C H A P T E R **2**

CTC Operations

This chapter covers Cisco Transport Controller (CTC) operations of the ML-Series card. All operations described in the chapter take place at the card-level view of CTC. CTC shows provisioning information and statistics for both the Ethernet and paket over SONET/SDH (POS) ports of the ML-Series card. For the ML-Series cards, CTC manages SONET/SDH alarms and provisions STS/STM circuits in the same manner as other ONS 15454 SONET/SDH traffic cards.

For information on using CTC to load a Cisco Internet Operating System (IOS) configuration file or to open a Cisco IOS command line interface (CLI) session, see Loading a Cisco IOS Startup Configuration File Through CTC, page 3-9 or Opening a Cisco IOS Session Using CTC, page 3-2.

This chapter contains the following major sections:

- Displaying ML-Series Ethernet Statistics on CTC, page 2-1
- Displaying ML-Series POS Statistics on CTC, page 2-3
- Displaying ML-Series Ethernet Ports Provisioning Information on CTC, page 2-5
- Displaying ML-Series POS Ports Provisioning Information on CTC, page 2-7
- Managing SONET/SDH Alarms, page 2-8
- SONET/SDH Circuit Provisioning, page 2-9

Displaying ML-Series Ethernet Statistics on CTC

The Ethernet statistics window (Figure 2-1 on page 2-2) lists Ethernet port-level statistics. The ML-Series Ethernet ports are zero based. Display the CTC card view for the ML-Series card and click the **Performance > Ether Ports** tabs to display the window. Table 2-1 on page 2-2 describes the buttons in the window. Table 2-2 on page 2-2 lists the ONS 15454 Ethernet parameters.
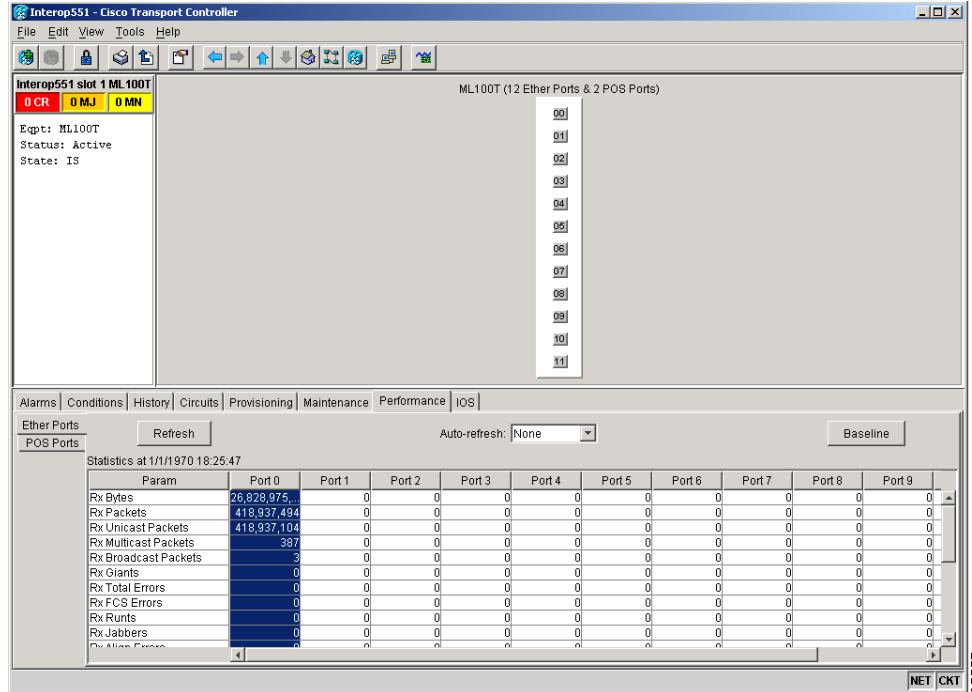
Figure 2-1   Displaying ML-Series Ethernet Statistics

Table 2-1   ML-Series Ethernet Statistics Fields and Buttons

Button or Field	Description
Baseline	Resets the software counters (in that particular CTC client only) temporarily to zero without affecting the actual statistics on the card. From that point on, only the delta in counters are displayed by this CTC. These new baselined counters are shown only as long as the user displays the Performance window. If the user navigates to another CTC window and comes back to the Performance window, the true actual statistics retained by the card are shown.
Refresh	Queries the current values from the card and updates the CTC display.
Auto-Refresh	Sets a time interval for the automatic refresh of statistics.

