

Initial Provisioning

This chapter contains procedures for the initial provisioning of a Cisco 6700 network element (NE). These procedures should be followed in this order:

- 1 Configure TCP/IP on the EMS Workstation
- 2 Connect Cisco 6700 NE to EMS Workstation
- 3 Start EMS on the Workstation
- 4 Create a Node
- 5 Launch the Node View
- 6 Open the NE Provision Window
- 7 Assign Network IP Addresses for the NE
- 8 Configure the Cisco 6700 NE

Before You Begin

The following conditions must be met before you can provision the Cisco 6700 NE:

- You must obtain a valid IP address to assign to the Cisco 6700 NE. Your EMS administrator must provide at least one IP address for each NE.



Caution Do not assign an IP address to the Cisco 6700 NE unless the IP address is specifically designated for this NE. Improper use and assignment of IP addresses can create severe problems, including network failure.

- Your EMS administrator must provide a **node ID** to be assigned to the NE. The node ID must be unique to each NE.
- EMS must be installed on your workstation. See Chapter 2, “EMS Installation,” for installation requirements and procedures.

Note After initially provisioning the Cisco 6700 NE, EMS can be accessed from other (remote) workstations for subsequent provisioning.

- The EMS workstation must be provisioned with an IP address of the format **192.168.0.N**, where N is a number between 4 and 254. This is required to allow EMS to communicate with the Cisco 6700 NE. For provisioning procedures, see the “Configure TCP/IP on the EMS Workstation” section on page 3-2.
- A crossover Ethernet cable with RJ-45 connectors is required to connect the EMS workstation to the Cisco 6700 NE. Alternatively, the EMS can be connected to the NE through a hub, using straight Ethernet cables. Check with your EMS administrator to confirm that you are using the proper cables. For more information, refer to the *6732 Full Access Device Hardware Installation Guide* or the *6705 Integrated Access Device Hardware Installation Guide*.
- Cisco Systems recommends that a portable laptop (or other device that is not a permanent network element) be used to initially provision the Cisco 6700 NE. This will prevent potential communication errors.

Configure TCP/IP on the EMS Workstation

Before the EMS workstation can initially provision the Cisco 6700 NE, the IP address of the workstation must be provisioned for the same IP subnet as the NE.

Windows 95/98

The following procedure is used to configure TCP/IP on a Windows 95 or Windows 98 workstation.

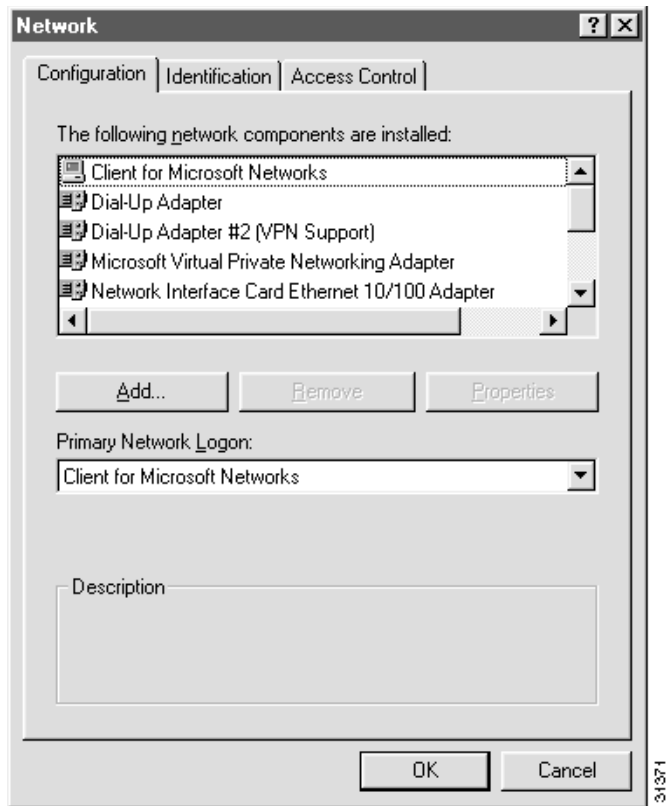
- Step 1** From the Windows NT desktop, right-click the **Network Neighborhood** icon, and select **Properties** from the pop-up menu. (See Figure 3-1.)

Figure 3-1 Network Neighborhood Icon



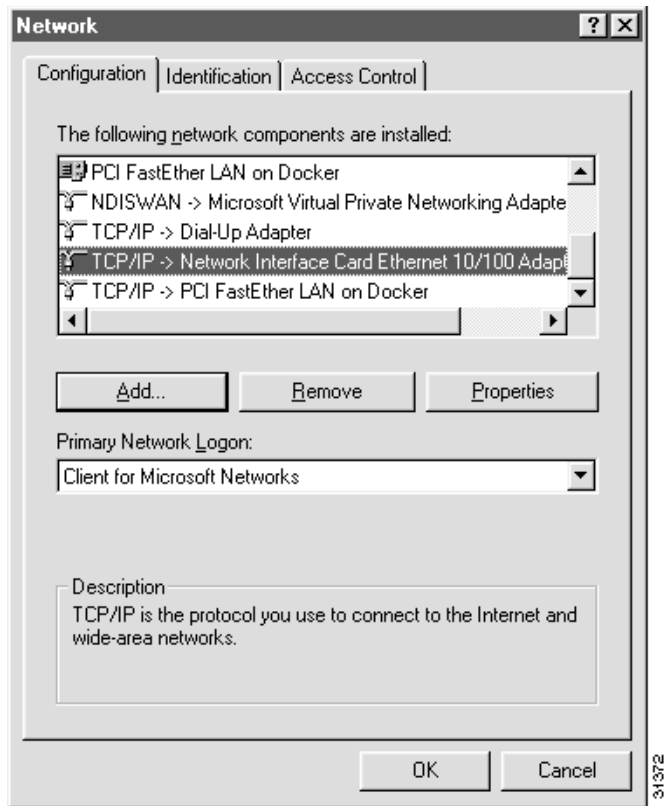
EMS launches the network properties window.

