

## **FSOS**

### **Ethernet Command Line Reference**

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# 1 Interface Commands

---

## 1.1 bandwidth

Use this command to set the bandwidth of the port.

To return the bandwidth to default value, use the no form of this command.

### Command Syntax

**bandwidth** *bandwidth*

no bandwidth

bandwidth	<1-10000000> port bandwidth, in kilobits
-----------	--

### Command Mode

Interface Configuration

### Default

None

### Usage

None

### Examples

- The following example set the bandwidth of the port:

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# bandwidth 1000
```

- The following example returns the bandwidth to default value:

```
Switch(config-if)# no bandwidth
```

## Related Commands

duplex

speed

## 1.2 clear counters

Use this command to clear the counters on the physical interface.

### Command Syntax

```
clear counters (IFNAME |)
```

IFNAME	Only clear the specified interface statistics
--------	---

### Command Mode

Privileged EXEC

### Default

None

### Usage

The clear counters command clears all current interface counters from the interface unless you specify optional arguments that clear only a specific interface type from a specific interface number.

## Examples

- The following example clears the counters on all interfaces:

```
Switch# clear counters
```

- The following example clears the counters on the interface eth-0-1:

```
Switch# clear counters eth-0-1
```

- The following example clears the counters on the agg1:

```
Switch# clear counters agg1
```

## Related Commands

None

## 1.3 description

Use this command to set the description on the interface.

To remove the description on the interface, use the no form of this command.

## Command Syntax

```
description LINE
```

```
no description
```

LINE	The description on the interface, should be no more than 20 characters, and the character must be “0-9A-Za-z.-_” with alphabet as prefix
------	--

## Command Mode

Interface Configuration

## Default

None

## Usage

None

## Examples

- The following example sets the description on the interface:

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# description Ethernet
```

- The following example removes the description on the interface:

```
Switch(config-if)# no description
```

## Related Commands

None

## 1.4 Duplex

Use the duplex interface configuration command to specify the duplex mode of operation for a port. Use the no form of this command to return the port to its default value.

### Command Syntax

```
duplex (auto |full |half)
```

```
no duplex
```

auto	Enable automatic duplex configuration; port automatically detects whether it should run in full-duplex or half-duplex mode, depending on the attached device mode
full	Enable full-duplex mode
half	Enable half-duplex mode (only for interfaces operating at 10 or 100 Mb/s). You can not configure half-duplex mode for interfaces operating at 1000 or 10,000 Mb/s

## Command Mode

Interface Configuration

## Default

Auto

## Usage

The command is not allowed to be set on 10G port or optical mode of combo port.

## Examples

- The following example sets the duplex mode to auto:  
Switch(config)# interface eth-0-1  
Switch(config-if)# duplex auto
- The following example sets the duplex mode to full:  
Switch(config-if)# duplex full
- The following example returns the duplex mode to default:  
Switch(config-if)# no duplex

## Related Commands

bandwidth

speed

## 1.5 speed

Use the speed interface configuration command to specify the speed of a 10/100 Mb/s or 10/100/1000 Mb/s port. Use the no of this command to return the port to its default value.

## Command Syntax

speed (10 |100 |1000 |auto)

no speed

auto	Port automatically detects the speed it should run
10	Port runs at 10 Mb/s
100	Port runs at 100 Mb/s
1000	Port runs at 1000 Mb/s

## Command Mode

Interface Configuration

## Default

Auto

## Usage

The command is not allowed to be set on 10G port or optical mode of combo port.

## Examples

- This example shows how to set the speed on a port to 1000 Mb/s:

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# speed 1000
```

- This example shows how to return the speed on a port to default value:

```
Switch(config-if)# no speed
```

## Related Commands

bandwidth

duplex

## 1.6 interface

Use this command to enter interface mode.

### Command Syntax

interface *IFNAME*

IFNAME	The name of interface, i.e. eth-0-1, agg1, vlan1,loopback1
--------	--

### Command Mode

Global Configuration

### Default

None

### Usage

The interface name can be either a port name (i.e. eth-0-1) or link-agg name (i.e. agg1) or vlan name (i.e. vlan2) or loop-back name (i.e. loopback10).

### Examples

- The following example enters the interface mode for eth-0-1:  
Switch(config)# interface eth-0-1
- The following example enters the interface mode for agg1:  
Switch(config)# interface agg1
- The following example enters the interface mode for vlan2:  
Switch(config)# interface vlan2

### Related Commands

exit



## 1.7 interface range

Use this command to operate a list of interfaces, the interface include physical port, vlan interface, **linkagg** interface and loopback interface.

### Command Syntax

interface range *IFNAME*

IFNAME	Interface range, can be separate by comma, dash
--------	---

### Command Mode

Global Configuration

### Default

None

### Usage

None

### Examples

- The following example operate a list of physical interface:  
Switch(config)# interface range eth-0-1 – 24  
Switch(config-if-range)# shutdown
- The following example operate a list of vlan interface:  
Switch(config)# interface range vlan 1 - 20  
Switch(config-if-range)# shutdown
- The following example operate a list of linkagg interface:  
Switch(config)# interface range agg 10 - 20  
Switch(config-if-range)# shutdown

- The following example operate a list of loopback interface:

```
Switch(config)# interface range loopback 0 - 5
```

```
Switch(config-if-range)# shutdown
```

### Related Commands

None

## 1.8 interface range create vlan

Use this command to create a list of vlan interface.

### Command Syntax

```
interface range create vlan vid-range
```

vid-range	VLAN ID range, can be separate by comma, dash
-----------	---

### Command Mode

Global Configuration

### Default

None

### Usage

None

### Examples

The following example create vlan interface 10 to 20:

```
Switch(config)# interface range create vlan 10 - 20
```

```
Switch(config-if-range)# shutdown
```

## Related Commands

None

## 1.9 jumboframe

Use this command to enable jumbo frame. To disable jumbo frame, use the no form of this command.

### Command Syntax

jumboframe enable

no jumboframe enable

### Command Mode

Interface Configuration

### Default

None

### Usage

Jumboframe is disabled by default. The max frame which can be transmitted is 1534 bytes. When enable jumboframe, the max frame can be 9600 bytes.

### Examples

- The following example enables the jumboframe:  
Switch(config)# interface eth-0-1  
Switch(config-if)# jumboframe enable
- The following example disables the jumboframe:  
Switch(config-if)# no jumboframe enable

## Related Commands

None

## 1.10 media-type

Use the media-type interface configuration command to select a media type for an interface.

Use the no form of this command restore to the default value.

### Command Syntax

media-type (auto-select|rj45|sfp)

auto-select	Enable the switch to dynamically select the type based on which one first links up
rj45	Select the RJ-45 interface
sfp	Select the small form-factor pluggable (SFP) module interface

### Command Mode

Interface Configuration

### Default

Auto-select

### Usage

By default, we use auto-select mode.

### Examples

- The following example shows how to configure the interface as a rj45 media:

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# media-type rj45
```

- The following example shows how to restore to default value:

```
Switch(config-if)# no media-type
```

### **Related Commands**

None

## **1.11 shutdown**

Use the shutdown interface configuration command to admin down an interface. Use the no form of this command to admin up an interface.

### **Command Syntax**

```
shutdown
```

```
no shutdown
```

### **Command Mode**

Interface Configuration

### **Default**

None

### **Usage**

None

### **Examples**

- The following example shows how to shutdown a port:

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# shutdown
```

- The following example shows how to admin up a port:

Switch(config-if)# no shutdown

## Related Commands

None

## 1.12 load-interval

Use the load-interval interface configuration command to specify the interval when calculating speed of an interface. Use the no of this command to return the port to its default value.

### Command Syntax

load-interval *seconds*

no load-interval

seconds	Load interval in seconds, the range is 30~600
---------	---

### Command Mode

Interface Configuration

### Default

300 seconds

### Usage

Load-interval must be in increments of 30 second and its default value is 300 second.

### Examples

- This example shows how to set the load-interval on a port to 600 second:

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# load-interval 600
```

- This example shows how to return the load-interval on a port to default value:

```
Switch(config-if)# no load-interval
```

## Related Commands

```
show interface
```

## 1.13 vlan dot1q tag native

Use the `vlan dot1q tag native` global configuration command to configure the edge switch so that all packets going out an 802.1Q trunk, including the native VLAN.

### Command Syntax

```
vlan dot1q tag native
```

```
no vlan dot1q tag native
```

### Command Mode

Interface Configuration

### Default

None

### Usage

If the switch is configured to tag native VLAN packets on all 802.1Q trunks, the switch accepts untagged packets, but sends only tagged packets. By default, `vlan dot1q tag native` is disabled.

### Examples

- This example shows how to tag native for trunk port:

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# vlan dot1q tag native
```

- This example shows how to disable tagging native for trunk port:

```
Switch(config-if)# no vlan dot1q tag native
```

## Related Commands

None

## 1.14 show interface

Use this command to display the configurations and statistics on all interfaces or an interface.

### Command Syntax

```
show interface (IFNAME | )
```

IFNAME	The interface name: eth:Physical interface agg:Aggregation interface loopback:Loopback interface vlan:Vlan interface tunnel:Tunnel interface null:Null interface
--------	--

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

---



## Examples

This example shows how to display the configurations and statistics on the interface eth-0-1.

Switch# show interface eth-0-1

```
Interface eth-0-1
Interface current state: Administratively DOWN
Hardware is Ethernet, address is bc3e.60b2.1601 (bia bc3e.60b2.1601)
Bandwidth 1000000 kbits
Index 1 , Metric 1 , Encapsulation ARPA
Speed - 1000Mb/s , Duplex - Full , Media type is 1000BASE_T
Link speed type is autonegotiation, Link duplex type is autonegotiation
Input flow-control is off, output flow-control is off
The Maximum Frame Size is 1534 bytes
VRF binding: not bound
Label switching is disabled
No virtual circuit configured
ARP timeout 01:00:00, ARP retry interval 1s
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  0 packets input, 0 bytes
  Received 0 unicast, 0 broadcast, 0 multicast
  0 runs, 0 giants, 0 input errors, 0 CRC
  0 frame, 0 overrun, 0 pause input
  0 input packets with dribble condition detected
  0 packets output, 0 bytes
  Transmitted 0 unicast, 0 broadcast, 0 multicast
  0 underruns, 0 output errors, 0 pause output
```

## Related Commands

show interface status

## 1.15 show interface status

Use this command to display the brief information on all Ethernet and link aggregation interfaces.

### Command Syntax

show interface (*IFNAME*|) status

IFNAME	The interface name, can be eth, agg
--------	-------------------------------------

## Command Mode

Privileged EXEC

## Default

None

## Usage

This command will not show VLAN and tunnel interfaces' information.

## Examples

This example shows how to display the brief information on all Ethernet and LAG interfaces:

Switch# show interface status

Port	Status	Duplex	Speed	Mode	Type	Description
eth-0-1	down	a-full	a-1000	ACCESS	1000BASE_T	
eth-0-2	down	a-full	a-1000	ACCESS	1000BASE_T	
eth-0-3	admin down	auto	auto	ACCESS	1000BASE_T	
eth-0-4	admin down	auto	auto	ACCESS	1000BASE_T	
eth-0-5	up	a-full	a-1000	routed	1000BASE_T	
eth-0-6	up	a-full	a-100	ACCESS	1000BASE_T	
eth-0-7	admin down	auto	auto	ACCESS	1000BASE_T	
eth-0-8	admin down	auto	auto	ACCESS	1000BASE_T	
eth-0-9	down	a-full	a-1000	ACCESS	1000BASE_T	
eth-0-10	down	a-full	a-1000	ACCESS	1000BASE_T	
eth-0-11	admin down	auto	auto	ACCESS	1000BASE_T	
eth-0-12	admin down	auto	auto	ACCESS	1000BASE_T	
eth-0-13	admin down	auto	auto	ACCESS	1000BASE_T	
eth-0-14	admin down	auto	auto	ACCESS	1000BASE_T	
eth-0-15	admin down	auto	auto	ACCESS	1000BASE_T	
eth-0-16	admin down	auto	auto	ACCESS	1000BASE_T	
eth-0-17	admin down	auto	auto	ACCESS	1000BASE_T	
eth-0-18	admin down	auto	auto	ACCESS	1000BASE_T	
eth-0-19	admin down	auto	auto	ACCESS	1000BASE_T	
eth-0-20	admin down	auto	auto	ACCESS	1000BASE_T	

## Related Commands

None

## 1.16 show interface summary

Use this command to display the summary on all interfaces or an interface.

### Command Syntax

show interface (*IFNAME*) summary

IFNAME	The interface name
--------	--------------------

### Command Mode

Privileged EXEC

### Default

None

### Usage

This command will display the summary on all interfaces or an interface in the form of list.

### Examples

This example shows how to display the summary on the interface eth-0-1.

Switch# show interface eth-0-1 summary

```
RXBS: rx rate (bits/sec)      RXPS: rx rate (pkts/sec)
TXBS: tx rate (bits/sec)      TXPS: tx rate (pkts/sec)
```

```
Interface Link  RXBS  RXPS  TXBS  TXPS
-----
eth-0-1  DOWN  2      0      0      0
```

## Related Commands

show interface

## 1.17 show ip interface

Use this command to show layer3 interface information.

### Command Syntax

show ip interface (*IFNAME*)

show ip interface brief

IFNAME	The interface name, can be eth, vlan or agg
--------	---

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

This example shows the vlan interface information:

```
Switch# show interface vlan10
```

```
Interface vlan10
  Interface current state: DOWN
  Hardware is VLAN, address is 8633.d260.6500 (bia 8633.d260.6500)
  Bandwidth 1000000 kbits
```

```
Index 4098 , Metric 1 , Encapsulation ARPA
The maximum transmit unit (MTU) is 1500 bytes
VRF binding: not bound
Label switching is disabled
No virtual circuit configured
VRRP master of : VRRP is not configured on this interface
ARP timeout 01:00:00, ARP retry interval 1s
```

## Related Commands

None

## 1.18 switchport

Use this command to configure a port to a bridge (layer 2) or routing (layer 3) mode.

### Command Syntax

switchport

no switchport

### Command Mode

Interface Configuration

### Default

Switchport

### Usage

When using this command to change the mode of a port, all bridge or routing configurations of this port will be cleared and not restored. By default, the port is a switchport.

### Examples

- This example shows how to configure a port to bridge mode:

```
Switch(config)# interface eth-0-1
```

Switch(config-if)# switchport

- This example shows how to configure a port to routing mode:

Switch(config-if)# no switchport

## Related Commands

None

## 1.19 switchport access allowed

Use this command to configure whether the specified VLAN flow can pass this access port.

### Command Syntax

switchport access allowed vlan (add | ove) *vid*

add	Allow the specified VLAN packet pass through this port
remove	Forbid the specified VLAN packet pass through this port
vid	VLAN ID

### Command Mode

Interface Configuration

### Default

None

### Usage

This command is only used for vlan classification.

## Examples

This example shows how to configure the specified VLAN flow pass through the port:

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# switchport access allowed vlan add 10
```

## Related Commands

```
switchport trunk allowed vlan (add vid | remove vid| all | none)
```

## 1.20 switchport access vlan

Use this command to set the default VLAN for access port.

### Command Syntax

```
switchport access vlan vid
```

```
no switchport access vlan
```

vid	VLAN ID
-----	---------

### Command Mode

Interface Configuration

### Default

1

### Usage

Before this command is used, port must be set to access port. By default, VLAN should be 1.

## Examples

- This example shows how to configure the access port to add to default vlan 10:  
Switch(config)# interface eth-0-1  
Switch(config-if)# switchport mode access  
Switch(config-if)# switchport access vlan 10
- This example shows how to configure the access port to restore to default vlan 1:  
Switch(config-if)# no switchport access vlan

## Related Commands

switchport trunk native

## 1.21 switchport mode access

Use this command to configure the port work in access mode.

### Command Syntax

switchport mode access

### Command Mode

Interface Configuration

### Default

Access port

### Usage

When port mode changed, all the dynamic FDB will be cleared.

### Examples

This example shows how to configure the port to access mode.



```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# switchport mode access
```

### **Related Commands**

```
switchport mode trunk
```

## **1.22 switchport mode trunk**

Use this command to configure the port work in trunk mode.

### **Command Syntax**

```
switchport mode trunk
```

### **Command Mode**

Interface Configuration

### **Default**

Access port

### **Usage**

When port mode changed, all the dynamic FDB will be cleared.

### **Examples**

This example shows how to configure the port to trunk mode.

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# switchport mode trunk
```

### **Related Commands**

```
switchport mode access
```

## 1.23 switchport mode dot1q-tunnel

Use this command to configure the port as QINQ port.

### Command Syntax

```
switchport mode dot1q-tunnel
```

### Command Mode

Interface Configuration

### Default

Access Port

### Usage

When port mode changed, all the dynamic FDB will be cleared.

### Examples

This example shows how to configure the port to QINQ mode.

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# switchport mode dot1q-tunnel
```

### Related Commands

```
switchport mode trunk
```

## 1.24 switchport mode trunk ingress-filter

Use this command to enable or disable VLAN ingress filter.

### Command Syntax

```
switchport mode trunk ingress-filter (enable|disable)
```

---

enable	Enable the VLAN ingress filter
disable	Disable the VLAN ingress filter

## Command Mode

Interface Configuration

## Default

Ingress filter Enabled

## Usage

This command should only be used with trunk port. If ingress filter check enabled, the port should only receive packet of allowed VLANs; otherwise if ingress filter check disabled, the port should allow packet of all VLANs.

## Examples

This example shows how to configure enable vlan ingress filter.

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# switchport mode trunk
```

```
Switch(config-if)# switchport mode trunk ingress-filter enable
```

## Related Commands

switchport mode trunk

## 1.25 switchport trunk allowed

Use this command to configure whether the specified VLAN flow can pass this trunk port.

## Command Syntax

switchport trunk allowed vlan (add *vid* | remove *vid* | all | none)

add <i>vid</i>	Allow the specified VLAN flow pass through this port
remove <i>vid</i>	Forbid the specified VLAN flow pass through this port
all	Allow all the VLAN flow pass through this port
none	Forbid all the VLAN flow pass through this port

## Command Mode

Interface Configuration

## Default

1

## Usage

None

## Examples

- This example shows how to configure the specified VLAN flow pass through the port:  
Switch(config)# interface eth-0-1  
Switch(config-if)# switchport trunk allowed vlan add 10
- This example shows how to configure the all VLAN flow pass through the port:  
Switch(config-if)# switchport trunk allowed vlan all
- This example shows how to configure the all VLAN flow can not pass through the port:  
Switch(config-if)# switchport trunk allowed vlan none

## Related Commands

switchport access allowed vlan (add | remove) *vid*

## 1.26 switchport trunk native

Use this command to configure the default VLAN for this trunk port.

### Command Syntax

switchport trunk native vlan *vid*

vid	VLAN ID, range is 2-4094
-----	--------------------------

### Command Mode

Interface Configuration

### Default

1

### Usage

Before this command is used, port must be set to trunk port.

### Examples

This example shows how to configure default vlan 10 for trunk port:

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# switchport mode trunk
```

```
Switch(config-if)# switchport trunk native vlan 10
```

## Related Commands

switchport access vlan *vid*

## 1.27 mtu

Use this command to configure the maximum transmit unit for this interface.

## Command Syntax

(no) mtu *value*

value	MTU range, should be [68, 9000]
-------	---------------------------------

## Command Mode

Interface Configuration

## Default

1500

## Usage

This command is only allowed to be used in layer3 interface.

