

**FiberstoreOS**

**Ethernet Command Line Reference**

# Contents

---

<b>1 Interface Commands.....</b>	<b>7</b>
1.1 bandwidth.....	7
1.2 clear counters.....	8
1.3 description.....	9
1.4 duplex.....	10
1.5 speed.....	11
1.6 flowcontrol.....	12
1.7 interface.....	13
1.8 interface range.....	14
1.9 interface range create vlan.....	15
1.10 jumboframe.....	16
1.11 system jumboframe size.....	17
1.12 media-type.....	18
1.13 shutdown.....	19
1.14 load-interval.....	20
1.15 vlan dot1q tag native.....	21
1.16 show interface.....	22
1.17 show interface status.....	23
1.18 show interface summary.....	24
1.19 show ip interface.....	25
1.20 switchport.....	26
1.21 switchport access allowed.....	27
1.22 switchport access vlan.....	28
1.23 switchport mode access.....	29
1.24 switchport mode trunk.....	29
1.25 switchport mode dot1q-tunnel.....	30
1.26 switchport mode trunk ingress-filter.....	31
1.27 switchport trunk allowed.....	32
1.28 switchport trunk native.....	33
<b>2 Interface Errdisable Commands.....</b>	<b>35</b>
2.1 errdisable detect.....	35
2.2 errdisable recovery interval.....	36
2.3 errdisable recovery reason.....	37
2.4 errdisable flap.....	38
2.5 show errdisable detect.....	39
2.6 show errdisable recovery.....	40

---

2.7 show errdisable flap.....	41
<b>3 MAC Address Table Commands.....</b>	<b>42</b>
3.1 mac-address-table ageing-time.....	42
3.2 mac-address-table forward.....	43
3.3 mac-address-table discard.....	44
3.4 clear mac address-table.....	45
3.5 show mac address-table ageing-time.....	46
3.6 show mac address-table.....	46
3.7 show mac address-table count.....	48
3.8 show mac-filter address-table.....	48
3.9 show resource mac-filter.....	49
3.10 show resource static-fdb.....	50
<b>4 VLAN Commands.....</b>	<b>52</b>
4.1 vlan database.....	52
4.2 vlan replace dscp.....	53
4.3 vlan.....	54
4.4 vlan VLAN_LIST.....	55
4.5 show vlan.....	56
4.6 show vlan all.....	56
4.7 show vlan brief.....	57
4.8 show interface switchport.....	58
4.9 switchport access allowed.....	59
4.10 switchport access vlan.....	60
4.11 switchport mode access.....	60
4.12 switchport mode trunk.....	61
4.13 switchport mode trunk ingress-filter.....	62
4.14 switchport trunk allowed.....	63
4.15 switchport trunk native.....	64
4.16 vlan bridge disable.....	65
<b>5 Voice VLAN Commands.....</b>	<b>67</b>
5.1 voice vlan.....	67
5.2 voice vlan security enable.....	68
5.3 voice vlan set phb to.....	68
5.4 voice vlan mac-address.....	70
5.5 voice vlan enable.....	71
5.6 show voice vlan state.....	72
5.7 debug voice-vlan.....	73
<b>6 VLAN Classification Commands.....</b>	<b>74</b>
6.1 vlan classifier activate.....	74
6.2 vlan classifier group.....	75
6.3 vlan classifier rule.....	76
6.4 show vlan classifier group.....	78
6.5 show vlan classifier interface.....	79

---

6.6 show vlan classifier rule.....	80
6.7 show resource vlan-classification.....	80
<b>7 VLAN Mapping Commands.....</b>	<b>82</b>
7.1 ethernet evc.....	82
7.2 dot1q mapped-vlan.....	83
7.3 dot1q mapped-double-vlan.....	83
7.4 vlan mapping table.....	84
7.5 raw-vlan.....	85
7.6 show vlan mapping table.....	86
7.7 show vlan mapping table applied-interface.....	87
7.8 switchport mode.....	88
7.9 switchport dot1q-tunnel type.....	88
7.10 switchport dot1q-tunnel native.....	89
7.11 switchport dot1q-tunnel allow vlan.....	90
7.12 switchport dot1q-tunnel vlan mapping table.....	91
7.13 switchport trunk vlan-translation.....	92
7.14 switchport trunk vlan-translation mapping table.....	93
7.15 vlan dot1q tag native.....	94
7.16 show resource vlan-mapping.....	94
<b>8 Link Aggregation Commands.....</b>	<b>96</b>
8.1 channel-group.....	96
8.2 static-channel-group.....	97
8.3 lacp port-priority.....	98
8.4 lacp timeout.....	99
8.5 lacp system-priority.....	100
8.6 port-channel load-balance.....	101
8.7 show channel-group summary.....	102
8.8 show channel-group detail.....	103
8.9 show lacp internal.....	104
8.10 show lacp internal detail.....	105
8.11 show lacp neighbor.....	108
8.12 show lacp neighbor detail.....	110
8.13 show channel-group port.....	113
8.14 show lacp counters.....	117
8.15 show lacp sys-id.....	118
8.16 clear lacp counters.....	119
<b>9 MSTP Commands.....</b>	<b>120</b>
9.1 spanning-tree enable.....	120
9.2 spanning-tree priority.....	121
9.3 spanning-tree instance priority.....	122
9.4 spanning-tree forward-time.....	123
9.5 spanning-tree hello-time.....	124
9.6 spanning-tree max-age.....	125

