

# **VLAN Commands**

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# vlan database

Use the **vlan database** Global Configuration mode command to enter the VLAN Configuration mode. This mode is used to create VLAN(s) and define the default VLAN.

Use the exit command to return to Global Configuration mode.

### Syntax

vlan database

## **Default Configuration**

VLAN 1 exists by default.

## **Command Mode**

Global Configuration mode

## Example

The following example enters the VLAN Configuration mode, creates VLAN 1972 and exits VLAN Configuration mode.

switchxxxxx(config)# vlan database
switchxxxxx(config-vlan)# vlan 1972
switchxxxxx(config-vlan)# exit

## vlan

Use the **vlan** VLAN Configuration mode or Global Configuration mode command to create a VLAN and assign it a name (if only a single VLAN is being created). Use the **no** form of this command to delete the VLAN(s).

#### Syntax

vlan vlan-range | {vlan-id [name vlan-name]} [media ethernet] [state active]

no vlan vlan-range

### **Parameters**

- vlan-range—Specifies a list of VLAN IDs. Separate nonconsecutive VLAN IDs with a comma and no spaces. Use a hyphen to designate a range of IDs (range: 2-4094).
- vlan-id—Specifies a VLAN ID. (range: 2-4094).
- vlan-name—Specifies the VLAN name. (range: 1-32 characters).
- media—Specifies the media type of the VLAN. Valid values are ethernet.
- state—Specifies whether the state of the VLAN. Valid values are active.

### **Default Configuration**

VLAN 1 exists by default.

## **Command Mode**

Global Configuration mode

VLAN Database Configuration mode

## **User Guidelines**

If the VLAN does not exist, it is created. If the VLAN cannot be created then the command is finished with error and the current context is not changed.

## Example

The following example creates a few VLANs. VLAN 1972 is assigned the name Marketing.

```
switchxxxxx(config)# vlan database
switchxxxxx(config-vlan)# vlan 19-23
switchxxxxx(config-vlan)# vlan 100
switchxxxxx(config-vlan)# vlan 1972 name Marketing
switchxxxxx(config-vlan)# exit
```

# show vlan

Use the show vlan Privileged EXEC mode command to display the following VLAN information.

## **Syntax**

show vlan [tag vlan-id | name vlan-name]

## Parameters

- tag vlan-id—Specifies a VLAN ID.
- name vlan-name—Specifies a VLAN name string (length: 1-32 characters)

### **Default Configuration**

All VLANs are displayed.

## **Command Mode**

Privileged EXEC mode

### **Example 1**—The following example displays information for all VLANs:

switchxxxxx# **show vlan**Created by: S-Static, G-GVRP, R-Radius Assigned VLAN, V-Voice VLAN

VLAN	Name	Tagged Ports	UnTagged Ports	Created by
1	Default		gi1/0/1	S
10	Marketing	gi1/0/2	gi1/0/2	S
91	11	gi1/0/2-4	gi1/0/2	SGR
92	11	gi1/0/3-4		G
93	11	gi1/0/3-4		GR

# interface vlan

Use the **interface vlan** Global Configuration mode command to enter the Interface Configuration (VLAN) mode for a specific VLAN. After this command is entered, all commands configure this VLAN.

## **Syntax**

interface vlan vlan-id

### **Parameters**

• vlan-id-Specifies the VLAN to be configured.

## **Command Mode**

Global Configuration mode

## **User Guidelines**

If the VLAN does not exist, the VLAN is created. If the VLAN cannot be created, this command is finished with an error and the current context is not changed.

#### Example

The following example configures VLAN 1 with IP address 131.108.1.27 and subnet mask 255.255.255.0.

```
switchxxxxxx(config)# interface vlan 1
switchxxxxxx(config-if)# ip address 131.108.1.27 255.255.255.0
```

# interface range vlan

Use the **interface range vlan** Global Configuration mode command to configure multiple VLANs simultaneously.

### Syntax

interface range vlan vlan-range

## Parameters

• *vlan-range*—Specifies a list of VLANs. Separate nonconsecutive VLANs with a comma and no spaces. Use a hyphen to designate a range of VLANs.

