RFC 3020 Multilink Frame Relay MIB Support

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The RFC 3020 Multilink Frame Relay MIB Support feature introduces MIB functionality to manage and monitor multilink Frame Relay interfaces via the use of MIB tables. The feature is based on RFC 3020, *Definitions of Managed Objects for Monitoring and Controlling the UNI/NNI Multilink Frame Relay Function*.

This feature uses three MIB tables:

- mfrBundleTable for managing bundle interfaces
- mfrBundleLinkTable for managing bundle links
- mfrBundleIfIndexMappingTable for associating bundle links with bundles

Finding Feature Information in This Module

Your Cisco IOS software release may not support all of the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. 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 RFC 3020 Multilink Frame Relay MIB Support" 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.

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Prerequisites for RFC 3020 Multilink Frame Relay MIB Support

Before the RFC 3020 multilink Frame Relay MIB can be used, the Simple Network Management Protocol (SNMP) server for the router must be configured.

Information About RFC 3020 Multilink Frame Relay MIB Support

To configure the RFC 3020 Multilink Frame Relay MIB, you should understand the following concept:

RFC 3020 Multilink Frame Relay MIB

Multilink Frame Relay is a feature in Cisco IOS software, and the RFC 3020 multilink Frame Relay MIB is a MIB standard. The purpose of this feature is to provide a multilink Frame Relay MIB based on RFC 3020.

Note The Cisco implementation of the RFC 3020 multilink Frame Relay MIB supports only read-only operations. Therefore, adding, deleting, or modifying a MIB table row is not supported.

Table 1 lists the MIB tables used for multilink Frame Relay support.

Table 1 Multilink Frame Relay MIB Tables

MIB Table Name	Description
mfrBundleTable	Bundle table, which contains bundle configuration and status information. The table is indexed by mfrBundleIndex, which is an internal index that is maintained to uniquely identify each entry in the table. Each entry in the table represents a bundle interface configured on a device.
mfrBundleLinkTable	Bundle link table, which contains bundle link configuration and status information. The table is indexed by ifIndex.
mfrBundleIfIndexMappingTable	Bundle-to-ifIndex mapping table, which provides mapping between ifIndex and mfrBundleIndex. The table is indexed by ifIndex.

How to Configure RFC 3020 Multilink Frame Relay MIB Support

This section contains the following procedure:

- Enabling the Multilink Frame Relay Bundle-Mismatch Trap, page 3

Enabling the Multilink Frame Relay Bundle-Mismatch Trap

To configure the RFC 3020 Multilink Frame Relay MIB, you enable the multilink Frame Relay bundle-mismatch trap.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **snmp-server enable traps frame-relay multilink bundle-mismatch**
4. **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	**snmp-server enable traps frame-relay multilink bundle-mismatch** **Example:** `Router(config)# snmp-server enable traps frame-relay multilink bundle-mismatch`	Enters class-map configuration mode and enables monitoring for multilink Frame Relay.

Step 4	`end`
	
	Example:
	`Router(config-cmap)# end`
		Exits class-map configuration mode and returns to privileged EXEC mode.

Configuration Examples for the RFC 3020 Multilink Frame Relay MIB

The following example shows how to configure the RFC 3020 multilink Frame Relay MIB.

This section provides the following configuration example:

Enabling the Multilink Frame Relay bundle-mismatch Trap: Example

The following example shows how to enable the multilink Frame Relay bundle-mismatch Trap. The example shows a multilink Frame Relay configuration on a host and a peer with two bundles and six bundle links.

On the host router:

```
Router# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# controller T3 6/0
Router(config)# t1 1 channel-group 0 timeslots 1-24
Router(config)# t1 2 channel-group 0 timeslots 1-24
Router(config)# t1 3 channel-group 0 timeslots 1-24
Router(config)# t1 4 channel-group 0 timeslots 1-24
Router(config)# t1 5 channel-group 0 timeslots 1-24
Router(config)# t1 6 channel-group 0 timeslots 1-24
!
Router(config)# interface MFR1
Router(config)# ip address 209.165.200.225 255.255.255.224
Router(config)# frame-relay multilink bid RUB_BUNDLE_ONE
Router(config)# frame-relay interface-dlci 100
!
Router(config)# interface MFR2
Router(config)# ip address 209.165.200.226 255.255.255.224
Router(config)# frame-relay multilink bid RUB_BUNDLE_TWO
Router(config)# frame-relay interface-dlci 100
!
Router(config)# interface Serial6/0/1:0
Router(config)# encapsulation frame-relay MFR1
Router(config)# frame-relay multilink lid RUB_BUNDLE_ONE_LINK_1
!
Router(config)# interface Serial6/0/2:0
Router(config)# encapsulation frame-relay MFR1
Router(config)# frame-relay multilink lid RUB_BUNDLE_ONE_LINK_2
!
Router(config)# interface Serial6/0/3:0
Router(config)# encapsulation frame-relay MFR1
Router(config)# frame-relay multilink lid RUB_BUNDLE_ONE_LINK_3
!
Router(config)# interface Serial6/0/4:0
Router(config)# encapsulation frame-relay MFR2
Router(config)# frame-relay multilink lid RUB_BUNDLE_TWO_LINK_1
!
Router(config)# interface Serial6/0/5:0
Router(config)# encapsulation frame-relay MFR2
Router(config)# frame-relay multilink lid RUB_BUNDLE_TWO_LINK_2
!
Router(config)# interface Serial6/0/6:0
Router(config)# encapsulation frame-relay MFR2
Router(config)# frame-relay multilink lid RUB_BUNDLE_TWO_LINK_3
```

```
!
Router(config)# snmp-server community public RW
Router(config)# snmp-server enable traps frame-relay multilink bundle-mismatch
Router(config)# snmp-server host 209.165.200.227 public
!
```

