L2VPN Pseudowire Switching

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This feature module explains how to configure L2VPN Pseudowire Switching, which extends layer 2 virtual private network (L2VPN) pseudowires across an interautonomous system (inter-AS) boundary or across two separate multiprotocol label switching (MPLS) networks.

History for the L2VPN Pseudowire Switching Feature

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
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<tbody>
<tr>
<td>12.0(31)S</td>
<td>L2VPN Pseudowire Switching for Any Transport over MPLS (AToM) was introduced on the Cisco 12000 series routers.</td>
</tr>
<tr>
<td>12.2(28)SB</td>
<td>This feature was integrated into Cisco IOS Release 12.2(28)SB for the Cisco 7200 and 7301 series routers.</td>
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<tr>
<td>12.2(33)SRB</td>
<td>This feature was integrated into Cisco IOS Release 12.2(33)SRB.</td>
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Use Cisco Feature Navigator to find information about platform support and Cisco IOS and Catalyst OS software image support. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

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Prerequisites for L2VPN Pseudowire Switching

For the Cisco 12000 series routers, the L2VPN Pseudowire Switching feature for AToM is supported on the following engines:

- E2
- E3
- E4+
- E5
- E6

For engines that do not support this feature, the packets are punted to the software and forwarded through the slow path.

**Note**

Engines E1 and E4 do not support L2VPN Pseudowire Switching, even in the slow path.

Restrictions for L2VPN Pseudowire Switching

- L2VPN Pseudowire Switching is supported with AToM.
- Only static, on-box provisioning is supported.
- Sequencing numbers in AToM packets are not processed by L2VPN Pseudowire Switching. The feature blindly passes the sequencing data through the xconnect packet paths, a process that is called transparent sequencing. The endpoint PE-CE connections enforce the sequencing.
- You can ping the adjacent next-hop PE router. End-to-end LSP pings are not supported.
- Do not configure IP or Ethernet interworking on a router where L2VPN Pseudowire Switching is enabled. Instead, configure interworking on the routers at the edge PEs of the network.
- The control word negotiation results must match. If either segment does not negotiate the control word, the control word is disabled for both segments.
- AToM Graceful Restart is negotiated independently on each pseudowire segment. If there is a transient loss of the LDP session between two AToM PE routers, packets continue to flow.
- Per-pseudowire quality of service (QoS) is not supported. Traffic Engineering (TE) tunnel selection is supported.
- Attachment circuit interworking is not supported.

Information About L2VPN Pseudowire Switching

To configure the L2VPN Pseudowire Switching feature, you should understand the following concepts:

- How L2VPN Pseudowire Switching Works, page 3
- How Packets Are Manipulated at the L2VPN Pseudowire Switching Aggregation Point, page 3
How L2VPN Pseudowire Switching Works

L2VPN Pseudowire Switching allows the user to extend L2VPN pseudowires across an inter-AS boundary or across two separate MPLS networks, as shown in Figure 1 and Figure 2. L2VPN Pseudowire Switching connects two or more contiguous pseudowire segments to form an end-to-end multihop pseudowire. This end-to-end pseudowire functions as a single point-to-point pseudowire.

As shown in Figure 2, L2VPN Pseudowire Switching enables you to keep the IP addresses of the edge PE routers private across inter-AS boundaries. You can use the IP address of the autonomous system boundary routers (ASBRs) and treat them as pseudowire aggregation (PE-agg) routers. The ASBRs join the pseudowires of the two domains.

L2VPN Pseudowire Switching also enables you to keep different administrative or provisioning domains to manage the end-to-end service. At the boundaries of these networks, PE-agg routers delineate the management responsibilities.

How Packets Are Manipulated at the L2VPN Pseudowire Switching Aggregation Point

Switching AToM packets between two AToM pseudowires is the same as switching any MPLS packet. The MPLS switching data path switches AToM packets between two AToM pseudowires. The following list explains exceptions:

- The outgoing virtual circuit (VC) label replaces the incoming VC label in the packet. New Internal Gateway Protocol (IGP) labels and Layer 2 encapsulation are added.
• The incoming VC label time-to-live (TTL) field is decremented by one and copied to the outgoing VC label TTL field.
• The incoming VC label EXP value is copied to the outgoing VC label EXP field.
• The outgoing VC label ‘Bottom of Stack’ S bit in the outgoing VC label is set to 1.
• AToM control word processing is not performed at the L2VPN Pseudowire Switching aggregation point. Sequence numbers are not validated. Use the Router Alert label for LSP Ping; do not require control word inspection to determine an LSP Ping packet.