## Examples

This example shows how to configure MTU 1600 for VLAN interface 10:

```
Switch(config)# interface vlan10
```

```
Switch(config-if)# mtu 1600
```

## Related Commands

None

---

## 1.28 virtual-cable-test

Use this command to configure the maximum transmit unit for this interface.

### Command Syntax

```
start vct interface IFNAME
```

```
show virtual-cable-test interface IFNAME
```

IFNAME	Physical interface
--------	--------------------

### Command Mode

Privileged EXEC

### Default

None

### Usage

The test results are not guaranteed for all manufacturers of cable are accurate, the test results are for reference only.

To execute this command, may affect the normal use of the interface in a short period of time.

### Examples

This example shows how to test eth-0-2 port cable:

```
Switch # start vct interface eth-0-2
```

```
% Make sure this port works on no shutdown mode during VCT test, otherwise the port works abnormal!
```

```
% A VCT test can take a few seconds to run on an interface!
```

```
% Use 'show virtual-cable-test interface eth-0-2' to read the VCT results!
```

```
Switch # show virtual-cable-test interface eth-0-2
```

Interface	Speed	Local_pair	Pair_length	Remote_pair	Pair_status
-----					
eth-0-2	--	Pair A	2 +/- 5 meters	Present	Normal
		Pair B	2 +/- 5 meters	Present	Normal
		Pair C	2 +/- 5 meters	Present	Normal
		Pair D	2 +/- 5 meters	Present	Normal

## Related Commands

None



# 2 Interface Errdisable Commands

---

## 2.1 errdisable detect

Use the interface errdisable detects configuration command to enable errdisable detection.

Use the no form of this command to disable errdisable detection.

### Command Syntax

errdisable detect reason (link-flap | fdb-loop | udld)

no errdisable detect reason (link-flap | fdb-loop | udld)

link-flap	Enable detect Link flap error
fdb-loop	Enable detect FDB loop
udld	Enable detect UDLD error

### Command Mode

Global Configuration

### Default

Enabled

### Usage

Only the link flap can be configured, other errdisable reason can not be configured.

## Examples

- This example shows how to enable errdisable detect link flap:  
Switch(config)# errdisable detect reason link-flap
- This example shows how to disable errdisable detect link flap:  
Switch(config)# no errdisable detect reason link-flap

## Related Commands

show errdisable detect

## 2.2 errdisable recovery interval

Use this command to set the specified timer to recover from the errdisable state. Use the no form of this command to restore to the default interval.

### Command Syntax

errdisable recovery interval *RANGE*

no errdisable recovery interval

RANGE	Recovery interval range in seconds, from 30~86400
-------	---

### Command Mode

Global Configuration

### Default

300

### Usage

The change of interval will not affect already started errdisable recovery timer.

## Examples

- This example shows how to set errdisable recovery to 30 seconds.  
Switch(config)# errdisable recovery interval 30
- This example shows how to set errdisable recovery to default values.  
Switch(config)# no errdisable recovery interval

## Related Commands

errdisable recovery reason

show errdisable recovery

## 2.3 errdisable fdb-loop

Use this command to set FDB-loop check parameter. Use the no form of this command to restore to the default interval.

### Command Syntax

errdisable fdb-loop *MAXSIZE RATE*

no errdisable fdb-loop

MAXSIZE	Token max size of FDB update bucket, advise set to max FDB entry count
RATE	Token add rate of FDB update bucket, advise set to default value 200

### Command Mode

Global Configuration

### Default

*MAXSIZE* is 60000 and *RATE* is 200

## Usage

None

## Examples

- This example shows how to set errdisable fdb-loop to 60000 100.

```
Switch(config)# errdisable fdb-loop 60000 100
```

## Related Commands

errdisable recovery reason

show errdisable recovery

## 2.4 errdisable recovery reason

Use this command to enable error disable detection for a specified cause or all cause. Use the no form of this command to disable the error disable feature.

### Command Syntax

```
errdisable recovery reason (all|bpduguard | bpduloop| port-security|link-flap|  
link-monitor-failure | oam-remote-failure|udld|fdb-loop)
```

```
no errdisable recovery reason (all|bpduguard | bpduloop| port-security|link-flap|  
link-monitor-failure | oam-remote-failure|udld|fdb-loop)
```

all	Enable timer to recover from all reason
bpduguard	Enable timer to recover from BPDU Guard error disable state
bpduloop	Enable timer to recover from BPDU Loopback error disable state
port-security	Enable timer to recover from Port security failure
link-flap	Enable timer to recover from Link flap failure

link-monitor-failure	Enable timer to recover from link monitoring failure
oam-remote-failure	Enable timer to recover from OAM detected remote failure
udld	Enable timer to recover from UDLD failure
fdb-loop	Enable timer to recover from FDB loop failure

## Command Mode

Global Configuration

## Default

Disabled

## Usage

The change of reason will not affect those interfaces have already enter errdisable state.

## Examples

- This example shows how to enable link flap errdisable recovery:  
Switch(config)# errdisable recovery reason link-flap
- This example shows how to disable link flap errdisable recovery:  
Switch(config)# no errdisable recovery reason link-flap

## Related Commands

errdisable recovery interval

show errdisable recovery

## 2.5 errdisable flap

Use this command to set the parameters for link-flap error disable. Use the no form of this command to restore to default value.

## Command Syntax

`errdisable flap reason link-flap count seconds`

`no errdisable flap reason link-flap count seconds`

link-flap	Configure link flap conditions
count	Max flap count, the range is 1~100
seconds	Flap count time in seconds, the range is 1~120

## Command Mode

Global Configuration

## Default

`count = 10, seconds = 10`

## Usage

Only the link flap can be detected. <1-100> is the threshold of flap count, and <1-120> is the count time in seconds for flap count. If the errdisable detect link flap is enabled, will result in link flap errdisable, otherwise, will only print a message in log.

## Examples

- This example shows how to set link flap conditions to 20 times in 60 seconds:  
`Switch(config)# errdisable flap reason link-flap 20 60`
- This example shows how to disable link flap conditions to default:  
`Switch(config)# no errdisable flap reason link-flap`

## Related Commands

`show errdisable flap`

## 2.6 show errdisable detect

Use this command to display the error disable detection reason.

### Command Syntax

```
show errdisable detect
```

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

```
Switch# show errdisable detect
```

```
ErrDisable Reason      Detection status
-----
bpduguard              Enabled
bpduloop               Enabled
link-monitor-failure   Enabled
oam-remote-failure     Enabled
port-security          Enabled
link-flap              Enabled
monitor-link           Enabled
udld                   Enabled
fdb-loop               Enabled
loopback-detection     Enabled
reload-delay           Enabled
```

### Related Commands

```
errdisable detect
```

## 2.7 show errdisable recovery

Use this command to display the error disable recovery timer.

### Command Syntax

```
show errdisable recovery
```

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

```
Switch# show errdisable recovery
```

```
ErrDisable Reason      Timer Status
-----
bpduguard              Disabled
bpduloop               Disabled
link-monitor-failure   Disabled
oam-remote-failure     Disabled
port-security          Disabled
link-flap              Enabled
udld                   Disabled
fdb-loop               Disabled
loopback-detection     Disabled

Timer interval: 300 seconds
```

### Related Commands

errdisable recovery interval

errdisable recovery reason



## 2.8 show errdisable flap

Use this command to display error disable link flap parameters.

### Command Syntax

```
show errdisable flap
```

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

```
Switch# show errdisable flap
```

ErrDisable Reason	Flaps	Time (sec)
link-flap	10	10

### Related Commands

```
errdisable flap
```

# 3

## MAC Address Table Commands

---

### 3.1 mac-address-table ageing-time

Use the `mac-address-table aging-time` global configuration command on the switch to set the length of time that a dynamic entry remains in the MAC address table after the entry is used or updated. Use the `no` form of this command to return to the default setting. The aging time applies to all VLANs.

#### Command Syntax

`mac-address-table ageing-time ageing-time`

`no mac-address-table ageing-time`

<code>ageing-time</code>	Aging time in seconds. The range is 10 to 1000000 seconds
--------------------------	---

#### Command Mode

Global Configuration

#### Default

The default is 300 seconds

## Usage

If packets are not received continuously, user can increase the aging time to make the system recording the dynamic entries for a longer time. Increasing the time can reduce the possibility of flooding when the hosts send again.

## Examples

This example shows how to set the aging time to 200 seconds for all VLANs.

```
Switch(config)# mac-address-table ageing-time 200
```

## Related Commands

```
show mac address-table ageing-time
```

## 3.2 mac-address-table hardware-learning

Use the `mac-address-table hardware-learning enable` global configuration command on the switch to study FDB without software. Use the `no` form of this command to return to the default setting.

## Command Syntax

```
mac-address-table hardware-learning enable
```

```
no mac-address-table hardware-learning enable
```

## Command Mode

Global Configuration

## Default

Disable

## Usage

Hardware learning is more faster than software learning.

## Examples

This example shows how to enable hardware learning:

```
Switch(config)# mac-address-table hardware-learning enable
```

## Related Commands

None

## 3.3 mac-address-table forward

Use the `mac-address-table forward` global configuration command on the switch to add static addresses to the MAC address table. Use the `no` form of this command to remove static entries from the table.

### Command Syntax

```
mac-address-table mac-addr forward interface-id vlan vlan-id
```

```
no mac-address-table mac-addr forward interface-id vlan vlan-id
```

mac-addr	Destination MAC address (unicast or multicast) to add to the address table. Packets with this destination address received in the specified VLAN are forwarded to the specified interface
interface-id	Interface to which the received packet is forwarded. Valid interfaces include physical ports and link aggregation ports
vlan-id	Specify the VLAN for which the packet with the specified MAC address is received. The range is 1 to 4094

### Command Mode

Global Configuration

### Default

None

## Usage

The static address entries which are added by this command are not aged.

## Examples

This example shows how to add the static address c2f3.220a.12f4 to the MAC address table. When a packet is received in VLAN 4 with this MAC address as its destination, the packet is forwarded to the specified interface:

```
Switch(config)# mac-address-table c2f3.220a.12f4 forward eth-0-1 vlan 4
```

## Related Commands

show mac address-table

## 3.4 mac-address-table discard

Use the mac-address-table discard global configuration command on the switch to enable unicast MAC address filtering and to configure the switch to drop traffic with a specific source or destination MAC address. Use the no form of this command to return to the default setting.

## Command Syntax

```
mac-address-table mac-addr discard
```

```
no mac-address-table mac-addr discard
```

mac-addr	Source or Destination MAC address (unicast) to add to the address filtering table
----------	---

## Command Mode

Global Configuration

**Default**

None

**Usage**

Follow these guidelines when using this feature:

Multicast MAC addresses, broadcast MAC addresses, and router MAC addresses are not supported. Packets that are forwarded to the CPU are also not supported.

**Examples**

This example shows how to enable unicast MAC address filtering and to configure the switch to drop packets that have a source or destination address of c2f3.220a.12f4. When a packet is received with this MAC address as its source or destination, the packet is dropped:

```
Switch(config)# mac-address-table c2f3.220a.12f4 discard
```

**Related Commands**

mac-address-table forward

## 3.5 clear mac address-table

Use the clear mac address-table privileged EXEC command on the switch to delete all dynamic(or static, or multicast) addresses, or all dynamic(or static, or multicast) addresses on a particular interface, or all dynamic(or static, or multicast) addresses on a particular VLAN from the MAC address table.

**Command Syntax**

```
clear mac address-table (static | dynamic| multicast) (address mac-addr | interface  
interface-id | vlan vlan-id)
```

<b>dynamic</b>	Delete the dynamic MAC address
<b>static</b>	Delete the static MAC address
<b>multicast</b>	Delete the multicast MAC address
<b>address mac-addr</b>	Delete the specified MAC address
<b>interface interface-id</b>	Delete all MAC addresses on the specified physical port or link aggregation port
<b>vlan vlan-id</b>	Delete all MAC addresses for the specified VLAN. The range is 1 to 4094

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

This example shows how to remove a specific MAC address from the dynamic address table:

```
Switch# clear mac address-table dynamic address 0008.0070.0007
```

### Related Commands

show mac address-table

## 3.6 show mac address-table ageing-time

Use the show mac address-table ageing-time privileged EXEC command to display the aging time of all address table instances on all VLANs.

## Command Syntax

show mac address-table ageing-time

## Command Mode

Privileged EXEC

## Default

None

## Usage

None

## Examples

This is an example of output from the show mac address-table ageing-time command:

```
Switch# show mac address-table ageing-time
```

```
MAC address table ageing time is 300 seconds
```

## Related Commands

mac-address-table ageing-time

## 3.7 show mac address-table

Use the show mac address-table privileged EXEC command to display a specific MAC address table static and dynamic entry or the MAC address table static and dynamic entries on a specific interface or VLAN.

## Command Syntax

```
show mac address-table (dynamic | static | multicast | ) (address mac-addr | interface  
interface-id | vlan vlan-id | )
```



<b>dynamic</b>	Display the dynamic MAC address
<b>static</b>	Display the static MAC address
<b>multicast</b>	Display the multicast MAC address
<b>address mac-addr</b>	Display the specified MAC address
<b>interface interface-id</b>	Display all MAC addresses on the specified physical port or link aggregation port
<b>vlan vlan-id</b>	Display all MAC addresses for the specified VLAN. The range is 1 to 4094

## Command Mode

Privileged EXEC

## Default

None

## Usage

None

## Examples

This is an example of output from the show mac address-table command:

Switch# show mac address-table

```

Mac Address Table
-----
(*) - Security Entry
Vlan  Mac Address      Type      Ports
----  -
1     0000.0000.0001   static    eth-0-2
1     0000.0001.0003   static(*) eth-0-1
1     0000.0001.0002   static(*) eth-0-1
2     26fc.72e5.0100   dynamic(*) eth-0-9
1     0100.0000.0001   static    eth-0-2
                                           eth-0-1
  
```

## Related Commands

mac-address-table

show mac address-table add-fdb-fail

## 3.8 show mac address-table hardware

Use the show mac address-table hardware privileged EXEC command to display a specific MAC address table static and dynamic entry or the MAC address table static and dynamic entries on a specific interface or VLAN in hardware.

### Command Syntax

```
show mac address-table hardware (dynamic | static | ) (address mac-addr | interface  
interface-id | vlan vlan-id | )
```

<b>dynamic</b>	Display the dynamic MAC address
<b>static</b>	Display the static MAC address
<b>address</b> <i>mac-addr</i>	Display the specified MAC address
<b>interface</b> <i>interface-id</i>	Display all MAC addresses on the specified physical port or link aggregation port
<b>vlan</b> <i>vlan-id</i>	Display all MAC addresses for the specified VLAN. The range is 1 to 4094

### Command Mode

Privileged EXEC

### Default

None

## Usage

None

## Examples

This is an example of output from the show mac address-table hardware command:

```
Switch# show mac address-table hardware
```

```
Mac Address Table
-----
(*) - Security Entry
Vlan  Mac Address      Type           Ports
----  -
1     0000.0000.0001   static        eth-0-2
1     0000.0001.0003   static(*)     eth-0-1
1     0000.0001.0002   static(*)     eth-0-1
2     26fc.72e5.0100   dynamic(*)    eth-0-9
1     0100.0000.0001   static        eth-0-2
                               eth-0-1
```

## Related Commands

None

## 3.9 show mac address-table count

Use the show mac address-table count privileged EXEC command to display the number of addresses present in all VLANs.

### Command Syntax

```
show mac address-table count
```

### Command Mode

Privileged EXEC

**Default**

None

**Usage**

None

**Examples**

This is an example of output from the show mac address-table count command:

```
Switch# show mac address-table count
```

```
Dynamic Address Count   : 1   (Security: 0)
Static Address Count    : 1   (Security: 0)
Total Mac Addresses     : 2   (Security: 0)
```

**Related Commands**

```
show mac address-table
```

## 3.10 show mac address-table add-fdb-fail

Use the show mac address-table add-fdb-fail privileged EXEC command to display all failed static FDB entries when adding FDB table in chip for hash conflict.

**Command Syntax**

```
show mac address-table add-fdb-fail
```

**Command Mode**

Privileged EXEC

**Default**None

---

**Usage**

None

**Examples**

This is an example of output from the show mac address-table add-fdb-fail command:

```
Switch# show mac address-table add-fdb-fail
```

Vlan	Mac Address	Type	Ports
1	0000.0000.0001	static	eth-0-1
1	0000.0000.0002	static	eth-0-2

**Related Commands**

mac-address-table

show mac address-table

### 3.11 show mac-filter address-table

Use the show mac-filter address-table privileged EXEC command to display the number of filter addresses present in all VLANs.

**Command Syntax**

show mac-filter address-table

**Command Mode**

Privileged EXEC

**Default**

None

**Usage**None

---

## Examples

This is an example of output from the show mac-filter address-table command:

```
Switch# show mac-filter address-table
```

```
MAC Filter Address Table
-----
Current count      : 1
Max count         : 256
Left count        : 255
Filter address list :
-----
0000.000a.000a
```

## Related Commands

```
show mac address-table
```

## 3.12 show resource mac-filter

Use this command to display the resource statistic used by mac-filter.

### Command Syntax

```
show resource mac-filter
```

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

## Examples

The following is sample output from the show resource mac-filter command.

Switch# show resource mac-filter

```
MAC-FILTER
Resource                Used      Capability
=====
Blackhole MAC Addresses    0        256
```

## Related Commands

show resource static-fdb

## 3.13 show resource static-fdb

Use this command to display the resource statistic used by static FDB.

### Command Syntax

show resource static-fdb

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

The following is sample output from the show resource static-fdb command:

Switch# show resource static-fdb

```
STATIC-FDB
Resource                Used      Capability
=====
Static FDB                0        1024
```

**Related Commands**

show resource mac-filter



# 4 VLAN Commands

---

## 4.1 vlan database

Use this command to enter VLAN configure mode.

### Command Syntax

```
vlan database
```

### Command Mode

Global Configuration

### Default

None

### Usage

When you try to create or remove VLAN, you must use this command to enter VLAN configure mode first. To exit VLAN configure mode, use exit command.

### Examples

- This example shows how to enter VLAN configure mode:

```
Switch(config)# vlan database
```

```
Switch(config-vlan)#
```

- This example shows how to exit VLAN configure mode:

```
Switch(config-vlan)# exit
```

Switch(config)#

## Related Commands

exit

## 4.2 vlan

Use the `vlan` VLAN configuration command to configure VLAN characteristics for a VLAN in the VLAN database. Use the `no` form of this command to delete a VLAN.

### Command Syntax

`vlan vlan (name name) (state (enable |disable))`

`no vlan vlan`

<code>vlan</code>	Vlan id, the range is 1~4094
<code>name <i>name</i></code>	the name for specific vlan, no more than 16 characters
<code>enable</code>	set the operational state of the VLAN to enable, and it is enabled by default
<code>disable</code>	set the operational state of the VLAN to disable

### Command Mode

VLAN Configuration

### Default

VLAN 1 is the default VLAN and all ports have been added to it by default.

### Usage

Default VLAN 1 can not be removed.

## Examples

- This example shows how to create VLAN 11 and named it to “vlan11”:

```
Switch(config-vlan)# vlan 11 name vlan11 state enable
```

- This example shows how to remove VLAN 11:

```
Switch(config-vlan)# no vlan 11
```

## Related Commands

**vlan** VLAN\_LIST

show vlan *vlan*

show vlan all

## 4.3 vlan port

Use the `vlan VLAN` configuration command to add VLAN to port. Use the `no` form of this command to remove VLAN from port.

