



System Maintenance and Monitoring

This chapter describes the system maintenance and monitoring capabilities available in the element management system (EMS), and includes the following sections:

- Getting System Information, page 16-2
- Provisioning the MTAC RS-232 Port on the Cisco 6732, page 16-5
- Shutting Down the Ethernet for System Protection, page 16-5
- Monitoring Performance, page 16-7

Getting System Information

EMS provides the following information about your NE, its plugin cards, and EMS:

- EMS Version, page 16-2
- NE Information, page 16-2
- Plugin Card Information, page 16-4
- One-Day Performance Monitoring, page 16-7
- Performance Monitoring Codes, page 16-8
 - NonSONET Performance, page 16-8
 - Monitoring SONET Performance, page 16-9

EMS Version

To view the version of EMS software currently running on a workstation, select **Help > Version** from either Cisco 6700 NetView or Cisco 6700 NodeView. EMS displays the date and release number of the software in use.

NE Information

-
- Step 1** From Cisco 6700 NetView, double-click the node. EMS launches Cisco 6700 NodeView.

Step 2 Double-click the node nameplate to launch the NE provision window. (See Figure 16-1.)

Figure 16-1 INE Provision Window

NE Provision for 6732 node: node9	
System Basic Provisioning	NE Name: 6732
IP Address Configuration	Alias:
IP & Datalink Route Configuration	NE Location: Central Office
Ping Node	NE Node Type: NetworkNode
Node ID Configuration	NE Time Of Day: 2000-04-27,17:29:17.0
IP & Inter Node Link Configuration	NE Uptime: 0d 9:26:16
Timing Source Selection & Control	NE Backplane Version: 1.3
Timing Distribution Provisioning	NE Loaded Software Version: 1.3(2)
NE Time Of Day Set	NE CLEI Code: SBMAFGODRA
Alarm Provisioning	NE Serial Number: 6861
Common Control Card Switch Over	NE Backplane Type: Unknown
Software Upgrade	Alarm Status: normal
Database Backup/Restore	Problem List:
Error Log Retrieval	
Exit	

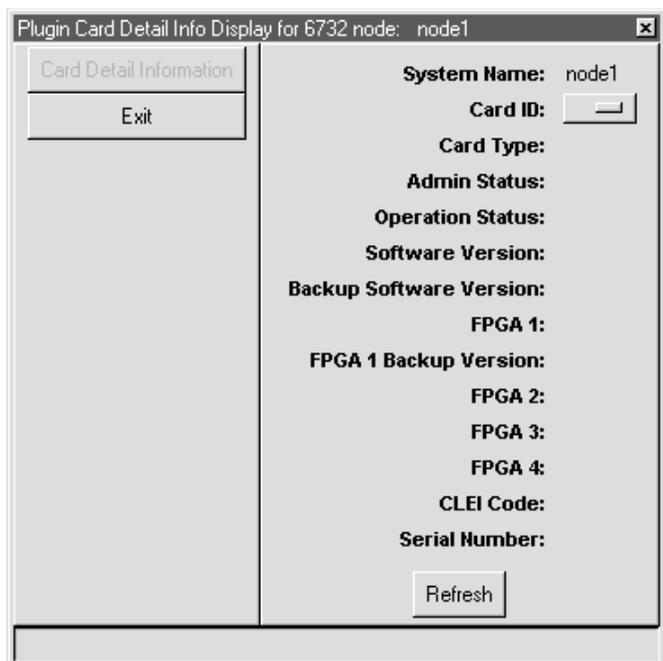
Information provided includes:

- NE Name
- Alias
- NE Locations
- NE Node Types
- NE Time of Day
- NE Uptime
- NE Backplane Version
- NE Loaded Software Version (this refers to the MCC, or embedded, software, not the version of EMS software that runs on your workstation)
- NE CLEI (common language equipment identifier) Code
- NE Serial Number
- NE Backplane Type
- Alarm Status
- Problem List

Plugin Card Information

- Step 1** From Cisco 6700 NodeView, select **Objects > Plugin Card Details**. EMS displays the plugin card detail information window. (See Figure 16-2.)

