



Cisco IOS XR Virtual Private Network Command Reference for the Cisco CRS Router, Release 4.1

First Published: March 14, 2011

Last Modified: March 14, 2011

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Preface

The *Cisco IOS XR Virtual Private Network Command Reference for the Cisco CRS Router* preface contains these sections:

- [Changes to This Document](#), page vi
- [Obtaining Documentation and Submitting a Service Request](#), page vi

Changes to This Document

[Table 1: Changes to This Document](#), page vi lists the technical changes made to this document since it was first printed.

Table 1: Changes to This Document

Revision	Date	Change Summary
OL-24674-01	April 2011	Initial release of this document.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.



Virtual Private Network Commands

For detailed information about virtual private network concepts, configuration tasks, and examples, refer to the *Cisco IOS XR Virtual Private Network Configuration Guide for the Cisco CRS Router*

- [authentication \(L2TP\), page 3](#)
- [backup disable \(L2VPN\), page 5](#)
- [clear l2tp counters control session, page 7](#)
- [clear l2tp counters control tunnel, page 9](#)
- [clear l2tp tunnel, page 10](#)
- [clear l2vpn collaborators, page 11](#)
- [clear l2vpn counters l2tp, page 12](#)
- [clear l2vpn counters bridge mac-withdrawal, page 13](#)
- [clear l2vpn forwarding counters, page 14](#)
- [clear l2vpn forwarding mac-address-table, page 15](#)
- [clear l2vpn forwarding message counters, page 17](#)
- [clear l2vpn forwarding table, page 18](#)
- [digest \(L2TP\), page 19](#)
- [hello-interval \(L2TP\), page 21](#)
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- [show l2vpn pw-class, page 77](#)
- [show l2vpn resource, page 79](#)
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- [tag-rewrite, page 88](#)
- [timeout setup \(L2TP\), page 90](#)
- [transport mode \(L2VPN\), page 92](#)
- [tunnel-template, page 94](#)
- [xconnect group, page 95](#)

authentication (L2TP)

To enable L2TP authentication for a specified L2TP class name, use the **authentication** command in L2TP class configuration mode. To return to the default behavior, use the **no** form of this command.

authentication

no authentication

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes L2TP class configuration

Command History	Release	Modification
	Release 3.9.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note

You can also enable L2TP authentication for a specified class name from L2TP class configuration submode. To enter this submode, enter the **l2tp-class** command followed by the class name.

Task ID	Task ID	Operations
	l2vpn	read, write

Examples The following example shows how to configure L2TP authentication for the specified L2TP class name "cisco":

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2tp-class cisco
RP/0/RP0/CPU0:router(config-l2tp-class)# authentication
```

Related Commands	Command	Description
	hello-interval (L2TP), page 21	Configures the hello-interval value for L2TP (duration between control channel hello packets).

Command	Description
hidden (L2TP), page 23	Enables hidden attribute-value pairs (AVPs).
hostname (L2TP), page 25	Defines the name used in the L2TP hostname AVP.
l2tp-class, page 29	Enters L2TP class configuration mode where you can define an L2TP signaling template.
password (L2TP), page 43	Defines the password and password encryption type for control channel authentication.
receive-window (L2TP), page 55	Configures the receive window size for the L2TP server.
retransmit (L2TP), page 57	Configures retransmit retry and timeout values.

backup disable (L2VPN)

To specify how long a backup pseudowire should wait before resuming operation after the primary pseudowire goes down, use the **backup disable** command in L2VPN pseudowire class configuration mode. To disable this feature, use the **no** form of this command.

backup disable {*delay value* | **never**}

no backup disable {*delay value* | **never**}

Syntax Description

delay value	Specifies the number of seconds that elapse after the primary pseudowire becomes nonfunctional before the Cisco IOS XR software attempts to activate the secondary pseudowire. The range, in seconds, is from 0 to 180. The default is 0.
never	Specifies that the secondary pseudowire does not fall back to the primary pseudowire if the primary pseudowire becomes available again, unless the secondary pseudowire fails.

Command Default

The default disable delay is the value of 0, which means that the primary pseudowire is activated immediately when it comes back up.

Command Modes

L2VPN pseudowire class configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how a backup delay is configured for point-to-point pseudowire in which the backup disable delay is set to 50 seconds:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# pw-class class1
RP/0/RP0/CPU0:router(config-l2vpn-pwc)# backup disable delay 50
```

```

RP/0/RP0/CPU0:router(config-l2vpn-pwc)# exit
RP/0/RP0/CPU0:router(config-l2vpn)# xconnect group A
RP/0/RP0/CPU0:router(config-l2vpn-xc)# p2p rtrx
RP/0/RP0/CPU0:router(config-l2vpn-xc-p2p)# neighbor 10.1.1.1 pw-id 2
RP/0/RP0/CPU0:router(config-l2vpn-xc-p2p-pw)# pw-class class1
RP/0/RP0/CPU0:router(config-l2vpn-xc-p2p-pw)# backup neighbor 10.2.2.2 pw-id 5
RP/0/RP0/CPU0:router(config-l2vpn-xc-p2p-pw-backup)#

```

Related Commands

Command	Description
l2vpn, page 37	Enters L2VPN configuration mode.
neighbor (L2VPN), page 41	Configures a pseudowire for a cross-connect.
p2p, page 53	Enters p2p configuration submode to configure point-to-point cross-connects.
pw-class (L2VPN), page 47	Enters pseudowire class submode to define a pseudowire class template.
xconnect group, page 95	Configures cross-connect groups.

clear l2tp counters control session

To clear L2TP control counters for a session, use the **clear l2tp counters control session** command in EXEC mode.

clear l2tp counters control session fsm [event| state transition]

Syntax Description

fsm	(Optional) Clears finite state machine counters.
event	(Optional) Clears state machine event counters.
state	(Optional) Clears state machine state counters.
transition	(Optional) Clears state machine transition counters.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to clear all L2TP state machine transition counters:

```
RP/0/RP0/CPU0:router(config-l2vpn-xc-p2p-pw-backup)## clear l2tp counters control session fsm state transition
```

Related Commands

Command	Description
clear l2tp counters control tunnel, page 9	Clears L2TP control counters for a tunnel.

Command	Description
clear l2vpn counters l2tp, page 12	Clears L2VPN statistical information, such as, packets dropped.

clear l2tp counters control tunnel

To clear L2TP control counters for a tunnel, use the **clear l2tp counters control tunnel** command in EXEC mode.

clear l2tp counters control tunnel {**all**| **authentication**| **id** *tunnel id*}

Syntax Description

all	Clears all L2TP counters, except authentication counters
authentication	Clears tunnel authentication counters.
id <i>tunnel id</i>	Clears a specified counter. Range is 1 to 4294967295.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to clear all L2TP control tunnel counters:

```
RP/0/RP0/CPU0:router# clear l2tp counters control tunnel all
```

Related Commands

Command	Description
clear l2tp counters control session , page 7	Clears L2TP control counters for a session.
clear l2vpn counters l2tp , page 12	Clears L2VPN statistical information, such as, packets dropped.

clear l2tp tunnel

To clear L2TP tunnels, use the **clear l2tp tunnel** command in EXEC mode.

clear l2tp tunnel {**all**| **id** *tunnel id*| **l2tp-class** *class name*| **local ipv4** *ipv4 address*| **remote ipv4** *ipv4 address*}

Syntax Description

all	Clears all L2TP tunnels.
id <i>tunnel id</i>	Clears a specified tunnel.
l2tp-class <i>class name</i>	Clears all L2TP tunnels based on L2TP class name.
local ipv4 <i>ipv4 address</i>	Clears all local tunnels based on the specified local IPv4 address.
remote ipv4 <i>ipv4 address</i>	Clears all remote tunnels based on the specified local IPv4 address.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to clear all L2TP tunnels:

```
RP/0/RP0/CPU0:router# clear l2tp tunnel all
```

Related Commands

Command	Description
clear l2tp counters control session, page 7	Clears L2TP control counters for a session.
clear l2tp counters control tunnel, page 9	Clears L2TP control counters for a tunnel.

clear l2vpn collaborators

To clear the state change counters for L2VPN collaborators, use the **clear l2vpn collaborators** command in EXEC mode.

clear l2vpn collaborators

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC

Command History	Release	Modification
	Release 3.4.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	l2vpn	read, write

Examples The following example shows how to clear change counters for L2VPN collaborators:

```
RP/0/RP0/CPU0:router# clear l2vpn collaborators
```

Related Commands	Command	Description
	show l2vpn collaborators, page 68	Displays information about the state of the interprocess communications connections between l2vpn_mgr and other processes.

clear l2vpn counters l2tp

To clear L2VPN statistical information, such as, packets dropped, use the **clear l2vpn counters l2tp** command in EXEC mode.

clear l2vpn counters l2tp [**neighbor** *ip-address* [**pw-id** *value*]]

Syntax Description

l2tp	Clears all L2TP counters.
neighbor <i>ip-address</i>	(Optional) Clears all L2TP counters for the specified neighbor.
pw-id <i>value</i>	(Optional) Configures the pseudowire ID. The range is from 1 to 4294967295.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to clear all L2TP counters:

```
RP/0/RP0/CPU0:router# clear l2vpn counters l2tp
```

Related Commands

Command	Description
show l2vpn collaborators , page 68	Displays information about the state of the interprocess communications connections between l2vpn_mgr and other processes.

clear l2vpn counters bridge mac-withdrawal

To clear the MAC withdrawal statistics for the counters of the bridge domain, use the **clear l2vpn counters bridge mac-withdrawal** command in EXEC mode.

clear l2vpn counters bridge mac-withdrawal {**all**| **group** *group-name* **bd-name** *bd-name*| **neighbor** *ip-address* **pw-id** *value*}

Syntax Description

all	Clears the MAC withdrawal statistics over all the bridges.
group <i>group-name</i>	Clears the MAC withdrawal statistics over the specified group.
bd-name <i>bd-name</i>	Clears the MAC withdrawal statistics over the specified bridge.
neighbor <i>ip-address</i>	Clears the MAC withdrawal statistics over the specified neighbor.
pw-id <i>value</i>	Clears the MAC withdrawal statistics over the specified pseudowire. The range is from 1 to 4294967295.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to clear the MAC withdrawal statistics over all the bridges:

```
RP/0/RP0/CPU0:router# clear l2vpn counters bridge mac-withdrawal all
```

clear l2vpn forwarding counters

To clear L2VPN forwarding counters, use the **clear l2vpn forwarding counters** command in EXEC mode.

clear l2vpn forwarding counters

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC

Command History	Release	Modification
	Release 3.4.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	l2vpn	read, write

Examples The following example shows how to clear L2VPN forwarding counters:

```
RP/0/RP0/CPU0:router# clear l2vpn forwarding counters
```

Related Commands	Command	Description
	show l2vpn forwarding, page 70	Displays forwarding information from the layer2_fib manager on the line card.

clear l2vpn forwarding mac-address-table

To clear L2VPN forwarding MAC address tables, use the **clear l2vpn forwarding mac-address-table** command in EXEC mode.

clear l2vpn forwarding mac-address-table {*address address*| *bridge-domain name*| *interface type interface-path-id*| *location node-id*}

Syntax Description

<i>address</i>	Clears a specified MAC address.
bridge-domain <i>name</i>	Clears bridge domains learned from a MAC address table.
<i>type</i>	(Optional) Interface type. For more information, use the question mark (?) online help function.
<i>interface-path-id</i>	Physical interface or a 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 <i>node-id</i>	Clears L2VPN forwarding message counters for the specified location. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to clear L2VPN forwarding MAC address tables on a specified node:

```
RP/0/RP0/CPU0:router# clear l2vpn forwarding mac-address location 1/1/1
```

Related Commands

Command	Description
show l2vpn forwarding, page 70	Displays forwarding information from the layer2_fib manager on the line card.

clear l2vpn forwarding message counters

To clear L2VPN forwarding message counters, use the **clear l2vpn forwarding message counters** command in EXEC mode.

clear l2vpn forwarding message counters location *node-id*

Syntax Description	location <i>node-id</i> Clears L2VPN forwarding message counters for the specified location.					
Command Default	None					
Command Modes	EXEC					
Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>Release 3.5.0</td><td>This command was introduced.</td></tr></table>		Release	Modification	Release 3.5.0	This command was introduced.
Release	Modification					
Release 3.5.0	This command was introduced.					
Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.					
Task ID	<table><tr><th>Task ID</th><th>Operations</th></tr><tr><td>l2vpn</td><td>read, write</td></tr></table>		Task ID	Operations	l2vpn	read, write
Task ID	Operations					
l2vpn	read, write					
Examples	The following example shows how to clear L2VPN forwarding message counters on a specified node: RP/0/RP0/CPU0:router# clear l2vpn forwarding message counters location 0/6/CPU0					
Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td>show l2vpn forwarding, page 70</td><td>Displays forwarding information from the layer2_fib manager on the line card.</td></tr></table>		Command	Description	show l2vpn forwarding , page 70	Displays forwarding information from the layer2_fib manager on the line card.
Command	Description					
show l2vpn forwarding , page 70	Displays forwarding information from the layer2_fib manager on the line card.					

clear l2vpn forwarding table

To clear an L2VPN forwarding table at a specified location, use the **clear l2vpn forwarding table** command in EXEC mode.

clear l2vpn forwarding table location *node-id*

Syntax Description	<div><div>location</div><div><i>node-id</i></div></div> <div>Clears L2VPN forwarding tables for the specified location.</div>					
Command Default	None					
Command Modes	EXEC					
Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>Release 3.4.0</td><td>This command was introduced.</td></tr></table>		Release	Modification	Release 3.4.0	This command was introduced.
Release	Modification					
Release 3.4.0	This command was introduced.					
Usage Guidelines	<p>To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.</p>					
Task ID	<table><tr><th>Task ID</th><th>Operations</th></tr><tr><td>l2vpn</td><td>read, write</td></tr></table>		Task ID	Operations	l2vpn	read, write
Task ID	Operations					
l2vpn	read, write					
Examples	<p>The following example shows how to clear an L2VPN forwarding table from a specified location:</p> <pre>RP/0/RP0/CPU0:router# clear l2vpn forwarding table location 1/2/3/5</pre>					
Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td>show l2vpn forwarding, page 70</td><td>Displays forwarding information from the layer2_fib manager on the line card.</td></tr></table>		Command	Description	show l2vpn forwarding , page 70	Displays forwarding information from the layer2_fib manager on the line card.
Command	Description					
show l2vpn forwarding , page 70	Displays forwarding information from the layer2_fib manager on the line card.					

digest (L2TP)

To configure digest options, use the **digest** command in L2TP class configuration mode. To return to the default behavior, use the **no** form of this command.

digest {**check disable**| **hash** {**MD5**| **SHA1**}}| **secret** {**0**| **7**| *word*}}

no digest {**check disable**| **hash** {**MD5**| **SHA1**}}| **secret** {**0**| **7**| *word*}}

Syntax Description

check disable	Disables digest checking.
hash { MD5 SHA1 }	Configures the digest hash method (MD5 or SHA1). Default is MD5.
secret { 0 7 <i>word</i> }	Configures a shared secret for message digest.

Command Default

check disable: Digest checking is enabled by default.

hash: Default is MD5 if the **digest** command is issued without the secret keyword option and L2TPv3 integrity checking is enabled.

Command Modes

L2TP class configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

The digest secret and hash algorithm can be configured in the l2tp-class configuration for authentication of the control channel. For control channel authentication to work correctly, however, both sides of the L2TP control channel connection must share a common secret and hash algorithm.

To update of digest secret without network disruption, Cisco supports a maximum to two digest secrets. You can configure a new secret while keeping the old secret valid. You can safely remove the old secret after you update all affected peer nodes with a new secret,

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure digest options for L2TP:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router (config)# l2tp-class cisco
RP/0/RP0/CPU0:router (config-l2tp-class)# digest check disable
RP/0/RP0/CPU0:router (config-l2tp-class)# digest secret cisco hash md5
```

Related Commands

Command	Description
authentication (L2TP), page 3	Enables L2TP authentication for a specified L2TP class name.
hello-interval (L2TP), page 21	Configures the hello-interval value for L2TP (duration between control channel hello packets).
hidden (L2TP), page 23	Enables hidden attribute-value pairs (AVPs).
hostname (L2TP), page 25	Defines the name used in the L2TP hostname AVP.
l2tp-class, page 29	Enters L2TP class configuration mode where you can define an L2TP signaling template.
password (L2TP), page 43	Defines the password and password encryption type for control channel authentication.
receive-window (L2TP), page 55	Configures the receive window size for the L2TP server.
retransmit (L2TP), page 57	Configures retransmit retry and timeout values.

hello-interval (L2TP)

To configure the hello-interval value for L2TP (duration between control channel hello packets), use the **hello interval (L2TP)** command in L2TP class configuration mode. To return to the default behavior, use the **no** form of this command.

hello-interval *interval*

no hello-interval *interval*

Syntax Description	<i>interval</i>	Interval (in seconds) between control channel hello packets. The range is from 0 to 1000. Default is 60 seconds.
---------------------------	-----------------	--

Command Default	<i>interval</i> : 60 seconds
------------------------	------------------------------

Command Modes	L2TP class configuration
----------------------	--------------------------

Command History	Release	Modification
	Release 3.9.0	This command was introduced.

Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
-------------------------	--

Task ID	Task ID	Operations
	l2vpn	read, write

Examples	The following example shows how to configure the hello-interval value for L2TP to 22 seconds:
-----------------	---

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2tp-class cisco
RP/0/RP0/CPU0:router(config-l2tp-class)# hello-interval 22
```

Related Commands	Command	Description
	authentication (L2TP), page 3	Enables L2TP authentication for a specified L2TP class name.
	hidden (L2TP), page 23	Enables hidden attribute-value pairs (AVPs).
	hostname (L2TP), page 25	Defines the name used in the L2TP hostname AVP.

Command	Description
l2tp-class, page 29	Enters L2TP class configuration mode where you can define an L2TP signaling template.
password (L2TP), page 43	Defines the password and password encryption type for control channel authentication.
receive-window (L2TP), page 55	Configures the receive window size for the L2TP server.
retransmit (L2TP), page 57	Configures retransmit retry and timeout values.

hidden (L2TP)

To enable hidden attribute-value pairs (AVPs), use the **hidden** command in L2TP class configuration mode. To return to the default behavior, use the **no** form of this command.

hidden

no hidden

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes L2TP class configuration

Command History	Release	Modification
	Release 3.9.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	l2vpn	read, write

Examples The following example shows how to enable hidden AVPs:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2tp-class cisco
RP/0/RP0/CPU0:router(config-l2tp-class)# hidden
```

Related Commands	Command	Description
	authentication (L2TP), page 3	Enables L2TP authentication for a specified L2TP class name.
	hello-interval (L2TP), page 21	Configures the hello-interval value for L2TP (duration between control channel hello packets).
	hostname (L2TP), page 25	Defines the name used in the L2TP hostname AVP.
	l2tp-class, page 29	Enters L2TP class configuration mode where you can define an L2TP signaling template.

Command	Description
password (L2TP), page 43	Defines the password and password encryption type for control channel authentication.
receive-window (L2TP), page 55	Configures the receive window size for the L2TP server.
retransmit (L2TP), page 57	Configures retransmit retry and timeout values.

hostname (L2TP)

To define the name used in the L2TP hostname AVP, use the **hostname** command in L2TP class configuration mode. To return to the default behavior, use the **no** form of this command.

hostname *name*

no hostname *name*

Syntax Description

<i>name</i>	Hostname used to identify the router during L2TP control channel authentication.
-------------	--

Command Default

None

Command Modes

L2TP class configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure a hostname using the word “cisco”:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2tp-class cisco
RP/0/RP0/CPU0:router(config-l2tp-class)# hostname cisco
```

Related Commands

Command	Description
authentication (L2TP), page 3	Enables L2TP authentication for a specified L2TP class name.
hello-interval (L2TP), page 21	Configures the hello-interval value for L2TP (duration between control channel hello packets).
hidden (L2TP), page 23	Enables hidden attribute-value pairs (AVPs).

Command	Description
l2tp-class, page 29	Enters L2TP class configuration mode where you can define an L2TP signaling template.
password (L2TP), page 43	Defines the password and password encryption type for control channel authentication.
receive-window (L2TP), page 55	Configures the receive window size for the L2TP server.
retransmit (L2TP), page 57	Configures retransmit retry and timeout values.

interface (p2p)

To configure an attachment circuit, use the **interface** command in p2p configuration submode. To return to the default behavior, use the **no** form of this command.

interface *type interface-path-id*

no interface *type interface-path-id*

Syntax Description

<i>type</i>	Interface type. For more information, use the question mark (?) online help function.
<i>interface-path-id</i>	Physical interface or a virtual interface. Note Use the show interfaces command to see a list of all possible interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.

Command Default

None

Command Modes

p2p configuration submode

Command History

Release	Modification
Release 3.4.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure an attachment circuit on a TenGigE interface:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# xconnect group gr1
RP/0/RP0/CPU0:router(config-l2vpn-xc)# p2p p001
RP/0/RP0/CPU0:router(config-l2vpn-xc-p2p)# interface TenGigE 1/1/1/1
```

Related Commands

Command	Description
p2p, page 53	Enters p2p configuration submode to configure point-to-point cross-connects.

l2tp-class

To enter L2TP class configuration mode where you can define an L2TP signaling template, use the **l2tp-class** command in global configuration mode. To delete the L2TP class, use the **no** form of this command.

l2tp-class *l2tp-class-name*

no l2tp-class *l2tp-class-name*

Syntax Description

l2tp-class-name	L2TP class name.
-----------------	------------------

Command Default

No L2TP classes are defined.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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



Note

An L2TP class name must be defined before configuring L2TP control plane configuration settings.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to enter L2TP configuration mode to create a template of L2TP control plane configuration settings that can be inherited by different pseudowire classes (in this case, the word “cisco” is used):

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2tp-class cisco
RP/0/RP0/CPU0:router(config-l2tp-class)#
```

l2transport

To configure a physical interface to operate in Layer 2 transport mode, use the **l2transport** command in interface configuration mode. To return to the default behavior, use the **no** form of this command.

l2transport

no l2transport

This command has no arguments or keywords.

Command Default

None

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.4.0	This command was introduced.

Usage Guidelines

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

The l2transport command and these configuration items are mutually exclusive:

- IPv4 address and feature (for example, ACL) configuration
- IPv4 enable, address and feature (for example, ACL) configuration
- Bundle-enabling configuration
- L3 subinterfaces
- Layer 3 QoS Policy



Note

After an interface or connection is set to Layer 2 switched, commands such as **ipv4 address** are not usable. If you configure routing commands on the interface, **l2transport** is rejected.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure an interface or connection as Layer 2 switched under several different modes:

Ethernet Port Mode:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface GigabitEthernet 0/0/0/0
RP/0/RP0/CPU0:router(config-if)# l2transport
```

Ethernet VLAN Mode:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface GigabitEthernet 0/0/0/0.900 l2transport
RP/0/RP0/CPU0:router(config-if)# encapsulation dot1q 100dot1q vlan 999
```

Ethernet VLAN Mode (QinQ):

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface GigabitEthernet 0/0/0/0.900 l2transport
RP/0/RP0/CPU0:router(config-if)# encapsulation dot1q 20 second-dot1q 10vlan 999 888
```

Ethernet VLAN Mode (QinAny):

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface GigabitEthernet 0/0/0/0.900 l2transport
RP/0/RP0/CPU0:router(config-if)# encapsulation dot1q 30 second-dot1q dot1q vlan 999 any
```

Related Commands

Command	Description
show l2vpn forwarding , page 70	Displays forwarding information from the layer2_fib manager on the line card.

l2transport l2protocol

To configure Layer 2 protocol handling, use the **l2transport l2protocol** command in interface configuration mode. To return to the default behavior, use the **no** form of this command.

l2transport l2protocol {cdp| pvst| stp| vtp} {drop| experimental bits| tunnel experimental bits}

no l2transport l2protocol {cdp| pvst| stp| vtp} {drop| experimental bits| tunnel experimental bits}

Syntax Description

cdp	Configures Cisco Discovery Protocol (CDP).
pvst	Configures Per VLAN Spanning Tree protocol (PVST).
stp	Configures Spanning Tree Protocol (STP).
vtp	Configures VLAN Trunk Protocol (VTP).
drop	Drops the selected protocol packets.
experimental bits	Modifies the MPLS experimental bits.
tunnel experimental bits	Configures tunnel protocol packets.

