcontrol to configure flow control for the interface.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **flowcontrol on**

## frame-length-check

### Syntax

**frame-length-check**
**no frame-length-check**

### Parameter

### Default

Flow control receive and send is off.

### Mode

Interface Configuration

### Usage

Enable 803.3 frame length check for EtherTypes below 0x0600.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **frame-length-check**

## green-ethernet eee

### Syntax

**green-ethernet eee**
**no green-ethernet eee**

### Parameter

### Default

Flow control receive and send is off.

### Mode

Interface Configuration

### Usage

Sets EEE mode, Powering down of PHYs when there is no traffic.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **green-ethernet eee**

## green-ethernet eee optimize-for-power

### Syntax

**green-ethernet eee optimize-for-power**
**no green-ethernet eee optimize-for-power**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Sets if EEE should be optimized for least traffic latency or least power consumption.

### Example

(config)# **green-ethernet eee optimize-for-power**

## green-ethernet eee urgent-queues

### Syntax

**green-ethernet eee urgent-queues** [ *<urgent_queue_range_list>* ]
**no green-ethernet eee urgent-queues** [ *<urgent_queue_range_list>* ]

### Parameter

| | |
|---|---|
| *<urgent_queue_range_list>* | EEE Interface |

### Default

### Mode

Interface Configuration

### Usage

Sets EEE urgent queues.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **green-ethernet eee urgent-queues 1**

## green-ethernet energy-detect

### Syntax

**green-ethernet energy-detect**
**no green-ethernet energy-detect**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Enables energy-detect power savings.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **green-ethernet energy-detect**

## green-ethernet led interval

### Syntax

**green-ethernet led interval** *<v_0_to_24>* **intensity** *<v_0_to_100>*
**no green-ethernet led interval** *<v_0_to_24>*

### Parameter

| | |
|---|---|
| *<v_0_to_24>* | Interval from 00.00 to 24.00 (00 is used to start at midnight, while 24 is used to stop at midnight) |
| *<v_0_to_100>* | Intensity from 0%% (LEDs OFF) to 100%% |

### Default

Intensity is 20%%.

### Mode

Global Configuration

### Usage

Use green-ethernet led interval to configure the LED intensity at specific interval of the day.

### Example

(config)# **green-ethernet led interval 1-5 50**

## green-ethernet led on-event

### Syntax

**green-ethernet led on-event** { [ **link-change** *<v_0_to_65535>* ] [ **error** ] }
**no green-ethernet led on-event** { [ **link-change** ] [ **error** ] }

### Parameter

| | |
|---|---|
| *<v_0_to_65535>* | Number of seconds to set LEDs intensity at 100%% intensity at link change |

### Default

link-change is 10 seconds, error is default turning LEDs intensity to 100%% at errors.

### Mode

Global Configuration

### Usage

Use green-ethernet led on-event to configure when to turn LEDs intensity to 100%%..

### Example

(config)# **green-ethernet led on-event link-change 30 error**

## green-ethernet short-reach

### Syntax

**green-ethernet short-reach**
**no green-ethernet short-reach**

### Parameter

### Default

short-reach power savings is disabled.

### Mode

Interface Configuration

### Usage

Enables short-reach power savings.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **green-ethernet short-reach**

## interface

### Syntax

**interface** ( *<port_type>* [ *<plist>* ] )

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<plist>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Global Configuration

### Usage

Select an interface to configure.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)#

## lacp

### Syntax

**lacp**
**no lacp**

### Parameter

### Default

LACP is disabled.

### Mode

Interface Configuration

### Usage

Enable LACP on an interface.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **lacp**

## lacp key

### Syntax

**lacp key** { *<v_1_to_65535>* | **auto** }
**no lacp key** { *<v_1_to_65535>* | **auto** }

### Parameter

| | |
|---|---|
| *<v_1_to_65535>* | Key value |
| **auto** | Choose a key based on port speed |

### Default

Auto is default, i.e. key is based on port speed.

### Mode

Interface Configuration

### Usage

Set the LACP key.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **lacp key 10**

## lacp port-priority

### Syntax

**lacp port-priority** *<v_1_to_65535>*
**no lacp port-priority** *<v_1_to_65535>*

### Parameter

| | |
|---|---|
| *<v_1_to_65535>* | Priority value, lower means higher priority |

### Default

Default port priority is 32768.

### Mode

Interface Configuration

### Usage

Set the LACP port priority.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **lacp port-priority 1**

## lacp role

### Syntax

**lacp role** { **active** | **passive** }
**no lacp role** { **active** | **passive** }

### Parameter

| | |
|---|---|
| **active** | Transmit LACP BPDUs continuously |
| **passive** | Wait for neighbor LACP BPDUs before transmitting |

### Default

Default role is active.

### Mode

Interface Configuration

### Usage

Set the LACP role, active or passive in transmitting BPDUs.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **lacp role passive**

## lacp system-priority

### Syntax

**lacp system-priority** *<v_1_to_65535>*
**no lacp system-priority** *<v_1_to_65535>*

### Parameter

| | |
|---|---|
| *<v_1_to_65535>* | Priority value, lower means higher priority |

### Default

Default system priority is 32768.

### Mode

Global Configuration

### Usage

Set the LACP system priority. Lower number means higher priority.

### Example

(config)# **lacp system-priority 1**

## lacp timeout

### Syntax

**lacp timeout** { **fast** | **slow** }
**no lacp timeout** { **fast** | **slow** }

### Parameter

| | |
|---|---|
| **fast** | Transmit BPDU each second (fast timeout) |
| **slow** | Transmit BPDU each 30th second (slow timeout) |

### Default

Default timeout is fast.

### Mode

Interface Configuration

### Usage

Set the LACP timeout, i.e. how fast to transmit BPDUs, once a sec or once each 30 sec.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **lacp timeout slow**

## monitor destination

### Syntax

**monitor destination interface** *<port_type> <in_port_type>*
**no monitor destination**

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<in_port_type>* | Port ID in 1/1-6 |

### Default

### Mode

Global Configuration

### Usage

Sets monitor destination port.

### Example

(config)# **monitor destination interface GigabitEthernet 1/1**

## monitor source

### Syntax

**monitor source** { { **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) } | { **cpu** [ *<cpu_switch_range>* ] }} { **both** | **rx** | **tx** }
**no monitor source** { { **interface** *<port_type>* [ *<v_port_type_list>* ] } | { **cpu** [ *<cpu_switch_range>* ] }}

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | Port ID in 1/1-6 |
| *<cpu_switch_range>* | Mirror CPU traffic |
| **both** | Setting source port to both will mirror both ingress and egress traffic. |
| **rx** | Setting source port to Rx will mirror ingress traffic |
| **tx** | Setting source port to Tx will mirror egress traffic |

### Default

### Mode

Global Configuration

### Usage

Sets monitor source port.

### Example

(config)# **monitor source interface GigabitEthernet 1/2 both**

## mtu

### Syntax

**mtu** *<max_length>*
**no mtu**

### Parameter

| | |
|---|---|
| *<max_length>* | Maximum frame size in bytes |

### Default

Default duplex is auto

### Mode

Interface Configuration

### Usage

Use mtu to specify maximum frame size (1518-9600 bytes).

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **mtu 1518**

## no port-security shutdown

### Syntax

**no port-security shutdown** [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | |
| *<v_port_type_list>* | Port list in 1/1-6 |

### Default

### Mode

Privileged EXEC

### Usage

### Example

# **no port-security shutdown interface GigabitEthernet 1/1**

## port-security(Global)

### Syntax

**port-security**

**no port-security**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Enable/disable port security globally.

### Example

(config)# **port-security**

## port-security(Interface)

### Syntax

**port-security**
**no port-security**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Enable/disable port security per interface.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **port-security**

## port-security aging

### Syntax

**port-security aging** [ **time** *<v_10_to_10000000>* ]
**no port-security aging** [ **time** ]

### Parameter

| | |
|---|---|
| *<v_10_to_10000000>* | Time in seconds between check for activity on learned MAC addresses |

### Default

### Mode

Global Configuration

### Usage

Enable/disable port security aging.

### Example

(config)# **port-security aging time 300**

## port-security maximum

### Syntax

**port-security maximum** [ *<v_1_to_1024>* ]
**no port-security maximum**

### Parameter

| | |
|---|---|
| *<v_1_to_1024>* | Number of addresses |

### Default

### Mode

Interface Configuration

### Usage

Maximum number of MAC addresses that can be learned on this set of interfaces.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **port-security maximum 100**

## port-security violation

### Syntax

**port-security violation** { **protect** | **trap** | **trap-shutdown** | **shutdown** }
**no port-security violation**

### Parameter

| | |
|---|---|
| **protect** | Don't do anything |
| **trap** | Send an SNMP trap |
| **trap-shutdown** | Send an SNMP trap and shutdown the port |
| **shutdown** | Shutdown the port |

### Default

### Mode

Interface Configuration

### Usage

The action involved with exceeding the limit.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **port-security violation shutdown**

## pvlan

### Syntax

**pvlan** *<pvlan_list>*
**no pvlan** *<pvlan_list>*

### Parameter

| | |
|---|---|
| *<pvlan_list>* | list of PVLANs. Range is from 1 to number of ports |

### Default

### Mode

Interface Configuration

### Usage

Use the pvlan add or remove command to add or remove a port from a PVLAN.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **pvlan 2**

## pvlan isolation

### Syntax

**pvlan isolation**
**no pvlan isolation**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Use the pvlan isolation command to add the port into an isolation group.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **pvlan isolation**

## show aggregation

### Syntax

**show aggregation** [ **mode** ]

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show aggregation port configuration.

### Example

# **show aggregation mode**
Aggregation Mode:

SMAC : Enabled
DMAC : Enabled
IP : Enabled
Port : Enabled

## show ddmi

### Syntax

**show ddmi**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show DDMI configuration.

### Example

# **show ddmi**
Current mode: Enabled

## show green-ethernet interface

### Syntax

**show green-ethernet** [ **interface** ( *<port_type>* [ *<port_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Interface |
| *<port_list>* | Port list in 1/1-4 |

### Default

### Mode

Privileged EXEC

### Usage

Shows Green Ethernet status.

### Example

```
# show green-ethernet
Interface                    Lnk   Energy-detect   Short-Reach   EEE Capable   EEE Enabled
LP EEE Capable     EEE In Power Save
---------------------   ---   -------------   -----------   -----------
GigabitEthernet  1/1        No     No                 No              Yes              No
No                    No
GigabitEthernet  1/2        No     No                 No              Yes              No
No                    No
GigabitEthernet  1/3        Yes    No                 No              Yes              No
No                    No
GigabitEthernet  1/4        No     No                 No              Yes              No
No                    No
2.5GigabitEthernet  1/1    No     N/A                N/A             No               N/A
N/A                   N/A
2.5GigabitEthernet  1/2    No     N/A                N/A             No               N/A
N/A                   N/A
```

## show green-ethernet eee

### Syntax

**show green-ethernet eee** [ **interface** ( *<port_type>* [ *<port_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Interface |
| *<port_list>* | Port list in 1/1-4 |

### Default

### Mode

Privileged EXEC

### Usage

Shows Green Ethernet EEE status.

### Example

```
# show green-ethernet eee
Interface                    Lnk   EEE Capable   EEE Enabled   LP EEE Capable    EEE In
Power Save
----------------------  ---  -----------  -----------  ---------------
GigabitEthernet 1/1        No    Yes          No           No                No
GigabitEthernet 1/2        No    Yes          No           No                No
GigabitEthernet 1/3        Yes   Yes          No           No                No
GigabitEthernet 1/4        No    Yes          No           No                No
2.5GigabitEthernet 1/1     No    No           N/A          N/A               N/A
2.5GigabitEthernet 1/2     No    No           N/A          N/A               N/A
```

## show green-ethernet energy-detect

### Syntax

**show green-ethernet energy-detect** [ **interface** ( *<port_type>* [ *<port_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Interface |
| *<port_list>* | Port list in 1/1-4 |

### Default

### Mode

Privileged EXEC

### Usage

Shows Green Ethernet energy-detect status.

### Example

```
# show green-ethernet energy-detect
Interface                    Lnk   Energy-detect
----------------------   ---   --------------
GigabitEthernet 1/1          No     No
GigabitEthernet 1/2          No     No
GigabitEthernet 1/3          Yes    No
GigabitEthernet 1/4          No     No
2.5GigabitEthernet 1/1   No     N/A
2.5GigabitEthernet 1/2   No     N/A
```

## show green-ethernet short-reach

### Syntax

**show green-ethernet short-reach** [ **interface** ( *<port_type>* [ *<port_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Interface |
| *<port_list>* | Port list in 1/1-4 |

### Default

### Mode

Privileged EXEC

### Usage

Shows Green Ethernet short-reach status.

### Example

```
# show green-ethernet short-reach
Interface                    Lnk   Short-Reach
----------------------   ---   ------------
GigabitEthernet 1/1          No     No
GigabitEthernet 1/2          No     No
GigabitEthernet 1/3          Yes    No
GigabitEthernet 1/4          No     No
```

2.5GigabitEthernet 1/1 No N/A
2.5GigabitEthernet 1/2 No N/A

## show interface switchport

### Syntax

**show interface** ( *<port_type>* [ *<in_port_list>* ] ) **switchport** [ **access** | **trunk** | **hybrid** ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<port_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Use the show interface command to display the administrative and operational status of all interfaces or a specified interface.

### Example

# **show interface GigabitEthernet 1/1 switchport**
Name: GigabitEthernet 1/1
Administrative mode: access
Access Mode VLAN: 1
Trunk Native Mode VLAN: 1
Administrative Native VLAN tagging: disabled
Allowed VLANs: 1-4095
Hybrid port configuration
---
Port Type: C-Port
Acceptable Frame Type: All
Ingress filter: Disabled
Egress tagging: All except-native
Hybrid Native Mode VLAN: 1
Hybrid VLANs Enabled: 1-4095

## show interface transceiver

### Syntax

**show interface** ( *<port_type>* [ *<plist>* ] ) **transceiver**

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<plist>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Show interface transceiver.

### Example

# **show interface 2.5GigabitEthernet 1/1 transceiver**
2.5GigabitEthernet 1/1
---
% No SFP module is detected

## show interface capabilities

### Syntax

**show interface** ( *<port_type>* [ *<v_port_type_list>* ] ) **capabilities**

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Show interface capabilities.

### Example

# **show interface GigabitEthernet 1/1 capabilities**

```
GigabitEthernet 1/1 Capabilities:
  Model:                    42AS-BT
  Type:                     10/100/1000BaseT
  Speed:                    10,100,1000,auto
  Duplex:                   half,full,auto
  Trunk encap. type:        802.1Q
  Trunk mode:               access,hybrid,trunk
  Channel:                  yes
  Broadcast suppression: no
  Flowcontrol:              yes
  Fast Start:               no
  QoS scheduling:           tx-(8q)
  CoS rewrite:              yes
  ToS rewrite:              yes
  UDLD:                     no
  Inline power:             yes
  RMirror:                  no
  PortSecure:               yes
  Dot1x:                    yes
```

## show interface description

### Syntax

**show interface** ( *<port_type>* [ *<v_port_type_list>* ] ) **description**

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Show interface description.

### Example

# **show interface GigabitEthernet 1/1 description**
---------- ----------
GigabitEthernet 1/1

## show interface statistics

### Syntax

**show interface** ( *<port_type>* [ *<v_port_type_list>* ] ) **statistics** [ { **packets** | **bytes** | **errors** | **discards** | **filtered** | { **priority** [ *<priority_v_0_to_7>* ] } } ] [ { **up** | **down** } ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |
| *<priority_v_0_to_7>* | Priority of the queue (or queues) to show statistics for |

### Default

### Mode

Privileged EXEC

### Usage

Shows the statistics for the interface.

### Example

# **show interface GigabitEthernet 1/1 statistics**
GigabitEthernet 1/1 Statistics:
Rx Packets: 79033 Tx Packets: 931
Rx Octets: 8139116 Tx Octets: 212233
Rx Unicast: 1024 Tx Unicast: 761
Rx Multicast: 42956 Tx Multicast: 167
Rx Broadcast: 35053 Tx Broadcast: 3
Rx Pause: 0 Tx Pause: 0

Rx 64: 29109 Tx 64: 448
Rx 65-127: 35122 Tx 65-127: 143

```
Rx 128-255:                13624    Tx 128-255:                202
Rx 256-511:                  251    Tx 256-511:                 52
Rx 512-1023:                 919    Tx 512-1023:                20
Rx 1024-1526:                  8    Tx 1024-1526:               66
Rx 1527-      :                0    Tx 1527-      :              0

Rx Priority 0:             79033    Tx Priority 0:              0
Rx Priority 1:                 0    Tx Priority 1:              0
Rx Priority 2:                 0    Tx Priority 2:              0
Rx Priority 3:                 0    Tx Priority 3:              0
Rx Priority 4:                 0    Tx Priority 4:              0
Rx Priority 5:                 0    Tx Priority 5:              0
Rx Priority 6:                 0    Tx Priority 6:              0
Rx Priority 7:                 0    Tx Priority 7:            931
```

## show interface status

### Syntax

**show interface** ( *<port_type>* [ *<v_port_type_list>* ] ) **status**

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Shows the status for the interface.

### Example

# **show interface GigabitEthernet 1/1 status**

```
Interface          Mode       Speed & Duplex   Flow Control   Max Frame   Excessive   Link
---------------------  -------  --------------  ------------  ---------
GigabitEthernet 1/1      enabled   Auto          disabled      9600      Discard      Down
```

## show interface veriphy

### Syntax

**show interface** ( *<port_type>* [ *<v_port_type_list>* ] ) **veriphy**

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Display cable diagnostics.

### Example

# **show interface GigabitEthernet 1/1 veriphy**

```
Interface                    Pair A   Length   Pair B, Length   Pair C   Length   Pair D   Length
----------------------       ------   ------   --------------   ------   ------   ------
GigabitEthernet 1/1          No test results
```

## show lacp

### Syntax

**show lacp** { **internal** | **statistics** | **system-id** | **neighbor** }

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show LACP configuration and status.

### Example

```
# show lacp internal
Port                    Mode       Key    Role     Timeout   Priority
-------------------    --------   ----   ------   -------   --------
Gi 1/1                  disabled   Auto   Active   Fast      32768
Gi 1/2                  disabled   Auto   Active   Fast      32768
Gi 1/3                  disabled   Auto   Active   Fast      32768
Gi 1/4                  disabled   Auto   Active   Fast      32768
2.5G 1/1                disabled   Auto   Active   Fast      32768
2.5G 1/2                disabled   Auto   Active   Fast      32768
```

## show port-security port

### Syntax

**show port-security port** [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Show port security port configuration.

### Example

```
# show port-security port interface GigabitEthernet 1/1
GigabitEthernet 1/1
-------------------
MAC Address          VID   State        Added                        Age/Hold Time
-----------------    ----  ----------   --------------------------   -------------
<none>
```

## show port-security switch

### Syntax

**show port-security switch** [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Show port security switch configuration.

### Example

```
# show port-security switch
Users:
L = Limit Control
8 = 802.1X
Interface                    Users   State          MAC Cnt
-----------------------     -----   -------------   -------
GigabitEthernet 1/1          --      No users          0
GigabitEthernet 1/2          --      No users          0
GigabitEthernet 1/3          --      No users          0
GigabitEthernet 1/4          --      No users          0
2.5GigabitEthernet 1/1       --      No users          0
2.5GigabitEthernet 1/2       --      No users          0
```

## show pvlan

### Syntax

**show pvlan** [ *<pvlan_list>* ]

### Parameter

| | |
|---|---|
| *<pvlan_list>* | PVLAN ID to show configuration for |

### Default

### Mode

Privileged EXEC

### Usage

Use the show pvlan command to view the PVLAN configuration.

### Example

```
# show pvlan 1
PVLAN ID    Ports
-------------------------------------------------------------------------------
1           GigabitEthernet 1/1, GigabitEthernet 1/2, GigabitEthernet 1/3,
            GigabitEthernet 1/4, 2.5GigabitEthernet 1/1, 2.5GigabitEthernet 1/2
```

## show pvlan isolation

### Syntax

**show pvlan isolation** [ **interface** ( *<port_type>* [ *<plist>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<plist>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Use the show pvlan isolation command to view the PVLAN isolation configuration.

### Example

```
# show pvlan isolation
Port                                    Isolation
--------------------------------   ---------
GigabitEthernet 1/1                 Disabled
GigabitEthernet 1/2                 Disabled
```

| | |
|---|---|
| GigabitEthernet 1/3 | Disabled |
| GigabitEthernet 1/4 | Disabled |

## shutdown

### Syntax

**shutdown**
**no shutdown**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Use shutdown to shut down the interface.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **no shutdown**

## speed

### Syntax

**speed** { **10g** | **2500** | **1000** | **100** | **10** | **auto** { [ **10** ] [ **100** ] [ **1000** ] } }
**no speed**

### Parameter

| | |
|---|---|
| **10g** | 10Gbps |
| **2500** | 2.5Gbps |
| **1000** | 1Gbps |
| **100** | 100Mbps |
| **10** | 10Mbps |
| **auto** | Auto negotiation |

### Default

Default speed is auto.

### Mode

Interface Configuration

### Usage

Configures interface speed. If you use 10, 100, or 1000 keywords with the auto keyword the port will only advertise the specified speeds..

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **speed 1000**

# 5. LLDP

## clear lldp statistics

### Syntax

**clear lldp statistics** { [ **interface** ( *<port_type>* [ *<plist>* ] ) ] | **global** }

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<plist>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Clear the LLDP statistics.

### Example

# **clear lldp statistics**

## lldp holdtime

### Syntax

**lldp holdtime** *<val>*
**no lldp holdtime**

### Parameter

| | |
|---|---|
| *<val>* | 2-10 seconds. |

### Default

### Mode

Global Configuration

### Usage

Use to set LLDP hold time.

### Example

(config)# **lldp holdtime 3**

## lldp med datum

### Syntax

**lldp med datum** { **wgs84** | **nad83-navd88** | **nad83-mllw** }
**no lldp med datum**

### Parameter

| | |
|---|---|
| **wgs84** | World Geodetic System 1984 |
| **nad83-navd88** | North American vertical datum 1983 |
| **nad83-mllw** | Mean lower low water datum 1983 |

### Default

### Mode

Global Configuration

### Usage

Use the lldp med datum to configure the datum (geodetic system) to use.

### Example

(config)# **lldp med datum wgs84**

## lldp med fast

### Syntax

**lldp med fast** *<v_1_to_10>*
**no lldp med fast**

### Parameter

| | |
|---|---|
| **fast** | Number of times to repeat LLDP frame transmission at fast start |

### Default

### Mode

Global Configuration

### Usage

Use the lldp med fast to configure the number of times the fast start LLDPDU are being sent during the activation of the fast start mechanism defined by LLDP-MED (1-10).

