



MPLS Pseudowire Status Signaling

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The MPLS Pseudowire Status Signaling feature enables you to configure the router so it can send pseudowire status to a peer router, even when the attachment circuit is down. In releases prior to Cisco IOS 12.2(33)SRC, if the attachment circuit was down, the pseudowire status messages were not sent to the peer.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the [“Feature Information for MPLS Pseudowire Status Signaling”](#) section on page 9.

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Prerequisites for MPLS Pseudowire Status Signaling

- Before configuring this feature, make sure that both peer routers are capable of sending and receiving pseudowire status messages. Specifically, both routers should be running Cisco IOS Release 12.2(33)SRC and have the supported hardware installed.

Restrictions for MPLS Pseudowire Status Signaling

- Both peer routers must support the ability to send and receive pseudowire status messages in label advertisement and label notification messages. If both peer routers do not support pseudowire status messages, Cisco recommends that you disable the messages with the **no status** command.
- This feature is not integrated with Any Transport over MPLS (AToM) Virtual Circuit Connection Verification (VCCV).
- This feature is not integrated with Bidirectional Forwarding Detection (BFD).
- The standby and required switchover values from IETF draft-muley-pwe3-redundancy-02.txt are not supported.
- For a list of supported hardware for this feature, see the release notes for your platform.

Information About MPLS Pseudowire Status Signaling

Before configuring MPLS Pseudowire Status Signaling, you should understand the following concepts:

- [How MPLS Pseudowire Status Signaling Works](#)

How MPLS Pseudowire Status Signaling Works

In releases prior to Cisco IOS Release 12.2(33)SRC, the control plane for AToM does not have the ability to provide pseudowire status. Therefore, when an attachment circuit (AC) associated with a pseudowire is down (or is forced down as part of the Pseudowire Redundancy functionality), labels advertised to peers are withdrawn. In Cisco IOS Release 12.2(33)SRC, the MPLS Pseudowire Status Signaling feature enables the AC status to be sent to the peer through the Label Distribution Protocol.

The pseudowire status messages are sent in label advertisement and label notification messages if the peer also supports the MPLS Pseudowire Status Signaling feature. You can issue the **show mpls l2transport vc detail** command to show that both the local and remote routers support pseudowire status messages. The following example shows the line of output to look for:

```
Router# show mpls l2transport vc detail
.
.
.
status TLV support (local/remote): enabled/supported
```

When One Router Does Not Support MPLS Pseudowire Status Signaling

The peer routers must support the ability to send and receive pseudowire status messages in label advertisement and label notification messages. If one router does not support pseudowire status messages, Cisco recommends that you disable the messages with the **no status** command. This returns the router to label withdraw mode.

If the peer does not support the MPLS Pseudowire Status Signaling feature, the local router changes its mode of operation to label withdraw mode. You can issue the **show mpls l2transport vc detail** command to show that the remote router does not support pseudowire status messages. The following example shows the line of output to look for:

```
Router# show mpls l2transport vc detail
.
.
.
status TLV support (local/remote): enabled/not supported
```

When you issue the following **debug mpls l2transport vc** commands, the messages show that the peer router does not support the MPLS Pseudowire Status Signaling feature and that the local router is changing to withdraw mode, as shown in bold in the following example:

```
Router# debug mpls l2transport vc event
Router# debug mpls l2transport vc status event
Router# debug mpls l2transport vc status fsm
Router# debug mpls l2transport vc ldp

*Feb 26 13:41:40.707: AToM LDP [110.1.1.2]: Sending label withdraw msg
*Feb 26 13:41:40.707: AToM LDP [110.1.1.2]: VC Type 5, mtu 1500
*Feb 26 13:41:40.707: AToM LDP [110.1.1.2]: VC ID 100, label 18
*Feb 26 13:41:40.707: AToM LDP [110.1.1.2]: Status 0x0000000A [PW Status NOT supported]
```

Status Messages Indicating That the Attachment Circuit Is Down

When the attachment circuit is down between the two routers, the output of the **show mpls l2transport vc detail** command shows the following status:

```
Router# show mpls l2transport vc detail
.
.
.
Last remote LDP TLV      status rcvd: AC DOWN(rx,tx faults)
```

The debug messages also indicate that the attachment circuit is down, as shown in bold in the command output:

```
Router# debug mpls l2transport vc event
Router# debug mpls l2transport vc status event
Router# debug mpls l2transport vc status fsm
Router# debug mpls l2transport vc ldp

*Feb 26 11:51:42.427: AToM LDP [10.1.1.1]: Received notif msg, id 88
*Feb 26 11:51:42.427: AToM LDP [10.1.1.1]: Status 0x00000007 [PW Status]
*Feb 26 11:51:42.427: AToM LDP [10.1.1.1]: PW Status 0x00000006 [AC DOWN(rx,tx faults)]
```

Other pseudowire status messages include not-forwarding, pw-tx-fault, and pw-rx-fault.