## **Command Mode**

Global Configuration mode

## **User Guidelines**

Commands under the interface VLAN range context are executed independently on each VLAN in the range. If the command returns an error on one of the VLANs, an error message is displayed, and the system attempts to configure the remaining VLANs.

## Example

The following example groups VLANs 221 through 228 and 889 to receive the same command(s).

switchxxxxx(config)# interface range vlan 221-228, vlan 889

## name

Use the **name** Interface Configuration (VLAN) mode command to name a VLAN. Use the **no** form of this command to remove the VLAN name.

## **Syntax**

name string

no name

## **Parameters**

• string—Specifies a unique name associated with this VLAN. (Length: 1-32 characters).

## **Default Configuration**

No name is defined.

## **Command Mode**

Interface (VLAN) Configuration mode

## **User Guidelines**

The VLAN name must be unique.

## Example

The following example assigns VLAN 19 the name Marketing.

```
switchxxxxx(config)# interface vlan 19
switchxxxxx(config-if)# name Marketing
```

## switchport

Use the **switchport** Interface Configuration mode command to put an interface that is in Layer 3 mode into Layer 2 mode. Use the **no** form of this command to put an interface in Layer 3 mode.

#### Syntax

switchport

no switchport

### **Default Configuration**

Layer 2 mode

## **Command Mode**

Interface (Ethernet, Port Channel) Configuration mode

## **User Guidelines**

Use the **no switchport** command to set the interface as a Layer 3 interface.

An interface cannot be set as a Layer 3 interface if 802x.1 is enabled on the interface and one of the following conditions is true:

- The host mode differs from multi-host.
- MAC-Based or WEB-Based authentication is enabled.
- Radius VLAN assignment is enabled.

#### Examples

**Example 1** - The following example puts the port gi1/0/1 into Layer 2 mode.

```
switchxxxxx(config)# interface gi1/0/1
switchxxxxx(config-if)# switchport
```

**Example 2** - The following example puts the port gi1/0/1 into Layer 3 mode.

```
switchxxxxx(config)# interface gi1/0/1
switchxxxxx(config-if)# no switchport
```

## switchport mode

Use the **switchport mode** Interface Configuration mode command to configure the VLAN membership mode. Use the **no** form of this command to restore the default configuration.

#### Syntax

switchport mode access | trunk | general

## no switchport mode

## **Parameters**

- access—Specifies an untagged layer 2 VLAN port.
- trunk—Specifies a trunking layer 2 VLAN port.
- general—Specifies a full 802-1q-supported VLAN port.
- customer—Specifies that an edge port connected to customer equipment. Traffic received from this port will be tunneled with the additional 802.1q VLAN tag (Q-in-Q VLAN tunneling).

#### **Default Configuration**

Access mode.

#### **Command Mode**

Interface (Ethernet, Port Channel) Configuration mode

## **User Guidelines**

When the port's mode is changed, it receives the configuration corresponding to the mode.

If the port mode is changed to access and the access VLAN does not exist, then the port does not belong to any VLAN.

The following features cannot be enabled if vlan-mapping is allowed:

- IPv4 routing
- IPv6 routing
- Auto Smart Port
- Voice VLAN

The switchport vlan-mapping commands cannot add a port to a S-VLAN.

IPv4 and IPv6 interfaces cannot be defined on VLANs containing edge interfaces.

The following Layer 2 features are not supported into VLANs containing edge interfaces:

- IGMP Snooping
- MLD Snooping

## Example

Example 1 - The following example configures gi1/0/1 as an access port (untagged layer 2) VLAN port.

```
switchxxxxx(config)# interface gi1/0/1
switchxxxxx(config-if)# switchport mode access
switchxxxxx(config-if)# switchport access vlan 2
```

## switchport access vlan

A port in access mode can be an untagged member of at most a single VLAN. The **switchport access vlan** Interface Configuration command reassigns an interface to a different VLAN than it currently belongs or assigns it to **none**, in which case it is not a member of any VLAN.

The no form of this command to restore the default configuration.

#### Syntax

switchport access vlan {*vlan-id* | none}

no switchport access vlan

#### **Parameters**

- *vlan-id*—Specifies the VLAN to which the port is configured.
- none—Specifies that the access port cannot belong to any VLAN.