### Example

(config)# **lldp med fast 5**

## lldp med location-tlv altitude

### Syntax

**lldp med location-tlv altitude** { **meters** | **floors** } *<v_word11>*
**no lldp med location-tlv altitude**

### Parameter

| | |
|---|---|
| **meters** | Specify the altitude in meters |
| **floors** | Specify the altitude in floor |

| | |
|---|---|
| *<v_word11>* | Altitude value. Valid range -2097151.9 to 2097151.9 |

### Default

### Mode

Global Configuration

### Usage

Use the lldp med location-tlv altitude to configure the location altitude.

### Example

(config)# **lldp med location-tlv altitude meters 12.2**

## lldp med location-tlv civic-addr

### Syntax

**lldp med location-tlv civic-addr** { { **country** *<country>* } | { **state** | **county** | **city** | **district** | **block** | **street** | **leading-street-direction** | **trailing-street-suffix** | **street-suffix** | **house-no** | **house-no-suffix** | **landmark** | **additional-info** | **name** | **zip-code** | **building** | **apartment** | **floor** | **room-number** | **place-type** | **postal-community-name** | **p-o-box** | **additional-code** } *<v_line>* }
**no lldp med location-tlv civic-addr** { { **country** | **state** | **county** | **city** | **district** | **block** | **street** | **leading-street-direction** | **trailing-street-suffix** | **street-suffix** | **house-no** | **house-no-suffix** | **landmark** | **additional-info** | **name** | **zip-code** | **building** | **apartment** | **floor** | **room-number** | **place-type** | **postal-community-name** | **p-o-box** | **additional-code** }

### Parameter

| | |
|---|---|
| *<country>* | The two-letter ISO 3166 country code in capital ASCII letters - Example: DK, DE or US. |
| *<v_line>* | Value for the corresponding selected civic address. |

### Default

The default civic address is "" (empty).

### Mode

Global Configuration

### Usage

Use lldp med location-tlv civic-addr to configure the civic address.

### Example

(config)# **lldp med location-tlv civic-addr street "Poppelve"**

## lldp med location-tlv elin-addr

### Syntax

**lldp med location-tlv elin-addr** *<v_word25>*
**no lldp med location-tlv elin-addr**

### Parameter

| | |
|---|---|
| *<v_word25>* | ELIN value |

### Default

### Mode

Global Configuration

### Usage

Use the lldp med location-tlv elin-addr to configure value for the Emergency Call Service.

### Example

(config)# **lldp med location-tlv elin-addr 112**

## lldp med location-tlv latitude

### Syntax

**lldp med location-tlv latitude** { **north** | **south** } *<v_word8>*
**no lldp med location-tlv latitude**

### Parameter

| | |
|---|---|
| **north** | Setting latitude direction to north |
| **south** | Setting latitude direction to south |
| *<v_word8>* | Latitude degrees (0.0000-90.0000) |

### Default

### Mode

Global Configuration

### Usage

Use the lldp med location-tlv latitude to configure the location latitude.

### Example

(config)# **lldp med location-tlv latitude north 12.2345**

## lldp med location-tlv longitude

### Syntax

**lldp med location-tlv longitude** { **west** | **east** } *<v_word9>*
**no lldp med location-tlv longitude**

### Parameter

| | |
|---|---|
| **west** | Setting longitude direction to west |
| **east** | Setting longitude direction to east |
| *<v_word9>* | Longitude degrees (0.0000-180.0000) |

### Default

### Mode

Global Configuration

### Usage

Use the lldp med location-tlv longitude to configure the location longitude.

### Example

(config)# **lldp med location-tlv longitude east 12.2345**

## lldp med media-vlan policy-list

### Syntax

**lldp med media-vlan policy-list** *<v_range_list>*
**no lldp med media-vlan policy-list** [ *<v_range_list>* ]

### Parameter

| | |
|---|---|
| *<v_range_list>* | Policies to assign to the interface |

### Default

### Mode

Interface Configuration

### Usage

Use the media-vlan policy-list to assign policy to the interface.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **lldp med media-vlan policy-list 1,5**

## lldp med media-vlan-policy

### Syntax

**lldp med media-vlan-policy** *<policy_index>* { **voice** | **voice-signaling** | **guest-voice-signaling** | **guest-voice** | **softphone-voice** | **video-conferencing** | **streaming-video** | **video-signaling** } { **untagged** | **tagged** *<v_vlan_id>* [ **l2-priority** *<v_0_to_7>* ] } [ **dscp** <v_0_to_63> ]
**no lldp med media-vlan-policy** *<policies_list>*

### Parameter

| | |
|---|---|
| *<policy_index>* | Policy id for the policy which is created |
| *<v_vlan_id>* | The VLAN the policy uses tagged frames |
| *<v_0_to_7>* | Priority 0-7 |
| <v_0_to_63> | DSCP value 0-63 |

### Default

### Mode

Global Configuration

### Usage

Used to create a policy, which can be assigned to an interface.

### Example

(config)# **lldp med media-vlan-policy 1 voice tagged 1 1 1**

## lldp med transmit-tlv

### Syntax

**lldp med transmit-tlv** [ **capabilities** ] [ **location** ] [ **network-policy** ] [ **poe** ]
**no lldp med transmit-tlv** [ **capabilities** ] [ **location** ] [ **network-policy** ] [ **poe** ]

### Parameter

| | |
|---|---|
| **capabilities** | Enable transmission of the optional capabilities TLV |
| **location** | Enable transmission of the optional location TLV |
| **network-policy** | Enable transmission of the optional network-policy TLV |
| **poe** | Runtime |

### Default

### Mode

Interface Configuration

### Usage

Use the lldp med transmit-tlv to configure which TLVs to transmit to link partner.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **lldp med transmit-tlv capabilities**

## lldp med type

### Syntax

**lldp med type** { **connectivity** | **end-point** }
**no lldp med type**

### Parameter

| | |
|---|---|
| **connectivity** | Work as connectivity device |
| **end-point** | Work as end-point device |

### Default

### Mode

Interface Configuration

### Usage

Select if the interface is working as 'Network Connectivity Device' or an 'Endpoint Device'. The difference between working as 'Network Connectivity Device' and an 'Endpoint Device' is a question of who is initializing the LLDP-MED TLVs transmission. A 'Network Connectivity Device' is not starting LLDP-MED TLVs transmission until it has detected an 'Endpoint Device' as link partner. An 'Endpoint Device' will start LLDP-MED TLVs transmission at once.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **lldp med type end-point**

## lldp receive

### Syntax

**lldp receive**
**no lldp receive**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Sets if switch shall update LLDP entry table with incoming LLDP information.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **lldp receive**

## lldp reinit

### Syntax

**lldp reinit** *<val>*
**no lldp reinit**

### Parameter

| | |
|---|---|
| *<val>* | 1-10 seconds |

### Default

### Mode

Global Configuration

### Usage

Use to set LLDP reinitialization delay.

### Example

(config)# **lldp reinit 5**

## lldp timer

### Syntax

**lldp timer** *<val>*
**no lldp timer**

### Parameter

| | |
|---|---|
| *<val>* | 5-32768 seconds |

### Default

### Mode

Global Configuration

### Usage

Use to set LLDP TX interval.

### Example

(config)# **lldp timer 125**

## lldp tlv-select

### Syntax

**lldp tlv-select** { **management-address** | **port-description** | **system-capabilities** | **system-description** | **system-name** }
**no lldp tlv-select** { **management-address** | **port-description** | **system-capabilities** | **system-description** | **system-name** }

### Parameter

| | |
|---|---|
| **management-address** | Enable/Disable transmission of management address |
| **port-description** | Enable/Disable transmission of port description |
| **system-capabilities** | Enable/Disable transmission of system capabilities |
| **system-description** | Enable/Disable transmission of system description |
| **system-name** | Enable/Disable transmission of system name |

### Default

### Mode

Interface Configuration

### Usage

Enables/disables LLDP optional TLVs.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **lldp tlv-select management-address**

## lldp transmission-delay

### Syntax

**lldp transmission-delay** *<val>*
**no lldp transmission-delay**

### Parameter

| | |
|---|---|
| *<val>* | 1-8192 seconds |

### Default

### Mode

Global Configuration

### Usage

Sets LLDP transmission-delay. LLDP transmission delay (the amount of time that the transmission of LLDP frames will delayed after LLDP configuration has changed) in seconds.

### Example

(config)# **lldp transmission-delay 5**

## lldp transmit

### Syntax

**lldp transmit**
**no lldp transmit**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Sets if switch shall transmit LLDP frames.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **lldp transmit**

## show lldp eee

### Syntax

**show lldp eee** [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Shows the LLDP local and neighbors EEE information.

### Example

# **show lldp eee**
Local Interface : GigabitEthernet 1/3
EEE not enabled for this interface

## show lldp med media-vlan-policy

### Syntax

**show lldp med media-vlan-policy** [ *<v_0_to_31>* ]

### Parameter

| | |
|---|---|
| *<v_0_to_31>* | List of policies. |

### Default

### Mode

Privileged EXEC

### Usage

Show media vlan policy(ies).

### Example

# **show lldp med media-vlan-policy**

## show lldp med remote-device

### Syntax

**show lldp med remote-device** [ **interface** ( *<port_type>* [ *<port_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<port_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Show LLDP-MED neighbor device information.

### Example

# **show lldp med remote-device interface GigabitEthernet 1/1**

## show lldp neighbors

### Syntax

**show lldp neighbors** [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<port_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Shows the LLDP neighbors information.

### Example

```
# show lldp neighbors
Local Interface        : GigabitEthernet 1/3
Chassis ID             : 1C-2A-A3-00-00-24
Port ID                : gi22
Port Description       :
System Name            :
System Description     :
System Capabilities :
PoE Type               :
PoE Source             :
PoE Power              :
PoE Priority           :
```

## show lldp statistics

### Syntax

**show lldp statistics** [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<port_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Shows the LLDP or interface statistics.

### Example

# **show lldp statistics interface GigabitEthernet 1/1**

| Interface | Tx Frames | Rx Frames | Rx Errors | Rx Discards | Rx TLV Errors | Rx TLV Unknown | Rx TLV Organiz. | Rx TLV Aged |
|---|---|---|---|---|---|---|---|---|
| GigabitEthernet 1/1 | 155 | 163 | 0 | 0 | 0 | 0 | 155 | 0 |

# 6. Loop Protection

## loop-protect(Global)

### Syntax

**loop-protect**
**no loop-protect**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Loop protection configuration.

### Example

(config)# **loop-protect**

## loop-protect(Interface)

### Syntax

**loop-protect**
**no loop-protect**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Loop protection configuration.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **loop-protect**

## loop-protect action

### Syntax

**loop-protect action** { [ **shutdown** ] [ **log** ] }
**no loop-protect action**

### Parameter

| | |
|---|---|
| **shutdown** | Shutdown port |
| **log** | Generate log |

### Default

### Mode

Interface Configuration

### Usage

Loop protection action configuration on port.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **loop-protect action shutdown**

## loop-protect shutdown-time

### Syntax

**loop-protect shutdown-time** *<t>*
**no loop-protect shutdown-time**

### Parameter

| | |
|---|---|
| *<t>* | Shutdown time in second |

### Default

### Mode

Global Configuration

### Usage

Loop protection shutdown time interval.

### Example

(config)# **loop-protect shutdown-time 5**

## loop-protect transmit-time

### Syntax

**loop-protect transmit-time** *<t>*
**no loop-protect transmit-time**

### Parameter

| | |
|---|---|
| *<t>* | Transmit time in second |

### Default

### Mode

Global Configuration

### Usage

Loop protection transmit time interval.

### Example

(config)# **loop-protect transmit-time 5**

## loop-protect tx-mode

### Syntax

**loop-protect tx-mode**
**no loop-protect tx-mode**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Actively generate PDUs.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **loop-protect tx-mode**

## show loop-protect

### Syntax

**show loop-protect** [ **interface** ( *<port_type>* [ *<plist>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<plist>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Shows Loop protection configuration.

### Example

```
# show loop-protect
Loop Protection Configuration
=====================================
Loop Protection     : Disable
Transmission Time : 5 sec
Shutdown Time        : 180 sec

GigabitEthernet 1/1
-----------------------------
    Loop protect mode is enabled.
    Action is shutdown.
    Transmit mode is enabled.
    No loop.
    The number of loops is 0.
    Status is down.
```

# 7. MAC Address

## clear mac address-table

### Syntax

**clear mac address-table**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Clear mac address cache.

### Example

# **clear mac address-table**

## mac address-table aging-time

### Syntax

**mac address-table aging-time** *<v_0_10_to_1000000>*
**no mac address-table aging-time** [ *<v_0_10_to_1000000>* ]

### Parameter

| | |
|---|---|
| *<v_0_10_to_1000000>* | Aging time in seconds, 0 disables aging |

### Default

### Mode

Global Configuration

### Usage

Set switch aging time, 0 to disable.

### Example

(config)# **mac address-table aging-time 300**

## mac address-table learning

### Syntax

**mac address-table learning** [ **secure** ]
**no mac address-table learning** [ **secure** ]

### Parameter

| | |
|---|---|
| **learning** | Port learning mode |
| **secure** | Port Secure mode |

### Default

Learning is enabled.

### Mode

Interface Configuration

### Usage

Enable learning on port.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **mac address-table learning**

## mac address-table learning vlan

### Syntax

**mac address-table learning vlan** *<vlan_list>*
**no mac address-table learning vlan** *<vlan_list>*

### Parameter

| | |
|---|---|
| *<vlan_list>* | VLAN ID list |

### Default

### Mode

Global Configuration

### Usage

VLAN learning.

### Example

(config)# **mac address-table learning vlan 1**

## mac address-table static

### Syntax

**mac address-table static** *<v_mac_addr>* **vlan** *<v_vlan_id>* [ **interface** ( <port_type> [ <v_port_type_list> ] ) ]
**no mac address-table static** *<v_mac_addr>* **vlan** *<v_vlan_id>* [ **interface** ( <port_type> [ <v_port_type_list> ] ) ]

### Parameter

| | |
|---|---|
| *<v_mac_addr>* | 48 bit MAC address: xx:xx:xx:xx:xx:xx |
| *<v_vlan_id>* | VLAN IDs 1-4095 |
| <port_type> | Port type in Fast, Giga or Tengiga ethernet |
| <v_port_type_list> | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Global Configuration

### Usage

Assign a static mac address to this port.

### Example

(config)# **mac address-table static 00:00:00:00:00:01 vlan 2 interface GigabitEthernet 1/2**

## show mac address-table

### Syntax

**show mac address-table** [ **conf** | **static** | **aging-time** | { { **learning** | **count** } [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) | **vlan** *<v_vlan_id_2>* ] } | { **address** *<v_mac_addr>* [ **vlan** *<v_vlan_id>* ] } | **vlan** <v_vlan_id_1> | **interface** ( <port_type> [ <v_port_type_list_1> ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |
| *<v_vlan_id_2>* | VLAN IDs 1-4095 |
| *<v_mac_addr>* | 48 bit MAC address: xx:xx:xx:xx:xx:xx |
| *<v_vlan_id>* | VLAN IDs 1-4095 |
| <v_vlan_id_1> | VLAN IDs 1-4095 |

### Default

### Mode

Privileged EXEC

### Usage

Shows MAC address entries.

### Example

# **show mac address-table**

```
Type       VID   MAC Address          Ports
Dynamic 1        00:0b:0e:0f:00:ed    GigabitEthernet 1/3
Dynamic 1        00:cf:e0:52:b0:4f    GigabitEthernet 1/3
Dynamic 1        00:cf:e0:52:b0:8b    GigabitEthernet 1/3
```

# 8. Multicast

## clear ip dhcp snooping statistics

### Syntax

**clear ip igmp snooping** [ **vlan** *<v_vlan_list>* ] **statistics**

### Parameter

| | |
|---|---|
| *<v_vlan_list>* | VLAN identifier (VID) |

### Default

### Mode

Privileged EXEC

### Usage

### Example

# **clear ip igmp snooping vlan 1 statistics**

## clear ipv6 mld snooping statistics

### Syntax

**clear ipv6 mld snooping** [ **vlan** *<v_vlan_list>* ] **statistics**

### Parameter

| | |
|---|---|
| *<v_vlan_list>* | VLAN identifier (VID) |

### Default

### Mode

Privileged EXEC

### Usage

### Example

# **clear ipv6 mld snooping vlan 1 statistics**

## default range

### Syntax

**default range** *<entry_name>*

### Parameter

| | |
|---|---|
| *<entry_name>* | Range entry name in 16 characters |

### Default

### Mode

IPMC Profile Configuration

### Usage

Set the filtering rule in an IPMC profile as default condition. When you are in IPMC profile configuration mode, use default range command to make a specific filtering rule working in default conditions.

### Example

This example shows when and how to execute default range command in IPMC profile configuration mode
(config)# **ipmc range Video 230.0.0.0 230.0.0.255**
(config)# **ipmc profile EXAMPLE**
(config-ipmc-profile)# **range Video permit log**

```
(config-ipmc-profile)# do show running-config
...

!
ipmc range Video 230.0.0.0 230.0.0.255
!
ipmc profile EXAMPLE
range Video permit log
!
...

(config-ipmc-profile)# default range Video
(config-ipmc-profile)# exit
(config)# do show running-config
...
!
ipmc range Video 230.0.0.0 230.0.0.255
!
ipmc profile EXAMPLE
range Video deny
!
...
```

## description

### Syntax

**description** *<profile_desc>*
**no description**

### Parameter

| | |
|---|---|
| *<profile_desc>* | Description for the designated IPMC filtering profile |

### Default

### Mode

IPMC Profile Configuration

### Usage

Set the additional description for an IPMC profile. When you are in IPMC profile configuration mode, use description command to set the additional description for a profile.

### Example

This example shows when and how to execute description command in ipmc profile configuration mode
(config)# **ipmc profile EXAMPLE**
(config-ipmc-profile)# **description This is a profile used for test**
(config-ipmc-profile)# **do show running-config**
...
!
ipmc profile EXAMPLE
description This is a profile used for test
!
...

## ip igmp host-proxy

### Syntax

**ip igmp host-proxy** [ *leave-proxy* ]
**no ip igmp host-proxy** [ *leave-proxy* ]

### Parameter

| | |
|---|---|
| *leave-proxy* | IGMP proxy for leave configuration |

### Default

### Mode

Global Configuration

### Usage

IGMP proxy configuration.

### Example

(config)# **ip igmp host-proxy**

## ip igmp snooping(global)

### Syntax

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

### Parameter

### Default

### Mode

Global Configuration

### Usage

Snooping IGMP configuration.

### Example

(config)# **ip igmp snooping**

## ip igmp snooping(VLANIF)

### Syntax

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

### Parameter

### Default

### Mode

VLAN Interface Configuration

### Usage

Snooping IGMP configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ip igmp snooping**

## ip igmp snooping compatibility

### Syntax

**ip igmp snooping compatibility** { **auto** | **v1** | **v2** | **v3** }
**no ip igmp snooping compatibility**

### Parameter

| | |
|---|---|
| **auto** | Compatible with IGMPv1/IGMPv2/IGMPv3 |
| **v1** | Forced IGMPv1 |
| **v2** | Forced IGMPv2 |
| **v3** | Forced IGMPv3 |

### Default

### Mode

VLAN Interface Configuration

### Usage

Interface compatibility configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ip igmp snooping compatibility auto**

## ip igmp snooping filter

### Syntax

**ip igmp snooping filter** *<profile_name>*
**no ip igmp snooping filter**

### Parameter

| | |
|---|---|
| *<profile_name>* | Profile name in 16 characters |

### Default

### Mode

Interface Configuration

### Usage

Access control on IGMP multicast group registration configuration.

### Example

(config)# **interface GigabitEthernet 1/2**

(config-if-vlan)# **ip igmp snooping filter abc**

## ip igmp snooping immediate-leave

### Syntax

**ip igmp snooping immediate-leave**
**no ip igmp snooping immediate-leave**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Immediate leave configuration.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **ip igmp snooping immediate-leave**

## ip igmp snooping last-member-query-interval

### Syntax

**ip igmp snooping last-member-query-interval** *<ipmc_lmqi>*
**no ip igmp snooping last-member-query-interval**

### Parameter

| | |
|---|---|
| *<ipmc_lmqi>* | 0 - 31744 tenths of seconds |

### Default

### Mode

VLAN Interface Configuration

### Usage

Last Member Query Interval in tenths of seconds configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ip igmp snooping last-member-query-interval 100**

## ip igmp snooping max-groups

### Syntax

**ip igmp snooping max-groups** *<throttling>*
**no ip igmp snooping max-groups**

### Parameter

| | |
|---|---|
| *<throttling>* | Maximum number of IGMP group registration |

### Default

### Mode

Interface Configuration

### Usage

IGMP group throttling configuration.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **ip igmp snooping max-groups 10**

## ip igmp snooping mrouter

### Syntax

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

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Multicast router port configuration.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **ip igmp snooping mrouter**

## ip igmp snooping priority

### Syntax

**ip igmp snooping priority** *<cos_priority>*
**no ip igmp snooping priority**

### Parameter

| | |
|---|---|
| *<cos_priority>* | CoS priority ranges from 0 to 7 |

### Default

### Mode

VLAN Interface Configuration

### Usage

Interface CoS priority configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ip igmp snooping priority 4**

## ip igmp snooping querier

### Syntax

**ip igmp snooping querier** { **election** | **address** *<v_ipv4_ucast>* }
**no ip igmp snooping querier**

### Parameter

| | |
|---|---|
| **election** | Act as an IGMP Querier to join Querier-Election |

| | |
|---|---|
| *<v_ipv4_ucast>* | A valid IPv4 unicast address |

### Default

### Mode

VLAN Interface Configuration

### Usage

IGMP Querier configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ip igmp snooping querier election**

## ip igmp snooping query-interval

### Syntax

**ip igmp snooping query-interval** *<ipmc_qi>*
**no ip igmp snooping query-interval**

### Parameter

| | |
|---|---|
| *<ipmc_qi>* | 1 - 31744 seconds |

### Default

### Mode

VLAN Interface Configuration

### Usage

Query Interval in seconds configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ip igmp snooping query-interval 100**

## ip igmp snooping query-max-response-time

### Syntax

**ip igmp snooping query-max-response-time** *<ipmc_qri>*
**no ip igmp snooping query-max-response-time**

### Parameter

| | |
|---|---|
| *<ipmc_qri>* | 0 - 31744 tenths of seconds |

### Default

### Mode

VLAN Interface Configuration

### Usage

Query Response Interval in tenths of seconds configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ip igmp snooping query-max-response-time 100**

## ip igmp snooping robustness-variable

### Syntax

**ip igmp snooping robustness-variable** *<ipmc_rv>*
**no ip igmp snooping robustness-variable**

### Parameter

| | |
|---|---|
| *<ipmc_rv>* | Packet loss tolerance count from 1 to 255 |

### Default

### Mode

VLAN Interface Configuration

### Usage

Robustness Variable configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ip igmp snooping robustness-variable 10**

## ip igmp snooping unsolicited-report-interval

### Syntax

**ip igmp snooping unsolicited-report-interval** *<ipmc_uri>*
**no ip igmp snooping unsolicited-report-interval**

### Parameter

| | |
|---|---|
| *<ipmc_uri>* | 0 - 31744 seconds |

### Default

### Mode

VLAN Interface Configuration

### Usage

Unsolicited Report Interval in seconds configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ip igmp snooping unsolicited-report-interval 100**

## ip igmp snooping vlan

### Syntax

**ip igmp snooping vlan** *<v_vlan_list>*
**no ip igmp snooping vlan** [ *<v_vlan_list>* ]

### Parameter

| | |
|---|---|
| *<v_vlan_list>* | VLAN identifier (VID) |

### Default

### Mode

Global Configuration

### Usage

IGMP VLAN configuration.