### Command Syntax

```
vlan vlan port slot slotid port portid
```

```
no vlan vlan port slot slotid port portid
```

vlan	Vlan id, the range is 1~4094
<b>slot</b> slotid	The slot id of the port
port portid	The port id of the port

### Command Mode

VLAN Configuration

**Default**

None

**Usage**

None

**Examples**

- This example shows how to add VLAN 11 to eth-0-4:  
Switch(config-vlan)# vlan 11 port slot 0 port 4

**Related Commands****vlan** VLAN\_LIST

## 4.4 vlan VLAN\_LIST

Use the `vlan VLAN_LIST` configuration command to add a normal-range VLANs to the VLAN database.

**Command Syntax****vlan** VLAN\_LIST**no vlan** VLAN\_LIST

VLAN\_LIST

vlan list connected with '-' and ',', for example, "1-10,15,20,30-40"

**Command Mode**VLAN Configuration

---

## Default

Vlan 1 is the default vlan and all ports have been added to it by default.

## Usage

The vlan list should be connected with '-' and ',' , the value should be in the range of <1-4094> and should be ascending order.

Default VLAN 1 can not be removed.

## Examples

- This example shows how to add vlans of “100,200,300-400”:  
Switch(config-vlan)# vlan 100,200,300-400
- This example shows how to remove vlans of “100,200,300-400”:  
Switch(config-vlan)# no vlan 100,200,300-400

## Related Commands

**vlan** <1-4094>

show vlan *vlan*

show vlan all

## 4.5 show vlan

Use this command to display specific vlan information.

### Command Syntax

show vlan *vlan*

vlan	Vlan id, the range is 1~4094
------	------------------------------

**Command Mode**

Privileged EXEC

**Default**

None

**Usage**

This command is used to display VLAN property including name, state, stp id, DSCP, member ports.

**Examples**

This example shows how to display the information on VLAN 11:

```
Switch# show vlan 11
```

**Related Commands**

show vlan all

## 4.6 show vlan all

Use this command to show the information of all the VLAN.

**Command Syntax**

```
show vlan all
```

**Command Mode**

Privileged EXEC

**Default**

None

**Usage**

This command is used to display all VLAN property including name, state, stp id, DSCP, member ports.

**Examples**

This example shows how to display the information on VLAN all:

```
Switch# show vlan all
```

**Related Commands**

```
show vlan vlan
```

## 4.7 show vlan brief

Use this command to show the brief information on VLAN.

**Command Syntax**

```
show vlan brief
```

**Command Mode**

Privileged EXEC

**Default**

None

**Usage**

This command is used to display all VLAN information for all bridges, including static and dynamic.

**Examples**

This example shows how to display the brief information on VLAN:

```
Switch# show vlan brief
```

### Related Commands

```
show vlan vlan
```

## 4.8 show interface switchport

Use this command to show the vlan configurations on all bridge ports or a bridge port.

### Command Syntax

```
show interface switchport (interface IFNAME)
```

IFNAME	Interface name
--------	----------------

### Command Mode

Privileged EXEC

### Default

None

### Usage

This command is used to display one or all VLAN's L2 configurations.

### Examples

This example shows how to display the vlan configurations on all bridge ports or a bridge port:

```
Switch# show interface switchport interface eth-0-1
```



## Related Commands

switchport mode access

switchport mode trunk

## 4.9 switchport access allowed

Use this command to allow or not allow the traffic from the specific VLAN to pass the access port.

### Command Syntax

switchport access allowed vlan (add | remove) *vlan*

add	Allow the traffic from the vlan to pass the access port
remove	Not allow the traffic from the vlan to pass the access port
vlan	Vlan list connected with '-' and ',', for example, "1-10,15,20,30-40"

### Command Mode

Interface Configuration

### Default

None

### Usage

This command is used to allow the traffic from the specific VLAN to pass the access port.

### Examples

This example shows how to allow the traffic from the vlan11 to pass the port:

```
Switch(config-if)# switchport access allowed vlan add 11
```

This example shows how to refuse the traffic from the vlan12 to pass the port:

```
Switch(config-if)# switchport access allowed vlan remove 12
```

### Related Commands

switchport trunk allowed

## 4.10 switchport access vlan

Use this command to set the access port to a specified VLAN.

To set the access port to default VLAN 1, use no form of this command.

### Command Syntax

```
switchport access vlan vlan
```

```
no switchport access vlan
```

vlan	Vlan id, the range is 2~4094
------	------------------------------

### Command Mode

Interface Configuration

### Default

All the ports are added to vlan 1 by default

### Usage

The port should be an access port by switchport mode access command before add to vlan by this command.

## Examples

This example shows how to add the port to vlan 11:

```
Switch(config-if)# switchport access vlan 11
```

This example shows how to return the port to default vlan 1:

```
Switch(config-if)# no switchport access vlan.
```

## Related Commands

switchport mode access

## 4.11 switchport mode access

Use this command to set the switchport mode to access.

### Command Syntax

switchport mode access

### Command Mode

Interface Configuration

### Default

None

### Usage

The access mode is usually used to connect the port to a terminal device, such as a PC.

When the mode is changed, both the MAC learnt dynamically and configured statically on the port will be cleared.

## Examples

This example shows how to set the switchport mode to access:

Switch(config-if)# switchport mode access

### **Related Commands**

switchport mode trunk

## **4.12 switchport mode trunk**

Use this command to set the switchport mode to trunk. Use the switchport mode access command to set the switchport mode to default.

### **Command Syntax**

switchport mode trunk

### **Command Mode**

Interface Configuration

### **Default**

None

### **Usage**

The trunk mode is usually used to connect the port with other switch.

The trunk mode is can also used to connect the port with host device.

When the mode is changed, both the MAC learnt dynamically and configured statically on the port will be cleared.

### **Examples**

This example shows how to set the switchport mode to trunk:

```
Switch(config-if)# switchport mode trunk
```

**Related Commands**

switchport mode access

## 4.13 switchport mode trunk ingress-filter

Use this command to set ingress-filter configuration of the trunk port.

**Command Syntax**

switchport mode trunk ingress-filter (enable |disable)

enable	Enable the ingress-filter
disable	Disable the ingress-filter

**Command Mode**

Interface Configuration

**Default**

Enable

**Usage**

The trunk port ingress-filter configuration should only be allowed on a trunk port.

When the ingress-filter is disabled, this port will not check the VLAN ID of received ingress packets.

**Examples**

This example shows how to set the trunk port ingress-filter to disable.

```
Switch(config-if)# switchport mode trunk ingress-filter disable
```

## Related Commands

switchport mode trunk

## 4.14 switchport trunk allowed

Use this command to allow traffic from specified VLAN to transmit the trunk port.

To remove this setting, use the no form of this command.

### Command Syntax

switchport trunk allowed vlan (add *vlan* | remove *vlan* | all | none)

no switchport trunk

<b>add</b> vlan	allow the traffic from the specified vlan to transmit the trunk port. Vlan list connected with '-' and ',', for example, "1-10,15,20,30-40"
remove vlan	do not allow the traffic from the specified vlan to transmit the trunk port. Vlan list connected with '-' and ',', for example, "1-10,15,20,30-40"
all	allow the traffic from all the vlan to transmit the trunk port
none	do not allow the traffic from all the vlan to transmit the trunk port

### Command Mode

Interface Configuration

### Default

None

### Usage

This command is used to allow traffic from specified VLAN to transmit the trunk port.

## Examples

This example shows how to allow traffic from vlan11,12 to transmit the trunk port:

```
Switch(config-if)# switchport trunk allowed vlan add 11,12
```

This example shows how to refuse traffic from vlan11,12 to transmit the trunk port:

```
Switch(config-if)# switchport trunk allowed vlan remove 11,12
```

This example shows how to allow traffic from all vlan to transmit the trunk port:

```
Switch(config-if)# switchport trunk allowed vlan all
```

This example shows how to refuse traffic from all vlan to transmit the trunk port:

```
Switch(config-if)# switchport trunk allowed vlan none
```

## Related Commands

switchport access allowed

## 4.15 switchport trunk native

Use this command to set the native VLAN for sending and receiving untagged traffic.

To return the native VLAN to default value, use the no form of this command.

### Command Syntax

switchport trunk native vlan *vlan*

no switchport trunk native vlan

vlan	An existing Vlan id, the range is 2~4094
------	--

### Command Mode

Interface Configuration

**Default**

vlan 1

**Usage**

This command is used to set the native VLAN for sending and receiving untagged traffic.

**Examples**

This example shows how to set the native vlan to vlan 10 on the interface:

```
Switch(config-if)# switchport trunk native vlan 10
```

This example shows how to return the native vlan to default on the interface:

```
Switch(config-if)# no switchport trunk native vlan
```

**Related Commands**

switchport trunk allowed

## 4.16 vlan bridge disable

Use this command to disable bridge function on specific VLAN. To enable it, use the no form of this command.

**Command Syntax**

vlan *vlan* bridge disable

no vlan *vlan* bridge disable

vlan	Vlan id, the range is 1~4094
------	------------------------------



**Command Mode**

VLAN Configuration

**Default**

Vlan bridge enable

**Usage**

None

**Examples**

This example shows how to disable bridge function on VLAN 2:

```
Switch(config-vlan)# vlan 2 bridge disable
```

This example shows how to enable bridge function on VLAN 2:

```
Switch(config-vlan)# no vlan 2 bridge disable
```

**Related Commands**

None

# 5 Voice VLAN Commands

---

## 5.1 voice vlan

Use this command to specific VLAN as VOICE VLAN.

### Command Syntax

```
voice vlan vlan_id
```

```
no voice vlan
```

vlan_id	Vlan id, the range is 2~4094
---------	------------------------------

### Command Mode

Global Configuration

### Default

Voice VLAN is disable

### Usage

This command is enabled VOICE VLAN.

### Examples

This example shows how to enable VLAN 2 as VOICE VLAN:

```
Switch(config)# voice vlan 2
```

## Related Commands

qos enable

## 5.2 voice vlan security enable

Use this command to enable VOICE VLAN security.

### Command Syntax

voice vlan security enable

no voice vlan security enable

### Command Mode

Global Configuration

### Default

By default the mode is security.

### Usage

If the security is enabled, all the packet that whose MAC is mismatched with OUI will be dropped in VOICE VLAN.

### Examples

This example shows how to enable security:

```
Switch(config)# voice vlan security enable
```

### Related Commands

show voice vlan state

## 5.3 voice vlan set cos to

Use this command to set COS for VOICE packet.

### Command Syntax

```
voice vlan set cos to <0-7>
```

```
no voice vlan set cos
```

### Command Mode

Global Configuration

### Default

By default the phb is 5

### Usage

This command is used to set COS for VOICE packet in global configuration.

### Examples

This example shows how to set cos to 7:

```
Switch(config)# voice vlan set costo 7
```

### Related Commands

```
show voice vlan state
```

## 5.4 voice vlan mac-address

Use this command to add OUI to system.

### Command Syntax

```
voice vlan mac-address MAC MASK description LINE
```

no voice vlan mac-address *MAC*

MAC	Source MAC address (unicast or multicast) to add to the address table
MASK	The MASK for the Source MAC
LINE	The description for this OUI

## Command Mode

Global Configuration

## Default

There are 5 default OUI in the system.:

0003-6b00-0000 Cisco phone

000f-e200-0000 H3C Aolynk phone

00d0-1e00-0000 Pingtel phone

00e0-7500-0000 Polycom phone

00e0-bb00-0000 3Com phone

## Usage

This command is used to add OUI to system database. The packet will be considered as VOICE VLAN packet when the source MAC match the OUI.

## Examples

This example shows how to add OUI to system:

```
Switch(config)# voice vlan mac-address 0034.3400.0000 FFFF.FF00.0000 description test
```

## Related Commands

show voice vlan state

## 5.5 voice vlan enable

Use this command to enable VOICE VLAN on port.

### Command Syntax

voice vlan enable

no voice vlan enable

### Command Mode

Interface Configuration

### Default

VOICE VLAN is disable on port

### Usage

This command is used to enable VOICE VLAN on port.

### Examples

This example shows how to enable VOICE VLAN on port:

```
Switch(config-if)# voice vlan enable
```

### Related Commands

show voice vlan state

## 5.6 show voice vlan state

Use this command to show the current status of VOICE VLAN.

### Command Syntax

show voice vlan state

**Command Mode**

Privileged EXEC

**Default**

None

**Usage**

This command is used to show the current status of VOICEC VLAN.

**Examples**

This example shows how to show the current status of VOICEC VLAN:

```
Switch# show voice vlan state
```

**Related Commands**

None

## 5.7 debug voice vlan

Use this command to show the current status of VOICEC VLAN.

**Command Syntax**

debug voice vlan (all | events)

no debug voice vlan (all | events)

all	Debug all VOICEC VLAN info
events	Debug VOICEC VLAN event info

**Command Mode**

Privileged EXEC

**Default**

None

**Usage**

This command is used to debug VOICE VLAN

**Examples**

This example shows how to debug VOICE VLAN

```
Switch# debug voice vlan all
```

**Related Commands**

show debugging voice vlan all



# 6 VLAN Classification Commands

---

## 6.1 vlan classifier activate

Use this command to apply vlan classifier group to an interface.

To remove it, use the no form of this command.

### Command Syntax

vlan classifier activate *group-id* based ( ip | mac | protocol )

no vlan classifier activate

group-id	VLAN classifier group id, only group id 31 can be used for protocol ,the is 0~31
ip	Based on ip
mac	Based on MAC
protocol	Based on protocol

### Command Mode

Interface Configuration

### Default

None

## Usage

An interface can only be applied by one vlan classifier group.

One vlan classifier group can apply more than one interface.

This command applies vlan classifier group to interface, and the interface can classify packets to different vlan according to the rule in vlan classifier group.

To create the rule, refer to vlan classifier rule command.

To create the group, refer to vlan classifier group command.

## Examples

This example shows how to apply vlan classifier group 1 to the interface:

```
Switch(config-if)# vlan classifier activate 1 based ip
```

This example shows how to remove the vlan classifier group 1 from the interface:

```
Switch(config-if)# no vlan classifier activate
```

## Related Commands

vlan classifier group

vlan classifier rule

## 6.2 vlan classifier group

Use this command to add or delete rule to vlan classifier group. Use the no form of this command to delete the group.

### Command Syntax

```
vlan classifier group group ( add | delete ) rule rule
```

```
no vlan classifier group group
```

group	The id of vlan classifier group, only group id 31 can be used for protocol, <0 - 31>
add	Add rule to vlan classifier group
delete	Delete rule to vlan classifier group
rule	The id of rule

## Command Mode

Global Configuration

## Default

None

## Usage

To create the rule, refer to vlan classifier rule command.

To apply the vlan classifier group to an interface, refer to vlan classifier activate command.

When add a rule to the group by this command, the rule will be active immediately if the group has been applied to an interface already.

When delete a rule from the group by this command, the rule on this interface will be inactive immediately if the group is still applied to that interface.

The vlan classifier group will be deleted when the last rule on this group is deleted.

## Examples

This example shows how to add rule1 to vlan classifier group 1:

```
Switch(config)# vlan classifier group 1 add rule 1
```

This example shows how to delete rule1 from vlan classifier group 1:

```
Switch(config)# vlan classifier group 1 delete rule 1
```

This example shows how to delete vlan classifier group 1:

Switch(config)# no vlan classifier group 1

## Related Commands

vlan classifier activate

vlan classifier rule

## 6.3 vlan classifier rule

Use this command to create vlan classifier rule.

To remove the vlan classifier rule, use the no form of this command.

### Command Syntax

vlan classifier rule *rule* ( ip *ipv4\_address* | mac *mac\_address* | protocol (arp | ip | mpls | mpls-mcast | pppoe | rarp ) ) vlan *vlan-id*

no vlan classifier rule *rule*

rule	The id of vlan classifier rule, <0 - 4095>
ip <i>ipv4_address</i>	The source of ipv4 address in packets
mac <i>mac_address</i>	The source of mac address in packets
protocol	Specify an ethernet protocol classification
arp	Specify ARP protocol
ip	Specify IP protocol
mpls	Specify MPLS protocol
mpls-mcast	Specify MPLS multi cast protocol
pppoe	Specify PPPOE protocol
rarp	Specify RARP protocol
vlan-id	The vlan id to be assigned, <1 - 4094>

## Command Mode

Global Configuration

## Default

None

## Usage

The rule will be effective only in inbound on interface.

The vlan id assigned by vlan classifier rule will be appended to the packets which match the rule.

To add this rule to vlan classifier group or apply the group to an interface, refer to vlan classifier group and vlan classifier activate command.

## Examples

This example shows how to create rule1 which will classify all ipv4 packets to vlan11:

```
Switch(config)# vlan classifier rule 1 protocol ip vlan 11
```

This example shows how to delete rule1:

```
Switch(config)# no vlan classifier rule 1
```

## Related Commands

vlan classifier group

vlan classifier activate

## 6.4 show vlan classifier group

Use this command to show the information about vlan classifier group.

## Command Syntax

show vlan classifier group *group*

group	The id of vlan classifier group, <0 - 31>
-------	---

## Command Mode

Privileged EXEC

## Default

None

## Usage

None

## Examples

This example shows how to display information about vlan classifier group 1:

```
Switch# show vlan classifier group 1
```

## Related Commands

show vlan classifier interface

show vlan classifier rule

## 6.5 show vlan classifier interface

Use this command to show the information about vlan classifier group on interface.

## Command Syntax

show vlan classifier interface group *group*

group	The id of vlan classifier group, the range is 0~31
-------	--

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

This example shows how to display information about vlan classifier group 1 on interface:

```
Switch# show vlan classifier interface group 1
```

### Related Commands

show vlan classifier group

show vlan classifier rule

## 6.6 show vlan classifier rule

Use this command to show the information about vlan classifier rule.

### Command Syntax

```
show vlan classifier rule (rule )
```

rule	The id of vlan classifier rule, the range is 0~4095
------	---

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

This example shows how to display information about all the vlan classifier rules:

```
Switch# show vlan classifier rule
```

This example shows how to display information about the vlan classifier rule1:

```
Switch# show vlan classifier rule 1
```

### Related Commands

show vlan classifier group

show vlan classifier interface

## 6.7 show resource vlan-classification

Use this command to display the resource statistic used by vlan classification rules.

### Command Syntax

```
show resource vlan-classification
```



**Command Mode**

Privileged EXEC

**Default**

None

**Usage**

None

**Examples**

The following is sample output from the show resource vlan-classification command:

```
Switch# show resource vlan-classification
```

```
VLAN-CLASS
Resource                Used      Capability
=====
MAC Based VLAN Classification  0        255
IPv4 Based VLAN Classification  0        255
```

**Related Commands**

None

# 7

## VLAN Mapping Commands

---

### 7.1 ethernet evc

Use this command to add or delete EVC table.

#### Command Syntax

ethernet evc *WORD*

no ethernet evc *WORD*

WORD	EVC name
------	----------

#### Command Mode

Global Configuration

#### Default

None

#### Usage

None

#### Examples

Create ethernet evc evc\_table.

Switch(config)# ethernet evc evc\_table

```
Switch(config-evc)# dot1q mapped-vlan 10
```

### Related Commands

```
show ethernet evc NAME
```

## 7.2 dot1q mapped-vlan

Use this command to add evc entry to EVC table.

### Command Syntax

```
dot1q mapped-vlan VLAN_ID
```

```
no dot1q mapped-vlan
```

VLAN_ID	Mapped vlan id, the range is 1~4094
IFNMAE	Forward interface name

### Command Mode

EVC Configuration

### Default

None

### Usage

None

### Examples

Add EVC mapped-vlan entry, mapped vlan is 100:

```
Switch(config)# ethernet evc evc_table
```

```
Switch(config-evc)# dot1q mapped-vlan 100
```

Add EVC mapped-vlan entry, mapped vlan is 101, forward interface eth-0-1:

```
Switch(config)# ethernet evc evc_table
```

```
Switch(config-evc)# dot1q mapped-vlan 10 forward interface eth-0-1
```

## Related Commands

```
show ethernet evc NAME
```

## 7.3 dot1q mapped-double-vlan

Use this command to add evc entry with double vlans to EVC table.