Figure 3-2 Network Properties Window



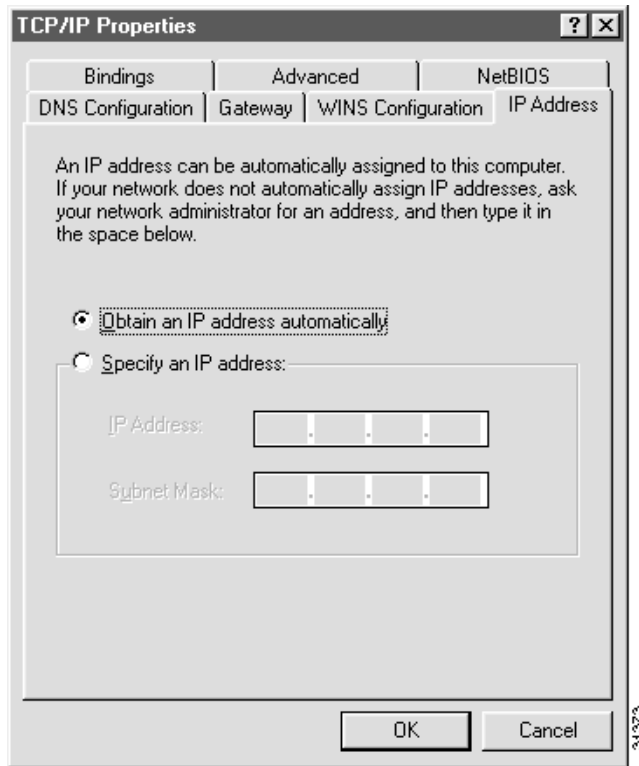
- Step 2** From the list of network components at the top of the window, click **TCP/IP**. (See Figure 3-3.) If there are multiple TCP/IP protocols listed, click the icon for the correct network interface. Contact your network administrator if you are not sure which network interface is used to connect to the Cisco 6700 NE.

Figure 3-3 Select TCP/IP for Network Interface



Step 3 Click **Properties** at the lower right of the window to launch the TCP/IP properties window. (See Figure 3-4.)

Figure 3-4 Windows 95—TCP/IP Properties



Step 4 Click the button next to “Specify an IP address.”

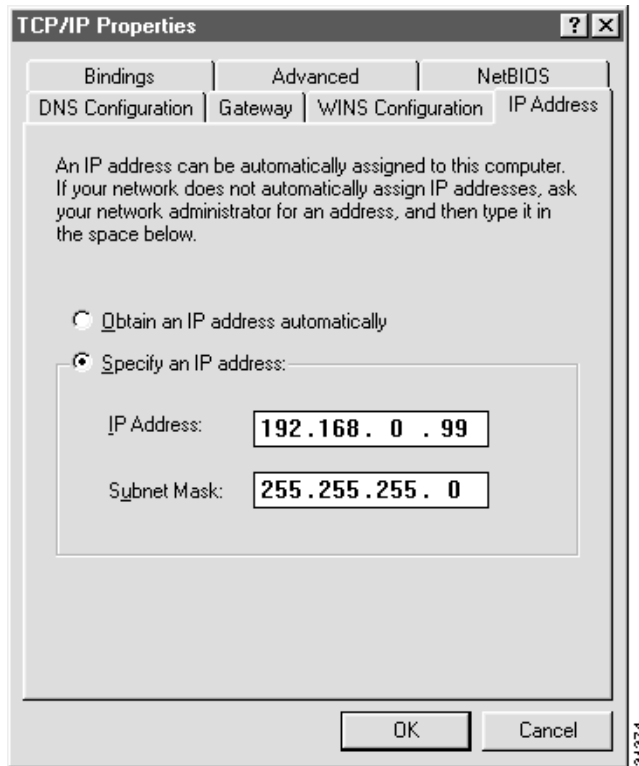
Step 5 In the IP Address field, enter **192.168.0.x**, where x is a number from 4 to 254.

Note The default IP address of the Cisco 6700 NE is 192.168.0.2. If you have already assigned an IP address to the NE, choose an IP address for the EMS workstation that is on the same subnet as the NE.

Step 6 In the Subnet Mask field, enter **255.255.255.0**.

Step 7 Click **OK** to set the new IP address and subnet mask. (See Figure 3-5.)

Figure 3-5 Windows 95—TCP/IP Properties Completed



Note After you configure TCP/IP on a Windows 95/98 workstation, **you must reboot the workstation** before the new IP address takes effect.

Windows NT

Use the following procedure to configure TCP/IP on a Windows NT workstation.

Note You must have administrative privileges in Windows NT to change the IP address of the workstation. Please contact your network administrator to obtain a user account with administrative privileges.

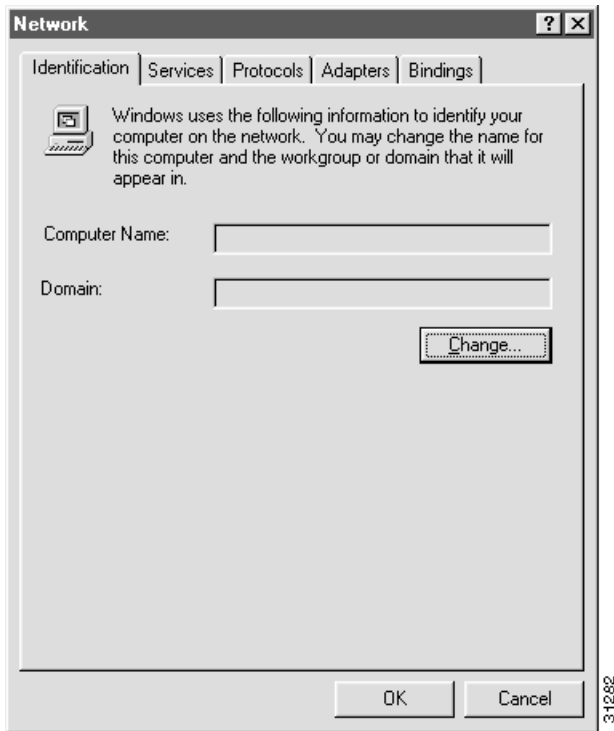
Step 1 From the Windows NT desktop, right-click the **Network Neighborhood** icon, and select **Properties** from the pop-up menu to launch the network properties window.