### Example

(config)# **ip igmp snooping vlan 1**

## ip igmp ssm-range

### Syntax

**ip igmp ssm-range** *<v_ipv4_mcast> <ipv4_prefix_length>*
**no ip igmp ssm-range**

### Parameter

| | |
|---|---|
| *<v_ipv4_mcast>* | Valid IPv4 multicast address |
| *<ipv4_prefix_length>* | Prefix length ranges from 4 to 32 |

### Default

### Mode

Global Configuration

### Usage

IPv4 address range of Source Specific Multicast configuration.

### Example

(config)# **ip igmp ssm-range 239.255.1.1 32**

## ip igmp unknown-flooding

### Syntax

**ip igmp unknown-flooding**

**no ip igmp unknown-flooding**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Flooding unregistered IPv4 multicast traffic configuration.

### Example

(config)# **ip igmp unknown-flooding**

## ipmc profile

### Syntax

**ipmc profile** [ *<profile_name>* ]
**no ipmc profile** [ *<profile_name>* ]

### Parameter

| | |
|---|---|
| *<profile_name>* | Profile name in 16 characters. |

### Default

IPMC profile filtering is disabled by default.

### Mode

Global Configuration

### Usage

Enable IPMC profile filtering configuration. When the IPMC profile filtering is required, use this command to enable the profile filtering.

### Example

(config)# **ipmc profile**

# ipmc range

## Syntax

**ipmc range** *<entry_name>* { <v_ipv4_mcast> [ <v_ipv4_mcast_1> ] | <v_ipv6_mcast> [ <v_ipv6_mcast_1> ] }
**no ipmc range** *<entry_name>*

## Parameter

| | |
|---|---|
| *<entry_name>* | Range entry name in 16 characters |
| <v_ipv4_mcast> | Valid IPv4 multicast address |
| <v_ipv4_mcast_1> | Valid IPv4 multicast address that is not less than start address |
| <v_ipv6_mcast> | Valid IPv6 multicast address |
| <v_ipv6_mcast_1> | Valid IPv6 multicast address that is not less than start address |

## Default

IPMC profile filtering is disabled by default.

## Mode

Global Configuration

## Usage

Create or update an IPMC profile range entry. When the IPMC profile address range is required, use this command to configure the profile address range.

## Example

This example shows how to execute ipmc range command in global configuration mode
(config)# **ipmc range Video 230.0.0.0 230.0.0.255**

# ipv6 mld host-proxy

## Syntax

**ipv6 mld host-proxy** [ *leave-proxy* ]
**no ipv6 mld host-proxy** [ *leave-proxy* ]

## Parameter

| | |
|---|---|
| *leave-proxy* | MLD proxy for leave configuration |

### Default

### Mode

Global Configuration

### Usage

MLD proxy configuration.

### Example

(config)# **ipv6 mld host-proxy**

## ipv6 mld snooping(global)

### Syntax

**ipv6 mld snooping**
**no ipv6 mld snooping**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Snooping MLD configuration.

### Example

(config)# **ipv6 mld snooping**

## ip mld snooping(VLANIF)

### Syntax

**ip mld snooping**
**no ipv6 mld snooping**

### Parameter

### Default

### Mode

VLAN Interface Configuration

### Usage

Snooping MLD configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ipv6 mld snooping**

## ipv6 mld snooping compatibility

### Syntax

**ipv6 mld snooping compatibility** { **auto** | **v1** | **v2** }
**no ipv6 mld snooping compatibility**

### Parameter

| | |
|---|---|
| **auto** | Compatible with MLDv1/MLDv2 |
| **v1** | Forced MLDv1 |
| **v2** | Forced MLDv2 |

### Default

### Mode

VLAN Interface Configuration

### Usage

Interface compatibility configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ipv6 mld snooping compatibility auto**

## ipv6 mld snooping filter

### Syntax

**ipv6 mld snooping filter** *<profile_name>*
**no ipv6 mld snooping filter**

### Parameter

| | |
|---|---|
| *<profile_name>* | Profile name in 16 characters |

### Default

### Mode

Interface Configuration

### Usage

Access control on MLD multicast group registration configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if-vlan)# **ipv6 mld snooping filter abc**

## ipv6 mld snooping immediate-leave

### Syntax

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

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Immediate leave configuration.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **ipv6 mld snooping immediate-leave**

## ipv6 mld snooping last-member-query-interval

### Syntax

**ipv6 mld snooping last-member-query-interval** *<ipmc_lmqi>*
**no ipv6 mld snooping last-member-query-interval**

### Parameter

| | |
|---|---|
| *<ipmc_lmqi>* | 0 - 31744 tenths of seconds |

### Default

### Mode

VLAN Interface Configuration

### Usage

Last Member Query Interval in tenths of seconds configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ipv6 mld snooping last-member-query-interval 100**

## ipv6 mld snooping max-groups

### Syntax

**ipv6 mld snooping max-groups** *<throttling>*
**no ipv6 mld snooping max-groups**

### Parameter

| | |
|---|---|
| *<throttling>* | Maximum number of MLD group registration |

### Default

### Mode

Interface Configuration

### Usage

IGMP group throttling configuration.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **ipv6 mld snooping max-groups 10**

## ipv6 mld snooping mrouter

### Syntax

**ipv6 mld snooping mrouter**
**no ipv6 mld snooping mrouter**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Multicast router port configuration.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **ipv6 mld snooping mrouter**

## ipv6 mld snooping priority

### Syntax

**ipv6 mld snooping priority** *<cos_priority>*
**no ipv6 mld snooping priority**

### Parameter

| | |
|---|---|
| *<cos_priority>* | CoS priority ranges from 0 to 7 |

### Default

### Mode

VLAN Interface Configuration

### Usage

Interface CoS priority configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ipv6 mld snooping priority 4**

## ipv6 mld snooping querier election

### Syntax

**ipv6 mld snooping querier election**
**no ipv6 mld snooping querier election**

### Parameter

| | |
|---|---|
| **election** | Act as an MLD Querier to join Querier-Election |

### Default

### Mode

VLAN Interface Configuration

### Usage

MLD Querier configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ipv6 mld snooping querier election**

## ipv6 mld snooping query-interval

### Syntax

**ipv6 mld snooping query-interval** *<ipmc_qi>*
**no ipv6 mld snooping query-interval**

### Parameter

| | |
|---|---|
| *<ipmc_qi>* | 1 - 31744 seconds |

### Default

### Mode

VLAN Interface Configuration

### Usage

Query Interval in seconds configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ipv6 mld snooping query-interval 100**

## ipv6 mld snooping query-max-response-time

### Syntax

**ipv6 mld snooping query-max-response-time** *<ipmc_qri>*
**no ipv6 mld snooping query-max-response-time**

### Parameter

| | |
|---|---|
| *<ipmc_qri>* | 0 - 31744 tenths of seconds |

### Default

### Mode

VLAN Interface Configuration

### Usage

Query Response Interval in tenths of seconds configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ipv6 mld snooping query-max-response-time 100**

## ipv6 mld snooping robustness-variable

### Syntax

**ipv6 mld snooping robustness-variable** *<ipmc_rv>*
**no ipv6 mld snooping robustness-variable**

### Parameter

| | |
|---|---|
| *<ipmc_rv>* | Packet loss tolerance count from 1 to 255 |

### Default

### Mode

VLAN Interface Configuration

### Usage

Robustness Variable configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ipv6 mld snooping robustness-variable 10**

## ipv6 mld snooping unsolicited-report-interval

### Syntax

**ipv6 mld snooping unsolicited-report-interval** *<ipmc_uri>*
**no ipv6 mld snooping unsolicited-report-interval**

### Parameter

| | |
|---|---|
| *<ipmc_uri>* | 0 - 31744 seconds |

### Default

### Mode

VLAN Interface Configuration

### Usage

Unsolicited Report Interval in seconds configuration.

### Example

(config)# **interface vlan 100**
(config-if-vlan)# **ipv6 mld snooping unsolicited-report-interval 100**

## ipv6 mld snooping vlan

### Syntax

**ipv6 mld snooping vlan** *<v_vlan_list>*
**no ipv6 mld snooping vlan** [ *<v_vlan_list>* ]

### Parameter

| | |
|---|---|
| *<v_vlan_list>* | VLAN identifier (VID) |

### Default

### Mode

Global Configuration

### Usage

IGMP VLAN configuration.

### Example

(config)# **ipv6 mld snooping vlan 1**

## ipv6 mld ssm-range

### Syntax

**ipv6 mld ssm-range** *<v_ipv6_mcast> <ipv6_prefix_length>*
**no ipv6 mld ssm-range**

### Parameter

| | |
|---|---|
| *<v_ipv6_mcast>* | Valid IPv6 multicast address |
| *<ipv6_prefix_length>* | Prefix length ranges from 8 to 128 |

### Default

### Mode

Global Configuration

### Usage

IPv6 address range of Source Specific Multicast configuration.

### Example

(config)# **ipv6 mld ssm-range FF02:100::01/64**

## ipv6 mld unknown-flooding

### Syntax

**ipv6 mld unknown-flooding**
**no ipv6 mld unknown-flooding**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Flooding unregistered IPv6 multicast traffic configuration.

### Example

(config)# **ipv6 mld unknown-flooding**

## range

### Syntax

**range** *<entry_name>* { **permit** | **deny** } [ **log** ] [ **next** *<next_entry>* ]
**no range** *<entry_name>*

### Parameter

| | |
|---|---|
| *<entry_name>* | Range entry name in 16 characters |
| *<next_entry>* | Range entry name in 16 characters |

### Default

### Mode

IPMC Profile Configuration

### Usage

Create or update the filtering rule in an IPMC profile.

### Example

(config)# **ipmc profile example**
(config-ipmc-profile)# **range Video permit log**

## show ip igmp snooping

### Syntax

**show ip igmp snooping** [ **vlan** *<v_vlan_list>* ] [ **group-database** [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) ] [ **sfm-information** ] ] [ **detail** ]

### Parameter

| | |
|---|---|
| *<v_vlan_list>* | VLAN identifier (VID) |
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Show IGMP snooping configuration.

### Example

# **show ip igmp snooping**

## show ip igmp snooping mrouter

### Syntax

**show ip igmp snooping mrouter** [ **detail** ]

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show multicast router port status in IGMP configuration.

### Example

# **show ip igmp snooping mrouter**

## show ipmc profile

### Syntax

**show ipmc profile** [ *<profile_name>* ] [ **detail** ]

### Parameter

| | |
|---|---|
| *<profile_name>* | Profile name in 16 characters |

### Default

### Mode

Privileged EXEC

### Usage

This privileged execution command displays the settings for entire IPMC profile ranges or for a specific IPMC profile range.

### Example

# **show ipmc profile EXAMPLE**
Profile: EXAMPLE (In HYBRID Mode)
Description: A Profile
HEAD-> Video (Permit the following range)
Start Address: 225.0.0.0
End Address : 225.0.0.255
NEXT-> Audio (Deny the following range and log the matched entry)
Start Address: ff3e:0000:0000:0000:0000:0000:0000:1234
End Address : ff3e:0000:0000:0000:0000:0000:0000:2234

## show ipmc range

### Syntax

**show ipmc range** [ *<entry_name>* ]

### Parameter

| | |
|---|---|
| *<entry_name>* | Range entry name in 16 characters |

### Default

### Mode

Privileged EXEC

### Usage

This privileged execution command displays the settings for entire IPMC profile ranges or for a specific IPMC profile range.

### Example

# **show ipmc range**
Range Name : Audio
Start Address: ff3e:0000:0000:0000:0000:0000:0000:1234
End Address : ff3e:0000:0000:0000:0000:0000:0000:2234
Range Name : Video
Start Address: 226.1.2.3

End Address : 226.2.2.3

## show ipv6 mld snooping

### Syntax

**show ipv6 mld snooping** [ **vlan** *<v_vlan_list>* ] [ **group-database** [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) ] [ **sfm-information** ] ] [ **detail** ]

### Parameter

| | |
|---|---|
| *<v_vlan_list>* | VLAN identifier (VID) |
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Show IPv6 MLD snooping configuration.

### Example

# **show ipv6 mld snooping**

## show ipv6 mld snooping mrouter

### Syntax

**show ipv6 mld snooping mrouter** [ **detail** ]

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show IPv6 multicast router port status in MLD.

### Example

# **show ipv6 mld snooping mrouter**

# 9. Network Administration

## clear ip arp

### Syntax

**clear ip arp**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Clear ARP cache

### Example

# **clear ip arp**

## clear ip statistics

### Syntax

**show ip statistics** [ **system** ] [ **interface vlan** *<v_vlan_list>* ] [ **icmp** ] [ **icmp-msg** *<type>* ]

### Parameter

| | |
|---|---|
| *<v_vlan_list>* | VLAN identifier (VID) |
| *<type>* | ICMP message type ranges from 0 to 255 |

### Default

### Mode

Privileged EXEC

### Usage

Clear IP statistics.

### Example

# **clear ip statistics**

## clear ipv6 neighbors

### Syntax

**clear ipv6 neighbors**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Clear IPv6 neighbors cache

### Example

# **clear ip neighbors**

## clear ipv6 statistics

### Syntax

**show ipv6 statistics** [ **system** ] [ **interface vlan** *<v_vlan_list>* ] [ **icmp** ] [ **icmp-msg** *<type>* ]

### Parameter

| | |
|---|---|
| *<v_vlan_list>* | VLAN identifier (VID) |

| | |
|---|---|
| *<type>* | ICMP message type ranges from 0 to 255 |

### Default

### Mode

Privileged EXEC

### Usage

Clear IPv6 statistics.

### Example

# **clear ipv6 statistics**

## clock timezone

### Syntax

**clock timezone offset** *<offset_var>*

### Parameter

| | |
|---|---|
| *<offset_var>* | offset |
| *<type>* | ICMP message type ranges from 0 to 255 |

### Default

### Mode

Global Configuration

### Usage

Configure time-of-day clock.

### Example

# **clock timezone offset 0**

## default snmp-server community

### Syntax

**default snmp-server community v2c { ro | rw }**

### Parameter

| | |
|---|---|
| **ro** | Read only |
| **rw** | Read write |

### Default

### Mode

Global Configuration

### Usage

### Example

(config) # **default snmp-server community v2c ro**

## show clock

### Syntax

**show clock**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show system clock.

### Example

```
# show clock
System Time        : 1970-01-01T01:06:49+00:00
```

## show ip arp

### Syntax

**show ip arp**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Print ARP table.

### Example

```
# show ip arp
192.168.0.20 via VLAN1:00-e0-4c-2e-2c-dd
```

## show ip domain

### Syntax

**show ip domain**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show IP domain.

### Example

# **show ip domain**
Current domain name is not configured.

## show ip statistics

### Syntax

**show ip statistics** [ **system** ] [ **interface vlan** *<v_vlan_list>* ] [ **icmp** ] [ **icmp-msg** *<type>* ]

### Parameter

| | |
|---|---|
| *<v_vlan_list>* | VLAN identifier (VID) |
| *<type>* | ICMP message type ranges from 0 to 255 |

### Default

### Mode

Privileged EXEC

### Usage

Show IP traffic statistics.

### Example

# **show ip statistics system**
```
IPv4 statistics:
  Rcvd:   39672 total in 4194505 bytes
           9967 local destination, 0 forwarding
           0 header error, 13737 address error, 0 unknown protocol
           0 no route, 0 truncated, 29525 discarded
  Sent:   4771 total in 1400350 bytes
           4591 generated, 0 forwarded
           3 no route, 0 discarded
  Frags: 0 reassemble (0 reassembled, 0 couldn't reassemble)
           0 fragment (0 fragmented, 0 couldn't fragment)
           0 fragment created
  Mcast: 33044 received in 3079054 bytes
           0 sent in 0 byte
  Bcast: 17256 received, 0 sent
```

## show ipv6 neighbor

### Syntax

**show ipv6 neighbor** [ **interface vlan** *<v_vlan_list>* ]

### Parameter

| | |
|---|---|
| *<v_vlan_list>* | VLAN identifier (VID) |

### Default

### Mode

Privileged EXEC

### Usage

Show IPv6 neighbor.

### Example

# **show ipv6 neighbor**
fe80::144f:be:99d0:5796 via VLAN1: 40-83-1d-eb-69-9f Dynamic/STALE
fe80::169d:9ff:fee6:5854 via VLAN1: 14-9d-09-e6-58-54 Dynamic/STALE

## show ipv6 statistics

### Syntax

**show ipv6 statistics** [ **system** ] [ **interface vlan** *<v_vlan_list>* ] [ **icmp** ] [ **icmp-msg** *<type>* ]

### Parameter

| | |
|---|---|
| *<v_vlan_list>* | VLAN identifier (VID) |
| *<type>* | ICMP message type ranges from 0 to 255 |

### Default

### Mode

Privileged EXEC

### Usage

Show IPv6 traffic statistics.

### Example

```
# show ipv6 statistics system
IPv6 statistics:
  Rcvd:   565 total in 33744 bytes
          565 local destination, 0 forwarding
          0 header error, 0 address error, 0 unknown protocol
          0 no route, 0 truncated, 0 discarded
  Sent:   10 total in 696 bytes
          14 generated, 0 forwarded
          0 no route, 0 discarded
  Frags: 0 reassemble (0 reassembled, 0 couldn't reassemble)
          0 fragment (0 fragmented, 0 couldn't fragment)
          0 fragment created
  Mcast: 565 received in 33744 bytes
          10 sent in 696 bytes
  Bcast: 0 received, 0 sent
```

# 10. PoE

## poe capacitor-detect

### Syntax

**poe capacitor-detect**
**no poe capacitor-detect**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Enable or disable capacitor detection.

### Example

(config)# **poe capacitor-detect**

## poe description

### Syntax

**poe description** *<poe_description>*
**no poe description**

### Parameter

| | |
|---|---|
| *<poe_description>* | PoE interface description |

### Default

### Mode

Interface Configuration

### Usage

add description for specific PoE port.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **poe description abc**

## poe management mode

### Syntax

**poe management mode** { **class-consumption** | **class-reserved-power** | **allocation-consumption** | **allocation-reserved-power** | **lldp-consumption** | **lldp-reserved-power** }
**no poe management mode**

### Parameter

| | |
|---|---|
| **class-consumption** | Max. port power determined by class, and power is managed according to power consumption |
| **class-reserved-power** | Max. port power determined by class, and power is managed according to reserved power. |
| **allocation-consumption** | Max. port power determined by allocated, and power is managed according to power consumption. |
| **allocation-reserved-power** | Max. port power determined by allocated, and power is managed according to reserved power. |

| | |
|---|---|
| **lldp-consumption** | Max. port power determined by LLDP Media protocol, and power is managed according to power consumption |
| **lldp-reserved-power** | Max. port power determined by LLDP Media protocol, and power is managed according to reserved power |

### Default

Management mode is class-consumption.

### Mode

Global Configuration

### Usage

Use management mode to configure PoE power management method..

### Example

(config)# **poe management mode class-reserved-power**

## poe mode

### Syntax

**poe mode** { **disable** | **standard** | **plus** | **bt** }
**no poe mode**

### Parameter

| | |
|---|---|
| **disable** | Set mode to Disable |
| **standard** | Set mode to PoE (Maximum power 15.4 W, if port power limit is current above 15.4W, it is automatically adjusted to 15.4W) |
| **plus** | Set mode to PoE+ (Maximum power 30.0 W) |
| **bt** | Set mode to PoE-BT (Maximum power 90.0 W) |

### Default

PoE is plus.

### Mode

Interface Configuration

### Usage

Use poe mode to configure of PoE mode.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **poe mode plus**

## poe power limit

### Syntax

**poe power limit** { *<v_word9>* }
**no poe power limit**

### Parameter

| | |
|---|---|
| *<v_word9>* | Maximum power for the interface (0-15.4 Watt for PoE standard mode, 0-30.0 Watt for PoE plus mode) |

### Default

Maximum power is 15.4W.

### Mode

Interface Configuration

### Usage

Use poe power limit to configure the maximum allowed power for the interface when power management is in allocation mode.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **poe power limit 30**

## poe priority

### Syntax

**poe priority** { **low** | **high** | **critical** }
**no poe priority**

### Parameter

| | |
|---|---|
| **low** | Set priority to low. |
| **high** | Set priority to high |
| **critical** | Set priority to critical. |

### Default

Default PoE priority is low.

### Mode

Interface Configuration

### Usage

Use poe priority to configure PoE priority.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **poe priority high**

## poe schedule

### Syntax

**poe schedule** { **sunday** | **monday** | **tuesday** | **wednesday** | **thursday** | **friday** | **saturday** }
**start** { *<start_0_to_50>* } **end** { *<end_0_to_50>* }
**no poe schedule** { **sunday** | **monday** | **tuesday** | **wednesday** | **thursday** | **friday** | **saturday** }

### Parameter

| | |
|---|---|
| *<start_0_to_50>* | The Start represents the start time(PoE output will be enabled then) of PoE scheduling for the port. |
| *<end_0_to_50>* | The End represents the end time(PoE output will be disabled then) of PoE scheduling for the port. |

### Default

Default is disabled.

### Mode

Interface Configuration

### Usage

Use to configure PoE scheduling method.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **poe schedule sunday start 6 end 8**

## poe supply

### Syntax

**poe supply sid** *<v_1_to_16> <v_1_to_2000>*
**no poe supply** [ **sid** *<v_1_to_16>* ]

### Parameter

| | |
|---|---|
| *<v_1_to_16>* | runtime |
| *<v_1_to_2000>* | Maximum power the power supply can deliver |

### Default

Power supply maximum is 2000W

### Mode

Global Configuration

### Usage

Use to specify the maximum power the power supply can deliver.