---

9.7 spanning-tree max-hops.....	126
9.8 spanning-tree transmit-holdcount.....	127
9.9 spanning-tree edgeport bpdu-guard.....	127
9.10 spanning-tree edgeport bpdu-filter.....	128
9.11 spanning-tree port.....	129
9.12 spanning-tree port-priority.....	130
9.13 spanning-tree pathcost-standard.....	131
9.14 spanning-tree path-cost.....	132
9.15 spanning-tree link-type.....	133
9.16 spanning-tree edgeport.....	134
9.17 spanning-tree edgeport bpdu-guard.....	135
9.18 spanning-tree edgeport bpdu-filter.....	136
9.19 spanning-tree guard root.....	137
9.20 spanning-tree guard loop.....	138
9.21 spanning-tree force-version.....	139
9.22 spanning-tree restricted-tcn.....	140
9.23 spanning-tree restricted-role.....	140
9.24 spanning-tree mode.....	141
9.25 spanning-tree instance port-priority.....	142
9.26 spanning-tree instance path-cost.....	143
9.27 spanning-tree instance restricted-tcn.....	144
9.28 spanning-tree instance restricted-role.....	145
9.29 spanning-tree mst configuration.....	146
9.30 instance.....	147
9.31 region.....	148
9.32 revision.....	149
9.33 clear spanning-tree detected protocols.....	150
9.34 clear spanning-tree disabled-port.....	150
9.35 show spanning-tree.....	151
9.36 show spanning-tree interface.....	152
9.37 show spanning-tree brief.....	154
9.38 show spanning-tree disabled-port.....	155
9.39 show spanning-tree mst.....	155
9.40 show spanning-tree mst config.....	156
9.41 show spanning-tree mst detail.....	157
9.42 show spanning-tree mst instance.....	159
9.43 show spanning-tree mst interface.....	160
9.44 show spanning-tree mst brief.....	161
9.45 spanning-tree instance forward.....	162
<b>10 Flow Control Commands.....</b>	<b>164</b>
10.1 flowcontrol send.....	164
10.2 flowcontrol receive.....	165
10.3 show flowcontrol.....	165

---

<b>11 Layer 2 Protocols Tunneling Commands.....</b>	<b>167</b>
11.1 l2protocol enable.....	167
11.2 l2protocol tunnel-dmac.....	167
11.3 l2protocol mac.....	168
11.4 l2protocol.....	169
11.5 l2protocol uplink enable.....	170
11.6 show l2protocol.....	171
11.7 l2protocol cos.....	172
11.8 l2protocol full-mac.....	173
<b>12 Storm Control Commands.....</b>	<b>175</b>
12.1 storm-control.....	175
12.2 show storm-control.....	176
12.3 ipg storm-control enable.....	177
<b>13 MLAG Commands.....</b>	<b>178</b>
13.1 mlag configuration.....	178
13.2 peer-address.....	179
13.3 peer-link.....	179
13.4 timers mlag.....	180
13.5 reload-delay.....	181
13.6 mlag.....	183
13.7 clear mlag count.....	184
13.8 show mlag.....	185
13.9 show mlag peer.....	186
13.10 show mlag interface.....	188

---

# 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**

<b>bandwidth</b>	<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* |)

<i>IFNAME</i>	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**

<i>LINE</i>	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**

<b>auto</b>	Enable automatic duplex configuration; port automatically detects whether it should run in full-duplex or half-duplex mode, depending on the attached device mode
<b>full</b>	Enable full-duplex mode
<b>half</b>	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**

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

Use the flowcontrol interface configuration command to control the packet flow.

## Command Syntax

**flowcontrol (send|receive) (on|off)**

<b>send</b>	Input direction
<b>receive</b>	Ouput direction
<b>on</b>	Enable flow control
<b>off</b>	Disable flow control

## Command Mode

Interface Configuration

## Default

Disabled

## Usage

By default, flow control is disabled.

## Examples

The following example sets the flow control on in the tx direction:

```
Switch(config)# interface eth-0-1
Switch(config-if)# flowcontrol send on
```

The following example sets the flow control on in the rx direction:

```
Switch(config-if)# flowcontrol receive on
```

## Related Commands

None

## 1.7 interface

Use this command to enter interface mode.

## Command Syntax

**interface** *IFNAME*

<i>IFNAME</i>	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**

# 1.8 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*

<i>IFNAME</i>	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

## 1.9 interface range create vlan

Use this command to create a list of vlan interface.

### Command Syntax

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

<i>vid-range</i>	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

## 1.10 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

Default is disabled.