Figure 3-6 Network Neighborhood Icon



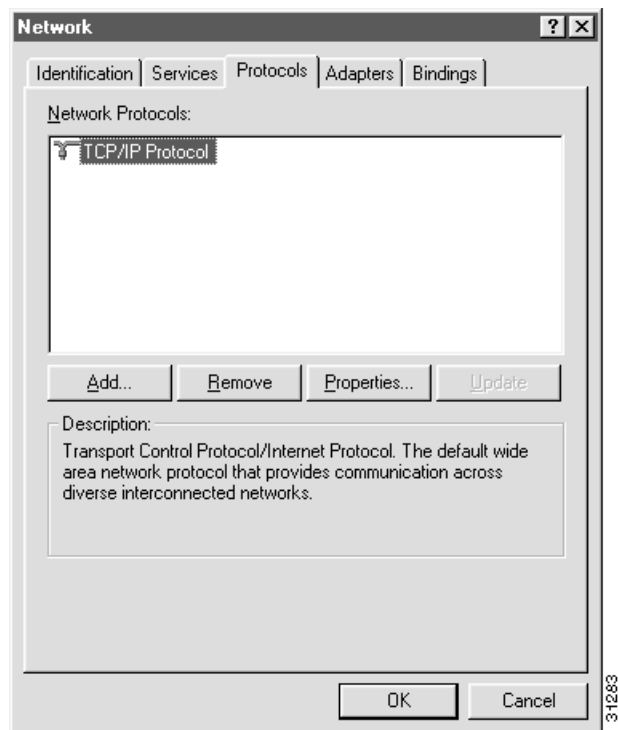
Step 2 Windows NT launches the network properties window. (See Figure 3-7.)

Figure 3-7 Network Properties Window



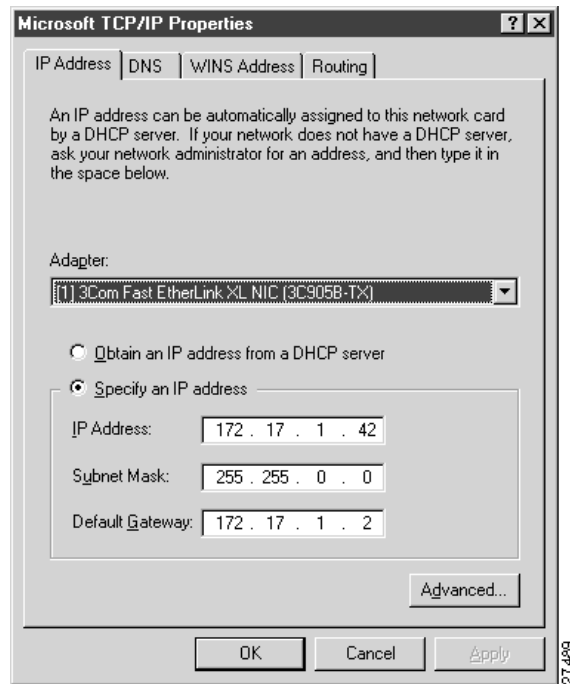
Step 3 Click the **Protocols** tab at the top of the window.

Figure 3-8 Protocols Display



- Step 4** Make sure that the **TCP/IP** icon is highlighted in the **Network Protocols** display. The TCP/IP icon becomes highlighted when clicked.
- Step 5** Click the **Properties** button at the lower right of the window to launch the TCP/IP properties window. (See Figure 3-9.)

Figure 3-9 Windows NT—TCP/IP Properties



- Step 6** Make sure that the correct network interface (adapter) appears in the **Adapter** field. If your workstation is using a different network interface than the one shown, select the correct interface from the pull-down list. Contact your network administrator if you are not sure which network interface is used to connect to the Cisco 6700 NE.
- Step 7** Click the button next to **Specify an IP address**.
- Step 8** In the IP Address field, enter **192.168.0.x**, where x is a number from 4 to 254.

Note The default IP address of the Cisco 6700 NE is 192.168.0.2. If you have already assigned a new IP address to the NE, choose an IP address for the EMS workstation that is on the same subnet as the NE.

- Step 9** In the Subnet Mask field, enter **255.255.255.0**.
- Step 10** The Default Gateway field does not need to be changed.
- Step 11** Click **OK** to set the new IP address and subnet mask. You do not need to reboot the workstation.

UNIX

For information on configuring TCP/IP addresses on UNIX workstations, please contact your network administrator.

Connect Cisco 6700 NE to EMS Workstation

To connect the NE to the EMS workstation, use a crossover Ethernet cable with RJ-45 connectors. Insert one end of the cable into the workstation's Ethernet port. Insert the other end of the cable into the 10BaseT port on the active main common control card (MCC).

Note If your NE has an alarm maintenance and management card (AMM) installed in the chassis, connect the cable to the 10BaseT port of the AMM card, not the MCC.

Alternatively, you can use a hub to connect the NE to the EMS workstation. Use straight Ethernet cables with RJ-45 connectors to connect the workstation to the hub, and to connect the hub to the AMM or MCC port.

For more information, contact your EMS administrator, and consult the *Cisco 6732 Full Access Device Hardware Installation Guide* or the *Cisco 6705 Integrated Access Device Hardware Installation Guide*.