Command Default

None

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

These L2 protocols are available:

- Cisco Discovery Protocol (CDP)—CDP is protocol-independent and is used to obtain protocol addresses, platform information, and other data about neighboring devices.
- PVST maintains a spanning tree instance for each VLAN configured in the network and permits a VLAN trunk to be forwarding for some VLANs and not for others. It can also load balance Layer 2 traffic by forwarding some VLANs on one trunk and other VLANs on others.

- Spanning-Tree Protocol (STP)—STP is a link management protocol that provides path redundancy in the network. For Ethernet networks to function properly, only one active path can exist between two stations.
- VLAN Trunk Protocol (VTP)—VTP is a Cisco-proprietary protocol that reduces administration in a switched network. When you configure a new VLAN on one VTP server, the VLAN is distributed through all switches in the domain.

Task ID

Task ID	Operations
l2vpn	read, write
atm	read, write

Examples

The following example shows how to configure Layer 2 protocol handling:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface GigabitEthernet 0/0/0/0
RP/0/RP0/CPU0:router(config-if)# l2transport l2protocol cpsv reverse-tunnelstp drop
```

Related Commands

Command	Description
show l2vpn forwarding, page 70	Displays forwarding information from the layer2_fib manager on the line card.

l2transport propagate

To propagate Layer 2 transport events, use the **l2transport propagate** command in interface configuration mode. To return to the default behavior, use the **no** form of this command.

l2transport propagate remote-status

no l2transport propagate remote-status

Syntax Description

remote-status	Propagates remote link status changes.
----------------------	--

Command Default

None

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

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

The **l2transport propagate** command provides a mechanism for the detection and propagation of remote link failure for port mode EoMPLS.

To display the state of l2transport events, use the **show controller internal** command in

To display the state of l2transport events, use the show controller internal command in *Cisco IOS XR Interface and Hardware Component Configuration Guide for the Cisco CRS Router*

For more information about the Ethernet remote port shutdown feature, see *Cisco IOS XR MPLS Configuration Guide for the Cisco CRS Router*.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to propagate remote link status changes:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface GigabitEthernet 0/0/0/0
RP/0/RP0/CPU0:router(config-if)# l2transport propagate remote remote-status
```

Related Commands

Command	Description
show l2vpn forwarding, page 70	Displays forwarding information from the layer2_fib manager on the line card.

l2transport service-policy

To configure a Layer 2 transport quality of service (QoS) policy, use the **l2transport service-policy** command in interface configuration mode. To return to the default behavior, use the **no** form of this command.

l2transport service-policy {*input policy-name*| *output policy-name*}

no l2transport service-policy {*input policy-name*| *output policy-name*}

Syntax Description

input <i>policy-name</i>	Configures the direction of service policy application: input.
output <i>policy-name</i>	Configures the direction of service policy application: output.

Command Default

None

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write
atm	read, write

Examples

The following example shows how configure an L2 transport quality of service (QoS) policy:

```
RP/0/RSP0RP00/CPU0:router# configure
RP/0/RSP0RP00/CPU0:router(config)# interface GigabitEthernet 0/0/0/0
RP/0/RSP0RP00/CPU0:router(config-if)# l2transport service-policy input sp_0001
```

Related Commands

Command	Description
show l2vpn forwarding , page 70	Displays forwarding information from the layer2_fib manager on the line card.

l2vpn

To enter L2VPN configuration mode, use the **l2vpn** command in global configuration mode. To return to the default behavior, use the **no** form of this command.

l2vpn

no l2vpn

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes Global configuration

Command History	Release	Modification
	Release 3.4.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note

All L2VPN configuration can be deleted using the **no l2vpn** command.

Task ID	Task ID	Operations
	l2vpn	read, write

Examples The following example shows how to enter L2VPN configuration mode:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)#
```

Related Commands	Command	Description
	show l2vpn forwarding , page 70	Displays forwarding information from the layer2_fib manager on the line card.

logging (l2vpn)

To enable cross-connect logging, use the **logging** command in L2VPN configuration submode. To return to the default behavior, use the **no** form of this command.

logging pseudowire status

no logging pseudowire status

Syntax Description

pseudowire status	Enables pseudowire state change logging.
-------------------	--

Command Default

None

Command Modes

L2VPN configuration submode

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

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



Note

All L2VPN configuration can be deleted using the **no l2vpn** command.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to enable cross-connect logging:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# logging pseudowire status
```

Related Commands

Command	Description
l2vpn , page 37	Enters L2VPN configuration mode.

mpls static label (L2VPN)

To configure static labels for MPLS L2VPN, use the **mpls static label** command in L2VPN cross-connect P2P pseudowire configuration mode. To have MPLS assign a label dynamically, use the **no** form of this command.

mpls static label local *label* **remote** *value*

no mpls static label local *label* **remote** *value*

Syntax Description

local <i>label</i>	Configures a local pseudowire label. Range is 16 to 15999.
remote <i>value</i>	Configures a remote pseudowire label. Range is 16 to 15999.

Command Default

The default behavior is a dynamic label assignment.

Command Modes

L2VPN cross-connect P2P pseudowire configuration

Command History

Release	Modification
Release 3.7.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure static labels for MPLS L2VPN:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn xconnect group l2vpn
RP/0/RP0/CPU0:router(config-l2vpn-xc)# p2p rtrA to_rtrB
RP/0/RP0/CPU0:router(config-xc-p2p)# neighbor 10.1.1.2 pw-id 1000
RP/0/RP0/CPU0:router(config-l2vpn-xc-p2p-pw)# mpls static label local 800 remote 500
```

Related Commands

Command	Description
l2vpn , page 37	Enters L2VPN configuration mode.

Command	Description
neighbor (L2VPN), page 41	Configures a pseudowire for a cross-connect.
p2p, page 53	Enters p2p configuration submode to configure point-to-point cross-connects.
xconnect group, page 95	Configures cross-connect groups.

neighbor (L2VPN)

To configure a pseudowire for a cross-connect, use the **neighbor** command in p2p configuration submode. To return to the default behavior, use the **no** form of this command.

neighbor *A.B.C.D* **pw-id** *value*

no neighbor *A.B.C.D* **pw-id** *value*

Syntax Description

<i>A.B.C.D</i>	IP address of the cross-connect peer.
pw-id <i>value</i>	Configures the pseudowire ID and ID value. Range is 1 to 4294967295.

Command Default

None

Command Modes

p2p configuration submode

Command History

Release	Modification
Release 3.4.0	This command was introduced.
Release 3.4.1	The vccv disable keyword was added.
Release 3.7.0	The following keywords were removed: <ul style="list-style-type: none"> • control-word • pw-static-label local • remote • vccv • transport-mode

Usage Guidelines

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

A cross-connect may have two segments:

- 1 An Attachment Circuit (AC)
- 2 An second AC or a pseudowire

**Note**

The pseudowire is identified by two keys: neighbor and pseudowire ID. There may be multiple pseudowires going to the same neighbor. It is not possible to configure a neighbor only.

All L2VPN configurations can be deleted using the **no l2vpn** command.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows a point-to-point cross-connect configuration (including pseudowire configuration):

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn xconnect group l2vpn
RP/0/RP0/CPU0:router(config-l2vpn-xc)# p2p rtrA to rtrB
RP/0/RP0/CPU0:router(config-xc-p2p)# neighbor 10.1.1.2 pw-id 1000 pw-class class12
RP/0/RP0/CPU0:router(config-xc-p2p)# neighbor 10.1.1.3 pw-id 1001 pw-class class13
RP/0/RP0/CPU0:router(config-xc)# p2p rtrC to rtrD
RP/0/RP0/CPU0:router(config-xc-p2p)# neighbor 10.2.2.3 pw-id 200 pw-class class23
RP/0/RP0/CPU0:router(config-xc-p2p)# neighbor 10.2.2.4 pw-id 201 pw-class class24
```

The following example shows a point-to-point cross-connect configuration (including pseudowire configuration):

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn xconnect group l2vpn
RP/0/RP0/CPU0:router(config-l2vpn-xc)# p2p rtrA to rtrB
RP/0/RP0/CPU0:router(config-xc-p2p)# neighbor 10.1.1.2 pw-id 1000 pw-class foo
RP/0/RP0/CPU0:router(config-xc)# p2p rtrC to rtrD
RP/0/RP0/CPU0:router(config-xc-p2p)# neighbor 20.2.2.3 pw-id 200 pw-class bar1
```

Related Commands

Command	Description
l2vpn , page 37	Enters L2VPN configuration mode.
p2p , page 53	Enters p2p configuration submode to configure point-to-point cross-connects.
pw-class (L2VPN) , page 47	Enters pseudowire class submode to define a pseudowire class template.
xconnect group , page 95	Configures cross-connect groups.

password (L2TP)

To define the password and password encryption type for control channel authentication, use the **password** command in L2TP class configuration mode. To return to the default behavior, use the **no** form of this command.

password [*0*|*7*] *password*

no password

Syntax Description

0	(Optional) Specifies that an unencrypted password will follow.
7	(Optional) Specifies that an encrypted password will follow.
<i>password</i>	Unencrypted or clear text user password.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to define an unencrypted password using the word “cisco” for control channel authentication:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2tp-class sanjose
RP/0/RP0/CPU0:router(config-l2tp-class)# password 0 cisco
```

Related Commands

Command	Description
authentication (L2TP), page 3	Enables L2TP authentication for a specified L2TP class name.
hello-interval (L2TP), page 21	Configures the hello-interval value for L2TP (duration between control channel hello packets).
hidden (L2TP), page 23	Enables hidden attribute-value pairs (AVPs).
hostname (L2TP), page 25	Defines the name used in the L2TP hostname AVP.
l2tp-class, page 29	Enters L2TP class configuration mode where you can define an L2TP signaling template.
receive-window (L2TP), page 55	Configures the receive window size for the L2TP server.
retransmit (L2TP), page 57	Configures retransmit retry and timeout values.

preferred-path

To configure an MPLS TE tunnel to be used for L2VPN traffic, use the **preferred-path** command in Encapsulation MPLS configuration mode. To delete the preferred-path, use the **no** form of this command.

preferred-path interface tunnel-te value [fallback disable]

no preferred-path interface tunnel-te value [fallback disable]

Syntax Description

<i>interface</i>	Specifies the interface for the preferred path.
tunnel-te	Specifies the tunnel interface name for the preferred path.
<i>value</i>	Tunnel number for preferred path.
fallback disable	(Optional) Disables fallback for preferred path tunnel settings.

Command Default

None

Command Modes

Encapsulation MPLS configuration

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

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

The **preferred-path** command is applicable only to pseudowires with MPLS encapsulation.

Cisco IOS XR software supports only **fallback disable**. Traffic does not use the default LDP path if the tunnel is down.

Use the **show l2vpn xconnect detail** command to show the status of fallback (that is, enabled or disabled).



Note

All L2VPN configurations can be deleted using the **no l2vpn** command.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure preferred-path tunnel settings:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# pw-class kanata01
RP/0/RP0/CPU0:router(config-l2vpn-pwc)# encapsulation mpls
RP/0/RP0/CPU0:router(config-l2vpn-pwc-encap-mpls)# interfacetunnel-te 56 tunnel 6666fallback
disable
```

Related Commands

Command	Description
show l2vpn xconnect, page 80	Displays brief information on configured cross-connects.

pw-class (L2VPN)

To enter pseudowire class submode to define a pseudowire class template, use the **pw-class** command in L2VPN configuration submode. To delete the pseudowire class, use the **no** form of this command.

pw-class *class-name*

no pw-class *class-name*

Syntax Description

<i>class-name</i>	Pseudowire class name.
-------------------	------------------------

Command Default

None

Command Modes

L2VPN configuration submode

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

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



Note

All L2VPN configurations can be deleted using the **no l2vpn** command.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to define a simple pseudowire class template:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# xconnect group l1vpn
RP/0/RP0/CPU0:router(config-l2vpn-xc)# p2p rtrA_to_rtrB
RP/0/RP0/CPU0:router(config-l2vpn-xc-p2p)# neighbor 10.1.1.2 pw-id 1000
RP/0/RP0/CPU0:router(config-l2vpn-xc-p2p-pw)# pw-class kanata01
```

Related Commands

Command	Description
p2p, page 53	Enters p2p configuration submode to configure point-to-point cross-connects.

pw-class encapsulation l2tpv3

To configure L2TPv3 pseudowire encapsulation, use the **pw-class encapsulation l2tpv3** command in L2VPN pseudowire class configuration mode. To return to the default behavior, use the **no** form of this command.

pw-class class name encapsulation l2tpv3 [**cookie size** {0 | 4 | 8}| **ipv4 source** *address*| **pmtu max** 68-65535| **protocol l2tpv3 class name**| **tos** {reflect value 0-255| value 0-255}| **ttl** *value*]

pw-class class name encapsulation l2tpv3 [**cookie size** {0 | 4 | 8}| **ipv4 source** *address*| **pmtu max** 68-65535| **protocol l2tpv3 class name**| **tos** {reflect value 0-255| value 0-255}| **ttl** *value*]

Syntax Description

class name	Configures an encapsulation class name.
cookie size {0 4 8}	(Optional) Configures the L2TPv3 cookie size setting: <ul style="list-style-type: none"> • 0—Cookie size is 0 bytes. • 4—Cookie size is 4 bytes. • 8—Cookie size is 8 bytes.
ipv4 source <i>address</i>	(Optional) Configures the local source IPv4 address.
pmtu max 68-65535	(Optional) Configures the value of the maximum allowable session MTU.
protocol l2tpv3 class name	(Optional) Configures L2TPv3 as the signaling protocol for the pseudowire class.
tos {reflect value 0-255 value 0-255}	(Optional) Configures TOS and the TOS value. Range is 0 to 255.
ttl <i>value</i>	Configures the Time-to-live (TTL) value. Range is 1 to 255.

Command Default

None

Command Modes

L2VPN pseudowire class configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

**Note**

All L2VPN configurations can be deleted using the **no l2vpn** command.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to define L2TPV3 pseudowire encapsulation:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# pw-class kanata01
RP/0/RP0/CPU0:router(config-l2vpn-pwc)# encapsulation l2tpv3
```

Related Commands

Command	Description
pw-class (L2VPN), page 47	Enters pseudowire class submode to define a pseudowire class template.
pw-class encapsulation mpls, page 51	Configures MPLS pseudowire encapsulation.

pw-class encapsulation mpls

To configure MPLS pseudowire encapsulation, use the **pw-class encapsulation mpls** command in L2VPN pseudowire class configuration mode. To return to the default behavior, use the **no** form of this command.

pw-class *class-name* **encapsulation mpls** {**control word**| **preferred-path**| **protocol ldp**| **sequencing**| **tag-rewrite**| **transport-mode**| **vccv verification-type none**}

no pw-class *class-name* **encapsulation mpls** {**control word**| **preferred-path**| **protocol ldp**| **sequencing**| **tag-rewrite**| **transport-mode**| **vccv verification-type none**}

Syntax Description

<i>class-name</i>	Configures an encapsulation class name.
control word	Disables control word for MPLS encapsulation. The control word keyword is disabled by default.
preferred-path	Configures the preferred path tunnel settings.
protocol ldp	Configures LDP as the signaling protocol for this pseudowire class.
sequencing	Configures sequencing on receive or transmit.
tag-rewrite	Configures VLAN tag rewrite.
transport-mode	Configures transport mode to be either Ethernet or VLAN.
vccv none	Enables or disables the VCCV verification type.

Command Default

None

Command Modes

L2VPN pseudowire class configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.8.0	The keywords control word disable and vccv none were replaced by the keywords control word and vccv verification-type none .
Release 3.9.0	The following keywords were added: <ul style="list-style-type: none"> • preferred-path • sequencing • tag-rewrite

Release	Modification
	• transport-mode

Usage Guidelines

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

**Note**

All L2VPN configurations can be deleted using the **no l2vpn** command.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to define MPLS pseudowire encapsulation:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# pw-class kanata01
RP/0/RP0/CPU0:router(config-l2vpn-pwc)# encapsulation mpls
```

Related Commands

Command	Description
pw-class (L2VPN), page 47	Enters pseudowire class submode to define a pseudowire class template.
pw-class encapsulation l2tpv3, page 49	Configures L2TPv3 pseudowire encapsulation.

p2p

To enter p2p configuration submode to configure point-to-point cross-connects, use the **p2p** command in L2VPN xconnect mode. To return to the default behavior, use the **no** form of this command.

p2p *xconnect-name*

no p2p *xconnect-name*

Syntax Description	<i>xconnect-name</i> (Optional) Configures the name of the point-to-point cross- connect.	
Command Default	None	
Command Modes	L2VPN xconnect	
Command History	Release	Modification
	Release 3.4.0	This command was introduced.

Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.	
	To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.	
	The name of the point-to-point cross-connect string is a free format description string.	

Task ID	Task ID	Operations
	l2vpn	read, write

Examples	The following example shows a point-to-point cross-connect configuration (including pseudowire configuration):
-----------------	--

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# xconnect group group 1
RP/0/RP0/CPU0:router(config-l2vpn-xc)# p2p xc1
```

Related Commands

Command	Description
interface (p2p), page 27	Configures an attachment circuit.

receive-window (L2TP)

To configure the receive window size for the L2TP server, use the **receive-window** command in L2TP class configuration mode. To return to the default behavior, use the **no** form of this command.

receive-window *size*

no receive-window *size*

Syntax Description

<i>size</i>	Maximum number of packets that are received from a peer before back-off is applied. Default is 512.
-------------	---

Command Default

size: 512

Command Modes

L2TP class configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure the receive window size for the L2TP server to 10 packets:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2tp-class cisco
RP/0/RP0/CPU0:router(config-l2tp-class)# receive-window 10
```

Related Commands

Command	Description
authentication (L2TP), page 3	Enables L2TP authentication for a specified L2TP class name.
hello-interval (L2TP), page 21	Configures the hello-interval value for L2TP (duration between control channel hello packets).
hidden (L2TP), page 23	Enables hidden attribute-value pairs (AVPs).

Command	Description
hostname (L2TP), page 25	Defines the name used in the L2TP hostname AVP.
l2tp-class, page 29	Enters L2TP class configuration mode where you can define an L2TP signaling template.
password (L2TP), page 43	Defines the password and password encryption type for control channel authentication.
retransmit (L2TP), page 57	Configures retransmit retry and timeout values.

retransmit (L2TP)

To configure retransmit retry and timeout values, use the **retransmit** command in L2TP class configuration mode. To return to the default behavior, use the **no** form of this command.

retransmit {*initial initial-retries*| *retries retries*| *timeout {max| min} timeout*}

no retransmit {*initial initial-retries*| *retries retries*| *timeout {max| min} timeout*}

Syntax Description

initial <i>initial-retries</i>	Configures the number of SCCRP messages resent before giving up on a particular control channel. Range is 1 to 1000. Default is 2.
retries <i>retries</i>	Configures the maximum number of retransmissions before determining that peer router does not respond. Range is 5 to 1000. Default is 15.
timeout { <i>max</i> <i>min</i> } <i>timeout</i>	Configures the maximum and minimum retransmission interval in seconds for control packets. Range is 1 to 8. Maximum timeout default is 8 seconds. Minimum timeout default is 1 second.

Command Default

initial retries: 2

retries: 15

min timeout: 1

max timeout: 8

Command Modes

L2TP class configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure a retransmit retry value to 1:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2tp-class cisco
RP/0/RP0/CPU0:router(config-l2tp-class)# retransmit initial retries 1
```

Related Commands

Command	Description
authentication (L2TP), page 3	Enables L2TP authentication for a specified L2TP class name.
hello-interval (L2TP), page 21	Configures the hello-interval value for L2TP (duration between control channel hello packets).
hidden (L2TP), page 23	Enables hidden attribute-value pairs (AVPs).
hostname (L2TP), page 25	Defines the name used in the L2TP hostname AVP.
l2tp-class, page 29	Enters L2TP class configuration mode where you can define an L2TP signaling template.
password (L2TP), page 43	Defines the password and password encryption type for control channel authentication.
receive-window (L2TP), page 55	Configures the receive window size for the L2TP server.

rollover (L3VPN)

To configure rollover times for a tunnel-template, use the **rollover** command in tunnel encapsulation l2tp configuration mode. To return to the default behavior, use the **no** form of this command.

rollover *periodic time holdown time*

no rollover *periodic time holdown time*

Syntax Description

periodic <i>time</i>	Configures the periodic rollover time in seconds. Range is 60 to 31536000.
holddown <i>time</i>	Configures the holddown time for old session cookie values.

Command Default

None

Command Modes

tunnel encapsulation l2tp configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

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

The name of the point-to-point cross-connect string is a free format description string.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure rollover times for a tunnel-template:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# tunnel-template kanata_9
RP/0/RP0/CPU0:router(config-tuntem) encapsulation l2tp
RP/0/RP0/CPU0:router(config-tunencap-l2tp)# rollover
```

Related Commands

Command	Description
interface (p2p) , page 27	Configures an attachment circuit.

show l2tp class

To display information about an L2TP class, use the **show l2tp class** command in EXEC mode.

show l2tp class *name name*

Syntax Description	<table><tr><td>name <i>name</i></td><td>Configures an L2TP class name.</td></tr></table>		name <i>name</i>	Configures an L2TP class name.		
name <i>name</i>	Configures an L2TP class name.					
Command Default	None					
Command Modes	EXEC					
Command History	<table><tr><td>Release</td><td>Modification</td></tr><tr><td>Release 3.9.0</td><td>This command was introduced.</td></tr></table>		Release	Modification	Release 3.9.0	This command was introduced.
Release	Modification					
Release 3.9.0	This command was introduced.					
Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.					
Task ID	<table><tr><td>Task ID</td><td>Operations</td></tr><tr><td>l2vpn</td><td>read, write</td></tr></table>		Task ID	Operations	l2vpn	read, write
Task ID	Operations					
l2vpn	read, write					

Examples

The following example shows sample output for the **show l2vtp session class** command:

```
RP/0/RP0/CPU0:router# show l2tp class name kanata_02

l2tp-class kanata_02
  manually configured class
  configuration parameters:
    (not) hidden
    (no) authentication
    (no) digest
    digest check enable
    hello 60
    (no) hostname
    (no) password
    (no) accounting
    (no) security crypto-profile
    (no) ip vrf
    receive-window 888
    retransmit retries 15
    retransmit timeout max 8
    retransmit timeout min 1
    retransmit initial retries 2
    retransmit initial timeout max 8
```

```
retransmit initial timeout min 1
timeout setup 300
```

This table describes the significant fields shown in the display.

Table 2: show l2tp class brief Field Descriptions

Field	Description
l2tp-class	Shows the L2TP class name and the manner of its creation. For example, manually configured class.
configuration parameters	Displays a complete list and state of all configuration parameters.

Related Commands

Command	Description
l2tp-class, page 29	Enters L2TP class configuration mode where you can define an L2TP signaling template.

show l2tp counters forwarding session

To display L2TP forward session counters, use the **show l2tp counter forwarding session** command in EXEC mode.

show l2tp counters forwarding session [*id identifier*] **name** *local-name remote-name*]

Syntax Description

id <i>identifier</i>	(Optional) Configures the session counter identifier.
name <i>local-name remote name</i>	(Optional) Configures the local and remote names for a session counter.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows sample output for the **show l2tp counters forwarding session** command:

```
RP/0/RP00/CPU0:router(config-l2vpn) # pw-class kanata01show l2tp counters forwarding session
```

```
LocID      RemID      TunID      Pkts-In    Pkts-Out   Bytes-In   Bytes-Out
22112      15584      14332      0           0           0           0
```

This table describes the significant fields shown in the display.

Table 3: show l2tp counters forwarding session Field Descriptions

Field	Description
LocID	Local session ID.

Field	Description
RemID	Remote session ID.
TunID	Local Tunnel ID for this session.
Pkts-In	Number of packets input in the session.
Pkts-Out	Number of packets output in the session.
Bytes-In	Number of bytes input in the session.
Bytes-Out	Number of bytes output in the session.

