

# Configuring T3/E3 and T1/E1 Modules

The NMC-RX application supports the following channelized and unchannelized line modules:

- CT3, CT1, CE1
- T3 (DS3), E3

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## Overview

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E-series routers can route traffic, such as IP/Frame Relay, IP/PPP, or IP/ATM, on higher-speed uplink modules into the core of the Internet. T3/E3 and T1/E1 line modules pair with I/O modules to provide particular capabilities and connections.

See Table 14-1 and the *E-Series Installation and User Guide* for complete module details.

**Table 14-1** T3/E3 and T1/E1 line modules and I/O modules

Line Module	I/O Module	Description	NMC-RX Software Reference Name
CE1	CE1 FULL	20-port E1 module that supports channelization to DS0	CE1-20 port
COCX-F3	CT3/T3 12	12-port unchannelized T3 module for frame operation	T3 FRAME-12 port
CT1	CT1 FULL	24-port E1 module that supports channelization to DS0	CT1-24 port
CT3	CT3/T3	3-port T3 module that supports channelization to T1 and DS0	CT3-3 port
CT3/T3-F0	CT3/T3 12	12-port T3 module that supports both channelized operation (T1 and DS0) and unchannelized T3 operation	CT3-12 port
E3 ATM	E3	3-port unchannelized E3 module for ATM	E3 ATM-3 port
E3 FRAME	E3	3-port unchannelized E3 module for frame operation	E3 FRAME-3 port
OCx/STMx ATM	4xDS3 ATM	4-port unchannelized E3 module for ATM operation	T3 ATM-4 port
T3 ATM	CT3/T3	3-port unchannelized T3 module for ATM operation	T3 ATM-3 port
T3 FRAME	CT3/T3	3-port unchannelized T3 module for frame operation	T3 FRAME-3 port

The channelized and unchannelized modules described in this chapter are physically different; however, they are configured in similar ways.

## Configuration Tasks

Typically, you configure channelized or unchannelized modules in the following order. Some steps may not be applicable for a particular module.

- 1 Set the parameters that provide basic identification and status information about the module.
- 2 Set the line interface parameters.
- 3 Set the DS1 interface parameters.
- 4 Configure the DS0 bundle parameters. (See *Chapter 12, Configuring DS0 Bundles*.)

- 5 Configure the:
- ATM interfaces (See *Chapter 16, Configuring ATM*)
  - Bridged IP/1483 interfaces (See *Chapter 18, Configuring Bridged IP*)
  - Cisco HDLC interfaces (See *Chapter 21, Configuring Cisco HDLC*)
  - Frame Relay interfaces (See *Chapter 22, Configuring Frame Relay*)
  - IP interfaces (See *NMC-RX User Guide, Vol. 2, Chapter 6, Configuring IP*)
  - MLPPP bundles (See *Chapter 23, Configuring MLPPP Bundles*)
  - PPP interfaces (See *Chapter 25, Configuring PPP*)
  - PPPoE interfaces (See *Chapter 26, Configuring PPP over Ethernet*)

## Configuring a Module

You can configure a module's admin status only by enabling or disabling it.

To change the admin status:

- 1 In the Instance Explorer list, select the module you want to configure.
- 2 Right-click, and click Configure.

The Module Config tab appears in the work area.

The screenshot shows a 'Module Config' dialog box with the following fields and values:

- Location: Physical:** Module: CT3-3 port, Slot: 2
- Location: Logical:** (Empty)
- Module Type:** CT3-3 port
- Serial Number:** 7199330013
- Admin Status:** Enabled
- IOA Serial Number:** (Empty)

- 3 Select the admin status. See Table 14-2.

**Table 14-2** Module configuration parameters

Field	Description
Module Type	Module type (uneditable)
Admin Status	<ul style="list-style-type: none"><li>• Enabled – module is running</li><li>• Disabled – module is not in operation</li></ul>
Serial Number	Ten-digit identification number (S/N) on the module's faceplate. This value is automatically retrieved from the device and is uneditable.
IOA Serial Number	Ten-digit identification number (S/N) on the input/output adapter's faceplate. This value is automatically retrieved from the device and is uneditable.