### **Default Configuration**

The interface belongs to the Default VLAN.

### **Command Mode**

Interface (Ethernet, Port Channel) Configuration mode

## **User Guidelines**

When the port is assigned to a different VLAN, it is automatically removed from its previous VLAN and added it to the new VLAN. If the port is assigned to **none**, it is removed from the previous VLAN and not assigned to any other VLAN.

## Example

The following example assigns access port gi1/0/1 to VLAN 2 (and removes it from its previous VLAN).

```
switchxxxxx(config) # interface gi1/0/2
switchxxxxx(config-if) # switchport mode access
switchxxxxx(config-if) # switchport access vlan 2
```

## switchport trunk allowed vlan

A trunk interface is an untagged member of a single VLAN, and, in addition, it may be an tagged member of one or more VLANs. Use the **switchport trunk allowed vlan** Interface Configuration mode command to add/remove VLAN(s) to/from a trunk port. Use the no form of the command to return to the default.

#### **Syntax**

switchport trunk allowed vlan {all | none | vlan-list / add vlan-list | remove vlan-list | except vlan-list}

no switchport trunk allowed vlan

#### **Parameters**

- all—Specifies all VLANs from 1 to 4094. At any time, the port belongs to all VLANs existing at the time. (range: 1–4094).
- none—Specifies an empty VLAN list The port does not belong to any VLAN.
- vlan-list— Specifies the list of VLAN IDs the interface is member of. The VLAN(s) specified in this command are the only VLAN(s) the port will be member of (all previous settings related to trunk VLAN membership are discarded). Use a hyphen to designate a range of IDs. Separate nonconsecutive VLAN IDs with a comma and no spaces (range: 1-4094).
- add vlan-list—List of VLAN IDs to add to the port. Separate nonconsecutive VLAN IDs with a comma and no spaces. Use a hyphen to designate a range of IDs.
- remove vlan-list—List of VLAN IDs to remove from a port. Separate nonconsecutive VLAN IDs with
  a comma and no spaces. Use a hyphen to designate a range of IDs.
- except vlan-list—List of VLAN IDs including all VLANs from range 1-4094 except VLANs belonging to *vlan-list*.

#### **Default Configuration**

By default, trunk ports belongs to all created VLANs.

### **Command Mode**

Interface (Ethernet, Port Channel) Configuration mode

## **User Guidelines**

Use the **switchport trunk allowed vlan** command to specify which VLANs the port belongs to when its mode is configured as trunk.

Non-existed VLANs can be configured. When a non-existed VLAN is created the port will add to it automatically.

Forbidden VLANs can be configured.

### Example

To add VLANs 2,3 and 100 to trunk ports 1 to 13

```
switchxxxxx(config)# interface range gi1/0/1-3
switchxxxxx(config-if)# switchport mode trunk
switchxxxxx(config-if)# switchport trunk allowed vlan add 2-3,100
switchxxxxx(config-if)
```

## switchport trunk native vlan

If an untagged packet arrives on a trunk port, it is directed to the port's native VLAN. Use the **switchport trunk native vlan** Interface Configuration mode command to define the native VLAN for a trunk interface. Use the **no** form of this command to restore the default native VLAN.

#### Syntax

switchport trunk native vlan {vlan-id | none}

no switchport trunk native vlan

#### **Parameters**

- vlan-id-Specifies the native VLAN ID.
- none—Specifies the access port cannot belong to any VLAN.

### **Default Configuration**

The default native VLAN is the Default VLAN.

## **Command Mode**

Interface (Ethernet, Port Channel) Configuration mode

## **User Guidelines**

A value of the interface PVID is set to this VLAN ID. When the interface belongs to the Native VLAN it is set as VLAN untagged egress interface.

The configuration is applied only when the port mode is trunk.

### **Examples**

The following example defines VLAN 2 as native VLAN for port gi1/0/1:

```
switchxxxxx(config)# interface gi1/0/1
switchxxxxx(config-if)# switchport trunk native vlan 2
switchxxxxx(config-if)# exit
```

## switchport general allowed vlan

General ports can receive tagged or untagged packets. Use the **switchport general allowed vlan** Interface Configuration mode command to add/remove VLANs to/from a general port and configure whether packets on the egress are tagged or untagged. Use the **no** form of this command to reset to the default.