Start EMS on the Workstation

Once the NE is physically connected to the workstation, launch EMS on the workstation. Select one of the following launch procedures, depending on the workstation's operating system:

- Start EMS (Windows NT)
- Start EMS Lite (Windows 95/98)
- Start EMS UNIX

Start EMS (Windows NT)

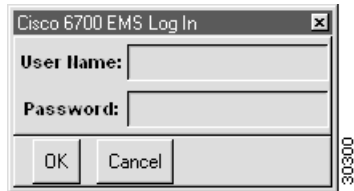
If EMS has been properly installed on your workstation, the **EMS Alarm Server** icon and **EMS Netview** icon will be placed on your workstation's desktop. See Chapter 2, "EMS Installation," for the installation procedure.

From your workstation's desktop view, click the **EMS Alarm Server** icon to launch the alarm server. The hourglass (system busy icon) cursor will appear briefly (indicating that the server is being launched).

Note The EMS alarm server application does not appear in the Windows taskbar or system tray when launched.

Click the **EMS Netview** icon to launch EMS. When the EMS login window appears (see Figure 3-10), enter your username and password. If you do not have a valid username and password, contact your EMS administrator. Click **OK** after entering a valid username and password.

Figure 3-10 EMS Login window



After clicking **OK**, the EMS net view will appear. Proceed to the “Create a Node” section on page 3-11 to create a node representing the NE.

Start EMS Lite (Windows 95/98)

If EMS Lite has been properly installed on your workstation, the **EMS Lite Netview** icon will be placed on your workstation’s desktop. See Chapter 2, “EMS Installation,” for the installation procedure.

Click the **EMS Lite Netview** icon to launch EMS. When the EMS login window appears (see Figure 3-10), enter your username and password. If you do not have a valid username and password, contact your EMS administrator. Click **OK** after entering a valid username and password.

After entering a valid username and password, the net view will appear. Proceed to the “Create a Node” section on page 3-11 to create a node representing the NE.

Start EMS UNIX

To start EMS and the EMS alarm server, two scripts are provided:

- Use **startEMS** to start the EMS NetView
- Use **startAlarmServer** to start the Alarm Server

They reside in *EMS installation directory/bin* directory, and they can be invoked from any directory if they are included in the path.

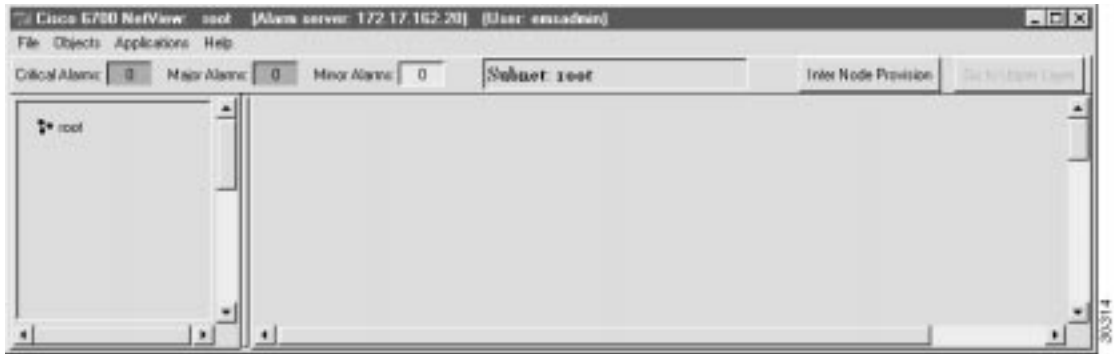
- To add to the path in **cs**h, append **setenv PATH \${PATH}:EMS installation directory/bin** into the *~/.cshrc* file, then log out and log back in.
- In case of **ksh**, append **export PATH=\${PATH}:EMS installation directory/bin** into the *~/.profile* file, then log out and log back in.

Proceed to the “Create a Node” section on page 3-11 to create a node representing your Cisco 6700 system.

Create a Node

After logging in with a valid username and password, EMS presents the net view. (See Figure 3-11.) Net view displays the Cisco 6700 network topology, including all nodes and subnets.

Figure 3-11 Net View

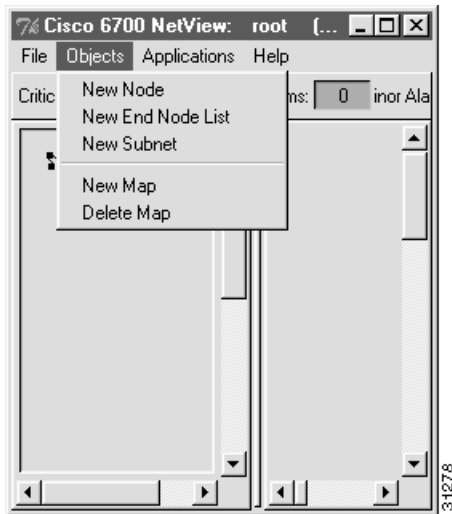


Before EMS can communicate with the NE, you must create a node in the net view. EMS uses nodes to represent each NE in the network.

To create a node:

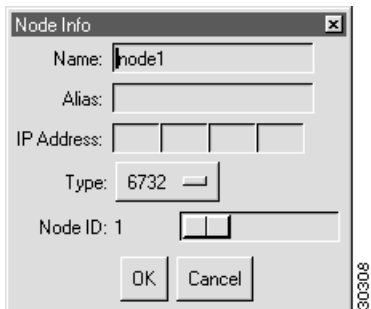
Step 1 From the net view, select **Objects > New Node**.

Figure 3-12 Net View Menu



EMS presents the node information window. (See Figure 3-13.)

Figure 3-13 Node Information Window



Step 2 Enter a node name (and optional node alias) for the NE. The node name identifies the node in the net view; the node alias provides additional description information (such as location or organization name).

Note The node name and node alias must not include spaces, quotation marks, or other non-alphanumeric characters.

