

MPLS Pseudowire Status Signaling

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.

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Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and 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 module.

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. 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

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:



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 vccommands**, 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 0x00000000 [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 0x000000007 [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

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 12transport vc detail

DETAILED STEPS

| | Command or Action | Purpose |
|--------|-------------------|------------------------------------|
| Step 1 | enable | Enables privileged EXEC mode. |
| | Example: | • Enter your password if prompted. |
| | Router> enable | |

| Command or Action | Purpose | |
|---|--|--|
| configure terminal | Enters global configuration mode. | |
| Example: | | |
| Router# configure terminal | | |
| pseudowire-class name | Establishes a pseudowire class with a name that you specify and enters pseudowire class configuration mode. | |
| Example: | | |
| Router(config)# pseudowire-class atom | | |
| status | (Optional) Enables the router to send pseudowire status messages to the peer router through label advertisement and label notification | |
| Example: | messages. | |
| Router(config-pw)# status | 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. | |
| encapsulation mpls | Specifies the tunneling encapsulation. | |
| Example: | | |
| Router(config-pw)# encapsulation mpls | | |
| exit | Exits pseudowire class configuration mode. | |
| Example: | | |
| Router(config-pw)# exit | | |
| exit | Exits global configuration mode. | |
| Example: | | |
| Router(config)# exit | | |
| show mpls 12transport vc detail | Validates that pseudowire messages can be sent and received. | |
| Example: | | |
| Router# show mpls 12transport vc detail | | |
| | configure terminal Example: Router# configure terminal pseudowire-class name Example: Router(config)# pseudowire-class atom status Example: Router(config-pw)# status encapsulation mpls Example: Router(config-pw)# encapsulation mpls exit Example: Router(config-pw)# exit exit Example: Router(config-pw)# exit exit Example: Router(config)# exit show mpls l2transport vc detail Example: | |

Configuration Examples for MPLS Pseudowire Status Signaling

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 | 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 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 |
|---|----------------------------------|
| The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. | http://www.cisco.com/techsupport |
| 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. | |
| Access to most tools on the Cisco Support website requires a Cisco.com user ID and password. | |

Feature Information for MPLS Pseudowire Status Signaling

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 | 12.2(33)SRC 12.2(50)SY | The MPLS Pseudowire Status Signaling feature enables you to configure the router so that it can send the pseudowire status to a peer router, even when the attachment circuit is down. The following commands were |
| | | introduced or modified: debug mpls l2transport vc, show mpls l2transport vc, status (pseudowire class). |