Related Commands

Command	Description
show l2tp tunnel, page 66	Displays information about L2TP tunnels.

show l2tp session

To display information about L2TP sessions, use the **show l2tp session** command in EXEC mode.

show l2tp session [**detail**|**brief**|**interworking**|**circuit**|**sequence**|**state**] {**id** *id*|**name** *name*}

Syntax Description

brief	(Optional) Displays summary output for a session.
circuit	(Optional) Displays attachment circuit information for a session.
detail	(Optional) Displays detailed output for a session.
interworking	(Optional) Displays interworking information for a session.
sequence	(Optional) Displays data packet sequencing information for a session.
state	(Optional) Displays control plane state information for a session.
id <i>id</i>	Configures the local tunnel ID. Range is 0 to 4294967295.
name <i>name</i>	Configures the tunnel name.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following sample output is from the **show l2vpn session brief** command:

```
RP/0/RP00/CPU0:router(config-l2vpn-pw)# encapsulation mpls show l2tp session brief
```

```
L2TP Session Information Total tunnels 1 sessions 6
```

LocID	TunID	Peer-address	State sess/cir	Vcid
26093	43554	13.0.0.2	est,UP	60
26094	43554	13.0.0.2	est,UP	40
26095	43554	13.0.0.2	est,UP	50
26096	43554	13.0.0.2	est,UP	70
26097	43554	13.0.0.2	est,UP	20
26098	43554	13.0.0.2	est,UP	30

This table describes the significant fields shown in the display.

Table 4: show l2tp session brief Field Descriptions

Field	Description
LocID	Local session ID.
TunID	Local tunnel ID for this session.
Peer-address	The IP address of the other end of the session.
State	The state of the session.
Vcid	The Virtual Circuit ID of the session. This is the same value of the pseudowire ID for l2vpn.

Related Commands

Command	Description
show l2tp tunnel , page 66	Displays information about L2TP tunnels.

show l2tp tunnel

To display information about L2TP tunnels, use the **show l2tp tunnel** command in EXEC mode.

show l2tp tunnel {**detail**|**brief**|**state**|**transport**} {**id** *identifier*|**name** *local-name remote-name*}

Syntax Description

detail	Displays detailed output for L2TP tunnels.
brief	Displays summary information for the tunnel.
state	Displays control plane state information.
transport	Displays transport information (IP) for each selected control channel.
id <i>identifier</i>	Displays local control channel identifiers.
name <i>local-name remote-name</i>	Displays the local and remote names of a control channel.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following sample output is from the **show l2tp tunnel** command:

```
RP/0/RP0/CPU0:router(config-l2vpn-encap-mppls)# sequencing bothshow l2tp tunnel
```

```
L2TP Tunnel Information Total tunnels 1 sessions 6
```

```
LocID RemID Remote Name      State Remote Address Port Sessions L2TP Class
43554 6220  PE2          est  13.0.0.2      0      6         foo
```

This table describes the significant fields shown in the display.

Table 5: show l2tp tunnel Field Descriptions

Field	Description
LocID	Local session ID.
RemID	Remote session ID.
Remote Name	Remote name of the session.
State	State of the session.
Remote Address	Remote address of the session.
Port	Session port.
Sessions	Number of sessions.
L2TP	L2TP class name.

Related Commands

Command	Description
show l2tp session, page 64	Displays information about L2TP sessions.

show l2vpn collaborators

To display information about the state of the interprocess communications connections between l2vpn_mgr and other processes, use the **show l2vpn collaborators** command in EXEC mode.

show l2vpn collaborators

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC

Release	Modification
Release 3.4.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Operations
l2vpn	read, write

Examples The following example shows sample output for the **show l2vpn collaborators** command:

```
RP/0/RP0/CPU0:router# show l2vpn collaborators
L2VPN Collaborator stats:
Name                State      Up Cnts    Down Cnts
-----
IMC                  Down       0          0
LSD                  Up         1          0
```

This table describes the significant fields shown in the display.

Table 6: show l2vpn collaborators Field Descriptions

Field	Description
Name	Abbreviated name of the task interacting with l2vpn_mgr.

Field	Description
State	Indicates if l2vpn_mgr has a working connection with the other process.
Up Cnts	Number of times the connection between l2vpn_mgr and the other process has been successfully established.
Down Cnts	Number of times that the connection between l2vpn_mgr and the other process has failed or been terminated.

Related Commands

Command	Description
clear l2vpn collaborators, page 11	Clears the state change counters for L2VPN collaborators.

show l2vpn forwarding

To display forwarding information from the layer2_fib manager on the line card, use the **show l2vpn forwarding** command in EXEC mode.

show l2vpn forwarding {**bridge-domain**| **counter**| **detail**| **hardware**| **inconsistent**| **interface**| **l2tp**| **location** [*node-id*]| **message**| **mstp**| **resource**| **retry-list**| **summary**| **unresolved**}

Syntax Description

bridge-domain	Displays bridge domain related forwarding information.
counter	Displays the cross-connect counters.
detail	Displays detailed information from the layer2_fib manager.
hardware	Displays hardware-related layer2_fib manager information.
inconsistent	Displays inconsistent entries only.
interface	Displays the match AC subinterface.
l2tp	Displays L2TPv3 related forwarding information.
location <i>node-id</i>	Displays layer2_fib manager information for the specified location. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
message	Displays messages exchanged with collaborators.
mstp	Displays multi-spanning tree related forwarding information.
resource	Displays resource availability information in the layer2_fib manager.
retry-list	Displays retry list related information.
summary	Displays summary information about cross-connects in the layer2_fib manager.
unresolved	Displays unresolved entries only.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.4.0	This command was introduced.

Release	Modification
Release 3.7.0	Sample output was updated to add MAC information for the layer2_fib manager summary.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read

Examples

The following sample output is from the **show l2vpn forwarding bridge detail location** command:

```
RP/0/RP0/CPU0:router# show l2vpn forwarding location 0/2/cpu0
Bridge-domain name: bgl:bd1, id: 0, state: up
MAC learning: enabled
Flooding:
  Broadcast & Multicast: enabled
  Unknown unicast: enabled
MAC aging time: 300 s, Type: inactivity
MAC limit: 4000, Action: none, Notification: syslog
MAC limit reached: no
Security: disabled
DHCPv4 snooping: profile not known on this node
IGMP snooping: disabled, flooding: disabled
Bridge MTU: 1500 bytes
Number of bridge ports: 1
Number of MAC addresses: 0
Multi-spanning tree instance: 0

GigabitEthernet0/1/0/1.2, state: oper up
Number of MAC: 0
Statistics:
  packets: received 0, sent 0
  bytes: received 0, sent 0
Storm control drop counters:
  packets: broadcast 0, multicast 0, unknown unicast 0
  bytes: broadcast 0, multicast 0, unknown unicast 0

Bridge-domain name: bgl:bd2, id: 1, state: up
Type: pbb-edge, I-SID: 1234
Core-bridge: pbb-bd2
MAC learning: enabled
Flooding:
  Broadcast & Multicast: enabled
  Unknown unicast: enabled
MAC aging time: 300 s, Type: inactivity
MAC limit: 4000, Action: none, Notification: syslog
MAC limit reached: no
Security: disabled
DHCPv4 snooping: profile not known on this node
IGMP snooping: disabled, flooding: disabled
Bridge MTU: 1500 bytes
Number of bridge ports: 0
Number of MAC addresses: 0
Multi-spanning tree instance: 0

PBB Edge, state: up
```

show l2vpn forwarding

```

    Number of MAC: 0
GigabitEthernet0/1/0/1.3, state: oper up
    Number of MAC: 0
    Storm control drop counters:
        packets: broadcast 0, multicast 0, unknown unicast 0
        bytes: broadcast 0, multicast 0, unknown unicast 0

Bridge-domain name: bg1:bd3, id: 2, state: up
    Type: pbb-core
    Number of associated pbb-edge BDs: 1

MAC learning: enabled
Flooding:
    Broadcast & Multicast: enabled
    Unknown unicast: enabled
MAC aging time: 300 s, Type: inactivity
MAC limit: 4000, Action: none, Notification: syslog
MAC limit reached: no
Security: disabled
DHCPv4 snooping: profile not known on this node
IGMP snooping: disabled, flooding: disabled
Bridge MTU: 1500 bytes
Number of bridge ports: 0
Number of MAC addresses: 0
Multi-spanning tree instance: 0

PBB Core, state: up
Vlan-id: 1

GigabitEthernet0/1/0/1.4, state: oper up
    Number of MAC: 0
    Storm control drop counters:
        packets: broadcast 0, multicast 0, unknown unicast 0
        bytes: broadcast 0, multicast 0, unknown unicast 0

```

The following sample outputs shows the backup pseudowire information:

```

RP/0/RP0/CPU0:router#show l2vpn forwarding detail location 0/2/CPU0
Local interface: GigabitEthernet0/2/0/0.1, Xconnect id: 0x3000001, Status: up
  Segment 1
    AC, GigabitEthernet0/2/0/0.1, Ethernet VLAN mode, status: Bound
    RG-ID 1, active
    Statistics:
        packets: received 0, sent 0
        bytes: received 0, sent 0
  Segment 2
    MPLS, Destination address: 101.101.101.101, pw-id: 1000, status: Bound
    Pseudowire label: 16000
    Statistics:
        packets: received 0, sent 0
        bytes: received 0, sent 0
  Backup PW
    MPLS, Destination address: 102.102.102.102, pw-id: 1000, status: Bound
    Pseudowire label: 16001
    Statistics:
        packets: received 0, sent 0
        bytes: received 0, sent 0

RP/0/RP0/CPU0:router#show l2vpn forwarding bridge-domain detail location 0/2/CPU0
Bridge-domain name: bg1:bd1, id: 0, state: up
...
  GigabitEthernet0/2/0/0.4, state: oper up
    RG-ID 1, active
    Number of MAC: 0
    ...

  Nbor 101.101.101.101 pw-id 5000
    Backup Nbor 101.101.101.101 pw-id 5000
    Number of MAC: 0
  ...

```

The following sample outputs displays the SPAN segment information of the xconnect:

```
RP/0/RP0/CPU0:router# show l2vpn forwarding counter location 0/7/CPU0
Legend: ST = State, DN = Down
```

Segment 1	Segment 2	ST	Byte	Switched
pw-span-test (Monitor-Session) mpls	2.2.2.2	UP	0	

```
RP/0/RP0/CPU0:router #Show l2vpn forwarding monitor-session location 0/7/CPU0
Segment 1          Segment 2          State
-----
pw-span-test(monitor-session) mpls    2.2.2.2          UP
pw-span-sess(monitor-session) mpls    3.3.3.3          UP
```

```
RP/0/RP0/CPU0:router #Show l2vpn forwarding monitor-session pw-span-test location 0/7/CPU0
Segment 1          Segment 2          State
-----
pw-span-test(Monitor-Session) mpls    2.2.2.2          UP
```

Example 4:

```
RP/0/RP0/CPU0:router #show l2vpn forwarding detail location 0/7/CPU0
Xconnect id: 0xc000001, Status: up
Segment 1
  Monitor-Session, pw-span-test, status: Bound
Segment 2
  MPLS, Destination address: 2.2.2.2, pw-id: 1, status: Bound
  Pseudowire label: 16001
  Statistics:
    packets: received 0, sent 11799730
    bytes: received 0, sent 707983800
```

Example 5:

```
show l2vpn forwarding private location 0/11/CPU0
Xconnect ID 0xc000001
Xconnect info:
  Base info: version=0xaabbcc13, flags=0x0, type=2, reserved=0
             xcon_bound=TRUE, switching_type=0, data_type=3

AC info:
  Base info: version=0xaabbcc11, flags=0x0, type=3, reserved=0
             xcon_id=0xc000001, ifh= none, subifh= none, ac_id=0, ac_type=SPAN,
             ac_mtu=1500, iw_mode=none, adj_valid=FALSE, adj_addr none

PW info:
  Base info: version=0xaabbcc12, flags=0x0, type=4, reserved=0
             pw_id=1, nh_valid=TRUE, sig_cap_flags=0x20, context=0x0,
             MPLS, pw_label=16001
  Statistics:
    packets: received 0, sent 11799730
    bytes: received 0, sent 707983800
```

Object: NHOP

Event Trace History [Total events: 5]

Time	Event	Flags
=====	=====	=====

Nexthop info:

```
Base info: version=0xaabbcc14, flags=0x10000, type=5, reserved=0
nh_addr=2.2.2.2, plat_data_valid=TRUE, plat_data_len=128, child_count=1
```

Object: XCON

Event Trace History [Total events: 16]

show l2vpn forwarding

```

Time          Event          Flags
====          =====          =====
-----
RP/0/RP0/CPU0:router #show l2vpn forwarding summary location 0/7/CPU0
Major version num:1, minor version num:0
Shared memory timestamp:0x31333944cf
Number of forwarding xconnect entries:2
  Up:2  Down:0
  AC-PW:1 (1 mpls)  AC-AC:0  AC-BP:0  AC-Unknown:0
  PW-BP:0  PW-Unknown:0  Monitor-Session-PW:1
Number of xconnects down due to:
  AIB:0  L2VPN:0  L3FIB:0
Number of p2p xconnects: 2
Number of bridge-port xconnects: 0
Number of nexthops:1
  MPLS:  Bound:1  Unbound:0  Pending Registration:0
Number of bridge-domains: 0
Number of static macs: 0
Number of locally learned macs: 0
Number of remotely learned macs: 0
Number of total macs: 0

```

The following sample output is from the **show l2vpn forwarding** command:

```

RP/0/RP0/CPU0:router# show l2vpn forwarding location 0/2/cpu0

ID   Segment 1          Segment 2
-----
1    Gi0/2/0/0 1        1.1.1.1 9)

```

The following sample output shows the MAC information in the layer2_fib manager summary:

```

RP/0/RP0/CPU0:router# show l2vpn forwarding summary location 0/3/CPU0

Major version num:1, minor version num:0
Shared memory timestamp:0x66ff58e894
Number of forwarding xconnect entries:2
  Up:1  Down:0
  AC-PW:0  AC-AC:0  AC-BP:1  PW-BP:1
Number of xconnects down due to:
  AIB:0  L2VPN:0  L3FIB:0
Number of nexthops:1
Number of static macs: 5
Number of locally learned macs: 5
Number of remotely learned macs: 0
Number of total macs: 10

```

Related Commands

Command	Description
clear l2vpn forwarding counters , page 14	Clears L2VPN forwarding counters.

show l2vpn forwarding l2tp

To display L2VPN forwarding information, use the **show l2vpn forwarding l2tp** command in EXEC mode.

show l2vpn forwarding l2tp disposition {**local session id** *session-ID*| **hardware**| **location** *node-id*} **location** *node-id*

Syntax Description

disposition	Displays forwarding disposition information.
<i>session-ID</i>	Displays L2TPv3-related forwarding information for the specified local session ID. Range is 1-4294967295.
hardware	Displays L2TPv3-related forwarding information read from hardware.
location	Displays L2TPv3-related forwarding information for the specified location.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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


Task ID

Task ID	Operations
l2vpn	read

Examples

The following example shows sample output for the **show l2vpn forwarding l2tp** command:

```
RP/0/RP0/CPU0:router# show l2vpn forwarding l2tp disposition hardware location 0/3/1
ID      Segment 1          Segment 2
-----
1       Gi0/2/0/0 1          1.1.1.1  9)
```

 show l2vpn forwarding l2tp**Related Commands**

Command	Description
clear l2vpn forwarding counters, page 14	Clears L2VPN forwarding counters.

show l2vpn pw-class

To display L2VPN pseudowire class information, use the **show l2vpn pw-class** command in EXEC mode.

show l2vpn pw-class [**detail**] **name** *class name*]

Syntax Description

detail	(Optional) Displays detailed information.
name <i>class-name</i>	(Optional) Displays information about a specific pseudowire class name.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read

Examples

The following example shows sample output for the **show l2vpn pw-class** command:

```
RP/0/RP0/CPU0:router# show l2vpn pw-class
```

Name	Encapsulation	Protocol
-----	-----	-----
mplsclass_75	MPLS	LDP
l2tp-dynamic	L2TPv3	L2TPv3

This table describes the significant fields shown in the display.

Table 7: show l2vpn pw-class Command Field Descriptions

Field	Description
Name	Displays the name of the pseudowire class.

Field	Description
Encapsulation	Displays the encapsulation type.
Protocol	Displays the protocol type.

Related Commands

Command	Description
clear l2vpn forwarding counters, page 14	Clears L2VPN forwarding counters.

show l2vpn resource

To display the memory state in the L2VPN process, use the **show l2vpn resource** command in EXEC mode.

show l2vpn resource

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes EXEC

Command History	Release	Modification
	Release 3.4.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	l2vpn	read

Examples The following example shows sample output for the **show l2vpn resource** command:

```
RP/0/RP0/CPU0:router# show l2vpn resource
```

Memory: Normal

describes the significant fields shown in the display. [Table 8: show l2vpn resource Command Field Descriptions, page 79](#)

Table 8: show l2vpn resource Command Field Descriptions

Field	Description
Memory	Displays memory status.

show l2vpn xconnect

To display brief information on configured cross-connects, use the **show l2vpn connect** command in EXEC mode.

show l2vpn xconnect [**detail**| **group**| **interface**| **neighbor**| **state**| **summary**| **type**| **state unresolved**]

Syntax Description

brief	(Optional) Displays encapsulation brief information.
detail	(Optional) Displays detailed information.
<i>encapsulation</i>	(Optional) Filters on encapsulation type.
group	(Optional) Displays all cross-connects in a specified group.
groups	(Optional) Displays all groups information.
interface	(Optional) Filters on interface and subinterface.
mp2mp	(Optional) Displays MP2MP information.
mpsw	(Optional) Displays ms_pw information.
neighbor	(Optional) Filters on neighbor.
private	(Optional) Displays private information.
pw-class	(Optional) Filters on pseudowire class
state	(Optional) Filters the following xconnect state types: <ul style="list-style-type: none"> • up • down
summary	(Optional) Displays AC information from the AC Manager database.
type	(Optional) Filters the following xconnect types: <ul style="list-style-type: none"> • ac-pw • locally switched • monitor-session-pw • ms-pw

Syntax Description

detail	(Optional) Displays detailed information.
---------------	---

group	(Optional) Displays all cross-connects in a specified group.
interface	(Optional) Filters the interface and subinterface.
neighbor	(Optional) Filters the neighbor.
state	(Optional) Filters the following xconnect state types: <ul style="list-style-type: none"> • up • down
summary	(Optional) Displays AC information from the AC Manager database.
type	(Optional) Filters the following xconnect types: <ul style="list-style-type: none"> • ac-pw • locally switched
state unresolved	(Optional) Displays information about unresolved cross-connects.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.4.0	This command was introduced.
Release 3.4.1	VCCV-related show command output was added.
Release 3.6.0	Preferred-path-related show command output was added.
Release 3.7.0	Sample output was updated to display the backup pseudowire information.

Usage Guidelines

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

If a specific cross-connect is specified in the command (for instance, AC_to_PW1) then only that cross-connect will be displayed; otherwise, all cross-connects are displayed.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows sample output for the **show l2vpn xconnect** command:

```
RP/0/RP0/CPU0:router# show l2vpn xconnect
```

Legend: ST = State, UP = Up, DN = Down, AD = Admin Down, UR = Unresolved,
LU = Local Up, RU = Remote Up, CO = Connected

XConnect Group	Name	ST	Segment 1 Description	ST	Segment 2 Description		ST
g1	x1	UP	pw-span-test	UP	2.2.2.2	1	UP
siva_xc	siva_p2p	UP	Gi0/4/0/1	UP	10.1.1.1	1	UP
					Backup 10.2.2.2	2	UP

The following sample output shows that the backup is in standby mode for the **show l2vpn xconnect detail** command:

```
RP/0/RP0/CPU0:router# show l2vpn xconnect detail
```

Group siva_xc, XC siva_p2p, state is up; Interworking none

Monitor-Session: pw-span-test, state is configured

AC: GigabitEthernet0/4/0/1, state is up

Type Ethernet

MTU 1500; XC ID 0x50000001; interworking none; MSTi 0

Statistics:

packet totals: send 90

byte totals: send 19056

PW: neighbor 10.1.1.1, PW ID 1, state is up (established)

PW class not set, XC ID 0x50000001

Encapsulation MPLS, protocol LDP

PW type Ethernet, control word enabled, interworking none

PW backup disable delay 0 sec

Sequencing not set

MPLS	Local	Remote
Label	30005	16003
Group ID	0x5000300	0x5000400
Interface	GigabitEthernet0/4/0/1	GigabitEthernet0/4/0/2
Interface	pw-span-test	GigabitEthernet0/3/0/1
MTU	1500	1500
Control word	enabled	enabled
PW type	Ethernet	Ethernet
VCCV CV type	0x2	0x2
	(LSP ping verification)	(LSP ping verification)
VCCV CC type	0x3	0x3
	(control word)	(control word)
	(router alert label)	(router alert label)

Create time: 20/11/2007 21:45:07 (00:49:18 ago)

Last time status changed: 20/11/2007 21:45:11 (00:49:14 ago)

Statistics:

packet totals: receive 0

byte totals: receive 0

Backup PW:

PW: neighbor 2.2.2.2, PW ID 2, state is up (established)

Backup for neighbor 1.1.1.1 PW ID 1 (standby)

PW class not set, XC ID 0x0

Encapsulation MPLS, protocol LDP

PW type Ethernet, control word enabled, interworking none

PW backup disable delay 0 sec

Sequencing not set

MPLS	Local	Remote
Label	30006	16003

```

Group ID      unassigned      0x5000400
Interface     unknown          GigabitEthernet0/4/0/2
MTU           1500
Control word  enabled           enabled
PW type       Ethernet      Ethernet
VCCV CV type  0x2              0x2
                (LSP ping verification)  (LSP ping verification)
VCCV CC type  0x3              0x3
                (control word)           (control word)
                (router alert label)      (router alert label)
-----
Backup PW for neighbor 10.1.1.1 PW ID 1
Create time: 20/11/2007 21:45:45 (00:48:40 ago)
Last time status changed: 20/11/2007 21:45:49 (00:48:36 ago)
Statistics:
  packet totals: receive 0
  byte totals: receive 0

```

The following sample output shows that the backup is active for the **show l2vpn xconnect detail** command:

RP/0/RP0/CPU0:router# **show l2vpn xconnect detail**

```

Group siva_xc, XC siva_p2p, state is down; Interworking none
Monitor-Session: pw-span-test, state is configured
AC: GigabitEthernet0/4/0/1, state is up
Type Ethernet
MTU 1500; XC ID 0x5000001; interworking none; MSTi 0
Statistics:
  packet totals: send 98
  byte totals: send 20798
PW: neighbor 10.1.1.1, PW ID 1, state is down ( local ready )
PW class not set, XC ID 0x5000001
Encapsulation MPLS, protocol LDP
PW type Ethernet, control word enabled, interworking none
PW backup disable delay 0 sec
Sequencing not set
  MPLS      Local      Remote
  -----
Label       30005      unknown
Group ID    0x5000300    0x0
Interface   GigabitEthernet0/4/0/1    unknown
  Interface   pw-span-test      GigabitEthernet0/3/0/1
MTU          1500      unknown
Control word enabled      unknown
PW type      Ethernet    unknown
VCCV CV type 0x2          0x0
                (LSP ping verification)  (none)
VCCV CC type 0x3          0x0
                (control word)           (none)
                (router alert label)
  -----
Create time: 20/11/2007 21:45:06 (00:53:31 ago)
Last time status changed: 20/11/2007 22:38:14 (00:00:23 ago)
Statistics:
  packet totals: receive 0
  byte totals: receive 0

Backup PW:
PW: neighbor 10.2.2.2, PW ID 2, state is up ( established )
Backup for neighbor 10.1.1.1 PW ID 1 ( active )
PW class not set, XC ID 0x0
Encapsulation MPLS, protocol LDP
PW type Ethernet, control word enabled, interworking none
PW backup disable delay 0 sec
Sequencing not set
  MPLS      Local      Remote
  -----
Label       30006      16003
Group ID    unassigned    0x5000400

```

show l2vpn xconnect

```

Interface      unknown                               GigabitEthernet0/4/0/2
MTU            1500                               1500
Control word   enabled                               enabled
PW type        Ethernet                               Ethernet
VCCV CV type   0x2                               0x2
               (LSP ping verification)         (LSP ping verification)
VCCV CC type   0x3                               0x3
               (control word)                   (control word)
               (router alert label)             (router alert label)
-----
Backup PW for neighbor 10.1.1.1 PW ID 1
Create time: 20/11/2007 21:45:44 (00:52:54 ago)
Last time status changed: 20/11/2007 21:45:48 (00:52:49 ago)
Statistics:
  packet totals: receive 0
  byte totals: receive 0

