Remote Port Shutdown

First Published: February 27, 2007
Last Updated: February 27, 2007

The Remote Port Shutdown feature uses Ethernet Local Management Interface (LMI) in an Ethernet over Multiprotocol Label Switching (EoMPLS) network to propagate remote link status to a customer edge (CE) device.

Finding Feature Information in This Module

Your Cisco IOS software release may not support all of the features documented in this module. To reach links to specific feature documentation in this module and to see a list of the releases in which each feature is supported, use the "Feature Information for Remote Port Shutdown" section on page 8.

Finding Support Information for Platforms and Cisco IOS and Catalyst OS Software Images

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.

Contents

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Prerequisites for Remote Port Shutdown

- Ethernet LMI must be enabled for the Remote Port Shutdown feature to function.

Restrictions for Remote Port Shutdown

- Connectivity Fault Management and Lightweight Directory Protocol (LDP) cannot be configured at the same time.

Information About Remote Port Shutdown

To configure the Remote Port Shutdown feature, you should understand the following concepts:

- Ethernet Virtual Circuit, page 2
- Ethernet LMI, page 2
- OAM Manager, page 2
- Benefits of Remote Port Shutdown, page 3

Ethernet Virtual Circuit

An Ethernet virtual circuit (EVC) as defined by the Metro Ethernet Forum is a port level point-to-point or multipoint-to-multipoint Layer 2 circuit. EVC status can be used by a CE device to find an alternative path into the service provider network or in some cases, fall back to a backup path over Ethernet or over another alternative service such as Frame Relay or ATM.

Ethernet LMI

Ethernet LMI is an Ethernet Operations, Administration, and Maintenance (OAM) protocol between a CE device and a Provider Edge (PE) device. Ethernet LMI provides information that enables autoconfiguration of CE devices and provides the status of EVCs for large Ethernet metropolitan area networks (MANs) and WANs. Specifically, Ethernet LMI runs only on the PE-CE user network interface (UNI) link and notifies a CE device of both the operating state of an EVC and the time when an EVC is added or deleted. Ethernet LMI also communicates the attributes of an EVC.

Ethernet LMI interoperates with Ethernet Connectivity Fault Management (CFM) and LDP. In this case Ethernet LMI relies on the OAM manager to interwork with LDP to report remote link status to the local CE.

OAM Manager

The OAM manager is an infrastructure element that streamlines interaction between OAM protocols. The OAM manager requires two interworking OAM protocols, in this case Ethernet LMI and MPLS LDP.

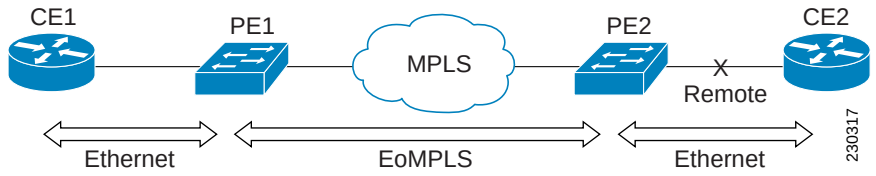
No interactions are required between Ethernet LMI and the OAM manager on the CE side. On the user-facing provider edge (UPE) side, the OAM manager defines an abstraction layer that relays data collected from Ethernet CFM to the Ethernet LMI device.

Ethernet LMI and OAM manager interaction is unidirectional, from the OAM manager to Ethernet LMI on the UPE side of the device. An information exchange results from an Ethernet LMI request or is triggered by the OAM manager when the OAM manager receives notification from the OAM protocol that the EVC status has changed. In this case, the change is called a remote link status change.

Benefits of Remote Port Shutdown

The Remote Port Shutdown feature provides direct interaction of Ethernet LMI with MPLS, LDP, and OAM. When CFM/802.1ag is not running in a network, Remote Port Shutdown enables communication of link status to a CE, and traffic from the CE can be stopped if MPLS or the pseudowire is down. Figure 1 shows an EoMPLS network with the remote link down.

Figure 1 EoMPLS Network With the Remote PE-CE Link Down



How to Configure Remote Port Shutdown

Perform the following tasks to configure the Remote Port Shutdown feature:

- Specifying LDP as an OAM Protocol, page 3

Specifying LDP as an OAM Protocol

Perform this task to specify LDP as an OAM protocol.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ethernet evc** *evc-id*
4. **oam protocol** {**cfm slvan** *slvan-id* **domain** *domain-name* | **ldp**}
5. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**ethernet evc** *evc-id* **Example:** `Router(config)# ethernet evc evc10`	Defines an EVC and enters EVC configuration mode.
Step 4	**oam protocol** {**cfm slvan** *slvan-id* **domain** *domain-name* | **ldp**} **Example:** `Router(config-evc)# oam protocol ldp`	Configures either CFM or LDP as an OAM protocol. • In this example, LDP is the protocol being configured.
Step 5	**end** **Example:** `Router(config-evc)# end`	Returns the CLI to privileged EXEC mode.