- 4 Click Save.

## Configuring a Line Interface

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You can configure line interfaces on CT3, T3, and E3 line modules. CT1 and CE1 line modules do not have line interfaces.

To configure a line interface:

- 1 In the Instance Explorer, select the line interface you want to configure.
- 2 Right-click, and click Configure.

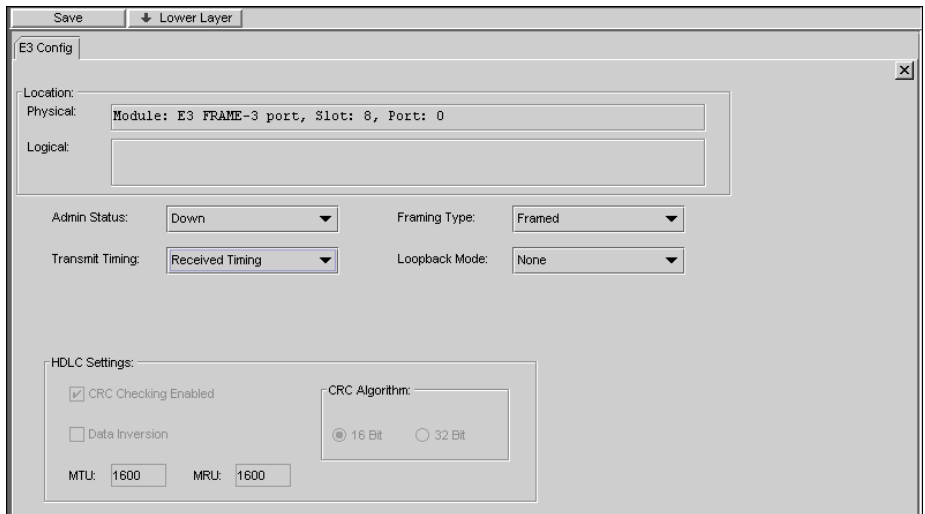
The Config tab appears in the work area.



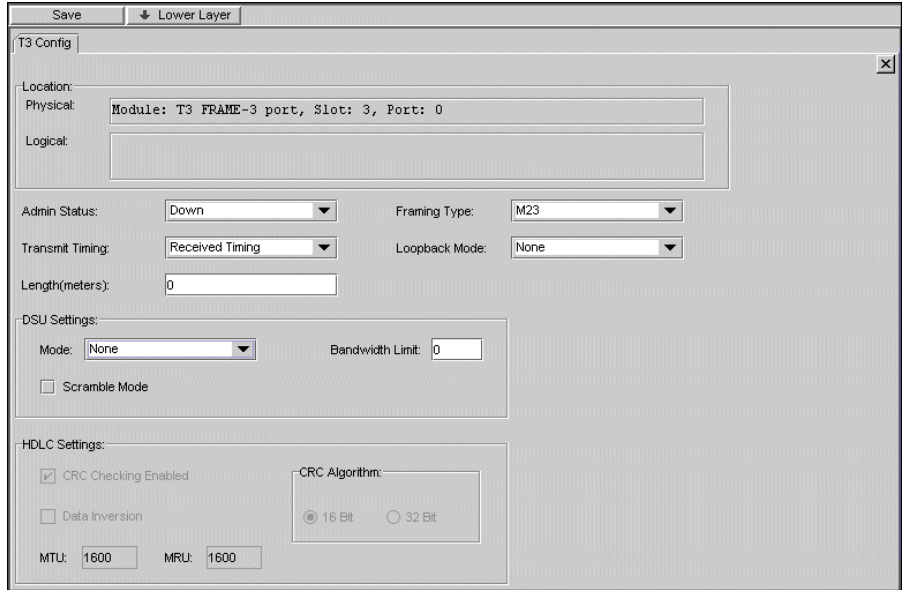
**Note:** Fields vary depending on the type of CT3, T3, and E3 line module being configured. See the following examples and refer to Table 14-3.