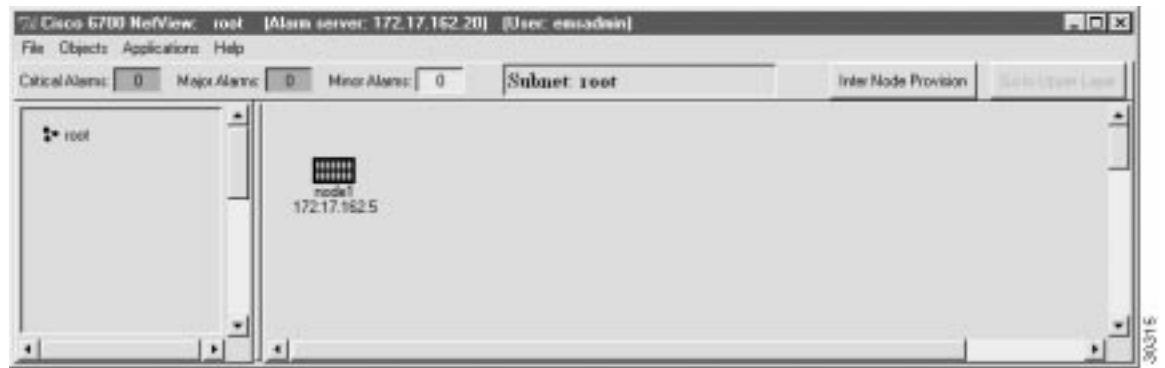
Step 3 In the IP address text box, enter the primary IP address of the NE. If you are provisioning the NE for the first time, enter the default IP address: **192.168.0.2**.

Step 4 In the **Type** field, and select the proper NE type (**6732** or **6705**).

Step 5 EMS provides a default node ID number for the NE. Consult your EMS administrator for the correct node ID for use with this NE. Highlight the number and enter a new node ID, or use the slider to change the node ID.

Step 6 Click the **OK** button when finished. You will return to the net view. The newly created node will appear as an icon, with the node name and IP address below the icon. (See Figure 3-14.)

Figure 3-14 Net View: Node Created

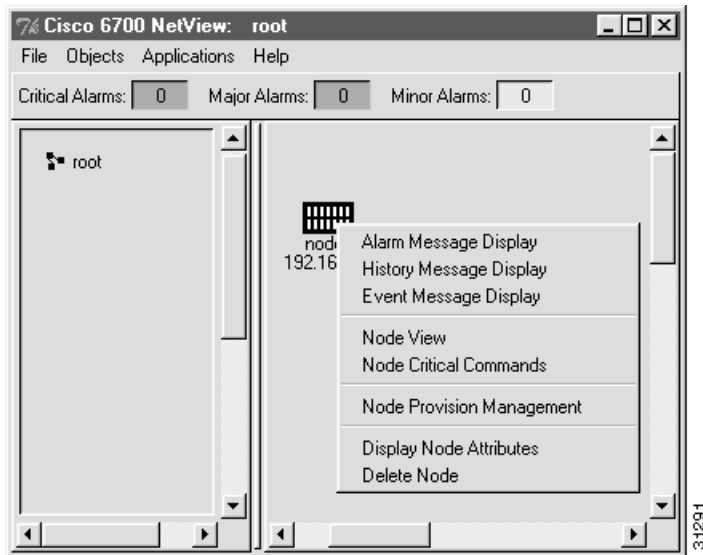


Note The Cisco 6705 icon is smaller than the Cisco 6732 icon shown in Figure 3-14.

Launch the Node View

To verify connectivity between EMS and the Cisco 6700 NE, double-click the node icon, or select **Node View** from the popup menu. (See Figure 3-15.)

Figure 3-15 Node Popup Menu



Depending on the chassis type, EMS launches the Cisco 6732 node view (see Figure 3-16) or the Cisco 6705 node view (see Figure 3-17).

