VLAN Subinterface Commands

This module provides command line interface (CLI) commands for configuring 802.1Q VLANs on the Cisco CRS Router.

To use commands of this module, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using any command, contact your AAA administrator for assistance.

dot1q native vlan

To assign the native VLAN ID of a physical interface trunking 802.1Q VLAN traffic, use the **dot1q native vlan** command in interface configuration mode. To remove the VLAN ID assignment, use the **no** form of this command.

dot1q native vlan *vlan-id*

Syntax Description	*vlan-id* Trunk interface ID. Range is from 1 to 4094 inclusive (0 and 4095 are reserved).

Command Default
No default behavior or values

Command Modes
Interface configuration

Command History

Release	Modification
Release 3.0	This command was introduced.

Usage Guidelines
The **dot1q native vlan** command defines the default, or native VLAN, associated with a 802.1Q trunk interface. The native VLAN of a trunk interface is the VLAN to which all untagged VLAN packets are logically assigned.

> **Note** The native VLAN cannot be configured on a subinterface of the trunk interface. The native VLAN must be configured with the same value at both ends of the link, or traffic can be lost or sent to the wrong VLAN.

Task ID

Task ID	Operations
vlan	read, write

Examples
The following example shows how to configure the native VLAN of a TenGigE0/2/0/4 trunk interface as 1. Packets received on this interface that are untagged, or that have an 802.1Q tag with VLAN ID 1, are received on the main interface. Packets sent from the main interface are transmitted without an 802.1Q tag.

```
RP/0/RP0/CPU0:router(config)# interface TenGigE 0/2/0/4
RP/0/RP0/CPU0:router(config-if)# dot1q native vlan 1
```

Related Commands

Command	Description
dot1q vlan, on page 3	Assigns a VLAN ID to a subinterface (or modifies the VLAN ID that is currently assigned to a subinterface).

dot1q vlan

To assign a VLAN ID to a subinterface (or to modify the VLAN ID that is currently assigned to a subinterface), use the **dot1q vlan** command in subinterface configuration mode. To remove the VLAN ID assigned to a subinterface, use the **no** form of this command.

Note   Effective with Cisco IOS XR Release 3.7.2, the **dot1q vlan** command is replaced by the **encapsulation dot1q** command. See the **encapsulation dot1q** command for more information.

dot1q vlan *vlan-id* [*vlan-id2* | **any**]

Syntax Description

vlan-id	ID of the subinterface. Range is from 1 to 4094 (0 and 4095 are reserved).
vlan-id2	(Optional) Identifies the host VLAN of a Q-in-Q VLAN pair. Replace *vlan-id2* with a number that specifies the host VLAN. Range is from 1 to 4094.
any	(Optional) Identifies the host VLAN of a Q-in any VLAN pair.

Command Default   No default behavior or values

Command Modes   Subinterface configuration

Command History

Release	Modification
Release 3.0	This command was introduced.
Release 5.1.1	This command was introduced and was also replaced by the **encapsulation dot1q** command.

Usage Guidelines   The VLAN ID specifies where 802.1Q tagged packets are sent and received on a specified subinterface. An 802.1Q VLAN subinterface must have a configured VLAN ID to send and receive traffic; without a VLAN ID, the subinterface remains in the down state. All VLAN IDs must be unique among all subinterfaces configured on the same physical interface. To change a VLAN ID, the new VLAN must not already be in use on the same physical interface. To exchange VLAN IDs, you must remove the configuration information and reconfigure the ID for each device.

Note   The subinterface does not pass traffic without an assigned VLAN ID.

Note   The **dot1q vlan** command is is replaced by the **encapsulation dot1q** command. It is still available for backward-compatibility, but only for Layer 3 interfaces. The **encapsulation dot1q** command must be used going forward.

Task ID

Task ID	Operations
vlan	read, write

Examples

This example shows how to configure the VLAN ID and IP address on a subinterface:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface TenGigE 0/2/0/4.1
RP/0/RP0/CPU0:router(config-subif)# dot1q vlan 10
RP/0/RP0/CPU0:router(config-subif)# ipv4 addr 10.0.0.1/24
```

This example shows how to configure the VLAN IDs for both VLANS in a single Q-in-Q attachment circuit (AC). In this case, incoming traffic must match both of the VLAN IDs before it is accepted by the subinterface:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface TenGigE 0/2/0/4.1
RP/0/RP0/CPU0:router(config-subif)# dot1q vlan 10 20
```

This example shows how to configure the VLAN IDs for a Q-in-any AC. In this case, all incoming traffic must have two VLAN tags, where the outer VLAN ID matches the configured value, while the inner VLAN ID can be any value.