Configuration Examples for Remote Port Shutdown

This section provides the following configuration example:

- Specifying LDP As the OAM Protocol and Associating a Service Instance to an EVC: Example, page 4
- Configuring Xconnect Directly on an Interface: Example, page 5

Specifying LDP As the OAM Protocol and Associating a Service Instance to an EVC: Example

In this example, the OAM protocol for EVC pw_evc is specified as LDP, and service instance 1 is associated with the EVC.

```
Router(config)# ethernet evc pw_evc
Router(config-evc)# oam protocol ldp
Router(config-evc)# uni count 2
Router(config-evc)# exit
Router(config)# pseudowire-class vlan-xconnect
Router(config-pw-class)# encapsulation mpls
Router(config-pw-class)# interworking
Router(config-pw-class)# exit
```

```
Router(config)# interface ethernet 0/0
Router(config-if)# ethernet lmi interface
Router(config-if)# ethernet uni id ce1
Router(config-if)# service instance 1 ethernet pw_evc
Router(config-if-srv)# encapsulation dot1q 2
Router(config-if-srv)# xconnect10.2.2.2 123 pw-class vlan-xconnect
Router(config_if-srv)# exit
```

Configuring Xconnect Directly on an Interface: Example

In this example, Xconnect is configured directly on an interface.

```
Router(config)# interface ethernet 0/0
Router(config-if)# xconnect 2.2.2.2 123 pw-class vlan-xconnect
Router(config-if)# ethernet lmi interface
Router(config-if)# ethernet uni id ce1
Router(config-if)# service instance 1 ethernet pw_evc
Router(config-if-srv)# encapsulation dot1q 2
Router(config_if-srv)# exit
```

Additional References

The following sections provide references related to the Remote Port Shutdown feature.

Related Documents

Related Topic	Document Title
Ethernet CFM	*Ethernet Connectivity Fault Management*.
Ethernet LMI	*Ethernet Local Management Interface*
Configuring Ethernet LMI on a PE device	*Configuring Ethernet Local Management Interface on a Provider Edge Device*
Ethernet over MPLS	*Ethernet over MPLS for the Cisco 7600 Series Internet Routers*

Standards

Standard	Title
IEEE P802.1ag/D5.2	Draft Standard for Local and Metropolitan Area Networks
IETF VPLS OAM	*L2VPN OAM Requirements and Framework*
ITU-T	*ITU-T Y.1731 OAM Mechanisms for Ethernet-Based Networks*
ITU-T Q.3/13	Liaison statement on Ethernet OAM (Y.17ethoam)
Metro Ethernet Forum 16 Technical Specification	*Technical Specification MEF 16-Ethernet Local Management Interface*

MIBs

MIB	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	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
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 website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register on Cisco.com.	http://www.cisco.com/techsupport

Command Reference

This section documents only commands that are new or modified.

- **oam protocol**

oam protocol

To specify an operations, maintenance, and administration (OAM) protocol, use the **oam protocol** command in Ethernet virtual connection (EVC) configuration mode. To remove an OAM protocol, use the **no** form of this command.

oam protocol {**cfm slvan** *svlan-id* **domain** *domain-name* | **ldp**}

no oam protocol

Syntax Description

cfm	Specifies Connectivity Fault Management (CFM) as the protocol.
svlan	Specifies a service provider VLAN.
svlan-id	Integer in the range of 1 to 4094 that identifies the service provider VLAN.
domain	Specifies a CFM maintenance domain.
domain-name	String of a maximum of 256 characters that identifies the domain.
ldp	Specifies Lightweight Directory Protocol (LDP).

Command Default

An OAM protocol is not specified.

Command Modes

EVC configuration

Command History

Release	Modification
12.2(33)SRB	This command was introduced.

Usage Guidelines

Use this command to specify the OAM protocol to use for communicating link status in an Ethernet over Multiprotocol Label Switching (EoMPLS) network.

Examples

The following example shows how to specify LDP as the OAM protocol:

```
Router(config)# ethernet evc evc10
Router(config-evc)# oam protocol ldp
```

Feature Information for Remote Port Shutdown

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.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS and Catalyst OS software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

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 Remote Port Shutdown

Feature Name	Releases	Feature Information
Remote Port Shutdown	12.2(33)SRB	The Remote Port Shutdown feature uses Ethernet LMI in an EoMPLS network to propagate remote link status to a CE device. In Release 12.2(33)SRB, this feature was implemented on the Cisco 7600 router. The **oam protocol** command was introduced in this feature.