```

The following sample output displays the xconnects with switch port analyzer (SPAN) as one of the segments:

```
Show l2vpn xconnect type minotor-session-pw
```

Legend: ST = State, UP = Up, DN = Down, AD = Admin Down, UR = Unresolved,
LU = Local Up, RU = Remote Up, CO = Connected

XConnect Group	Name	ST	Segment 1 Description	ST	Segment 2 Description	ST
g1	x1	UP	pw-span-test	UP	2.2.2.2 1	UP

The following sample output shows that one-way redundancy is enabled:

```

Group g1, XC x2, state is up; Interworking none
AC: GigabitEthernet0/2/0/0.2, state is up, active in RG-ID 1
Type VLAN; Num Ranges: 1
VLAN ranges: [2, 2]
MTU 1500; XC ID 0x30000002; interworking none
Statistics:
  packets: received 103, sent 103
  bytes: received 7348, sent 7348
  drops: illegal VLAN 0, illegal length 0
PW: neighbor 101.101.101.101, PW ID 2000, state is up ( established )
PW class class1, XC ID 0x30000002
Encapsulation MPLS, protocol LDP
PW type Ethernet VLAN, control word disabled, interworking none
PW backup disable delay 0 sec
One-way PW redundancy mode is enabled
Sequencing not set

....
Incoming Status (PW Status TLV):
  Status code: 0x0 (Up) in Notification message
Outgoing Status (PW Status TLV):
  Status code: 0x0 (Up) in Notification message

....
Backup PW:
PW: neighbor 102.102.102.102, PW ID 3000, state is standby ( all ready )
Backup for neighbor 101.101.101.101 PW ID 2000 ( inactive )
PW class class1, XC ID 0x30000002
Encapsulation MPLS, protocol LDP
PW type Ethernet VLAN, control word disabled, interworking none
Sequencing not set

....
Incoming Status (PW Status TLV):
  Status code: 0x26 (Standby, AC Down) in Notification message
Outgoing Status (PW Status TLV):
  Status code: 0x0 (Up) in Notification message

```

The following example shows sample output for the **show l2vpn xconnect** command:

```
RP/0/RP0/CPU0:router# show l2vpn xconnect
```

Legend: ST = State, UP = Up, DN = Down, AD = Admin Down, UR = Unresolved,
LU = Local Up, RU = Remote Up, CO = Connected

XConnect Group	Name	ST	Segment 1 Description	ST	Segment 2 Description	ST
siva_xc	siva_p2p	UP	Gi0/4/0/1	UP	1.1.1.1	1 UP
					Backup 2.2.2.2	2 UP

The following sample output shows that the backup is in standby mode for the **show l2vpn xconnect detail** command:

```
RP/0/RP0/CPU0:router# show l2vpn xconnect detail
```

```
Group siva_xc, XC siva_p2p, state is up; Interworking none
AC: GigabitEthernet0/4/0/1, state is up
Type Ethernet
MTU 1500; XC ID 0x5000001; interworking none; MSTi 0
Statistics:
  packet totals: received 90, sent 90
  byte totals: received 19056, sent 19056
PW: neighbor 1.1.1.1, PW ID 1, state is up ( established )
PW class not set, XC ID 0x5000001
Encapsulation MPLS, protocol LDP
PW type Ethernet, control word enabled, interworking none
PW backup disable delay 0 sec
Sequencing not set
```

MPLS	Local	Remote
Label	30005	16003
Group ID	0x5000300	0x5000400
Interface	GigabitEthernet0/4/0/1	GigabitEthernet0/4/0/2
MTU	1500	1500
Control word	enabled	enabled
PW type	Ethernet	Ethernet
VCCV CV type	0x2	0x2
	(LSP ping verification)	(LSP ping verification)
VCCV CC type	0x3	0x3
	(control word)	(control word)
	(router alert label)	(router alert label)

```
Create time: 20/11/2007 21:45:07 (00:49:18 ago)
Last time status changed: 20/11/2007 21:45:11 (00:49:14 ago)
Statistics:
  packet totals: received 0, sent 0
  byte totals: received 0, sent 0
```

Backup PW:

```
PW: neighbor 2.2.2.2, PW ID 2, state is up ( established )
Backup for neighbor 1.1.1.1 PW ID 1 ( standby )
PW class not set, XC ID 0x0
Encapsulation MPLS, protocol LDP
PW type Ethernet, control word enabled, interworking none
PW backup disable delay 0 sec
Sequencing not set
```

MPLS	Local	Remote
Label	30006	16003
Group ID	unassigned	0x5000400
Interface	unknown	GigabitEthernet0/4/0/2
MTU	1500	1500
Control word	enabled	enabled
PW type	Ethernet	Ethernet
VCCV CV type	0x2	0x2
	(LSP ping verification)	(LSP ping verification)
VCCV CC type	0x3	0x3
	(control word)	(control word)
	(router alert label)	(router alert label)

```
Backup PW for neighbor 1.1.1.1 PW ID 1
Create time: 20/11/2007 21:45:45 (00:48:40 ago)
Last time status changed: 20/11/2007 21:45:49 (00:48:36 ago)
Statistics:
```

```

packet totals: received 0, sent 0
byte totals: received 0, sent 0

```

The following sample output shows that the backup is active for the **show l2vpn xconnect detail** command:

```
RP/0/RP0/CPU0:router# show l2vpn xconnect detail
```

```
Group siva_xc, XC siva_p2p, state is down; Interworking none
```

```
AC: GigabitEthernet0/4/0/1, state is up
```

```
Type Ethernet
```

```
MTU 1500; XC ID 0x5000001; interworking none; MSTi 0
```

```
Statistics:
```

```
packet totals: send 98
```

```
byte totals: send 20798
```

```
PW: neighbor 1.1.1.1, PW ID 1, state is down ( local ready )
```

```
PW class not set, XC ID 0x5000001
```

```
Encapsulation MPLS, protocol LDP
```

```
PW type Ethernet, control word enabled, interworking none
```

```
PW backup disable delay 0 sec
```

```
Sequencing not set
```

MPLS	Local	Remote
-----	-----	-----
Label	30005	unknown
Group ID	0x5000300	0x0
Interface	GigabitEthernet0/4/0/1	unknown
MTU	1500	unknown
Control word	enabled	unknown
PW type	Ethernet	unknown
VCCV CV type	0x2	0x0
		(none)
	(LSP ping verification)	
VCCV CC type	0x3	0x0
		(none)
	(control word)	
	(router alert label)	
-----	-----	-----

```
Create time: 20/11/2007 21:45:06 (00:53:31 ago)
```

```
Last time status changed: 20/11/2007 22:38:14 (00:00:23 ago)
```

```
Statistics:
```

```
packet totals: received 0, sent 0
```

```
byte totals: received 0, sent 0
```

```
Backup PW:
```

```
PW: neighbor 2.2.2.2, PW ID 2, state is up ( established )
```

```
Backup for neighbor 1.1.1.1 PW ID 1 ( active )
```

```
PW class not set, XC ID 0x0
```

```
Encapsulation MPLS, protocol LDP
```

```
PW type Ethernet, control word enabled, interworking none
```

```
PW backup disable delay 0 sec
```

```
Sequencing not set
```

MPLS	Local	Remote
-----	-----	-----
Label	30006	16003
Group ID	unassigned	0x5000400
Interface	unknown	GigabitEthernet0/4/0/2
MTU	1500	1500
Control word	enabled	enabled
PW type	Ethernet	Ethernet
VCCV CV type	0x2	0x2
	(LSP ping verification)	(LSP ping verification)
VCCV CC type	0x3	0x3
	(control word)	(control word)
	(router alert label)	(router alert label)
-----	-----	-----

```
Backup PW for neighbor 1.1.1.1 PW ID 1
```

```
Create time: 20/11/2007 21:45:44 (00:52:54 ago)
```

```
Last time status changed: 20/11/2007 21:45:48 (00:52:49 ago)
```

```
Statistics:
```

```
packet totals: received 0, sent 0
```

```
byte totals: received 0, sent 0
```

This table describes the significant fields shown in the display.

Table 9: show l2vpn xconnect Command Field Descriptions

Field	Description
XConnect Group	Displays a list of all configured cross-connect groups.
Group	Displays the cross-connect group number.
Name	Displays the cross-connect group name.
Description	Displays the cross-connect group description. If no description is configured, the interface type is displayed.
ST	State of the cross-connect group: up (UP) or down (DN).

Related Commands

Command	Description
xconnect group, page 95	Configures cross-connect groups.

tag-rewrite

To configure VLAN tag rewrite, use the **tag-rewrite** command in Encapsulation MPLS configuration mode. To disable VLAN tag rewrite, use the **no** form of this command.

tag-rewrite ingress vlan *vlan-id*

no tag-rewrite ingress vlan *vlan-id*

Syntax Description

ingress	Configures ingress mode.
vlan	Configures VLAN tagged mode
<i>vlan-id</i>	Specifies the value of the ID of the VLAN.

Command Default

None

Command Modes

Encapsulation MPLS configuration

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

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

The **tag-rewrite** command is applicable only to pseudowires with MPLS encapsulation.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure preferred-path tunnel settings:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# pw-class kanata01
RP/0/RP0/CPU0:router(config-l2vpn-pwc)# encapsulation mpls
RP/0/RP0/CPU0:router(config-l2vpn-pwc-encap-mpls)# tag-rewrite vlan 2000
RP/0/RP0/CPU0:router(config-l2vpn-pwc-encap-mpls)#
```

Related Commands

Command	Description
show l2vpn xconnect, page 80	Displays brief information on configured cross-connects.

timeout setup (L2TP)

To configure timeout definitions for L2TP session setup, use the **timeout setup** command in L2TP class configuration mode. To return to the default behavior, use the **no** form of this command.

timeout setup *seconds*

no timeout setup *seconds*

Syntax Description	<i>seconds</i>	Time, in seconds, to setup a control channel. Range is 60 to 6000 seconds. Default is 300 seconds.
--------------------	----------------	--

Command Default	<i>seconds</i> : 300
-----------------	----------------------

Command Modes	L2TP class configuration
---------------	--------------------------

Command History	Release	Modification
	Release 3.9.0	This command was introduced.

Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
------------------	--

Task ID	Task ID	Operations
	l2vpn	read, write

Examples	The following example shows how to configure a timeout value for L2TP session setup of 400 seconds:
----------	---

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2tp-class cisco
RP/0/RP0/CPU0:router(config-l2tp-class)# timeout setup 400
```

Related Commands	Command	Description
	authentication (L2TP) , page 3	Enables L2TP authentication for a specified L2TP class name.
	hello-interval (L2TP) , page 21	Configures the hello-interval value for L2TP (duration between control channel hello packets).
	hidden (L2TP) , page 23	Enables hidden attribute-value pairs (AVPs).

Command	Description
hostname (L2TP), page 25	Defines the name used in the L2TP hostname AVP.
l2tp-class, page 29	Enters L2TP class configuration mode where you can define an L2TP signaling template.
password (L2TP), page 43	Defines the password and password encryption type for control channel authentication.
receive-window (L2TP), page 55	Configures the receive window size for the L2TP server.
retransmit (L2TP), page 57	Configures retransmit retry and timeout values.
show l2tp session, page 64	Displays information about L2TP sessions.
show l2tp tunnel, page 66	Displays information about L2TP tunnels.

transport mode (L2VPN)

To configure L2VPN pseudowire class transport mode, use the **transport mode** command in L2VPN pseudowire class MPLS encapsulation mode. To return to the default behavior, use the **no** form of this command.

transport mode {ethernet| vlan}

no transport mode {ethernet| vlan}

Syntax Description

ethernet	Configures Ethernet port mode.
vlan	Configures VLAN tagged mode.

Command Default

None

Command Modes

L2VPN pseudowire class MPLS encapsulation

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.7.2	This command was introduced.

Usage Guidelines

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



Note

All L2VPN configurations can be deleted using the **no l2vpn** command.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure Ethernet transport mode:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# pw-class kanata01
```

```
RP/0/RP0/CPU0:router(config-l2vpn-pw)# encapsulation mpls  
RP/0/RP0/CPU0:router(config-l2vpn-encap-mpls)# transport transport-mode ethernet
```

Related Commands

Command	Description
pw-class (L2VPN), page 47	Enters pseudowire class submode to define a pseudowire class template.

tunnel-template

To enter tunnel-template configuration submode, use the **tunnel-template** command in global configuration mode.

tunnel-template *template name*

no tunnel-template *template-name*

Syntax Description

<i>template-name</i>	Configures a name for the tunnel template.
----------------------	--

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
tunnel	read, write

Examples

The following example shows how to enter tunnel-template configuration submode:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# tunnel-template template_01
```

Related Commands


Command	Description
xconnect group , page 95	Configures cross-connect groups.

xconnect group

To configure cross-connect groups, use the **xconnect group** command in L2VPN configuration mode. To return to the default behavior, use the **no** form of this command.

xconnect group *group-name*

no xconnect group *group-name*

Syntax Description	<div><i>group-name</i></div> <div>Configures a cross-connect group name using a free-format 32-character string.</div>					
Command Default	None					
Command Modes	L2VPN configuration					
Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>Release 3.4.0</td><td>This command was introduced.</td></tr></table>		Release	Modification	Release 3.4.0	This command was introduced.
Release	Modification					
Release 3.4.0	This command was introduced.					
Usage Guidelines	<div>To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.</div>					
<div></div> <div>Note</div>	<div>You can configure up to a maximum of 16K cross-connects per box.</div>					
Task ID	<table><tr><th>Task ID</th><th>Operations</th></tr><tr><td>l2vpn</td><td>read, write</td></tr></table>		Task ID	Operations	l2vpn	read, write
Task ID	Operations					
l2vpn	read, write					
Examples	<div>The following example shows how to group all cross -connects for customer_atlantic:</div> <div>RP/0/RP0/CPU0:router# configure RP/0/RP0/CPU0:router(config)# l2vpn RP/0/RP0/CPU0:router(config-l2vpn)# xconnect group customer_atlantic</div>					
Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td>show l2vpn xconnect, page 80</td><td>Displays brief information on configured cross-connects.</td></tr></table>		Command	Description	show l2vpn xconnect , page 80	Displays brief information on configured cross-connects.
Command	Description					
show l2vpn xconnect , page 80	Displays brief information on configured cross-connects.					



Virtual Private LAN Services Commands

This module describes the commands used to configure, monitor, and troubleshoot Virtual Private LAN Services (VPLS).

For detailed information about virtual private network concepts, configuration tasks, and examples, refer to the *Virtual Private Configuration Guide*.

- [action \(VPLS\), page 99](#)
- [aging \(VPLS\), page 101](#)
- [bridge-domain \(VPLS\), page 103](#)
- [bridge group \(VPLS\), page 105](#)
- [clear l2vpn bridge-domain \(VPLS\), page 107](#)
- [flooding disable, page 109](#)
- [interface \(VPLS\), page 111](#)
- [learning disable \(VPLS\), page 113](#)
- [limit \(VPLS\), page 115](#)
- [mac \(VPLS\), page 117](#)
- [maximum \(VPLS\), page 119](#)
- [mpls static label \(VPLS\), page 121](#)
- [mtu \(VPLS\), page 123](#)
- [neighbor \(VPLS\), page 125](#)
- [notification \(VPLS\), page 127](#)
- [port-down flush disable \(VPLS\), page 129](#)
- [pw-class \(VFI\), page 131](#)
- [show l2vpn bridge-domain \(VPLS\), page 133](#)
- [show l2vpn forwarding bridge-domain \(VPLS\), page 140](#)
- [show l2vpn forwarding bridge-domain mac-address \(VPLS\), page 154](#)
- [shutdown \(Bridge Domain\), page 164](#)

- [shutdown \(VFI\), page 166](#)
- [static-address \(VPLS\), page 168](#)
- [static-mac-address \(VPLS\), page 170](#)
- [time \(VPLS\), page 172](#)
- [type \(VPLS\), page 174](#)
- [vfi \(VPLS\), page 176](#)
- [withdraw \(VPLS\), page 178](#)

action (VPLS)

To configure the bridge behavior when the number of learned MAC addresses reaches the MAC limit configured, use the **action** command in L2VPN bridge group bridge domain MAC limit configuration mode. To disable this feature, use the **no** form of this command.

action {flood| no-flood| shutdown}

no action {flood| no-flood| shutdown}

Syntax Description

flood	Configures the action to flood all unknown unicast packets when the MAC limit is reached. If the action is set to flood, all unknown unicast packets are flooded over the bridge.
no-flood	Configures the action to no-flood so all unknown unicast packets are dropped when the MAC limit is reached. If the action is set to no-flood, all unknown unicast packets are dropped.
shutdown	Stops forwarding when the MAC limit is reached. If the action is set to shutdown, all packets are dropped.

Command Default

No action is taken when the MAC address limit is reached.

Command Modes

L2VPN bridge group bridge domain MAC limit configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

Use the **action** command to specify the type of action to be taken when the action is violated.

The configured action has no impact if the MAC limit has not been reached.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure the bridge bar to flood all unknown unicast packets when the number of MAC addresses learned by the bridge reaches 10:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)#bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)#bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)#mac
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac)#limit
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac-limit)#action flood
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac-limit)#maximum 10
```

Related Commands

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
limit (VPLS), page 115	Sets the MAC address limit for action, maximum, and notification and enters L2VPN bridge group bridge domain MAC limit configuration mode.
l2vpn, page 37	Enters L2VPN configuration mode.
mac (VPLS), page 117	Enters L2VPN bridge group bridge domain MAC configuration mode.
maximum (VPLS), page 119	Configures the specified action when the number of MAC addresses learned on a bridge is reached.
notification (VPLS), page 127	Specifies the type of notification that is sent when the number of learned MAC addresses exceeds the configured limit.

aging (VPLS)

To enter the MAC aging configuration submode to set the aging parameters such as time and type, use the **aging** command in L2VPN bridge group bridge domain configuration mode. To return to the default value for all parameters that are attached to this configuration submode, use the **no** form of this command.

aging

no aging

Syntax Description This command has no arguments or keywords.

Command Default No defaults are attached to this parameter since it is used as a configuration submode. See defaults that are assigned to the [time \(VPLS\)](#), [page 172](#) and the [type \(VPLS\)](#), [page 174](#) parameters.

Command Modes L2VPN bridge group bridge domain MAC configuration

Command History	Release	Modification
	Release 3.8.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **aging** command to enter L2VPN bridge group bridge domain MAC aging configuration mode.

Task ID	Task ID	Operations
	l2vpn	read, write

Examples The following example shows how to enter MAC aging configuration submode and to set the MAC aging time to 120 seconds:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# mac
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac)# aging
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac-aging)# time 120
```

Related Commands

Commands	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then assigns network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mac (VPLS), page 117	Enters L2VPN bridge group bridge domain MAC configuration mode.
time (VPLS), page 172	Configures the maximum aging time.
type (VPLS), page 174	Configures the type for MAC address aging.

bridge-domain (VPLS)

To establish a bridge domain and to enter L2VPN bridge group bridge domain configuration mode, use the **bridge-domain** command in L2VPN bridge group configuration mode. To return to a single bridge domain, use the **no** form of this command.

bridge-domain *bridge-domain-name*

no bridge-domain *bridge-domain-name*

Syntax Description

<i>bridge-domain-name</i>	Name of the bridge domain.
Note	The maximum number of characters that can be specified in the bridge domain name is 27.

Command Default

The default value is a single bridge domain.

Command Modes

L2VPN bridge group configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

Use the **bridge-domain** command to enter L2VPN bridge group bridge domain configuration mode.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure a bridge domain:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)#
```

Related Commands

Command	Description
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.

bridge group (VPLS)

To create a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain, use the **bridge group** command in L2VPN configuration mode. To remove all the bridge domains that are created under this bridge group and to remove all network interfaces that are assigned under this bridge group, use the **no** form of this command.

bridge group *bridge-group-name*

no bridge-group *bridge-group-name*

Syntax Description

<i>bridge-group-name</i>	Number of the bridge group to which the interface belongs. The range is from 1 to 255.
--------------------------	--

Command Default

No bridge group is created.

Command Modes

L2VPN configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

Use the **bridge group** command to enter L2VPN bridge group configuration mode.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows that bridge group 1 is assigned:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)#
```


Related Commands

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
l2vpn, page 37	Enters L2VPN configuration mode.

clear l2vpn bridge-domain (VPLS)

To clear the MAC addresses and to restart the bridge domains on the router, use the **clear l2vpn bridge-domain** command in EXEC mode.

clear l2vpn bridge-domain {**all**| **bd-name** *name*| **group** *group*}

Syntax Description

all	Clears and restarts all the bridge domains on the router.
bd-name <i>name</i>	Clears and restarts the specified bridge domain. The <i>name</i> argument specifies the name of the bridge-domain.
group <i>group</i>	Clears and restarts all the bridge domains that are part of the bridge group.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

This is the method that allows a bridge to forward again after it was put in Shutdown state as a result of exceeding the configured MAC limit.


Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to clear all the MAC addresses and to restart all the bridge domains on the router:

```
RP/0/RP0/CPU0:router# clear l2vpn bridge-domain all
```

 clear l2vpn bridge-domain (VPLS)**Related Commands**

Command	Description
show l2vpn bridge-domain (VPLS), page 133	Display information for the bridge ports such as attachment circuits and pseudowires for the specific bridge domains.

flooding disable

To configure flooding for traffic at the bridge domain level or at the bridge port level, use the **flooding disable** command in L2VPN bridge group bridge domain configuration mode. To return the bridge to normal flooding behavior when all unknown unicast packets, all broadcast packets, and all multicast packets are flooded over all other bridge domain network interfaces, use the **no** form of this command.

flooding disable

no flooding disable

This command has no arguments or keywords.

Command Default

The default behavior is that packets are flooded when their destination MAC address is not found.

Command Modes

L2VPN bridge group bridge domain configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

Use the **flooding disable** command to override the parent bridge configuration.

By default, bridge ports inherit the flooding behavior of the bridge domain.

When flooding is disabled, all unknown unicast packets, all broadcast packets, and all multicast packets are discarded.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to disable flooding on the bridge domain called bar:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# flooding disable
```

Related Commands

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mtu (VPLS), page 123	Adjusts the maximum packet size or maximum transmission unit (MTU) size for the bridge domain.

interface (VPLS)

To add an interface to a bridge domain that allows packets to be forwarded and received from other interfaces that are part of the same bridge domain, use the **interface** command in L2VPN bridge group bridge domain configuration mode. To remove an interface from a bridge domain, use the **no** form of this command.

interface *type interface-path-id*

no interface *type interface-path-id*

Syntax Description

<i>type</i>	Interface type. For more information, use the question mark (?) online help function.
<i>interface-path-id</i>	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.

Command Default

None

Command Modes

L2VPN bridge group bridge domain configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

Use the **interface** command to enter L2VPN bridge group bridge domain attachment circuit configuration mode. In addition, the **interface** command enters the interface configuration submode to configure parameters specific to the interface.

By default, an interface is not part of a bridge.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure the bundle Ethernet interface as an attachment circuit:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# interface gigabitethernet 0/1/0/9
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-ac)#
```

Related Commands

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.

learning disable (VPLS)

To override the MAC learning configuration of a parent bridge or to set the MAC learning configuration of a bridge, use the **learning disable** command in L2VPN bridge group bridge domain MAC configuration mode. To disable this feature, use the **no** form of this command.

learning disable

no learning disable

Syntax Description

This command has no arguments or keywords.

Command Default

By default, learning is enabled on all bridge domains and all interfaces on that bridge inherits this behavior.

Command Modes

L2VPN bridge group bridge domain MAC configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

When set, the **learning disable** command stops all MAC learning either on the specified interface or the bridge domain.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

In the following example, MAC learning is disabled on all ports in the bridge domain called bar, which is applied to all interfaces in the bridge unless the interface has its own MAC learning enable command.