Message Codes in the Pseudowire Status Messages

The `debug mpls l2transport vc` and the `show mpls l2transport vc detail` commands show output that contains message codes. For example:

```
Label/status state machine: established, LruRru
```

```
AToM MGR [10.9.9.9, 100]: S:Evt local up, LndRru->LnuRru
```

The message codes (LruRru, LndRru, and LnuRru) indicate the status of the local and remote routers. You can use the following key to interpret the message codes:

L—local router

R—remote router

r or n—ready (r) or not ready (n)

u or d—up (u) or down (d) status

The output also includes other values:

D—Dataplane

S—Local shutdown

How to Configure MPLS Pseudowire Status Signaling

This section explains how to perform the following tasks:

- [Enabling MPLS Pseudowire Status Signaling, page 4](#) (required)

Enabling MPLS Pseudowire Status Signaling

Perform the following task to enable the router to send pseudowire status to a peer router even when the attachment circuit is down. If both routers do not support pseudowire status messages, then disable the messages with the `no status` command.

SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `pseudowire-class name`
4. `status`
5. `encapsulation mpls`
6. `exit`
7. `exit`
8. `show mpls l2transport vc detail`

DETAILED STEPS

	Command or Action	Purpose
Step 1	<code>enable</code> Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none">Enter your password if prompted.
Step 2	<code>configure terminal</code> Example: Router# configure terminal	Enters global configuration mode.
Step 3	<code>pseudowire-class name</code> Example: Router(config)# pseudowire-class atom	Establishes a pseudowire class with a name that you specify and enters pseudowire class configuration mode.
Step 4	<code>status</code> Example: Router(config-pw)# status	(Optional) Enables the router to send pseudowire status messages to the peer router through label advertisement and label notification messages. Note By default, status messages are enabled. This step is included only in case status messages have been disabled. If you need to disable status messages because both peer routers do not support this functionality, enter the no status command.
Step 5	<code>encapsulation mpls</code> Example: Router(config-pw)# encapsulation mpls	Specifies the tunneling encapsulation.
Step 6	<code>exit</code> Example: Router(config-pw)# exit	Exits pseudowire class configuration mode.
Step 7	<code>exit</code> Example: Router(config)# exit	Exits global configuration mode.
Step 8	<code>show mpls l2transport vc detail</code> Example: Router# show mpls l2transport vc detail	Validates that pseudowire messages can be sent and received.

Configuration Examples for MPLS Pseudowire Status Signaling

This section contains the following examples:

- [MPLS Pseudowire Status Signaling: Example](#)
- [MPLS Pseudowire Status Signaling: Example](#)

MPLS Pseudowire Status Signaling: Example

The following example configures the MPLS Pseudowire Status Signaling feature on two PE routers. By default, status messages are enabled. The **status** command is included in this example in case status messages have been disabled.

PE1

```
interface Loopback0
 ip address 10.1.1.1 255.255.255.255
!
pseudowire-class atomstatus
 encapsulation mpls
 status
!
interface GigabitEthernet10/5
 xconnect 10.1.1.2 123 pw-class atomstatus
```

PE2

```
interface Loopback0
 ip address 10.1.1.2 255.255.255.255
!
pseudowire-class atomstatus
 encapsulation mpls
 status
!
interface GigabitEthernet3/3
 xconnect 10.1.1.1 123 pw-class atomstatus
```

Verifying That Both Routers Support Pseudowire Status Messages: Example

You can issue the **show mpls l2transport vc detail** command to show that both the local and remote routers support pseudowire status messages. The following example shows the line of output to look for:

```
Router# show mpls l2transport vc detail
.
.
.
status TLV support (local/remote): enabled/supported
```

Additional References

The following sections provide references related to the MPLS Pseudowire Status Signaling feature.

Related Documents

Related Topic	Document Title
Any Transport over MPLS	Any Transport over MPLS
Virtual Private LAN Services	Virtual Private LAN Services on the Optical Services Modules

Standards

Standard	Title
draft-ietf-pwe3-control-protocol-15.txt	<i>Pseudowire Setup and Maintenance Using LDP</i>
draft-ietf-pwe3-iana-allocation-08.txt	<i>IANA Allocations for Pseudo Wire Edge to Edge Emulation (PWE3)</i>
draft-martini-pwe3-pw-switching-03.txt	<i>Pseudo Wire Switching</i>

MIBs

MIB	MIBs Link
Pseudowire Emulation Edge-to-Edge MIBs for Ethernet, Frame Relay, and ATM Services	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
None	—

Technical Assistance

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	<p>http://www.cisco.com/techsupport</p>

Command Reference

The following commands are introduced or modified in the feature or features documented in this module. For information about these commands, see the *Cisco IOS Multiprotocol Label Switching Command Reference* at http://www.cisco.com/en/US/docs/ios/mpls/command/reference/mp_book.html. For information about all Cisco IOS commands, use the Command Lookup Tool at <http://tools.cisco.com/Support/CLILookup>.

- **debug mpls l2transport vc**
- **show mpls l2transport vc**
- **status (pseudowire class)**

Feature Information for MPLS Pseudowire Status Signaling

Table 1 lists the release history for this feature.

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

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Note

Table 1 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Table 1 Feature Information for MPLS Pseudowire Status Signaling

Feature Name	Releases	Feature Information
MPLS Pseudowire Status Signaling	12.2(33)SRC 12.2(50)SY	The MPLS Pseudowire Status Signaling feature enables you to configure the router so it can send pseudowire status to a peer router, even when the attachment circuit is down. In 12.2(33)SRC, this feature was introduced on the Cisco 7600 series router.

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