



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.

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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 Table at the end of this document.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

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.

Restrictions for MPLS Pseudowire Status Signaling



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- 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.

Information About MPLS Pseudowire Status Signaling

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How MPLS Pseudowire Status Switching Works

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 [10.1.1.2]: Sending label withdraw msg *Feb 26 13:41:40.707: AToM LDP [10.1.1.2]: VC Type 5, mtu 1500 *Feb 26 13:41:40.707: AToM LDP [10.1.1.2]: VC ID 100, label 18
*Feb 26 13:41:40.707: AToM LDP [10.1.1.2]: 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

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

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

Command or Action	Purpose
Step 8 <code>show mpls l2transport vc detail</code> Example: Router# <code>show mpls l2transport vc detail</code>	Validates that pseudowire messages can be sent and received.

Configuration Examples for MPLS Pseudowire Status Signaling

- [Example MPLS Pseudowire Status Signaling, page 6](#)
- [Example Verifying That Both Routers Support Pseudowire Status Messages, page 7](#)

Example MPLS Pseudowire Status Signaling

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 GigabitEthernet0/0/1
 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 GigabitEthernet3/3/0
 xconnect 10.1.1.1 123 pw-class atomstatus
```

Example Verifying That Both Routers Support Pseudowire Status Messages

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

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Commands List, All Releases
Description of commands associated with MPLS and MPLS applications	<i>Cisco IOS Multiprotocol Label Switching Command Reference</i>
Any Transport over MPLS	Any Transport over MPLS

Standards

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

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 software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	--

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1 *Feature Information for MPLS Pseudowire Status Signaling*

Feature Name	Releases	Feature Information
MPLS Pseudowire Status Signaling	Cisco IOS XE Release 2.3	<p>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.</p> <p>The following commands were introduced or modified: debug mpls l2transport vc, show mpls l2transport vc, status (pseudowire class).</p>

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