On the peer router:

```
Router(config)# controller T3 6/0
Router(config)# t1 1 channel-group 0 timeslots 1-24
Router(config)# t1 2 channel-group 0 timeslots 1-24
Router(config)# t1 3 channel-group 0 timeslots 1-24
Router(config)# t1 4 channel-group 0 timeslots 1-24
Router(config)# t1 5 channel-group 0 timeslots 1-24
Router(config)# t1 6 channel-group 0 timeslots 1-24
Router(config)# t1 7 channel-group 0 timeslots 1-24
!
Router(config)# interface MFR1
Router(config)# ip address 209.165.200.228 255.255.255.224
Router(config)# frame-relay multilink bid GAN_BUNDLE_ONE
Router(config)# frame-relay interface-dlci 100
Router(config)# frame-relay intf-type dce
!
Router(config)# interface MFR2
Router(config)# ip address 209.165.200.229 255.255.255.224
Router(config)# frame-relay multilink bid GAN_BUNDLE_TWO
Router(config)# frame-relay interface-dlci 100
Router(config)# frame-relay intf-type dce
!
Router(config)# interface Serial6/0/1:0
Router(config)# encapsulation frame-relay MFR1
Router(config)# frame-relay multilink lid GAN_BUNDLE_ONE_LINK_1
!
Router(config)# interface Serial6/0/2:0
Router(config)# encapsulation frame-relay MFR1
Router(config)# frame-relay multilink lid GAN_BUNDLE_ONE_LINK_2
!
Router(config)# interface Serial6/0/3:0
Router(config)# encapsulation frame-relay MFR1
Router(config)# frame-relay multilink lid GAN_BUNDLE_ONE_LINK_3
!
Router(config)# interface Serial6/0/4:0
Router(config)# encapsulation frame-relay MFR2
Router(config)# frame-relay multilink lid GAN_BUNDLE_TWO_LINK_1
!
Router(config)# interface Serial6/0/5:0
Router(config)# encapsulation frame-relay MFR2
Router(config)# frame-relay multilink lid GAN_BUNDLE_TWO_LINK_2
!
Router(config)# interface Serial6/0/6:0
Router(config)# encapsulation frame-relay MFR2
Router(config)# frame-relay multilink lid GAN_BUNDLE_TWO_LINK_3

Router(config)# exit
```

Additional References

The following sections provide references related to the RFC 3020 Multilink Frame Relay MIB Support feature.

Related Documents

Related Topic	Document Title
Information about configuring multilink Frame Relay using Cisco IOS software	"Multilink Frame Relay (FRF.16)" chapter in the *Cisco IOS Wide-Area Networking Configuration Guide*, Release 12.4T *Cisco IOS Wide-Area Networking Command Reference*

Standards

Standard	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

MIBs

MIB	MIBs Link
FR-MFR-MIB	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
RFC 3020	*Definitions of Managed Objects for Monitoring and Controlling the UNI/NNI Multilink Frame Relay Function*

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. 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.	http://www.cisco.com/techsupport

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 Wide-Area Networking Command Reference* at http://www.cisco.com/en/US/docs/ios/wan/command/reference/wan_book.html. For information about all Cisco IOS commands, go to the Command Lookup Tool at http://tools.cisco.com/Support/CLILookup or a Cisco IOS master commands list.

- **snmp-server enable traps frame-relay multilink bundle-mismatch**

Feature Information for RFC 3020 Multilink Frame Relay MIB Support

Table 2 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 2 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 2 Feature Information for RFC 3020 Multilink Frame Relay MIB Support

Feature Name	Releases	Feature Information
RFC 3020 Multilink Frame Relay MIB Support	12.4(9)T 12.2(33)SRB 12.2(33)SB	The RFC 3020 Multilink Frame Relay MIB Support feature introduces MIB functionality to manage and monitor multilink Frame Relay interfaces via the use of MIB tables. The following sections provide information about this feature: • RFC 3020 Multilink Frame Relay MIB, page 2 • Enabling the Multilink Frame Relay Bundle-Mismatch Trap, page 3 The following command was introduced or modified: **snmp-server enable traps frame-relay multilink bundle-mismatch**.