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# mac
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac)# learning disable
```


Related Commands

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mac (VPLS), page 117	Enters L2VPN bridge group bridge domain MAC configuration mode.

limit (VPLS)

To set the MAC address limit for action, maximum, and notification and to enter L2VPN bridge group bridge domain MAC limit configuration mode, use the **limit** command in L2VPN bridge group bridge domain MAC configuration mode. To remove all limits that were previously configured under the MAC configuration submodes, use the **no** form of this command.

limit

no limit

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes L2VPN bridge group bridge domain MAC configuration

Command History	Release	Modification
	Release 3.8.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **limit** command to enter L2VPN bridge group bridge domain MAC limit configuration mode. The **limit** command specifies that one syslog message is sent or a corresponding trap is generated with the MAC limit when the action is violated.

Task ID	Task ID	Operations
	l2vpn	read, write

Examples The following example shows how the MAC limit for the bridge bar is set to 100 with an action of shutdown. After the configuration, the bridge stops all forwarding after 100 MAC addresses are learned. When this happens, a syslog message and an SNMP trap are created.

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# mac
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac)# limit
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac-limit)# maximum 100
```

```
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac-limit)# action shutdown
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac-limit)# notification both
```

Related Commands

Command	Description
action (VPLS), page 99	Configures bridge behavior when the number of learned MAC addresses reaches the MAC limit configured.
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mac (VPLS), page 117	Enters L2VPN bridge group bridge domain MAC configuration mode.
maximum (VPLS), page 119	Configures the specified action when the number of MAC addresses learned on a bridge is reached.
notification (VPLS), page 127	Specifies the type of notification that is sent when the number of learned MAC addresses exceeds the configured limit.

mac (VPLS)

To enter L2VPN bridge group bridge domain MAC configuration mode, use the **mac** command in L2VPN bridge group bridge domain configuration mode. To disable all configurations added under the MAC configuration submodes, use the **no** form of this command.

mac

no mac

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes L2VPN bridge group bridge domain configuration

Command History	Release	Modification
	Release 3.8.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **mac** command to enter L2VPN bridge group bridge domain MAC configuration mode.

Task ID	Task ID	Operations
	l2vpn	read, write

Examples The following example shows how to enter L2VPN bridge group bridge domain MAC configuration mode:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# mac
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac)#
```

Related Commands	Command	Description
	aging (VPLS), page 101	Enters the MAC aging configuration submode to set the aging parameters such as time and type.

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
learning disable (VPLS), page 113	Overrides the MAC learning configuration of a parent bridge or sets the MAC learning configuration of a bridge.
limit (VPLS), page 115	Sets the MAC address limit for action, maximum, and notification and enters L2VPN bridge group bridge domain MAC limit configuration mode.
static-address (VPLS), page 168	Adds static entries to the MAC address for filtering.
withdraw (VPLS), page 178	Disables MAC address withdrawal for a specified bridge domain

maximum (VPLS)

To configure the specified action when the number of MAC addresses learned on a bridge is reached, use the **maximum** command in L2VPN bridge group bridge domain MAC limit configuration mode. To disable this feature, use the **no** form of this command.

maximum *value*

no maximum *value*

Syntax Description

<i>value</i>	Maximum number of learned MAC addresses. The range is from 5 to 65536.
--------------	--

Command Default

The default maximum value is 4000.

Command Modes

L2VPN bridge group bridge domain MAC limit configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

The action can either be flood, no flood, or shutdown. Depending on the configuration, a syslog, an SNMP trap notification, or both are issued.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows when the number of MAC address learned on the bridge reaches 5000 and the bridge stops learning but continues flooding:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# mac
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac)# limit
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac-limit)# maximum 5000
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac-limit)# action no-flood
```

Related Commands

Command	Description
action (VPLS), page 99	Configures bridge behavior when the number of learned MAC addresses reaches the MAC limit configured.
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
limit (VPLS), page 115	Sets the MAC address limit for action, maximum, and notification and enters L2VPN bridge group bridge domain MAC limit configuration mode.
mac (VPLS), page 117	Enters L2VPN bridge group bridge domain MAC configuration mode.
notification (VPLS), page 127	Specifies the type of notification that is sent when the number of learned MAC addresses exceeds the configured limit.

mpls static label (VPLS)

To configure the MPLS static labels and the static labels for the access pseudowire configuration, use the **mpls static label** command in L2VPN bridge group bridge domain VFI pseudowire configuration mode. To assign the dynamic MPLS labels to either the virtual forwarding interface (VFI) pseudowire or the access pseudowire, use the **no** form of this command.

mpls static label local *value value* **remote** *value*

no mpls static label local *value value* **remote** *value*

Syntax Description

local <i>value</i>	Configures the local pseudowire label.
Note	Use the show mpls label range command to obtain the range for the local labels.
remote <i>value</i>	Configures the remote pseudowire label.
Note	The range of values for the remote labels depends on the label allocator of the remote router.

Command Default

By default, the router attempts to assign dynamic labels to the pseudowire.

Command Modes

L2VPN bridge group bridge domain Access/VFI pseudowire configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

Ensure that both ends of the pseudowire have matching static labels.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure the VFI pseudowire 10.1.1.2 with pseudowire ID of 1000 to use MPLS label 800 and remote MPLS label 500:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
```



```

RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# vfi model
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-vfi)# neighbor 10.1.1.2 pw-id 1000
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-vfi-pw)# mpls static label local 800 remote 500

```

Related Commands

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
neighbor (VPLS), page 125	Adds an access pseudowire port to a bridge domain or a pseudowire to a bridge virtual forwarding interface (VFI).
pw-class (VFI), page 131	Configures the pseudowire class template name to use for the pseudowire.
vfi (VPLS), page 176	Configures virtual forwarding interface (VFI) parameters.

mtu (VPLS)

To adjust the maximum packet size or maximum transmission unit (MTU) size for the bridge domain, use the **mtu** command in L2VPN bridge group bridge domain configuration mode. To disable this feature, use the **no** form of this command.

mtu *bytes*

no mtu

Syntax Description

bytes MTU size, in bytes. The range is from 64 to 65535.

Command Default

The default MTU value is 1500.

Command Modes

L2VPN bridge group bridge domain configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

Each interface has a default maximum packet size or MTU size. This number generally defaults to the largest size possible for that interface type. On serial interfaces, the MTU size varies, but cannot be set smaller than 64 bytes.

The MTU for the bridge domain includes only the payload of the packet. For example, a configured bridge MTU of 1500 allows tagged packets of 1518 bytes (6 bytes DA, 6 bytes SA, 2 bytes ethertype, or 4 bytes qtag).

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example specifies an MTU of 1000 bytes:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# mtu 1000
```

Related Commands

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
flooding disable, page 109	Configures flooding for traffic at the bridge domain level or at the bridge port level.
l2vpn, page 37	Enters L2VPN configuration mode.

neighbor (VPLS)

To add an access pseudowire port to a bridge domain or a pseudowire to a bridge virtual forwarding interface (VFI), use the **neighbor** command in the appropriate L2VPN bridge group bridge domain configuration submode. To remove the pseudowire either from the bridge or from the VFI, use the **no** form of this command.

neighbor *A.B.C.D* **pw-id** *value*

no neighbor *A.B.C.D* **pw-id** *value*

Syntax Description	<i>A.B.C.D</i>	IP address of the cross-connect peer.
	pw-id <i>value</i>	Configures the pseudowire ID and ID value. Range is 1 to 4294967295.

Command Default	None
------------------------	------

Command Modes	L2VPN bridge group bridge domain configuration
	L2VPN bridge group bridge domain VFI configuration

Command History	Release	Modification
	Release 3.8.0	This command was introduced.

Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
	Use the neighbor command to enter L2VPN bridge group bridge domain VFI pseudowire configuration mode. Alternatively, use the neighbor command to enter L2VPN bridge group bridge domain access pseudowire configuration mode.

Task ID	Task ID	Operations
	l2vpn	read, write

Examples	The following example shows how to configure an access pseudowire directly under a bridge domain in L2VPN bridge group bridge domain configuration mode:
-----------------	--

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
```

```
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd) # neighbor 10.1.1.2 pw-id 1000
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-pw) #
```

The following example shows how to configure the parameters for any pseudowire in L2VPN bridge group bridge domain VFI configuration mode:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config) # l2vpn
RP/0/RP0/CPU0:router(config-l2vpn) # bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg) # bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd) # vfi v1
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-vfi) # neighbor 10.1.1.2 pw-id 1000
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-vfi-pw) #
```

Related Commands

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mpls static label (VPLS), page 121	Configures the MPLS static labels and the static labels for the access pseudowire configuration.
pw-class (VFI), page 131	Configures the pseudowire class template name to use for the pseudowire.
static-mac-address (VPLS), page 170	Configures the static MAC address to associate a remote MAC address with a pseudowire or any other bridge interface.
vfi (VPLS), page 176	Configures virtual forwarding interface (VFI) parameters.

notification (VPLS)

To specify the type of notification that is sent when the number of learned MAC addresses exceeds the configured limit, use the **notification** command in L2VPN bridge group bridge domain MAC limit configuration mode. To use the notification as only a syslog entry, use the **no** form of this command.

notification {both| none| trap}

no notification {both| none| trap}

Syntax Description

both	Sends syslog and trap notifications when the action is violated.
none	Specifies no notification.
trap	Sends trap notifications when the action is violated.

Command Default

By default, only a syslog message is sent when the number of learned MAC addresses reaches the maximum configured.

Command Modes

L2VPN bridge group bridge domain MAC limit configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

A syslog message and an SNMP trap is generated. Alternatively, an SNMP trap is generated. Finally, no notification is generated.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how both a syslog message and an SNMP trap are generated with the bridge bar and learns more MAC addresses than the configured limit:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
```

```
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# mac
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac)# limit
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac-limit)# notification both
```

Related Commands

Command	Description
action (VPLS), page 99	Configures bridge behavior when the number of learned MAC addresses reaches the MAC limit configured.
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mac (VPLS), page 117	Enters L2VPN bridge group bridge domain MAC configuration mode.
maximum (VPLS), page 119	Configures the specified action when the number of MAC addresses learned on a bridge is reached.

port-down flush disable (VPLS)

To disable MAC flush when the bridge port is nonfunctional, use the **port-down flush disable** command in the L2VPN bridge group bridge domain MAC configuration mode. Use the **no** form of this command to enable the MAC flush when the bridge port is nonfunctional.

port-down flush disable

no port-down flush disable

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes L2VPN bridge group bridge domain MAC configuration

Command History	Release	Modification
	Release 3.9.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **port-down flush disable** command disables the MAC flush when the bridge port is nonfunctional.

Task ID	Task ID	Operations
	l2vpn	read, write

Examples The following example shows how to disable MAC flush when the bridge port is nonfunctional:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# mac
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac)# port-down flush disable
```

Related Commands	Command	Description
	action (VPLS), page 99	Configures bridge behavior when the number of learned MAC addresses reaches the MAC limit configured.

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mac (VPLS), page 117	Enters L2VPN bridge group bridge domain MAC configuration mode.
maximum (VPLS), page 119	Configures the specified action when the number of MAC addresses learned on a bridge is reached.
notification (VPLS), page 127	Specifies the type of notification that is sent when the number of learned MAC addresses exceeds the configured limit.

pw-class (VFI)

To configure the pseudowire class template name to use for the pseudowire, use the **pw-class** command in L2VPN bridge group bridge domain VFI pseudowire configuration mode. To delete the pseudowire class, use the **no** form of this command.

pw-class *class-name*

no pw-class *class-name*

Syntax Description	<div><i>class-name</i></div> <div>Pseudowire class name.</div>					
Command Default	None					
Command Modes	L2VPN bridge group bridge domain VFI pseudowire configuration					
Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>Release 3.8.0</td><td>This command was introduced.</td></tr></table>		Release	Modification	Release 3.8.0	This command was introduced.
Release	Modification					
Release 3.8.0	This command was introduced.					
Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.					
Task ID	<table><tr><th>Task ID</th><th>Operations</th></tr><tr><td>l2vpn</td><td>read, write</td></tr></table>		Task ID	Operations	l2vpn	read, write
Task ID	Operations					
l2vpn	read, write					
Examples	<p>The following example shows how to attach the pseudowire class to the pseudowire:</p> <pre>RP/0/RP0/CPU0:router# configure RP/0/RP0/CPU0:router(config)# l2vpn RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1 RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# vfi vl RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-vfi)# neighbor 10.1.1.2 pw-id 1000 RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-vfi-pw)# pw-class canada</pre>					
Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td>bridge-domain (VPLS), page 103</td><td>Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.</td></tr></table>		Command	Description	bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
Command	Description					
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.					

Command	Description
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mpls static label (VPLS), page 121	Configures the MPLS static labels and the static labels for the access pseudowire configuration.
neighbor (VPLS), page 125	Adds an access pseudowire port to a bridge domain or a pseudowire to a bridge virtual forwarding interface (VFI).
vfi (VPLS), page 176	Configures virtual forwarding interface (VFI) parameters.

show l2vpn bridge-domain (VPLS)

To display information for the bridge ports such as attachment circuits and pseudowires for the specific bridge domains, use the **show l2vpn bridge-domain** command in EXEC mode.

```
{show l2vpn bridge-domain [bd-name bridge-domain-name] brief| detail| group
bridge-domain-group-name| interface type interface-path-id| neighbor IP-address [pw-id value]
summary]}
```

Syntax Description

bd-name <i>bridge-domain-name</i>	(Optional) Displays the bridges by the bridge ID. The <i>bridge-domain-name</i> argument is used to name a bridge domain.
brief	(Optional) Displays brief information about the bridges.
detail	(Optional) Displays the output for the Layer 2 VPN (L2VPN) to indicate whether or not the MAC withdrawal feature is enabled and the number of MAC withdrawal messages that are sent or received from the pseudowire.
group <i>bridge-domain-group-name</i>	(Optional) Displays filter information on the bridge-domain group name. The <i>bridge-domain-group-name</i> argument is used to name the bridge domain group.
interface <i>type</i>	(Optional) Displays the filter information for the interface on the bridge domain. Interface type. For more information, use the question mark (?) online help function.
<i>interface-path-id</i>	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.
neighbor <i>IP-address</i>	(Optional) Displays only the bridge domain that contains the pseudowires to match the filter for the neighbor. The <i>IP-address</i> argument is used to configure IP address of the neighbor.
pw-id <i>value</i>	(Optional) Displays the filter for the pseudowire ID. The range is from 1 to 4294967295.
summary	(Optional) Displays the summary information for the bridge domain.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

Use the **interface** keyword to display only the bridge domain that contains the specified interface as an attachment circuit. In the sample output, only the attachment circuit matches the filter that is displayed. No pseudowires are displayed.

Task ID

Task ID	Operations
l2vpn	read

Examples

This table describes the significant fields shown in the display.

The following sample output shows information for the bridge ports such as attachment circuits and pseudowires for the specific bridge domains:

```
RP/0/RP0/CPU0:router# show l2vpn bridge-domain

Bridge group: g1, bridge-domain: bd1, id: 0, state: up, ShgId: 0, MSTi: 0
Aging: 300 s, MAC limit: 4000, Action: none, Notification: syslog
Filter MAC addresses: 0
ACs: 1 (1 up), VFIs: 1, PWs: 1 (1 up)
List of ACs:
  Gi0/1/0/0, state: up, Static MAC addresses: 2, MSTi: 0 (unprotected)
List of Access PWs:
List of VFIs:
  VFI 1
    Neighbor 10.1.1.1 pw-id 1, state: up, Static MAC addresses: 0
```

This table describes the significant fields shown in the display.

Table 10: show l2vpn bridge-domain Command Field Descriptions

Field	Description
Bridge group	Name of bridge domain group is displayed.
bridge-domain	Name of bridge domain is displayed.
id	ID assigned to this bridge domain is displayed.
state	Current state of the bridge domain is displayed.

The following example shows sample output for a bridge named bd1:

```
RP/0/RP0/CPU0:router# show l2vpn bridge-domain bd-name bd1
```

```

Bridge group: g1, bridge-domain: bd1, id: 0, state: up, ShgId: 0, MSTi: 0
Aging: 300 s, MAC limit: 4000, Action: none, Notification: syslog
Filter MAC addresses: 0
ACs: 1 (1 up), VFIs: 1, PWs: 1 (1 up)
List of ACs:
  Gi0/1/0/0, state: up, Static MAC addresses: 2, MSTi: 0 (unprotected)
List of Access PWs:
List of VFIs:
  VFI 1
    Neighbor 10.1.1.1 pw-id 1, state: up, Static MAC addresses: 0

```

The following sample output shows brief information about the bridges:

```
RP/0/RP0/CPU0:router# show l2vpn bridge-domain brief
```

Bridge Group/Bridge-Domain Name	ID	State	Num ACs/up	Num PWs/up
g1/bd1	0	up	1/1	1/1

This table describes the significant fields shown in the display.

Table 11: show l2vpn bridge-domain brief Command Field Descriptions

Field	Description
Bridge Group/Bridge-Domain Name	Bridge domain group name followed by the bridge domain name are displayed.
ID	ID assigned to this bridge domain is displayed.
State	Current state of the bridge domain is displayed.
Num ACs/up	Total number of attachment circuits that are up in this bridge domain is displayed.
Num PWs/up	Total number of pseudowires that are up in this bridge domain is displayed. The count includes both VFI pseudowires and access pseudowires.

The following sample output shows detailed information:

```
RP/0/RP0/CPU0:router# show l2vpn bridge-domain detail
```

```

Bridge group: g1, bridge-domain: bd1, id: 0, state: up, ShgId: 0, MSTi: 0
MAC learning: enabled
MAC withdraw: disabled
Flooding:
  Broadcast & Multicast: enabled
  Unknown unicast: enabled
MAC aging time: 300 s, Type: inactivity
MAC limit: 4000, Action: none, Notification: syslog
MAC limit reached: yes
Security: disabled
DHCPv4 snooping: disabled
MTU: 1500
Filter MAC addresses:
ACs: 1 (1 up), VFIs: 1, PWs: 1 (1 up)
List of ACs:
  AC: GigabitEthernet0/1/0/0, state is up
    Type Ethernet
    MTU 1500; XC ID 0x2000001; interworking none; MSTi 0 (unprotected)
    MAC learning: enabled
    Flooding:
      Broadcast & Multicast: enabled

```

show l2vpn bridge-domain (VPLS)

```

    Unknown unicast: enabled
    MAC aging time: 300 s, Type: inactivity
    MAC limit: 4000, Action: none, Notification: syslog
    MAC limit reached: yes
    Security: disabled
    DHCPv4 snooping: disabled
    Static MAC addresses:
      0000.0000.0000
      0001.0002.0003
    Statistics:
      packet totals: receive 3919680, send 9328
      byte totals: receive 305735040, send 15022146
  List of Access PWs:
  List of VFIs:
    VFI 1
      PW: neighbor 1.1.1.1, PW ID 1, state is up ( established )
      PW class mpls, XC ID 0xff000001
      Encapsulation MPLS, protocol LDP
      PW type Ethernet, control word disabled, interworking none
      PW backup disable delay 0 sec
      Sequencing not set
      -----
      MPLS              Local              Remote
      -----
      Label              16003              16003
      Group ID           0x0              0x0
      Interface          1              1
      MTU                1500             1500
      Control word       disabled             disabled
      PW type            Ethernet             Ethernet
      VCCV CV type       0x2              0x2
                        (LSP ping verification)  (LSP ping verification)
      VCCV CC type       0x2              0x2
                        (router alert label)    (router alert label)
      -----
      Create time: 12/03/2008 14:03:00 (17:17:30 ago)
      Last time status changed: 13/03/2008 05:57:58 (01:22:31 ago)
      MAC withdraw message: send 0 receive 0
      Static MAC addresses:
      Statistics:
        packet totals: receive 3918814, send 3918024
        byte totals: receive 305667492, send 321277968
    VFI Statistics:
      drops: illegal VLAN 0, illegal length 0

```

The following sample output shows that when a bridge operates in VPWS mode, the irrelevant information for MAC learning is suppressed:

```
RP/0/RP0/CPU0:router# show l2vpn bridge-domain detail
```

```

Bridge group: foo_group, bridge-domain: foo_bd, id: 0, state: up, ShgId: 0
VPWS Mode
MTU: 1500
ACs: 1 (0 up), VFIs: 1, PWs: 2 (2 up)
List of ACs:
  AC: GigabitEthernet0/5/1/4, state is admin down
  Type Ethernet      MTU 1500; XC ID 1; interworking none
  Static MAC addresses:
  Statistics:
    packet totals: receive 0, send 0
    byte totals: receive 0, send 0
List of VFIs:
  VFI foo_vfi
    PW: neighbor 1.1.1.1, PW ID 1, state is up ( established )
    PW class not set
    Encapsulation MPLS, protocol LDP
    PW type Ethernet, control word enabled, interworking none
    Sequencing not set
    -----
    MPLS              Local              Remote
    -----
    Label              16001              16001
    Group ID           unassigned             unknown
    Interface          siva/vfi              siva/vfi

```

```

MTU          1500          1500
Control word  enabled      enabled
PW type      Ethernet      Ethernet
VCCV CV type 0x2          0x2
              (LSP ping verification) (LSP ping verification)
VCCV CC type 0x3          0x3
              (control word)         (control word)
              (router alert label)   (router alert label)
-----
Create time: 25/06/2007 05:29:42 (2w0d ago)
Last time status changed: 27/06/2007 06:50:35 (1w5d ago)
Static MAC addresses:
PW: neighbor 1.1.1.1, PW ID 2, state is up ( established )
PW class not set
Encapsulation MPLS, protocol LDP
PW type Ethernet, control word enabled, interworking none
Sequencing not set
MPLS          Local          Remote
-----
Label          16002          16002
Group ID       unassigned     unknown
Interface      siva/vfi         siva/vfi
MTU            1500          1500
Control word   enabled        enabled
PW type        Ethernet      Ethernet
VCCV CV type   0x2          0x2
              (LSP ping verification) (LSP ping verification)
VCCV CC type   0x3          0x3
              (control word)         (control word)
              (router alert label)   (router alert label)
-----
Create time: 25/06/2007 05:29:42 (2w0d ago)
Last time status changed: 27/06/2007 06:50:35 (1w5d ago)
Static MAC addresses:
Statistics:
drops: illegal VLAN 0, illegal length 0

```

This table describes the significant fields shown in the display.

Table 12: show l2vpn bridge-domain detail Command Field Descriptions

Field	Description
Bridge group	Name of bridge domain group is displayed.
bridge-domain	Name of bridge domain is displayed.
ID	ID assigned to this bridge domain is displayed.
state	Current state of the bridge domain is displayed.
MSTi	ID for the Multiple Spanning Tree.

The following sample output shows filter information about the bridge-domain group named g1:

```

RP/0/RP0/CPU0:router# show l2vpn bridge-domain group g1

Bridge group: g1, bridge-domain: bd1, id: 0, state: up, ShgId: 0, MSTi: 0
Aging: 300 s, MAC limit: 4000, Action: none, Notification: syslog
Filter MAC addresses: 0
ACs: 1 (1 up), VFIs: 1, PWs: 1 (1 up)
List of ACs:
  Gi0/1/0/0, state: up, Static MAC addresses: 2, MSTi: 0 (unprotected)
List of Access PWs:
List of VFIs:

```



```
VFI 1
Neighbor 1.1.1.1 pw-id 1, state: up, Static MAC addresses: 0
```

The following sample output shows display the filter information for the interface on the bridge domain:

```
RP/0/RP0/CPU0:router# show l2vpn bridge-domain interface gigabitEthernet 0/1/0/0
```

```
Bridge group: g1, bridge-domain: bdl, id: 0, state: up, ShgId: 0, MSTi: 0
Aging: 300 s, MAC limit: 4000, Action: none, Notification: syslog
Filter MAC addresses: 0
ACs: 1 (1 up), VFIs: 1, PWs: 1 (1 up)
List of ACs:
Gi0/1/0/0, state: up, Static MAC addresses: 2, MSTi: 0 (unprotected)
```

The following sample output shows that the bridge domain contains the pseudowires to match the filter for the neighbor:

```
RP/0/RP0/CPU0:router# show l2vpn bridge-domain neighbor 1.1.1.1
```

```
Bridge group: g1, bridge-domain: bdl, id: 0, state: up, ShgId: 0, MSTi: 0
Aging: 300 s, MAC limit: 4000, Action: none, Notification: syslog
Filter MAC addresses: 0
ACs: 1 (1 up), VFIs: 1, PWs: 1 (1 up)
List of Access PWs:
List of VFIs:
VFI 1
Neighbor 1.1.1.1 pw-id 1, state: up, Static MAC addresses: 0
```

The following sample output shows the summary information for the bridge domain:

```
RP/0/RP0/CPU0:router# show l2vpn bridge-domain summary
```

```
Number of groups: 1, bridge-domains: 1, Up: 1, Shutdown: 0
Number of ACs: 1 Up: 1, Down: 0
Number of PWs: 1 Up: 1, Down: 0
```

This table describes the significant fields shown in the display.