Table 2-2   Ethernet Parameters

Parameter	Meaning
Rx Bytes	Number of bytes received since the last counter reset
Rx Packets	Number of packets received since the last counter reset
Rx Unicast Packets	Number of unicast packets received
Rx Multicast Packets	Number of multicast packets received
Rx Broadcast Packets	Number of broadcast packets received
Rx Giants	Number of packets received that are greater than 1530 bytes in length
Rx Total Errors	Total number of receive errors

Table 2-2   Ethernet Parameters (continued)

Parameter	Meaning
Rx FCS Errors	Number of packets with a frame check sequence (FCS) error
Rx Runts	Total number of frames received that are less than 64 bytes in length and have a cyclic redundancy check (CRC) error
Rx Jabbers	Total number of frames received that exceed the maximum 1548 bytes and contain CRC errors
Rx Align Errors	Number of received packets with alignment errors
Tx Bytes	Number of bytes transmitted since the last counter reset
Tx Packets	Number of packets transmitted since the last counter reset
Tx Unicast Packets	Number of unicast packets transmitted
Tx Multicast Packets	Number of multicast packets transmitted
Tx Broadcast Packets	Number of broadcast packets transmitted
Tx Giants	Number of packets transmitted that are greater than 1548 bytes in length
Tx Collisions	Number of transmitted packets that collided
Port Drop Counts	Number of received frames dropped at the port level
Rx Pause Frames	Number of received pause frames (applies only to the ML1000-2 Ethernet ports)
Rx Threshold Oversizes	Number of received packets larger than the ML-Series remote monitoring (RMON) threshold (applies only to the ML1000-2 Ethernet ports)
Rx GMAC Drop Counts	Number of received frames dropped by MAC module (applies only to the ML1000-2 Ethernet ports)
Tx Pause Frames	Number of transmitted pause frames (applies only to the ML1000-2 Ethernet ports)

Displaying ML-Series POS Statistics on CTC

The POS statistics window (Figure 2-2 on page 2-4) lists POS port-level statistics. Display the CTC card view for the ML-Series card and click the **Performance > POS Ports** tabs to display the window. Table 2-3 on page 2-4 describes the buttons in the window. Table 2-4 on page 2-4 lists the ONS 15454 POS parameters.
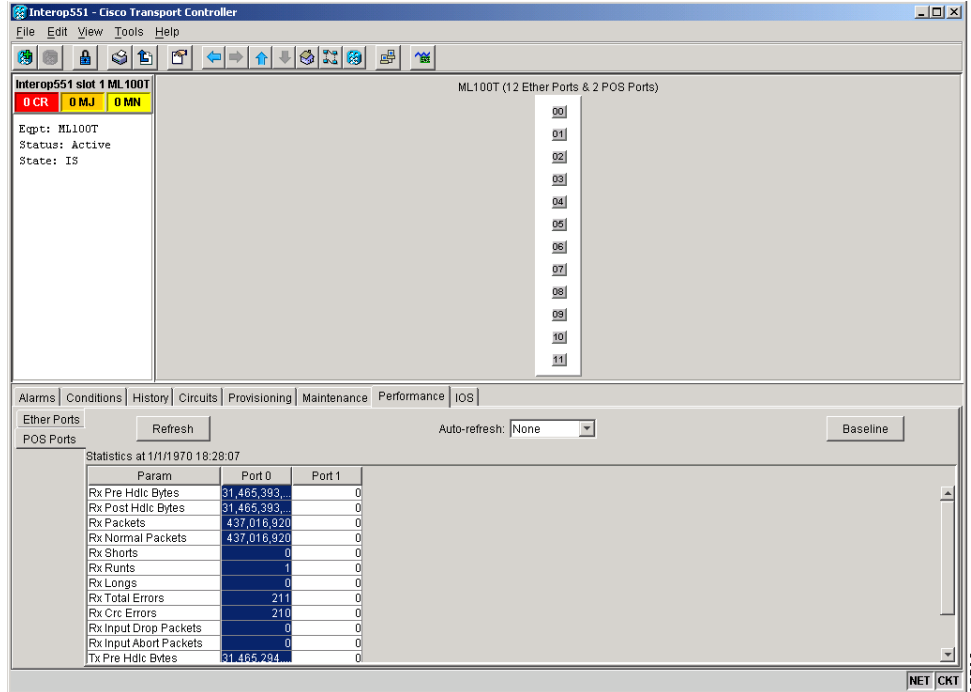
Figure 2-2   Displaying ML-Series POS Statistics