## 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

## 1.11 system jumboframe size

Use this command to set jumbo frame size.

To return to default jumbo frame size, use the no form of this command.

## Command Syntax

**system jumboframe size** *SIZE*

**no system jumboframe size**

<i>SIZE</i>	Frame size of max jumbo frame, the range is 9216~16096
-------------	--

## Command Mode

Global Configuration

## Default

9600

## Usage

When jumboframe is enable, by default, the max frame size which can be transmitted is 9600 bytes.  
Use this command this set the max frame size.

## Examples

The following example shows how to set the max jumboframe size:

```
Switch(config)# system jumboframe size 16906
```

## Related Commands

**jumboframe**

## 1.12 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)**

**no media-type**

<b>auto-select</b>	Enable the switch to dynamically select the type based on which one first links up
<b>rj45</b>	Select the RJ-45 interface
<b>sfp</b>	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

## 1.13 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

## 1.14 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**

<i>seconds</i>	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**

## 1.15 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

## 1.16 show interface

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

### Command Syntax

**show interface** (*IFNAME* | )

<i>IFNAME</i>	The interface name, can be eth, vlan or agg
---------------	---

### 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 runts, 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**

## 1.17 show interface status

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

### Command Syntax

**show interface (*IFNAME*) status**

<i>IFNAME</i>	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

## 1.18 show interface summary

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

### Command Syntax

**show interface** (*IFNAME*) **summary**

<i>IFNAME</i>	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**

## 1.19 show ip interface

Use this command to show layer3 interface information.

### Command Syntax

**show ip interface** (*IFNAME*)

**show ip interface brief**

<i>IFNAME</i>	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

## 1.20 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

## 1.21 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
```

<b>add</b>	Allow the specified VLAN packet pass through this port
<b>remove</b>	Forbid the specified VLAN packet pass through this port
<i>vid</i>	VLAN ID

## Command Mode

Interface Configuration

## Default

None

## Usage

This command is used for vlan classification or dot1x guest vlan.

## 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)**

## 1.22 switchport access vlan

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

## Command Syntax

**switchport access vlan *vid***

**no switchport access vlan**

<i>vid</i>	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
```

## **1.23 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
```

## **1.24 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**

# 1.25 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**

## 1.26 switchport mode trunk ingress-filter

Use this command to enable or disable VLAN ingress filter.

## Command Syntax

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

<b>enable</b>	Enable the VLAN ingress filter
<b>disable</b>	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**

## 1.27 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)**

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

## 1.28 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*

## 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 | udld | fdb-loop)**

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

<b>link-flap</b>	Enable detect Link flap error
<b>udld</b>	Enable detect UDLD error
<b>fdb-loop</b>	Enable detect FDB loop 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**

<i>RANGE</i>	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 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)**

<b>all</b>	Enable timer to recover from all reason
<b>bpduguard</b>	Enable timer to recover from BPDU Guard error disable state
<b>bpduloop</b>	Enable timer to recover from BPDU Loopback error disable state
<b>port-security</b>	Enable timer to recover from Port security failure
<b>link-flap</b>	Enable timer to recover from Link flap failure
<b>link-monitor-failure</b>	Enable timer to recover from link monitoring failure
<b>oam-remote-failure</b>	Enable timer to recover from OAM detected remote failure
<b>udld</b>	Enable timer to recover from UDLD failure
<b>fdb-loop</b>	Enable timer to recover from FDB loop

### 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**

## 2.4 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**

<b>link-flap</b>	Configure link flap conditions
<i>count</i>	Max flap count, the range is 1~100
<i>seconds</i>	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**

## 2.5 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
```

## Related Commands

**errdisable detect**

## 2.6 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
```



Timer interval: 300 seconds

## Related Commands

**errdisable recovery interval**

**errdisable recovery reason**

## 2.7 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**

<i>ageing-time</i>	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 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*

<i>mac-addr</i>	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
<i>interface-id</i>	Interface to which the received packet is forwarded. Valid interfaces include physical ports and link aggregation ports
<i>vlan-id</i>	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**

## 3.3 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**

<i>mac-addr</i>	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**

---

## 3.4 clear mac address-table

Use the clear mac address-table privileged EXEC command on the switch to delete a specific dynamic address, all dynamic addresses on a particular interface, all dynamic addresses on stack members, or all dynamic 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</b> <i>mac-addr</i>	Delete the specified MAC address
<b>interface</b> <i>interface-id</i>	Delete all MAC addresses on the specified physical port or link aggregation port
<b>vlan</b> <i>vlan-id</i>	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**

## 3.5 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**

## 3.6 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</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 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**

## 3.7 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**

## 3.8 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**

## 3.9 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**

## 3.10 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 replace dscp

Use this command to enable DSCP on specific VLAN.

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

## Command Syntax

**vlan** *vlan* **replace dscp-exp**

**no vlan** *vlan* **replace dscp-exp**

<i>vlan</i>	<1-4094> vlan id
-------------	------------------

## Command Mode

VLAN Configuration

## Default

None

## Usage

This command is enabled the DSCP of the packet in the VLAN will be replaced.

## Examples

This example shows how to enable dscp on VLAN 1:

```
Switch(config-vlan)# vlan 1 replace dscp-exp
```

This example shows how to disable dscp on VLAN 1:

```
Switch(config-vlan)# no vlan 1 replace dscp-exp
```

## Related Commands

**qos enable**

---

## 4.3 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*

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

## 4.4 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`

<i>vlan</i>	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)
```

<i>IFNAME</i>	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***

<b>add</b>	Allow the traffic from the vlan to pass the access port
<b>remove</b>	Not allow the traffic from the vlan to pass the access port
<i>vlan</i>	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)**

<b>enable</b>	Enable the ingress-filter
<b>disable</b>	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 <i>vlan</i></b>	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"
<b>remove <i>vlan</i></b>	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"
<b>all</b>	allow the traffic from all the vlan to transmit the trunk port
<b>none</b>	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**

<i>vlan</i>	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**

<i>vlan</i>	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**

<i>vlan_id</i>	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 enable, all the packet whose MAC mismatch with OUI will be drop 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 phb to

Use this command to set COS for VOICE packet.

### Command Syntax

**voice vlan set phb to**

**(af11|af12|af13|af21|af22|af23|af31|af32|af33|af41|af42|af43|ef|df|cs1|cs2|cs3|cs4|cs5|cs6|cs7)**

**no voice vlan set phb**

<b>af11</b>	Assured forwarding class 1, low drop precedence, PHB of (priority 2, color green)
<b>af12</b>	Assured forwarding class 1, medium drop precedence, PHB of (priority 2, color yellow)
<b>af13</b>	Assured forwarding class 1, high drop precedence, PHB of (priority 2, color red)
<b>af21</b>	Assured forwarding class 2, low drop precedence, PHB of (priority 3, color green)
<b>af22</b>	Assured forwarding class 2, medium drop precedence, PHB of (priority 3, color yellow)
<b>af23</b>	Assured forwarding class 2, high drop precedence, PHB of (priority 3, color red)
<b>af31</b>	Assured forwarding class 3, low drop precedence, PHB of (priority 4, color green)
<b>af32</b>	Assured forwarding class 3, medium drop precedence, PHB of (priority 4, color yellow)
<b>af33</b>	Assured forwarding class 3, high drop precedence, PHB of (priority 4, color red)
<b>af41</b>	Assured forwarding class 4, low drop precedence, PHB of (priority 5, color green)
<b>af42</b>	Assured forwarding class 4, medium drop precedence, PHB of (priority 5, color yellow)
<b>af43</b>	Assured forwarding class 4, high drop precedence, PHB of (priority 5, color red)
<b>ef</b>	Expedited forwarding, PHB of (priority 12, color green)
<b>df</b>	Default forwarding, PHB of (priority 1, color green)
<b>cs1</b>	Class selector 1, PHB of (priority 0, color green)
<b>cs2</b>	Class selector 2, PHB of (priority 6, color green)
<b>cs3</b>	Class selector 3, PHB of (priority 7, color green)
<b>cs4</b>	Class selector 4, PHB of (priority 8, color green)
<b>cs5</b>	Class selector 5, PHB of (priority 9, color green)
<b>cs6</b>	Class selector 6, PHB of (priority 10, color green)
<b>cs7</b>	Class selector 7, PHB of (priority 11, color green)

## Command Mode

Global Configuration

## Default

By default the phb is ef

## Usage

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

## Examples

This example shows how to set phb to df:

```
Switch(config)# voice vlan set phb to df
```

## 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*

<i>MAC</i>	Source MAC address (unicast or multicast) to add to the address table
<i>MASK</i>	The MASK for the Source MAC
<i>LINE</i>	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 consider as VOICEC packet when the sourec 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 VOICE VLAN.

## Examples

This example shows how to show the current status of VOICE 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)**

<b>all</b>	Debug all VOICEC VLAN info
<b>events</b>	Debug VOICEC VLAN event info

### Command Mode

Privileged EXEC

### Default

None

### Usage

This command is used to debug VOICEC 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**

<i>group-id</i>	VLAN classifier group id, only group id 31 can be used for protocol ,the is 0~31
<b>ip</b>	Based on ip
<b>mac</b>	Based on MAC
<b>protocol</b>	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*

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

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

<i>group</i>	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* |)

<i>rule</i>	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*

<i>WORD</i>	EVC name
-------------	----------

### Command Mode

Global Configuration

### Default

None

### Usage

None

### Examples

Create ethernet evc evc\_table.