Table 13: show l2vpn bridge-domain summary Command Field Descriptions

Field	Description
Number of groups	Number of configured bridge domain groups is displayed.
bridge-domains	Number of configured bridge domains is displayed.
Shutdown	Number of bridge domains that are in Shutdown state is displayed.
Number of ACs	Number of attachment circuits that are in Up state and Down state are displayed.
Number of PWs	Number of pseudowires that are in Up state and Down state are displayed. This includes the VFI pseudowire and the access pseudowire.

Related Commands

Command	Description
clear l2vpn bridge-domain (VPLS), page 107	Clears the MAC addresses and restarts the bridge domains on the router.

show l2vpn forwarding bridge-domain (VPLS)

To display information on the bridge that is used by the forwarding layer, use the **show l2vpn forwarding bridge-domain** command in EXEC mode.

show l2vpn forwarding bridge-domain [*bridge-domain-name*] {**detail**|**hardware** {**egress**|**ingress**}}
location *node-id*

Syntax Description

<i>bridge-domain-name</i>	(Optional) Name of a bridge domain.
detail	Displays all the detailed information on the attachment circuits and pseudowires.
hardware	Displays the hardware location entry.
egress	Reads information from the egress PSE.
ingress	Reads information from the ingress PSE.
location <i>node-id</i>	Displays the bridge-domain information for the specified location. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

For each bridge, you can display summary information about the number of bridge ports, number of MAC addresses, and so forth.

The **detail** keyword displays detailed information on the attachment circuits and pseudowires, and is meant for field investigation by a specialized Cisco engineer.



Note

All bridge ports in the bridge domain on that line card are displayed. Therefore, if the bridge domain contains non-local bridge ports, those are displayed as well.

Task ID

Task ID	Operations
l2vpn	read

Examples

The following sample output shows bridge-domain information for location 0/1/CPU0:

RP/0/RP0/CPU0:router# **show l2vpn forwarding bridge-domain location 0/1/CPU0**

```

Bridge-Domain Name          ID      Ports addr  Flooding Learning State
-----
gl:bd1

Bridge-domain name: gl:bd1, id: 0, state: up
MAC learning: enabled
Flooding:
  Broadcast & Multicast: enabled
  Unknown unicast: enabled
MAC aging time: 300 s, Type: inactivity
MAC limit: 4000, Action: none, Notification: syslog
MAC limit reached: yes
Security: disabled
DHCPv4 snooping: profile not known on this node
Bridge MTU: 1500 bytes
Number of bridge ports: 2
Number of MAC addresses: 65536
Multi-spanning tree instance: 0

GigabitEthernet0/1/0/0, state: oper up
Number of MAC: 32770
Sent(Packets/Bytes): 0/21838568
Received(Packets/Bytes): 5704781/444972918

Nbor 1.1.1.1 pw-id 1
Number of MAC: 32766
Sent(Packets/Bytes): 0/0
Received(Packets/Bytes): 5703987/444910986
0      2      65536 Enabled Enabled UP

```

The following sample output shows detailed information for hardware location 0/1/CPU0 from the egress pse:

```

RP/0/RP0/CPU0:router

Bridge-domain name: gl:bd1, id: 0, state: up
MAC learning: enabled
Flooding:
  Broadcast & Multicast: enabled
  Unknown unicast: enabled
MAC aging time: 300 s, Type: inactivity
MAC limit: 4000, Action: none, Notification: syslog
MAC limit reached: yes
Security: disabled
DHCPv4 snooping: profile not known on this node
Bridge MTU: 1500 bytes
Number of bridge ports: 2
Number of MAC addresses: 65536
Multi-spanning tree instance: 0

===== GSR HW Information =====

-----
SHG-TX rewrite details
-----

HW Rewrite 0 Detail :
-----

```

show l2vpn forwarding bridge-domain (VPLS)

```

Rewrite HW Address : 0x00060000
packets 0 bytes 0
Raw data:
[ 0x04018180 04018190 040181a0 040181b0 ]
[ 0x04018170 00000000 80360000 000bfff4 ]
[ 0x00000000 00000000 00000000 00000000 ]

-----
SHG-TX encap details
-----
outer_etype: 0
outer_vlan_id: 0
gather_profile: 0
inner_vlan_id: 0
so_l2_len_adjust: 0
-----
SHG-TX mgid details
-----
Base MGIDs for default mgid
base_mgid[0]: 0x0003ffff
base_mgid[1]: 0x0003ffff
base_mgid[2]: 0x0003ffff
base_mgid[3]: 0x0003ffff
base_mgid[4]: 0x0003ffff
base_mgid[5]: 0x0003ffff
base_mgid[6]: 0x0003ffff
base_mgid[7]: 0x0003ffff
MGID Entries for default mgid
oi[0]: 0
oq[0]: 16384
xc_id[0]: 1
mgid_idx[0]: 0x00000000
next_mgid[0]: 0x00000000
-----
VMR 0 Details
-----
vmrid: 0x5f002010
Value: 0xc0 0x00 0x1f 0xff 0xff 0xff 0xff 0xff 0xfd
Mask : 0x00 0x00 0x1f 0xff 0xff 0xff 0xff 0xff 0xe0
Result 0x32003000
=====

GigabitEthernet0/1/0/0, state: oper up
Number of MAC: 32770
Sent(Packets/Bytes): 749/22989834
Received(Packets/Bytes): 5732104/447104112

===== GSR HW Information =====

-----
BP-TX-AC rewrite details
-----

BP is local

-----
BP L2 Uidb Details
-----
l2fwd_enabled: true
plim_enabled: true
l2fwd_type: 4
l2_ac_type: 0
xconn_id: 0
bridge_id: 0
shg_id: 0
unicast flooding enabled: 0
multicast flooding enabled: 0
broadcast flooding enabled: 0
mac learning enabled: 0
Is AC Port mode?: 0
-----
HW Rewrite 0 Detail :

```

```

-----
Rewrite HW Address : 0x59eff314
packets 0 bytes 0
HFA Bits 0x0 gp 0 mtu 1580 (REW)
OI 0x3fffc OutputQ 0 Output-port 0x36 local_outputq 0x0
Raw data:
[ 0x00000000 0036062c 0003fffc 00000000 ]
[ 0x00000000 00000000 0d103600 00000010 ]
[ 0x00000000 00000000 00000000 00000000 ]
-----
BP OI/OQ Details
-----
oi[0]:      0x00000000      oq[0]      16384
oi[1]:      0x00000000      oq[1]      65535
oi[2]:      0x00000000      oq[2]      65535
oi[3]:      0x00000000      oq[3]      65535
oi[4]:      0x00000000      oq[4]      65535
oi[5]:      0x00000000      oq[5]      65535
oi[6]:      0x00000000      oq[6]      65535
oi[7]:      0x00000000      oq[7]      65535
-----
Sram table entry details
-----
sram_data: 0xa000400c
=====

Nbor 1.1.1.1 pw-id 1
Number of MAC: 32766
Sent(Packets/Bytes): 0/0
Received(Packets/Bytes): 5731250/447037500

===== GSR HW Information =====

-----
BP-TX-AC rewrite details
-----
BP OI/OQ Details
-----
oi[0]:      0x00000000      oq[0]      65535
oi[1]:      0x00000000      oq[1]      65535
oi[2]:      0x00000000      oq[2]      65535
oi[3]:      0x00000000      oq[3]      65535
oi[4]:      0x00000000      oq[4]      65535
oi[5]:      0x00000000      oq[5]      65535
oi[6]:      0x00000000      oq[6]      65535
oi[7]:      0x00000000      oq[7]      65535
-----
BP Encap Info
-----
mac_length: 0
mac_string:
egress_slot: 2
num_tags: 1
tags: {16001, }
if_handle: 0x03000500
=====

```

The following sample output shows the bridge-domain information for the specified location:

```
RP/0/RP0/CPU0:router# show l2vpn forwarding bridge-domain g1:bd1 location 0/1/CPU0
```

Bridge-Domain Name	ID	Ports	addr	Flooding	Learning	State
g1:bd1	0	2	65536	Enabled	Enabled	UP

The following sample output shows the hardware information for a specific bridge-domain:

```
RP/0/RP0/CPU0:router#show l2vpn bridge-domain hardware
```

```

Bridge group: aa, bridge-domain name: g1, id:0
FGID Boardcast [version 1]:

```

show l2vpn forwarding bridge-domain (VPLS)

```

Allocate_count: 2048, Retry_count: 0, Realloc_on: Off
Status_flag: (0x4) Replay-end
ALL 44032, VFI 44033

```

```

Bridge group: aa, bridge-domain name: g2, id:1
FGID Boardcast [version 1]:
Allocate_count: 2048, Retry_count: 0, Realloc_on: Off
Status_flag: (0x4) Replay-end
ALL 44034, VFI 44035

```

The following sample output shows the hardware information for the line card, for a specific bridge-domain on the ingress detail location:

RP/0/RP0/CPU0:router#**show l2vpn forwarding bridge-domain hardware ingress detail location 0/2/CPU0**

```

Bridge-domain name: aa:g1, id: 0, state: up
MAC learning: enabled
Flooding:
  Broadcast & Multicast: enabled
  Unknown unicast: enabled
MAC aging time: 300 s, Type: inactivity
MAC limit: 4000, Action: none, Notification: syslog
MAC limit reached: no
Security: disabled
DHCPv4 snooping: profile not known on this node
Bridge MTU: 1500 bytes
Number of bridge ports: 4
Number of MAC addresses: 0
Multi-spanning tree instance: 0

INGRESS BRIDGE [version, state]: [1, CREATED]

  TCAM entry seq#: 1024 Key: [BID: 0 MAC: default]
  HW: 0x4c000000 0x000080ac 0x00010000 0x80ac0100
  SW: 0x4c000000 0x000080ac 0x00010000 0x80ac0100

  SMAC: action: PUNT state: NO REFRESH
  DMAC: action: FLOOD, flood_enable: enable
  FGID: All: 44032, VFI: 44033, MCAST Sponge_q: 16
  Fabric_multicast1: 1 Fabric_multicast2: 1

  Admin State: UP
  MTU: 1500
  Number of MAC addresses: 1 (0 MAC + 1 default)
  ACL NAME (ACL-ID): VPLS Special (4096)
  TCAM region handle : 5

GigabitEthernet0/2/0/1.1, state: oper up
Number of MAC: 0
Statistics:
  packets: received 0, sent 0
  bytes: received 0, sent 0

INGRESS BRIDGE PORT [version, state]: [1, BOUND]
  Bridge Port Type: AC
  XID: 0/2/CPU0 : 1 (0x1280001)
  Bridge ID: 0, Split Horizon ID: 0
  RX TLU1 : 0x4c00
  RX TLU2 : 0x1013c00
  RX TLU3 : 0x200ba00
  RX TLU4 : 0x3000c00

INGRESS AC [version, state]: [1, BOUND]

  Xconnect-ID: [1] TCAM-Key: (UIDB:0x2 O-vlan:1 I-vlan:0 Ether-Type:0x8100)
  HW: 0x24001000 0x01280001 0x10128000 0xc7ff7d00
  SW: 0x24001000 0x01280001 0x10128000 0xc7ff7d00

  Service type: 4 (bridging pmp)
  Entry type: 1 (fwd)

```

```

Bridge_ID : 0
ACL_ID : 4096
Xconnect_ID : 0x1280001
SplitHorizonGroup_ID : 0
Rewrite supported: 0 (No)
PW_mode: 0 (vc-type 5)
AC-type: 1 (vlan-mode)
Interface handle: 0x128000
Ingress AC stats: 0x7ff7d

SMAC Learning: enable
DMAC Flooding: enable

GigabitEthernet0/2/0/1.2, state: oper up
Number of MAC: 0
Statistics:
  packets: received 0, sent 0
  bytes: received 0, sent 0

INGRESS BRIDGE PORT [version, state]: [1, BOUND]
  Bridge Port Type: AC
  XID: 0/2/CPU0 : 2 (0x1280002)
  Bridge ID: 0, Split Horizon ID: 0
  RX TLU1 : 0x4c01
  RX TLU2 : 0x1013c01
  RX TLU3 : 0x200ba01
  RX TLU4 : 0x3000c01

INGRESS AC [version, state]: [1, BOUND]

  Xconnect-ID: [2] TCAM-Key: (UIDB:0x2 O-vlan:2 I-vlan:0 Ether-Type:0x8100)
  HW: 0x24001000 0x01280002 0x10128002 0xc7ff7a00
  SW: 0x24001000 0x01280002 0x10128002 0xc7ff7a00

  Service type: 4 (bridging pmp)
  Entry type: 1 (fwd)
  Bridge_ID : 0
  ACL_ID : 4096
  Xconnect_ID : 0x1280002
  SplitHorizonGroup_ID : 0
  Rewrite supported: 0 (No)
  PW_mode: 0 (vc-type 5)
  AC-type: 1 (vlan-mode)
  Interface handle: 0x128002
  Ingress AC stats: 0x7ff7a

  SMAC Learning: enable
  DMAC Flooding: enable

GigabitEthernet0/2/0/1.3, state: oper up
Number of MAC: 0
Statistics:
  packets: received 0, sent 0
  bytes: received 0, sent 0

INGRESS BRIDGE PORT [version, state]: [1, BOUND]
  Bridge Port Type: AC
  XID: 0/2/CPU0 : 3 (0x1280003)
  Bridge ID: 0, Split Horizon ID: 0
  RX TLU1 : 0x4c02
  RX TLU2 : 0x1013c02
  RX TLU3 : 0x200ba02
  RX TLU4 : 0x3000c02

INGRESS AC [version, state]: [1, BOUND]

  Xconnect-ID: [3] TCAM-Key: (UIDB:0x2 O-vlan:3 I-vlan:0 Ether-Type:0x8100)
  HW: 0x24001000 0x01280003 0x10128004 0xc7ff7700
  SW: 0x24001000 0x01280003 0x10128004 0xc7ff7700

  Service type: 4 (bridging pmp)
  Entry type: 1 (fwd)
  Bridge_ID : 0

```


show l2vpn forwarding bridge-domain (VPLS)

```

ACL_ID : 4096
Xconnect_ID : 0x1280003
SplitHorizonGroup_ID : 0
Rewrite supported: 0 (No)
PW mode: 0 (vc-type 5)
AC-type: 1 (vlan-mode)
Interface handle: 0x128004
Ingress AC stats: 0x7ff77

SMAC Learning: enable
DMAC Flooding: enable

Nbor 5.0.0.5 pw-id 1
Number of MAC: 0
Statistics:
  packets: received 0, sent 0
  bytes: received 0, sent 0

INGRESS BRIDGE PORT [version, state]: [1, BOUND]
  Bridge Port Type: ATOM
  XID: 127/15/CPU0 : 1 (0xffff80001)
  Bridge ID: 0, Split Horizon ID: 1
  VC label: 16006
  Control-word supported: No

Bridge-domain name: aa:g2, id: 1, state: up
MAC learning: enabled
Flooding:
  Broadcast & Multicast: enabled
  Unknown unicast: enabled
MAC aging time: 300 s, Type: inactivity
MAC limit: 4000, Action: none, Notification: syslog
MAC limit reached: no
Security: disabled
DHCPv4 snooping: profile not known on this node
Bridge MTU: 1500 bytes
Number of bridge ports: 2
Number of MAC addresses: 0
Multi-spanning tree instance: 0

INGRESS BRIDGE [version, state]: [1, CREATED]

TCAM entry seq#: 1025 Key: [BID: 1 MAC: default]
HW: 0x4c000000 0x000080ac 0x02010000 0x80ac0300
SW: 0x4c000000 0x000080ac 0x02010000 0x80ac0300

SMAC:  action: PUNT  state: NO REFRESH
DMAC:  action: FLOOD, flood enable: enable
FGID:  All: 44034, VFI: 44035, MCAST_Sponge_q: 16
Fabric_multicast1: 1 Fabric_multicast2: 1

Admin State: UP
MTU: 1500
Number of MAC addresses: 1 (0 MAC + 1 default)
ACL NAME (ACL-ID): VPLS Special (4097)
TCAM region handle : 5

GigabitEthernet0/2/0/1.4, state: oper up
Number of MAC: 0
Statistics:
  packets: received 0, sent 0
  bytes: received 0, sent 0

INGRESS BRIDGE PORT [version, state]: [1, BOUND]
  Bridge Port Type: AC
  XID: 0/2/CPU0 : 4 (0x1280004)
  Bridge ID: 1, Split Horizon ID: 0
  RX TLU1 : 0x4c03
  RX TLU2 : 0x1013c03
  RX TLU3 : 0x200ba03
  RX TLU4 : 0x3000c03

```

```

INGRESS AC [version, state]: [1, BOUND]

Xconnect-ID: [4] TCAM-Key: (UIDB:0x2 O-vlan:4 I-vlan:0 Ether-Type:0x8100)
HW: 0x24003001 0x01280004 0x10128006 0xc7ff7400
SW: 0x24003001 0x01280004 0x10128006 0xc7ff7400

Service type: 4 (bridging pmp)
Entry type: 1 (fwd)
Bridge_ID : 1
ACL_ID : 4097
Xconnect_ID : 0x1280004
SplitHorizonGroup_ID : 0
Rewrite supported: 0 (No)
PW_mode: 0 (vc-type 5)
AC-type: 1 (vlan-mode)
Interface handle: 0x128006
Ingress AC stats: 0x7ff74

SMAC Learning: enable
DMAC Flooding: enable

Nbor 5.0.0.5 pw-id 2
Number of MAC: 0
Statistics:
  packets: received 0, sent 0
  bytes: received 0, sent 0

INGRESS BRIDGE PORT [version, state]: [1, BOUND]
Bridge Port Type: ATOM
XID: 127/15/CPU0 : 2 (0xffff80002)
Bridge ID: 1, Split Horizon ID: 1
VC label: 16008
Control-word supported: No

```

The following sample output shows the hardware information of the route processor, for a specific bridge-domain on the ingress detail location:

RP/0/RP0/CPU0:router#**show l2vpn forwarding bridge-domain hardware ingress detail location 0/RP0/CPU0**

```

Bridge-domain name: aa:gl, id: 0, state: up
MAC learning: enabled
Flooding:
  Broadcast & Multicast: enabled
  Unknown unicast: enabled
MAC aging time: 300 s, Type: inactivity
MAC limit: 4000, Action: none, Notification: syslog
MAC limit reached: no
Security: disabled
DHCPv4 snooping: profile not known on this node
Bridge MTU: 1500 bytes
Number of bridge ports: 4
Number of MAC addresses: 0
Multi-spanning tree instance: 0

BRIDGE [version, state]: [1, CREATED]
Bridge ID: 0
FGID1: 44032   NodeCount: 1   Info_len: 24   XID_count: 4
FGID2: 44033   NodeCount: 1   Info_len: 20   XID_count: 3

FGID1 Membership list:
node-id: 0/2/CPU0 (0x21)   RSI: 0x25   XID_count: 4
XID: 0x1280001   0x1280002   0x1280003   0xffff80001

FGID2 Membership list:
node-id: 0/2/CPU0 (0x21)   RSI: 0x25   XID_count: 3
XID: 0x1280001   0x1280002   0x1280003

GigabitEthernet0/2/0/1.1, state: oper up
Number of MAC: 0
Statistics:

```

show l2vpn forwarding bridge-domain (VPLS)

```

        packets: received 0, sent 0
        bytes: received 0, sent 0

AC [version, state]: [1, BOUND]
    XID: 0x1280001    RSI: 0x25    Bridging: TRUE

GigabitEthernet0/2/0/1.2, state: oper up
    Number of MAC: 0
    Statistics:
        packets: received 0, sent 0
        bytes: received 0, sent 0

AC [version, state]: [1, BOUND]
    XID: 0x1280002    RSI: 0x25    Bridging: TRUE

GigabitEthernet0/2/0/1.3, state: oper up
    Number of MAC: 0
    Statistics:
        packets: received 0, sent 0
        bytes: received 0, sent 0

AC [version, state]: [1, BOUND]
    XID: 0x1280003    RSI: 0x25    Bridging: TRUE

Nbor 5.0.0.5 pw-id 1
    Number of MAC: 0

Bridge-domain name: aa:g2, id: 1, state: up
MAC learning: enabled
Flooding:
    Broadcast & Multicast: enabled
    Unknown unicast: enabled
MAC aging time: 300 s, Type: inactivity
MAC limit: 4000, Action: none, Notification: syslog
MAC limit reached: no
Security: disabled
DHCPv4 snooping: profile not known on this node
Bridge MTU: 1500 bytes
Number of bridge ports: 2
Number of MAC addresses: 0
Multi-spanning tree instance: 0

BRIDGE [version, state]: [1, CREATED]
    Bridge ID: 1
        FGID1: 44034    NodeCount: 1    Info_len: 16    XID_count: 2
        FGID2: 44035    NodeCount: 1    Info_len: 12    XID_count: 1

        FGID1 Membership list:
            node-id: 0/2/CPU0 (0x21)    RSI: 0x25    XID_count: 2
            XID: 0x1280004    0xffff80002

        FGID2 Membership list:
            node-id: 0/2/CPU0 (0x21)    RSI: 0x25    XID_count: 1
            XID: 0x1280004

GigabitEthernet0/2/0/1.4, state: oper up
    Number of MAC: 0
    Statistics:
        packets: received 0, sent 0
        bytes: received 0, sent 0

AC [version, state]: [1, BOUND]
    XID: 0x1280004    RSI: 0x25    Bridging: TRUE

Nbor 5.0.0.5 pw-id 2
    Number of MAC: 0