Figure 3-16 Cisco 6732 Node View

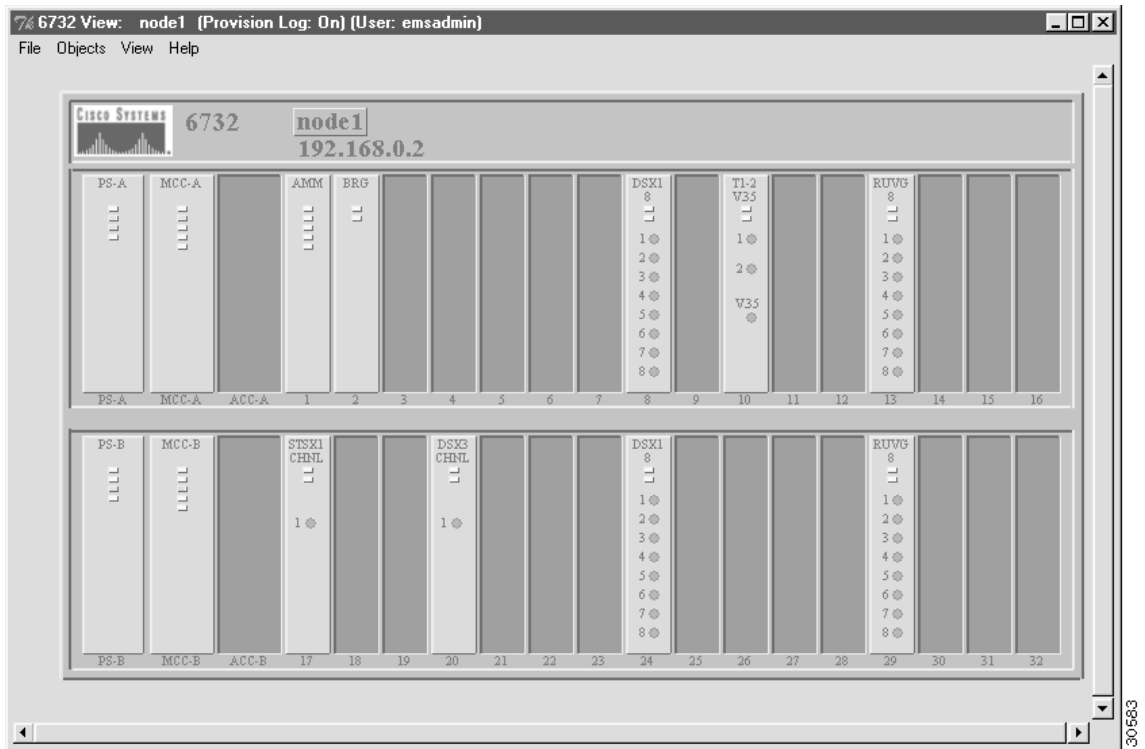
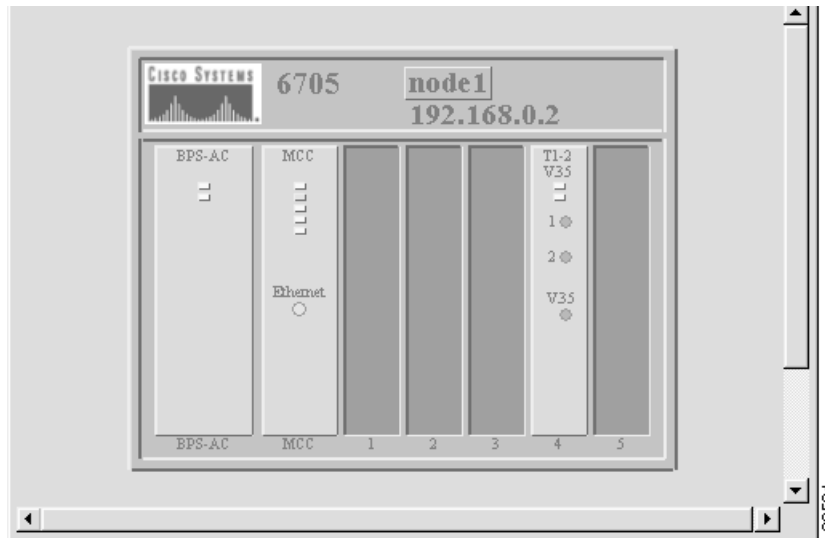


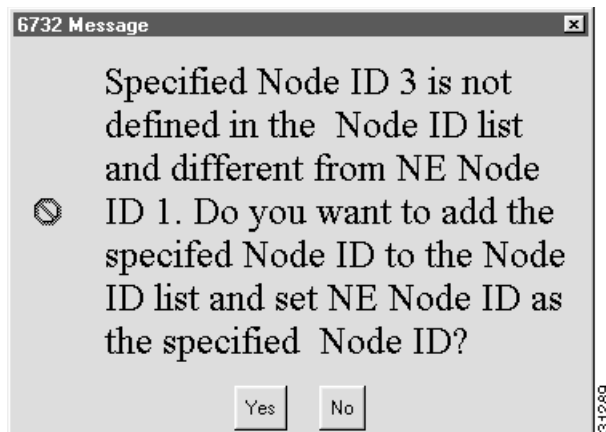
Figure 3-17 Cisco 6705 Node View



Node ID Conflict

If the node ID entered in EMS differs from the current node ID assigned to the NE, EMS reports a node ID conflict. (See Figure 3-18.)

Figure 3-18 Node ID Conflict



- Select **Yes** to override the NE provisioning and assign the EMS node ID to the NE.
- Select **No** to leave the NE with its original (conflicting) node ID.

Example: You create a node in EMS net view and assign a node ID of **3**, but the Cisco 6700 NE is provisioned with a node ID of **1**. When you double-click the node icon, EMS reports a node ID conflict. Selecting **Yes** changes the NE node ID to 3. Selecting **No** leaves the NE with its node ID of 1.

No Response

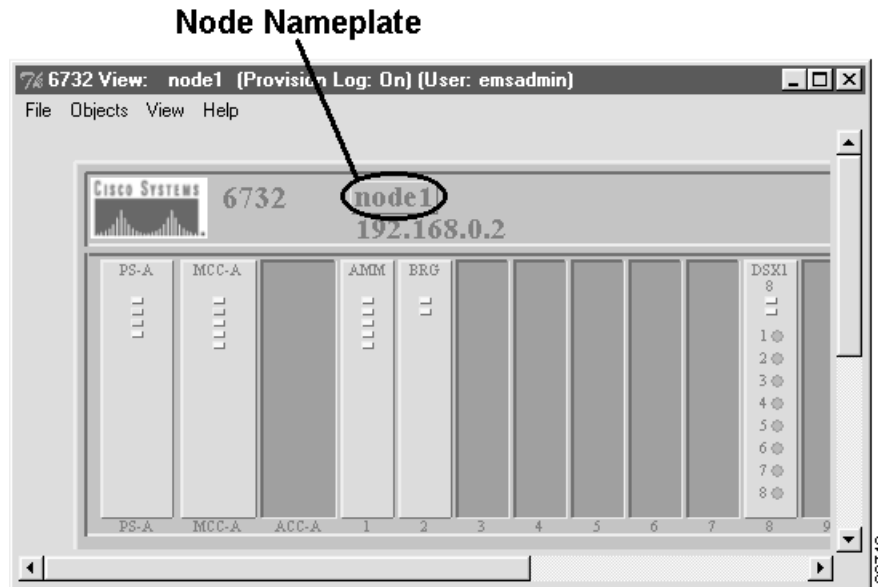
If EMS is unable to connect with the NE, you will see a warning message describing the problem. The following list identifies common issues that may prevent the EMS workstation from communicating with the NE:

- The EMS workstation is not configured with the correct IP address. See the “Connect Cisco 6700 NE to EMS Workstation” section on page 3-10, and configure the IP address as provided by your EMS administrator.
- The Ethernet cable connecting the EMS workstation to the NE is not a crossover cable. Contact your EMS administrator to obtain a crossover cable.
- The Cisco 6700 NE is not powered on. Contact your EMS administrator to insure the proper connection between the NE and power source.
- The Cisco 6700 NE is configured with an IP address other than the factory default IP addresses. This may occur if the NE was previously configured for a different network. To reset the NE with factory default IP addresses, contact your EMS administrator for the proper procedure.
- The node is configured for the wrong type of NE. While EMS will still be able to communicate with the NE, the warning message will occur each time node view is launched. To correct this, delete the node icon in net view, and create a node using the correct chassis type (see the “Create a Node” section on page 3-11).