### Example

(config)# **poe supply 1000**

## show poe

### Syntax

**show poe** [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Use to show PoE status for the switch.

### Example

```
# show poe
Interface          PD Class   Port Status          Power Used [W]    Current Used [mA]
-----------------------------------------------------------------------------------
GigabitEthernet 1/1     0     PoE turned OFF          0.0                 0
GigabitEthernet 1/2     0     PoE turned OFF          0.0                 0
GigabitEthernet 1/3     0     PoE turned OFF           0.0                0
GigabitEthernet 1/4     0     PoE turned OFF           0.0                0
2.5GigabitEthernet 1/1 does not have PoE support
2.5GigabitEthernet 1/2 does not have PoE support
```

# 11. QoS

## qos cos

### Syntax

**qos cos** *<cos>*
**no qos cos**

### Parameter

| | |
|---|---|
| *<cos>* | Specific class of service |

### Default

### Mode

Interface Configuration

### Usage

Class of service configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos cos 0**

## qos dei

### Syntax

**qos dei** *<dei>*
**no qos dei**

### Parameter

| | |
|---|---|
| *<dei>* | Specific Drop Eligible Indicator |

### Default

### Mode

Interface Configuration

### Usage

Drop Eligible Indicator configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos dei 0**

## qos dpl

### Syntax

**qos dpl** *<dpl>*

**no qos dpl**

### Parameter

| | |
|---|---|
| *<dpl>* | Specific drop precedence level |

### Default

### Mode

Interface Configuration

### Usage

Drop precedence level configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos dpl 0**

## qos dscp-classify

### Syntax

**qos dscp-classify** { **zero** | **selected** | **any** }
**no qos dscp-classify**

### Parameter

| | |
|---|---|
| **zero** | Classify to new DSCP if DSCP is 0 |
| **selected** | Classify to new DSCP if classify is enabled for specific DSCP value in global DSCP classification map |
| **any** | Classify to new DSCP always |

### Default

### Mode

Interface Configuration

### Usage

DSCP ingress classification.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos dscp-classify zero**

## qos dscp-remark

### Syntax

**qos dscp-remark** { **rewrite** | **remap** | **remap-dp** }
**no qos dscp-remark**

### Parameter

| | |
|---|---|
| **rewrite** | Rewrite DSCP field with classified DSCP value (no translation) |
| **remap** | Rewrite DSCP field using classified DSCP and DPL=0 remapped through global dscp-egress-translation map |
| **remap-dp** | Rewrite DSCP field using classified DSCP and DPL remapped through global DSCP egress translation map |

### Default

### Mode

Interface Configuration

### Usage

DSCP egress remarking.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos dscp-remark remap**

## qos dscp-translate

### Syntax

**qos dscp-translate**
**no qos dscp-translate**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

DSCP ingress translation.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos dscp-translate**

## qos map cos-dscp

### Syntax

**qos map cos-dscp** *<cos>* **dpl** *<dpl>* **dscp** { *<dscp_num>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } }
**no qos map cos-dscp** *<cos>* **dpl** *<dpl>*

### Parameter

| | |
|---|---|
| *<cos>* | Specific class of service or range |
| *<dpl>* | Specific drop precedence level or range |
| *<dscp_num>* | Specific DSCP |

### Default

### Mode

Global Configuration

### Usage

Map for COS to DSCP.

### Example

(config)# **qos map cos-dscp 0 dpl 0 dscp 0**

## qos map cos-tag cos

### Syntax

**qos map cos-tag cos** *<cos>* **dpl** *<dpl>* **pcp** *<pcp>* **dei** *<dei>*
**no qos map cos-tag cos** *<cos>* **dpl** *<dpl>*

### Parameter

| | |
|---|---|
| *<cos>* | Specific class of service or range |
| *<dpl>* | Specific drop precedence level or range |
| *<pcp>* | Specific PCP |
| *<dei>* | Specific DEI |

### Default

### Mode

Interface Configuration

### Usage

Map for cos to tag configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos map cos-tag cos 0 dpl 0 pcp 0 dei 0**

## qos map dscp-classify

### Syntax

**qos map dscp-classify** { *<dscp_num>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } }
**no qos map dscp-classify** { *<dscp_num>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } }

### Parameter

| | |
|---|---|
| *<dscp_num>* | Specific DSCP or range |

### Default

### Mode

Global Configuration

### Usage

Map for DSCP classify enable.

### Example

(config)# **qos map dscp-classify 0**

## qos map dscp-cos

### Syntax

**qos map dscp-cos** { *<dscp_num>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } } **cos** *<cos>* **dpl** *<dpl>*
**no qos map dscp-cos** { *<dscp_num>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } }

### Parameter

| | |
|---|---|
| *<dscp_num>* | Specific DSCP or range |
| *<cos>* | Specific class of service |
| *<dpl>* | Specific drop precedence level |

### Default

### Mode

Global Configuration

### Usage

Map for DSCP to COS.

### Example

(config)# **qos map dscp-cos 0 cos 1 dpl 1**

## qos map dscp-egress-translation

### Syntax

**qos map dscp-egress-translation** { *<dscp_num>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } } *<dpl>* **to** { *<dscp_num_tr>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } }
**no qos dscp-egress-translation** { *<dscp_num>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } } *<dpl>*

### Parameter

| | |
|---|---|
| *<dscp_num>* | Specific DSCP or range |
| *<dpl>* | Specific drop precedence level or range |
| *<dscp_num_tr>* | Translated DSCP value |

### Default

### Mode

Global Configuration

### Usage

Map for DSCP egress translation.

### Example

(config)# **qos map dscp-egress-translation 0 0 to 10**

## qos map dscp-ingress-translation

### Syntax

**qos map dscp-ingress-translation** { *<dscp_num>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } } **to** { *<dscp_num_tr>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } }
**no qos dscp-ingress-translation** { *<dscp_num>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } }

### Parameter

| | |
|---|---|
| *<dscp_num>* | Specific DSCP or range |
| *<dscp_num_tr>* | Translated DSCP value |

### Default

### Mode

Global Configuration

### Usage

Map for DSCP ingress translation.

### Example

(config)# **qos map dscp-ingress-translation 0 to 10**

## qos map tag-cos

### Syntax

**qos map tag-cos pcp** *<pcp>* **dei** *<dei>* **cos** *<cos>* **dpl** *<dpl>*
**no qos map tag-cos pcp** *<pcp>* **dei** *<dei>*

### Parameter

| | |
|---|---|
| *<pcp>* | Specific PCP or range |
| *<dei>* | Specific DEI or range |
| *<cos>* | Specific class of service |
| *<dpl>* | Specific drop precedence level |

### Default

### Mode

Interface Configuration

### Usage

Map for tag to cos configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos map tag-cos pcp 0 dei 0 cos 0 dpl 0**

## qos pcp

### Syntax

**qos pcp** *<pcp>*
**no qos pcp**

### Parameter

| | |
|---|---|
| *<pcp>* | Specific Priority Code Point |

### Default

### Mode

Interface Configuration

### Usage

Priority Code Point configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos pcp 0**

## qos policer

### Syntax

**qos policer** *<rate>* [ **kbps** | **mbps** | **fps** | **kfps** ] [ **flowcontrol** ]
**no qos policer**

### Parameter

| | |
|---|---|
| *<rate>* | Policer rate (default kbps). Internally rounded up to the nearest value supported by the port policer. |

### Default

### Mode

Interface Configuration

### Usage

Policer configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos policer 1000**

## qos qce refresh

### Syntax

**qos qce refresh**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Refresh QCE tables in hardware.

### Example

(config)# **qos map refresh**

## qos qce

### Syntax

**qos qce** { [ **update** ] } *<qce_id>* [ { **next** *<qce_id_next>* } | **last** ] [ **interface** ( *<port_type>* [ *<port_list>* ] ) ] [ **smac** { *<smac>* | *<smac_24>* | **any** } ] [ **dmac** { *<dmac>* | **unicast** | **multicast** | **broadcast** | **any** } ] [ **tag** { [ **type** { **untagged** | **tagged** | **c-tagged** | **s-tagged** | **any** } ] [ **vid** { *<ot_vid>* | **any** } ] [ **pcp** { *<ot_pcp>* | **any** } ] [ **dei** { *<ot_dei>* | **any** } ] } ] [ **inner-tag** { [ **type** { **untagged** | **tagged** | **c-tagged** | **s-tagged** | **any** } ] [ **vid** { *<it_vid>* | **any** } ] [ **pcp** { *<it_pcp>* | **any** } ] [ **dei** { *<it_dei>* | **any** } ] } ] [ **frame-type** { **any** | { **etype** [ { *<etype_type>* | **any** } ] } | { **llc** [ **dsap** { *<llc_dsap>* | **any** } ] [ **ssap** { *<llc_ssap>* | **any** } ] [ **control** { *<llc_control>* | **any** } ] } | { **snap** [ { *<snap_data>* | **any** } ] } | { **ipv4** [ **proto** { *<pr4>* | **tcp** | **udp** | **any** } ] [ **sip** { *<sip4>* | **any** } ] [ **dip** { *<dip4>* | **any** } ] [ **dscp** { *<dscp4>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } | **any** } ] [ **fragment** { **yes** | **no** | **any** } ] [ **sport** { *<sp4>* | **any** } ] [ **dport** { *<dp4>* | **any** } ] } | { **ipv6** [ **proto** { *<pr6>* | **tcp** | **udp** | **any** } ] [ **sip** { *<sip6>* | **any** } ] [ **dip** { *<dip6>* | **any** } ] [ **dscp** { *<dscp6>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } | **any** } ] [ **sport** { *<sp6>*

| **any** } ] [ **dport** { *<dp6>* | **any** } ] } } ] [ **action** { [ **cos** { *<action_cos>* | **default** } ] [ **dpl** { *<action_dpl>* | **default** } ] [ **pcp-dei** { *<action_pcp>* *<action_dei>* | **default** } ] [ **dscp** { *<action_dscp_dscp>* | { **be** | **af11** | **af12** | **af13** | **af21** | **af22** | **af23** | **af31** | **af32** | **af33** | **af41** | **af42** | **af43** | **cs1** | **cs2** | **cs3** | **cs4** | **cs5** | **cs6** | **cs7** | **ef** | **va** } | **default** } ] [ **policy** { *<action_policy>* | **default** } ] } ]
**no qos qce** *<qce_id_range>*

## Parameter

| | |
|---|---|
| *<qce_id>* | QCE ID |
| *<qce_id_next>* | The next QCE ID |
| *<port_type>* | Port interface |
| *<port_list>* | Port list in 1/1-4 |
| *<smac>* | Matched SMAC (XX-XX-XX-XX-XX-XX) |
| *<ot_vid>* | Matched VLAN ID value/range |
| *<ot_pcp>* | Matched PCP value/range |
| *<ot_dei>* | Matched DEI |
| *<it_vid>* | Matched VLAN ID value/range |
| *<it_pcp>* | Matched PCP value/range |
| *<it_dei>* | Matched DEI |
| *<etype_type>* | Matched EtherType |
| *<llc_dsap>* | Matched LLC DSAP |
| *<llc_ssap>* | Matched LLC SSAP |
| *<llc_control>* | Matched LLC Control byte |
| *<snap_data>* | Setup matched SNAP EtherType |
| *<sip4>* | Matched source IP address/mask |
| *<dip4>* | Matched destination IP address/mask |
| *<dscp4>* | Matched DSCP value/range |
| *<sp4>* | Match UDP/TCP source port value/range |
| *<dp4>* | Match UDP/TCP destination port value/range |
| *<pr6>* | Matched IP protocol |
| *<sip6>* | Matched source IP address/mask |
| *<dip6>* | Matched destination IP address/mask |
| *<dscp6>* | Matched DSCP value/range |
| *<sp6>* | Match UDP/TCP source port value/range |
| *<dp6>* | Match UDP/TCP destination port value/range |
| *<action_cos>* | Assign class of service |
| *<action_dpl>* | Assign drop precedence level |
| *<action_pcp>* | Assign PCP |
| *<action_dei>* | Assign DEI |
| *<action_dscp_dscp>* | Assign DSCP |
| *<action_policy>* | Assign ACL policy |

| | |
|---|---|
| *<qce_id_range>* | QCE ID |

### Default

### Mode

Global Configuration

### Usage

Qos qce configuration.

### Example

(config)# **qos qce 1 frame-type any**

## qos qce addr

### Syntax

**qos qce** { [ **addr** { **source** | **destination** } ] [ **key** { **double-tag** | **normal** | **ip-addr** | **mac-ip-addr** } ] }
**no qos qce** { [ **addr** ] [ **key** ] }

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Setup address match mode.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos qce addr source**

## qos queue-policer

### Syntax

**qos queue-policer queue** *<queue>* *<rate>* [ **kbps** | **mbps** ]

**no qos queue-policer queue** *<queue>*

### Parameter

| | |
|---|---|
| *<queue>* | Specific queue or range |
| *<rate>* | Policer rate (default kbps). Internally rounded up to the nearest value supported by the queue policer |

### Default

### Mode

Interface Configuration

### Usage

Qos queue policer rate configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos queue-policer queue 0 1000**

## qos queue-shaper

### Syntax

**qos queue-shaper queue** *<queue>* *<rate>* [ **kbps** | **mbps** ] [ **excess** ] [ **rate-type** { **line** | **data** } ]
**no qos queue-shaper queue** *<queue>*

### Parameter

| | |
|---|---|
| *<queue>* | Specific queue or range |
| *<rate>* | Shaper rate (default kbps). Internally rounded up to the nearest value supported by the queue shaper |

### Default

### Mode

Interface Configuration

### Usage

Qos queue shaper rate configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos queue-shaper 0 1000**

## qos shaper

### Syntax

**qos shaper** *<cbs>* *<rate>* [ **kbps** | **mbps** ] [ **rate-type** { **line** | **data** } ]
**no qos shaper**

### Parameter

| | |
|---|---|
| *<cbs>* | Shaper Burst Size (KB). Internally rounded up to the nearest value supported by the port shaper. |
| *<rate>* | Shaper rate (default kbps). Internally rounded up to the nearest value supported by the port shaper. |

### Default

### Mode

Interface Configuration

### Usage

QoS shaper configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos shaper 4096 32768**

## qos storm

### Syntax

**qos storm** { **unicast** | **multicast** | **broadcast** } *<rate>* [ **fps** | **kfps** | **kbps** | **mbps** ]
**no qos storm** { **unicast** | **multicast** | **broadcast** }

### Parameter

| | |
|---|---|
| **unicast** | Police unicast frames |
| **multicast** | Police multicast frames |

| | |
|---|---|
| **broadcast** | Police broadcast frames |
| *<rate>* | Policer rate (default fps). Internally rounded up to the nearest value supported by the storm policer |

### Default

### Mode

Global Configuration

### Usage

QoS global storm policer Configuration.

### Example

(config)# **qos storm unicast 16 fps**

## qos tag-remark

### Syntax

**qos tag-remark** { **pcp** *<pcp>* **dei** *<dei>* | **mapped** }
**no qos tag-remark**

### Parameter

| | |
|---|---|
| *<pcp>* | Specific PCP |
| *<dei>* | Specific DEI |

### Default

### Mode

Interface Configuration

### Usage

Tag remarking configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos tag-remark pcp 0 dei 0**

## qos trust dscp

### Syntax

**qos trust dscp**
**no qos trust dscp**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Trust dscp configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos trust dscp**

## qos trust tag

### Syntax

**qos trust tag**
**no qos trust tag**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Trust tag configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos trust tag**

## qos wrr

### Syntax

**qos wrr** *<w0> <w1> <w2> <w3> <w4> <w5>*
**no qos wrr**

### Parameter

| | |
|---|---|
| *<w0>* | Weight for queue 0 |
| *<w1>* | Weight for queue 1 |
| *<w2>* | Weight for queue 2 |
| *<w3>* | Weight for queue 3 |
| *<w4>* | Weight for queue 4 |
| *<w5>* | Weight for queue 5 |

### Default

### Mode

Interface Configuration

### Usage

Weighted round robin configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **qos wrr 10 10 10 20 20 30**

## show qos

### Syntax

**show qos** [ { **interface** [ ( *<port_type>* [ *<port>* ] ) ] } | **wred** | { **maps** [ **dscp-cos** ] [ **dscp-ingress-translation** ] [ **dscp-classify** ] [ **cos-dscp** ] [ **dscp-egress-translation** ] } | **storm** | { **qce** [ *<qce>* ] } ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<port>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

| | |
|---|---|
| *<qce>* | QCE ID |

### Default

### Mode

Privileged EXEC

### Usage

Show QoS configuration.

### Example

```
# show qos interface GigabitEthernet 1/1
interface GigabitEthernet 1/1
 qos cos 0
 qos pcp 0
 qos dpl 0
 qos dei 0
 qos trust tag disabled
 qos map tag-cos pcp 0 dei 0 cos 1 dpl 0
 qos map tag-cos pcp 0 dei 1 cos 1 dpl 1
 qos map tag-cos pcp 1 dei 0 cos 0 dpl 0
 qos map tag-cos pcp 1 dei 1 cos 0 dpl 1
 qos map tag-cos pcp 2 dei 0 cos 2 dpl 0
 qos map tag-cos pcp 2 dei 1 cos 2 dpl 1
 qos map tag-cos pcp 3 dei 0 cos 3 dpl 0
……
```

# 12. Routing

## interface vlan

### Syntax

**interface vlan** *<vlist>*
**no interface vlan** *<vlist>*

### Parameter

| | |
|---|---|
| *<vlist>* | List of VLAN interface numbers, 1~4095 |

### Default

### Mode

Global Configuration

### Usage

Select a VLAN interface to configure.

### Example

(config)# **interface vlan 100**
(config-if-vlan)#

## ip address

### Syntax

**ip address** { { *<address>* *<netmask>* } | { **dhcp** [ **fallback** *<fallback_address>* *<fallback_netmask>* [ **timeout** *<fallback_timeout>* ] ] } }
**no ip address**

### Parameter

| | |
|---|---|
| *<address>* | IP address |
| *<netmask>* | IP netmask |
| **dhcp** | Enable DHCP |
| *<fallback_address>* | DHCP fallback address |
| *<fallback_netmask>* | DHCP fallback netmask |
| *<fallback_timeout>* | DHCP fallback timeout in seconds. Legal values are 0 to 4294967295 seconds |

### Default

Default IP address is 192.168.2.1, default IP netmask is 255.255.255.0.

### Mode

VLAN Interface Configuration

### Usage

IP address configuration.

### Example

(config)# **interface vlan 2**
(config-if-vlan)# **ip address 192.168.1.1 255.255.255.0**

## ip route

### Syntax

**ip route** *<v_ipv4_addr> <v_ipv4_netmask> <v_ipv4_gw>*
**no ip route** *<v_ipv4_addr> <v_ipv4_netmask> <v_ipv4_gw>*

### Parameter

| | |
|---|---|
| *<v_ipv4_addr>* | Network |
| *<v_ipv4_netmask>* | Netmask |
| *<v_ipv4_gw>* | Gateway |

### Default

### Mode

Global Configuration

### Usage

Add new IP route.

### Example

(config)# **ip route 10.1.1.0 255.255.255.0 192.168.1.254**

## ip routing

### Syntax

**ip routing**
**no ip routing**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Configure IP routing mode.

### Example

(config)# **ip routing**

## ipv6 route

### Syntax

**ipv6 route** *<v_ipv6_subnet>* { *<v_ipv6_ucast>* | **interface vlan** *<v_vlan_id>* *<v_ipv6_addr>* }
**no ipv6 route** *<v_ipv6_subnet>* { *<v_ipv6_ucast>* | **interface vlan** *<v_vlan_id>* *<v_ipv6_addr>* }

### Parameter

| | |
|---|---|
| *<v_ipv6_subnet>* | IPv6 prefix x:x::y/z |
| *<v_ipv6_ucast>* | IPv6 unicast address (except link-local address) of next-hop |
| *<v_vlan_id>* | VLAN identifier (VID) |
| *<v_ipv6_addr>* | IPv6 link-local address of next-hop |

### Default

### Mode

Global Configuration

### Usage

Add new IPv6 route.

### Example

(config)# **ipv6 route 2001:1000::/64 2002:abcd::2**

## show ip route

### Syntax

**show ip route**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show routing table status.

### Example

# **show ip route**
127.0.0.1/32 via 127.0.0.1 <UP HOST>
192.168.0.0/24 via interface index 1 <UP HW_RT>
224.0.0.0/4 via 127.0.0.1 <UP>

## show ipv6 route

### Syntax

**show ipv6 route**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show IPv6 routing table status.

### Example

# **show ipv6 route**
::1/128 via ::1 <UP HOST>

# 13. Security

## access management

### Syntax

**access management**
**access management** *<access_id>* *<access_vid>* *<start_addr>* [ **to** *<end_addr>* ] { [ **web** ] [ **snmp** ] [ **telnet** ] | **all** }
**access management** *<access_id>* *<access_vid>* *<start_addr>* [ **to** <end_addr> ] { [ **web** ] [ **snmp** ] [ **telnet** ] | **all** }
**no access management**
**no access management** *<access_id_list>*

### Parameter

| | |
|---|---|
| *<access_id>* | ID of access management entry |
| *<access_vid>* | The VLAN ID for the access management entry |
| *<start_addr>* | Start IP address |
| *<end_addr>* | End IP address |
| **web** | Web service |
| **snmp** | SNMP service |
| **telnet** | TELNET/SSH service |
| **all** | All services |

### Default

### Mode

Global Configuration

### Usage

Use the access management global configuration command to enable the access management. Use the no form of this command to disable the access management.