```

The following sample output shows the hardware information of the line card, for a specific bridge-domain on the egress detail location:

```
RP/0/RP0/CPU0:router#show l2vpn forwarding bridge-domain hardware egress detail location 0/2/CPU0
```

```
Bridge-domain name: aa:gl, id: 0, state: up
MAC learning: enabled
Flooding:
  Broadcast & Multicast: enabled
  Unknown unicast: enabled
MAC aging time: 300 s, Type: inactivity
MAC limit: 4000, Action: none, Notification: syslog
MAC limit reached: no
Security: disabled
DHCPv4 snooping: profile not known on this node
Bridge MTU: 1500 bytes
Number of bridge ports: 4
Number of MAC addresses: 0
Multi-spanning tree instance: 0

EGRESS BRIDGE [version, state]: [1, CREATED]

  BID: 0   Total_oif_count: 4
  AC:   oif_count: 3   head_ptr: 0x9ff6e4f8   tail_ptr: 0x9ff6e480
  PW:   oif_count: 1   head_ptr: 0x9ff6e570

  PLU RESULT Key[Bridge-ID: 0]
  HW: 0x04008000 0x000a01c0 0x00000000 0x00000000
  SW: 0x04008000 0x000a01c0 0x00000000 0x00000000
  Entry_type: 1
  OLIST pointer: 0xa01
  OLIST channel: 3
  OLIST count: 4

  OIF[0] seg_type: AC xid: 0x1280003 Gi0/2/0/1.3 (ifh: 0x1280042)
  TLU RESULT tlu_addr: 0x3000a01 ch: 3 seg_type: 1
  HW: 0x80000002 0x00ba0080 0x01280003 0x00000000
  SW: 0x80000002 0x00ba0080 0x01280003 0x00000000
  SHG: 0
  UIDB: 2
  XID: 0x1280003
  OLIST pointer: 0xba00
  OLIST channel: 2

  OIF[1] seg_type: AC xid: 0x1280002 Gi0/2/0/1.2 (ifh: 0x1280022)
  TLU RESULT tlu_addr: 0x200ba00 ch: 2 seg_type: 1
  HW: 0x80000002 0x000a00c0 0x01280002 0x00000000
  SW: 0x80000002 0x000a00c0 0x01280002 0x00000000
  SHG: 0
  UIDB: 2
  XID: 0x1280002
  OLIST pointer: 0xa00
  OLIST channel: 3

  OIF[2] seg_type: AC xid: 0x1280001 Gi0/2/0/1.1 (ifh: 0x1280002)
  TLU RESULT tlu_addr: 0x3000a00 ch: 3 seg_type: 1
  HW: 0x80000002 0x00ba0180 0x01280001 0x00000000
  SW: 0x80000002 0x00ba0180 0x01280001 0x00000000
  SHG: 0
  UIDB: 2
  XID: 0x1280001
  OLIST pointer: 0xba01
  OLIST channel: 2

  OIF[3] seg_type: PW xid: 0xffff80001 ecd_ptr: 0x5206
  TLU RESULT tlu_addr: 0x200ba01 ch: 2 seg_type: 0
  HW: 0x01005206 0x00000000 0xffff80001 0x03e86000
  SW: 0x01005206 0x00000000 0xffff80001 0x03e86000
  SHG: 1
  XID: 0xffff80001
  OLIST pointer: 0x0
```

show l2vpn forwarding bridge-domain (VPLS)

```

    OLIST channel: 0
    Control Word: Disabled
    VC label: 16006
    ECD/TLU1 pointer: 0x5206

GigabitEthernet0/2/0/1.1, state: oper up
  Number of MAC: 0
  Statistics:
    packets: received 0, sent 0
    bytes: received 0, sent 0

EGRESS BRIDGE PORT [version, state]: [1, BOUND]
  Bridge Port Type: AC
  XID: 0/2/CPU0 : 1 (0x1280001)
  Bridge ID: 0, Split Horizon ID: 0
  RX TLU1 : 0x4c00
  RX TLU2 : 0x1013c00
  RX TLU3 : 0x200ba00
  RX TLU4 : 0x3000c00

EGRESS AC [version, state]: [1, BOUND]

  Xconnect-ID: [1] TLU2-entry-addr: [0x200a001]
  HW: 0x8018b000 0x0000000b 0x00004001 0xfb7ba000
  SW: 0x8018b000 0x0000000b 0x00004001 0xfb7ba000

  Entry status: 1 (Fwd)
  AC_type: 1 (vlan-mode)
  Outer-vlan: 1
  Inner-vlan: 0
  Outer Ether Type: 0 (dot1q)
  AC_mtu: 1580
  Adjacency_type: 0
  Default EgressQ (SharqQ): 11
  PW mode: 0 (vc-type 5)
  Rewrite supported: 0 (No)
  Control-word supported: 0 (No)
  Egress AC stats: 0x7dbdd

GigabitEthernet0/2/0/1.2, state: oper up
  Number of MAC: 0
  Statistics:
    packets: received 0, sent 0
    bytes: received 0, sent 0

EGRESS BRIDGE PORT [version, state]: [1, BOUND]
  Bridge Port Type: AC
  XID: 0/2/CPU0 : 2 (0x1280002)
  Bridge ID: 0, Split Horizon ID: 0
  RX TLU1 : 0x4c01
  RX TLU2 : 0x1013c01
  RX TLU3 : 0x200ba01
  RX TLU4 : 0x3000c01

EGRESS AC [version, state]: [1, BOUND]

  Xconnect-ID: [2] TLU2-entry-addr: [0x200a002]
  HW: 0x8018b000 0x0000000b 0x00004002 0xfb7b4000
  SW: 0x8018b000 0x0000000b 0x00004002 0xfb7b4000

  Entry status: 1 (Fwd)
  AC_type: 1 (vlan-mode)
  Outer-vlan: 2
  Inner-vlan: 0
  Outer Ether Type: 0 (dot1q)
  AC_mtu: 1580
  Adjacency_type: 0
  Default EgressQ (SharqQ): 11
  PW mode: 0 (vc-type 5)
  Rewrite supported: 0 (No)
  Control-word supported: 0 (No)
  Egress AC stats: 0x7dbda

```

```

GigabitEthernet0/2/0/1.3, state: oper up
  Number of MAC: 0
  Statistics:
    packets: received 0, sent 0
    bytes: received 0, sent 0

EGRESS BRIDGE PORT [version, state]: [1, BOUND]
  Bridge Port Type: AC
  XID: 0/2/CPU0 : 3 (0x1280003)
  Bridge ID: 0, Split Horizon ID: 0
  RX TLU1 : 0x4c02
  RX TLU2 : 0x1013c02
  RX TLU3 : 0x200ba02
  RX TLU4 : 0x3000c02

EGRESS AC [version, state]: [1, BOUND]

  Xconnect-ID: [3] TLU2-entry-addr: [0x200a003]
  HW: 0x8018b000 0x0000000b 0x00004003 0xfb7ae000
  SW: 0x8018b000 0x0000000b 0x00004003 0xfb7ae000

  Entry status: 1 (Fwd)
  AC_type: 1 (vlan-mode)
  Outer-vlan: 3
  Inner-vlan: 0
  Outer Ether Type: 0 (dot1q)
  AC mtu: 1580
  Adjacency_type: 0
  Default EgressQ (SharqQ): 11
  PW mode: 0 (vc-type 5)
  Rewrite supported: 0 (No)
  Control-word supported: 0 (No)
  Egress AC stats: 0x7dbd7

Nbor 5.0.0.5 pw-id 1
  Number of MAC: 0
  Statistics:
    packets: received 0, sent 0
    bytes: received 0, sent 0

EGRESS BRIDGE PORT [version, state]: [1, BOUND]
  Bridge Port Type: ATOM
  XID: 127/15/CPU0 : 1 (0xffff80001)
  Bridge ID: 0, Split Horizon ID: 1
  VC label: 16006
  Control-word supported: No

Bridge-domain name: aa:g2, id: 1, state: up
MAC learning: enabled
Flooding:
  Broadcast & Multicast: enabled
  Unknown unicast: enabled
MAC aging time: 300 s, Type: inactivity
MAC limit: 4000, Action: none, Notification: syslog
MAC limit reached: no
Security: disabled
DHCPv4 snooping: profile not known on this node
Bridge MTU: 1500 bytes
Number of bridge ports: 2
Number of MAC addresses: 0
Multi-spanning tree instance: 0

EGRESS BRIDGE [version, state]: [1, CREATED]

  BID: 1 Total_oif_count: 2
  AC: oif_count: 1 head_ptr: 0x9ff6e534 tail_ptr: 0x9ff6e534
  PW: oif_count: 1 head_ptr: 0x9ff6e5ac

```

show l2vpn forwarding bridge-domain (VPLS)

```

PLU RESULT Key[Bridge-ID: 1]
HW: 0x04004000 0x000a02c0 0x00000000 0x00000000
SW: 0x04004000 0x000a02c0 0x00000000 0x00000000
Entry_type: 1
OLIST_pointer: 0xa02
OLIST_channel: 3
OLIST_count: 2

OIF[0] seg_type: AC xid: 0x1280004 Gi0/2/0/1.4 (ifh: 0x1280062)
TLU RESULT tlu_addr: 0x3000a02 ch: 3 seg_type: 1
HW: 0x80000002 0x00ba0280 0x01280004 0x00000000
SW: 0x80000002 0x00ba0280 0x01280004 0x00000000
SHG: 0
UIDB: 2
XID: 0x1280004
OLIST_pointer: 0xba02
OLIST_channel: 2

OIF[1] seg_type: PW xid: 0xffff80002 ecd_ptr: 0x5200
TLU RESULT tlu_addr: 0x200ba02 ch: 2 seg_type: 0
HW: 0x01005200 0x00000000 0xffff80002 0x03e88000
SW: 0x01005200 0x00000000 0xffff80002 0x03e88000
SHG: 1
XID: 0xffff80002
OLIST_pointer: 0x0
OLIST_channel: 0
Control Word: Disabled
VC label: 16008
ECD/TLU1 pointer: 0x5200

GigabitEthernet0/2/0/1.4, state: oper up
Number of MAC: 0
Statistics:
  packets: received 0, sent 0
  bytes: received 0, sent 0

EGRESS BRIDGE PORT [version, state]: [1, BOUND]
Bridge Port Type: AC
XID: 0/2/CPU0 : 4 (0x1280004)
Bridge ID: 1, Split Horizon ID: 0
RX TLU1 : 0x4c03
RX TLU2 : 0x1013c03
RX TLU3 : 0x200ba03
RX TLU4 : 0x3000c03

EGRESS AC [version, state]: [1, BOUND]

Xconnect-ID: [4] TLU2-entry-addr: [0x200a004]
HW: 0x8018b000 0x0000000b 0x00004004 0xfb7a8000
SW: 0x8018b000 0x0000000b 0x00004004 0xfb7a8000

Entry status: 1 (Fwd)
AC_type: 1 (vlan-mode)
Outer-vlan: 4
Inner-vlan: 0
Outer Ether Type: 0 (dot1q)
AC mtu: 1580
Adjacency_type: 0
Default EgressQ (SharqQ): 11
PW mode: 0 (vc-type 5)
Rewrite supported: 0 (No)
Control-word supported: 0 (No)
Egress AC stats: 0x7dbd4

Nbor 5.0.0.5 pw-id 2
Number of MAC: 0
Statistics:
  packets: received 0, sent 0
  bytes: received 0, sent 0

```

```

EGRESS BRIDGE PORT [version, state]: [1, BOUND]
Bridge Port Type: ATOM
XID: 127/15/CPU0 : 2 (0xffff80002)
Bridge ID: 1, Split Horizon ID: 1
VC label: 16008
Control-word supported: No

```

This table describes the significant fields shown in the display.

Table 14: show l2vpn forwarding bridge-domain Command Field Descriptions

Field	Description
Bridge-Domain Name	Name of bridge domain is displayed.
Bridge ID	ID assigned to this bridge domain is displayed.
Ports	Number of ports that are part of this bridge domain is displayed.
MAC Addr	Number of MAC addresses that are learned on this bridge domain is displayed.
Flooding	Flooding of packets are displayed if they are enabled on this bridge domain.
Learning	Learning of MAC addresses are displayed if they are enabled on this bridge domain.
State	Current state of the bridge domain is displayed.

Related Commands

Command	Description
clear l2vpn bridge-domain (VPLS), page 107	Clears the MAC addresses and restarts the bridge domains on the router.

show l2vpn forwarding bridge-domain mac-address (VPLS)

To display the summary information for the MAC address, use the **show l2vpn forwarding bridge-domain mac-address** command in EXEC mode.

show l2vpn forwarding bridge-domain [*bridge-domain-name*] **mac-address** {*MAC-address*| **detail**| **hardware** {**egress**| **ingress**}| **interface** *type interface-path-id*| **neighbor address pw-id pw-id**} **location** *node-id*

Syntax Description

<i>bridge-domain-name</i>	(Optional) Name of a bridge domain.
<i>MAC-address</i>	MAC address.
detail	Displays detailed information for the MAC address.
hardware	Reads information from the hardware.
egress	Reads information from the egress PSE.
ingress	Reads information from the ingress PSE.
interface	Displays the match for the attachment circuit subinterface.
<i>type</i>	Interface type. For more information, use the question mark (?) online help function.
<i>interface-path-id</i>	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.
neighbor address	Displays the match for the neighbor IP address.
pw-id pw-id	Displays the match for the pseudowire ID.
location node-id	Displays the bridge-domain information for the MAC address of the specified location. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.0	This command was introduced.
Release 3.7.2	This command was introduced.
Release 3.8.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read

Examples

The following sample output shows the specified location of the bridge-domain name g1:bd1 for the MAC address:

```
RP/0/RP0/CPU0:router# show l2vpn forwarding bridge-domain g1:bd1 location 0/1/CPU0
Bridge          MAC
Bridge-Domain Name ID   Ports addr   Flooding Learning State
-----
g1:bd1          0     2    65536  Enabled  Enabled  UP
```

The following sample output shows the list of MAC addresses that are learned on a specified bridge and summary information for the addresses:

```
RP/0/RP0/CPU0:router# show l2vpn forwarding bridge-domain mac-address location 0/1/CPU0
Mac Address      Type      Learned from/Filtered on    LC learned Age
-----
0000.0000.0000  static   Gi0/1/0/0                  N/A           N/A
0000.0001.0101  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.0102  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.0103  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.0104  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.0105  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.0106  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.0107  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.0108  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.0109  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.010a  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.010b  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.010c  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.010d  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.010e  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.010f  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.0110  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.0111  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
0000.0001.0112  dynamic  Gi0/1/0/0                  0/1/CPU0     0d 0h 2m 22s
....
```

The following sample output shows the MAC address on a specified interface on a specified bridge:

```
RP/0/RP0/CPU0:router# show l2vpn forwarding bridge-domain g1:bd1 mac-address 1.2.3 location 0/1/CPU0
```

show l2vpn forwarding bridge-domain mac-address (VPLS)

Mac Address	Type	Learned from/Filtered on	LC learned	Age
0001.0002.0003	static	Gi0/1/0/0	N/A	N/A

The following sample output shows the hardware information from the egress pse:

RP/0/RP0/CPU0:router# **show l2vpn forwarding bridge-domain g1:bd1 mac-address hardware egress location 0/1/CPU0**

Mac Address	Type	Learned from/Filtered on	LC learned	Age
0000.0000.0000	static	Gi0/1/0/0	N/A	N/A
0000.0001.0101	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.0102	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.0103	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.0104	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.0105	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.0106	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.0107	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.0108	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.0109	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.010a	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.010b	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.010c	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.010d	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.010e	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.010f	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.0110	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.0111	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.0112	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.0113	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
0000.0001.0114	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 24s
...				

The following sample output shows the MAC addresses that are learned on a specified pseudowire on a specified bridge:

RP/0/RP0/CPU0:router# **show l2vpn forwarding bridge-domain mac-address neighbor 1.1.1.1 pw-id 1 location 0/1/CPU0**

Mac Address	Type	Learned from/Filtered on	LC learned	Age
0000.0003.0101	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0102	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0103	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0104	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0105	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0106	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0107	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0108	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0109	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.010a	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.010b	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.010c	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.010d	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.010e	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.010f	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0110	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0111	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0112	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0113	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0114	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
0000.0003.0115	dynamic	1.1.1.1, 1	0/1/CPU0	0d 0h 0m 30s
...				

The following sample output shows the detailed information for MAC addresses that are learned on a specified interface and on specified bridge of a specified interface card. The sample output lists all the MAC addresses, the learned location, and the current age.

RP/0/RP0/CPU0:router# **show l2vpn forwarding bridge-domain g1:bd1 mac-address interface**

gigabitEthernet 0/1/0/0 location 0/1/CPU0

Mac Address	Type	Learned from/Filtered on	LC learned	Age
0000.0000.0000	static	Gi0/1/0/0	N/A	N/A
0000.0001.0101	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.0102	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.0103	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.0104	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.0105	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.0106	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.0107	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.0108	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.0109	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.010a	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.010b	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.010c	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.010d	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.010e	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.010f	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.0110	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.0111	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.0112	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.0113	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s
0000.0001.0114	dynamic	Gi0/1/0/0	0/1/CPU0	0d 0h 2m 14s

The following sample output shows the MAC address hardware information on the line card, for a specific bridge-domain on the ingress detail location:

RP/0/RP0/CPU0:router#**show l2vpn forwarding bridge-domain mac hardware ingress detail location 0/2/CPU0**

```

Bridge-domain name: aa:gl, id: 0, state: up
MAC learning: enabled
Flooding:
  Broadcast & Multicast: enabled
  Unknown unicast: enabled
MAC aging time: 300 s, Type: inactivity
MAC limit: 4000, Action: none, Notification: syslog
MAC limit reached: no
Security: disabled
DHCPv4 snooping: profile not known on this node
Bridge MTU: 1500 bytes
Number of bridge ports: 4
Number of MAC addresses: 10
Multi-spanning tree instance: 0

INGRESS BRIDGE [version, state]: [1, CREATED]

TCAM entry seq#: 1024 Key: [BID: 0 MAC: default]
HW: 0x4c000000 0x000080ac 0x00010000 0x80ac0100
SW: 0x4c000000 0x000080ac 0x00010000 0x80ac0100

SMAC: action: PUNT state: NO REFRESH
DMAC: action: FLOOD, flood_enable: enable
FGID: All: 44032, VFI: 44033, MCAST_Sponge_q: 16
Fabric_multicast1: 1 Fabric_multicast2: 1

Admin State: UP
MTU: 1500
Number of MAC addresses: 11 (10 MAC + 1 default)
ACL NAME (ACL-ID): VPLS Special (4096)
TCAM region handle : 5

GigabitEthernet0/2/0/1.1, state: oper up
Number of MAC: 10
Statistics:
  packets: received 0, sent 121515
  bytes: received 0, sent 7290900

```

show l2vpn forwarding bridge-domain mac-address (VPLS)

```

INGRESS BRIDGE PORT [version, state]: [1, BOUND]
  Bridge Port Type: AC
  XID: 0/2/CPU0 : 1 (0x1280001)
  Bridge ID: 0, Split Horizon ID: 0
  RX TLU1      : 0x4c00
  RX TLU2      : 0x1013c00
  RX TLU3      : 0x200ba00
  RX TLU4      : 0x3000c00

INGRESS AC [version, state]: [1, BOUND]

  Xconnect-ID: [1] TCAM-Key: (UIDB:0x2 O-vlan:1 I-vlan:0 Ether-Type:0x8100)
  HW: 0x24001000 0x01280001 0x10128000 0xc7ff7d00
  SW: 0x24001000 0x01280001 0x10128000 0xc7ff7d00

  Service type: 4 (bridging pmp)
  Entry type: 1 (fwd)
  Bridge_ID : 0
  ACL_ID : 4096
  Xconnect_ID : 0x1280001
  SplitHorizonGroup_ID : 0
  Rewrite supported: 0 (No)
  PW_mode: 0 (vc-type 5)
  AC-type: 1 (vlan-mode)
  Interface handle: 0x128000
  Ingress AC stats: 0x7ff7d

  SMAC Learning: enable
  DMAC Flooding: enable

Mac Address: 0000.0022.2222, LC learned: 0/2/CPU0
Age: 0d 0h 0m 21s, Flag: local

INGRESS MAC [version, state]: [1, CREATED]

  TCAM entry seq#: 0 Key: [BID: 0 MAC: 0000.0022.2222]
  HW: 0x22004c00 0x00000001 0x00000000 0x01280001
  SW: 0x22004c00 0x00000001 0x00000000 0x01280001

  SMAC: action: FWD state: REFRESH
  XID: 0/2/CPU0 : 1 (0x1280001)
  DMAC: action: FWD, BridgePort type: AC
  SHG ID : 0
  Entry Flag : FWD
  Entry Type : DYNAMIC
  Local Switching: enabled
  Next (tlu0) addr: 0x4c00
  Control-word supported: No

  Destination AC: Gi0/2/0/1.1 (ifh: 0x1280002)

  TLU1      : 0x4c00
  [HW: 0x00000000 0x00013c00 0x00000000 0x00000100]
    label: 0 num of labels: 0
    entry type: FWD next ptr: 0x00013c00
    num of entries: 1
    BGP next-hop: 0.0.0.0

  TLU2      : 0x1013c00
  [HW: 0x00000008 0x00000000 0x00001000 0x00ba0000]
    label1: 1 label2: 0
    num of labels: 1 next ptr: 0x0000ba00

  TLU3      : 0x200ba00
  [HW: 0x00010000 0x00000000 0x00000000 0x000c0000]
    num. entries : 1
    num. labels : 0
    label 1 : 0
    label 2 : 0
    next ptr : 0xc00

  TLU4      : 0x3000c00

```

```

[HW: 0x00000000 0x20082000 0x01280040 0x00020000]
  dest. addr      : 0x20
  sponge queue    : 130
  egress port     : 0x128004
  rp destined     : no
  rp drop         : no
  hash type       : 0
  uidb index      : 0x2

Mac Address: 0000.0022.2223, LC learned: 0/2/CPU0
Age: 0d 0h 0m 21s, Flag: local

INGRESS MAC [version, state]: [1, CREATED]

TCAM entry seq#: 1 Key: [BID: 0 MAC: 0000.0022.2223]
HW: 0x22004c00 0x00000001 0x00000000 0x01280001
SW: 0x22004c00 0x00000001 0x00000000 0x01280001

SMAC: action: FWD state: REFRESH
XID: 0/2/CPU0 : 1 (0x1280001)
DMAC: action: FWD, BridgePort type: AC
SHG ID      : 0
Entry Flag  : FWD
Entry Type  : DYNAMIC
Local Switching: enabled
Next (tlu0) addr: 0x4c00
Control-word supported: No

Destination AC: Gi0/2/0/1.1 (ifh: 0x1280002)

TLU1          : 0x4c00
[HW: 0x00000000 0x00013c00 0x00000000 0x00000100]
  label:          0      num of labels:      0
  entry type:     FWD    next ptr:      0x00013c00
  num of entries: 1
  BGP next-hop:   0.0.0.0

TLU2          : 0x1013c00
[HW: 0x00000008 0x00000000 0x00001000 0x00ba0000]
  label1:         1      label2:          0
  num of labels:  1      next ptr: 0x0000ba00

TLU3          : 0x200ba00
[HW: 0x00010000 0x00000000 0x00000000 0x000c0000]
  num. entries    : 1
  num. labels     : 0
  label 1         : 0
  label 2         : 0
  next ptr        : 0xc00

TLU4          : 0x3000c00
[HW: 0x00000000 0x20082000 0x01280040 0x00020000]
  dest. addr      : 0x20
  sponge queue    : 130
  egress port     : 0x128004
  rp destined     : no
  rp drop         : no
  hash type       : 0
  uidb index      : 0x2

Mac Address: 0000.0022.2224, LC learned: 0/2/CPU0
Age: 0d 0h 0m 21s, Flag: local

INGRESS MAC [version, state]: [1, CREATED]

TCAM entry seq#: 2 Key: [BID: 0 MAC: 0000.0022.2224]
HW: 0x22004c00 0x00000001 0x00000000 0x01280001
SW: 0x22004c00 0x00000001 0x00000000 0x01280001

SMAC: action: FWD state: REFRESH
XID: 0/2/CPU0 : 1 (0x1280001)

```

show l2vpn forwarding bridge-domain mac-address (VPLS)

```

DMAC: action: FWD, BridgePort type: AC
SHG ID : 0
Entry Flag : FWD
Entry Type : DYNAMIC
Local Switching: enabled
Next (tlu0) addr: 0x4c00
Control-word supported: No

Destination AC: Gi0/2/0/1.1 (ifh: 0x1280002)

TLU1 : 0x4c00
[HW: 0x00000000 0x00013c00 0x00000000 0x00000100]
label: 0 num of labels: 0
entry type: FWD next ptr: 0x00013c00
num of entries: 1
BGP next-hop: 0.0.0.0

TLU2 : 0x1013c00
[HW: 0x00000008 0x00000000 0x00001000 0x00ba0000]
label1: 1 label2: 0
num of labels: 1 next ptr: 0x0000ba00

TLU3 : 0x200ba00
[HW: 0x00010000 0x00000000 0x00000000 0x000c0000]
num. entries : 1
num. labels : 0
label 1 : 0
label 2 : 0
next ptr : 0xc00

TLU4 : 0x3000c00
[HW: 0x00000000 0x20082000 0x01280040 0x00020000]
dest. addr : 0x20
sponge queue : 130
egress port : 0x128004
rp destined : no
rp drop : no
hash type : 0
uidb index : 0x2

Mac Address: 0000.0022.2225, LC learned: 0/2/CPU0
Age: 0d 0h 0m 21s, Flag: local

INGRESS MAC [version, state]: [1, CREATED]

TCAM entry seq#: 3 Key: [BID: 0 MAC: 0000.0022.2225]
HW: 0x22004c00 0x00000001 0x00000000 0x01280001
SW: 0x22004c00 0x00000001 0x00000000 0x01280001

SMAC: action: FWD state: REFRESH
XID: 0/2/CPU0 : 1 (0x1280001)
DMAC: action: FWD, BridgePort type: AC
SHG ID : 0
Entry Flag : FWD
Entry Type : DYNAMIC
Local Switching: enabled
Next (tlu0) addr: 0x4c00
Control-word supported: No

Destination AC: Gi0/2/0/1.1 (ifh: 0x1280002)

TLU1 : 0x4c00
[HW: 0x00000000 0x00013c00 0x00000000 0x00000100]
label: 0 num of labels: 0
entry type: FWD next ptr: 0x00013c00
num of entries: 1
BGP next-hop: 0.0.0.0

TLU2 : 0x1013c00
[HW: 0x00000008 0x00000000 0x00001000 0x00ba0000]
label1: 1 label2: 0
num of labels: 1 next ptr: 0x0000ba00

