

# Configuring MLPPP Bundles

# 23

The NMC-RX application supports Multilink Point-to-Point Protocol (MLPPP) on the CT3, CT1, and CE1 modules.

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## Overview

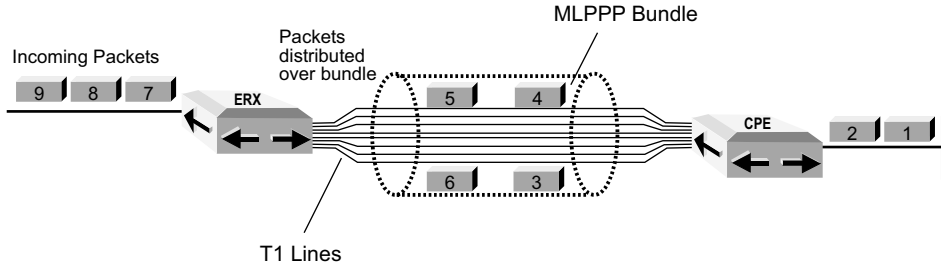
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MLPPP aggregates multiple physical links into a single logical bundle. More specifically, MLPPP bundles multiple link-layer channels into a single network-layer channel. Peers negotiate MLPPP during the initial phase of Link Control Protocol (LCP) option negotiation. Each system indicates that it is multilink-capable by sending the multilink option as part of its initial LCP configuration request.

The systems joined by the multilink each assign the same unique name to the bundle. A bundle can consist of multiple physical links of the same type—such as multiple asynchronous lines—or can consist of physical links of different types—such as leased synchronous lines and dial-up asynchronous lines.

Your E-series device treats MLPPP like another PPP network control protocol (NCP). Packets received with an MLPPP header are subject to fragmentation, reassembly, and sequencing. Packets received without the MLPPP header cannot be sequenced and can be delivered only on a first-come, first-served basis.

The NMC-RX implementation of MLPPP logically aggregates up to eight T1 or E1 connections into a single virtual connection, or bundle, to a given customer site, as shown in Figure 23-1.



**Figure 23-1** MLPPP aggregation of T1 lines into a single bundle

MLPPP allows you to bundle up to eight DS1s together to provide a service that offers greater than T1 but less than T3 bandwidth. This service provides bandwidth greater than DS1 service without the expense and infrastructure required for DS3 service. The NMC-RX application allows you to configure these bundles on your E-series device.

See Table 23-1 for a comparison of the three modules that can be configured with MLPPP bundles.

**Table 23-1** Comparing module types

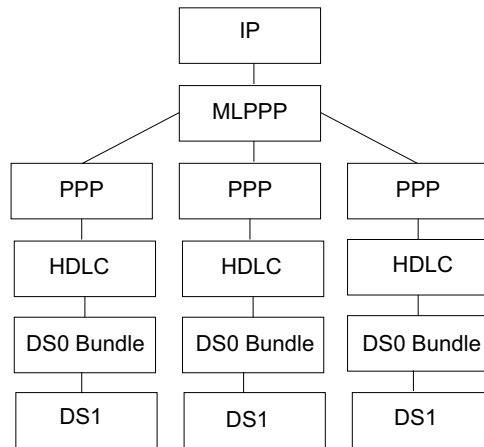
Module Type	DS3s	DS1s	DS0s
CT3	3	28	24
CT1	0	24	24
CE1	0	20	31



**Note:** The DS0s column indicates the number of DS0 bundle timeslots for each module type. DS1s are the basic units of MLPPP bundles.

An MLPPP bundle is stacked on top of DS1s. If you select a DS1 that does not have a DS0 bundle created on it, then the NMC-RX application automatically creates a fully allocated DS0 bundle on that DS1. Also, if a DS0 bundle exists on a DS1 that you want to bind to an MLPPP bundle, the DS0 bundle must be fully allocated and cannot have anything created on top of it. Once a DS1 is associated with an MLPPP bundle, the NMC-RX application creates a PPP interface on the DS0 bundle on that DS1. You cannot create anything on the PPP interface. Also, you cannot delete a DS0 bundle or PPP interface on a DS1 that is associated with an MLPPP bundle.

The following figure illustrates the interface stacking with MLPPP.



## Creating MLPPP Bundles

To create an MLPPP bundle, you must associate at least one DS1 with the bundle. After you create an MLPPP bundle, you can create an IP interface on the bundle.

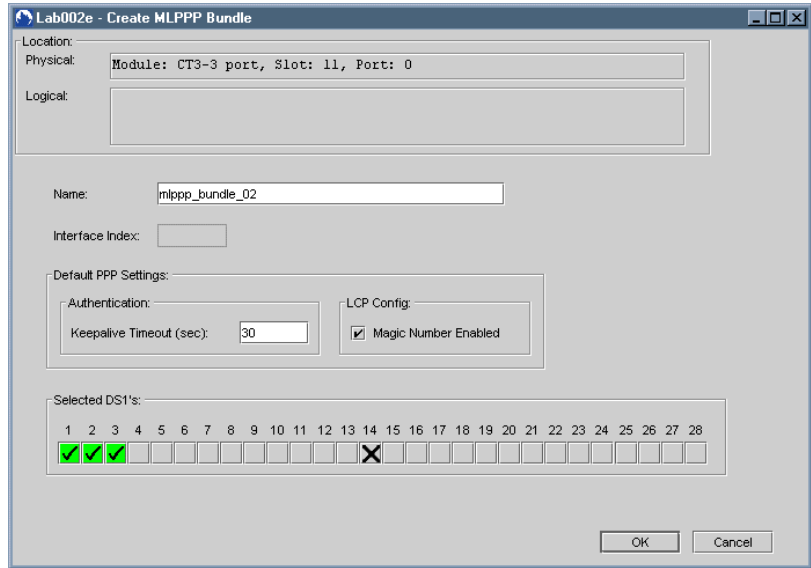


**Note:** You can create as many MLPPP bundles on a module or line interface as you have DS1s on that node. For example, on a CT3 module, you can create a maximum of 28 MLPPP bundles on each line interface (port). In this case, each bundle consists of 1 DS1. When you have assigned all the available DS1s to MLPPP bundles, you can create no additional bundles on that node. You can create a maximum of 4,000 MLPPP bundles per E-series device.

To create an MLPPP bundle:

- 1 In the Instance Explorer, expand the node on which you want to create an MLPPP bundle:
  - DS3 for a CT3
  - DS1 for a CT1
  - DS1 for a CE1
- 2 Select the module or line interface, right-click, select Create, and click MLPPP Bundle.

The Create MLPPP Bundle dialog box appears.



3 Set the MLPPP bundle's parameters. See Table 23-2.



**Note:** The parameters in the Default PPP Settings group box apply to the PPP interface on a DS0 bundle.

**Table 23-2** MLPPP bundle parameters

Parameter	Description
Name	Name that identifies the bundle (a maximum of 32 characters)
Interface Index	Number that identifies the MLPPP bundle; uneditable
Keepalive Timeout (sec)	Tracks the status of the connection; range 30–300 seconds; zero (0) disables timeout
Magic Number Enabled	Randomly generated number used to identify one end of a point-to-point connection
Selected DS1s	Select the DS1s to be associated with the MLPPP bundle. Any DS1 that has a partially allocated DS0 bundle or is associated with another bundle is marked with an X and is not available for the MLPPP bundle you are creating. <b>Note:</b> You must select at least one but not more than eight DS1s.

4 Click OK to save the settings.