Figure 16-2 Plugin Card Detail Window



- Step 2** In the drop-down Card ID menu, select a card to display that card's information, which includes:
- System Name
 - Card ID
 - Card Type
 - Admin Status
 - Operation Status
 - Software Version (this refers to the MCC, or embedded, software, not the version of EMS software that runs on your workstation)
 - Backup Software Version
 - FPGA 1
 - FPGA 1 Backup Version
 - FPGA 2
 - FPGA 3
 - FPGA 4
 - CLEI Code
 - Serial Number

Provisioning the MTAC RS-232 Port on the Cisco 6732

The Cisco 6732 metallic test access card (MTAC) offers an EIA/TIA-232 interface (the older but more widely recognized term “RS-232” is used in this chapter) for local access through an EMS workstation. See the application note *RS-232 Connection* for the workstation provisioning procedure.

- Step 1** From Cisco 6700 NodeView, double-click the MTAC RS-232 port icon. EMS launches the MTAC RS-232 provisioning window. (See Figure 16-3.)

Figure 16-3 MTAC Provisioning Window

- Step 2** Set the following parameters:
- **Baud Rate**—Select the interface baud rate.
 - **Number of Bits**—Select the number of bits for the connection.
 - **Parity**—Select **None**, **Even**, or **Odd** parity.
 - **Stop Bits**—Select the number of stop bits.
 - **Flow Control**—Select **None** or **Hardware** flow control.
 - **Test Access**—Select the MTAC interface used, **Front** or **Backplane**.
 - **Target ID**—Leave blank.
- Step 3** Click **Apply** to provision the MTAC RS-232 interface.



Note

You cannot provision an MTAC RS-232 port on a Cisco 6705 or Cisco IAD1101.

Shutting Down the Ethernet for System Protection

The Ethernet port on the Cisco IAD1101 and on the Cisco 6705 main control card (MCC) can be shut down to secure the NE and prevent unauthorized system access.

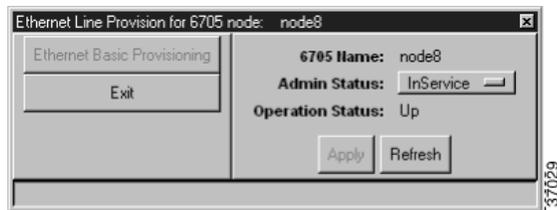
**Caution**

Placing the Ethernet port out of service should only be performed after all provisioning is complete. You cannot communicate with the NE if this port is disabled, and a solid inter node data link (INDL) has not been established between the NE in question and a remote NE.

Before disabling the Ethernet port, Cisco Systems recommends backing up the NE database so you can retrieve and use the information if any system difficulties occur. (See “Backing Up the System Database” on page 14-2.)

- Step 1** From Cisco 6700 NodeView, double-click the Ethernet port LED on the MCC card. EMS launches the Ethernet line provision window (see Figure 16-4).

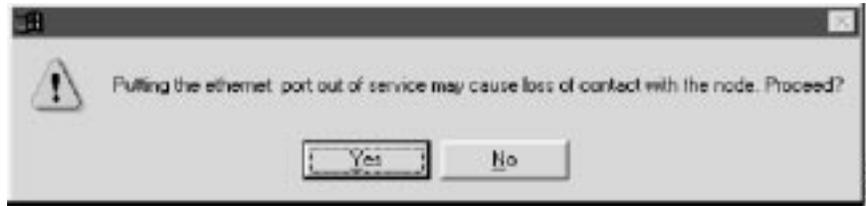
Figure 16-4 Put Ethernet Port Out of Service



- Step 2** Set the **Admin Status** of the Ethernet port to **OutOfService**.