How to Configure L2VPN Pseudowire Switching

Use the following procedure to configure L2VPN Pseudowire Switching on each of the PE-agg routers.

Prerequisites

• This procedure assumes that you have configured basic AToM L2VPNs. This procedure does not explain how to configure basic AToM L2VPNs that transport Layer 2 packets over an MPLS backbone. For information on the basic configuration, see Any Transport over MPLS.
• For inter-Autonomous configurations, ASBRs require a labeled interface.

Restrictions

In this configuration, you are limited to two neighbor commands after entering the l2 vfi command.

SUMMARY STEPS

1. enable
2. configure terminal
3. l2 vfi name point-to-point
4. neighbor ip-address vcid encapsulation mpls | pw-class pw-class-name
5. exit
6. exit
7. show mpls l2transport vc [vcid [vc-id | vc-id-min vc-id-max]] [interface name [local-circuit-id]] [destination ip-address | name] [detail]
8. show vfi [vfi-name]
9. ping [protocol] [tag] {host-name | system-address}
## DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
</table>
| **Step 1** enable | Enables privileged EXEC mode.  
- Enter your password if prompted. |
| **Example:**  
Router> enable | |
| **Step 2** configure terminal | Enters global configuration mode. |
| **Example:**  
Router# configure terminal | |
| **Step 3** l2 vfi name point-to-point | Creates a point-to-point Layer 2 virtual forwarding interface (VFI) and enters VFI configuration mode. |
| **Example:**  
Router(config)# l2 vfi atomtunnel point-to-point | |
| **Step 4** neighbor ip-address vcid encapsulation mpls | Sets up an emulated VC. Specify the IP address and the VC ID of the remote router. Also specify the pseudowire class to use for the emulated VC. |
| **Example:**  
Router(config-vfi)# neighbor 10.0.0.1 100 pw-class mpls | **Note** Only two `neighbor` commands are allowed for each `l2 vfi point-to-point` command. |
| **Step 5** exit | Exits VFI configuration mode. |
| **Example:**  
Router(config-vfi)# exit | |
| **Step 6** exit | Exits global configuration mode. |
| **Example:**  
Router(config)# exit | |
| **Step 7** show mpls l2transport vc | Verifies that the L2VPN Pseudowire Switching session has been established. |
| **Example:**  
Router# show mpls l2transport vc | |
| **Step 8** show vfi [vfi-name] | Verifies that a point-to-point VFI has been established. |
| **Example:**  
Router# show vfi atomtunnel | |
| **Step 9** ping [protocol] [tag] (host-name | When issued from the CE routers, this command verifies end-to-end connectivity. |
| **Example:**  
Router# ping 10.1.1.1 | system-address) |
Examples

The following example displays the output of the `show mpls l2transport vc` command:

```
Router# show mpls l2transport vc

Local intf     Local circuit              Dest address    VC ID Status
-------------  -------------------------- --------------- ----- ----
MPLS PW        10.0.1.1:100               10.0.1.1        100 UP
MPLS PW        10.0.1.1:100               10.0.1.1        100 UP
```

The following example displays the output of the `show vfi` command:

```
Router# show vfi

VFI name: test, type: point-to-point
Neighbors connected via pseudowires:

<table>
<thead>
<tr>
<th>Router ID</th>
<th>Pseudowire ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0.1.1</td>
<td>100</td>
</tr>
<tr>
<td>10.0.1.1</td>
<td>100</td>
</tr>
</tbody>
</table>
```

Configuration Examples for L2VPN Pseudowire Switching

This section provides the following configuration example:

- L2VPN Pseudowire Switching in an Inter-AS Configuration: Example, page 6

L2VPN Pseudowire Switching in an Inter-AS Configuration: Example

Two separate autonomous systems are able to pass L2VPN packets, because the two PE-agg routers have been configured with L2VPN Pseudowire Switching. This example configuration is shown in Figure 3.
Figure 3  L2VPN Pseudowire Switching in an Inter-Autonomous System
### PE-agg-1

```plaintext
version 12.0
service timestamps debug uptime
service timestamps log uptime
service password-encryption
!
hostname [pe-agg1]
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$Q0Bb$32sIU82pHRgyddWaeB4zs/

ip subnet-zero
ip cef
no ip domain-lookup
mpls label protocol ldp
pseudowire-class SW-PW
encapsulation mpls
!
12 vfi PW-SWITCH-1 point-to-point
neighbor 172.17.255.3 100 pw-class SW-PW
neighbor 172.16.255.1 16 pw-class SW-PW
!
interface Loopback0
ip address 172.16.255.3 255.255.255.255
no ip directed-broadcast
!
interface Serial0/0
ip address 172.16.255.3 255.255.255.255
no ip directed-broadcast
mpls ip
!
interface Serial1/0
ip address 192.168.0.1 255.255.255.255
no ip directed-broadcast
mpls bgp forwarding
!
router ospf 16
log-adjacency-changes
network 172.16.0.0 0.0.255.255 area 0
!
router bgp 65016
no synchronization
bgp log-neighbor-changes
network 172.16.255.3 mask 255.255.255.255
neighbor 192.168.0.2 remote-as 65017
neighbor 192.168.0.2 send-label
no auto-summary
!
ip classless
control-plane
!
line con 0
exec-timeout 0 0
line aux 0
line vty 0 4
login
!
no cns aaa enable
end
```

### PE-agg-2

```plaintext
version 12.0
service timestamps debug uptime
service timestamps log uptime
service password-encryption
!
hostname [pe-agg2]
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$32jd$zQRfxXzjstr4llV9DcWf7/

ip subnet-zero
ip cef
no ip domain-lookup
mpls label protocol ldp
pseudowire-class SW-PW
encapsulation mpls
!
12 vfi PW-SWITCH-1 point-to-point
neighbor 172.17.255.3 100 pw-class SW-PW
neighbor 172.16.255.1 16 pw-class SW-PW
!
interface Loopback0
ip address 172.17.255.3 255.255.255.255
no ip directed-broadcast
!
interface Serial0/0
ip address 172.17.255.3 255.255.255.255
no ip directed-broadcast
mpls ip
!
interface Serial1/0
ip address 192.168.0.1 255.255.255.255
no ip directed-broadcast
mpls ip
!
interface Serial1/0
ip address 192.168.0.2 255.255.255.255
no ip directed-broadcast
mpls bgp forwarding
!
router ospf 17
log-adjacency-changes
network 172.17.0.0 0.0.255.255 area 0
!
router bgp 65017
no synchronization
bgp log-neighbor-changes
network 172.17.255.3 mask 255.255.255.255
neighbor 192.168.0.1 remote-as 65017
neighbor 192.168.0.1 send-label
no auto-summary
!
ip classless
control-plane
!
line con 0
exec-timeout 0 0
line aux 0
line vty 0 4
login
!
no cns aaa enable
end
```
A-P1

version 12.0
service timestamps debug uptime
service timestamps log uptime
service password-encryption
!
hostname [a-p1]
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$eiUn$rTMnZiYnJxtMTP00NKpQQ/
!
ip subnet-zero
ip cef
no ip domain-lookup
mpls label protocol ldp
!
interface Loopback0
  ip address 172.16.255.2 255.255.255.255
  no ip directed-broadcast
!
interface Serial0/0
  ip address 172.16.0.5 255.255.255.252
  no ip directed-broadcast
  mpls ip
!
interface Serial1/0
  ip address 172.16.0.2 255.255.255.252
  no ip directed-broadcast
  mpls ip
!
router ospf 16
  log-adjacency-changes
  network 172.16.0.0 0.0.255.255 area 0
!
ip classless
!
control-plane
!
line con 0
  exec-timeout 0 0
  line aux 0
  line vty 0 4
  login
!
no cns aaa enable
end

B-P1

version 12.0
service timestamps debug uptime
service timestamps log uptime
service password-encryption
!
hostname [b-p1]
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$svU/$2JmJZ/5gxIW4nVXVniIJe1
!
ip subnet-zero
ip cef
no ip domain-lookup
mpls label protocol ldp
!
interface Loopback0
  ip address 172.17.255.2 255.255.255.255
  no ip directed-broadcast
!
interface Serial0/0
  ip address 172.17.0.5 255.255.255.252
  no ip directed-broadcast
  mpls ip
!
interface Serial1/0
  ip address 172.17.0.2 255.255.255.252
  no ip directed-broadcast
  mpls ip
!
router ospf 17
  log-adjacency-changes
  network 172.17.0.0 0.0.255.255 area 0
!
ip classless
!
control-plane
!
line con 0
  exec-timeout 0 0
  line aux 0
  line vty 0 4
  login
!
no cns aaa enable
end
### Configuration Examples for L2VPN Pseudowire Switching