### Example

(config)# **access management 1 10 1.1.1.1 to 1.1.1.10 all**

# access-list ace

## Syntax

**access-list ace** [ **update** ] *<ace_id>* [ **next** { *<ace_id_next>* | **last** } ] [ **ingress** { **switch** *<ingress_switch_id>* | **switchport** { *<ingress_switch_port_id>* | *<ingress_switch_port_list>* } | **interface** { *<port_type>* *<ingress_port_id>* | ( *<port_type>* [ *<ingress_port_list>* ] ) } | **any** } ] [ **policy** *<policy>* [ **policy-bitmask** *<policy_bitmask>* ] ] [ **tag** { **tagged** | **untagged** | **any** } ] [ **vid** { *<vid>* | **any** } ] [ **tag-priority** { *<tag_priority>* | **0-1** | **2-3** | **4-5** | **6-7** | **0-3** | **4-7** | **any** } ] [ **dmac-type** { **unicast** | **multicast** | **broadcast** | **any** } ] [ **frame-type** { **any** | **etype** [ **etype-value** { *<etype_value>* | **any** } ] [ **smac** { *<etype_smac>* | **any** } ] [ **dmac** { *<etype_dmac>* | **any** } ] | **arp** [ **sip** { *<arp_sip>* | **any** } ] [ **dip** { *<arp_dip>* | **any** } ] [ **smac** { *<arp_smac>* | **any** } ] [ **arp-opcode** { **arp** | **rarp** | **other** | **any** } ] [ **arp-flag** [ **arp-request** { *<arp_flag_request>* | **any** } ] [ **arp-smac** { *<arp_flag_smac>* | **any** } ] [ **arp-tmac** { *<arp_flag_tmac>* | **any** } ] [ **arp-len** { *<arp_flag_len>* | **any** } ] [ **arp-ip** { *<arp_flag_ip>* | **any** } ] [ **arp-ether** { *<arp_flag_ether>* | **any** } ] ] | **ipv4** [ **sip** { *<sipv4>* | **any** } ] [ **dip** { *<dipv4>* | **any** } ] [ **ip-protocol** { *<ipv4_protocol>* | **any** } ] [ **ip-flag** [ **ip-ttl** { *<ip_flag_ttl>* | **any** } ] [ **ip-options** { *<ip_flag_options>* | **any** } ] [ **ip-fragment** { *<ip_flag_fragment>* | **any** } ] ] | **ipv4-icmp** [ **sip** { *<sipv4_icmp>* | **any** } ] [ **dip** { *<dipv4_icmp>* | **any** } ] [ **icmp-type** { *<icmpv4_type>* | **any** } ] [ **icmp-code** { *<icmpv4_code>* | **any** } ] [ **ip-flag** [ **ip-ttl** { *<ip_flag_icmp_ttl>* | **any** } ] [ **ip-options** { *<ip_flag_icmp_options>* | **any** } ] [ **ip-fragment** { *<ip_flag_icmp_fragment>* | **any** } ] ] | **ipv4-udp** [ **sip** { *<sipv4_udp>* | **any** } ] [ **dip** { *<dipv4_udp>* | **any** } ] [ **sport** { *<sportv4_udp_start>* [ **to** *<sportv4_udp_end>* ] | **any** } ] [ **dport** { *<dportv4_udp_start>* [ **to** *<dportv4_udp_end>* ] | **any** } ] [ **ip-flag** [ **ip-ttl** { *<ip_flag_udp_ttl>* | **any** } ] [ **ip-options** { *<ip_flag_udp_options>* | **any** } ] [ **ip-fragment** { <ip_flag_udp_fragment> | **any** **}** **]** **]** **|** **ipv4-tcp** **[** **sip** **{** <sipv4_tcp> | **any** } ] [ **dip** { *<dipv4_tcp>* | **any** } ] [ **sport** { *<sportv4_tcp_start>* [ **to** *<sportv4_tcp_end>* ] | **any** } ] [ **dport** { *<dportv4_tcp_start>* [ **to** *<dportv4_tcp_end>* ] | **any** } ] [ **ip-flag** [ **ip-ttl** { *<ip_flag_tcp_ttl>* | **any** } ] [ **ip-options** { *<ip_flag_tcp_options>* | **any** } ] [ **ip-fragment** { *<ip_flag_tcp_fragment>* | **any** } ] ] [ **tcp-flag** [ **tcp-fin** { *<tcpv4_flag_fin>* | **any** } ] [ **tcp-syn** { *<tcpv4_flag_syn>* | **any** } ] [ **tcp-rst** { *<tcpv4_flag_rst>* | **any** } ] [ **tcp-psh** { *<tcpv4_flag_psh>* | **any** } ] [ **tcp-ack** { *<tcpv4_flag_ack>* | **any** } ] [ **tcp-urg** { *<tcpv4_flag_urg>* | **any** } ] ] | **ipv6** [ **next-header** { *<next_header>* | **any** } ] [ **sip** { *<sipv6>* [ **sip-bitmask** *<sipv6_bitmask>* ] | **any** } ] [ **hop-limit** { *<hop_limit>* | any } ] | **ipv6-icmp** [ **sip** { *<sipv6_icmp>* [ **sip-bitmask** *<sipv6_bitmask_icmp>* ] | **any** } ] [ **icmp-type** { *<icmpv6_type>* | **any** } ] [ **icmp-code** { *<icmpv6_code>* | **any** } ] [ **hop-limit** { *<hop_limit_icmp>* | **any** } ] | **ipv6-udp** [ **sip** { *<sipv6_udp>* [ **sip-bitmask** *<sipv6_bitmask_udp>* ] | **any** } ] [ **sport** { *<sportv6_udp_start>* [ **to** <sportv6_udp_end> ] | **any** } ] [ **dport** { *<dportv6_udp_start>* [ **to <dportv6_udp_end> ]** | **any** } ] [ **hop-limit** { *<hop_limit_udp>* | **any** } ] | **ipv6-tcp** [ **sip** { *<sipv6_tcp>* [ **sip-bitmask** *<sipv6_bitmask_tcp>* ] | **any** } ] [ **sport** { *<sportv6_tcp_start>* [ **to** *<sportv6_tcp_end>* ] | **any** } ] [ **dport** { *<dportv6_tcp_start>* [ **to** *<dportv6_tcp_end>* ] | **any** } ] [ **hop-limit** { *<hop_limit_tcp>* | **any** } ] [ **tcp-flag** [ **tcp-fin** { *<tcpv6_flag_fin>* | **any** } ] [ **tcp-syn** { *<tcpv6_flag_syn>* | **any** } ] [ **tcp-rst** { *<tcpv6_flag_rst>* | **any** } ] [ **tcp-psh** { *<tcpv6_flag_psh>* | **any** } ] [ **tcp-ack** { *<tcpv6_flag_ack>* | **any** } ] [ **tcp-urg** { *<tcpv6_flag_urg>* | **any** } ] ] } ] [ **action** { **permit** | **deny** | **filter** { **switchport** *<filter_switch_port_list>* | **interface** ( *<port_type>* [ *<fliter_port_list>* ] ) } } ] [ **rate-limiter** { *<rate_limiter_id>* | **disable** } ] [ **evc-policer** { *<evc_policer_id>* | **disable** } ] [ **mirror** [ **disable** ] ] [ **logging** [ **disable** ] ]

[ **shutdown** [ **disable** ] ] [ **lookup-second** [ **disable** ] ] [ **redirect** { **switchport** { *<redirect_switch_port_id>* | *<redirect_switch_port_list>* } | **interface** { *<port_type>* *<redirect_port_id>* | ( *<port_type>* [ *<redirect_port_list>* ] ) } | **disable** } ]
**no access-list ace** *<ace_list>*

## Parameter

| | |
|---|---|
| *<ace_id>* | ACE ID |
| **update** | Update an existing ACE |
| *<ingress_switch_id>* | Switch ID |
| *<ingress_switch_port_id>* | Switchport ID |
| *<ingress_switch_port_list>* | List of switchport ID |
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<ingress_port_id>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |
| *<policy>* | Policy ID |
| *<policy_bitmask>* | The value of policy bitmask |
| *<vid>* | The value of VID field |
| *<tag_priority>* | The value of tag priority |
| *<etype_value>* | The value of EtherType field |
| *<etype_smac>* | The value of source MAC address field |
| *<etype_dmac>* | The value of destination MAC address field |
| *<arp_sip>* | The value of source IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP address will explicitly adding deny action |
| *<arp_dip>* | The value of destination IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP address will explicitly adding deny action |
| *<arp_smac>* | The value of source MAC address field |
| *<arp_flag_request>* | The value of ARP Request/Reply opcode field |
| *<arp_flag_smac>* | The value of ARP sender hardware address (SHA) field |
| *<arp_flag_tmac>* | The value of ARP target hardware address (THA) field |
| *<arp_flag_len>* | The value of ARP/RARP hardware address length (HLN) and protocol address length (PLN) field |
| *<arp_flag_ip>* | The value of ARP/RARP hardware address space (HRD) field |
| *<arp_flag_ether>* | The value of ARP/RARP protocol address space (PRO) field |
| *<sipv4>* | The value of source IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP address will explicitly adding deny action |
| *<dipv4>* | The value of destination IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP |

| | |
|---|---|
| | address will explicitly adding deny action |
| *<ipv4_protocol>* | The value of IPv4 protocol field |
| *<ip_flag_ttl>* | The value of IPv4 TTL field |
| *<ip_flag_options>* | The value of IPv4 options field |
| *<ip_flag_fragment>* | The value of IPv4 fragment field |
| *<sipv4_icmp>* | The value of source IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP address will explicitly adding deny action |
| *<dipv4_icmp>* | The value of destination IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP address will explicitly adding deny action |
| *<icmpv4_type>* | The value of ICMP type field |
| *<icmpv4_code>* | The value of ICMP code field |
| *<ip_flag_icmp_ttl>* | The value of IPv4 TTL field |
| *<ip_flag_icmp_options>* | The value of IPv4 options field |
| *<ip_flag_icmp_fragment>* | The value of IPv4 fragment field |
| *<sipv4_udp>* | The value of source IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP address will explicitly adding deny action |
| *<dipv4_udp>* | The value of destination IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP address will explicitly adding deny action |
| *<sportv4_udp_start>* | The value of UDP source port field |
| *<sportv4_udp_end>* | The value of UDP source port field |
| *<dportv4_udp_start>* | The value of UDP destination port field |
| *<dportv4_udp_end>* | The value of UDP destination port field |
| *<ip_flag_udp_ttl>* | The value of IPv4 TTL field |
| *<ip_flag_udp_options>* | The value of IPv4 options field |
| *<ip_flag_udp_fragment>* | The value of IPv4 fragment field |
| *<sipv4_tcp>* | The value of source IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP address will explicitly adding deny action |
| *<dipv4_tcp>* | The value of destination IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP address will explicitly adding deny action |
| *<sportv4_tcp_start>* | The value of TCP source port field |
| *<sportv4_tcp_end>* | The value of TCP source port field |
| *<dportv4_tcp_start>* | The value of TCP destination port field |
| *<dportv4_tcp_end>* | The value of TCP destination port field |

| | |
|---|---|
| *<ip_flag_tcp_ttl>* | The value of IPv4 TTL field |
| *<ip_flag_tcp_options>* | The value of IPv4 options field |
| *<ip_flag_tcp_fragment>* | The value of IPv4 fragment field |
| *<tcpv4_flag_fin>* | The value of TCP FIN field |
| *<tcpv4_flag_syn>* | The value of TCP SYN field |
| *<tcpv4_flag_rst>* | The value of TCP RST field |
| *<tcpv4_flag_psh>* | The value of TCP PSH field |
| *<tcpv4_flag_ack>* | The value of TCP ACK field |
| *<tcpv4_flag_urg>* | The value of TCP URG field |
| *<next_header>* | The value of IPv6 hop limiter field |
| *<sipv6>* | The value of source IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP address will explicitly adding deny action |
| *<sipv6_bitmask>* | The value of IPv6 source address bitmask |
| *<hop_limit>* | The value of IPv6 hop limiter field |
| *<sipv6_icmp>* | The value of source IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP address will explicitly adding deny action |
| *<sipv6_bitmask_icmp>* | The value of IPv6 source address bitmask |
| *<icmpv6_type>* | The value of ICMP type field |
| *<icmpv6_code>* | The value of ICMP code field |
| *<hop_limit_icmp>* | The value of IPv6 hop limiter field |
| *<sipv6_udp>* | The value of source IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP address will explicitly adding deny action |
| *<sipv6_bitmask_udp>* | The value of IPv6 source address bitmask |
| *<sportv6_udp_start>* | The value of UDP source port field |
| *<sportv6_udp_end>* | The value of UDP source port field |
| *<dportv6_udp_start>* | The value of UDP destination port field |
| *<dportv6_udp_end>* | The value of UDP destination port field |
| *<hop_limit_udp>* | The value of IPv6 hop limiter field |
| *<sipv6_tcp>* | The value of source IP address field. Notice the invalid IP address configuration is acceptable too, for example, 0.0.0.0. Normally, an ACE with invalid IP address will explicitly adding deny action |
| *<sipv6_bitmask_tcp>* | The value of IPv6 source address bitmask |
| *<sportv6_tcp_start>* | The value of TCP source port field |
| *<sportv6_tcp_end>* | The value of TCP source port field |
| *<dportv6_tcp_start>* | The value of TCP destination port field |
| *<dportv6_tcp_end>* | The value of TCP destination port field |
| *<hop_limit_tcp>* | The value of IPv6 hop limiter field |

| | |
|---|---|
| *<tcpv6_flag_fin>* | The value of TCP FIN field |
| *<tcpv6_flag_syn>* | The value of TCP SYN field |
| *<tcpv6_flag_rst>* | The value of TCP RST field |
| *<tcpv6_flag_psh>* | The value of TCP PSH field |
| *<tcpv6_flag_ack>* | The value of TCP ACK field |
| *<tcpv6_flag_urg>* | The value of TCP URG field |
| *<filter_switch_port_list>* | List of switchport ID |
| *<rate_limiter_id>* | Rate limiter ID |
| *<evc_policer_id>* | EVC policer ID |
| *<redirect_switch_port_id>* | Switchport ID |
| *<redirect_switch_port_list>* | List of switchport ID |
| *<redirect_port_id>* | Port ID in the format of switch-no/port-no |
| *<redirect_port_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

## Default

## Mode

Global Configuration

## Usage

Use the access-list ace global configuration command to set the access-list ace. The command without the update keyword will creates or overwrites an existing ACE, any unspecified parameter will be set to its default value. Use the update keyword to update an existing ACE and only specified parameter are modified. The ACE must ordered by an appropriate sequence, the received frame will only be hit on the first matched ACE. Use the next or last keyword to adjust the ACE's sequence order.

Note1: There are a lot of parameters are depended on these features if supported on the platform. For example, The parameter of switch <SwitchID> and switchport {<SwitchPortId>|<SwitchPortList>} only support on stackable platform. The parameter of <port_type_id>, is used for ACLv1, <port_type_list>, action filter, tag, mirror, ipv6-icmp, ipv6-udp and ipv6-tcp is used for ACLv2. In stackable platform, the feature only supported for local interfaces. The command keyword of evc-policer only supported on CE platform. Use the parameter of redirect switchport for global ACE on stackable device.

Note2: The logging and shutdown features only works when the packet length is less than 1518(without VLAN tags).

## Example

This example shows how to set the access-list ace ID 1:
(config)# **access-list ace 1**

## access-list action

### Syntax

**access-list action** { **permit** | **deny** }

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Use the access-list action interface configuration command to configure access-list action. The access-list interface configuration will affect the received frames if it doesn't match any ACE.

### Example

This example shows how to configure access-list permit
(config)# **interface GigabitEthernet 1/1**
(config-if)# **access-list permit**

## access-list evc-policer

### Syntax

**access-list evc-policer** *<evc_policer_id>*
**no access-list evc-policer**

### Parameter

| | |
|---|---|
| *<evc_policer_id>* | EVC policer ID |

### Default

### Mode

Interface Configuration

### Usage

Use the access-list evc-policer interface configuration command to configure the access-list evc-policer ID. The access-list interface configuration will affect the received frames if it doesn't match any ACE.

### Example

This example shows how to configure the access-list evc-policer value 1
(config)# **interface GigabitEthernet 1/1**
(config-if)# **access-list evc-policer 1**

## access-list policy

### Syntax

**access-list policy** *<policy_id>*
**no access-list policy**

### Parameter

| | |
|---|---|
| *<policy_id>* | Policy ID |

### Default

### Mode

Interface Configuration

### Usage

Use the access-list policy interface configuration command to configure the access-list policy ID. The access-list interface configuration will affect the received frames if it doesn't match any ACE.

### Example

This example shows how to configure the access-list policy value 1
(config)# **interface GigabitEthernet 1/1**
(config-if)# **access-list policy 1**

## access-list logging

### Syntax

**access-list logging**
**no access-list logging**

### Parameter

### Default

Default access-list logging is disabled.

### Mode

Interface Configuration

### Usage

Use the access-list logging interface configuration command to enable access-list logging. Use the no form of this command to disable access-list logging. The access-list interface configuration will affect the received frames if it doesn't match any ACE.

Note: The logging feature only works when the packet length is less than 1518(without VLAN tags).

### Example

This example shows how to enable access-list logging
(config)# **interface GigabitEthernet 1/1**
(config-if)# **access-list logging**

## access-list mirror

### Syntax

**access-list mirror**
**no access-list mirror**

### Parameter

### Default

Default access-list mirror is disabled.

### Mode

Interface Configuration

### Usage

Use the access-list mirror interface configuration command to enable access-list mirror. Use the no form of this command to disable access-list mirror. The access-list interface configuration will affect the received frames if it doesn't match any ACE.

### Example

This example shows how to enable access-list mirror
(config)# **interface GigabitEthernet 1/1**
(config-if)# **access-list mirror**

## access-list port-state

### Syntax

**access-list port-state**
**no access-list port-state**

### Parameter

### Default

Default access-list port-state is enabled.

### Mode

Interface Configuration

### Usage

Enable access-list port state. If an interface had been shut down by access-list module, this command can be used to reopen the interface, then it can receive normal frame again.

### Example

This example shows how to enable access-list port state
(config)# **interface GigabitEthernet 1/1**
(config-if)# **access-list port-state**

## access-list rate-limiter(Global)

### Syntax

**access-list rate-limiter** [ *<rate_limiter_list>* ] { **pps** <pps_rate> | **10pps** *<pps10_rate>* | **100pps** <pps100_rate> | **25kbps** *<kpbs25_rate>* | **100kbps** *<kpbs100_rate>* }
**no access-list rate-limiter** [ *<rate_limiter_list>* ]

### Parameter

| | |
|---|---|
| *<rate_limiter_list>* | Rate limiter ID |
| *<pps_rate>* | Rate value for pps |
| *<pps10_rate>* | Rate value for 10 packets per second |
| <pps100_rate> | Rate value for 100 packets per second |
| *<kpbs25_rate>* | Rate value for 25k bits per second |
| *<kpbs100_rate>* | Rate value for 100k bits per second |

### Default

The access-list rate-limiter is 1 pps

### Mode

Global Configuration

### Usage

Configure the access-list rate-limiter ID.

### Example

This example shows how to configure the access-list rate-limiter ID 1 to 512 pps
(config)# **access-list rate-limiter 1 pps 512**

## access-list rate-limiter(Interface)

### Syntax

**access-list rate-limiter** *<rate_limiter_id>*
**no access-list rate-limiter**

### Parameter

| | |
|---|---|
| *<rate_limiter_id>* | Rate limiter ID |

### Default

The access-list rate-limiter is disabled

### Mode

Interface Configuration

### Usage

Configure the access-list rate-limiter ID.

### Example

This example shows how to configure the access-list rate-limiter ID 1
(config)# **interface GigabitEthernet 1/1**
(config-if)# **access-list rate-limiter 1**

## access-list redirect

### Syntax

**access-list** { **redirect** } **interface** { *<port_type>* *<port_type_id>* | ( *<port_type>* [ *<port_type_list>* ] ) }
**no access-list redirect**

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<port_type_id>* | Port ID in the format of switch-no/port-no |
| *<port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

The access-list redirect is disabled

### Mode

Interface Configuration

### Usage

Use the no access-list redirect interface configuration command to configure the access-list redirect interface. The access-list interface configuration will affect the received frames if it doesn't match any ACE.

Note: The parameter of <port_type_id> is used for ACLv1, <port_type_list> is used for ACLv2. On stackable platforms, the feature only supported for local interfaces.

### Example

This example shows how to configure the access-list redirect interface to interface GigaEthernet 1/1
(config)# **interface GigabitEthernet 1/2**
(config-if)# **access-list redirect interface to interface GigaEthernet 1/1**

## access-list shutdown

### Syntax

**access-list shutdown**
**no access-list shutdown**

### Parameter

### Default

access-list shutdown is disabled

### Mode

Interface Configuration

### Usage

Use the access-list shutdown interface configuration command to enable access-list shutdown. Use the no form of this command to disable access-list shutdown. The access-list interface configuration will affect the received frames if it doesn't match any ACE.

Note: The shutdown feature only works when the packet length is less than 1518(without VLAN tags).

### Example

This example shows how to enable access-list shutdown
(config)# **interface GigabitEthernet 1/1**
(config-if)# **access-list shutdown**

## clear access management statistics

### Syntax

**clear access management statistics**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Use the clear access management statistics privileged EXEC command to clear the statistics maintained by access management.

### Example

This example shows how to clear access management statistics:
# **clear access management statistics**

## clear access-list ace statistics

### Syntax

**clear access-list ace statistics**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Use the clear access-list ace statistics privileged EXEC command to clear the statistics maintained by access-list, including access-list interface statistics and ACE's statistics.

### Example

This example shows how to clear access-list ace statistics:
# **clear access-list ace statistics**

## default access-list rate-limiter

### Syntax

**default access-list rate-limiter** [ *<rate_limiter_list>* ]

### Parameter

| | |
|---|---|
| *<rate_limiter_list>* | Rate limiter ID |

### Default

### Mode

Global Configuration

### Usage

Use the default access-list rate-limiter global configuration command to restore the default setting of access-list rate-limiter.

### Example

This example shows how to restore the default setting on all rate-limiter IDs
(config)# **default access-list rate-limiter**

## ip arp inspection

### Syntax

**ip arp inspection**
**no ip arp inspection**

### Parameter

### Default

ARP inspection is disabled.

### Mode

Global Configuration

### Usage

Use the ip arp inspection global configuration command to globally enable ARP inspection. Use the no form of this command to globally disable ARP inspection.

### Example

This example shows how to enable ARP inspection
(config)# **ip arp inspection**

## ip arp inspection check-vlan

### Syntax

**ip arp inspection check-vlan**
**no ip arp inspection check-vlan**

### Parameter

### Default

ARP inspection is disabled.

### Mode

Interface Configuration

### Usage

Use the ip arp inspection check-vlan interface configuration command to configure a port as VLAN mode for ARP inspection purposes. Use the no form of this command to configure a port as default.

### Example

This example shows how to enable ARP inspection VLAN mode on a port
(config)# **interface GigabitEthernet 1/2**
(config-if)# **ip arp inspection check-vlan**

## ip arp inspection entry interface

### Syntax

**ip arp inspection entry interface** *<port_type> <in_port_type_id> <vlan_var> <mac_var> <ipv4_var>*

**no ip arp inspection entry interface** *<port_type> <in_port_type_id> <vlan_var> <mac_var> <ipv4_var>*

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<in_port_type_id>* | Port ID in the format of switch-no/port-no |
| *<vlan_var>* | Select a VLAN id to configure |
| *<mac_var>* | Select a MAC address to configure |
| *<ipv4_var>* | Select an IP Address to configure |

### Default

ARP inspection is disabled.

### Mode

Global Configuration

### Usage

ARP inspection entry.

### Example

(config)# **ip arp inspection entry interface GigabitEthernet 1/2 1 00:e0:fc:11:22:33 192.168.1.10**

## ip arp inspection logging

### Syntax

**ip arp inspection logging** { **deny** | **permit** | **all** }
**no ip arp inspection logging**

### Parameter

| | |
|---|---|
| **deny** | Log denied entries |
| **permit** | Log permitted entries |
| **all** | Log all entries |

### Default

ARP inspection default is logging none.

### Mode

Interface Configuration

### Usage

Use the ip arp inspection logging interface configuration command to configure a port as some logging mode for ARP inspection purposes. Use the no form of this command to configure a port as logging none.

### Example

This example shows how to enable ARP inspection logging mode on a port
(config)# **interface GigabitEthernet 1/2**
(config-if)# **ip arp inspection logging all**

## ip arp inspection translate

### Syntax

**ip arp inspection translate** [ **interface** *<port_type> <in_port_type_id> <vlan_var> <mac_var> <ipv4_var>* ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<in_port_type_id>* | Port ID in the format of switch-no/port-no |
| *<vlan_var>* | Select a VLAN id to configure |
| *<mac_var>* | Select a MAC address to configure |
| *<ipv4_var>* | Select an IP Address to configure |

### Default

ARP inspection is disabled.