#### Syntax

switchport general allowed vlan add vlan-list [tagged | untagged]

switchport general allowed vlan remove vlan-list

no switchport general allowed vlan

### **Parameters**

- add vlan-list—List of VLAN IDs to add. Separate nonconsecutive VLAN IDs with a comma and no spaces. Use a hyphen to designate a range of IDs. (range: 1–4094)
- **remove** vlan-list—List of VLAN IDs to remove. Separate nonconsecutive VLAN IDs with a comma and no spaces. Use a hyphen to designate a range of IDs.
- tagged—Specify that packets are transmitted tagged for the configured VLANs
- untagged—Specify that packets are transmitted untagged for the configured VLANs (this is the default)

#### **Default Configuration**

The port is not a member of any VLAN.

## **Command Mode**

Interface (Ethernet, Port Channel) Configuration mode

## **User Guidelines**

If the interface is a forbidden member of an added VLAN, the interface does not become a member of this specific VLAN. There will be an error message in this case ("An interface cannot become a a member of a forbidden VLAN. This message will only be displayed once.") and the command continues to execute in case if there are more VLANs in the vlan-list.

A non-existed VLAN cannot be configured. When a VLAN is removed it is deleted from the vlan-list.

The configuration is applied only when the port mode is general.

#### Example

The example adds gi1/0/1 and to VLAN 2 and 3. Packets are tagged on the egress:

```
switchxxxxxx(config) # interface gi1/0/1
switchxxxxxx(config-if) # switchport general allowed vlan add 2-3 tagged
```

## switchport general pvid

Use the **switchport general pvid** Interface Configuration mode command to configure the Port VLAN ID (PVID) of an interface when it is in general mode. Use the **no** form of this command to restore the default configuration.

#### Syntax

switchport general pvid vlan-id

no switchport general pvid

### **Parameters**

vlan-id—Specifies the Port VLAN ID (PVID).

## **Default Configuration**

The PVID is the Default VLAN PVID.

## **Command Mode**

Interface (Ethernet, Port Channel) Configuration mode

#### **Examples**

**Example 1** - The following example sets the gi1/0/2 PVID to 234.

```
switchxxxxxx(config)# interface gi1/0/2
switchxxxxxx(config-if)# switchport general pvid 234
```

**Example 2** - The following example performs the following:

- Adds VLANs 2&3 as tagged, and VLAN 100 as untagged to gi1/0/4
- Defines VID 100 as the PVID

```
switchxxxxx(config)# interface gi1/0/4
switchxxxxx(config-if)# switchport mode general
switchxxxxx(config-if)# switchport general allowed vlan add 2-3 tagged
switchxxxxx(config-if)# switchport general allowed vlan add 100 untagged
switchxxxxx(config-if)# switchport general pvid 100
switchxxxxx(config-if)# exit
```

# switchport general ingress-filtering disable

Use the **switchport general ingress-filtering disable** Interface Configuration mode command to disable port ingress filtering (no packets are discarded at the ingress) on a general port. Use the no form of this command to restore the default configuration.

#### Syntax

switchport general ingress-filtering disable

no switchport general ingress-filtering disable

### **Default Configuration**

Ingress filtering is enabled.

#### **Command Mode**

Interface (Ethernet, Port Channel) Configuration mode

#### Example

The following example disables port ingress filtering on gi1/0/1.

```
switchxxxxxx(config)# interface gi1/0/1
switchxxxxxx(config-if)# switchport mode general
switchxxxxxx(config-if)# switchport general ingress-filtering disable
```

## switchport general acceptable-frame-type

The **switchport general acceptable-frame-type** Interface Configuration mode command configures the types of packets (tagged/untagged) that are filtered (discarded) on the interface. Use the **no** form of this command to return ingress filtering to the default.