<table>
<thead>
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<th>PE2</th>
</tr>
</thead>
<tbody>
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<td>version 12.0</td>
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<td>service timestamps debug uptime</td>
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<td>service password-encryption</td>
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<tr>
<td>!</td>
<td>hostname [pe1]</td>
</tr>
<tr>
<td>!</td>
<td>hostname [pe2]</td>
</tr>
<tr>
<td>boot-start-marker</td>
<td>boot-start-marker</td>
</tr>
<tr>
<td>boot-end-marker</td>
<td>boot-end-marker</td>
</tr>
<tr>
<td>!</td>
<td>enable secret 5 $1$9z8F$2A1/YLc6NB6d.WLQXP08z1</td>
</tr>
<tr>
<td>!</td>
<td>enable secret 5 $1$rT.V$8Z6Dy/r8/eaRdx2TR/O5r/</td>
</tr>
<tr>
<td>ip subnet-zero</td>
<td>ip subnet-zero</td>
</tr>
<tr>
<td>ip cef</td>
<td>ip cef</td>
</tr>
<tr>
<td>no ip domain-lookup</td>
<td>no ip domain-lookup</td>
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<td>mpls label protocol ldp</td>
<td>mpls label protocol ldp</td>
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<td>pseudowire-class ETH-PW</td>
<td>pseudowire-class ETH-PW</td>
</tr>
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<td>encapsulation mpls</td>
<td>encapsulation mpls</td>
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<td>interface Loopback0</td>
</tr>
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</tr>
<tr>
<td>!</td>
<td>interface Loopback0</td>
</tr>
<tr>
<td></td>
<td>ip address 172.17.255.1 255.255.255.255</td>
</tr>
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<td>interface Ethernet0/0</td>
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</tr>
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<td>no ip address</td>
</tr>
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</tr>
<tr>
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<td>no cdp enable</td>
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<td>xconnect 172.17.255.3 17 pw-class ETH-PW</td>
</tr>
<tr>
<td>!</td>
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</tr>
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</tr>
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<td>interface Serial1/0</td>
</tr>
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<td>line con 0</td>
</tr>
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</tr>
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<td>ip cef</td>
</tr>
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<td>no ip domain-lookup</td>
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<td>interface Ethernet0/0</td>
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<tr>
<td>ip classless</td>
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Additional References

The following sections provide references related to L2VPN Pseudowire Switching.

Related Documents

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<th>Related Topic</th>
<th>Document Title</th>
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<td>Any Transport over MPLS</td>
<td>Any Transport over MPLS</td>
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<tr>
<td>Pseudowire redundancy</td>
<td>L2VPN Pseudowire Redundancy</td>
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<tr>
<td>High availability for AToM</td>
<td>AToM Graceful Restart</td>
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<tr>
<td>L2VPN interworking</td>
<td>L2VPN Interworking</td>
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<td>Layer 2 Local Switching</td>
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<td>Pseudowire Emulation Edge-to-Edge MIBs for Ethernet and Frame Relay Services</td>
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<tr>
<td>Packet sequencing</td>
<td>Any Transport over MPLS (AToM) Sequencing Support</td>
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Standards

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<td>Pseudowire Setup and Maintenance using LDP</td>
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<tr>
<td>draft-martini-pwe3-pw-switching-01.txt</td>
<td>Pseudo Wire Switching</td>
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MIBs

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<td>CISCO-IETF-PW-MIB</td>
<td>To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a></td>
</tr>
<tr>
<td>CISCO-IETF-PW-MPLS-MIB</td>
<td></td>
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<tr>
<td>CISCO-IETF-PW-ENET-MIB</td>
<td></td>
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<tr>
<td>CISCO-IETF-PW-FR-MIB</td>
<td></td>
</tr>
</tbody>
</table>

RFCs

<table>
<thead>
<tr>
<th>RFCs</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>—</td>
</tr>
</tbody>
</table>
Technical Assistance

<table>
<thead>
<tr>
<th>Description</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Cisco Support website provides extensive online resources, including</td>
<td><a href="http://www.cisco.com/techsupport">http://www.cisco.com/techsupport</a></td>
</tr>
<tr>
<td>documentation and tools for troubleshooting and resolving technical</td>
<td></td>
</tr>
<tr>
<td>issues with Cisco products and technologies. Access to most tools on the</td>
<td></td>
</tr>
<tr>
<td>Cisco Support website requires a Cisco.com user ID and password. If you</td>
<td></td>
</tr>
<tr>
<td>have a valid service contract but do not have a user ID or password, you</td>
<td></td>
</tr>
<tr>
<td>can register on Cisco.com.</td>
<td></td>
</tr>
</tbody>
</table>

Command Reference

This section documents modified commands only.