### Mode

Global Configuration

### Usage

ARP inspection translate all entries.

### Example

(config)# **ip arp inspection translate interface GigabitEthernet 1/2 1 00:e0:fc:11:22:33 192.168.1.10**

## ip arp inspection trust

### Syntax

**ip arp inspection trust**
**no ip arp inspection trust**

### Parameter

### Default

ARP inspection trust is enabled.

### Mode

Interface Configuration

### Usage

Use the ip arp inspection trust interface configuration command to configure a port as trusted for ARP inspection purposes. Use the no form of this command to configure a port as untrusted.

### Example

This example shows how to enable ARP inspection trust on a port
(config)# **interface GigabitEthernet 1/2**
(config-if)# **ip arp inspection trust**

## ip arp inspection vlan

### Syntax

**ip arp inspection vlan** *<in_vlan_list>*
**ip arp inspection vlan** *<in_vlan_list>* **logging** { **deny** | **permit** | **all** }
**no ip arp inspection vlan** *<in_vlan_list>*
**ip arp inspection vlan** *<in_vlan_list>* **logging**

### Parameter

| | |
|---|---|
| *<in_vlan_list>* | ARP inspection VLAN list |
| **deny** | Log denied entries |
| **permit** | Log permitted entries |
| **all** | Log all entries |

### Default

ARP inspection is disabled.

### Mode

Global Configuration

### Usage

Use the ip arp inspection vlan configuration command to enable vlan ARP inspection. Use the no form of this command to disable vlan ARP inspection.

### Example

(config)# **ip arp inspection vlan 1**

## ip source binding interface

### Syntax

**ip source binding interface** *<port_type>* *<in_port_type_id>* *<vlan_var>* *<ipv4_var>* *<mac_var>*
**no ip source binding interface** *<port_type>* *<in_port_type_id>* *<vlan_var>* *<ipv4_var>* *<mac_var>*

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<in_port_type_id>* | Port ID in the format of switch-no/port-no |
| *<vlan_var>* | Select a VLAN id to configure |
| *<ipv4_var>* | Select an IP Address to configure |
| *<mac_var>* | Select a MAC address to configure |

### Default

ARP inspection is disabled.

### Mode

Global Configuration

### Usage

IP source binding entry interface configuration.

### Example

(config)# **ip source binding interface GigabitEthernet 1/2 1 192.168.10.1 00:00:e0:11:22:33**

## ip verify source(Global)

### Syntax

**ip verify source** [ **translate** ]
**no ip verify source**

### Parameter

| | |
|---|---|
| **translate** | IP verify source translate all entries |

### Default

### Mode

Global Configuration

### Usage

Verify source configuration.

### Example

(config)# **ip verify source**

## ip verify source(Interface)

### Syntax

**ip verify source** [ **limit** *<cnt_var>* ]
**no ip verify source** [ **limit** ]

### Parameter

| | |
|---|---|
| *<cnt_var>* | the number of limit |

### Default

### Mode

Interface Configuration

### Usage

Verify source configuration.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-fi)# **ip verify source**

## show access management

### Syntax

**show access management** [ **statistics** | *<access_id_list>* ]

### Parameter

| | |
|---|---|
| *<access_id_list>* | ID of access management entry |

### Default

### Mode

Privileged EXEC

### Usage

Use the show access management user EXEC command without keywords to display the access management configuration, or use the statistics keyword to display statistics, or use the <AccessId> keyword to display the specific access management entry.

### Example

This is an example of output from the show access management command
# **show access management**

Switch access management mode is disabled

W: WEB/HTTPS
S: SNMP
T: TELNET/SSH
Idx VID Start IP Address End IP Address W S T
--- --- ---------- ---------- - - -
1 1 192.168.0.1 192.168.0.254 Y N N

## show access-list interface

### Syntax

**show access-list** [ **interface** [ ( *<port_type>* [ *<v_port_type_list>* ] ) ] ] [ **rate-limiter** [ *<rate_limiter_list>* ] ] [ **ace statistics** [ *<ace_list>* ] ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |
| *<rate_limiter_list>* | Rate limiter ID |
| *<ace_list>* | ACE ID |

### Default

### Mode

Privileged EXEC

### Usage

Use the show access-list privilege EXEC command without keywords to display the access-list configuration, or particularly the show access-list interface for the access-list interface configuration, or use the rate-limiter keyword to display access-list rate-limiter configuration, or use the ace keyword to display access-list ace configuration.

### Example

This is an example of output from the show access-list command
# **show access-list**
ID Policy Frame Action Rate L. Mirror Counter
-- -------- ----- ------ -------- -------- -------
1 Any Any Permit Disabled Disabled 9110
Switch access-list ace number: 2
Switch access-list rate limiter ID 1 is 1 pps
Switch access-list rate limiter ID 2 is 1 pps
Switch access-list rate limiter ID 3 is 1 pps
Switch access-list rate limiter ID 4 is 1 pps

```
Switch access-list rate limiter ID 5 is 1 pps
Switch access-list rate limiter ID 6 is 1 pps
Switch access-list rate limiter ID 7 is 1 pps
Switch access-list rate limiter ID 8 is 1 pps
GigabitEthernet 1/1 :
---------------------
GigabitEthernet 1/1 access-list action is deny
GigabitEthernet 1/1 access-list policy ID is 0
GigabitEthernet 1/1 access-list rate limiter ID is disabled
GigabitEthernet 1/1 access-list redirect is disabled
GigabitEthernet 1/1 access-list mirror is disabled
GigabitEthernet 1/1 access-list logging is disabled
GigabitEthernet 1/1 access-list shutdown is disabled
GigabitEthernet 1/1 access-list port-state is enabled
GigabitEthernet 1/1 access-list counter is 0
```

## show access-list ace-status

### Syntax

**show access-list ace-status** [ **static** ] [ **link-oam** ] [ **loop-protect** ] [ **dhcp** ] [ **ptp** ] [ **upnp** ] [ **arp-inspection** ] [ **evc** ] [ **mep** ] [ **ipmc** ] [ **ip-source-guard** ] [ **ip-mgmt** ] [ **tt-loop** ] [ **y1564** ] [ **ztp** ] [ **ring** ] [ **conflicts** ] [ **switch** *<switch_list>* ]

### Parameter

| | |
|---|---|
| *<switch_list>* | List of switch ID, ex, 1,3-5,6 |

### Default

### Mode

Privileged EXEC

### Usage

Use the show access-list ace-status privilege EXEC command without keywords to display the access-list ace status for all access-list users, or particularly the access-list user for the access-list ace status. Use conflicts keyword to display the access-list ace that doesn't apply on the hardware. In other word, it means the specific ACE is not applied to the hardware due to hardware limitations.
Note: The parameter of access-list users is depended on these features if supported on the platform.

### Example

This is an example of output from the show access-list ace-status command
# **show access-list ace-status**
User
---
S : Static
IPSG: IP Source Guard
IPMC: IPMC
ARPI: ARP Inspection
UPnP: UPnP
DHCP: DHCP
LOOP: Loop Protect
User ID Frame Action Rate L. CPU Counter Conflict
---- -- ----- ------ -------- ------ ------- --------
S 1 Any Permit Disabled No 3606 No
S 2 Any Permit Disabled No 0 No
Switch 2 access-list ace number: 2

## show ip arp inspection interface

### Syntax

**show ip arp inspection** [ **interface** ( *<port_type>* [ *<in_port_type_list>* ] ) | **vlan** *<in_vlan_list>* ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<in_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |
| *<in_vlan_list>* | Select a VLAN id to configure |

### Default

### Mode

Privileged EXEC

### Usage

Show ARP inspection.

### Example

# **show ip arp inspection**
ARP Inspection Mode : disabled

```
Port                      Port Mode    Check VLAN   Log Type
----                      ---------    ----------   --------
GigabitEthernet 1/1        disabled     disabled     NONE
GigabitEthernet 1/2        disabled     disabled     NONE
GigabitEthernet 1/3        disabled     disabled     NONE
GigabitEthernet 1/4        disabled     disabled     NONE
2.5GigabitEthernet 1/1    disabled     disabled     NONE
2.5GigabitEthernet 1/2    disabled     disabled     NONE
```

## show ip arp inspection entry

### Syntax

**show ip arp inspection entry** [ **dhcp-snooping** | **static** ] [ **interface** ( *<port_type>* [ *<in_port_type_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<in_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Show ARP inspection entries.

### Example

# **show ip arp inspection entry**

## show ip source binding

### Syntax

**show ip source binding** [ **dhcp-snooping** | **static** ] [ **interface** ( *<port_type>* [ *<in_port_type_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<in_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Show IP source binding interface configuration.

### Example

# **show ip source binding**

## show ip verify source

### Syntax

**show ip verify source** [ **interface** ( *<port_type>* [ *<in_port_type_list>* ] ) ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<in_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Show IP source binding interface configuration.

### Example

# **show ip verify source**
IP Source Guard Mode : disabled

Port Port Mode Dynamic Entry Limit

```
----                          ---------     -------------------
GigabitEthernet 1/1           disabled      unlimited
GigabitEthernet 1/2           disabled      unlimited
GigabitEthernet 1/3           disabled      unlimited
GigabitEthernet 1/4           disabled      unlimited
2.5GigabitEthernet 1/1        disabled      unlimited
2.5GigabitEthernet 1/2        disabled      unlimited
```

## show web privilege group

### Syntax

**show web privilege group** [ *<group_name>* ] **level**

### Parameter

| | |
|---|---|
| *<group_name>* | Group name |

### Default

### Mode

Privileged EXEC

### Usage

Display web privilege information.

### Example

```
# show web privilege group ip level
Group Name                          Privilege Level
                                   CRO CRW SRO SRW
------------------------------- --- --- --- ---
IP                                  5   10   5   10
```

## web privilege group

### Syntax

**web privilege group** *<group_name>* **level** { [ **configRoPriv** *<configRoPriv>* ] [ **configRwPriv** *<configRwPriv>* ] [ **statusRoPriv** *<statusRoPriv>* ] [ **statusRwPriv** *<statusRwPriv>* ] }
**no web privilege group** *<group_name>* **level**

### Parameter

| | |
|---|---|
| *<group_name>* | Web privilege group name |
| *<configRoPriv>* | Configuration Read-only level |
| *<configRwPriv>* | Configuration Read-write level |
| *<statusRoPriv>* | Status/Statistics Read-only level |
| *<statusRwPriv>* | Status/Statistics Read-write level |

### Default

### Mode

Global Configuration

### Usage

Set web privilege group.

### Example

(config)# **web privilege group ddmi level configRwPriv 15**

# 14. Spanning Tree

## clear spnning-tree

### Syntax

**clear spanning-tree** { { **statistics** [ **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) ] } | { **detected-protocols** [ **interface** ( *<port_type>* [ *<v_port_type_list_1>* ] ) ] } }

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of switch ID, ex, 1,3-5,6 |

### Default

### Mode

Privileged EXEC

### Usage

### Example

# **clear spanning-tree statistics**

## show spanning-tree

### Syntax

**show spanning-tree** [ **summary** | **active** | { **interface** ( *<port_type>* [ *<v_port_type_list>* ] ) } | { **detailed** [ **interface** ( *<port_type>* [ *<v_port_type_list_1>* ] ) ] } | { **mst** [ **configuration** | { *<instance>* [ **interface** ( *<port_type>* [ *<v_port_type_list_2>* ] ) ] } ] } ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<v_port_type_list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |
| *<instance>* | Choose port |

### Default

### Mode

Privileged EXEC

### Usage

Show spanning tree configuration.

### Example

# **show spanning-tree**

```
CIST Bridge STP Status
Bridge ID       : 32768.1C-2A-A3-01-23-C6
Root ID         : 32768.1C-2A-A3-01-23-C6
Root Port       : -
Root PathCost: 0
Regional Root: 32768.1C-2A-A3-01-23-C6
Int. PathCost: 0
Max Hops        : 20
TC Flag         : Steady
TC Count        : 0
TC Last         : -
```

```
Port        Port Role        State        Pri   PathCost   Edge   P2P   Uptime
---------   --------------   ----------   ---   --------   ----   ---   -------------
```

## spanning-tree(Interface)

### Syntax

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

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Enable/disable STP on this interface.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **spanning-tree**

## spanning-tree(STP Aggregation)

### Syntax

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

### Parameter

### Default

### Mode

STP Aggregation Configuration

### Usage

Enable/disable STP on this interface.

### Example

(config)# **spanning-tree aggregation**
(config-stp-aggr)# **spanning-tree**

## spanning-tree auto-edge(Interface)

### Syntax

**spanning-tree auto-edge**
**no spanning-tree auto-edge**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Auto detect edge status.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **spanning-tree auto-edge**

## spanning-tree auto-edge(STP Aggregation)

### Syntax

**spanning-tree auto-edge**
**no spanning-tree auto-edge**

### Parameter

### Default

### Mode

STP Aggregation Configuration

### Usage

Auto detect edge status.

### Example

(config)# **spanning-tree aggregation**
(config-stp-aggr)# **spanning-tree auto-edge**

## spanning-tree bpdu-guard(Interface)

### Syntax

**spanning-tree bpdu-guard**
**no spanning-tree bpdu-guard**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Enable/disable BPDU guard.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **spanning-tree bpdu-guard**

## spanning-tree bpdu-guard(STP Aggregation)

### Syntax

**spanning-tree bpdu-guard**
**no spanning-tree bpdu-guard**

### Parameter

### Default

### Mode

STP Aggregation Configuration

### Usage

Enable/disable BPDU guard.

### Example

(config)# **spanning-tree aggregation**
(config-stp-aggr)# **spanning-tree bpdu-guard**

## spanning-tree edge(Interface)

### Syntax

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

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Edge port.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **spanning-tree edge**

## spanning-tree edge(STP Aggregation)

### Syntax

**spanning-tree edge**

**no spanning-tree edge**

### Parameter

### Default

### Mode

STP Aggregation Configuration

### Usage

Edge port.

### Example

(config)# **spanning-tree aggregation**
(config-stp-aggr)# **spanning-tree edge**

## spanning-tree edge bpdu-filter

### Syntax

**spanning-tree edge bpdu-filter**
**no spanning-tree edge bpdu-filter**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Enable BPDU filter (stop BPDU tx/rx).

### Example

(config)# **spanning-tree edge bpdu-filter**

## spanning-tree edge bpdu-guard

### Syntax

**spanning-tree edge bpdu-guard**
**no spanning-tree edge bpdu-guard**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Enable BPDU guard

### Example

(config)# **spanning-tree edge bpdu-guard**

## spanning-tree link-type(Interface)

### Syntax

**spanning-tree link-type** { **point-to-point** | **shared** | **auto** }
**no spanning-tree link-type**

### Parameter

| | |
|---|---|
| **point-to-point** | Forced to point-to-point |
| **shared** | Forced to Shared |
| **auto** | Auto detect |

### Default

### Mode

Interface Configuration

### Usage

Set port link-type.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **spanning-tree link-type auto**

## spanning-tree link-type(STP Aggregation)

### Syntax

**spanning-tree link-type** { **point-to-point** | **shared** | **auto** }
**no spanning-tree link-type**

### Parameter

| | |
|---|---|
| **point-to-point** | Forced to point-to-point |
| **shared** | Forced to Shared |
| **auto** | Auto detect |

### Default

### Mode

STP Aggregation Configuration

### Usage

Set port link-type.

### Example

(config)# **spanning-tree aggregation**
(config-stp-aggr)# **spanning-tree link-type auto**

## spanning-tree mode

### Syntax

**spanning-tree mode** { **stp** | **rstp** | **mstp** }
**no spanning-tree mode**

### Parameter

| | |
|---|---|
| **stp** | 802.1D Spanning Tree |
| **rstp** | Rapid Spanning Tree (802.1w) |
| **mstp** | Multiple Spanning Tree (802.1s) |

### Default

### Mode

Global Configuration

### Usage

Set spnning tree mode.

### Example

(config)# **spanning-tree mode mstp**

## spanning-tree mst cost(Interface)

### Syntax

**spanning-tree mst** *<instance>* **cost** { *<cost>* | **auto** }
**no spanning-tree mst** *<instance>* **cost**

### Parameter

| | |
|---|---|
| *<instance>* | instance (CIST=0, MSTI1=1...) |
| *<cost>* | STP cost of this port |
| **auto** | Use auto cost |

### Default

### Mode

Interface Configuration

### Usage

Set spanning tree mst port cost.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **spanning-tree mst 1 cost 100**

## spanning-tree mst cost(STP Aggregation)

### Syntax

**spanning-tree mst** *<instance>* **cost** { *<cost>* | **auto** }
**no spanning-tree mst** *<instance>* **cost**

### Parameter

| | |
|---|---|
| *<instance>* | instance (CIST=0, MSTI1=1...) |
| *<cost>* | STP cost of this port |
| **auto** | Use auto cost |

### Default

### Mode

STP Aggregation Configuration

### Usage

Set spanning tree mst port cost.

### Example

(config)# **spanning-tree aggregation**
(config-stp-aggr)# **spanning-tree mst 1 cost 100**

## spanning-tree mst port-priority(Interface)

### Syntax

**spanning-tree mst** *<instance>* **port-priority** *<prio>*
**no spanning-tree mst** *<instance>* **port-priority**

### Parameter

| | |
|---|---|
| *<instance>* | instance (CIST=0, MSTI1=1...) |
| *<prio>* | STP priority of this port |

### Default

### Mode

Interface Configuration

### Usage

Set STP priority of this port.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **spanning-tree mst 1 port-priority 0**

## spanning-tree mst port-priority(STP Aggregation)

### Syntax

**spanning-tree mst** *<instance>* **port-priority** *<prio>*
**no spanning-tree mst** *<instance>* **port-priority**

### Parameter

| | |
|---|---|
| *<instance>* | instance (CIST=0, MSTI1=1...) |
| *<prio>* | STP priority of this port |

### Default

### Mode

STP Aggregation Configuration

### Usage

Set STP priority of this port.

### Example

(config)# **spanning-tree aggregation**
(config-stp-aggr)# **spanning-tree mst 1 port-priority 0**

## spanning-tree mst priority

### Syntax

**spanning-tree mst** *<instance>* **priority** *<prio>*
**no spanning-tree mst** *<instance>* **priority**

### Parameter

| | |
|---|---|
| *<instance>* | instance (CIST=0, MSTI1=1...) |
| *<prio>* | Priority of the instance |

### Default

### Mode

Global Configuration

### Usage

Set Priority of the instance.

### Example

(config)# **spanning-tree mst 1 priority 0**

## spanning-tree mst vlan

### Syntax

**spanning-tree mst** *<instance>* **vlan** *<v_vlan_list>*
**no spanning-tree mst** *<instance>* **vlan**

### Parameter

| | |
|---|---|
| *<instance>* | instance (CIST=0, MSTI1=1...) |
| *<v_vlan_list>* | Range of VLANs |

### Default

### Mode

Global Configuration

### Usage

Set VLAN for instance.

### Example

(config)# **spanning-tree mst 1 vlan 1**

## spanning-tree mst forward-time

### Syntax

**spanning-tree mst forward-time** *<fwdtime>*
**no spanning-tree mst forward-time**

### Parameter

| | |
|---|---|
| *<fwdtime>* | Range in seconds |

### Default

### Mode

Global Configuration

### Usage

Set delay between port states.

### Example

(config)# **spanning-tree mst forward-time 100**

## spanning-tree mst hello-time

### Syntax

**spanning-tree mst hello-time** *<hellotime>*
**no spanning-tree mst hello-time**

### Parameter

| | |
|---|---|
| *<hellotime>* | Hello BPDU timer value |

### Default

### Mode

Global Configuration

### Usage

Set MSTP bridge hello time.

### Example

(config)# **spanning-tree mst hello-time 10**

## spanning-tree mst max-age

### Syntax

**spanning-tree mst max-age** *<maxage>* [ **forward-time** *<fwdtime>* ]
**no spanning-tree mst max-age**

### Parameter

| | |
|---|---|
| *<maxage>* | Max bridge age before timeout |
| *<fwdtime>* | Range in seconds |

### Default

### Mode

Global Configuration

### Usage

Set Max bridge age before timeout.

### Example

(config)# **spanning-tree mst max-age 10**

## spanning-tree mst max-hops

### Syntax

**spanning-tree mst max-hops** *<maxhops>*
**no spanning-tree mst max-hops**

### Parameter

| | |
|---|---|
| *<maxhops>* | Hop count range |

### Default

### Mode

Global Configuration

### Usage

Set MSTP bridge max hop count.

### Example

(config)# **spanning-tree mst max-hops 10**

## spanning-tree mst name

### Syntax

**spanning-tree mst name** *<name>* **revision** *<v_0_to_65535>*
**no spanning-tree mst name**

### Parameter

| | |
|---|---|
| *<name>* | Name of the bridge |
| *<v_0_to_65535>* | Revision number |

### Default

### Mode

Global Configuration

### Usage

Set revision of STP bridge instance.

### Example

(config)# **spanning-tree mst name abc revision 1**

## spanning-tree recovery interval

### Syntax

**spanning-tree recovery interval** *<interval>*
**no spanning-tree recovery interval**

### Parameter

| | |
|---|---|
| *<interval>* | Range in seconds |

### Default

### Mode

Global Configuration

### Usage

Set the error recovery timeout.

### Example

(config)# **spanning-tree recovery interval 10**

## spanning-tree restricted-role(Interface)

### Syntax

**spanning-tree restricted-role**
**no spanning-tree restricted-role**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Port role is restricted (never root port).

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **spanning-tree restricted-role**

## spanning-tree restricted-role(STP Aggregation)

### Syntax

**spanning-tree restricted-role**
**no spanning-tree restricted-role**

### Parameter

### Default

### Mode

STP Aggregation Configuration

### Usage

Port role is restricted (never root port).

### Example

(config)# **spanning-tree aggregation**
(config-stp-aggr)# **spanning-tree restricted-role**

## spanning-tree restricted-tcn(Interface)

### Syntax

**spanning-tree restricted-tcn**
**no spanning-tree restricted-tcn**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Restrict topology change notifications.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **spanning-tree restricted-tcn**

## spanning-tree restricted-tcn(STP Aggregation)

### Syntax

**spanning-tree restricted-tcn**

**no spanning-tree restricted-tcn**

### Parameter

### Default

### Mode

STP Aggregation Configuration

### Usage

Restrict topology change notifications.

### Example

(config)# **spanning-tree aggregation**
(config-stp-aggr)# **spanning-tree restricted-tcn**

## spanning-tree transmit hold-count

### Syntax

**spanning-tree transmit hold-count** *<holdcount>*
**no spanning-tree transmit hold-count**

### Parameter

| | |
|---|---|
| *<holdcount>* | 1-10 per sec, 6 is default |

### Default

### Mode

Global Configuration

### Usage

Max number of transmit BPDUs per sec.