#### Syntax

switchport general acceptable-frame-type {tagged-only | untagged-only | all}

no switchport general acceptable-frame-type

### **Parameters**

- tagged-only—Ignore (discard) untagged packets and priority-tagged packets.
- untagged-only—Ignore (discard) VLAN-tagged packets (not including priority-tagged packets)
- all—Do not discard packets untagged or priority-tagged packets.

#### **Default Configuration**

All frame types are accepted at ingress (all).

#### **Command Mode**

Interface (Ethernet, Port Channel) Configuration mode

### Example

The following example configures port gi1/0/3 to be in general mode and to discard untagged frames at ingress.

```
switchxxxxxx(config)# interface gi1/0/3
switchxxxxxx(config-if)# switchport mode general
switchxxxxxx(config-if)# switchport general acceptable-frame-type tagged-only
```

## switchport general forbidden vlan

Use the **switchport general forbidden vlan** Interface Configuration mode command to forbid adding/removing specific VLANs to/from a port. Use the **no** form of this command to restore the default configuration.

#### **Syntax**

switchport general forbidden vlan {add vlan-list | remove vlan-list}

no switchport general forbidden vlan

## **Parameters**

- add *vlan-list*—Specifies a list of VLAN IDs to add to interface. Separate nonconsecutive VLAN IDs with a comma and no spaces. Use a hyphen to designate a range of IDs.
- **remove** vlan-list—Specifies a list of VLAN IDs to remove from interface. Separate nonconsecutive VLAN IDs with a comma and no spaces. Use a hyphen designate a range of IDs.

## **Default Configuration**

All VLANs are allowed.

### **Command Mode**

Interface (Ethernet, Port Channel) Configuration mode

### **User Guidelines**

The forbidden VLAN cannot be one that does not exist on the system, or one that is already defined on the port.

## Example

The following example define s gi1/0/4 as a forbidden membership in VLANs 5-7:

```
switchxxxxxx(config) # interface gi1/0/4
switchxxxxxx(config-if) # switchport general forbidden vlan add 5-7
switchxxxxxx(config-if) # exit
```

## switchport customer vlan

Use the **switchport customer vlan** Interface Configuration mode command to set the port's VLAN when the interface is in customer mode (set by the **switchport mode** command). Use the **no** form of this command to restore the default configuration.

#### Syntax

switchport customer vlan vlan-id

no switchport customer vlan

#### **Parameters**

• vlan-id—Specifies the customer VLAN.

## **Default Configuration**

No VLAN is configured as customer.

## **Command Mode**

Interface (Ethernet, Port Channel) Configuration mode

## **User Guidelines**

When a port is in customer mode it is in QinQ mode. This enables the user to use their own VLAN arrangements (PVID) across a provider network. The switch is in QinQ mode when it has one or more customer ports.

#### Example

The following example defines gi1/0/4 as a member of customer VLAN 5.

```
switchxxxxx(config)# interface gil/0/4
switchxxxxx(config-if)# switchport mode customer
switchxxxxx(config-if)# switchport customer vlan 5
```

## show interfaces switchport

Use the **show interfaces switchport** Privileged EXEC command to display the administrative and operational status of all interfaces or a specific interface.

#### Syntax

show interfaces switchport [interface-id]

### **Parameters**

Interface-id—Specifies an interface ID. The interface ID can be one of the following types: Ethernet
port or port-channel.

### **Command Mode**

Privileged EXEC mode

## Default

Displays the status of all interfaces.

## **User Guidelines**

Each port mode has its own private configuration. The **show interfaces switchport** command displays all these configurations, but only the port mode configuration that corresponds to the current port mode displayed in "Administrative Mode" is active.

#### Example

```
switchxxxxx# show interfaces switchport gi1/0/1
Gathering information...
S-VLAN Ethernet Type: 0x88a8 (802.1ad)
VLAN Mapping Tunnel L2 protocols Global CoS: 6
Name: gi1/0/1
Switchport: enable
Administrative Mode: access
Operational Mode: down
Access Mode VLAN: 1
Access Multicast TV VLAN: none
Trunking Native Mode VLAN: 1
Trunking VLANs: 1
                2-4094 (Inactive)
General PVID: 1
General VLANs: none
General Egress Tagged VLANs: none
General Forbidden VLANs: none
General Ingress Filtering: enabled
General Acceptable Frame Type: all
General GVRP status: Enabled
General GVRP VLANs: none
Customer Mode VLAN: none
VLAN Mapping Tunnel:
S-VLAN Ethernet Type: 0x8100 (802.1q)
C-VLANs
                      Outer S-VLAN
      _____
```