- `l2 vfi point-to-point`
- `neighbor (L2VPN Pseudowire Switching)`
- `show vfi`
To establish a point-to-point Layer 2 virtual forwarding interface (VFI) between two separate networks, use the `l2 vfi point-to-point` command in global configuration mode. To disable the connection, use the `no` form of this command.

```
l2 vfi name point-to-point
no l2 vfi name point-to-point
```

### Syntax Description

- **name**: Name of the connection between the two networks.

### Command Default

Point-to-point Layer 2 virtual forwarding interfaces are not created.

### Command Modes

Global configuration

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.0(31)S</td>
<td>This command was introduced.</td>
</tr>
<tr>
<td>12.2(28)SB</td>
<td>This command was integrated into Cisco IOS Release 12.2(28)SB.</td>
</tr>
<tr>
<td>12.2(33)SRB</td>
<td>This command was integrated into Cisco IOS Release 12.2(33)SRB.</td>
</tr>
</tbody>
</table>

### Usage Guidelines

If you disable L2VPN Pseudowire Switching with the `no l2 vfi point-to-point` command, the virtual circuits (VCs) are deleted.

### Examples

The following example establishes a point-to-point Layer 2 VFI:

```
Router(config)# l2 vfi atomvfi point-to-point
```

### Related Commands

- **Command**: `neighbor (L2VPN Pseudowire Switching)`
  - Description: Establishes the two routers with which to form a connection.
neighbor (L2VPN Pseudowire Switching)

To specify the routers that should form a point-to-point Layer 2 virtual forwarding interface (VFI) connection, use the `neighbor` command in L2 VFI point-to-point configuration mode. To disconnect the routers, use the `no` form of this command.

```
neighbor ip-address vc-id {encapsulation mpls |pw-class pw-class-name}
no neighbor ip-address vc-id {encapsulation mpls |pw-class pw-class-name}
```

**Syntax Description**
- `ip-address`: IP address of the VFI neighbor.
- `vc-id`: Virtual circuit (VC) identifier.
- `encapsulation mpls`: Encapsulation type.
- `pw-class`: Pseudowire type.
- `pw-class-name`: Name of the pseudowire you created when you established the pseudowire class.

**Command Default**
Routers do not form a point-to-point Layer 2 VFI connection.

**Command Modes**
L2 VFI point-to-point configuration

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.0(31)S</td>
<td>This command was introduced.</td>
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<tr>
<td>12.2(28)SB</td>
<td>This command was integrated into Cisco IOS Release 12.2(28)SB.</td>
</tr>
<tr>
<td>12.2(33)SRB</td>
<td>This command was integrated into Cisco IOS Release 12.2(33)SRB.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**
A maximum of two `neighbor` commands are allowed when you issue an `l2 vfi point-to-point` command.

**Examples**
The following example is a typical configuration of a Layer 2 VFI connection:
```
Router(config)# l2 vfi atom point-to-point
Router(config-vfi)# neighbor 10.10.10.10 1 encapsulation mpls
```

**Related Commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>l2 vfi point-to-point</code></td>
<td>Establishes a point-to-point Layer 2 VFI between two separate networks.</td>
</tr>
</tbody>
</table>
show vfi

To display information related to the virtual forwarding instance (VFI), use the `show vfi` command in privileged EXEC mode.

```
show vfi vfi-name
```

**Syntax Description**

- **vfi-name**  
  (Optional) Name of the VFI.