### Example

(config)# **spanning-tree transmit hold-count 1**

# 15. System Configuration

## clear logging

### Syntax

**clear logging** [ **informational** ] [ **notice** ] [ **warning** ] [ **error** ] [ **switch** *<switch_list>* ]

### Parameter

| | |
|---|---|
| *<switch_list>* | List of switch ID, ex, 1,3-5,6 |

### Default

### Mode

Privileged EXEC

### Usage

Use the clear logging privileged EXEC command to clear the logging message.

### Example

This example shows how to clear the logging message of error level
# **clear logging warning**

## configure terminal

### Syntax

**configure terminal**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

### Example

# **configure terminal**
(config)#

## copy

### Syntax

**copy** { **startup-config** | **running-config** | *<source_path>* } { **startup-config** | **running-config** | *<destination_path>* } [ **syntax-check** ]

### Parameter

| | |
|---|---|
| *<source_path>* | File in FLASH or on TFTP server. Syntax: <flash:filename \| tftp://server/path-and-filename>. A valid file name is a text string drawn from alphabet (A-Za-z), digits (0-9), dot (.), hyphen (-), underscore (_). The maximum length is 63 and hyphen must not be first character. The file name content that only contains '.' is not allowed. |
| *<destination_path>* | File in FLASH or on TFTP server. Syntax: <flash:filename \| tftp://server/path-and-filename>. A valid file name is a text string drawn from alphabet (A-Za-z), digits (0-9), dot (.), hyphen (-), underscore (_). The maximum length is 63 and hyphen must not be first character. The file name content that only contains '.' is not allowed. |

### Default

### Mode

Privileged EXEC

### Usage

Copy from source to destination

### Example

# **copy running-config startup-config**
Building configuration...
% Saving 2100 bytes to flash:startup-config

## delete

### Syntax

**delete** *<path>*

### Parameter

| | |
|---|---|
| *<path>* | File in FLASH. Syntax: <flash:filename>. A valid file name is a text string drawn from alphabet (A-Za-z), digits (0-9), dot (.), hyphen (-), underscore (_). The maximum length is 63 and hyphen must not be first character. The file name content that only contains '.' is not allowed. |

### Default

### Mode

Privileged EXEC

### Usage

Delete one file in flash.

### Example

## dir

### Syntax

**dir**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Directory of all files in flash: file system.

### Example

```
# dir
Directory of flash:
    r- 1970-01-01 00:00:00        764 default-config
```

## do

### Syntax

**do**

### Parameter

### Default

### Mode

Global Configuration
ICLI mode for multiline input
VLAN Configuration
Interface Configuration
Line Configuration
...

### Usage

To run exec commands in the configuration mode.

### Example

```
(config)# do show running-config
...
!
```

## editing

### Syntax

**editing**
**no editing**

### Parameter

### Default

### Mode

Line Configuration

### Usage

Enable command line editing.

### Example

(config-line)# **editing**

## end

### Syntax

**end**

### Parameter

### Default

### Mode

Global Configuration
ICLI mode for multiline input
VLAN Configuration
Interface Configuration
Line Configuration
...

### Usage

Go back to Privileged EXEC mode.

### Example

(config)# **end**
#

# exec-timeout

## Syntax

**exec-timeout** *<min>* [ *<sec>* ]
**no exec-timeout**

## Parameter

| | |
|---|---|
| *<min>* | Timeout in minutes |
| *<sec>* | Timeout in seconds |

## Default

## Mode

Line Configuration

## Usage

Set the EXEC timeout.

## Example

(config)# line 0
(config-line)# **exec-timeout 0 0**

# exit

## Syntax

**exit**

## Parameter

## Default

## Mode

Global Configuration
ICLI mode for multiline input
VLAN Configuration
Interface Configuration
Line Configuration
...

### Usage

Exit from current mode.

### Example

(config-line)# **exit**
(config)#

## firmware swap

### Syntax

**firmware swap**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Use firmware swap to swap the active and alternative firmware images.

### Example

# **firmware swap**

## firmware upgrade

### Syntax

**firmware upgrade** *<url_file>*

### Parameter

| | |
|---|---|
| <url_file> | Uniform Resource Locator. It is a specific character string that constitutes a reference to a resource. Syntax: <protocol>://[<username>[:<password>]@]<host>[:<port>][/<path>]/<file_name> If the following special characters: space !\"#$%&'()*+,/:;<=>?@[\\]^`{\|}~ need to be contained in the input URL string, they should be percent-encoded. A valid file name is a text string drawn from alphabet (A-Za-z), digits (0-9), dot (.), hyphen (-), underscore (_). The maximum length is 63 and hyphen must not be first character. The file name content that only contains '.' is not allowed. |

### Default

### Mode

Privileged EXEC

### Usage

Use firmware upgrade to load new firmware image to the switch.

### Example

# **firmware upgrade tftp://10.10.10.10/new_image_path/new_image.dat**

## help

### Syntax

**help**

### Parameter

| | |
|---|---|
| *<min>* | Timeout in minutes |
| *<sec>* | Timeout in seconds |

### Default

### Mode

Global Configuration
ICLI mode for multiline input
VLAN Configuration
Interface Configuration
Line Configuration
...

### Usage

Description of the interactive help system.

### Example

(config)# **help**
Help may be requested at any point in a command by entering
a question mark '?'.  If nothing matches, the help list will
be empty and you must backup until entering a '?' shows the
available options.
Two styles of help are provided:
1. Full help is available when you are ready to enter a
   command argument (e.g. 'show ?') and describes each possible
   argument.
2. Partial help is provided when an abbreviated argument is entered
   and you want to know what arguments match the input
   (e.g. 'show pr?'.)

## history

### Syntax

**history size** *<history_size>*
**no history size**

### Parameter

| | |
|---|---|
| *<history_size>* | Number of history commands, 0 means disable |

### Default

### Mode

Line Configuration

### Usage

Set history buffer size.

### Example

(config)# **line 0**
(config-line)# **history size 0**

# host

## Syntax

**host** *<v_ipv6_ucast>* [ *<udp_port>* ] [ **traps** | **informs** ]
**host** { *<v_ipv4_ucast>* | *<v_word>* } [ *<udp_port>* ] [ **traps | informs** ]
**no host**

## Parameter

| | |
|---|---|
| *<v_ipv6_ucast>* | IPv6 address of SNMP trap host |
| *<v_ipv4_ucast>* | IPv4 address of SNMP trap host |
| *<v_word>* | Hostname of SNMP trap host |
| *<udp_port>* | UDP port of the trap messages |
| **traps** | Send Trap messages to this host |
| **informs** | Send Inform messages to this host |

## Default

## Mode

SNMP Server Host Configuration

## Usage

Host configuration.

## Example

(config)# **snmp-server host abc**
(config-snmps-host)# **host 192.168.2.20 traps**

# hostname

## Syntax

**hostname** *<hostname>*
**no hostname**

## Parameter

| | |
|---|---|
| *<hostname>* | This system's network name |

### Default

### Mode

Global Configuration

### Usage

Set system's network name.

### Example

(config)# **hostname abclin**
abclin(config)#

## informs retries

### Syntax

**informs retries** *<retries>* **timeout** *<timeout>*
**no informs**

### Parameter

| | |
|---|---|
| *<retries>* | Retires times |
| *<timeout>* | Timeout interval |

### Default

### Mode

SNMP Server Host Configuration

### Usage

Send Inform messages to this host.

### Example

(config)# **snmp-server host abc**
(config-snmps-host)# **informs retries 0 timeout 0**

## ip ssh

### Syntax

**ip ssh**
**no ip ssh**

### Parameter

### Default

The SSH is enabled.

### Mode

Global Configuration

### Usage

Use the ip ssh global configuration command to enable the SSH. Use the no form of this command to disable the SSH.

### Example

This example shows how to enable the SSH
(config)# **ip ssh**

## length

### Syntax

**length** *<length>*
**no length**

### Parameter

| | |
|---|---|
| *<length>* | Number of lines on screen (0 for no pausing) |

### Default

### Mode

Line Configuration

### Usage

Set number of lines on a screen.

### Example

(config)# **line 0**
(config-line)# **length 20**

## line

### Syntax

**line** { *<0~16>* | **console** *0* | **vty** *<0~15>* }

### Parameter

| | |
|---|---|
| *<0~16>* | List of line numbers |
| **console** | Console terminal line |
| **vty** | Virtual terminal |

### Default

### Mode

Global Configuration

### Usage

Configure a terminal line.

### Example

(config)# **line 0**
(config-line)#

## location

### Syntax

**location** *<location>*
**no location**

### Parameter

| | |
|---|---|
| *<location>* | One text line describing the terminal's location in 32 characters. |

### Default

### Mode

Line Configuration

### Usage

Enter terminal location description.

### Example

(config)# **line 0**
(config-line)# **location Beijin**

## logging host

### Syntax

**logging host** { *<ipv4_addr>* | *<domain_name>* }
**no logging host**

### Parameter

| | |
|---|---|
| *<ipv4_addr>* | The IPv4 address of the log server |
| *<domain_name>* | The domain name is to provide a mechanism for naming resources on the Internet. A complete domain name consists of one or more subdomain names which are separated by dots (.) |

### Default

### Mode

Global Configuration

### Usage

Use the logging host global configuration command to configure the host address of logging server.

### Example

This example shows how to configure the host address of logging server
(config)# **logging host 192.168.2.20**

# logging level

## Syntax

**logging level** { **informational** | **notice** | **warning** | **error** }

## Parameter

| | |
|---|---|
| **informational** | Severity 6: Informational messages |
| **notice** | Severity 5: Normal but significant condition |
| **warning** | Severity 4: Warning conditions |
| **error** | Severity 3: Error conditions |

## Default

logging level is information.

## Mode

Global Configuration

## Usage

Use the logging level global configuration command to configure what level of message will send to logging server.

## Example

This example shows how to configure logging error level
(config)# **logging level error**

# logging on

## Syntax

**logging on**
**no logging on**

## Parameter

## Default

The logging server is disabled.

### Mode

Global Configuration

### Usage

Use the logging on global configuration command to enable the logging server. Use the no form of this command to disable the logging server.

### Example

This example shows how to enable the logging server
(config)# **logging on**

## logout

### Syntax

**logout**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Exit from EXEC mode.

### Example

# **logout**

## privilege level

### Syntax

**privilege level** *<privileged_level>*
**no privilege level**

### Parameter

| | |
|---|---|
| *<privileged_level>* | Default privilege level for line |

### Default

### Mode

Line Configuration

### Usage

Change privilege level for line.

### Example

(config)# **line 0**
(config-line)# **privilege level 15**

## snmp-server view

### Syntax

**snmp-server view** *<view_name> <oid_subtree>* { **include** | **exclude** }
**no snmp-server view** *<view_name> <oid_subtree>*

### Parameter

| | |
|---|---|
| *<view_name>* | MIB view name |
| *<oid_subtree>* | MIB view OID |
| **include** | Included type from the view |
| **exclude** | Excluded type from the view |

### Default

### Mode

Global Configuration

### Usage

To specify the MIB view configuration.

### Example

(config)# **snmp-server version view subtree .1.3.6.2.1001.1 include**

# ping ip

## Syntax

**ping ip** { *<v_ip_addr>* | <v_ip_name> } [ **repeat** *<count>* ] [ **size** *<size>* ] [ **interval** *<seconds>* ]

## Parameter

| | |
|---|---|
| *<v_ip_addr>* | ICMP destination IPv4 address |
| <v_ip_name> | ICMP destination IP domain name |
| *<count>* | 1-60; Default is 5 |
| *<size>* | 2-1452; Default is 56 (excluding MAC, IP and ICMP headers) |
| *<seconds>* | 0-30; Default is 0 |

## Default

## Mode

Privileged EXEC

## Usage

Send ICMP echo messages.

## Example

# **ping ip 11.1.1.1**

# ping ipv6

## Syntax

**ping ipv6** { *<v_ipv6_addr>* | *<v_ipv6_name>* } [ **repeat** *<count>* ] [ **size** *<size>* ] [ **interval** *<seconds>* ] [ **interface vlan** *<v_vlan_id>* ]

## Parameter

| | |
|---|---|
| *<v_ipv6_addr>* | ICMPv6 destination IPv6 address |
| *<v_ipv6_name>* | ICMPv6 destination IP domain name |
| *<count>* | 1-60; Default is 5 |
| *<size>* | 2-1452; Default is 56 (excluding MAC, IP and ICMP headers) |
| *<seconds>* | 0-30; Default is 0 |
| *<v_vlan_id>* | VLAN identifier (VID) |

### Default

### Mode

Privileged EXEC

### Usage

Send ICMPv6 echo messages.

### Example

# **ping ipv6 FE80:3E2F:10AC::C001**

## reload

### Syntax

**reload** { { { **cold** | **warm** } [ **sid** *<usid>* ] } | { **defaults** [ **keep-ip** ] } }

### Parameter

| | |
|---|---|
| **cold** | Reload cold |
| **warm** | Reload warm (CPU restart only). |
| *<usid>* | Stack switch ID |
| **defaults** | Reload defaults without rebooting. |
| **keep-ip** | Attempt to keep VLAN1 IP setup |

### Default

### Mode

Privileged EXEC

### Usage

Reload system, either cold (reboot) or restore defaults without reboot.

### Example

# **reload default**

## send

### Syntax

**send** { * | *<session_list>* | **console 0** | **vty** *<vty_list>* } *<message>*

### Parameter

| | |
|---|---|
| *<session_list>* | Send a message to multiple lines |
| *<vty_list>* | Send a message to multiple lines |
| *<message>* | Message to be sent to lines, in 128 characters. |

### Default

### Mode

Privileged EXEC

### Usage

Send a message to other tty lines.

### Example

# **send console 0 show**

## show history

### Syntax

**show history**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show history.

### Example

```
# show clock
  show access-list
  show aggregation
  show aggregation mode
  show clock
  show ddmi
```

## show ip ssh

### Syntax

**show ip ssh**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Use the show ip ssh privileged EXEC command to display the SSH status.

### Example

```
# show ip ssh
  Switch SSH is enabled
```

## show line

### Syntax

**show line** [ **alive** ]

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show TTY line information.

### Example

```
# show line alive
Line is vty 0.
    * You are at this line now.
    Alive from Telnet.
    Default privileged level is 2.
    Command line editing is enabled
    Display EXEC banner is enabled.
    Display Day banner is enabled.
    Terminal width is 80.
                length is 24.
                history size is 32.
                exec-timeout is 10 min 0 second.

    Current session privilege is 15.
    Elapsed time is 0 day 0 hour 12 min 39 sec.
    Idle time is 0 day 0 hour 0 min 0 sec.
```

## show logging

### Syntax

**show logging** *<log_id>* [ **switch** *<switch_list>* ]

### Parameter

| | |
|---|---|
| *<log_id>* | Logging ID |
| *<switch_list>* | List of switch ID, ex, 1,3-5,6 |

### Default

### Mode

Privileged EXEC

### Usage

Use the show logging privileged EXEC command with logging ID to display the detail logging message.

### Example

```
# show logging
Switch logging host mode is disabled
Switch logging host address is null
Switch logging level is informational

Number of entries on Switch 1:
Error          : 0
Warning        : 0
Notice         : 11
Informational: 7
All            : 18

ID          Level          Time & Message
----------  -------------  --------------
          1 Informational  1970-01-01T00:00:01+00:00
                             SYS-BOOTING: Switch just made a cold boot.

          2 Notice         1970-01-01T00:00:01+00:00
                             LINK-UPDOWN: Interface Vlan 1, changed state to down
```

## show logging information

### Syntax

**show logging** [ **informational** ] [ **notice** ] [ **warning** ] [ **error** ] [ **switch** *<switch_list>* ]

### Parameter

| | |
|---|---|
| *<switch_list>* | List of switch ID, ex, 1,3-5,6 |

### Default

### Mode

Privileged EXEC

### Usage

Use the show logging privileged EXEC command without keywords to display the logging configuration, or particularly the logging message summary for the logging level.

### Example

# **show logging informational**

```
Switch logging host mode is disabled
Switch logging host address is null
Switch logging level is informational

Number of entries on Switch 1:
Error          : 0
Warning        : 0
Notice         : 11
Informational: 7
All            : 18

ID          Level          Time & Message
----------  -------------  --------------
         1  Informational  1970-01-01T00:00:01+00:00
                             SYS-BOOTING: Switch just made a cold boot.

        13  Informational  1970-01-01T01:32:51+00:00
                             DDMI-MODULE_INSERT_REMOVE: Inserted SFP module on
                             Interface 2.5GigabitEthernet 1/1
```

## show privilege

### Syntax

**show privilege**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Display command privilege.

### Example

# **show privilege**

## show process list

### Syntax

**show process list** [ **detail** ]

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show current state of system threads.

### Example

```
# show process list
ID   State SetPrio CurPrio Name            1sec Load 10sec Load Stack Base Size   Used
--- ----- ------- ------- ----------- --------- ---------- ---------- ----- -----
DSR N/A       N/A     N/A DSR Context        N/A        N/A        N/A   N/A   N/A
  3 Sleep       6       6 Network alarm support    N/A     N/A 0x82737a90  4096  1832
  4 Sleep       7       7 Network support        N/A     N/A 0x821b5298  8192  2264
  5 Susp       15      15 pthread.00000800     N/A     N/A 0x827620e4  7828   280
  6 Sleep       7       7 Main            N/A         N/A 0x81af8d30 16384   496
  7 Sleep       7       7 Critd           N/A         N/A 0x81e6c1d8  8192   656
  8 Sleep       8       8 Configuration     N/A         N/A 0x80e8ab20  8192  1060
  9 Sleep       7       7 ICFG Loader         N/A         N/A 0x8119c450 65536 11624
 10 Sleep       7       7 Port Control      N/A         N/A 0x81eba850 16384  3292
```

## show process load

### Syntax

**show process load**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show current CPU load: 100ms, 1s and 10s running average (in percent, zero is idle).

### Example

```
# show process load
Load average(100ms, 1s, 10s):     0%,     0%,     0%
```

## show running-config

### Syntax

**show running-config** [ **all-defaults** ]

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show running configuration.

### Example

```
# show running-config
Building configuration...
username admin privilege 15 password encrypted YWRtaW4=
!
vlan 1,2
!
!
snmp-server host abc
!
ip routing
ip dhcp relay
ip helper-address 192.168.100.1
...........
```

## show running-config feature

### Syntax

**show running-config feature** *<feature_name>* [ **all-defaults** ]

### Parameter

| | |
|---|---|
| *<feature_name>* | specific feature |

### Default

### Mode

Privileged EXEC

### Usage

Show configuration for specific feature.

### Example

# **show running-config feature vlan**
Building configuration...
!
vlan 1,2,10,20,100
!
snmp-server host abc
.....

## show running-config interface

### Syntax

**show running-config interface** ( *<port_type>* [ *<list>* ] ) [ **all-defaults** ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<list>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Show specific interface or interfaces.

### Example

```
# show running-config interface GigabitEthernet 1/1
Building configuration...
interface GigabitEthernet 1/1
  no spanning-tree
!
end
```

## show running-config interface vlan

### Syntax

**show running-config interface vlan** <list> [ **all-defaults** ]

### Parameter

| | |
|---|---|
| <list> | VLAN identifier (VID) |

### Default

### Mode

Privileged EXEC

### Usage

Show specific VLAN.

### Example

```
# show running-config interface vlan 1
Building configuration...
interface vlan 1
  ip address 192.168.0.2 255.255.255.0
!
end
```

## show snmp

### Syntax

**show snmp**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Display SNMP configurations.

### Example

```
# show snmp
SNMP Configuration
SNMP Mode                    : enabled
SNMP Version                 : 2c
Read Community               : public
Write Community              : private
Trap Mode                    : disabled

SNMPv3 Communities Table:
Community     : public
Source IP     : 0.0.0.0
Source Mask : 0.0.0.0

Community     : private
Source IP     : 0.0.0.0
Source Mask : 0.0.0.0
……….
```

## show snmp access

### Syntax

**show snmp access** [ *<group_name>* { **v1** | **v2c** | **v3** | **any** } { **auth** | **noauth** | **priv** } ]

### Parameter

### Default

| | |
|---|---|
| *<group_name>* | Group name |

### Mode

Privileged EXEC

### Usage

Display access configurations.

### Example

```
# show snmp access
Group Name          : default_ro_group
Security Model      : any
Security Level      : NoAuth, NoPriv
Read View Name      : default_view
Write View Name     : <no writeview specified>

Group Name          : default_rw_group
Security Model      : any
Security Level      : NoAuth, NoPriv
Read View Name      : default_view
Write View Name     : default_view
```

## show snmp community

### Syntax

**show snmp community v3** [ *<community>* ]

### Parameter

### Default

| | |
|---|---|
| *<community>* | Specify community name |

### Mode

Privileged EXEC

### Usage

Display Community configurations.

### Example

```
# show snmp community v3
Community     : public
Source IP     : 0.0.0.0
Source Mask : 0.0.0.0

Community     : private
Source IP     : 0.0.0.0
Source Mask : 0.0.0.0
```

## show snmp host

### Syntax

**show snmp host** [ *<conf_name>* ] [ **system** ] [ **switch** ] [ **interface** ] [ **aaa** ]

### Parameter

### Default

| | |
|---|---|
| *<conf_name>* | Name of the host configuration |

### Mode

Privileged EXEC

### Usage

Display snmp host configurations.

### Example

```
# show snmp host
Trap Global Mode: disabled
Trap abc (ID:0) is disabled
Community            : Public
Destination Host: 0.0.0.0
UDP Port             : 162
Version              : V2C
Inform Mode          : disabled
Inform Timeout    : 3
```

Inform Retry : 5

## show snmp mib context

### Syntax

**show snmp mib context**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Use the show snmp mib context user EXEC command to display the supported MIBs in the switch.

### Example

```
# show snmp mib context
BRIDGE-MIB :
    - dot1dBase (.1.3.6.1.2.1.17.1)
    - dot1dTp (.1.3.6.1.2.1.17.4)
ENTITY-MIB :
    - entityMIBObjects (.1.3.6.1.2.1.47.1)
EtherLike-MIB :
    - transmission (.1.3.6.1.2.1.10)
……….
```

## show snmp mib ifmib ifIndex

### Syntax

**show snmp mib ifmib ifIndex**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Use the show snmp mib ifmib ifIndex user EXEC command to display the SNMP ifIndex(defined in IF-MIB) mapping information in the switch.

### Example

# **show snmp mib ifmib ifIndex**

```
  ifIndex        ifDescr                                        Interface
  ----------   ------------------------------------   ---------
           1   VLAN      1                                      vlan 1
     1000001   Switch   1 - Port   1                   GigabitEthernet 1/1
     1000002   Switch   1 - Port   2                   GigabitEthernet 1/2
     1000003   Switch   1 - Port   3                   GigabitEthernet 1/3
     1000004   Switch   1 - Port   4                   GigabitEthernet 1/4
```

## show snmp security-to-group

### Syntax

**show snmp security-to-group** [ { **v1** | **v2c** | **v3** } *<security_name>* ]

### Parameter

### Default

| | |
|---|---|
| *<security_name>* | security user name |

### Mode

Privileged EXEC

### Usage

Display snmp security to group configurations.