Table 2-3   ML-Series POS Statistics Fields and Buttons

Button or Field	Description
Baseline	Resets the software counters (in that particular CTC client only) temporarily to zero without affecting the actual statistics on the card. From that point on, only the delta in counters are displayed by this CTC. These new baselined counters are shown only as long as the user displays the Performance window. If the user navigates to another CTC window and comes back to the Performance window, the true actual statistics retained by the card are shown.
Refresh	Manually refreshes the statistics.
Auto-Refresh	Sets a time interval for the automatic refresh of statistics.

Table 2-4   POS Parameters

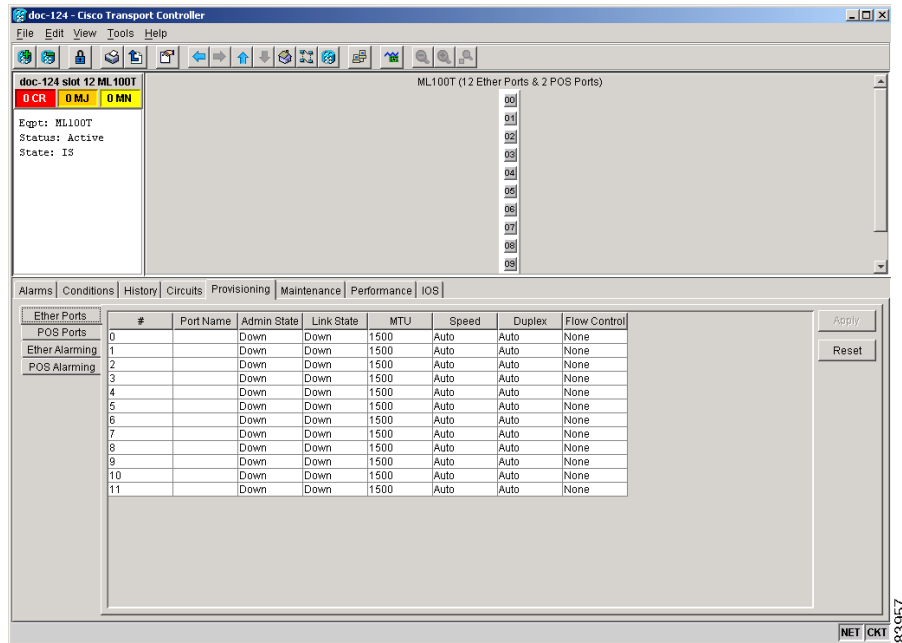| Parameter	Meaning
Rx Pre Hdlc Bytes	Number of bytes received prior to the bytes undergoing HLDC encapsulation by the policy engine
Rx Post Hdlc Bytes	Number of bytes received after the bytes undergoing HLDC encapsulation by the policy engine
Rx Packets	Total number of packets received since the last counter reset
Rx Normal Packets	Number of packets between the minimum and maximum packet size received
Rx Shorts	Number of packets below the minimum packet size received

Table 2-4   POS Parameters (continued)

Parameter	Meaning
Rx Runts	Total number of frames received that are less than 64 bytes in length and have a CRC error
Rx Longs	Counter for the number of received frames that exceed the maximum valid packet length of 1518 bytes
Rx Total Errors	Total number of receive errors
Rx Crc Errors	Number of packets with a CRC error
Rx Input Drop Packets	Number of received packets dropped on input
Rx Input Abort Packets	Number of received packets aborted on input
Tx Pre Hdlc Bytes	Number of bytes transmitted prior to the bytes undergoing HLDC encapsulation by the policy engine
Tx Post Hdlc Bytes	Number of bytes transmitted after the bytes undergoing HLDC encapsulation by the policy engine
Tx Packets	Number of packets transmitted since the last counter reset
Port Drop Counts	Number of received frames dropped at the port level

Displaying ML-Series Ethernet Ports Provisioning Information on CTC

The Ethernet port provisioning window () displays the provisioning status of the card's Ethernet ports. Click the **Provisioning > Ether Ports** tabs to display this window. For ML-Series cards, only the Port Name field can be provisioned from CTC. The user must configure ML-Series ports through the Cisco IOS CLI.