CT3 line module



E3 Frame line module



T3 Frame line module

3 Set the line interface parameters. See Table 14-3.

**Table 14-3** CT3, T3, and E3 module parameters

Parameter	Description	CT3	T3 ATM	T3 FRAME	E3 ATM	E3 FRAME
Admin Status	<ul style="list-style-type: none"> <li>Up – interface is enabled by the administrator</li> <li>Down – interface is disabled by the administrator</li> </ul>	x	x	x	x	x
Transmit Clock	Specifies the type of timing: <ul style="list-style-type: none"> <li>Local Timing – system receives its clocking from an internal source</li> <li>Module Timing – system receives its clocking from a network source</li> <li>Chassis Timing – system receives its clocking from the configured system clock</li> </ul>	x	x	x	x	x
Length (meters)	Specifies the cable length. The length of cable determines power requirements: <ul style="list-style-type: none"> <li>0 to 224 – use for low-power output</li> <li>225 to 450 – use for high-power output</li> </ul>	x	-	x	-	-
Framing Type	M23 – M23 multiplexer framing	x	x	x	-	-
	M23Plcp – M23 with PLCP framing	-	x	-	-	-
	C-Bit Parity – c-bit parity framing	x	x	x	-	-

**Table 14-3** CT3, T3, and E3 module parameters (continued)

Parameter	Description	CT3	T3 ATM	T3 FRAME	E3 ATM	E3 FRAME
	<ul style="list-style-type: none"> <li>CbitParityPlcp – c-bit parity with PLCP framing</li> </ul>	-	x	-	-	-
	<ul style="list-style-type: none"> <li>G832 – G.832 ATM direct mapping</li> </ul>	-	-	-	x	x
	<ul style="list-style-type: none"> <li>Framed – Framed mode</li> </ul>	-	-	-	x	x
	<ul style="list-style-type: none"> <li>PLCP – PLPC framing</li> </ul>	-	-	-	x	-
Loopback Mode	<ul style="list-style-type: none"> <li>None – no loopback specified (default)</li> <li>Network Payload – loops the data toward the network</li> <li>Network Line – sets a local loopback at the payload controllers</li> <li>Local – loops back outgoing data from the transmit to the receive side</li> </ul>	x	x	-	x	x
Cell Scramble	Enables cell scrambling on the interface	-	x	-	x	-
<b>DSU Settings</b>						
Mode	None, Larscom, Digital Link	-	-	x	-	-
Bandwidth Limit	Range: 0–44210	-	-	x	-	-
Scramble Mode	Enables cell scrambling on the interface	-	-	x	-	-
<b>HDLC Settings</b>						
CRC Checking Enabled	Enables cyclic redundancy check (CRC), an error-checking technique that uses a calculated numeric value to detect errors in transmitted data	-	-	x	-	x
CRC Algorithm	Cyclic redundancy check algorithm used during error checking (16 bit or 32 bit)	-	-	x	-	x
Data Inversion	Enables data stream inversion for the interface	-	-	x	-	x
MTU	Maximum transmission unit size for the interface. Coordinate this value with the network administrator on the other end of the line; default 1500	-	-	x	-	x
MRU	Maximum receive unit size for the interface. Coordinate this value with the network administrator on the other end of the line; default 1500	-	-	x	-	x
(x = parameter available on module)						

4 Click Save.

Your configuration settings are saved.