```

```

TLU3          : 0x200ba00
[HW: 0x00010000 0x00000000 0x00000000 0x000c0000]
  num. entries : 1
  num. labels  : 0
  label 1     : 0
  label 2     : 0
  next ptr    : 0xc00

TLU4          : 0x3000c00
[HW: 0x00000000 0x20082000 0x01280040 0x00020000]
  dest. addr   : 0x20
  sponge queue : 130
  egress port  : 0x128004
  rp destined  : no
  rp drop      : no
  hash type    : 0
  uidb index   : 0x2

Mac Address: 0000.0022.2226, LC learned: 0/2/CPU0
Age: 0d 0h 0m 21s, Flag: local

INGRESS MAC [version, state]: [1, CREATED]

TCAM entry seq#: 4 Key: [BID: 0 MAC: 0000.0022.2226]
HW: 0x22004c00 0x00000001 0x00000000 0x01280001
SW: 0x22004c00 0x00000001 0x00000000 0x01280001

SMAC: action: FWD state: REFRESH
XID: 0/2/CPU0 : 1 (0x1280001)
DMAC: action: FWD, BridgePort type: AC
SHG ID : 0
Entry Flag : FWD
Entry Type : DYNAMIC
Local Switching: enabled
Next (tlu0) addr: 0x4c00
Control-word supported: No

Destination AC: Gi0/2/0/1.1 (ifh: 0x1280002)

TLU1          : 0x4c00
[HW: 0x00000000 0x00013c00 0x00000000 0x00000100]
  label: 0 num of labels: 0
  entry type: FWD next ptr: 0x00013c00
  num of entries: 1
  BGP next-hop: 0.0.0.0

TLU2          : 0x1013c00
[HW: 0x00000008 0x00000000 0x00001000 0x00ba0000]
  label1: 1 label2: 0
  num of labels: 1 next ptr: 0x0000ba00

TLU3          : 0x200ba00
[HW: 0x00010000 0x00000000 0x00000000 0x000c0000]
  num. entries : 1
  num. labels  : 0
  label 1     : 0
  label 2     : 0
  next ptr    : 0xc00

TLU4          : 0x3000c00
[HW: 0x00000000 0x20082000 0x01280040 0x00020000]
  dest. addr   : 0x20
  sponge queue : 130
  egress port  : 0x128004
  rp destined  : no
  rp drop      : no
  hash type    : 0
  uidb index   : 0x2

Mac Address: 0000.0022.2227, LC learned: 0/2/CPU0
Age: 0d 0h 0m 21s, Flag: local

```


show l2vpn forwarding bridge-domain mac-address (VPLS)

```

INGRESS MAC [version, state]: [1, CREATED]

TCAM entry seq#: 5 Key: [BID: 0 MAC: 0000.0022.2227]
HW: 0x22004c00 0x00000001 0x00000000 0x01280001
SW: 0x22004c00 0x00000001 0x00000000 0x01280001

SMAC: action: FWD state: REFRESH
XID: 0/2/CPU0 : 1 (0x1280001)
DMAC: action: FWD, BridgePort type: AC
SHG ID : 0
Entry Flag : FWD
Entry Type : DYNAMIC
Local Switching: enabled
Next (tlu0) addr: 0x4c00
Control-word supported: No

Destination AC: Gi0/2/0/1.1 (ifh: 0x1280002)

TLU1 : 0x4c00
[HW: 0x00000000 0x00013c00 0x00000000 0x00000100]
label: 0 num of labels: 0
entry type: FWD next ptr: 0x00013c00
num of entries: 1
BGP next-hop: 0.0.0.0

TLU2 : 0x1013c00
[HW: 0x00000008 0x00000000 0x00001000 0x00ba0000]
label1: 1 label2: 0
num of labels: 1 next ptr: 0x0000ba00

TLU3 : 0x200ba00
[HW: 0x00010000 0x00000000 0x00000000 0x000c0000]
num. entries : 1
num. labels : 0
label 1 : 0
label 2 : 0
next ptr : 0xc00

TLU4 : 0x3000c00
[HW: 0x00000000 0x20082000 0x01280040 0x00020000]
dest. addr : 0x20
sponge queue : 130
egress port : 0x128004
rp destined : no
rp drop : no
hash type : 0
uidb index : 0x2

Mac Address: 0000.0022.2228, LC learned: 0/2/CPU0
Age: 0d 0h 0m 21s, Flag: local

INGRESS MAC [version, state]: [1, CREATED]

TCAM entry seq#: 6 Key: [BID: 0 MAC: 0000.0022.2228]
HW: 0x22004c00 0x00000001 0x00000000 0x01280001
SW: 0x22004c00 0x00000001 0x00000000 0x01280001

SMAC: action: FWD state: REFRESH
XID: 0/2/CPU0 : 1 (0x1280001)
DMAC: action: FWD, BridgePort type: AC
SHG ID : 0
Entry Flag : FWD
Entry Type : DYNAMIC
Local Switching: enabled
Next (tlu0) addr: 0x4c00
Control-word supported: No

Destination AC: Gi0/2/0/1.1 (ifh: 0x1280002)

TLU1 : 0x4c00

```

```

[HW: 0x00000000 0x00013c00 0x00000000 0x00000100]
  label:          0      num of labels: 0
  entry type:      FWD    next ptr:      0x00013c00
  num of entries:  1
  BGP next-hop:    0.0.0.0

TLU2              : 0x1013c00
[HW: 0x00000008 0x00000000 0x00001000 0x00ba0000]
  label1:          1      label2:          0
  num of labels:    1      next ptr: 0x0000ba00

TLU3              : 0x200ba00
[HW: 0x00010000 0x00000000 0x00000000 0x000c0000]
  num. entries : 1
  num. labels  : 0
  label 1      : 0
  label 2      : 0
  next ptr     : 0xc00

TLU4              : 0x3000c00
[HW: 0x00000000 0x20082000 0x01280040 0x00020000]
  dest. addr   : 0x20
  sponge queue : 130
  egress port  : 0x128004
  rp destined  : no
  rp drop      : no
  hash type    : 0
  uidb index   : 0x2

Mac Address: 0000.0022.2229, LC learned: 0/2/CPU0
Age: 0d 0h 0m 21s, Flag: local

```

Related Commands

Command	Description
show l2vpn forwarding bridge-domain (VPLS), page 140	Displays information on the bridge that is used by the forwarding layer.

shutdown (Bridge Domain)

To shut down a bridge domain to bring the bridge and all attachment circuits and pseudowires under it to admin down state, use the **shutdown** command in L2VPN bridge group bridge domain configuration mode. To re-enable the bridge domain, use the **no** form of this command.

shutdown

no shutdown

Syntax Description This command has no arguments or keywords.

Command Default By default, the bridge is not shutdown.

Command Modes L2VPN bridge group bridge domain configuration

Command History	Release	Modification
	Release 3.8.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

When a bridge domain is disabled, all VFIs associated with the bridge domain are disabled. You can still attach or detach members to or from the bridge domain as well as the VFIs associated with the bridge domain.

Task ID	Task ID	Operations
	l2vpn	read, write

Examples The following example shows how to disable the bridge domain named bar:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# shutdown
```

Related Commands	Command	Description
	bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.

Command	Description
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.

shutdown (VFI)

To disable virtual forwarding interface (VFI), use the **shutdown** command in L2VPN bridge group bridge domain VFI configuration mode. To re-enable VFI, use the **no** form of this command.

shutdown

no shutdown

Syntax Description This command has no arguments or keywords.

Command Default By default, the VFI is not shutdown.

Command Modes L2VPN bridge group bridge domain VFI configuration

Command History	Release	Modification
	Release 3.8.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	l2vpn	read, write

Examples The following example shows how to disable VFI:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# vfi v1
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-vfi)# shutdown
```

Related Commands	Command	Description
	bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
	bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
	l2vpn, page 37	Enters L2VPN configuration mode.

Command	Description
mpls static label (VPLS), page 121	Configures the MPLS static labels and the static labels for the access pseudowire configuration.
neighbor (VPLS), page 125	Adds an access pseudowire port to a bridge domain or a pseudowire to a bridge virtual forwarding interface (VFI).

static-address (VPLS)

To add static entries to the MAC address for filtering, use the **static-address** command in L2VPN bridge group bridge domain MAC configuration mode. To remove entries profiled by the combination of a specified entry information, use the **no** form of this command.

static-address *MAC-address* **drop**

no static-address *MAC-address* **drop**

Syntax Description

<i>MAC-address</i>	Static MAC address that is used to filter on the bridge domain.
drop	Drops all traffic that is going to the configured MAC address.

Command Default

No static MAC address is configured.

Command Modes

L2VPN bridge group bridge domain MAC configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to add static MAC entries in L2VPN bridge group bridge domain MAC configuration mode. This entry causes all packets with destination MAC address 1.1.1 to be dropped.

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# mac
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac)# static-address 1.1.1 drop
```

Related Commands

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mac (VPLS), page 117	Enters L2VPN bridge group bridge domain MAC configuration mode.

static-mac-address (VPLS)

To configure the static MAC address to associate a remote MAC address with a pseudowire or any other bridge interface, use the **static-mac-address** command in the appropriate L2VPN bridge group bridge domain configuration submode. To disable this feature, use the **no** form of this command.

static-mac-address *MAC-address*

no static-mac-address *MAC-address*

Syntax Description	<i>MAC-address</i> Static address to add to the MAC address.	
Command Default	None	
Command Modes	L2VPN bridge group bridge domain VFI pseudowire configuration L2VPN bridge group bridge domain attachment circuit configuration	
Command History	Release	Modification
	Release 3.8.0	This command was introduced.
Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.	
Task ID	Task ID	Operations
	l2vpn	read, write

Examples

The following example shows how to associate a remote MAC address with a pseudowire:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# vfi model
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-vfi)# neighbor 10.1.1.2 pw-id 1000
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-vfi-pw)# static-mac-address 1.1.1
```

The following example shows how to associate a GigabitEthernet interface from a bridge domain to static MAC address 1.1.1:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
```

```
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# interface GigabitEthernet 0/1/0/0
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-ac)# static-mac-address 1.1.1
```

The following example shows how to associate an access pseudowire to static MAC address 2.2.2:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# neighbor 10.1.1.2 pw-id 2000
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-pw)# static-mac-address 2.2.2
```

Related Commands

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mpls static label (VPLS), page 121	Configures the MPLS static labels and the static labels for the access pseudowire configuration.
neighbor (VPLS), page 125	Adds an access pseudowire port to a bridge domain or a pseudowire to a bridge virtual forwarding interface (VFI).
vfi (VPLS), page 176	Configures virtual forwarding interface (VFI) parameters.

time (VPLS)

To configure the maximum aging time, use the **time** command in L2VPN bridge group bridge domain MAC aging configuration mode. To disable this feature, use the **no** form of this command.

time *seconds*

no time *seconds*

Syntax Description

<i>seconds</i>	MAC address table entry maximum age. The range is from 120 to 1000000 seconds. Aging time is counted from the last time that the switch saw the MAC address. The default value is 300 seconds.
----------------	--

Command Default

seconds: 300

Command Modes

L2VPN bridge group bridge domain MAC aging configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

If no packets are received from the MAC address for the duration of the maximum aging time, the dynamic MAC entry previously learned is removed from the forwarding table.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to increase the maximum aging time to 600 seconds. After 600 seconds of inactivity from a MAC address, the MAC address is removed from the forwarding table.

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# mac
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac)# aging
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac-aging)# time 600
```

Related Commands

Command	Description
aging (VPLS), page 101	Enters the MAC aging configuration submode to set the aging parameters such as time and type.
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mac (VPLS), page 117	Enters L2VPN bridge group bridge domain MAC configuration mode.
type (VPLS), page 174	Configures the type for MAC address aging.

type (VPLS)

To configure the type for MAC address aging, use the **type** command in L2VPN bridge group bridge domain MAC aging configuration mode. To disable this feature, use the **no** form of this command.

type {absolute| inactivity}

no type {absolute| inactivity}

Syntax Description

absolute	Configures the absolute aging type.
inactivity	Configures the inactivity aging type.

Command Default

By default, the inactivity type is configured.

Command Modes

L2VPN bridge group bridge domain MAC aging configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

In general, the type is set to inactivity. With an inactivity type configuration, a MAC address is removed from the forwarding table after the MAC address is inactive for the configured aging time.

With an absolute type configuration, a MAC address is always removed from the forwarding table after the aging time has elapsed once it is initially learned.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to configure the MAC address aging type to absolute for every member of the bridge domain named bar:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# mac
```

```
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac)# aging  
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac-aging)# type absolute
```

Related Commands

Command	Description
aging (VPLS), page 101	Enters the MAC aging configuration submode to set the aging parameters such as time and type.
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mac (VPLS), page 117	Enters L2VPN bridge group bridge domain MAC configuration mode.
time (VPLS), page 172	Configures the maximum aging time.

vfi (VPLS)

To configure virtual forwarding interface (VFI) parameters and to enter L2VPN bridge group bridge domain VFI configuration mode, use the **vfi** command in L2VPN bridge group bridge domain configuration mode. To remove all configurations that are made under the specified VFI, use the **no** form of this command.

vfi *vfi-name*

no vfi *vfi-name*

Syntax Description

<i>vfi-name</i>	Name of the specified virtual forwarding interface.
-----------------	---

Command Default

None

Command Modes

L2VPN bridge group bridge domain configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

Use the **vfi** command to enter L2VPN bridge group bridge domain VFI configuration mode.

You cannot configure a pseudowire directly under a bridge domain. Therefore, a pseudowire must be configured under a VFI, which is configured under a bridge domain.

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to create a VFI:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# vfi v1
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-vfi)#
```

Related Commands

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mpls static label (VPLS), page 121	Configures the MPLS static labels and the static labels for the access pseudowire configuration.
neighbor (VPLS), page 125	Adds an access pseudowire port to a bridge domain or a pseudowire to a bridge virtual forwarding interface (VFI).

withdraw (VPLS)

To enable MAC address withdrawal for a specified bridge domain, use the **withdraw** command in L2VPN bridge group bridge domain MAC configuration mode. To disable this feature, use the **no** form of this command

withdraw { disable }

no withdraw { disable }

Syntax Description

disable	Disables MAC address withdrawal.
----------------	----------------------------------

Command Default

By default, MAC address withdrawal is enabled.

Command Modes

L2VPN bridge group bridge domain MAC configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
l2vpn	read, write

Examples

The following example shows how to enable disable MAC withdrawal:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# mac
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac)# withdraw disable
```

The following example shows how to disable sending MAC withdrawal messages to access pseudowires:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# l2vpn
RP/0/RP0/CPU0:router(config-l2vpn)# bridge group 1
RP/0/RP0/CPU0:router(config-l2vpn-bg)# bridge-domain bar
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd)# mac
RP/0/RP0/CPU0:router(config-l2vpn-bg-bd-mac)# withdraw access-pw disable
```

Related Commands

Command	Description
bridge-domain (VPLS), page 103	Establishes a bridge domain and enters L2VPN bridge group bridge domain configuration mode.
bridge group (VPLS), page 105	Creates a bridge group so that it can contain bridge domains and then to assign network interfaces to the bridge domain.
l2vpn, page 37	Enters L2VPN configuration mode.
mac (VPLS), page 117	Enters L2VPN bridge group bridge domain MAC configuration mode.

 **withdraw (VPLS)**



Generic Routing Encapsulation Commands

This module describes the commands used to configure generic routing encapsulation (GRE).

For detailed information about GRE concepts, configuration tasks, and examples, refer to the *Cisco IOS XR Virtual Private Network Configuration Guide for the Cisco CRS Router*.

- [interface tunnel-ip, page 182](#)
- [keepalive, page 183](#)
- [tunnel destination, page 184](#)
- [tunnel dfbit disable, page 186](#)
- [tunnel mode, page 188](#)
- [tunnel source, page 190](#)
- [tunnel tos, page 192](#)
- [tunnel ttl, page 194](#)

interface tunnel-ip

To configure a tunnel interface, use the **interface tunnel-ip** command in the interface global configuration mode. To disable this feature, use the **no** form of this command.

interface tunnel-ip *number*

no interface tunnel-ip *number*

Syntax Description	<div><i>number</i></div> <div>Specifies the instance number of the interface to be configured.</div>					
Command Default	None					
Command Modes	interface configuration					
Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>Release 3.9.0</td><td>This command was introduced.</td></tr></table>		Release	Modification	Release 3.9.0	This command was introduced.
Release	Modification					
Release 3.9.0	This command was introduced.					
Usage Guidelines	<p>To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.</p> <p>Use the interface tunnel-ip command to enter the interface global configuration mode.</p>					
Task ID	<table><tr><th>Task ID</th><th>Operations</th></tr><tr><td>interface</td><td>read, write</td></tr></table>		Task ID	Operations	interface	read, write
Task ID	Operations					
interface	read, write					
Examples	<p>This example shows how to configure a tunnel interface:</p> <pre>RP/0/RP0/CPU0:router# configure RP/0/RP0/CPU0:router(config)# interface tunnel-ip 400 RP/0/RP0/CPU0:router(config-if)#</pre>					

keepalive

To enable keepalive for a tunnel interface, use the **keepalive** command. To remove keepalive, use the **no** form of this command.

keepalive [*time_in_seconds* [*retry_num*]]

no keepalive

Syntax Description

<i>time_in_seconds</i>	Specifies the frequency (in seconds) at which keepalive check is performed. The default is 10 seconds. The minimum value is 1 second.
<i>retry_num</i>	Specifies the number of keepalive retries before declaring that a tunnel destination is unreachable. The default is 3 retries. The minimum value is 1 retry.

Command Default

None

Command Modes

interface configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Use the **keepalive** command to enable keepalive for a tunnel interface.

Task ID

Task ID	Operations
interface	read, write

Examples

The following example shows how to configure interface tunnel:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface tunnel-ip 400
RP/0/RP0/CPU0:router(config-if)# keepalive 30
```

tunnel destination

To specify a tunnel interface's destination, use the **tunnel destination** command. To remove the destination, use the **no** form of this command.



Note

The tunnel will not be operational until the tunnel destination is specified.

tunnel destination *A.B.C.D*

no tunnel destination *A.B.C.D*

Syntax Description

<i>A.B.C.D</i>	Specifies the IPv4 address of the host destination.
----------------	---

Command Default

None

Command Modes

interface configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
interface	read, write

Examples

The following example shows how to configure interface tunnel:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface tunnel-ip 400
RP/0/RP0/CPU0:router(config-if)# tunnel destination 10.10.10.1
```

Related Commands

Command	Description
tunnel dfbit disable , page 186	Configures the DF bit setting in the tunnel transport header.

Command	Description
tunnel mode, page 188	Sets the encapsulation mode of the tunnel interface.
tunnel source, page 190	Sets a tunnel interface's source address.
tunnel tos, page 192	Specifies the value of the TOS field in the tunnel encapsulating packets.
tunnel ttl, page 194	Configures the Time-To-Live (TTL) for packets entering the tunnel.

tunnel dfbit disable

To configure the DF bit setting in the tunnel transport header, use the **tunnel dfbit disable** command. To revert to the default DF bit setting value, use the **no** form of this command.

tunnel dfbit disable

no tunnel dfbit disable

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes interface configuration

Command History	Release	Modification
	Release 3.9.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **tunnel dfbit disable** command specifies the DF bit setting in the tunnel transport header. The default is to always set the DF bit. Hence, use the **tunnel dfbit disable** command to override the default.

Task ID	Task ID	Operations
	interface	read, write

Examples The following example shows how to configure interface tunnel:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface tunnel-ip 400
RP/0/RP0/CPU0:router(config-if)# tunnel dfbit disable
```

Related Commands	Command	Description
	tunnel destination, page 184	Specifies a tunnel interface's destination.
	tunnel mode, page 188	Sets the encapsulation mode of the tunnel interface.
	tunnel source, page 190	Sets a tunnel interface's source address.

Command	Description
tunnel tos, page 192	Specifies the value of the TOS field in the tunnel encapsulating packets.
tunnel ttl, page 194	Configures the Time-To-Live (TTL) for packets entering the tunnel.

tunnel mode

To set the encapsulation mode of the tunnel interface, use the **tunnel mode** command. To remove the encapsulation mode, use the **no** form of this command.



Note

The tunnel will not be operational until the encapsulation mode is specified. Only one mode can be specified for a tunnel instance at any given time.

tunnel mode gre ipv4

no tunnel mode

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

interface configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
interface	read, write

Examples

The following example shows how to configure interface tunnel:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface tunnel-ip 400
RP/0/RP0/CPU0:router(config-if)# tunnel mode gre ipv4
```

Related Commands

Command	Description
tunnel dfbit disable , page 186	Configures the DF bit setting in the tunnel transport header.

Command	Description
tunnel destination, page 184	Specifies a tunnel interface's destination.
tunnel source, page 190	Sets a tunnel interface's source address.
tunnel tos, page 192	Specifies the value of the TOS field in the tunnel encapsulating packets.
tunnel ttl, page 194	Configures the Time-To-Live (TTL) for packets entering the tunnel.

tunnel source

To set a tunnel interface's source address, use the **tunnel source** command. To remove the source address, use the **no** form of this command.



Note

The tunnel will not be operational until the tunnel source is specified.

tunnel source {interface_name| A.B.C.D}

no tunnel source {interface_name| A.B.C.D}

Syntax Description

<i>interface_name</i>	Specifies the name of the interface whose IP address will be used as the source address of the tunnel. The interface name can be of a loopback interface or a physical interface.
<i>A.B.C.D</i>	Specifies the IPv4 address to use as the source address for packets in the tunnel.

Command Default

None

Command Modes

interface configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
interface	read, write

Examples

The following example shows how to configure interface tunnel:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface tunnel-ip 400
RP/0/RP0/CPU0:router(config-if)# tunnel source 10.10.10.1
```

Related Commands

Command	Description
tunnel destination, page 184	Specifies a tunnel interface's destination.
tunnel dfbit disable, page 186	Configures the DF bit setting in the tunnel transport header.
tunnel mode, page 188	Sets the encapsulation mode of the tunnel interface.
tunnel tos, page 192	Specifies the value of the TOS field in the tunnel encapsulating packets.
tunnel ttl, page 194	Configures the Time-To-Live (TTL) for packets entering the tunnel.

tunnel tos

To specify the value of the TOS field in the tunnel encapsulating packets, use the **tunnel tos** command. To revert to the default TOS value, use the **no** form of this command.

tunnel tos *tos_value*

no tunnel tos *tos_value*

Syntax Description

<i>tos_value</i>	Specifies the value of the TOS field in the tunnel encapsulating packets. The TOS value ranges between 0 to 255.
------------------	--

Command Default

Copies the TOS/COS bits of the internal IP header to the GRE IP header. In case of labeled payload, EXP bits are copied to TOS bits of the GRE IP header.

Command Modes

interface configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
interface	read, write

Examples

The following example shows how to configure interface tunnel:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface tunnel-ip 400
RP/0/RP0/CPU0:router(config-if)# tunnel tos 100
```

Related Commands

Command	Description
tunnel destination , page 184	Specifies a tunnel interface's destination.
tunnel dfbit disable , page 186	Configures the DF bit setting in the tunnel transport header.
tunnel mode , page 188	Sets the encapsulation mode of the tunnel interface.

Command	Description
tunnel source , page 190	Sets a tunnel interface's source address.
tunnel ttl , page 194	Configures the Time-To-Live (TTL) for packets entering the tunnel.

tunnel ttl

To configure the Time-To-Live (TTL) for packets entering the tunnel, use the **tunnel ttl** command. To revert to the default TTL value, use the **no** form of this command.

tunnel ttl *ttl_value*

no tunnel ttl *ttl_value*

Syntax Description

<i>ttl_value</i>	Specifies the value of TTL for packets entering the tunnel. The TTL value ranges between 1 to 255.
------------------	--

Command Default

The default TTL value is set to 255.

Command Modes

interface configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

This command specifies the Time-To-Live for packets entering the tunnel so that the packets are not dropped inside the carrier network before reaching the tunnel destination.

Task ID

Task ID	Operations
interface	read, write

Examples

The following example shows how to configure interface tunnel:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface tunnel-ip 400
RP/0/RP0/CPU0:router(config-if)# tunnel source 10.10.10.1
```

Related Commands

Command	Description
tunnel destination , page 184	Specifies a tunnel interface's destination.

Command	Description
tunnel dfbit disable , page 186	Configures the DF bit setting in the tunnel transport header.
tunnel mode , page 188	Sets the encapsulation mode of the tunnel interface.
tunnel tos , page 192	Specifies the value of the TOS field in the tunnel encapsulating packets.
tunnel source , page 190	Sets a tunnel interface's source address.

 tunnel ttl



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