



## BNG Interface Commands

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This module describes the Cisco IOS XR software commands used to configure and verify the interfaces for Broadband Network Gateway (BNG) on the Cisco ASR 9000 Series Router. For details regarding the related configurations, refer to the *Cisco ASR 9000 Series Aggregation Services Router Broadband Network Gateway Configuration Guide*.

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.

- [encapsulation ambiguous dot1ad, on page 2](#)
- [encapsulation ambiguous dot1q, on page 4](#)
- [show ethernet tags, on page 6](#)

# encapsulation ambiguous dot1ad

To configure encapsulated ambiguous VLANs with IEEE 802.1ad Provider Bridging (PB) encapsulation type on an access-interface, use the **encapsulation ambiguous dot1ad** command in the interface configuration mode. To remove the encapsulated ambiguous VLANs, use the **no** form of this command.

**encapsulation ambiguous dot1ad** {*any vlan-id vlan-range*} [**dot1q** {*any vlan-range*}]

## Syntax Description

<b>any</b>	Specifies the matching criteria as <b>any</b> VLAN tag in the range 1 to 4094.
<i>vlan-id</i>	VLAN-ID for the outer VLAN.
<i>vlan-range</i>	VLAN range for the outer and inner VLANs. The range is given in comma-separated, or hyphen-separated format, or a combination of both.
<b>dot1q</b>	Indicates that the IEEE 802.1q standard encapsulation type is used for the inner tag.

## Command Default

None

## Command Modes

Interface configuration

## Command History

Release	Modification
Release 4.2.0	This command was introduced.
Release 5.2.0	The support for outer VLAN range was added in BNG.

## Usage Guidelines

The valid combinations of ambiguous VLAN configurations in BNG, with IEEE 802.1ad Provider Bridging (PB) encapsulation type are:

- **encapsulation ambiguous dot1ad** {*any | vlan-range* }
- **encapsulation ambiguous dot1ad** *vlan-id* **dot1q** { *any | vlan-range* }
- **encapsulation ambiguous dot1ad** *vlan-range* **dot1q any**



**Note** Although **encapsulation ambiguous dot1ad** is supported, it is not commonly used in BNG deployments.

## Task ID

Task ID	Operation
	interface read, write

These examples show how to configure ambiguous VLANs with IEEE 802.1ad Provider Bridging (PB) encapsulation type on an access-interface.

Single-tagged ambiguous VLAN configuration where the matching criteria for the outer VLAN is specified as **any**:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#interface Bundle-Ether100.10
RP/0/RSP0/CPU0:router(config-subif)#encapsulation ambiguous dot1ad any
```

Ambiguous VLAN configuration where the match criteria for outer VLAN is specified as VLAN-Id and that for inner VLAN is specified as a range:

```
RP/0/RSP0/CPU0:router(config-subif)#encapsulation ambiguous dot1ad 14 dot1q 100,200,300-400
```

Ambiguous VLAN configuration with outer VLAN range:

```
(config-subif)#encapsulation ambiguous dot1ad 1-1000 dot1q any
```

#### Related Commands

Command	Description
<a href="#">encapsulation ambiguous dot1q, on page 4</a>	Configures encapsulated ambiguous VLANs with IEEE 802.1q encapsulation type, on an access-interface in BNG.

# encapsulation ambiguous dot1q

To configure encapsulated ambiguous VLANs with IEEE 802.1q encapsulation type on an access-interface, use the **encapsulation ambiguous dot1q** command in the interface configuration mode. To remove the encapsulated ambiguous VLANs, use the **no** form of this command.

**encapsulation ambiguous dot1q** {**any** *vlan-id* *vlan-range*} [**second-dot1q** {**any** *vlan-id* *vlan-range*}]

## Syntax Description

<b>any</b>	Specifies the matching criteria as <b>any</b> VLAN tag in the range 1 to 4094.
<i>vlan-id</i>	VLAN-ID for the outer and inner VLANs. The range is from 0 to 4094.
<i>vlan-range</i>	VLAN range for the outer and inner VLANs. The range is given in comma-separated, or hyphen-separated format, or a combination of both.

## Command Default

None

## Command Modes

Interface configuration

## Command History

Release	Modification
Release 4.2.0	This command was introduced.
Release 4.3.1	The support for <b>encapsulation ambiguous dot1q any second-dot1q</b> { <b>any</b>   <i>vlan-id</i> } was added.
Release 5.2.0	The support for outer VLAN range was added in BNG.

## Usage Guidelines

The valid combinations of ambiguous VLAN configurations in BNG, with IEEE 802.1q encapsulation type are:

- **encapsulation ambiguous dot1q** {**any** | *vlan-range* }
- **encapsulation ambiguous dot1q** *vlan-id* **second-dot1q** { **any** | *vlan-range* }
- **encapsulation ambiguous dot1q any second-dot1q** { **any** | *vlan-id* }
- **encapsulation ambiguous dot1q** *vlan-range* **second-dot1q any**

For ambiguous VLAN dot1q configuration where the match criteria is explicitly configured for inner and outer VLAN tags or where a range is specified or where **any** is used for outer VLAN tag, the MTU is calculated by adding 8 bytes (2x dot1q tags) to the default MTU. That is, if default is 1514, the MTU is set to 1522 bytes in such scenarios. Whereas, for configurations where the match criteria for inner VLAN is specified as **any**, the MTU on the sub-interface is calculated by adding 4 (and not 8) bytes to the main interface MTU. That is,  $1514 + 4 = 1518$  bytes. This behavior is applicable for both physical interfaces and bundle sub-interfaces.

Task ID	Task ID	Operation
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	interface	read, write
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These examples show how to configure ambiguous VLANs with IEEE 802.1q encapsulation type on an access-interface.

Single-tagged ambiguous VLAN configuration where the match criteria for outer VLAN is specified as **any**:

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)# interface Bundle-Ether100.10
RP/0/RSP0/CPU0:router(config-subif)# encapsulation ambiguous dot1q any
```