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

```
Switch(config-etc)# 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**

<i>VLAN_ID</i>	Mapped vlan id, the range is 1~4094
----------------	-------------------------------------

### 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-etc)# dot1q mapped-vlan 100

### 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**

<i>inner-vlan</i>	Mapped inner vlan id, the range is 1~4094
<i>outer-vlan</i>	Mapped outer vlan id, the range is 1~4094

### **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-enc)# 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
```

<i>WORD</i>	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

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

## Command Syntax

**raw-vlan** (*VLAN\_ID* | **out-of-range** | **untagged** ) **evc** *WORD*

**no raw-vlan** (*VLAN\_ID* | **out-of-range** | **untagged** )

<i>VLAN_ID</i>	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
<i>WORD</i>	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
```

## 7.6 show vlan mapping table

Use this command to display current vlan mapping table.

**Command Syntax**

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

<i>WORD</i>	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	Raw VLAN
VMT	evc_table	100	10-20
VMT_double	evc_double	10(100)	untagged

## Related Commands

**show vlan mapping table applied-interface**

## 7.7 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***

## 7.8 switchport mode

Use this command to configure switchport mode

### Command Syntax

**switchport mode ( access | trunk | dot1q-tunnel )**

**no switchport dot1q-tunnel**

<b>access</b>	Configure this port to access port
<b>trunk</b>	Configure this port to trunk port
<b>dot1q-tunne</b>	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**

## 7.9 switchport dot1q-tunnel type

Use this command to configure dot1q-tunnel type.



## Command Syntax

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

<b>basic</b>	Dot1q-tunnel basic type
<b>selective</b>	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**

## 7.10 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**

<b>vlan</b>	VLAN that will be added
-------------	-------------------------

<b>inner-vlan</b>	Untagged inner VLAN
<i>VLAN_ID</i>	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

## 7.11 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)
```

<b>all</b>	Add all VLANs to the allowed VLAN list
<b>none</b>	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**

## 7.12 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**

<i>WORD</i>	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**

## 7.13 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**

## 7.14 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**

<i>WORD</i>	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`

## 7.15 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

## 7.16 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**

<i>channel-group-number</i>	<1-127>
<b>active</b>	Enable initiation of LACP negotiation on a port
<b>passive</b>	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**

<i>static-channel-group-number</i>	Channel group number, the range is 1~127
------------------------------------	--

### 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*

<i>priority</i>	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)**

<b>short</b>	Set LACP short timeout
<b>long</b>	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*

no lacp system-priority

<i>priority</i>	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)**

**no port-channel load-balance**

<b>dst-mac</b>	Load balance by destination MAC address
<b>src-mac</b>	Load balance by source MAC address
<b>src-dst-mac</b>	Load balance by both source and destination MAC address
<b>dst-ip</b>	Load balance by destination IP address
<b>src-ip</b>	Load balance by source IP address
<b>src-dst-ip</b>	Load balance by both source and destination IP address

### 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 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**

<i>channel-group-number</i>	Channel group number, the range is 1~127
-----------------------------	--

### 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

## 8.8 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**

<i>channel-group-number</i>	Channel group number, the range is 1~127
-----------------------------	--

### 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 = 127
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	LACP port Priority	Dev ID	Oper Key	Port Number	Port State
eth-0-10	SA	32768	fed3.7914.b000	10	0xa	0x1d

## Related Commands

None

## 8.9 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**

<i>channel-group-number</i>	Channel group number, the range is 1~127
-----------------------------	--

### 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

Port	Flags	State	Priority	LACP port 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

Channel group 50

Port	Flags	State	Priority	LACP port Admin key	Oper Key	Port Number	Port 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	Priority	LACP port 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

## 8.10 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**

<i>channel-group-number</i>	Channel group number, the range is 1~127
-----------------------------	--

## 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:

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
```

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:

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

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

## 8.11 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**

<i>channel-group-number</i>	Channel group number, the range is 1~127
-----------------------------	--

## 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:

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
eth-0-12	FA	32768	ca9c.e21d.a301	0	1	0x57	0x3f

Channel group 50 neighbors

Partner's information:

Port	Flags	Priority	Dev ID	Admin key	Oper Key	Port Number	Port 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

## 8.12 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**

<i>channel-group-number</i>	Channel group number, the range is 1~127
-----------------------------	--

### 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	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	
Partner	Partner	Partner	
Port	System ID	Port Number	Flags
eth-0-12	32768,ca9c.e21d.a301	0x57	FA
LACP Partner	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	
Partner	Partner	Partner	
Port	System ID	Port Number	Flags
eth-0-9	32768,ca9c.e21d.a301	0x54	FA
LACP Partner	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	
Partner	Partner	Partner	
Port	System ID	Port Number	Flags
eth-0-10	32768,ca9c.e21d.a301	0x55	FA
LACP Partner	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



## 8.13 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**

<i>ifname</i>	Interface name
<i>channel-group-number</i>	Channel group number, the range is 1~127

### 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-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	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	LACP port Priority	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	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	LACP port Priority	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
------	-------	-------	-----------------------	--------------	-------------	----------------	---------------

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

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

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:

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

Partner's information:

		LACP port		Admin	Oper	Port	Port
Port	Flags	Priority	Dev ID	key	Key	Number	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:

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

Partner's information:

Port	Flags	LACP port 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	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	LACP port 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	LACP port Priority	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

## 8.14 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**

<i>channel-group-number</i>	Channel group number, the range is 1~127
-----------------------------	--

### 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          LACPDU      Pckt err
              Sent   Recv   Sent   Recv
-----
Channel-group aggl
eth-0-11      231    226    0      0
eth-0-12      224    219    0      0

Traffic statistics
Port          LACPDU      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          LACPDU      Pckt err
              Sent      Recv      Sent      Recv
-----
Channel-group aggl
eth-0-11      256      251      0      0
eth-0-12      249      244      0      0
```