### Command Syntax

```
dot1q mapped-double-vlan inner-vlan outer-vlan
```

```
no dot1q mapped-double-vlan
```

inner-vlan	Mapped inner vlan id, the range is1~4094
outer-vlan	Mapped outer vlan id, the range is1~4094

### Command Mode

EVC Configuration

### Default

None

## Usage

This command is only used for untagged packet

## Examples

Add EVC mapped-vlan entry, mapped inner vlan is 100, mapped outer vlan is 10:

```
Switch(config)# ethernet evc evc_table
```

```
Switch(config-evc)# dot1q mapped-double-vlan 100 10
```

## Related Commands

```
show ethernet evc NAME
```

## 7.4 vlan mapping table

Use this command to add or delete vlan mapping table.

### Command Syntax

```
vlan mapping table WORD
```

```
no vlan mapping table WORD
```

WORD	The name of vlan mapping table
------	--------------------------------

### Command Mode

Global Configuration

### Default

None

## Usage

None

## Examples

Create vlan mapping table VMT.

```
Switch(config)# vlan mapping table VMT
```

```
Switch(config-vlan-mapping)#
```

## Related Commands

```
show vlan mapping table WORD
```

## 7.5 raw vlan group

Use this command to create raw VLAN group.

### Command Syntax

```
raw vlan GROUP_ID vlan VLAN_LIST
```

```
no raw vlan GROUP_ID
```

GROUP_ID	Raw vlan group id, range from 1~64.
VLAN_LIST	The VLAN ID list, example: 2-5,9-11

### Command Mode

Global Configuration

### Default

None

## Usage

None

## Examples

Create raw VLAN group 1 and the VLAN list is from 10 to 20

```
Switch(config)# raw vlan group 1 vlan 10-20
```

## Related Commands

```
show vlan mapping table WORD
```

## 7.6 raw-vlan

Use this command to add vlan mapping entry into vlan mapping table.

### Command Syntax

```
raw-vlan (VLAN_ID | out-of-range | untagged | group GROUP_ID) evc WORD
```

```
no raw-vlan (VLAN_ID | out-of-range | untagged )
```

VLAN_ID	Raw vlan id, range from 1~4094, the format could be 1,2,3 or 1~20.
out-of-range	Vlan id isn't specified
untagged	Untagged packet
group GROUP_ID	Raw VLAN group, The group will use less resource compare with VLAN range.
WORD	EVC name

### Command Mode

VLAN Mapping Configuration

**Default**

None

**Usage**

None

**Examples**

Add vlan mapping entry, raw vlan is from 10 to 20, mapped evc is evc\_table:

```
Switch(config)# vlan mapping table VMT
```

```
Switch(config-vlan-mapping)# raw-vlan 10-20 evc evc_table
```

**Related Commands**

```
show vlan mapping table WORD
```

## 7.7 show vlan mapping table

Use this command to display current vlan mapping table.

**Command Syntax**

```
show vlan mapping table (WORD )
```

WORD	The vlan mapping table to be displayed
------	--

**Command Mode**

Privileged EXEC

**Default**None

---



## Usage

None

## Examples

This example show all vlan mapping table existed in system.

Switch# show vlan mapping table

Table Name	EVC Name	Mapped VLAN	Forward Interface	Raw VLAN
VMT	evc_table	100	n/a	10-20
VMT_double	evc_double	10(100)	n/a	untagged
VMT_forward	evc_forward	20	eth-0-9	30

## Related Commands

show vlan mapping table applied-interface

## 7.8 show vlan mapping table applied-interface

Use this command to display who is using the vlan mapping table of interface.

### Command Syntax

show vlan mapping table applied-interface

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

## Examples

This example show which interface used the vlan mapping table.

Switch# show vlan mapping table applied-interface

Table Name	Interface Name	Type
VMT	eth-0-1	802.1Q-Tunnel

## Related Commands

show vlan mapping table *WORD*

## 7.9 switchport mode

Use this command to configure switchport mode

### Command Syntax

switchport mode ( access | trunk | dot1q-tunne )

no switchport dot1q-tunnel

access	Configure this port to access port
trunk	Configure this port to trunk port
dot1q-tunne	Configure this port to dot1q-tunnel port

### Command Mode

Interface configuration

### Default

None

**Usage**

This command is used to configure a switchport to dot1q-tunnel port.

**Examples**

This example shows how to configure a switchport to dot1q-tunnel port.

```
Switch(config-if)# switchport mode dot1q-tunnel
```

**Related Commands**

```
show interface switchport
```

## 7.10 switchport dot1q-tunnel type

Use this command to configure dot1q-tunnel type.

**Command Syntax**

```
switchport dot1q-tunnel type ( basic | selective )
```

basic	Dot1q-tunnel basic type
selective	Dot1q-tunnel selective type

**Command Mode**

Interface configuration

**Default**

basic type

**Usage**

None

## Examples

This command is used to configure dot1q-tunnel type.

```
Switch(config-if)# switchport dot1q-tunnel type selective
```

## Related Commands

```
show interface switchport
```

## 7.11 switchport dot1q-tunnel native

Use this command to configure a switch-port's default vlan.

### Command Syntax

```
switchport dot1q-tunnel native (vlan | inner-vlan) VLAN_ID
```

```
no switchport dot1q-tunnel native vlan
```

vlan	VLAN that will be added
inner-vlan	Untagged inner VLAN
VLAN_ID	Vlan Id, <1-4094>

### Command Mode

Interface configuration

### Default

None

### Usage

None

## Examples

Configure the eth-0-1 to dot1q-tunnel and configure this port's native to vlan 10:

```
Switch(config)# vlan database
```

```
Switch(config-vlan)# vlan 100
```

```
Switch(config-vlan)# exit
```

```
Switch(config)# interface eth-0-23
```

```
Switch(config-if)# switchport mode dot1q-tunnel
```

```
Switch(config-if)# switchport dot1q-tunnel native vlan 100
```

## Related Commands

None

## 7.12 switchport dot1q-tunnel allow vlan

Use this command to configure dot1q-tunnel allowed vlan.

### Command Syntax

```
switchport dot1q-tunnel allow vlan (all | none | add VLAN_ID | remove VLAN_ID)
```

all	Add all VLANs to the allowed VLAN list
none	Remove all VLANs from the allowed VLAN list
<b>add</b> <i>VLAN_ID</i>	Add VLANs to the allowed VLAN list, <1-4094>
<b>remove</b> <i>VLAN_ID</i>	Remove VLANs from the allowed VLAN list, <1-4094>

### Command Mode

Interface Configuration

---

**Default**

None

**Usage**

None

**Examples**

Configure dot1q-tunnel allowed vlan 100 on interface:

```
Switch(config-if)# switchport dot1q-tunnel allowed vlan add 100
```

**Related Commands**

```
show vlan brief
```

## 7.13 switchport dot1q-tunnel vlan mapping table

Use this command to apply vlan mapping table on selective dot1q tunnel port.

**Command Syntax**

```
switchport dot1q-tunnel vlan mapping table WORD
```

```
no switchport dot1q-tunnel vlan mapping table
```

WORD	VLAN mapping table name
------	-------------------------

**Command Mode**

Interface configuration

**Default**None

---

**Usage**

Apply exist vlan mapping table on dot1q-tunnel port. The type of dot1q-tunnel port should be selective.

**Examples**

The following is a sample that applying vlan mapping table on selective dot1q tunnel port:

```
Switch(config-if)# switchport dot1q-tunnel vlan mapping table mp
```

**Related Commands**

```
show interface switchport
```

## 7.14 switchport trunk vlan-translation

Use this command to enable vlan translation.

**Command Syntax**

```
switchport trunk vlan-translation
```

```
no switchport trunk vlan-translation
```

**Command Mode**

Interface Configuration

**Default**

None

**Usage**

Use this command to enable vlan translation on trunk port. Only trunk port can enable vlan translation.

## Examples

The following is a sample that enabling vlan translation on trunk port:

```
Switch(config-if)# switchport mode trunk
```

```
Switch(config-if)# switchport trunk vlan-translation
```

## Related Commands

```
show interface switchport
```

## 7.15 switchport trunk vlan-translation mapping table

Use this command to apply vlan mapping table on vlan translation port.

### Command Syntax

```
switchport trunk vlan-translation mapping table WORD
```

```
no switchport trunk vlan-translation mapping table
```

WORD	VLAN mapping table name
------	-------------------------

### Command Mode

Interface Configuration

### Default

None

### Usage

Use this command to apply vlan mapping on vlan translation port.



## Examples

The following is a sample that applying vlan mapping on vlan translation port:

```
Switch(config-if)# switchport trunk vlan-translation vlan mapping table map_table
```

## Related Commands

```
show interface switchport
```

## 7.16 vlan dot1q tag native

Use this command to enable tagging all native vlan.

### Command Syntax

```
vlan dot1q tag native
```

```
no vlan dot1q tag native
```

### Command Mode

Interface Configuration

### Default

None

### Usage

Use this command to enable tagging native. If enabled, the packet in native vlan will be tagged with the native vlan. Otherwise, it will be untagged.

## Examples

The following is a sample that enabling tagging native vlan on interface:

```
Switch(config-if)# vlan dot1q tag native
```

## Related Commands

None

## 7.17 show resource vlan-mapping

Use this command to display the resource statistic used by vlan mapping table.

### Command Syntax

```
show resource vlan-mapping
```

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

The following is sample output from the show resource vlan-mapping command.

```
Switch# show resource vlan-mapping
```

```
VLAN-MAPPING
Resource                Used      Capability
=====
Applied VLAN Mapping Entry  0        191
```

### Related Commands

None

# 8 Link Aggregation Commands

---

## 8.1 channel-group

Use this command to assign a port to a channel group. Use the no form of this command to remove a port from a channel group.

### Command Syntax

channel-group *channel-group-number* mode (active | passive)

no channel-group

channel-group-number	<1-31>
active	Enable initiation of LACP negotiation on a port
passive	Disable initiation of LACP negotiation on a port

### Command Mode

Interface Configuration

### Default

None

### Usage

None

## Examples

This example shows how to assign a port to a channel group 1:

```
Switch(config-if)# channel-group 1 mode active
```

This example shows how to remove a port from an channel group 1:

```
Switch(config-if)# no channel-group
```

## Related Commands

None

## 8.2 static-channel-group

Use this command to assign a port to a static channel group. Use the no form of this command to remove a port from a static channel group.

### Command Syntax

```
static-channel-group static-channel-group-number
```

```
no static-channel-group
```

static-channel-group-number	Channel group number, the range is 1~31
-----------------------------	---

### Command Mode

Interface Configuration

### Default

None

**Usage**

None

**Examples**

This example shows how to assign a port to a static channel group 1:

```
Switch(config-if)# static-channel-group 1
```

This example shows how to remove a port from a static channel group 1:

```
Switch(config-if)# no static-channel-group
```

**Related Commands**

None

## 8.3 lacp port-priority

Use this command to configure the port priority for the Link Aggregation Control Protocol (LACP). Use the no form of this command to return to the default setting.

**Command Syntax**

```
lacp port-priority priority
```

priority	LACP port priority , the range is 1~65535
----------	---

**Command Mode**

Interface Configuration

**Default**32768

---

**Usage**

None

**Examples**

This example shows how to configure the port priority 100 for the Link Aggregation Control Protocol (LACP) member:

```
Switch(config-if)# lacp port-priority 100
```

This example shows how to return to the default setting:

```
Switch(config-if)# no lacp port-priority
```

**Related Commands**

None

## 8.4 lacp timeout

Use this command to configure the port timeout for the Link Aggregation Control Protocol (LACP). Use the no form of this command to return to the default setting.

**Command Syntax**

```
lacp timeout (short | long)
```

short	Set LACP short timeout
long	Set LACP long timeout

**Command Mode**

Interface Configuration

**Default**

Long

**Usage**

None

**Examples**

This example shows how to configure the port timeout short for the Link Aggregation Control Protocol (LACP):

```
Switch(config-if)# lacp timeout short
```

This example shows how to return to the default setting:

```
Switch(config-if)# no lacp timeout
```

**Related Commands**

None

## 8.5 lacp system-priority

Use this command to configure the system priority for the Link Aggregation Control Protocol (LACP). Use the no form of this command to return to the default setting.

**Command Syntax**

lacp system-priority *priority*

priority	LACP system priority , the range is 1~65535
----------	---

**Command Mode**Global Configuration

---

**Default**

32768

**Usage**

None

**Examples**

This example shows how to configure the system priority 100 for the Link Aggregation Control Protocol (LACP):

```
Switch(config)# lacp system-priority 100
```

This example shows how to return to the default setting:

```
Switch(config)# no lacp system-priority
```

**Related Commands**

None

## 8.6 port-channel load-balance

Use this command to configure the load balance type for the Link Aggregation Control Protocol (LACP). Use the no form of this command to return to the default setting (src-dst-ip).

**Command Syntax**

```
port-channel load-balance
```

```
(dst-mac|src-mac|src-dst-mac|dst-ip|src-ip|src-dst-ip|dst-port|src-port|src-dst-port)
```

```
no port-channel load-balance
```

dst-mac	Load balance by destination MAC address
src-mac	Load balance by source MAC address



src-dst-mac	Load balance by both source and destination MAC address
dst-ip	Load balance by destination IP address
src-ip	Load balance by source IP address
src-dst-ip	Load balance by both source and destination IP address
dst-port	Load balance by destination TCP/UDP port
src-port	Load balance by source TCP/UDP port
src-dst-port	Load balance by both source and destination TCP/UDP port

## Command Mode

Global Configuration

## Default

src-dst-ip

## Usage

None

## Examples

This example shows how to configure the load balance type for Link Aggregation Control Protocol (LACP):

```
Switch(config)# port-channel load-balance src-mac
```

## Related Commands

None

## 8.7 port-channel dynamic-load-balance

Use this command to enable dynamic load balance for the Link Aggregation Group(both static and dynamic aggregator). Use the no form of this command to return to the default setting (src-dst-ip).

### Command Syntax

port-channel dynamic-load-balance *channel-group-number*

no port-channel dynamic-load-balance *channel-group-number*

channel-group-number	Channel group number, the range is 1~31
----------------------	---

### Command Mode

Global Configuration

### Default

None

### Usage

None

### Examples

This example shows how to enable dynamic load balance for agg1:

```
Switch(config)# port-channel dynamic-load-balance 1
```

### Related Commands

None

## 8.8 show channel-group summary

Use this command to display a summary of all of the channel groups, or a specified channel group.

### Command Syntax

**show channel-group** (*channel-group-number* | ) **summary**

channel-group-number	Channel group number, the range is 1~31
----------------------	---

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

This example shows how to display a summary of all of the channel groups:

```
Switch# show channel-group summary
Flags: s - suspend          T - standby
      D - down/admin down  B - in Bundle
      R - Layer3           S - Layer2
      w - wait             U - in use

Aggregator Name  Protocol  Ports
-----+-----+-----
agg10 (SU)      LACP     eth-0-9 (B) eth-0-10 (B)
agg20 (SU)      LACP     eth-0-11 (B) eth-0-12 (B)
```

This example shows how to display a summary of a specified channel group:

```
Switch# show channel-group 10 summary
```

```

Flags: s - suspend          T - standby
       D - down/admin down  B - in Bundle
       R - Layer3           S - Layer2
       w - wait             U - in use
  
```

```

Aggregator Name  Protocol  Ports
-----+-----+-----
agg10 (SU)      LACP      eth-0-9 (B) eth-0-10 (B)
  
```

## Related Commands

None

## 8.9 show channel-group detail

Use this command to display detailed information of all of the channel groups, or a specified channel group.

### Command Syntax

**show channel-group** (*channel-group-number* |) **detail**

channel-group-number	Channel group number, the range is 1~31
----------------------	---

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

## Examples

This example shows how to display detailed information of the channel group 10:

```
Switch# show channel-group 10 detail
```

```
Channel-group listing:
```

```
Group: 10
```

```
Group state = L2
```

```
Ports: 1 Maxports = 48
```

```
Number of ports in bundle: 1 Max Channel-groups = 31
```

```
Standby port = NULL
```

```
Protocol: LACP
```

```
Ports in the group:
```

```
Port: eth-0-10
```

```
Port state = Up In-Bndl
```

```
Channel number = 10 Protocol = LACP Channel-group = agg10
```

```
Port index = 10 Mode = Active
```

Flags: S - Device is sending Slow LACPDUs F - Device is sending fast LACPDUs

```
A - Device is in active mode P - Device is in passive mode
```

```
Local information:
```

Port	Flags	State	LACP port Priority	Admin Key	Oper Key	Port Number	Port State
eth-0-10	SA	bndl	32768	10	10	0xa	0x3d

```
Partner's information:
```

Port	Flags	Priority	LACP port Dev ID	Oper Key	Port Number	Port State
eth-0-10	SA	32768	fed3.7914.b000	10	0xa	0x1d

## Related Commands

None

## 8.10 show lacp internal

Use this command to display internal information of all of the channel groups, or a specified channel group.

## Command Syntax

**show lacp** (*channel-group-number*|) **internal**

channel-group-number	Channel group number, the range is 1~31
----------------------	---

## Command Mode

Privileged EXEC

## Default

None

## Usage

None

## Examples

This example shows how to display internal information of all of the channel groups:

```
Switch# show lacp internal
Flags: S - Device is requesting Slow LACPDUs
       F - Device is requesting Fast LACPDUs
       A - Device is in Active mode       P - Device is in Passive mode
```

```
Channel group 1
          LACP port Admin Oper  Port  Port
Port    Flags State Priority key  Key   Number State
eth-0-11 FA   bndl  32768  1    1    0x5a  0x3f
eth-0-12 FA   bndl  32768  1    1    0x5b  0x3f
```

```
Channel group 50
          LACP port Admin Oper  Port  Port
Port    Flags State Priority key  Key   Number State
eth-0-9  FA   bndl  32768  50   50   0x58  0x3f
eth-0-10 FA   bndl  32768  50   50   0x59  0x3f
```

This example shows how to display internal information of a specified channel group:

```
Switch# show lacp 1 internal
Flags: S - Device is requesting Slow LACPDUs
       F - Device is requesting Fast LACPDUs
```

A - Device is in Active mode      P - Device is in Passive mode

### Channel group 1

Port	Flags	State	LACP port Priority	Admin key	Oper Key	Port Number	Port State
eth-0-11	FA	bndl	32768	1	1	0x5a	0x3f
eth-0-12	FA	bndl	32768	1	1	0x5b	0x3f

### Related Commands

None

## 8.11 show lacp internal detail

Use this command to display detailed internal information of all of the channel groups, or a specified channel group.