Ambiguous VLAN configuration where the match criteria for outer VLAN is specified as VLAN-ID and that for inner VLAN is specified as a range:

```
RP/0/RSP0/CPU0:router(config-subif)# encapsulation ambiguous dot1q 14 second-dot1q 100-200
```

Ambiguous VLAN configuration where the match criteria for outer VLAN and inner VLAN is specified as **any**:

```
(config-subif)# encapsulation ambiguous dot1q any second-dot1q any
```

Ambiguous VLAN configuration with a single outer VLAN range and inner VLAN specified as **any**:

```
(config-subif)# encapsulation ambiguous dot1q 1-1000 dot1q any
```

Ambiguous VLAN configuration with 9 outer VLAN ranges and inner VLAN specified as **any**:

```
(config-subif)# encapsulation ambiguous dot1q 9-18, 19-25, 26, 27-30, 32, 33-40, 42, 43-50, 52 second-dot1q any
```

Related Commands	Command	Description
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	<a href="#">encapsulation ambiguous dot1ad, on page 2</a>	Configures encapsulated ambiguous VLANs with IEEE 802.1ad Provider Bridging (PB) encapsulation type, on an access-interface in BNG.
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# show ethernet tags

To display the ethernet tag match information, use the **show ethernet tags** command in EXEC mode.

**show ethernet tags** [*interface-type interface-path-id*] [**detail**] [**location node-id**] [**match-order**]

## Syntax Description

<i>interface-type</i>	Interface type. For more information, use the question mark (?) online help function.
<i>interface-path-id</i>	Physical interface or virtual interface.
<b>Note</b>	Use the <b>show interfaces</b> 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.
<b>match-order</b>	Displays the high priority matches first.

## Command Default

None

## Command Modes

EXEC mode

## Command History

Release	Modification
Release 4.2.0	This command was introduced.

## Usage Guidelines

For ambiguous VLAN dot1q configuration where the match criteria is explicitly configured for inner and outer VLAN tags or where a range is specified or where **any** is used for outer VLAN tag, the MTU is calculated by adding 8 bytes (2xdot1q tags) to the default MTU. That is, if default is 1514, the MTU is set to 1522 bytes in such scenarios. Whereas, for configurations where the match criteria for inner VLAN is specified as **any**, the MTU on the sub-interface is calculated by adding 4 (and not 8) bytes to the main interface MTU. That is,  $1514 + 4 = 1518$  bytes. This behavior is applicable for both physical interfaces and bundle sub-interfaces.

## Task ID

Task ID	Operation
ethernet-services	read

This is a sample output of the **show ethernet tags** command:

```
RP/0/RSP0/CPU0:router#show ethernet tags tengigE 0/0/0/0.1
St:   AD - Administratively Down, Dn - Down, Up - Up
Ly:   L2 - Switched layer 2 service, L3 = Terminated layer 3 service,
Xtra  C - Match on Cos, E - Match on Ethertype, M - Match on source MAC
-,+:  Ingress rewrite operation; number of tags to pop and push respectively

Interface          St  MTU  Ly  Outer          Inner          Xtra  -,+
Te0/0/0/0.1       Up  1522 L3  .1Q:10         .1Q:100-200   -    0 0
```

This is a sample output of the **show ethernet tags detail** command for BNG outer VLAN range feature:

```
RP/0/RSP0/CPU0:router#show ethernet tags tengigE 0/1/0/10.12 detail
GigabitEthernet0/1/0/10.12 is up, service is L3
  Interface MTU is 1518
  Outer Match: Dot1Q VLAN 11-20,21-30,31-60,61-100,101-140,141-180,181-220,221-260,261-300

  Inner Match: Dot1Q VLAN any
  Local traffic encap: -
  Pop 0 tags, push none
```

show ethernet tags