Open the NE Provision Window

To open the NE provision window, double-click the node nameplate in node view. (See Figure 3-19.)

Figure 3-19 Node View and Node Nameplate



EMS launches the NE provisioning window. (See Figure 3-20.)

Figure 3-20 NE Provision Window

System Basic Provisioning	NE Name: 6732
IP Address Configuration	Alias:
Datalink Route Configuration	NE Location: Central Office
Ping Node	NE Node Type: NetworkNode
Node ID Configuration	NE Time Of Day: 1993-03-14,21:03:29.0
Inter Node Link Configuration	NE Uptime: 0d 0:3:29
Timing Source Selection & Control	NE Backplane Version: 1.3
NE Time Of Day Set	NE Loaded Software Version: 1.3.23
Alarm Provisioning	NE CLEI Code: BP
Common Control Card Switch Over	NE Serial Number: 1359
Software Upgrade	NE Backplane Type: 6732
Database Backup	Alarm Status: normal
Error Log Retrieval	Problem List:
Exit	

The left side of the window contains the **function bar**, a group of buttons used to navigate the NE provision window. Note that the **System Basic Provisioning** button is grayed out in the button bar. This indicated that the system basic provisioning window is now open. To open a different provisioning window, click one of the buttons in the function bar.

Assign Network IP Addresses for the NE

The NE must be assigned an appropriate IP address before it can be introduced in the Cisco 6700 network. Your EMS administrator should provide IP information for the NE, including subnet masks.

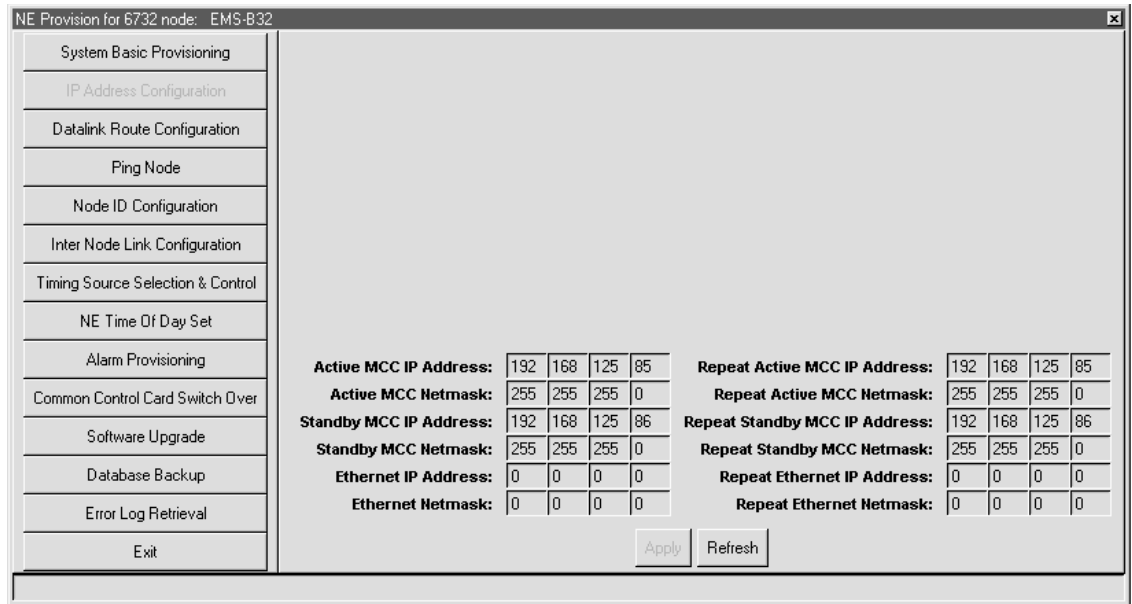


Caution Do not assign an IP address to the Cisco 6700 NE unless the IP address is specifically designated for this NE. Improper use and assignment of IP addresses can create severe problems, including network failure.

To configure IP information for the NE:

- Step 1** Click **IP Address Configuration** in the function bar to bring up the IP address configuration window. (See Figure 3-21.)

Figure 3-21 IP Address Configuration



The Cisco 6732 NE is factory configured with the following default IP addresses and subnet masks:

- Active MCC IP Address: **192.168.0.2**
- Active MCC Netmask: **255.255.255.0**
- Standby MCC IP address: **192.168.0.3**
- Standby MCC Netmask: **255.255.255.0**

The Cisco 6705 NE is factory configured with the following default IP address and subnet mask:

- MCC IP Address: **192.168.0.2**
- MCC Netmask: **255.255.255.0**

Step 2 Enter the IP addresses and netmasks as instructed by your EMS administrator.

Note After entering an address or netmask, you must enter the same address/netmask in the **Repeat** fields (on the right side of the window). For example, if you enter 1.2.3.4 as the **Active MCC IP Address**, you must enter 1.2.3.4 in the **Repeat Active MCC IP Address** field as well. EMS will not allow you to apply your changes unless all entries are repeated properly.

Step 3 (Optional) The **Ethernet IP address** allows you to specify a separate route for Ethernet network traffic. If a unique Ethernet IP address (and netmask) is not assigned, Ethernet traffic will be routed through the primary IP address.