### Command Syntax

**show lacp** [*channel-group-number*] **internal detail**

channel-group-number	Channel group number, the range is 1~31
----------------------	---

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

## Examples

This example shows how to display detailed internal information of all of the channel groups:

Switch# show lacp internal detail

```

Flags: S - Device is requesting Slow LACPDUs
       F - Device is requesting Fast LACPDUs
       A - Device is in Active mode       P - Device is in Passive mode
Channel group 1 neighbors
Actor's information:

      Actor          Actor          Actor
Port   System ID      Port Number  Flags
eth-0-11 32768,ca9c.e21d.a301  0x56      FA

      LACP Actor      Actor          Actor
Port   Priority      Oper Key      Port State
32768      1              0x3f

Port State Flags Decode:
Activity:  Timeout:  Aggregation:  Synchronization:
Active    Short     Yes         Yes

Collecting:  Distributing:  Defaulted:  Expired:
Yes         Yes           No          No

      Actor          Actor          Actor
Port   System ID      Port Number  Flags
eth-0-12 32768,ca9c.e21d.a301  0x57      FA

      LACP Actor      Actor          Actor
Port   Priority      Oper Key      Port State
32768      1              0x3f

Port State Flags Decode:
Activity:  Timeout:  Aggregation:  Synchronization:
Active    Short     Yes         Yes

Collecting:  Distributing:  Defaulted:  Expired:
Yes         Yes           No          No
  
```

### Channel group 50 neighbors

```

Actor's information:

      Actor          Actor          Actor
Port   System ID      Port Number  Flags
eth-0-9 32768,ca9c.e21d.a301  0x54      FA
  
```



```

LACP Actor      Actor      Actor
Port Priority    Oper Key    Port State
32768           199         0x3f

Port State Flags Decode:
Activity: Timeout: Aggregation: Synchronization:
Active   Short   Yes     Yes

Collecting: Distributing: Defaulted: Expired:
Yes      Yes      No      No

Actor          Actor      Actor
Port System ID      Port Number Flags
eth-0-10 32768,ca9c.e21d.a301 0x55 FA

LACP Actor      Actor      Actor
Port Priority    Oper Key    Port State
32768           199         0x3f

Port State Flags Decode:
Activity: Timeout: Aggregation: Synchronization:
Active   Short   Yes     Yes

Collecting: Distributing: Defaulted: Expired:
Yes      Yes      No      No

```

This example shows how to display detailed internal information of a specified channel group:

Switch# show lacp 1 internal detail

```

Flags: S - Device is requesting Slow LACPDUs
      F - Device is requesting Fast LACPDUs
      A - Device is in Active mode      P - Device is in Passive mode
Channel group 1 neighbors
Actor's information:

Actor          Actor      Actor
Port System ID      Port Number Flags
eth-0-11 32768,ca9c.e21d.a301 0x56 FA

LACP Actor      Actor      Actor
Port Priority    Oper Key    Port State
32768           1           0x3f

Port State Flags Decode:
Activity: Timeout: Aggregation: Synchronization:
Active   Short   Yes     Yes

Collecting: Distributing: Defaulted: Expired:
Yes      Yes      No      No

Actor          Actor      Actor

```

Port	System ID	Port Number	Flags
eth-0-12	32768,ca9c.e21d.a301	0x57	FA

  

LACP Actor	Actor	Actor
Port Priority	Oper Key	Port State
32768	1	0x3f

  

Port State Flags Decode:			
Activity:	Timeout:	Aggregation:	Synchronization:
Active	Short	Yes	Yes

  

Collecting:	Distributing:	Defaulted:	Expired:
Yes	Yes	No	No

## Related Commands

None

## 8.12 show lacp neighbor

Use this command to display neighbor information of all of the channel groups, or a specified channel group.

### Command Syntax

**show lacp** (*channel-group-number*|) **neighbor**

channel-group-number	Channel group number, the range is 1~31
----------------------	---

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

## Examples

This example shows how to display neighbor information of all of the channel groups:

Switch# show lacp neighbor

```
Flags: S - Device is requesting Slow LACPDUs
       F - Device is requesting Fast LACPDUs
       A - Device is in Active mode       P - Device is in Passive mode
```

### Channel group 1 neighbors

Partner's information:

		LACP port		Admin	Oper	Port	Port
Port	Flags	Priority	Dev ID	key	Key	Number	State
eth-0-11	FA	32768	ca9c.e21d.a301	0	1	0x56	0x3f
eth-0-12	FA	32768	ca9c.e21d.a301	0	1	0x57	0x3f

### Channel group 50 neighbors

Partner's information:

		LACP port		Admin	Oper	Port	Port
Port	Flags	Priority	Dev ID	key	Key	Number	State
eth-0-9	FA	32768	ca9c.e21d.a301	0	99	0x54	0x3f
eth-0-10	FA	32768	ca9c.e21d.a301	0	99	0x55	0x3f

This example shows how to display neighbor information of a specified channel group:

Switch# show lacp 1 neighbor

```
Flags: S - Device is requesting Slow LACPDUs
       F - Device is requesting Fast LACPDUs
       A - Device is in Active mode       P - Device is in Passive mode
```

### Channel group 1 neighbors

Partner's information:

		LACP port		Admin	Oper	Port	Port
Port	Flags	Priority	Dev ID	key	Key	Number	State
eth-0-11	FA	32768	ca9c.e21d.a301	0	1	0x56	0x3f
eth-0-12	FA	32768	ca9c.e21d.a301	0	1	0x57	0x3f

## Related Commands

None

## 8.13 show lacp neighbor detail

Use this command to display detailed neighbor information of all of the channel groups, or a specified channel group.

### Command Syntax

**show lacp** (*channel-group-number*|) **neighbor detail**

channel-group-number	Channel group number, the range is 1~31
----------------------	---

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

This example shows how to display detailed neighbor information of all of the channel groups:

Switch# show lacp neighbor detail

```
Flags: S - Device is requesting Slow LACPDUs
       F - Device is requesting Fast LACPDUs
       A - Device is in Active mode       P - Device is in Passive mode
Channel group 1 neighbors
Partner's information:

Partner          Partner          Partner
Port    System ID          Port Number    Flags
eth-0-11 32768,ca9c.e21d.a301 0x56          FA
```

LACP Partner	Partner	Partner
Port Priority	Oper Key	Port State
32768	1	0x3f

Port State Flags Decode:

Activity:	Timeout:	Aggregation:	Synchronization:
Active	Short	Yes	Yes

Collecting:	Distributing:	Defaulted:	Expired:
Yes	Yes	No	No

Partner	Partner	Partner	
Port	System ID	Port Number	Flags
eth-0-12	32768,ca9c.e21d.a301	0x57	FA

LACP Partner	Partner	Partner
Port Priority	Oper Key	Port State
32768	1	0x3f

Port State Flags Decode:

Activity:	Timeout:	Aggregation:	Synchronization:
Active	Short	Yes	Yes

Collecting:	Distributing:	Defaulted:	Expired:
Yes	Yes	No	No

## Channel group 50 neighbors

Partner's information:

Partner	Partner	Partner	
Port	System ID	Port Number	Flags
eth-0-9	32768,ca9c.e21d.a301	0x54	FA

LACP Partner	Partner	Partner
Port Priority	Oper Key	Port State
32768	199	0x3f

Port State Flags Decode:

Activity:	Timeout:	Aggregation:	Synchronization:
Active	Short	Yes	Yes

Collecting:	Distributing:	Defaulted:	Expired:
Yes	Yes	No	No

Partner	Partner	Partner	
Port	System ID	Port Number	Flags
eth-0-10	32768,ca9c.e21d.a301	0x55	FA

LACP Partner	Partner	Partner
Port Priority	Oper Key	Port State
32768	199	0x3f

```

Port State Flags Decode:
Activity: Timeout: Aggregation: Synchronization:
Active      Short      Yes      Yes
  
```

```

Collecting: Distributing: Defaulted: Expired:
Yes         Yes          No         No
  
```

This example shows how to display detailed neighbor information of a specified channel group:

Switch# show lacp 1 neighbor detail

```

Flags: S - Device is requesting Slow LACPDUs
       F - Device is requesting Fast LACPDUs
       A - Device is in Active mode       P - Device is in Passive mode
  
```

Channel group 1 neighbors

Partner's information:

Partner	Partner	Partner
Port	System ID	Port Number
eth-0-11	32768,ca9c.e21d.a301	0x56
		FA

LACP Partner	Partner	Partner
Port Priority	Oper Key	Port State
32768	1	0x3f

```

Port State Flags Decode:
Activity: Timeout: Aggregation: Synchronization:
Active      Short      Yes      Yes
  
```

```

Collecting: Distributing: Defaulted: Expired:
Yes         Yes          No         No
  
```

Partner	Partner	Partner
Port	System ID	Port Number
eth-0-12	32768,ca9c.e21d.a301	0x57
		FA

LACP Partner	Partner	Partner
Port Priority	Oper Key	Port State
32768	1	0x3f

```

Port State Flags Decode:
Activity: Timeout: Aggregation: Synchronization:
Active      Short      Yes      Yes
  
```

```

Collecting: Distributing: Defaulted: Expired:
Yes         Yes          No         No
  
```

## Related Commands

None

## 8.14 show channel-group port

Use this command to display details of the LACP port of all of the channel groups, or a specified channel group, or a specified port.

### Command Syntax

show channel-group port (*ifname*)

**show channel-group** *channel-group-number* **port**

ifname	Interface name
channel-group-number	Channel group number, the range is 1~31

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

This example shows how to display details of the LACP port of all of the channel group:

```
Switch# show channel-group port
```

```
Channel-group listing:
-----
```

```
Group: 1
```

```
-----
```

```
Ports in the group:
```

```

-----
Port: eth-0-11
-----

```

```

Port state      = Up In-Bndl
Channel number = 1          Protocol = LACP          Channel-gorup = aggl
Port index     = 90        Mode = Active

```

Flags: S - Device is sending Slow LACPDUs F - Device is sending fast LACPDUs

```

A - Device is in active mode      P - Device is in passive mode

```

Local information:

Port	Flags	State	LACP port Priority	Admin Key	Oper Key	Port Number	Port State
eth-0-11	FA	bndl	32768	1	1	0x5a	0x3f

Partner's information:

Port	Flags	Priority	LACP port Dev ID	Admin key	Oper Key	Port Number	Port State
eth-0-11	FA	32768	ca9c.e21d.a301	0	1	0x56	0x3f

```

-----
Port: eth-0-12
-----

```

```

Port state      = Up In-Bndl
Channel number = 1          Protocol = LACP          Channel-gorup = aggl
Port index     = 91        Mode = Active

```

Flags: S - Device is sending Slow LACPDUs F - Device is sending fast LACPDUs

```

A - Device is in active mode      P - Device is in passive mode

```

Local information:

Port	Flags	State	LACP port Priority	Admin Key	Oper Key	Port Number	Port State
eth-0-12	FA	bndl	32768	1	1	0x5b	0x3f

Partner's information:

Port	Flags	Priority	LACP port Dev ID	Admin key	Oper Key	Port Number	Port State
eth-0-12	FA	32768	ca9c.e21d.a301	0	1	0x57	0x3f

```

-----
Group: 50
-----

```



```

Ports in the group:
-----

```

Port: eth-0-9

```
-----
```

```

Port state      = Up In-Bndl
Channel number = 50          Protocol = LACP          Channel-group = agg50
Port index     = 88          Mode = Active

```

Flags: S - Device is sending Slow LACPDUs F - Device is sending fast LACPDUs

```
A - Device is in active mode      P - Device is in passive mode
```

Local information:

Port	Flags	State	LACP port Priority	Admin Key	Oper Key	Port Number	Port State
eth-0-9	FA	bndl	32768	50	50	0x58	0x3f

Partner's information:

Port	Flags	LACP port Priority	Admin key	Oper Key	Port Number	Port State
eth-0-9	FA	32768	ca9c.e21d.a301	0	99	0x54 0x3f

Port: eth-0-10

```
-----
```

```

Port state      = Up In-Bndl
Channel number = 50          Protocol = LACP          Channel-group = agg50
Port index     = 89          Mode = Active

```

Flags: S - Device is sending Slow LACPDUs F - Device is sending fast LACPDUs

```
A - Device is in active mode      P - Device is in passive mode
```

Local information:

Port	Flags	State	LACP port Priority	Admin Key	Oper Key	Port Number	Port State
eth-0-10	FA	bndl	32768	50	50	0x59	0x3f

Partner's information:

Port	Flags	LACP port Priority	Admin key	Oper Key	Port Number	Port State
eth-0-10	FA	32768	ca9c.e21d.a301	0	99	0x55 0x3f

This example shows how to display details of the LACP port of a specified channel group:

Switch# show channel-group 1 port

```
Ports in the group:
-----
```

Port: eth-0-11

```
-----
```

```
Port state      = Up In-Bndl
Channel number = 1          Protocol = LACP          Channel-group = agg1
Port index      = 90        Mode = Active
```

Flags: S - Device is sending Slow LACPDUs F - Device is sending fast LACPDUs

```
A - Device is in active mode      P - Device is in passive mode
```

Local information:

Port	Flags	State	Priority	Admin Key	Oper Key	Port Number	Port State
eth-0-11	FA	bndl	32768	1	1	0x5a	0x3f

Partner's information:

Port	Flags	Priority	Dev ID	Admin key	Oper Key	Port Number	Port State
eth-0-11	FA	32768	ca9c.e21d.a301	0	1	0x56	0x3f

Port: eth-0-12

```
-----
```

```
Port state      = Up In-Bndl
Channel number = 1          Protocol = LACP          Channel-group = agg1
Port index      = 91        Mode = Active
```

Flags: S - Device is sending Slow LACPDUs F - Device is sending fast LACPDUs

```
A - Device is in active mode      P - Device is in passive mode
```

Local information:

Port	Flags	State	Priority	Admin Key	Oper Key	Port Number	Port State
eth-0-12	FA	bndl	32768	1	1	0x5b	0x3f

Partner's information:

Port	Flags	Priority	Dev ID	Admin key	Oper Key	Port Number	Port State
eth-0-12	FA	32768	ca9c.e21d.a301	0	1	0x57	0x3f

This example shows how to display details of the LACP port of a specified port:

Switch# show channel-group port eth-0-11

```
Port: eth-0-11
```

```
-----
```

```
Port state      = Up In-Bndl
```

```
Channel number = 50      Protocol = LACP      Channel-group = agg50
```

```
Port index     = 90      Mode = Active
```

```
Flags:  S - Device is sending Slow LACPDUs  F - Device is sending fast LACPDUs
```

```
      A - Device is in active mode  P - Device is in passive mode
```

```
Local information:
```

Port	Flags	State	LACP port Priority	Admin Key	Oper Key	Port Number	Port State
eth-0-11	FA	bndl	32768	50	50	0x5a	0x3f

```
Partner's information:
```

Port	Flags	Priority	LACP port Dev ID	Admin key	Oper Key	Port Number	Port State
eth-0-11	FA	32768	381c.9f94.2501	0	90	0x56	0x3f

## Related Commands

None

## 8.15 show lacp counters

Use this command to display the packet traffic on all of the channel groups, or a specified channel group.

### Command Syntax

**show lacp** (*channel-group-number*|) **counters**

channel-group-number	Channel group number, the range is 1~31
----------------------	---

## Command Mode

Privileged EXEC

## Default

None

## Usage

None

## Examples

This example shows how to display the packet traffic on all of the channel groups:

Switch# show lacp counters

```
Traffic statistics
Port                LACPDUs          Pckt err
                   Sent    Recv    Sent    Recv
-----
Channel-group agg1

eth-0-11            231    226    0      0
eth-0-12            224    219    0      0
```

### Traffic statistics

```
Port                LACPDUs          Pckt err
                   Sent    Recv    Sent    Recv
-----
Channel-group agg50

eth-0-9             29     25     0      0
eth-0-10            24     18     0      0
```

This example shows how to display the packet traffic on a specified channel group :

Switch# show lacp 1 counters

```
Traffic statistics
Port                LACPDUs          Pckt err
                   Sent    Recv    Sent    Recv
-----
Channel-group agg1

eth-0-11            256    251    0      0
eth-0-12            249    244    0      0
```

**Related Commands**

None

## 8.16 show lacp sys-id

Use this command to display the LACP system ID.

**Command Syntax**

```
show lacp sys-id
```

**Command Mode**

Privileged EXEC

**Default**

None

**Usage**

None

**Examples**

This example shows how to display the LACP system ID:

```
Switch# show lacp sys-id
```

```
System ID: 32768,4600.0987.6c01
```

**Related Commands**

None

## 8.17 clear lacp counters

Use this command to clear all counters of all of the channel groups, or a specified channel group.

### Command Syntax

**clear lacp** (*channel-group-number* |) **counters**

channel-group-number	Channel group number, the range is 1~31
----------------------	---

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

- This example shows how to clear all counters of all of the channel groups:  
Switch# clear lacp counters
- This example shows how to clear a specified channel group:  
Switch# clear lacp 10 counters

### Related Commands

None

# 9

## MSTP Commands

---

### 9.1 spanning-tree enable

Use this command to enable the Spanning Tree Protocol on a bridge. Use the no parameter to disable the Spanning Tree Protocol on the bridge.

#### Command Syntax

spanning-tree enable

no spanning-tree enable

#### Command Mode

Global configuration

#### Default

Disable

#### Usage

This command is used to enable/disable the Spanning Tree Protocol.

#### Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree enable
```

```
Switch# configure terminal
```

Switch(config)# no spanning-tree enable

## Related Commands

show spanning-tree

## 9.2 spanning-tree priority

Use this command to set the bridge priority for the common instance for the default bridge. Using a lower priority indicates a higher likelihood of the bridge becoming root. Use the no parameter with this command to reset it to the default value.

### Command Syntax

spanning-tree priority *priority*

no spanning-tree priority

priority	Bridge priority, the range is 0~61440
----------	---------------------------------------

### Command Mode

Global configuration

### Default

The default priority is 32678 (or hex 0x8000)

### Usage

This command is used to set the priority of the bridge. The priority values must be in multiples of 4096.

### Examples



```
Switch# configure terminal
```

```
Switch(config)# spanning-tree priority 4096
```

```
Switch# configure terminal
```

```
Switch(config)# no spanning-tree priority
```

### Related Commands

```
show spanning-tree
```

## 9.3 spanning-tree instance priority

Use this command to set the default bridge priority for an MST instance to the value specified. Use the no parameter with this command to restore the default value of the default bridge priority.

### Command Syntax

```
spanning-tree instance instance-id priority priority
```

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

instance-id	Specify the instance ID, the range is 1~4094
priority	Specify the bridge priority, the range is 0~61440

### Command Mode

Global configuration

### Default

The default value of the priority for each instance is 32768.

## Usage

The lower the priority of the bridge, there is higher likelihood that the bridge becomes a root bridge or a designated bridge for the LAN. The permitted range of values is 0-61440. The priority values must be in multiples of 4096.

## Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree instance 1 priority 0
```

## Related Commands

```
show spanning-tree
```

## 9.4 spanning-tree forward-time

Use this command to set the time after which (if this bridge is the root bridge) each port in the default bridge changes states to learning and forwarding. This value is used by all instances. Use the no parameter with this command to restore the default value of 15 seconds.

### Command Syntax

```
spanning-tree forward-time seconds
```

```
no spanning-tree forward-time
```

seconds	Forwarding time delay, in seconds, for the default bridge, the range is 4~30
---------	--

### Command Mode

```
Global configuration
```

## Default

The default value is 15 seconds

## Usage

The allowable range for the forward time is 4-30 seconds. It is not advisable to set the value below 7 seconds.

## Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree forward-time 16
```

```
Switch(config)# no spanning-tree forward-time
```

## Related Commands

```
show spanning-tree
```

## 9.5 spanning-tree hello-time

Use this command to set the hello-time, the time in seconds after which (if this bridge is the root bridge) all the default bridges in a bridged LAN exchange Bridge Protocol Data Units (BPDUs). A very low value of this parameter leads to excessive traffic on the network, while a higher value delays the detection of topology change. This value is used by all instances.

### Command Syntax

```
spanning-tree hello-time seconds
```

```
no spanning-tree hello-time
```

seconds	Hello BPDU interval in seconds, the range is 1~10
---------	---

## Command Mode

Global Configuration

## Default

The default hello-time value is 2

## Usage

The allowable range of values is 1-10 seconds.

## Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree hello-time 5
```

```
Switch(config)# no spanning-tree hello-time
```

## Related Commands

```
show spanning-tree
```

## 9.6 spanning-tree max-age

Use this command to set the maximum age for the default bridge. Use the no parameter with this command to restore the default value of the maximum age.