### Example

# **show snmp security-to-group**

```
Security Model : v1
Security Name   : public
Group Name        : default_ro_group

Security Model : v1
Security Name   : private
Group Name        : default_rw_group
...........
```

## show snmp user

### Syntax

**show user** [ *<username> <engineID>* ]

### Parameter

### Default

| | |
|---|---|
| *<username>* | security user name |
| *<engineID>* | Security Engine ID |

### Mode

Privileged EXEC

### Usage

Display snmp security user configurations.

### Example

```
# show snmp user
User Name                  : default_user
Engine ID                  : 800007e5017f000001
Security Level             : NoAuth, NoPriv
Authentication Protocol : None
Privacy Protocol           : None
```

## show snmp view

### Syntax

**show view** [ *<view_name> <oid_subtree>* ]

### Parameter

### Default

| | |
|---|---|
| *<view_name>* | MIB view name |
| *<oid_subtree>* | MIB view OID |

### Mode

Privileged EXEC

### Usage

Display snmp view configuration.

### Example

```
# show snmp view
View Name      : default_view
OID Subtree : .1
View Type      : included
```

## show system cpu status

### Syntax

**show system cpu status**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Display system CPU status.

### Example

```
# show system cpu status
    Average load in 100 ms    : 0%
    Average load in      1 sec : 0%
    Average load in    10 sec : 0%
```

## show system led status

### Syntax

**show system led status**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Display system LED status.

### Example

# **show system led status**
System LED: green, solid, normal indication.

## show terminal

### Syntax

**show terminal**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Display terminal configuration parameters.

### Example

# **show terminal**
Line is vty 0.
    * You are at this line now.
    Alive from Telnet.

```
Default privileged level is 2.
Command line editing is enabled
Display EXEC banner is enabled.
Display Day banner is enabled.
Terminal width is 80.
          length is 24.
          history size is 32.
          exec-timeout is 10 min 0 second.

Current session privilege is 15.
Elapsed time is 0 day 0 hour 16 min 43 sec.
Idle time is 0 day 0 hour 0 min 0 sec.
```

## show user-privilege

### Syntax

**show user-privilege**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Show Users privilege configuration.

### Example

```
# show user-privilege
username admin privilege 15 password encrypted YWRtaW4=
```

## show users

### Syntax

**show users** [ **myself** ]

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Display information about terminal lines.

### Example

# **show users**

```
Line is vty 0.
    * You are at this line now.
    Connection is from 192.168.0.20:56376 by Telnet.
    User name is admin.
    Privilege is 15.
    Elapsed time is 0 day 0 hour 19 min 46 sec.
    Idle time is 0 day 0 hour 0 min 0 sec.
```

## show version

### Syntax

**show version** [ **brief** ]

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Use show version to display firmware information.

### Example

# **show version**

```
MEMORY          : Total=89879 KBytes, Free=77849 KBytes, Max=77752 KBytes
FLASH           : 0x40000000-0x40ffffff, 256 x 0x10000 blocks
```

```
MAC Address          : 9a-86-03-ab-57-01
Previous Restart : Cold
```

## shutdown

### Syntax

**shutdown**
**no shutdown**

### Parameter

### Default

### Mode

SNMP Server Host Configuration

### Usage

Use shutdown to shut down the SNMP server.

### Example

(config)# **snmp-server host abc**
(config-snmps-host)# **no shutdown**

## snmp-server

### Syntax

**snmp-server**
**no snmp-server**

### Parameter

### Default

### Mode

Global Configuration

### Usage

The command can enable SNMP server on SNMPv1, SNMPv2c, or SNMPv3.

### Example

(config)# **snmp-server**

## snmp-server access

### Syntax

**snmp-server access** *<group_name>* **model** { **v1** | **v2c** | **v3** | **any** } **level** { **auth** | **noauth** | **priv** } [ **read** *<view_name>* ] [ **write** *<write_name>* ]
**no snmp-server access** *<group_name>* **model** { **v1** | **v2c** | **v3** | **any** } **level** { **auth** | **noauth** | **priv** }

### Parameter

| | |
|---|---|
| *<group_name>* | group name |
| *<view_name>* | read view name |
| *<write_name>* | write view name |

### Default

### Mode

Global Configuration

### Usage

Configure SNMP server access.

### Example

(config)# **snmp-server access**

## snmp-server community v2c

### Syntax

**snmp-server community v2c** *<comm>* [ **ro** | **rw** ]
**no snmp-server community v2c** *<comm>* [ **ro** | **rw** ]

### Parameter

| | |
|---|---|
| *<comm>* | Community word |

### Default

### Mode

Global Configuration

### Usage

Set the SNMP community.

### Example

(config)# **snmp-server community v2c private rw**

## snmp-server community v3

### Syntax

**snmp-server community v3** <v3_comm> [ *<v_ipv4_addr> <v_ipv4_netmask>* ]
**no snmp-server community v3** <v3_comm> [ *<v_ipv4_addr> <v_ipv4_netmask>* ]

### Parameter

| | |
|---|---|
| <v3_comm> | Community word |
| *<v_ipv4_addr>* | IPv4 address |
| *<v_ipv4_netmask>* | IPv4 netmask |

### Default

### Mode

Global Configuration

### Usage

Set the SNMP v3 community.

### Example

(config)# **snmp-server community v3 123@admin**

## snmp-server contact

### Syntax

**snmp-server contact** *<v_line255>*
**no snmp-server contact**

### Parameter

| | |
|---|---|
| *<v_line255>* | contact string |

### Default

### Mode

Global Configuration

### Usage

To specify the system contact string.

### Example

(config)# **snmp-server contact abc.com**

## snmp-server engine-id local

### Syntax

**snmp-server engine-id local** *<engineID>*
**no snmp-server engine-id local**

### Parameter

| | |
|---|---|
| *<engineID>* | local engine ID |

### Default

### Mode

Global Configuration

### Usage

To specify SNMP server's engine ID.

### Example

(config)# **snmp-server engine-id local 800007e5017f000001**

## snmp-server host

### Syntax

**snmp-server host** *<conf_name>*
**no snmp-server host** *<conf_name>*

### Parameter

| | |
|---|---|
| *<conf_name>* | Name of the host configuration |

### Default

### Mode

Global Configuration

### Usage

Set SNMP host's configurations.

### Example

(config)# **snmp-server host abc**

## snmp-server host trap

### Syntax

**snmp-server host** *<conf_name>* **traps** [ **linkup** ] [ **linkdown** ] [ **lldp** ]
**no snmp-server host** *<conf_name>* **traps**

### Parameter

| | |
|---|---|
| *<conf_name>* | Name of the host configuration |

### Default

### Mode

Interface Configuration

### Usage

Enable traps.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **snmp-server host abc traps linkup linkdown**

## snmp-server location

### Syntax

**snmp-server location** *<v_line255>*
**no snmp-server location**

### Parameter

| | |
|---|---|
| *<v_line255>* | location string |

### Default

### Mode

Global Configuration

### Usage

To specify the system location string.

### Example

(config)# **snmp-server location abc**

## snmp-server security-to-group

### Syntax

**snmp-server security-to-group model** { **v1** | **v2c** | **v3** } **name** *<security_name>* **group** *<group_name>*
**no snmp-server security-to-group model** { **v1** | **v2c** | **v3** } **name** *<security_name>* **group** *<group_name>*

### Parameter

| | |
|---|---|
| *<security_name>* | security user name |
| *<group_name>* | security group name |

### Default

### Mode

Global Configuration

### Usage

To specify the security-to-group configuration.

### Example

(config)# **snmp-server security-to-group model v3 name admin@123 group abc**

## snmp-server trap

### Syntax

**snmp-server trap**
**no snmp-server trap**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Set trap's configurations.

### Example

(config)# **snmp-server trap**

## snmp-server user

### Syntax

**snmp-server user** *<username>* **engine-id** *<engineID>* [ { **md5** *<md5_passwd>* | **sha** *<sha_passwd>* } [ **priv** { **des** | **aes** } *<priv_passwd>* ] ]
**no snmp-server user** *<username>* **engine-id** *<engineID>*

### Parameter

| | |
|---|---|
| *<username>* | User name |
| *<engineID>* | Engine ID octet string |
| *<md5_passwd>* | MD5 password |
| *<sha_passwd>* | SHA password |
| *<priv_passwd>* | Set privacy password |

### Default

### Mode

Global Configuration

### Usage

Set the SNMPv3 user's configurations.

### Example

(config)# **snmp-server user admin@123 engine-id 800007e5017f000001**

## snmp-server version

### Syntax

**snmp-server version** { **v1** | **v2c** | **v3** }
**no snmp-server version**

### Parameter

| | |
|---|---|
| **v1** | SNMPv1 |
| **v2** | SNMPv2c |
| **v3** | SNMPv3 |

### Default

Default is SNMPv2c.

### Mode

Global Configuration

### Usage

Set the SNMP server version to SNMPv1, SNMPv2c or SNMPv3.

### Example

(config)# **snmp-server version v2c**

## sntp

### Syntax

**sntp**
**no sntp**

### Parameter

### Default

### Mode

Global Configuration

### Usage

Enable the global SNTP service.

### Example

(config)# **sntp**

## sntp server

### Syntax

**sntp server ip-address** { *<ipv4_var>* }
**no sntp server**

### Parameter

| | |
|---|---|
| *<ipv4_var>* | IPv4 address |

### Default

### Mode

Global Configuration

### Usage

Set SNTP server IPv4 address.

### Example

(config)# **sntp server ip-address 120.25.108.11**

## terminal editing

### Syntax

**terminal editing**
**no terminal editing**

### Parameter

### Default

### Mode

Privileged EXEC

### Usage

Enable command line editing.

### Example

# **terminal editing**

## terminal exec-timeout

### Syntax

**terminal exec-timeout** *<min>* [ <sec> ]

**no terminal exec-timeout**

### Parameter

| | |
|---|---|
| *<min>* | Timeout in minutes |
| <sec> | Timeout in seconds |

### Default

### Mode

Privileged EXEC

### Usage

Set the EXEC timeout.

### Example

# **terminal exec-timeout 1**

## terminal history size

### Syntax

**terminal history size** *<history_size>*
**no terminal history size**

### Parameter

| | |
|---|---|
| *<history_size>* | Number of history commands, 0 means disable |

### Default

### Mode

Privileged EXEC

### Usage

Set history buffer size.

### Example

# **terminal history size 100**

## terminal length

### Syntax

**terminal length** *<lines>*
**no terminal length**

### Parameter

| | |
|---|---|
| *<lines>* | Number of lines on screen (0 for no pausing) |

### Default

### Mode

Privileged EXEC

### Usage

Set number of lines on a screen.

### Example

# **terminal length 50**

## terminal width

### Syntax

**terminal width** *<width>*
**no terminal width**

### Parameter

| | |
|---|---|
| *<width>* | Number of characters on a screen line (0 for unlimited width) |

### Default

### Mode

Privileged EXEC

### Usage

Set width of the display terminal.

### Example

# **terminal width 50**

## traps

### Syntax

**traps** [ **authentication snmp-auth-fail** ] [ **system** [ **coldstart** ] [ **warmstart** ] ] [ **switch** [ **stp** ] [ **rmon** ] ]
**no traps**

### Parameter

| | |
|---|---|
| **authentication snmp-auth-fail** | Authentication fail event |
| **coldstart** | Cold start event |
| **warmstart** | Warm start event |
| **stp** | STP event |
| **rmon** | RMON event |

### Default

### Mode

SNMP Server Host Configuration

### Usage

Trap event configuration.

### Example

(config)# **snmp-server host abc**
(config-snmps-host)# **traps**

## username

### Syntax

**username** *<username>* **privilege** *<priv>* **password encrypted** *<encry_password>*
**username** *<username>* **privilege** *<priv>* **password none**
**username** *<username>* **privilege** *<priv>* **password unencrypted** *<password>*
**no username** *<username>*

### Parameter

| | |
|---|---|
| *<username>* | User name allows letters, numbers and underscores |
| *<priv>* | User privilege level |
| *<encry_password>* | The ENCRYPTED (hidden) user password. Notice the ENCRYPTED password will be decoded by system internally. You cannot directly use it as same as the Plain Text and it is not human-readable text normally. |
| **none** | NULL password |
| *<password>* | The UNENCRYPTED (Plain Text) user password. Any printable characters including space is accepted. Notice that you have no chance to get the Plain Text password after this command. The system will always display the ENCRYPTED password. |

### Default

### Mode

Global Configuration

### Usage

Add a user for the local switch access.

### Example

(config)# **username testuser privilege 5 password encrypted dGVzdHVzZXI=**

## version

### Syntax

**version** { **v1** [ *<v1_comm>* ] | **v2** [ *<v2_comm>* ] | **v3** [ **probe** | **engineID** *<v_word10_to_64>* ] [ *<securtyname>* ] }
**no version**

### Parameter

| | |
|---|---|
| **v1** | SNMP trap version 1 |
| **v2** | SNMP trap version 2 |
| **v3** | SNMP trap version 3 |
| **probe** | Probe trap server's engine ID |
| *<v_word10_to_64>* | trap server's engine ID |
| *<securtyname>* | security name |

### Default

### Mode

SNMP Server Host Configuration

### Usage

Configure SNMP version.

### Example

(config)# **snmp-server host abc**
(config-snmps-host)# **version v2**

## width

### Syntax

**width** *<width>*
**no width**

### Parameter

| | |
|---|---|
| *<width>* | Number of characters on a screen line (0 for unlimited width) |

### Default

### Mode

Line Configuration

### Usage

Set width of the display terminal.

### Example

(config)# **line 0**
(config-line)# **width 100**

# 16. VLAN

## name

### Syntax

**name** *<vlan_name>*
**no name**

### Parameter

| | |
|---|---|
| *<vlan_name>* | The ASCII name for the VLAN |

### Default

### Mode

VLAN Configuration

### Usage

Use the name <vword32> command to configure VLAN name.

### Example

This example shows how to configure the VLAN name
(config)# **vlan 10**
(config-vlan)# **name guest**

## show interface vlan

### Syntax

**show interface vlan** [ *<vlist>* ]

### Parameter

| | |
|---|---|
| *<vlist>* | VLAN list |

### Default

### Mode

Privileged EXEC

### Usage

Display VLAN interface status.

### Example

```
# show interface vlan
VLAN1
  LINK: 1c-2a-a3-01-23-c6 Mtu:1500 <UP BROADCAST RUNNING MULTICAST>
  IPv4: 192.168.0.2/24 192.168.0.255
  IPv6: fe80::1e2a:a3ff:fe01:23c6/64 <UP RUNNING>
```

## show switchport forbidden

### Syntax

**show switchport forbidden** [ { **vlan** *<vlan_list>* } | { **name** *<name>* } ]

### Parameter

| | |
|---|---|
| *<vlan_list>* | Forbidden VLAN by VLAN ID |
| *<name>* | Forbidden VLANs by VLAN name |

### Default

### Mode

Privileged EXEC

### Usage

Display switchport forbidden VLAN configuration.

### Example

# **show switchport forbidden**

## show vlan

### Syntax

**show vlan** [ **id** *<vlan_list>* | **name** *<name>* | **brief** ] [ **all** ]

### Parameter

| | |
|---|---|
| *<vlan_list>* | VLAN IDs 1-4095 |
| *<name>* | VLAN name |

### Default

### Mode

Privileged EXEC

### Usage

Use the show vlan command to view the VLAN configuration.

### Example

```
# show vlan id 1
VLAN   Name                                  Interfaces
----   -------------------------------   ----------
1      default                                Gi 1/1,3 2.5G 1/1
```

## show vlan status

### Syntax

**show vlan status** [ **interface** ( *<port_type>* [ *<plist>* ] ) ] [ **admin** | **all** | **combined** | **conflicts** | **erps** | **evc** | **gvrp** | **mep** | **mstp** | **mvr** | **nas** | **rmirror** | **vcl** | **voice-vlan** ]

### Parameter

| | |
|---|---|
| *<port_type>* | Port type in Fast, Giga or Tengiga ethernet |
| *<plist>* | List of Port ID, ex, 1/1,3-5;2/2-4,6 |

### Default

### Mode

Privileged EXEC

### Usage

Use the show VLAN status command to view the VLANs configured for each interface.

### Example

```
# show vlan status interface GigabitEthernet 1/1
GigabitEthernet 1/1 :
---------------------
VLAN User     PortType     PVID   Frame Type       Ing Filter   Tx Tag        UVID   Conflicts
----------   -------------   ----   -------------   ----------   -----------------
```

```
Combined    C-Port    1    All        Enabled    All except-native  1    No
Admin       C-Port    1    All        Enabled    All except-native  1
NAS                                                                      No
GVRP                                                                     No
MSTP                                                                     No
……….
```

## switchport access vlan

### Syntax

**switchport access vlan** *<pvid>*
**no switchport access vlan**

### Parameter

| | |
|---|---|
| *<pvid>* | VLAN ID of the VLAN when this port is in access mode |

### Default

The no switchport access command resets the access mode VLAN to the appropriate default VLAN.

### Mode

Interface Configuration

### Usage

Use the switchport access vlan command to configure a port to a VLAN. Valid VLAN IDs are 1 to 4095.

### Example

(config)# **interface GigabitEthernet 1/2**
(config-if)# **switchport access vlan 1**

## switchport forbidden vlan

### Syntax

**switchport forbidden vlan** { **add** | **remove** } *<vlan_list>*
**no switchport forbidden vlan**

### Parameter

| | |
|---|---|
| *<vlan_list>* | VLAN IDs |

### Default

### Mode

Interface Configuration

### Usage

Configure forbidden VLAN.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **switchport forbidden vlan add 2**

## switchport hybrid acceptable-frame-type

### Syntax

**switchport hybrid acceptable-frame-type** { **all** | **tagged** | **untagged** }
**no switchport hybrid acceptable-frame-type**

### Parameter

| | |
|---|---|
| **all** | Allow all frames |
| **tagged** | Allow only tagged frames |
| **untagged** | Allow only untagged frames |

### Default

### Mode

Interface Configuration

### Usage

Configure the type of frame the port allows to receive.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **switchport hybrid acceptable-frame-type all**

## switchport hybrid allowed vlan

### Syntax

**switchport hybrid allowed vlan** { **all** | **none** | [ **add** | **remove** | **except** ] *<vlan_list>* }
**no switchport hybrid allowed vlan**

### Parameter

| | |
|---|---|
| **all** | All VLANs |
| **none** | No VLANs |
| *<vlan_list>* | VLAN IDs of the allowed VLANs when this port is in hybrid mode |

### Default

### Mode

Interface Configuration

### Usage

Configure VLAN allows to receive on hybrid port.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **switchport hybrid allowed vlan add 100**

## switchport hybrid egress-tag

### Syntax

**switchport hybrid egress-tag** { **none** | **all** [ **except-native** ] }
**no switchport hybrid egress-tag**

### Parameter

| | |
|---|---|
| **none** | No egress tagging |
| **all** | Tag all frames |
| **except-native** | Tag all frames except frames classified to native VLAN of the hybrid port |

### Default

### Mode

Interface Configuration

### Usage

Port out direction tag attribute data filtering.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **switchport hybrid ingress-filtering**

## switchport hybrid ingress-filtering

### Syntax

**switchport hybrid ingress-filtering**
**no switchport hybrid ingress-filtering**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

VLAN Ingress filter configuration.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **switchport hybrid ingress-filtering**

## switchport hybrid native vlan

### Syntax

**switchport hybrid native vlan** *<pvid>*
**no switchport hybrid native vlan**

### Parameter

| | |
|---|---|
| *<pvid>* | VLAN ID of the native VLAN when this port is in hybrid mode |

### Default

The no switchport hybrid command resets the hybrid native VLAN to the appropriate default VLAN

### Mode

Interface Configuration

### Usage

Use the switchport native vlan command to configure a port VLAN ID for a hybrid port.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **switchport hybrid native vlan 1**

## switchport hybrid port-type

### Syntax

**switchport hybrid port-type** { **unaware** | **c-port** | **s-port** | **s-custom-port** }
**no switchport hybrid port-type**

### Parameter

| | |
|---|---|
| **unaware** | Port in not aware of VLAN tags. |
| **c-port** | Customer port |
| **s-port** | Provider port |
| **s-custom-port** | Custom Provider port |

### Default

### Mode

Interface Configuration

### Usage

Set port type.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **switchport hybrid port-type unaware**

## switchport mode

### Syntax

**switchport mode** { **access** | **trunk** | **hybrid** }
**no switchport mode**

### Parameter

| | |
|---|---|
| **access** | Set mode to ACCESS unconditionally |
| **trunk** | Set mode to TRUNK unconditionally |
| **hybrid** | Set mode to HYBRID unconditionally |

### Default

### Mode

Interface Configuration

### Usage

Use the switchport mode command to define the type of the port.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **switchport mode trunk**

## switchport trunk allowed vlan

### Syntax

**switchport trunk allowed vlan** { **all** | **none** | [ **add** | **remove** | **except** ] *<vlan_list>* }
**no switchport trunk allowed vlan**

### Parameter

| | |
|---|---|
| **all** | All VLANs |
| **none** | No VLANs |
| *<vlan_list>* | VLAN IDs of the allowed VLANs when this port is in trunk mode |

### Default

### Mode

Interface Configuration

### Usage

Set allowed VLANs when interface is in trunk mode.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **switchport trunk allowed vlan add 1,10**

## switchport trunk native vlan

### Syntax

**switchport trunk native vlan** *<pvid>*
**no switchport trunk native vlan**

### Parameter

| | |
|---|---|
| *<pvid>* | VLAN ID of the native VLAN when this port is in trunk mode |

### Default

### Mode

Interface Configuration

### Usage

Use the switchport native vlan command to configure a port VLAN ID for a trunk port.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **switchport trunk native vlan 1**

## switchport trunk tag native

### Syntax

**switchport trunk tag native**

**no switchport trunk tag native**

### Parameter

### Default

### Mode

Interface Configuration

### Usage

Configure tag native VLAN.

### Example

(config)# **interface GigabitEthernet 1/1**
(config-if)# **switchport trunk tag native**

## vlan

### Syntax

**vlan** *<vlist>*
**vlan ethertype s-custom-port** *<etype>*
**no vlan** { { **ethertype s-custom-port** } | *<vlan_list>* }

### Parameter

| | |
|---|---|
| *<vlist>* | ISL VLAN IDs 1~4095 |
| *<etype>* | EtherType (Range: 0x0600-0xffff) |
| *<vlan_list>* | ISL VLAN IDs 1~4095 |

### Default

### Mode

Global Configuration

### Usage

Configure VLAN commands.

### Example

(config)# **vlan 10**