## Related Commands

None

## 8.15 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

## 8.16 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**

<i>channel-group-number</i>	Channel group number, the range is 1~127
-----------------------------	--

### 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 SpanningTree 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

This example shows how to enable Spanning Tree Protocol:

```
Switch# configure terminal
```

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

```
Switch# configure terminal
```

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

### Related Commands

**show spanning-stree**



## 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**

<i>priority</i>	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

This example shows how to set the priority of the bridge:

```
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**

<i>instance-id</i>	Specify the instance ID, the range is 1~4094
<i>priority</i>	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, the higher likelihood of the bridge becoming 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

This example shows how to configure the priority of instance 1:

```
Switch# configure terminal
```

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

### Related Commands

**show spanning-stree**

## 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**

<i>seconds</i>	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

This example shows how to configure the forwarding time:

```
Switch# configure terminal
```

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

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

### Related Commands

**show spanning-stree**

## 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**

<i>seconds</i>	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

This example shows how to set STP hello time:

```
Switch# configure terminal
```

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

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

### Related Commands

**show spanning-stree**

## 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**

<i>seconds</i>	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

This example shows how to set the value of bridge maximum age time:

```
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**

<i>number</i>	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

This example shows how to configure the maximum hops:

```
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**

<i>number</i>	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

This example shows how to set the transmit hold-count:

```
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

This example shows how to enable BPDU guard:

```
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)**

<b>enable</b>	Enable spanning protocol on this port
<b>disable</b>	Disable spanning protocol on this port

## Command Mode

Interface Configuration

## Default

The default spanning tree state of the port is enabled.

## Usage

None

## Examples

This example shows how to enable spanning tree on interface:

```
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**

<i>priority</i>	Port priority, the range is 0~240
-----------------	-----------------------------------

### Command Mode

Interface Configuration

### Default

The default priority is 128

## Usage

None

## Examples

This example shows how to set spanning tree port priority:

```
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**

<b>dot1d-1998</b>	IEEE 802.1D-1998 standard
<b>dot1t</b>	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

This example shows how to set spanning tree pathcost mode:

```
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**

<i>number</i>	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

This example shows how to set spanning tree pathcost:

```
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**

<b>auto</b>	Automatically detect link type
<b>point-to-point</b>	Enable point to point link
<b>shared</b>	Disable point to point link

### Command Mode

Interface Configuration

### Default

The link type is auto detected

### Usage

None

### Examples

This example shows how to set spanning tree port type:

```
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

This example shows how to enable spanning tree edgeport:

```
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**

<b>enable</b>	Enable spanning-tree edgeport bpdu-guard
<b>disable</b>	Disable spanning-tree edgeport bpdu-guard
<b>default</b>	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

This example shows how to enable BPDU guard on spanning-tree edgeport:

```
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**

<b>enable</b>	Enable spanning-tree edgeport bpdu- filter
<b>disable</b>	Disable spanning-tree edgeport bpdu- filter
<b>default</b>	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

This example shows how to enable BPDU filter on spanning tree edgeport:

```
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

This example shows how to enable root guard:

```
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, that port should move into the STP loop-inconsistent blocking state, instead of the listening / learning / forwarding state, and should not pass user traffic.

### Examples

This example shows how to enable loop guard:

```
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**

<i>number</i>	Version identifier. (0 - STP, 1- Not supported, 2 - RSTP, 3 - MSTP)
---------------	---

### Command Mode

Interface Configuration

### Default

None

### Usage

None

### Examples

This example shows how to modify spanning tree version on port:

```
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 restricted-tcn**

**no spanning-tree restricted-tcn**

### Command Mode

Interface Configuration

### Default

The default restricted TCN value is FALSE

### Usage

None

### Examples

This example shows how to enable restricted TCN:

```
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

This example shows how to enable restricted-role on port:

```
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 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 stp

## Usage

None

## Examples

This example shows how to configure spanning-tree mode:

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree mode mstp
```

## Related Commands

None

## 9.25 spanning-tree instance port-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**

<i>instance-id</i>	Specify the identifier
<i>priority</i>	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

This example shows how to configure port priority for specified instance:

```
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

## 9.26 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**

<i>instance-id</i>	Specify the identifier
<i>cost</i>	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

This example shows how to set path-cost for specified instance:

```
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

## 9.27 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**



<i>instance-id</i>	Specify the instance ID
--------------------	-------------------------

## Command Mode

Interface Configuration

## Default

The default restricted TCN value is FALSE

## Usage

None

## Examples

This example shows how to enable restricted TCN for specified instance:

```
Switch# configure terminal
```

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

```
Switch(config-if)# spanning-tree instance 2 restricted-tcn
```

## Related Commands

None

## 9.28 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**

<i>instance-id</i>	Specify the instance ID
--------------------	-------------------------

## Command Mode

Interface Configuration

## Default

The default restricted-role value is FALSE.

## Usage

None

## Examples

This example shows how to enable restrict-role for specified instance:

```
Switch# configure terminal
```

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

```
Switch(config-if)# spanning-tree instance 2 restricted-role
```

## Related Commands

None

## 9.29 spanning-tree mst configuration

Use this command to enter mst configuration mode.

## Command Syntax

**spanning-tree mst configuration**

## Command Mode

Global Configuration

## Default

None

## Usage

None

## Examples

This example shows how to enter mst configuration mode:

```
Switch# configure terminal
```

```
Switch(config)# spanning-tree mst configuration
```

```
Switch(config-mst)# instance 1 vlan 2
```

## Related Commands

None

## 9.30 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*

<i>instance-id</i>	Instance id, we support at most 16 instances
<i>vlan-id</i>	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

This example shows how to add vlan to specified instance:

```
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

## 9.31 region

Use this command to create mstp region.

### Command Syntax

**region** *name*

**no region**

<i>name</i>	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

This example shows how to create mstp region:

```
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

## 9.32 revision

Use this command to create an mstp revision number.

### Command Syntax

**revision** *number*

**no revision**

<i>number</i>	Specify the configuration revision number. The range is 0~255
---------------	---

### Command Mode

MST Configuration

### Default

Default value is 0

### Usage

None

### Examples

This example shows how to create mstp revision number:

```
Switch# configure terminal
Switch(config)# spanning-tree mst configuration
Switch(config-mst)# revision 1
```

## Related Commands

None

## 9.33 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> <i>interface-id</i>	Specify the name of the interface on which protocols have to be cleared
---	---

### Command Mode

Privileged EXEC

### Default

None

### Usage

None

### Examples

This example shows how to clear the detected protocols for a specific bridge or interface:

```
Switch# clear spanning-tree detected protocols interface eth-0-1
```

### Related Commands

None

## 9.34 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

This example shows how to clear all spanning tree protocol disabled port

```
Switch# clear spanning-tree disabled-port
```

## Related Commands

None

## 9.35 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

This example shows how to display spanning tree information

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 t
imer 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

## 9.36 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** | )



<i>interface-id</i>	Specify the name of the interface
<b>brief</b>	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

## 9.37 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

## 9.38 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

## 9.39 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

## 9.40 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

## 9.41 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> <i>interface-id</i>	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 timer 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

## 9.42 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* | )

<i>instance-id</i>	Instance number you want to display
<b>interface</b> <i>interface-id</i>	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

## 9.43 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*

<i>interface-id</i>	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

## 9.44 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> <i>interface-id</i>	The interface name you want to display
<b>instance</b> <i>instance-id</i>	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

## 9.45 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**

<i>instance-id</i>	Specify the identifier
--------------------	------------------------

## Command Mode

Interface Configuration

## Default

None

## Usage

None

## Examples

This example shows how to configure spanning tree state to forwarding on interface:

```
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 )**

<b>on</b>	Set send flowcontrol enable
<b>off</b>	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 )**

<b>on</b>	Set receive flowcontrol enable
<b>off</b>	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| )**

<i>INTERFACE</i>	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**

<i>MAC</i>	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

Use this command to configure l2 protocol mac address globally.

## Command Syntax

**l2protocol mac** *MAC\_NUM* *MAC* **mask** *MASK\_MAC*

**no l2protocol mac** *MAC\_NUM*

<i>MAC_NUM</i>	Should not overlap each other
----------------	-------------------------------



<i>MAC</i>	0180.C200.0000 ~ 0180.C2FF.FFFF
<i>MASK_MAC</i>	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.c200.0000 mask FFFF.FFFF.FFFF
```

## Related Commands

l2protocol full-mac

# 11.4 l2protocol

Use this command to configure l2protocol pdu-mac-address to discard, peer or tunnel.

## Command Syntax

**l2protocol (stp|slow-proto|dot1x) mac *MAC\_NUM* | full-mac)(discard|peer|tunnel (evc *WORD* ))**

**no l2protocol (stp|slow-proto|dot1x) mac *MAC\_NUM* | full-mac )**

<b>stp</b>	MAC: 0180.c200.0000
<b>slow-proto</b>	MAC: 0180.c200.0002, ethertype: 0x8809
<b>dot1x</b>	MAC: 0180.c200.0003, ethertype: 0x888e
<b>mac <i>MAC_NUM</i></b>	Globally configured mac 1-2
<b>discard</b>	Discard the protocol data unit
<b>peer</b>	Act as peer to the customer device instance of the protocol, peer is default option

<b>tunnel</b>	Tunnel the protocol data unit into the SVLAN
<b>full-mac</b>	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

## 11.5 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

# 11.6 show l2protocol

Use this display current l2 protocol tunnel configuration.

## Command Syntax

**show l2protocol (interface *IFNAME* | tunnel-dmac )**

<b>interface <i>IFNAM</i></b>	Interface information
<b>tunnel-dmac</b>	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

## 11.7 l2protocol cos

Use this command to configure l2protocol cos globally.

### Command Syntax