### Command Syntax

```
spanning-tree max-age seconds
```

```
no spanning-tree max-age
```

seconds	The maximum time, in seconds, to listen for the root bridge, <6 - 40>
---------	---

## Command Mode

Global Configuration

## Default

The default value of bridge maximum age is 20 seconds.

## Usage

Maximum age is the maximum time for which (if a bridge is the root bridge) a message is considered valid. This prevents the frames from looping indefinitely. The value of maximum age should be greater than twice the value of hello time plus 1, and less than twice the value of forward delay minus 1. The allowable range for maximum age is 6-40 seconds. Configure this value sufficiently high, so that a frame generated by root can be propagated to the leaf nodes without exceeding the maximum age.

## Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree max-age 12
```

```
Switch(config)# no spanning-tree max-age
```

## Related Commands

```
show spanning-tree
```

## 9.7 spanning-tree max-hops

Use this command to specify the maximum allowed hops for a BPDU in an MST region.

This parameter is used by all the instances of the MST. To restore the default value, use the no parameter with this command.

## Command Syntax

spanning-tree max-hops *number*

no spanning-tree max-hops

number	Max hops, the range is 1~40
--------	-----------------------------

## Command Mode

Global Configuration

## Default

The default maximum hops in an MST region are 20

## Usage

Specifying the maximum hops for a BPDU prevents the messages from looping indefinitely in the network. When a bridge receives an MST BPDU that has exceeded the allowed maximum hops, it discards the BPDU packets.

The configuration should be shown when the bridge is MSTP mode.

## Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree max-hops 25
```

```
Switch(config)# no spanning-tree max-hops
```

## Related Commands

```
show spanning-tree
```

## 9.8 spanning-tree transmit-holdcount

Use this command to set the maximum number of transmissions of BPDUs in an MST region by the transmit state machine. Use the no parameter with this command to restore the default transmit hold-count value.

### Command Syntax

spanning-tree transmit-holdcount *number*

no spanning-tree transmit-holdcount

number	Transmit hold-count value, the range is 1~10
--------	--

### Command Mode

Global Configuration

### Default

Transmit hold-count default value is 3

### Usage

The configuration should be shown when the bridge is MSTP mode.

### Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree transmit-holdcount 5
```

```
Switch(config)# no spanning-tree transmit-holdcount
```

### Related Commands

```
show spanning-tree
```

## 9.9 spanning-tree edgeport bpdu-guard

Use this command to enable the BPDU (Bridge Protocol Data Unit) Guard feature on a bridge. Use the no parameter with this command to disable the BPDU Guard feature on a bridge.

### Command Syntax

```
spanning-tree edgeport bpdu-guard
```

```
no spanning-tree edgeport bpdu-guard
```

### Command Mode

Global Configuration

### Default

The BPDU Guard feature on a bridge is disabled

### Usage

When the BPDU Guard feature is set for a bridge and set on edgeport-enabled port, the port should shut down when receiving a BPDU. In this case, the BPDU is not processed. You can either bring the port back up manually by using the no shutdown command, or configure the errdisable-timeout feature to enable the port after the specified time interval.

Use the show spanning-tree command to display the bridge and port configurations for the BPDU Guard feature. It shows both the administratively configured and currently running values of BPDU guard.

### Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree edgeport bpdu-guard
```



## Related Commands

show spanning-tree interface

## 9.10 spanning-tree edgeport bpdu-filter

Use this command to enable the edgeport BPDU filter for the bridge. Use the no parameter with this command to disable the BPDU filter for the bridge.

### Command Syntax

spanning-tree edgeport bpdu-filter

no spanning-tree edgeport bpdu-filter

### Command Mode

Global Configuration

### Default

spanning-tree edgeport bpdu-filter is disabled

### Usage

The Spanning Tree Protocol sends BPDUs from all ports. Enabling the BPDU Filter feature ensures that edgeport enabled ports do not transmit or receive any BPDUs.

Use the show spanning tree command to display administratively configured and currently running values of the BPDU filter parameter for the bridge and port.

### Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree edgeport bpdu-filter enable
```

```
Switch(config)# no spanning-tree edgeport bpdu-filter
```

## Related Commands

Show spanning-tree interface

## 9.11 spanning-tree port

Use this command to enable or disable spanning tree protocol on specified port.

### Command Syntax

spanning-tree port (enable | disable)

enable	Enable spanning protocol on this port
disable	Disable spanning protocol on this port

### Command Mode

Interface Configuration

### Default

The default spanning tree state of the port is enabled.

### Usage

None

### Examples

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree port enable
```

```
Switch(config-if)# spanning-tree port disable
```

## Related Commands

show spanning-tree interface

## 9.12 spanning-tree port-priority

Use this command to set the port priority for a bridge. A lower priority indicates a greater likelihood of the bridge becoming root.

### Command Syntax

spanning-tree port-priority *priority*

no spanning-tree priority

priority	Port priority, the range is 0~240
----------	-----------------------------------

### Command Mode

Interface Configuration

### Default

The default priority is 128

### Usage

None

### Examples

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree port-priority 240
```

## Related Commands

show spanning-tree interface

## 9.13 spanning-tree pathcost-standard

Use this command to set the path cost standard associated with the default bridge-group.

Use the no parameter with this command to set to default value.

### Command Syntax

spanning-tree pathcost-standard (dot1d-1998 | dot1t)

no spanning-tree pathcost-standard

dot1d-1998	IEEE 802.1D-1998 standard
dot1t	IEEE 802.1T standard

### Command Mode

Global Configuration

### Default

The default pathcost-standard is dot1t

### Usage

If the pathcost-standard is changed, cost of every port will be reset and auto-calculated.

### Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree pathcost-standard dot1d-1998
```

```
Cost of every port has been reset and auto-calculation is available
```

## Related Commands

show spanning-tree

## 9.14 spanning-tree path-cost

Use this command to set the cost of a path associated with the default bridge-group. The lower the path cost, the greater likelihood of the bridge becoming root. Use the no parameter with this command to calculate path cost according to interface's speed.

### Command Syntax

spanning-tree path-cost *number*

no spanning-tree path-cost

number	The cost to be assigned to the group. The range is 1 to 200000000 for dot1t and 1-65535 for dot1d-1998
--------	--

### Command Mode

Interface Configuration

### Default

The default path cost value is calculated according to interface's speed

### Usage

None

### Examples

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree path-cost 123
```

```
Switch(config-if)# no spanning-tree path-cost
```

### Related Commands

```
show spanning-tree interface
```

## 9.15 spanning-tree link-type

Use this command to enable or disable point-to-point or shared link types. Use the no parameter with this command to disable rapid transition.

### Command Syntax

```
spanning-tree link-type ( auto | point-to-point | shared )
```

```
no spanning-tree link-type
```

auto	Automatically detect link type
point-to-point	Enable point to point link
shared	Disable point to point link

### Command Mode

Interface Configuration

### Default

The link type is auto detected

### Usage

None

## Examples

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree link-type shared
```

## Related Commands

```
show spanning-tree brief
```

## 9.16 spanning-tree edgeport

Use this command to set a port as an edge-port and to enable rapid transitions. Use the `no` parameter with this command to set a port to its default state (not an edge-port) and to disable rapid transitions.

### Command Syntax

```
spanning-tree edgeport
```

```
no spanning-tree edgeport
```

### Command Mode

Interface Configuration

### Default

The port is not an edge-port

### Usage

None

## Examples

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree edgeport
```

```
Switch(config-if)# no spanning-tree edgeport
```

### Related Commands

```
show spanning-tree interface
```

## 9.17 spanning-tree edgeport bpdu-guard

Use this command to enable or disable the BPDU Guard feature on a port. Use the no parameter with this command to set the BPDU Guard feature on a port to default.

### Command Syntax

```
spanning-tree edgeport bpdu-guard (enable | disable | default)
```

```
no spanning-tree edgeport bpdu-guard
```

enable	Enable spanning-tree edgeport bpdu-guard
disable	Disable spanning-tree edgeport bpdu-guard
default	Set default value

### Command Mode

Interface Configuration

### Default

BPDU guard is disabled



## Usage

Use the show spanning-tree command to display the bridge and port configurations for the BPDU Guard feature. It shows both the administratively configured and currently running values of the BPDU guard.

## Examples

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree edgeport
```

```
Switch(config-if)# spanning-tree edgeport bpdu-guard enable
```

## Related Commands

None

## 9.18 spanning-tree edgeport bpdu-filter

Use this command to set edgeport BPDU filter for the port. Use the no parameter with this command to revert the port BPDU filter value to default.

### Command Syntax

```
spanning-tree edgeport bpdu-filter (enable | disable | default)
```

```
no spanning-tree edgeport bpdu-filter
```

enable	Enable spanning-tree edgeport bpdu- filter
disable	Disable spanning-tree edgeport bpdu- filter
default	Set default value

**Command Mode**

Interface Configuration

**Default**

None

**Usage**

Use the show spanning tree command to display administratively configured, and currently running values, of the BPDU filter parameter for the bridge and port.

If bpdu-guard and bpdu-filter are all configed on port, bpdu-filter has a higher priority.

**Examples**

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree edgeport
```

```
Switch(config-if)# spanning-tree edgeport bpdu-filter
```

```
Switch(config-if)# no spanning-tree edgeport bpdu-filter
```

**Related Commands**

```
show spanning-tree interface
```

## 9.19 spanning-tree guard root

Use this command to enable the Root Guard feature for the port. This feature disables reception of superior BPDUs. Use the no parameter with this command to disable the root guard feature for the port.

## Command Syntax

spanning-tree guard root

no spanning-tree guard root

## Command Mode

Interface Configuration

## Default

Root guard is disabled

## Usage

The Root Guard feature makes sure that the port on which it is enabled is a designated port. If a port with Root Guard enabled receives a superior BPDU, it goes to a Listening state (for STP) or discarding state (for RSTP and MSTP).

## Examples

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree guard root
```

```
Switch(config-if)# no spanning-tree guard root
```

## Related Commands

None

## 9.20 spanning-tree guard loop

Use this command to enable the loop guard feature for the port. This feature provides additional protection against Layer 2 forwarding loops. Use the no parameter with this command to disable the loop guard feature for the port.

### Command Syntax

```
spanning-tree guard loop
```

```
no spanning-tree guard loop
```

### Command Mode

Interface Configuration

### Default

Loop guard is disabled

### Usage

The loop guard feature should be enabled on the non-designated ports. When a port enables loop guard, and BPDUs are not received on a non-designated port after max\_age, the port should move into the STP loop-inconsistent blocking state, instead of the listening / learning / forwarding state, and should not pass user traffic.

### Examples

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree guard loop
```

```
Switch(config-if)# no spanning-tree guard loop
```

## Related Commands

spanning-tree guard root

## 9.21 spanning-tree force-version

Use this command to specify the version. A version identifier of less than a value of 2 enforces the spanning tree protocol. Although the command supports an input range of 0-3, for RSTP, the valid range is 0-2. Use the no parameter with this command to set the default protocol version.

### Command Syntax

spanning-tree force-version *number*

no spanning-tree force-version

number	Version identifier. (0 - STP, 1- Not supported, 2 - RSTP, 3 - MSTP)
--------	---

### Command Mode

Interface Configuration

### Default

None

### Usage

None

### Examples

Switch# configure terminal

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree force-version 1
```

```
Switch(config-if)# no spanning-tree force-version
```

## Related Commands

None

## 9.22 spanning-tree restricted-tcn

Use this command to set the restricted TCN value of the port to TRUE. Use the no parameter with this command to set the restricted TCN value of the port to FALSE.

### Command Syntax

```
spanning-tree mode restricted-tcn
```

```
no spanning-tree restricted-tcn
```

### Command Mode

Interface Configuration

### Default

The default restricted TCN value is FALSE

### Usage

None

### Examples

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree restricted-tcn
```

```
Switch(config-if)# no spanning-tree restricted-tcn
```

### Related Commands

None

## 9.23 spanning-tree restricted-role

Use this command to set the restricted-role value of the port to TRUE. Use the no parameter with this command to set the restricted-role value of the port to FALSE.

### Command Syntax

```
spanning-tree restricted-role
```

```
no spanning-tree restricted-role
```

### Command Mode

Interface Configuration

### Default

The default restricted-role value is FALSE

### Usage

None

### Examples

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree restricted-role
```

```
Switch(config-if)# no spanning-tree restricted-role
```

### Related Commands

None

## 9.24 spanning-tree tc-protection

Use this command to set the tc-protection value to TRUE. Use the no parameter with this command to set the tc-protection value to FALSE. If tc-protection is set, the number of tc packets which can be processed every hello time interval shouldn't be greater than the number of tc-protection threshold.

### Command Syntax

```
spanning-tree tc-protection
```

```
no spanning-tree tc-protection
```

### Command Mode

Global Configuration

### Default

The default tc-protection value is FALSE

### Usage

None

### Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree tc-protection
```

```
Switch(config-if)# no spanning-tree tc-protection
```



## Related Commands

None

## 9.25 spanning-tree tc-protection threshold

Use this command to set the tc-protection threshold value. Use the no parameter with this command to set the tc-protection threshold value to 1. If tc-protection is set, the number of tc packets which can be processed every hello time interval shouldn't be greater than the number of tc-protection threshold.

### Command Syntax

```
spanning-tree tc-protection threshold <1-255>
```

```
no spanning-tree tc-protection threshold
```

### Command Mode

Global Configuration

### Default

The default tc-protection threshold value is 1

### Usage

None

### Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree tc-protection threshold 255
```

```
Switch(config-if)# no spanning-tree tc-protection threshold
```

**Related Commands**

None

## 9.26 spanning-tree mode

Use this command to set spanning tree mode.

**Command Syntax**

spanning-tree mode (stp|rstp|mstp)

**Command Mode**

Global Configuration

**Default**

The default spanning-tree mode is rstp

**Usage**

None

**Examples**

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree mode mstp
```

**Related Commands**

None

## 9.27 Nonespanning-tree instance priority

Use this command to set the port priority for a bridge group. Use the `no` parameter with this command to restore the default priority value.

### Command Syntax

`spanning-tree instance instance-id port-priority priority`

`no spanning-tree instance instance-id port-priority`

instance-id	Specify the identifier
priority	Specify the port priority (a lower priority indicates greater likelihood of the interface becoming a root). The range is 0~240

### Command Mode

Interface Configuration

### Default

The default value of port priority for each instance is 128.

### Usage

The Multiple Spanning Tree Protocol uses port priority as a tiebreaker to determine which port should forward frame for a particular instance on a LAN, or which port should be the root port for an instance. A lower value implies a better priority. In the case of the same priority, the interface index will serve as the tiebreaker, with the lower-numbered interface being preferred over others.

The permitted range is 0-240. The priority values can only be set in increments of 16.

### Examples

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree instance 3 port-priority 112
```

```
Switch(config-if)# no spanning-tree instance 3 port-priority
```

### Related Commands

None

## 9.28 spanning-tree instance path-cost

Use this command to set the cost of a path associated with an interface. Use the `no` parameter with this command to restore the default cost value of the path.

### Command Syntax

```
spanning-tree instance instance-id path-cost cost
```

```
no spanning-tree instance instance-id path-cost
```

instance-id	Specify the identifier
cost	Specify the cost of path in the range of <1-200000000> for dot1t and <1-65535> for dot1d-1998 (a lower path-cost indicates a greater likelihood of the specified interface becoming a root)

### Command Mode

Interface Configuration

### Default

Assuming a 10 Mb/s link speed, the default value is configured as 2,000,000

## Usage

Before you can use this command to set a path-cost in a VLAN configuration, you must explicitly add an MST instance to a port using the bridge-group instance command (see the example below).

## Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree mst configuration
```

```
Switch(config-mst)# instance 3 vlan 3
```

```
Switch(config-mst)# exit
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# switchport mode trunk
```

```
Switch(config-if)# switchport trunk allowed vlan add 3
```

```
Switch(config-if)# spanning-tree instance 3 path-cost 1000
```

```
Switch(config-mst)# exit
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# switchport mode access
```

```
Switch(config-if)# switchport access vlan 3
```

```
Switch(config-if)# spanning-tree instance 3 path-cost 1000
```

## Related Commands

None

## 9.29 spanning-tree instance restricted-tcn

Use this command to set the restricted TCN value for the instance to TRUE. Use the no parameter with this command to set the restricted TCN value for the instance to FALSE.

### Command Syntax

```
spanning-tree instance instance-id restricted-tcn
```

```
no spanning-tree instance instance-id restricted-tcn
```

instance-id	Specify the instance ID
-------------	-------------------------

### Command Mode

Interface Configuration

### Default

The default restricted TCN value is FALSE

### Usage

None

### Examples

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree instance 2 restricted-tcn
```

### Related Commands

None

## 9.30 spanning-tree instance restricted-role

Use this command to set the restricted role value for the instance to TRUE. Use the no parameter with this command to set the restricted role value for the instance to FALSE.

### Command Syntax

spanning-tree instance *instance-id* restricted-role

no spanning-tree instance *instance-id* restricted-role

instance-id	Specify the instance ID
-------------	-------------------------

### Command Mode

Interface Configuration

### Default

The default restricted-role value is FALSE.

### Usage

None

### Examples

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree instance 2 restricted-role
```

### Related Commands

None

## 9.31 spanning-tree mst configuration

Use this command to enter mst configuration mode.

### Command Syntax

spanning-tree mst configuraiton

### Command Mode

Global Configuration

### Default

None

### Usage

None

### Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree mst configuration
```

```
Switch(config-mst)# instance 1 vlan 2
```

### Related Commands

None

## 9.32 instance

Use this command to create an mstp instance and map VLANs to an MST instance.

### Command Syntax

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



**no instance** instance-id **vlan** vlan-id

instance-id	Instance id, we support at most 64 instances
vlan-id	The vlan associated with instance must be created first. < 1- 4094 >

## Command Mode

MST Configuration

## Default

None

## Usage

When you map VLANs to an MST instance, the mapping is incremental, and the VLANs specified in the command are added to or removed from the VLANs that were previously mapped.

## Examples

```
Switch# configure terminal
```

```
Switch(config)# vlan database
```

```
Switch(config-vlan)# vlan 10
```

```
Switch(config-vlan)# exit
```

```
Switch(config)# spanning-tree Mst configuration
```

```
Switch(config-mst)# instance 1 vlan 10
```

## Related Commands

None

## 9.33 region

Use this command to create mstp region.

### Command Syntax

region *name*

no region *name*

name	Specify the region name. The name string has a maximum length of 32 characters and is case sensitive
------	--

### Command Mode

MST Configuration

### Default

The default region name is an empty string

### Usage

None

### Examples

```
Switch# configure terminal
```

```
Switch(config)# vlan database
```

```
Switch(config-vlan)# vlan 10
```

```
Switch(config-vlan)# exit
```

```
Switch(config)# spanning-tree mst configuration
```

```
Switch(config-mst)# region Switch
```

## Related Commands

None

## 9.34 revision

Use this command to create an mstp revision number.