2 12 12,16-18 100 default 1100 VLAN Mapping Tunnel L2 protocols S-VLAN: 100 VLAN Mapping Tunnel L2 protocols Interface CoS: 6 (global) VLAN Mapping Tunnel L2 protocols forward enabled: cdp,stp Drop Threshold: 4 kbps (default) VLAN Mapping One-to-one: C-VLANs Translated S-VLAN \_\_\_\_\_ -----2 102 12 112 100 10 Private-vlan promiscuous-association primary VLAN: none Private-vlan promiscuous-association Secondary VLANs: none Private-vlan host-association primary VLAN: none Private-vlan host-association Secondary VLAN: none Protected: Enabled, Uplink is gi1/0/1Classification rules: Classification Type Group ID VLAN ID ----- -----\_\_\_\_\_ 1 19 Protocol Protocol 1 20 72 Protocol 2 Subnet 1 15 1 77 MAC

## vlan prohibit-internal-usage

Use the **vlan prohibit-internal-usage** command in Global configuration mode to specify VLANs that cannot be used by the switch as internal VLANs.

#### **Syntax**

vlan prohibit-internal-usage none | {add | except | remove} vlan-list

### **Parameters**

- none—The Prohibit Internal Usage VLAN list is empty: any VLAN can be used by the switch as internal.
- except—The Prohibit Internal Usage VLAN list includes all VLANs except the VLANs specified by the *vlan-list* argument: only the VLANs specified by the *vlan-list* argument can be used by the switch as internal.
- add—Add the given VLANs to the Prohibit Internal Usage VLAN list.
- remove—Remove the given VLANs from the Prohibit Internal Usage VLAN list.
- *vlan-list*—List of VLAN. Separate nonconsecutive VLAN IDs with a comma and no spaces. Use a hyphen to designate a range of IDs. The VLAN ID that can be used is from 1 through 4094.

#### **Default Configuration**

The Prohibit Internal usage VLAN list is empty.

## **Command Mode**

Global Configuration mode

## **User Guidelines**

The switch requires an internal VLAN in the following cases:

- One VLAN for each IP interface is defined directly on an Ethernet port or on a Port channel.
- One VLAN for each IPv6 tunnel.
- One VLAN for 802.1x.

When a switch needs an internal VLAN it takes a free VLAN with the highest VLAN ID.

Use the **vlan prohibit-internal-usage** command to define a list of VLANs that cannot be used as internal VLANs after reload.

If a VLAN was chosen by the software for internal usage, but you want to use that VLAN for a static or dynamic VLAN, do one of the following

- Add the VLAN to the Prohibited User Reserved VLAN list.
- · Copy the Running Configuration file to the Startup Configuration file
- · Reload the switch

• Create the VLAN

**Example 1**—The following example specifies that VLANs 4010, 4012, and 4090-4094 cannot be used as internal VLANs:

vlan prohibit-internal-usage add 4010,4012,4090-4094

**Example 2**—The following specifies that all VLANs except 4000-4107 cannot be used as internal VLANs:

vlan prohibit-internal-usage all vlan prohibit-internal-usage remove 4000-4107

**Example 3**—The following specifies that all VLANs except 4000-4107 cannot be used as internal VLANs:

vlan prohibit-internal-usage 4000-4107

# show vlan internal usage

Use the **show vlan internal usage** Privileged EXEC mode command to display a list of VLANs used internally by the device (defined by the user).

## **Syntax**

show vlan internal usage

## **Command Mode**

Privileged EXEC mode

## Example

The following example displays VLANs used internally by the switch:

## show vlan internal usage

```
User Reserved VLAN list after reset: 4010,4012,4080-4094

Current User Reserved VLAN list: 4010,4012,4090-4094

VLAN Usage

---- -----

4089 gi1/0/2

4088 gi1/0/3

4087 tunnel 1

4086 802.1x
```