- Step 3** Click **Apply** to put the Ethernet port out of service. EMS displays a warning message. (See Figure 16-5.)

Figure 16-5 Ethernet Shutdown Warning Message



- Step 4** Click **Yes** to disable the Ethernet port.



Caution

The Ethernet port remains inoperable until you send a remote instruction from an EMS workstation using an INDL to place the port back in service.

Monitoring Performance

Performance monitoring is the action of collecting data on the signal over a period of time to detect degradations in the section, line, or path. The parameters that are collected are based on signal integrity, number of protection switches, and number of failures.

One-Day Performance Monitoring

All Cisco 6700 Series line interface modules are synchronized to Greenwich Mean Time (GMT), rather than the “Time of Day” setting on the EMS workstation. One-day performance monitoring (PM) tests use GMT, not the EMS time of day, to determine the start and end times of the 24-hour monitoring window.

Performance Monitoring Codes

Table 16-1 through Table 16-6 show the codes for monitoring degradations on sections, lines and paths.

NonSONET Performance

Table 16-1 Performance Monitoring Codes—NonSONET

PM Code	Definition	Description
CV-L	Coding violation – line	The count of BPVs and EXZs occurring over the accumulation period. An EXZ increments the CV-L by one, regardless of the length of the zero string. For a B8ZS-coded signal, BPVs that are part of the zero substitution code are excluded from the count.
ES-L	Errored second – line	The count of seconds during which one or more of the following has occurred: BPVs, EXZs and LOSs. For a B8ZS-coded signal, BPVs that are part of the zero substitution code are excluded.
SES-L	Severely errored second – line	The count of seconds during which 1,544 or more BPVs or EXZs, or one or more LOS defects, have occurred.
CV-P	Coding violation – path	For DS1-ESF paths, this parameter is a count of detected CRC-6 defects. For DS1-SF Paths, this parameter is a count of detected FEs.
CSS-P	Controlled slip second – path	Only applies to DS1 extensions and Multiple Interface Group Features. This parameter is a count of seconds during which a CS has occurred. Counts of CSs can be accurately made only in the NE of the DS1 signal where the CS took place.
ES-P	Errored second – path	For DS1-ESF, this parameter is a count of one-second intervals containing one or more CRC-6 errors or one or more CS events, or one or more SEF or AIS defects. In the case of DS1 SF, this parameter is a count of one second intervals containing one or more FE events, or one or more CS events, or one or more SEF or AIS defects.
FC-P	Failure count – path	The number of LOS/LOF/AIS-L (near-end) or RDI-L (far-end) failures. Count is incremented only when the failure goes from off to on.
PSC-P	Protection switch count – path	The number of switches between working and protect fibers when in 1+1 linear mode.
PSD-P	Protection switch duration – path	The number of seconds that the facility has been on the protection fiber. Only applicable if revertive line switching is used.
SAS-P	Severely errored frame/alarm indication signal – path	The number of seconds containing one or more SEFs, or one or more AIS defects.
SES-P	Severely errored second – path	For DS1-ESF paths, this parameter is a count of seconds during which at least one of the following has occurred: 320 or more CRC-6 errors, or one or more SEF or AIS defects. For DS1-SF paths, an SES is a second containing the occurrence of eight FEs (if both Ft and Fs bits are considered), four FEs (if only Ft bits are considered), or one or more SEF or AIS defects.

Table 16-1 Performance Monitoring Codes—NonSONET (continued)

PM Code	Definition	Description
SEFS-P	Severely errored frame second – path	A count of seconds containing one or more SEFs, or one or more AIS defects.
UAS-P	Unavailable second – path	A count of one-second intervals during which the DS1 path is unavailable. A DS1 path is said to be unavailable at the onset of 10 contiguous SESs. The 10 SESs are included in unavailable time. Once unavailable, the DS1 path becomes available at the onset of 10 consecutive seconds with no SESs. The 10 seconds with no SESs are excluded from unavailable time.