### Command Syntax

revision *number*

no revision *number*

number	Specify the configuration revision number. The range is 0~255
--------	---

### Command Mode

MST Configuration

### Default

Default value is 0

### Usage

None

### Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree mst configuration
```

```
Switch(config-mst)# revision 1
```

## Related Commands

None

## 9.35 clear spanning-tree detected protocols

Use this command to clear the detected protocols for a specific bridge or interface.

### Command Syntax

clear spanning-tree detected protocols (interface *interface-id* | )

<b>interface</b> interface-id	Specify the name of the interface on which protocols have to be cleared
----------------------------------	---

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

```
Switch# clear spanning-tree detected protocols interface eth-0-1
```

## Related Commands

None

## 9.36 clear spanning-tree disabled-port

Use this command to clear all spanning tree protocol disabled port.

### Command Syntax

clear spanning-tree disabled-port

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

```
Switch# clear spanning-tree disabled-port
```

### Related Commands

None

## 9.37 show spanning-tree

Use this command to show the state of the spanning tree. This command only shows up interface's state.

### Command Syntax

show spanning-tree

## Command Mode

Privileged EXEC

## Default

None

## Usage

None

## Examples

Switch# show spanning-tree

```
Bridge up - Spanning Tree Enabled
Mode - Multiple spanning tree protocol
Path Cost Standard - dot1t
CIST Root Path Cost 0 - CIST Root Port 0 - CIST Bridge Priority 32768
Forward Delay 15 - Hello Time 2 - Max Age 20 - Max-hops 20
Tx Hold Count 6
CIST Root Id 80008afa58e9cb00
CIST Reg Root Id 80008afa58e9cb00
CIST Bridge Id 80008afa58e9cb00
Edgeport bpdu-filter disabled
Edgeport bpdu-guard disabled
eth-0-1: Port 1 - Id 8001 - Role Designated - State Forwarding
eth-0-1: Designated External Path Cost 0 -Internal Path Cost 0
eth-0-1: Configured Path Cost 20000 - Add type Explicit ref count 1
eth-0-1: Designated Port Id 8001 - CIST Priority 128
eth-0-1: CIST Root 80008afa58e9cb00
eth-0-1: Regional Root 80008afa58e9cb00
eth-0-1: Designated Bridge 80008afa58e9cb00
eth-0-1: Message Age 0 - Max Age 20
eth-0-1: CIST Hello Time 2 - Forward Delay 15
eth-0-1: CIST Forward Timer 0 - Msg Age Timer 0 - Hello Timer 0 - topo change timer 0
eth-0-1: Forward-transitions 2
eth-0-1: BPDU sent 373 - BPDU received 0
eth-0-1: Version Multiple spanning tree protocol - Received None - Send MSTP
eth-0-1: No edgeport configured - Current edgeport off
eth-0-1: Edgeport bpdu-guard Default - Current edgeport bpdu-guard off
eth-0-1: Edgeport bpdu-filter Default - Current edgeport bpdu-filter off
eth-0-1: No root guard configured - Current root guard off
eth-0-1: No loop guard configured - Current loop guard off
eth-0-1: Configured Link Type auto - Current point-to-point
```

## Related Commands

None

## 9.38 show spanning-tree interface

Use this command to show the state of the spanning tree of the specified interface.

### Command Syntax

show spanning-tree interface *interface-id* (brief | )

interface-id	Specify the name of the interface
brief	The brief spanning-tree information

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

The following is an output of this command displaying the state of the spanning tree of the interface eth-0-1:

```
Switch# show spanning-tree interface eth-0-1
```

```
Bridge up - Spanning Tree Enabled  
Mode - Multiple spanning tree protocol  
Path Cost Standard - dot1t  
CIST Root Path Cost 0 - CIST Root Port 0 - CIST Bridge Priority 32768
```

```
Forward Delay 15 - Hello Time 2 - Max Age 20 - Max-hops 20
Tx Hold Count 6
CIST Root Id 80008afa58e9cb00
CIST Reg Root Id 80008afa58e9cb00
CIST Bridge Id 80008afa58e9cb00
Edgeport bpdu-filter disabled
Edgeport bpdu-guard disabled
eth-0-1: Port 1 - Id 8001 - Role Designated - State Forwarding
eth-0-1: Designated External Path Cost 0 -Internal Path Cost 0
eth-0-1: Configured Path Cost 20000 - Add type Explicit ref count 1
eth-0-1: Designated Port Id 8001 - CIST Priority 128
eth-0-1: CIST Root 80008afa58e9cb00
eth-0-1: Regional Root 80008afa58e9cb00
eth-0-1: Designated Bridge 80008afa58e9cb00
eth-0-1: Message Age 0 - Max Age 20
eth-0-1: CIST Hello Time 2 - Forward Delay 15
eth-0-1: CIST Forward Timer 0 - Msg Age Timer 0 - Hello Timer 0 - topo change t
imer 0
eth-0-1: Forward-transitions 2
eth-0-1: BPDU sent 352 - BPDU received 0
eth-0-1: Version Multiple spanning tree protocol - Received None - Send MSTP
eth-0-1: No edgeport configured - Current edgeport off
eth-0-1: Edgeport bpdu-guard Default - Current edgeport bpdu-guard off
eth-0-1: Edgeport bpdu-filter Default - Current edgeport bpdu-filter off
eth-0-1: No root guard configured - Current root guard off
eth-0-1: No loop guard configured - Current loop guard off
eth-0-1: Configured Link Type auto - Current point-to-point
```

## Related Commands

None

## 9.39 show spanning-tree brief

Use this command to show the brief state of the spanning tree.

### Command Syntax

```
show spanning-tree brief
```

### Command Mode

Privileged EXEC

### Default

None



## Usage

None

## Examples

The following is an output of this command displaying the brief state of the spanning tree.  
The down interface should not be show:

Switch# show spanning-tree brief

```
Multiple spanning tree protocol Enabled
Root ID      Priority      32768 (0x8000)
  Address    8afa.58e9.cb00
  Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID    Priority      32768 (0x8000)
  Address    8afa.58e9.cb00
  Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
  Aging Time 300 sec

Interface Role          State          Cost          Priority.Number  Type
-----
eth-0-1   Designated    Forwarding     20000         128.1           P2p
eth-0-2   Designated    Forwarding     20000         128.2           P2p
```

## Related Commands

None

## 9.40 show spanning-tree disabled-port

Use this command to show the spanning tree protocol disabled port.

### Command Syntax

```
show spanning-tree disabled-port
```

### Command Mode

Privileged EXEC

### Default

None

**Usage**

None

**Examples**

The following is an output of this command displaying all spanning tree protocol disabled port:

```
Switch# show spanning-tree disabled-port
```

```
Interface
-----
eth-0-1
```

**Related Commands**

None

## 9.41 show spanning-tree mst

Use this command to show the mstp information.

**Command Syntax**

```
show spanning-tree mst
```

**Command Mode**

Privileged EXEC

**Default**

None

**Usage**

None

## Examples

The following is an output of this command displaying the mstp information. The down interface should not be show:

```
Switch#show spanning-tree mst
```

```
Bridge up - Spanning Tree Enabled
Mode - Multiple spanning tree protocol
Path Cost Standard - dot1t
CIST Root Path Cost 0 - CIST Root Port 0 - CIST Bridge Priority 32768
Forward Delay 15 - Hello Time 2 - Max Age 20 - Max-hops 20
Tx Hold Count 6
CIST Root Id 80008afa58e9cb00
CIST Reg Root Id 80008afa58e9cb00
CIST Bridge Id 80008afa58e9cb00
Edgeport bpdu-filter disabled
Edgeport bpdu-guard disabled

Instance Interface VLAN
0 :          1, 3
1 :    eth-0-2    2
```

## Related Commands

None

## 9.42 show spanning-tree mst config

Use this command to show the mstp region configuration information.

### Command Syntax

```
show spanning-tree mst config
```

### Command Mode

Privileged EXEC

### Default

None

## Usage

None

## Examples

The following is an output of this command displaying the mstp information. The down interface should not be show:

Switch# show spanning-tree mst config

```
MSTP Configuration Information:
-----
Format Id      : 0
Name           : switch
Revision Level : 0
Digest        : 0x3AB68794D602FDF43B21C0B37AC3BCA8
Instances configured 1
-----

Instance  Vlans mapped
-----
0         1, 3
1         2
-----
```

## Related Commands

None

## 9.43 show spanning-tree mst detail

Use this command to show the detail mstp information.

### Command Syntax

show spanning-tree mst detail (interface *interface-id* | )

<b>interface</b> interface-id	The interface name you want to display
----------------------------------	--

## Command Mode

Privileged EXEC

## Default

None

## Usage

None

## Examples

The following is an output of this command displaying the detail mstp information:

```
Switch# show spanning-tree mst detail interface eth-0-1
```

```
Bridge up - Spanning Tree Enabled
Mode - Multiple spanning tree protocol
Path Cost Standard - dot1t
CIST Root Path Cost 0 - CIST Root Port 0 - CIST Bridge Priority 32768
Forward Delay 15 - Hello Time 2 - Max Age 20 - Max-hops 20
Tx Hold Count 6
CIST Root Id 80008afa58e9cb00
CIST Reg Root Id 80008afa58e9cb00
CIST Bridge Id 80008afa58e9cb00
Edgeport bpdu-filter disabled
Edgeport bpdu-guard disabled
eth-0-1: Port 1 - Id 8001 - Role Designated - State Forwarding
eth-0-1: Designated External Path Cost 0 -Internal Path Cost 0
eth-0-1: Configured Path Cost 20000 - Add type Explicit ref count 1
eth-0-1: Designated Port Id 8001 - CIST Priority 128
eth-0-1: CIST Root 80008afa58e9cb00
eth-0-1: Regional Root 80008afa58e9cb00
eth-0-1: Designated Bridge 80008afa58e9cb00
eth-0-1: Message Age 0 - Max Age 20
eth-0-1: CIST Hello Time 2 - Forward Delay 15
eth-0-1: CIST Forward Timer 0 - Msg Age Timer 0 - Hello Timer 0 - topo change t
imer 0
eth-0-1: Forward-transitions 2
eth-0-1: BPDU sent 247 - BPDU received 0
eth-0-1: Version Multiple spanning tree protocol - Received None - Send MSTP
eth-0-1: No edgeport configured - Current edgeport off
```

## Related Commands

None

## 9.44 show spanning-tree mst instance

Use this command to show the detail mstp information of a specific instance.

### Command Syntax

show spanning-tree mst instance *instance-id* (interface *interface-id* | )

instance-id	Instance number you want to display
<b>interface</b> interface-id	The interface name you want to display

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

The following is an output of this command displaying the mstp information of an instance:

```
Switch# show spanning-tree mst instance 2
```

```
MSTI Root Path Cost 0 - MSTI Root Port 0
MSTI Root Id 8002e083bce89601
MSTI Bridge Id 8002e083bce89601
MSTI Bridge Priority 32768

eth-0-48: Port 48 - Id 8030 - Role Disabled - State Discarding
eth-0-48: Designated Internal Path Cost 0 - Designated Port Id 0
eth-0-48: Configured Internal Path Cost 20000
eth-0-48: Configured CST External Path cost 20000
eth-0-48: CST Priority 128 - MSTI Priority 128
eth-0-48: Designated Root 0000000000000000
```

```
eth-0-48: Designated Bridge 0000000000000000
eth-0-48: Message Age 0 - Max Age 0
eth-0-48: Hello Time 2 - Forward Delay 15
eth-0-48: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 0
|
eth-0-1: Port 1 - Id 8001 - Role Disabled - State Discarding
eth-0-1: Designated Internal Path Cost 0 - Designated Port Id 0
eth-0-1: Configured Internal Path Cost 20000
eth-0-1: Configured CST External Path cost 20000
eth-0-1: CST Priority 128 - MSTI Priority 128
eth-0-1: Designated Root 0000e083bce89601
eth-0-1: Designated Bridge 0000e083bce89601
eth-0-1: Message Age 0 - Max Age 0
eth-0-1: Hello Time 2 - Forward Delay 15
eth-0-1: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 0
```

## Related Commands

None

## 9.45 show spanning-tree mst interface

Use this command to show the detail mstp information of a specific interface.

### Command Syntax

show spanning-tree mst interface *interface-id*

interface-id	The interface name you want to display
--------------	--

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

## Examples

The following is an output of this command displaying the mstp information of an interface:

```
Switch# show spanning-tree mst interface eth-0-1
```

```
Bridge up - Spanning Tree Enabled
Mode - Multiple spanning tree protocol
Path Cost Standard - dot1t
CIST Root Path Cost 0 - CIST Root Port 0 - CIST Bridge Priority 32768
Forward Delay 15 - Hello Time 2 - Max Age 20 - Max-hops 20
Tx Hold Count 6
CIST Root Id 8000be8c722f7f00
CIST Reg Root Id 8000be8c722f7f00
CIST Bridge Id 8000be8c722f7f00
Edgeport bpdu-filter disabled
Edgeport bpdu-guard disabled
Loop guard configured disabled
```

```
Instance Interface VLAN
```

```
0 :          1, 4-100
1 :    eth-0-1    2
2 :    eth-0-1    3
```

## Related Commands

None

## 9.46 show spanning-tree mst brief

Use this command to show the brief mstp information.

## Command Syntax

```
show spanning-tree mst brief ( interface interface-id | instance instance-id | )
```

<b>interface</b> interface-id	The interface name you want to display
<b>instance</b> instance-id	Instance number you want to display



## Command Mode

Privileged EXEC

## Default

None

## Usage

None

## Examples

The following is an output of this command displaying the brief mstp information:

Switch#show spanning-tree mst brief

```
##### MST0: Vlans: 1
Multiple spanning tree protocol Enabled
Root ID    Priority    32768 (0x8000)
           Address    e083.bce8.9601
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID  Priority    32768 (0x8000)
           Address    e083.bce8.9601
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
           Aging Time 300 sec

Interface  Role          State      Cost      Priority.Number  Type
-----
#####

##### MST2: Vlans: 2
Root ID    Priority    32770 (0x8002)
           Address    e083.bce8.9601
Bridge ID  Priority    32770 (0x8002)
           Address    e083.bce8.9601
Interface  Role          State      Int-Cost   Priority.Number  Type
-----
eth-0-48   Disabled      Discarding 20000      128.48        P2p
eth-0-1    Disabled      Discarding 20000      128.1          P2p

##### MST15: Vlans: 15
Root ID    Priority    32783 (0x800f)
           Address    e083.bce8.9601
Bridge ID  Priority    32783 (0x800f)
           Address    e083.bce8.9601
Interface  Role          State      Int-Cost   Priority.Number  Type
-----
eth-0-48   Disabled      Discarding 20000      128.48        P2p
```

```
eth-0-1   Disabled   Discarding  20000   128.1   P2p
```

## Related Commands

None

## 9.47 spanning-tree instance forward

Use this command to set STP state is forward for instance and keep forward.

### Command Syntax

```
spanning-tree instance instance-id forward
```

```
no spanning-tree instance instance-id forward
```

instance-id	Specify the identifier
-------------	------------------------

### Command Mode

Interface Configuration

### Default

None

### Usage

None

### Examples

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree mode mstp
```

```
Switch(config)# spanning-tree mst configuration
```

```
Switch(config-mst)# instance 1 vlan 2
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# spanning-tree instance 1 forward
```

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# no spanning-tree instance 1 forward
```

### **Related Commands**

None

# 10

## Flow Control Commands

---

### 10.1 flowcontrol send

Use this command to enable or disable flow control send function.

#### Command Syntax

flowcontrol send ( on | off )

on	Set send flowcontrol enable
off	Set send flowcontrol disable

#### Command Mode

Interface Configuration

#### Default

Off

#### Usage

Use the flowcontrol Interface Configuration command to set the interface's ability to send pause frames to on or off.

#### Examples

This example shows how to enable flow control on interface:

```
Switch(config-if)# flowcontrol send on
```

## Related Commands

flowcontrol receive on

## 10.2 flowcontrol receive

Use this command to enable or disable flow control receive function.

### Command Syntax

flowcontrol receive ( on | off )

on	Set receive flowcontrol enable
off	Set receive flowcontrol disable

### Command Mode

Interface Configuration

### Default

Off

### Usage

Use the flowcontrol interface configuration command to set the interface's ability to receive pause frames to on or off.

### Examples

This example shows how to enable flow control on interface:

```
Switch(config-if)# flowcontrol receive on
```

### Related Commands

flowcontrol send on

## 10.3 show flowcontrol

Use this command to display flow control information.

### Command Syntax

show flowcontrol (*INTERFACE*| )

INTERFACE	Interface name
-----------	----------------

### Command Mode

Privileged EXEC

### Default

None

### Usage

Use the command to display flowcontrol ability and the pause frame information of each port.

### Examples

This example shows how to display flowcontrol information:

```
Switch# show flowcontrol
```

### Related Commands

None

# 11

## Layer 2 Protocols Tunneling Commands

---

### 11.1 l2protocol enable

Use this command to enable l2protocol function globally.

#### Command Syntax

l2protocol enable

no l2protocol enable

#### Command Mode

Global Configuration

#### Default

None

#### Usage

Use this command to enable l2protocol function globally.

#### Examples

This example shows how to enable l2protocol function globally.