Figure 2-3   Displaying ML-Series Ethernet Port Provisioning Information

The Provisioning > Ether Ports tab displays the following information:

- Port Name—Configurable identifier for the port.

- Admin State—Configured port state, which is administratively active or inactive. Possible values are UP and DOWN.

- Link State—Status between signalling points at port and attached device. Possible values are UP and DOWN.

- MTU—(maximum transfer unit) Largest acceptable packet size configured for that port. Default value is 1500.

- Speed—ML1000-2 possible values are Auto or 1Gbps. ML100T-12 possible values are Auto, 10Mbps or 100Mbps.

- Duplex—Setting of the port. ML1000-2 possible values are Auto or Full. ML100T-12 possible values are Auto, Full, or Half.

- Flow Control—Negotiated flow control mode. Possible values are None, Symmetrical, and Asymmetrical.

- Optics—Small form-factor pluggable (SFP) physical media type. Possible values are Unplugged, 1000 SX, or 1000 LX. (This information does not apply to the ML100T-12 card.)

Note   Auto indicates the port is set to auto-negotiate capabilities with the attached link partner.

Note   The port name field configured in CTC and the port name configured in Cisco IOS are independant of each other. The name for the same port under Cisco IOS and CTC will not match, unless the same name is used to configure the port name in both CTC and Cisco IOS.
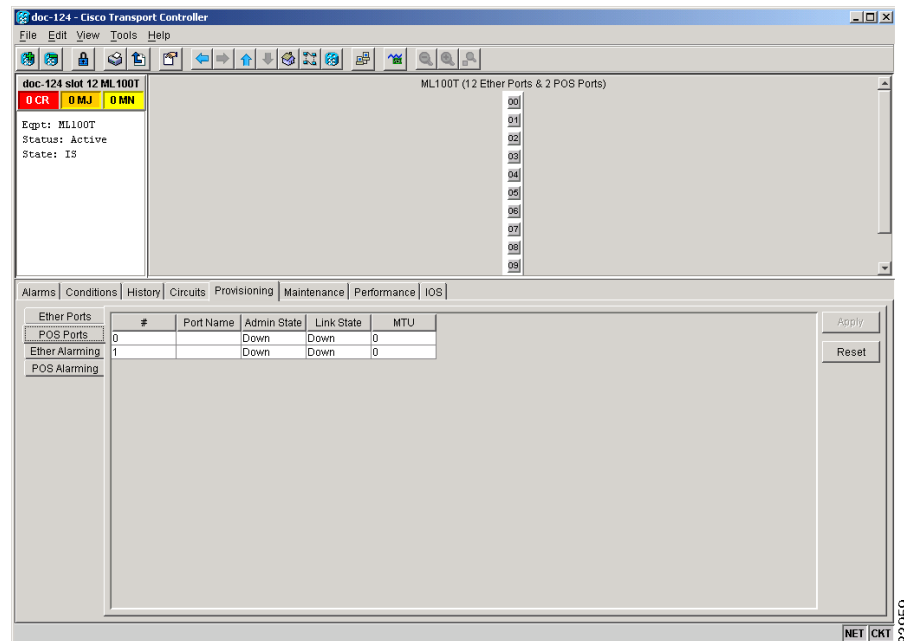
Note   When set to auto-negotiate, the ML1000-2 might show Auto in the speed and duplex columns of the Ether ports provisioning screen. This indicates that the ML1000-2 is set to auto-negotiate flow control with the link partner. It does not mean the speed or duplex mode of the card will vary from the 1-Gbps, full duplex characteristics of Gigabit Ethernet.

Displaying ML-Series POS Ports Provisioning Information on CTC

The POS ports provisioning window (Figure 2-4) displays the provisioning status of the card's POS ports. Click the **Provisioning > POS Ports** tabs to display this window. For ML-Series cards, only the POS Port Name field can be provisioned from CTC. The user must configure ML-Series ports through the Cisco IOS CLI.

Figure 2-4   Displaying POS Port Provisioning Information

The Provisioning > POS Ports tab displays the following information:

- Port Name—Configurable identifier for the port.