**Command Modes**

Privileged EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.0(31)S</td>
<td>This command was introduced.</td>
</tr>
<tr>
<td>12.2(28)SB</td>
<td>This command was integrated into Cisco IOS Release 12.2(28)SB.</td>
</tr>
<tr>
<td>12.2(33)SRA</td>
<td>This command was extended to show VPN ID information.</td>
</tr>
<tr>
<td>12.2(33)SRB</td>
<td>This command was updated to display VPLS Autodiscovery information.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows an example of VFI status. The VC ID in the output represents the VPN ID; the VC is identified by the combination of the destination address and the VC ID.

```
Router# show vfi VPLS-2

VFI name: VPLS-2, state: up
  VPN ID: 100
  Local attachment circuits:
    Vlan2
  Neighbors connected via pseudowires:
    Peer Address  VC ID  Split-horizon
    10.1.1.1      2      Y
    10.1.1.2      2      Y
    10.2.2.3      2      N
```

Table 1 explains the fields displayed in the output.

**Table 1 show vfi Command Field Descriptions**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VFI name</td>
<td>The name assigned to the VFI</td>
</tr>
<tr>
<td>state</td>
<td>The status of the VFI (up or down)</td>
</tr>
<tr>
<td>Local attachment circuits</td>
<td>The interface or VLAN assigned to the VFI</td>
</tr>
<tr>
<td>Peer Address</td>
<td>The IP address of the peer router</td>
</tr>
<tr>
<td>VC ID</td>
<td>The VC ID assigned to the pseudowire</td>
</tr>
<tr>
<td>Split-horizon</td>
<td>Whether split horizon is enabled (Y) or disabled (N)</td>
</tr>
</tbody>
</table>
For the VPLS Autodiscovery feature, the command output of the `show vfi` command includes autodiscovery information.

Router# `show vfi`

Legend: RT= Route-target, S=Split-horizon, Y=Yes, N=No

VFI name: VPLS1, state: up, type: multipoint
VPN ID: 10, VPLS-ID: 9:10
RD: 9:10, RT: 10.10.10.10:150
Local attachment circuits:
  Ethernet0/0.2

Neighbors connected via pseudowires:
<table>
<thead>
<tr>
<th>Peer Address</th>
<th>VC ID</th>
<th>Discovered Router ID</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.7.7.1</td>
<td>10</td>
<td>10.7.7.1</td>
<td>Y</td>
</tr>
<tr>
<td>10.7.7.2</td>
<td>10</td>
<td>10.1.1.2</td>
<td>Y</td>
</tr>
<tr>
<td>10.7.7.3</td>
<td>10</td>
<td>10.1.1.3</td>
<td>Y</td>
</tr>
<tr>
<td>10.7.7.4</td>
<td>10</td>
<td>10.1.1.4</td>
<td>Y</td>
</tr>
<tr>
<td>10.7.7.5</td>
<td>10</td>
<td>-</td>
<td>Y</td>
</tr>
</tbody>
</table>

VFI name: VPLS2 state: up, type: multipoint
VPN ID: 11, VPLS-ID: 10.9.9.9:2345
RD: 10:11, RT: 10.4.4.4:151
Local attachment circuits:
  Ethernet0/0.3

Neighbors connected via pseudowires:
<table>
<thead>
<tr>
<th>Peer Address</th>
<th>VC ID</th>
<th>Discovered Router ID</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.7.7.1</td>
<td>11</td>
<td>10.7.7.1</td>
<td>Y</td>
</tr>
<tr>
<td>10.7.7.2</td>
<td>11</td>
<td>10.1.1.5</td>
<td>Y</td>
</tr>
</tbody>
</table>

Table 2 explains the fields related to VPLS Autodiscovery displayed in the output.

**Table 2**  
**show vfi Field Descriptions for VPLS Autodiscovery**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPLS-ID</td>
<td>The identifier of the VPLS domain. VPLS Autodiscovery automatically generates a VPLS ID using the BGP autonomous system number and the configured VFI VPN ID.</td>
</tr>
<tr>
<td>RD</td>
<td>The route distiguisher (RD) to distribute end-point information. VPLS Autodiscovery automatically generates an RD using the BGP autonomous system number and the configured VFI VPN ID.</td>
</tr>
<tr>
<td>RT</td>
<td>The route target (RT). VPLS Autodiscovery automatically generates a route target using the lower 6 bytes of the RD and VPLS ID.</td>
</tr>
<tr>
<td>Discovered Router ID</td>
<td>A unique identifier assigned to the PE router. VPLS Autodiscovery automatically generates Router ID using the MPLS global router ID.</td>
</tr>
</tbody>
</table>

**Related Commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>show xconnect</td>
<td>Displays information about xconnect attachment circuits and pseudowires.</td>
</tr>
</tbody>
</table>