```
l2protocol cos cos_value
```

```
no l2protocol cos
```

<i>cos_value</i>	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

## 11.8 l2protocol full-mac

Use this command to configure l2 protocol mac address globally. The mac address and mac address mask can be configured as anyone.

### Command Syntax

**l2protocol full-mac** *MAC* **mask** *MASK\_MAC*

**no l2protocol full-mac** *MAC\_NUM*

<i>MAC</i>	0000.0000.0000 ~ FFFF.FFFF.FFFF
<i>MASK_MAC</i>	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<1-2>, the tunnel operation priority is orderly: BPDU, Slow proto, EAPOL, full-mac, mac<1-2>.

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 packets.

As same as l2protocol mac CLI, the configured full-mac address will do mask operation and the operation result of MAC address will be saved to configuration.

### Examples

This example shows how to configure l2 protocol full-mac address:

```
Switch (config)# l2protocol full-mac 0100.0CCC.CCCC mask FFFF.FFFF.FFFF
```

## 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* | )

<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 MLAG Commands

---

## 13.1 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`**

### Command Mode

Global Configuration

### Default

None

### 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

This example shows how to configure mlag.

```
Switch(config)# mlag configuration
```

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

### Related Commands

**`show mlag`**

## 13.2 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**

<i>ipv4_addr</i>	MLAG peer IPv4 address
------------------	------------------------

### Command Mode

MLAG Configuration

### Default

None

### 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

This example shows peer-address configurations.

```
Switch(config-mlag)# peer-address 12.1.1.2
```

### Related Commands

**show mlag peer**

## 13.3 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**

<i>IFNAME</i>	Interface for peer link
---------------	-------------------------

Note: Only physical port or port-channel interface can be set to

## Command Mode

MLAG Configuration

## Default

None

## 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

```
Switch(config-mlag)# peer-link eth-0-9
```

```
Switch(config-mlag)#
```

## Related Commands

**show mlag**

## 13.4 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.

## Command Mode

MLAG Configuration

## Default

Default keepalive interval is 60 seconds and default holdtime is 240 seconds.

## 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

```
Switch(config-mlag)# timers mlag 10 100
```

```
Switch(config-mlag)#
```

## Related Commands

**show mlag peer**

## 13.5 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.

## Command Mode

MLAG Configuration

## Default

300 seconds.

## 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

```
Switch(config-mlag)# reload-delay 100
```

```
Switch(config-mlag)#
```

## Related Commands

**show mlag**

# 13.6 peer-link arp learning

The peer-link arp learning command specifies FDB learning by ARP packet on peer-link interface.

Use the no format of this command to restores the default value.

## Command Syntax

**peer-link arp learning** (**enable** | **disable**)

**no peer-link arp learning**

<b>enable</b>	Enable FDB learning by ARP packet on peer-link interface.
<b>disable</b>	Disable FDB learning by ARP packet on peer-link interface.

## Command Mode

MLAG Configuration

## Default

Disable

## Usage

None

## Examples

```
Switch(config-mlag)# peer-link arp learning enable
```

```
Switch(config-mlag)#
```

## Related Commands

**mlag configuratio**

# 13.7 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
--------	---

## Command Mode

Interface Mode

## Default

None

## 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

```
Switch(config)# interface agg1
```

```
Switch(config-if)# mlag 1
```

## Related Commands

```
show mlag interface
```

# 13.8 clear mlag count

The clear mlag count command clears mlag count information.

## Command Syntax

```
clear mlag count
```

## Command Mode

Privileged EXEC

## Default

None

## Usage

Use this command to clear mlag count information which can be displayed by show mlag peer command.

## Examples

```
Switch # clear mlag count
```



```
Switch # 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**

## 13.9 show mlag

The show mlag command displays information about the MLAG configuration.

## Command Syntax

**show mlag**

## Command Mode

Privileged EXEC

## Default

None

## Usage

Use this command to display information about the MLAG configuration.

## Examples

```
Switch # 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**

## 13.10 show mlag peer

The show mlag peer command displays information about the MLAG peer.

## Command Syntax

**show mlag peer**

## Command Mode

Privileged EXEC

## Default

None

## Usage

Use this command to display information about the MLAG peer.

## Examples

```
Switch # 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**

## 13.11 show mlag interface

The show mlag interface command displays information about the MLAG interface.

### Command Syntax

```
show mlag interface
```

### Command Mode

Privileged EXEC

### Default

None

### Usage

Use this command to display information about the MLAG interface.

### Examples

```
Switch # show mlag interface
```

```
mlagid local-if local-state remote-state
```

```
1   agg1   up      up
```

```
2   agg2   up      up
```

### Related Commands

```
mlag MLAGID
```