- Admin State—Configured administrative port state, which is active or inactive. Possible values are UP and DOWN. For the UP value to appear, a POS port must be both administratively active and have a SONET/SDH circuit provisioned.

- Link State—Status between signalling points at port and attached device. Possible values are UP and DOWN.

- MTU—(maximum transfer unit) Largest acceptable packet size configured for that port. Maximum setting is 9000 and default size is 1500 for LEX encapsulation and 4470 for PPP and HDLC encapsulation. The MTU value will display 0 until the POS port is used in creating a circuit.

> **Note**   POS interfaces are first created when a CTC STS/STM circuit is provisioned.
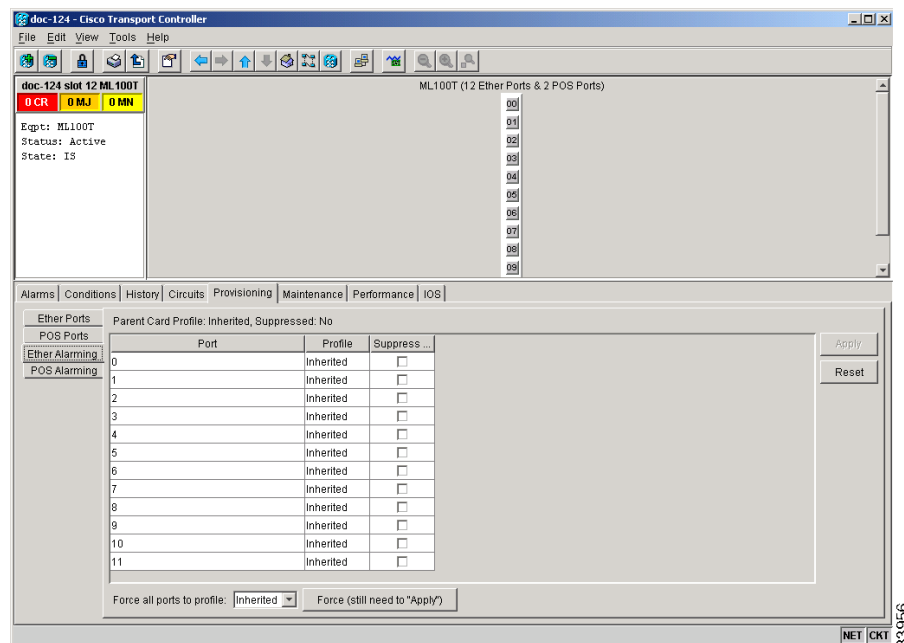
> **Note**   The port name field configured in CTC and the port name configured in Cisco IOS are independant of each other. The name for the same port under Cisco IOS and CTC will not match, unless the same name is used to configure the port name in both CTC and Cisco IOS.

Managing SONET/SDH Alarms

CTC manages the ML-Series SONET/SDH alarm behavior in the same manner as it manages alarm behavior for other ONS 15454 SONET/SDH cards. Refer to Chapter 7, "Manage Alarms", of the *Cisco ONS 15454 Procedure Guide* or *Cisco ONS 15454 SDH Procedure Guide* for detailed information. For information on specific alarms, refer to Chapter 2, "Alarm Troubleshooting", of the *Cisco ONS 15454 Troubleshooting Guide* or *Cisco ONS 15454 SDH Troubleshooting Guide* for detailed information.

To view the window, click the **Ether Alarming > Provisioning** tabs for the Ethernet ports or **POS Alarming > Provisioning** tabs for the POS ports. Figure 2-5 shows the Ethernet ports alarming pane.

Figure 2-5   Managing ML-Series SONET/SDH Alarms

SONET/SDH Circuit Provisioning

CTC provisions STS/STM level circuits for the two virtual SONET/SDH ports of the ML Series in the same manner as it provisions other ONS 15454 SONET/SDH OC-N cards. For the ONS 15454 SONET, refer to Chapter 6, "Create Circuits and VT Tunnels" of the *Cisco ONS 15454 Procedure Guide* for a step-by-step procedure for creating ML-Series STS circuits. For the ONS 15454 SDH, refer to Chapter 6, "Create Circuits and Low-Order Tunnels" of the *Cisco ONS 15454 SDH Procedure Guide* for a step-by-step procedure for creating ML-Series SDH circuits.