```
Switch(config)# l2protocol enable
```

#### Related Commands

```
show l2protocol
```

## 11.2 l2protocol tunnel-dmac

Use this command to configure l2protocol tunnel destination MAC address.

### Command Syntax

l2protocol tunnel-dmac *MAC*

no l2protocol tunnel-dmac

MAC	l2 protocol tunnel's destination MAC address, could be 0100.0CCD.CDD0-D2 or 010F.E200.0003
-----	--

### Command Mode

Global Configuration

### Default

None

### Usage

Use this command to configure l2 protocol tunnel dmac. System default tunnel-dmac is 0100.0ccd.cdd0.

### Examples

Following is a sample that configuring 010F.E200.0003 as l2 protocol tunnel dmac:

```
Switch(config)# l2protocol tunnel-dmac 010F.E200.0003
```

### Related Commands

show l2protocol



## 11.3 l2protocol mac 1

Use this command to configure l2 protocol mac address globally.

### Command Syntax

l2protocol mac 1 *MAC* mask *MASK*

no l2protocol mac 1

MAC	0180.C200.0000 ~ 0180.C2FF.FFFF 0180.C200.0000~0180.C200.003F is used by other protocol, so this range is out of L2 Protocol MAC address control.
MASK	FFFF.FF00.0000 ~ FFFF.FFFF.FFFF

### Command Mode

Global Configuration

### Default

None

### Usage

Use this command to configure l2 protocol mac address globally.

### Examples

This example shows how to configure l2 protocol mac address:

```
Switch (config)# l2protocol mac 1 0180.c222.0000 mask ffff.ffff.0000
```

### Related Commands

l2protocol full-mac

## 11.4 l2protocol mac <2-6>

Use this command to configure l2 protocol mac address globally.

### Command Syntax

l2protocol mac *MAC\_NUM* *MAC*

no l2protocol mac *MAC\_NUM*

MAC_NUM	Should not overlap each other, range <2-6>
MAC	0180.C200.0000 ~ 0180.C2FF.FFFF

### Command Mode

Global Configuration

### Default

None

### Usage

Use this command to configure l2 protocol mac address globally.

### Examples

This example shows how to configure l2 protocol mac address:

```
Switch (config)# l2protocol mac 3 0180.c200.0000
```

### Related Commands

l2protocol full-mac

## 11.5 l2protocol

Use this command to configure l2protocol pdu-mac-address to discard, peer or tunnel.

### Command Syntax

```
l2protocol (stp|slow-proto|dot1x|cfm|mac MAC_NUM | full-mac)(discard|peer|tunnel) (evc WORD )
```

```
no l2protocol (stp|slow-proto|dot1x|cfm|mac MAC_NUM | full-mac )
```

stp	MAC: 0180.c200.0000
slow-proto	MAC: 0180.c200.0002, ethertype: 0x8809
dot1x	MAC: 0180.c200.0003, ethertype: 0x888e
cfm	ethertype: 0x8902
<b>mac</b> <i>MAC_NUM</i>	Globally configured mac 1-6
discard	Discard the protocol data unit
peer	Act as peer to the customer device instance of the protocol, peer is default option
tunnel	Tunnel the protocol data unit into the SVLAN
full-mac	Globally configured full-mac
<i>WORD</i>	The evc name

### Command Mode

Interface Configuration

### Default

None

### Usage

Use this command to configure l2 protocol to discard, peer or tunnel.

## Examples

This example shows how to configure l2 protocol to discard:

```
Switch (config-if)# l2protocol stp discard
```

This example shows how to configure l2 protocol to tunnel:

```
Switch (config-if)# l2protocol slow-proto tunnel evc evc1
```

## Related Commands

None

## 11.6 l2protocol uplink enable

Use this command to configure l2 protocol uplink port.

### Command Syntax

```
l2protocol uplink enable
```

```
no l2protocol uplink enable
```

### Command Mode

Interface Configuration

### Default

None

### Usage

Use this command to configure l2 protocol uplink port.

## Examples

This example shows how to configure l2 protocol uplink port:

```
Switch(config-if)# l2protocol uplink enable
```

## Related Commands

None

## 11.7 show l2protocol

Use this display current l2 protocol tunnel configuration.

### Command Syntax

show l2protocol (interface *IFNAME* | tunnel-dmac |)

interface <i>IFNAME</i>	Interface information
tunnel-dmac	Layer2 protocols tunnel destination MAC address

### Command Mode

Privileged EXEC

### Default

None

### Usage

Use this display current l2 protocol tunnel configuration or on specified interface.

### Examples

This example shows how to display current l2 protocol tunnel configuration on interface eth-0-1:

```
Switch# show l2protocol interface eth-0-1
```

```

Interface PDU Address      MASK                Status  EVC
=====  =====
eth-0-1   stp                  ffff.ffff.ffff    Peer    N/A
eth-0-1   slow-proto          ffff.ffff.ffff    Peer    N/A

```

```
eth-0-1 dot1x ffff.ffff.ffff Peer N/A
```

```
Switch # show l2protocol tunnel-dmac
```

```
Layer2 protocols tunnel destination MAC address is 0100.0ccd.cdd0
```

## Related Commands

None

## 11.8 l2protocol cos

Use this command to configure l2protocol cos globally.

### Command Syntax

```
l2protocol cos cos_value
```

```
no l2protocol cos
```

cos_value	vlan tag priority, the range is 0~7
-----------	-------------------------------------

### Command Mode

Global Configuration

### Default

None

### Usage

Use this command to configure l2protocol cos globally, the default value is 0.

### Examples

This example shows how to configure l2protocol cos 7:

```
Switch(config)# l2protocol cos 7
```

## Related Commands

None

## 11.9 l2protocol full-mac

Use this command to configure l2 protocol mac address globally.

### Command Syntax

l2protocol full-mac *MAC*

no l2protocol full-mac

MAC	0000.0000.0000 ~ FFFF.FFFF.FFFF
-----	---------------------------------

### Command Mode

Global Configuration

### Default

None

### Usage

If the L2 protocol full-mac address coincides with BPDU, Slow proto, EAPOL or MAC<1-4>, the tunnel operation priority is orderly: BPDU, Slow proto, EAPOL, full-mac, mac<1-4>.

If the L2 protocol full-mac address coincides with L2 Protocol tunnel destination MAC address, the crossed L2 protocol mac address won't take effect when tunnel L2 Protocol

#### Examples

This example shows how to configure l2 protocol full-mac address:

```
Switch (config)# l2protocol full-mac 0100.0CCC.CCCC
```

**Related Commands**

l2protocol mac



# 12 Storm Control Commands

---

## 12.1 storm-control

Use the storm-control interface configuration command to enable broadcast, multicast, or unicast storm control and to set threshold levels on an interface. Use the no form of this command to return to the default setting.

### Command Syntax

storm-control (broadcast | multicast | unicast) (level *LEVEL* | pps *PPS*)

no storm-control (broadcast | multicast | unicast)

broadcast	Enable broadcast storm control on the interface
multicast	Enable multicast storm control on the interface
unicast	Enable unicast storm control on the interface
level <i>LEVEL</i>	Specify the rising and falling suppression levels as a percentage of total bandwidth of the port. <0.00-100.00>
pps <i>PPS</i>	Specify the rising and falling suppression levels as a rate in packets per second at which traffic is received on the port. <0-1000000000>

### Command Mode

Interface Configuration

### Default

Disabled

## Usage

This command can only be configured on switchport.

## Examples

This example shows how to configure storm-control broadcast on interface.

```
Switch(config-if)# storm-control broadcast level 30
```

This example shows how to disable storm-control broadcast on interface.

```
Switch(config-if)# no storm-control broadcast
```

## Related Commands

show storm-control

## 12.2 show storm-control

Use this command to show storm-control configurations.

### Command Syntax

```
show storm-control (interface INTERFACE |)
```

<b>interface</b> <i>INTERFACE</i>	Interface name
-----------------------------------	----------------

### Command Mode

Privileged EXEC

### Default

None

**Usage**

This command displays the storm-control configurations.

**Examples**

This example shows storm-control configurations.

```
Switch# show storm-control
```

This example shows storm-control configurations on interface eth-0-1

```
Switch# show storm-control interface eth-0-1
```

**Related Commands**

storm-control

## 12.3 ipg storm-control enable

Use the ipg storm-control enable to let storm control calculate IPG bytes. Use the no form of this command to return to the default setting.

**Command Syntax**

```
ipg storm-control enable
```

```
no ipg storm-control enable
```

**Command Mode**

Global Configuration

**Default**

Disabled

**Usage**

This command can be configured on global configure mode.

## Examples

This example shows how to configure storm-control to calculate IPG bytes.

```
Switch(config)# ipg storm-control enable
```

This example shows how to disable storm-control to calculate IPG bytes.

```
Switch(config)# no ipg storm-control enable
```

## Related Commands

None

# 13

## Loopback Detection Commands

---

### 13.1 loopback-detect

Using the loopback-detect enable command, you can enable loopback detection on an interface.

Using the no loopback-detect enable command, you can disable loopback detection on an interface. By default, loopback detection is disabled on an interface.

#### Command Syntax

loopback-detect enable

no loopback-detect enable

#### Default

Disabled.

#### Command Mode

Interface configuration

## Usage

The loopback-detect enable command enables loopback detection on an interface. This function enables the system to detect a loopback on the interface quickly and minimizes impact of the loopback on the entire network. After loopback detection is enabled on an interface, the interface sends loopback detection packets at intervals. Loopback detection occupies CPU resources; therefore, disable this function when it is not required.

## Examples

Enable loopback detection on interface eth-0-1

```
DUT1(config)# interface eth-0-1
```

```
DUT1(config-if)# loopback-detect enable
```

## Related Commands

```
show loopback-detect
```

## 13.2 loopback-detect packet-interval

Using the loopback-detect packet-interval command, you can set the interval for sending loopback detection packets on all interfaces.

Using the no loopback-detect packet-interval command, you can restore the default interval for sending loopback detection packets on all interfaces.

By default, the interval for sending loopback detection packets is 5s

## Command Syntax

```
loopback-detect packet-interval <1-300>
```

no loopback-detect packet-interval

<1-300> INTEGER<1-300> Second, the default value is 5(5seconds).

## Default

5 seconds

## Command Mode

Global configuration

## Usage

The loopback-detect packet-interval command is used to adjust the interval for sending loopback detection packets. After loopback detection is enabled on an interface, the interface sends loopback detection packets at the interval specified by the loopback-detect packet-interval command. If a shorter interval is set, the system sends more loopback detection packets in a certain period. This enables the system to detect loopbacks more quickly and accurately, but more system sources are consumed.

## Examples

Set the interval for sending loopback detection packets to 10s

```
Switch(config)# loopback-detect packet-interval 10
```

## Related Commands

show loopback-detect

## 13.3 loopback-detect action

Using the loopback-detect action command, you can configure an action to perform when a loopback is detected on an interface.

Using the no loopback-detect action command, you can restore the default action.

By default, an interface is blocked when a loopback is detected on the interface.

### Command Syntax

```
loopback-detect action {shutdown | trap }
```

```
no loopback-detect action
```

shutdown Shuts down an interface when a loopback is detected on the interface.

Trap Only sends a trap message when a loopback is detected.

### Default

Trap

### Command Mode

Interface configuration

### Usage

After loopback detection is enabled on an interface, the interface sends loopback detection packets at intervals. When a loopback is detected on the interface, the system performs an action to minimize the impact on the entire network. The loopback-detect action command configures the action.

### Examples

Configure the system to shut down interface eth-0-1 when a loopback occurs.

```
Switch(config)#interface eth-0-1
```

```
Switch (config-if)# loopback-detect action shutdown
```



## Related Commands

show loopback-detect

loopback-detect enable

## 13.4 loopback-detect packet vlan

Using the loopback-detect packet vlan command, you can specify the VLAN IDs of loopback detection packets on an interface.

Using the no loopback-detect packet vlan command, you can cancel the configuration.

By default, detection packets do not have a VLAN ID.

### Command Syntax

loopback-detect packet vlan <1-4094>

no loopback-detect packet vlan vlan-id

<1-4094>      VLAN ID, A maximum of eight VLANs can be specified.

### Default

No vlan id.

### Command Mode

Interface configuration

## Usage

By default, loopback detection packets do not contain VLAN IDs. After the `loopback-detect packet vlan` command is executed on an interface, the interface sends an untagged loopback detection packet and the loopback detection packets with the specified VLAN tags. The specified VLANs exist and the interface has been added to the VLANs in tagged mode. If you run the `loopback-detect packet vlan` command multiple times in the same interface view, multiple VLAN IDs are specified.

You can specify a maximum of eight VLAN IDs

## Examples

Set the VLAN ID of loopback detection packets sent by interface `eth-0-1` to 30.

```
Switch(config)#interface eth-0-1
```

```
Switch (config-if)# loopback-detect packet vlan 30
```

## Related Commands

```
show running-config
```

## 13.5 show loopback-detect

Using the `show loopback-detect` command, you can view the loopback detection configuration and status of loopback detection enabled interfaces.

## Command Syntax

```
show loopback-detect {interface interface-name | packet-interval}
```

**interface** interface-name (Optional) Show loopback detection status and configuration on interface.

**packet-interval** (Optional) Show loopback detect packet interval.

## Command Mode

Privileged EXEC

## Usage

This command is used to check the loopback detection configuration and status of each interface on which loopback detection is enabled.

## Examples

Display the loopback detection configuration and status of loopback detection enabled interfaces.

```
DUT1# show loopback-detect
```

```
Loopback detection packet interval(second): 5
Loopback detection recovery time(second): 15
Interface      Action      Status
eth-0-1        trap        NORMAL
eth-0-4        trap        NORMAL
eth-0-5        trap        NORMAL
eth-0-6        trap        NORMAL
```

## Related Commands

loopback-detect action

loopback-detect enable

# 14

## MLAG Commands

---

### 14.1 mlag configuration

The mlag configuration command enters MLAG configuration mode to configure Multichassis Link Aggregation (MLAG) features.

The no mlag configuration command removes all MLAG configuration command from running-config.

#### Command Syntax

mlag configuration

no mlag configuration

#### Default

None

#### Command Mode

Global Configuration

#### Usage

The mlag configuration command enters MLAG configuration mode to configure Multichassis Link Aggregation (MLAG) features. The exit command does not affect the configuration. The no mlag configuration command removes all MLAG configuration command from running-config.

## Examples

```
DUT1(config)# mlag configuration
```

```
DUT1(config-mlag)# exit
```

## Related Commands

```
show mlag
```

## 14.2 peer-address

The peer-address command specifies the peer IPv4 address for a MLAG domain.

The no peer-address command removes the MLAG peer's IPv4 address assignment by deleting the peer-address command from running-config.

### Command Syntax

```
peer-address ipv4_addr
```

```
no peer-address
```

ipv4_addr	MLAG peer IPv4 address
-----------	------------------------

### Default

None

### Command Mode

MLAG Configuration

### Usage

The peer-address command specifies the peer IPv4 address for a MLAG domain. MLAG control traffic is sent to the peer IPv4 address.

The `no peer-address` command removes the MLAG peer's IPv4 address assignment by deleting the `peer-address` command from `running-config`.

### Examples

```
DUT1(config-mlag)# peer-address 12.1.1.2
```

```
DUT1(config-mlag)#
```

### Related Commands

```
show mlag peer
```

## 14.3 peer-link

The `peer-link` command specifies the interface that connects MLAG peers.

The `no peer-link` command removes the peer link by deleting the `peer-link` command from `running-config`.

### Command Syntax

```
peer-link IFNAME
```

```
no peer-link
```

IFNAME	Interface for peer link.
--------	--------------------------

Note: Only physical port or port-channel interface can be set to

### Default

None

### Command Mode

MLAG Configuration

## Usage

The peer-link command specifies the interface that connects MLAG peers. To form an MLAG, two switches are connected through an interface called a peer link. The peer link carries control and data traffic between the two switches.

The no peer-link command removes the peer link by deleting the peer-link command from running-config.

## Examples

```
DUT1(config-mlag)# peer-link eth-0-9
```

```
DUT1(config-mlag)#
```

## Related Commands

```
show mlag
```

## 14.4 timers mlag

The timers mlag command specifies the keepalive interval and holdtime timers.

The no timers mlag command removes the specified timer and returns it to default value.

### Command Syntax

```
timers mlag keepalive holdtime
```

```
no timers mlag
```

keepalive	Value ranges from 1 to 65535 seconds.
holdtime	Value ranges from 4 to 65535 seconds.

Note: Hold time should be no less than 4 times of the keepalive time.

**Default**

Default keepalive interval is 60 seconds and default holdtime is 240 seconds.

**Command Mode**

MLAG Configuration

**Usage**

The `timers mlag` command specifies the keepalive interval and holdtime timers. It will be take effective by next time when the peer goes to established. Between the locally configured keepalive timer and the calculated value by the remote holdtime/4 carried in open message, system uses the smaller one in actual calculation.

The `no timers mlag` command removes the specified timer and returns it to default value.

**Examples**

```
DUT1(config-mlag)# timers mlag 10 100
```

```
DUT1(config-mlag)#
```

**Related Commands**

```
show mlag peer
```

## 14.5 reload-delay

The `reload-delay` command specifies the period that non-peer links are disabled after an MLAG peer reboots.

The `no reload-delay` command restores the default value of 300 by deleting the `reload-delay mlag` statement from running-config.



## Command Syntax

reload-delay *period*

no reload-delay

period	Disable link interval. Value ranges from 0 to 86400 seconds.
--------	--

Note: Value 0 means do not have reload-delay period.

## Default

300 seconds.

## Command Mode

MLAG Configuration

## Usage

When an MLAG peer reboots, all ports except those in peer-link port-channel remain in errdisabled state for a specified period. This period allows all topology states to stabilize before the switch begins forwarding traffic. The specified period is configured by this command.

## Examples

```
DUT1(config-mlag)# reload-delay 100
```

```
DUT1(config-mlag)#
```

## Related Commands

```
show mlag
```

## 14.6 mlag

The mlag command assigns an MLAG ID to a port-channel.

The no mlag command removes the MLAG ID assignment from the configuration mode interface by deleting the corresponding mlag command from running-config.

### Command Syntax

**mlag** MLAGID

no mlag

MLAGID	Number used as MLAG ID. Value ranges from 1 to 31
--------	---

### Default

None

### Command Mode

Interface Mode

### Usage

The mlag command assigns an MLAG ID to a port-channel. MLAG peer switches form an MLAG when each switch configures the same MLAG ID to a port-channel interface. Only one MLAG ID can be assigned to an interface. An individual MLAG number cannot be assigned to more than one interface.

The no mlag command removes the MLAG ID assignment from the configuration mode interface by deleting the corresponding mlag command from running-config.

### Examples

```
DUT1(config)# interface agg1
```

```
DUT1(config-if)# mlag 1
```

## Related Commands

show mlag interface

## 14.7 clear mlag count

The clear mlag count command clears mlag count information.

### Command Syntax

clear mlag count

### Default

None

### Command Mode

Privileged EXEC

### Usage

Use this command to clear mlag count information which can be displayed by show mlag peer command.

### Examples

```
DUT1# clear mlag count
```

```
DUT1# show mlag peer
```

```
MLAG neighbor is 12.1.1.2, MLAG version 1
```

```
MLAG state = Established, up for 00:00:39
```

```
Last read 00:00:15, hold time is 240, keepalive interval is 60 seconds
```

```
Received 0 messages,Sent 0 messages
```

Open : received 0, sent 0

KAlive : received 0, sent 0

Fdb sync : received 0, sent 0

Failover : received 0, sent 0

Conf : received 0, sent 0

Syspri : received 0, sent 0

Peer fdb : received 0, sent 0

STP Total: received 0, sent 0

Global : received 0, sent 0

Packet : received 0, sent 0

Instance: received 0, sent 0

State : received 0, sent 0

Connections established 1; dropped 0

Local host: 12.1.1.1, Local port: 61000

Foreign host: 12.1.1.2, Foreign port: 37335

remote\_sysid: 0ecb.3030.1100

## Related Commands

show mlag peer

## 14.8 show mlag

The show mlag command displays information about the MLAG configuration.

## Command Syntax

show mlag

## Default

None

## Command Mode

Privileged EXEC

## Usage

Use this command to display information about the MLAG configuration.

## Examples

```
DUT1# show mlag
```

```
MLAG configuration:
```

```
-----
```

```
role          : Master
```

```
local_sysid   : 6a6f.596c.4600
```

```
mlag_sysid    : 6a6f.596c.4600
```

```
peer-link     : -
```

```
peer conf     : Yes
```

## Related Commands

mlag configuration

## 14.9 show mlag peer

The show mlag peer command displays information about the MLAG peer.

### Command Syntax

```
show mlag peer
```

### Default

None

### Command Mode

Privileged EXEC

### Usage

Use this command to display information about the MLAG peer.

### Examples

```
DUT1# show mlag peer
```

```
MLAG neighbor is 12.1.1.2, MLAG version 1
```

```
MLAG state = Established, up for 4d02h14m
```

```
Last read 00:00:29, hold time is 240, keepalive interval is 60 seconds
```

```
Received 6835 messages,Sent 7185 messages
```

```
Open      : received 1, sent 2
```

```
KAlive    : received 6831, sent 6830
```

```
Fdb sync  : received 0, sent 0
```

```
Failover  : received 0, sent 87
```

```
Conf      : received 1, sent 1
```

```
STP Total: received 2, sent 265
```

Global : received 2, sent 3

Packet : received 0, sent 0

Instance: received 0, sent 0

State : received 0, sent 262

Connections established 1; dropped 0

Local host: 12.1.1.1, Local port: 61000

Foreign host: 12.1.1.2, Foreign port: 34283

remote\_sysid: 5e26.6a03.d400

### **Related Commands**

peer-address

## **14.10 show mlag interface**

The show mlag interface command displays information about the MLAG interface.

### **Command Syntax**

show mlag interface

### **Default**

None

### **Command Mode**

Privileged EXEC

**Usage**

Use this command to display information about the MLAG interface.

**Examples**

```
DUT1# show mlag interface
```

mlagid	local-if	local-state	remote-state
1	agg1	up	up
2	agg2	up	up

**Related Commands**

**mlag** MLAGID