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface TenGigE 0/2/0/4.1 l2transport
RP/0/RP0/CPU0:router(config-subif)# dot1q vlan 10 any
```

Related Commands

Command	Description
show interfaces	Displays statistics for all interfaces configured on the router or for a specific node.
show vlan interface, on page 7	Displays summarized information about VLAN subinterfaces.
show vlan tags, on page 9	Displays VLAN tagging allocation information.

interface (VLAN)

To create a VLAN subinterface, use the **interface** command in Global Configuration mode. To delete a subinterface, use the **no** form of this command.

interface *type* *interface-path-id.subinterface* [**l2transport**]

Syntax Description		
type	Type of Ethernet interface on which you want to create a VLAN. Enter **GigabitEthernet**, **TenGigE**,, or **Bundle-Ether**.
interface-path-id.subinterface	Physical interface or virtual interface followed by the subinterface path ID. Naming notation is *interface-path-id.subinterface*. The period in front of the subinterface value is required as part of the notation.
	For more information about the syntax for the router, use the question mark (?) online help function.
l2transport	Enables Layer 2 transport port mode on the specified VLAN interface and enters Layer 2 transport configuration mode. The l2transport keyword creates the Vlan interface in L2 mode so that it can be used for L2VPNs and local switching.

Command Default No default behavior or values

Command Modes Global Configuration

Command History

Release	Modification
Release 3.0	This command was introduced.

Usage Guidelines For the *interface-path-id* argument, use the following guidelines:

- If specifying a physical interface, the naming notation is *rack*/*slot*/*module*/*port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:

    - *rack*: Chassis number of the rack.

    - *slot*: Physical slot number of the line card.

    - *module*: Module number. A physical layer interface module (PLIM) is always 0.

    - *port*: Physical port number of the interface.

- If specifying an Ethernet bundle interface, the range is from 1 through 65535.

For the *subinterface* argument, the range is from 0 through 4095.

To configure a large number of subinterfaces, we recommend entering all configuration data before you commit the **interface** command.

To change an interface from Layer 2 to Layer 3 mode and back, you must delete the interface first and then re-configure it in the appropriate mode.

Note A subinterface does not pass traffic without an assigned VLAN ID.

Task ID

Task ID	Operations
vlan	read, write

Examples

This example shows how to configure a VLAN subinterface on a 10-Gigabit Ethernet interface:

```
RP/0/RP0/CPU0:router(config)# interface TenGigE 0/0/0/1.2
RP/0/RP0/CPU0:router(config-subif)# dot1q vlan 1
RP/0/RP0/CPU0:router(config-subif)# ipv4 address 50.0.0.1/24
```

This example shows how to create a VLAN subinterface with Layer 2 transport port mode enabled, and enter Layer 2 transport configuration mode under that VLAN:

```
RP/0/RP0/CPU0:router(config)# interface GigabitEthernet 0/4/0/1.1
RP/0/RP0/CPU0:router(config-if-l2)#
```

Related Commands

Command	Description
dot1q vlan, on page 3	Assigns a VLAN ID to a subinterface (or modifies the VLAN ID that is currently assigned to a subinterface).

show vlan interface

To display summarized information about VLAN subinterfaces, use the **show vlan interface** command in EXEC mode .

Note Effective with Cisco IOS XR Release 5.1.1, the**show vlan interface** command is replaced by the **show ethernet tags** command.

show vlan interface [*type interface-path-id.subinterface* | **location** *instance*]

Syntax Description

type	(Optional) Type of Ethernet interface whose VLAN information you want to display. Enter **GigabitEthernet**, **TenGigE**, or **Bundle-Ether**.
interface-path-id .subinterface	Physical interface or virtual interface followed by the subinterface path ID. Naming notation is *interface-path-id.subinterface*. The period in front of the subinterface value is required as part of the notation.
	For more information about the syntax for the router, use the question mark (?) online help function.
location *instance*	(Optional) Displays VLAN subinterfaces on a particular port. The *instance* argument is entered in the *rack*/*slot*/*module/port* notation.

Command Default No default behavior or values

Command Modes EXEC

Command History

Release	Modification
Release 3.0	This command was introduced.
Release 5.1.1	This command was replaced with **show ethernet tags** command.

Usage Guidelines For the *interface-path-id* argument, use the following guidelines:

- If specifying a physical interface, the naming notation is *rack*/*slot*/*module*/*port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:

  - *rack*: Chassis number of the rack.

  - *slot*: Physical slot number of the line card.

  - *module*: Module number. A physical layer interface module (PLIM) is always 0.

  - *port*: Physical port number of the interface.

- If specifying an Ethernet bundle interface, the range is from 1 through 65535.

For the *subinterface* argument, the range is from 0 through 4095.

Enter the **show vlan interface** command without including any of the optional parameters to display summarized information about all VLANs configured on the router.

Task ID

Task ID	Operations
vlan	read

Table 1: show vlan interface Field Descriptions

Field	Description
interface	VLAN subinterface.
encapsulation	Encapsulation of the VLAN subinterface. Currently, this is always 802.1Q.
Outer VLAN	VLAN ID currently assigned to the subinterface. Range is from 1 to 4094 (or blank if no VLAN ID has been assigned).
2nd VLAN	VLAN ID currently assigned to the second subinterface in a pair. Range is from 1 to 4094 (or blank if no VLAN ID has been assigned). For Q-in-any VLANS, this field shows "Any."
Service	Service currently assigned to the VLAN. Possible services are L2 and L3.
MTU	Maximum transmission unit (MTU) value configured for the specified VLAN, in bytes.
LineP state	Displays the line protocol state of the VLAN interface. Possible states: up, down, admin-down. The line protocol state reflects whether a VLAN ID is configured or not.

Related Commands

Command	Description
show interfaces	Displays statistics for all interfaces configured on the router or for a specific node.
show vlan trunks, on page 11	Displays information about VLAN trunks.

show vlan tags

To display VLAN tagging allocation information, use the **show vlan tags** command in EXEC mode.

show vlan tags [*type interface-path-id* | **location** *node-id*]

Syntax Description	*type*	Displays VLAN tagging information for a specific bundle type.
		Note Use the **show interfaces** command with the **Bundle-Ether**, **GigabitEthernet** or **TenGigE** keyword to see a list of all Ethernet bundles currently configured on the router.
	interface-path-id	Physical interface or virtual interface.
		Note Use the **show interfaces** command to see a list of all interfaces currently configured on the router.
		For more information about the syntax for the router, use the question mark (**?**) online help function.
	location *node-id*	Displays VLAN tagging information for a specific node. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.

Command Default   Enter the command without any of the optional keywords or arguments to display tagging allocation information for all VLANS configured on the router.

Command Modes   EXEC

Command History

Release	Modification
Release 3.0	This command was introduced.

Usage Guidelines   For the *interface-path-id* argument, use the following guidelines:

- If specifying a physical interface, the naming notation is *rack*/*slot*/*module*/*port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:

  - *rack*: Chassis number of the rack.

  - *slot*: Physical slot number of the line card.

  - *module*: Module number. A physical layer interface module (PLIM) is always 0.

  - *port*: Physical port number of the interface.

- If specifying an Ethernet bundle interface, the range is from 1 through 65535.

Task ID

Task ID	Operations
vlan	read

Examples

The following example shows how to display VLAN tagging allocation information for a router:

```
RP/0/RP0/CPU0:router(config-subif)# show vlan tagsl2protocol cdp drop

Interface          Outer  2nd    Service  MTU    LineP
                   VLAN   VLAN                    State
Gi0/1/5/0.1         10           L3       1518   up
Gi0/1/5/0.2         20           L3       1518   up
Gi0/1/5/0.3         30           L3       1518   up
```

Table 2: show vlan tags Field Descriptions

Field	Description
Outer Vlan	The first (outermost) 802.1Q VLAN ID. This field is empty if no VLAN ID is configured. An asterisk (*) indicate the native VLAN.
2nd Vlan	The second 802.1Q VLAN ID. This field reports "any" for a Q-in-Any service. If no VLAN ID is configured, then this field is empty.
Service	Service currently assigned to the subinterface. Can be Layer 2 (L2) or Layer 3 (L3).
MTU	Maximum transmission unit (MTU) value configured for the specified VLAN, in bytes.
LineP state	Displays the state of the VLAN interface. Possible states: up, down, admin-down.

Related Commands

Command	Description
dot1q vlan, on page 3	Assigns a VLAN ID to a subinterface (or modifies the VLAN ID that is currently assigned to a subinterface).
show vlan interface, on page 7	Displays summarized information about VLAN subinterfaces.
show vlan trunks, on page 11	Displays information about VLAN trunks.

show vlan trunks

To display information about VLAN trunks, use the **show vlan trunks** command in EXEC mode

show vlan trunks [**brief**] [**location** *node-id*] [*type interface-path-id*] [**summary**]

Syntax Description		
type		(Optional) Type of Ethernet interface whose VLAN trunk information you want to display. Possible Ethernet types are **GigabitEthernet**, **TenGigE** , or **Bundle-Ether**.
interface-path-id		(Optional) Physical interface or virtual interface.
	Note	Use the **show interfaces** command to see a list of all interfaces currently configured on the router.
		For more information about the syntax for the router, use the question mark (**?**) online help function.
brief		(Optional) Displays a short summary output.
summary		(Optional) Displays a summarize output.
	Note	The **summary** option can be specified only if the trunk interface is not specified.
location *node-id*		(Optional) Displays VLAN trunk information for a specific node. The *node-id* is expressed in the *rack/slot/module* notation.
	Note	For more information about the syntax for the router, use the question mark (**?**) online help function.

Command Default No default behavior or values

Command Modes EXEC

Command History

Release	Modification
Release 3.0	This command was introduced.

Usage Guidelines For the *interface-path-id* argument, use the following guidelines:

- If specifying a physical interface, the naming notation is *rack*/*slot*/*module*/*port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:

    - *rack*: Chassis number of the rack.

    - *slot*: Physical slot number of the line card.

    - *module*: Module number. A physical layer interface module (PLIM) is always 0.

    - *port*: Physical port number of the interface.

- If specifying a virtual interface, the number range varies, depending on interface type.

The **show vlan trunks** command provides summary information about VLAN trunk interfaces. It is used to determine the number of configured subinterfaces and verify the state of the subinterfaces.

Task ID

Task ID	Operations
vlan	read

Examples

The following is sample output from the **show vlan trunks** command:

```
RP/0/RP0/CPU0:router# show vlan trunks

GigabitEthernet0/4/0/0 is up
  Outer VLAN tag format is Dot1Q (0x8100)
  L3 Encapsulations: Ether, 802.1Q
    Sub-interfaces: 2
      2 are up
      Single tag sub-interfaces: 2
    No native VLAN Id
  L2 Encapsulations: 802.1Q
    VLAN ACs: 1
      1 are up
      Single tag ACs: 1
```

Table 3: show vlan trunks summary Field Descriptions

Field	Description
Outer VLAN tag format	The first (outermost) 802.1Q VLAN Id. • This field is empty if no VLAN ID is configured. • An asterisk (*) indicates that a native VLAN is configured.
L3 Encapsulations	VLAN encapsulations currently used for terminated Layer 3 traffic. Possible Layer 3 encapsulations are as follows: • Nat – A Native VLAN is configured. • Q – One or more sub-interfaces are configured with either 0 or 1 802.1Q VLAN tags. • 2Q – One or more sub-interfaces have been configured with two 802.1Q VLAN tags.
Sub-interfaces	The number of subinterfaces configured on the main Ethernet interface, and the current state of those subinterfaces. Possible states are up, down, and admin-down. **Note** The number of Down and Admin-down subinterfaces is only reported only if that number is greater than 0.
Single tag sub-interfaces:	Number of sub-interfaces configured with a single 802.1Q tag. **Note** The number of sub-interfaces is displayed only if that number is greater than 0.

Field	Description
No native VLAN Id	Indicate that a native VLAN ID is not configured on this interface.
L2 Encapsulations:	VLAN encapsulations currently used for terminated L2 traffic. Possible Layer 2 encapsulations are as follows: • Q – One or more single 802.1Q tag ACs are configured. • 2Q – One or more double 802.1Q tag ACs have been configured. • Qany – One or more double 802.1Q tag ACs have been configured that have a wildcard "any" innertag.
VLAN ACs	Number of ACs currently configured under the specified interface.
Single tag ACs	**Note** The number of sub-interfaces sub-interfaces configured with a single 802.1Q tag is displayed only if that number is greater than 0.

Related Commands

Command	Description
show interfaces	Displays statistics for all interfaces configured on the router or for a specific node.
interface (VLAN), on page 5	Creates a VLAN subinterface.