Monitoring SONET Performance

Table 16-2 Performance Monitoring Codes—SONET Section

PM Code	Definition	Description
CV-S	Coding violation – section	Coding Violation - Count of B1 BIP-8 violations.
ES-S	Errored second – section	Number of seconds that at any time during the second either at least one BIP error occurred, or an SEF/LOS was present.
SES-S	Severely errored second – section	Number of seconds during which 155 or more BIP errors occurred or an SEF/LOS was present.
SEFS-S	Severely errored frame second – section	Number of seconds during which an OOF/LOS occurred.

Table 16-3 Performance Monitoring Codes—SONET Line

PM Code	Definition	Description
CV-L	Coding violation – line	Count of B2 BIP-8 violations.
ES-L	Errored second – line	Number of seconds that at any time during the second either at least one BIP error occurred, or an SEF/LOS/AIS-L was present.
SES-L	Severely errored second – line	Number of seconds during which 154 or more BIP errors occurred or an SEF/LOS/AIS-L was present.
UAS-L	Unavailable second – line	Number of seconds that a line is unavailable. A line is unavailable when 10 consecutive SESs have been detected, and begins at the beginning of the SES sequence (back in time). It is cleared at the beginning of 10 nonSESs.
FC-L	Failure count – line	Number of LOS/LOF/AIS-L failures. Count is incremented only when the failure goes from off to on.
PSC	Protection switch count – line	Number of switches between working and protect fibers when in 1+1 linear mode.
PSD	Protection switch duration – line	Number of seconds that the facility has been on the protection fiber. Only applicable if revertive line switching is used.

Table 16-4 Performance Monitoring Codes—Far-End SONET Line

PM Code	Definition	Description
CV-L	Coding violation – far-end line	Count of B2 BIP-8 violations at the far-end. This is carried in the Remote Error Indicator (REI) overhead byte.
ES-L	Errored second – far-end line	Number of seconds that at any time during the second either at least one REI error occurred or an RDI-L was present.
SES-L	Severely errored second – far-end line	Number of seconds during which 154 or more REI errors occurred or an RDI-L was present.
UAS-L	Unavailable second – far-end line	Same as the near-end, except it is based on SES-FE.
FC-L	Failure count – far-end line	Same as the near-end, but counts RDI-L failures.

Table 16-5 Performance Monitoring Codes—SONET Path

PM Code	Definition	Description
CV-P	Coding violation – path	Count of B3 BIP-8 violations.
ES-P	Errored second – path	Number of seconds that at any time during the second either at least one BIP error occurred, or an SEF/LOS/AIS-L/AIS-P/LOP was present.
SES-P	Severely errored second – path	Number of seconds during which 2400 or more BIP errors occurred, or an SEF/LOS/AIS-L/AIS-P/LOP was present.
UAS-P	Unavailable second – path	Number of seconds that a line is unavailable. A line is unavailable when 10 SESs have been detected, and begins at the beginning of the SESs (back in time). It is cleared at the beginning of 10 nonSESs.
FC-P	Failure count – path	Number of LOS/LOF/AIS-L/AIS-P/LOP failures. Count is incremented only when the failure goes from off to on.

Table 16-6 Performance Monitoring Codes—Far-End SONET Path

PM Code	Definition	Description
CV-P	Coding violation – far-end path	Count of B3 BIP-8 violations at the far-end. This is carried in the remote error indicator (REI) overhead byte.
ES-P	Errored second – far-end path	Number of seconds that at any time during the second either at least one REI error occurred, or an RDI-P was present.
SES-P	Severely errored second – far-end path	Number of seconds during which 2400 or more REI errors occurred, or an RDI-P was present.
UAS-P	Unavailable second – far-end path	Same as the near-end except it is based on SES-FE.
FC-P	Failure count – far-end path	Same as the near-end, but counts RDI-P failures.