## Configuring a DS1 Interface

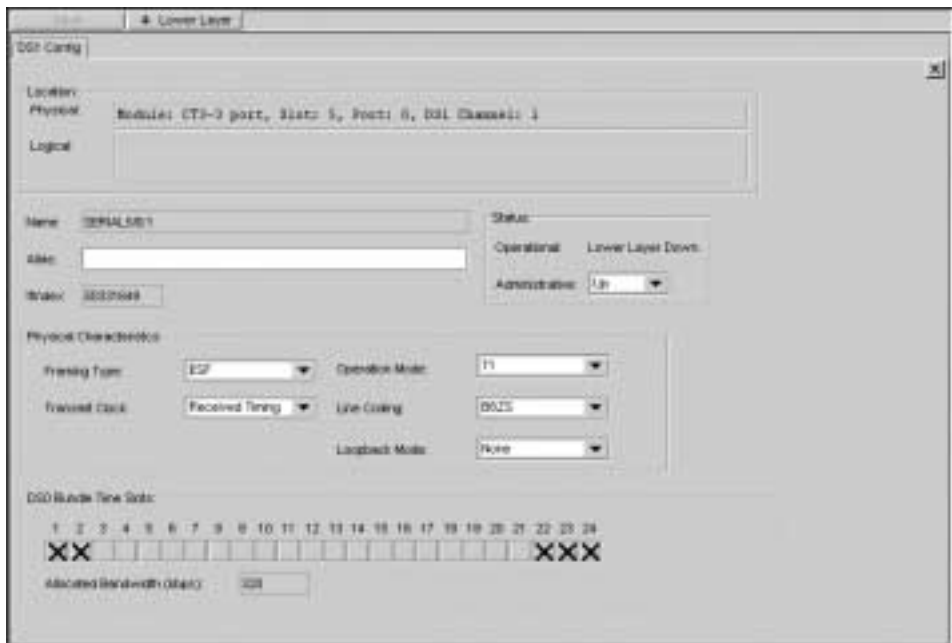
You can configure DS1 interfaces on CT3, CT1, and CE1 line modules.

- CT3 modules are made up of 3 DS3 line interfaces. Each DS3 line interface multiplexes 28 asynchronous T1 (DS1) channels.
- CT1 modules have 24 T1 channels
- CE1 modules have 20 E1 channels

To configure a DS1 interface:

- 1 In the Instance Explorer, navigate to the DS1 level.
- 2 Select the DS1 interface you want to configure, right-click, and click Configure.

The DS1 config tab appears in the work area.



- 3 Set the DS1 configuration parameters. See Table 14-4.

**Table 14-4** DS1 interface parameters

Field	Description
Name	Identifies the interface; generated automatically
Alias	Description of the interface; 0–15 characters; default: blank

**Table 14-4** DS1 interface parameters (continued)

Field	Description
IfIndex	Identifies the interface on the particular line interface; generated automatically
Operational	Current operational status of the interface
Administrative	Desired status of the interface: Up/Down; default: Up
Framing Type	<ul style="list-style-type: none"> <li>ESF – T1 framing for Extended Super Frames (ESF) (default)</li> <li>SF – T1 framing for Super Frames (SF)</li> <li>CRC4 – Cyclic redundancy check (CE1 only)</li> <li>no CRC4 – (CE1 only)</li> </ul>
Transmit Clock	<ul style="list-style-type: none"> <li>Received Timing – sets the clock source on the active line</li> <li>Module Timing – receives its clocking from a network source</li> <li>Chassis Timing – receives its clocking from the configured system clock</li> </ul>
Operation Mode	Specifies the type of controller (DS1): <ul style="list-style-type: none"> <li>T1 – T1 and CT3 modules only</li> <li>E1 – E1 module only (Europe)</li> <li>J1 – T1 module only; J1 variant of the T1 framing (Japan)</li> </ul>
Line Coding	<ul style="list-style-type: none"> <li>AMI – specifies alternate mark inversion; default</li> <li>B8ZS – specifies bipolar with eight-zero substitution; T1 and CT3 modules only</li> <li>HDB3 – specifies high-density bipolar 3 line-code type; E1 module only (Europe)</li> </ul>
Loopback Mode	<ul style="list-style-type: none"> <li>None – no loopback specified; default</li> <li>Network Payload – loops the data toward the network</li> <li>Network Line – sets a local loopback at the payload controllers</li> <li>Local – loops back outgoing data from the transmit to the receive side</li> </ul>
DS0 Bundle Time Slots	<ul style="list-style-type: none"> <li>Time slots 1–24 (CT3 and CT1) or 1–31 (CE1)</li> <li>An X indicates preallocated DS0 bundle timeslots on the T1 line interface selected</li> </ul>
Allocated Bandwidth (kbps)	<ul style="list-style-type: none"> <li>Displays the total amount of allocated bandwidth</li> </ul>

#### 4 Click Save.

You can now create DS0 interfaces on the DS1 interface. See *Chapter 12, Configuring DS0 Bundles*.