Step 4 Click the **Apply** button to confirm the IP address provisioning. EMS displays a warning message, indicating that you will become disconnected with the NE. Click **Yes** to confirm the changes.

Note After assigning a new IP address, the EMS workstation will lose contact with the NE. To further provision the NE, configure the IP address of the EMS workstation on the same IP network as the NE. See the “Configure TCP/IP on the EMS Workstation” section on page 3-2 for more information.

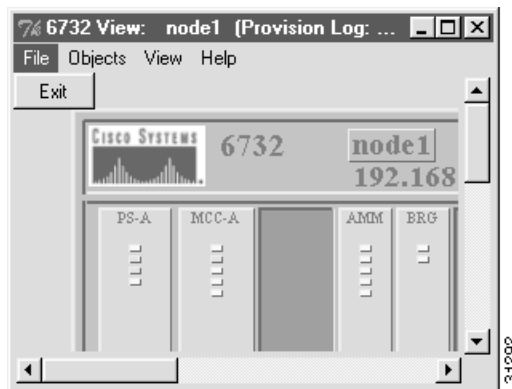
Reassign Node IP Address

Any changes made to the NE IP address must also be made to the node.

Step 1 From the NE provision window, click **Exit** in the function bar. EMS returns to node view.

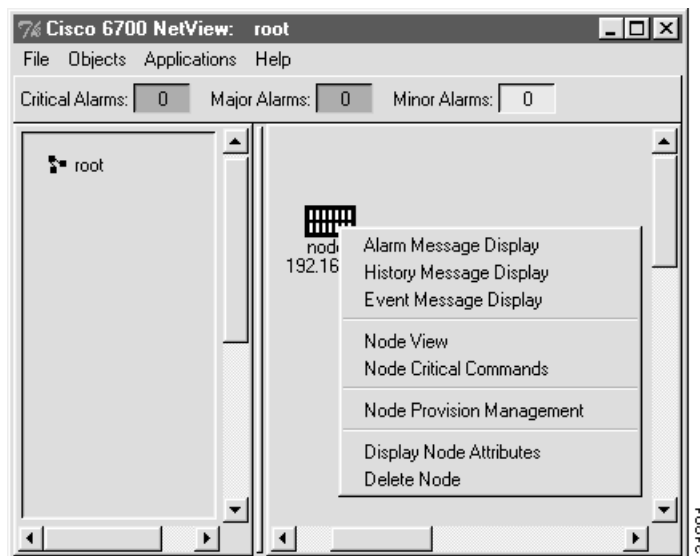
Step 2 Select **File > Exit** from the node view menu bar. EMS returns to net view.

Figure 3-22 Node View Menu Bar



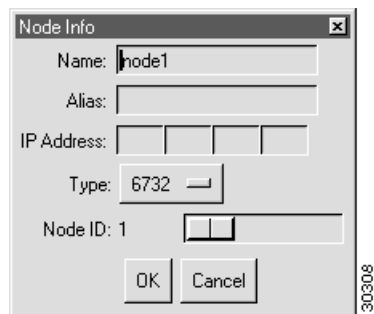
Step 3 Right-click the node icon to bring up the node popup menu. (See Figure 3-23.)

Figure 3-23 Node Popup Menu



Step 4 Select **Display Node Attributes** to display the node information window. (See Figure 3-24.)

Figure 3-24 Node Information Window



- Step 5** In the IP Address field, enter the IP address assigned to the NE in the “Assign Network IP Addresses for the NE” procedure. For the Cisco 6732, this is the **Active MCC IP Address**; for the Cisco 6705, this is the **MCC IP Address**.
- Step 6** Click **OK**. EMS returns to net view. The node icon displays the newly assigned IP address.

Configure the Cisco 6700 NE

This section covers basic provisioning that is required for each Cisco 6700 NE:

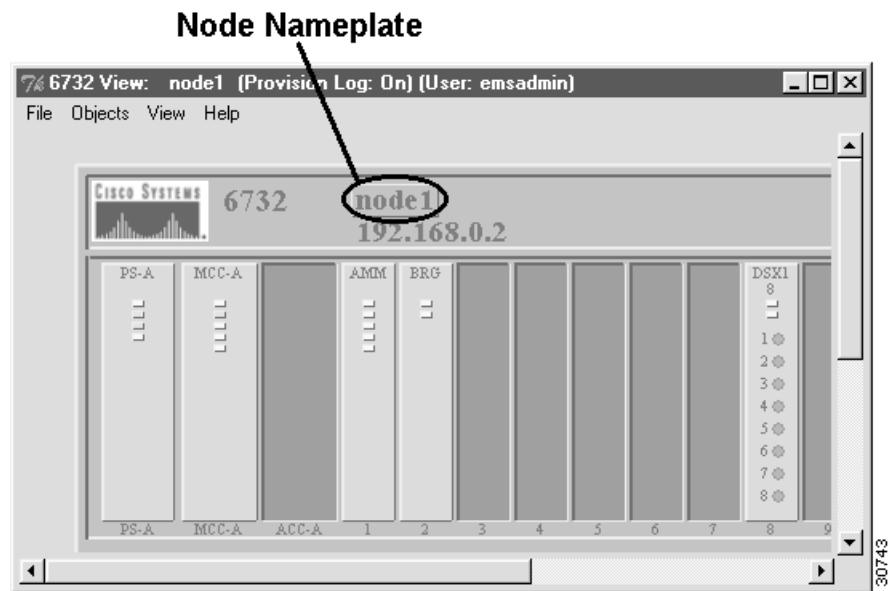
- Alarm Provisioning
- Node Clock Provisioning
- Synchronization Provisioning

Note The following procedures must be performed for each NE in the Cisco 6700 network.

The following procedures are performed in the NE provisioning window. To bring up the NE provisioning window:

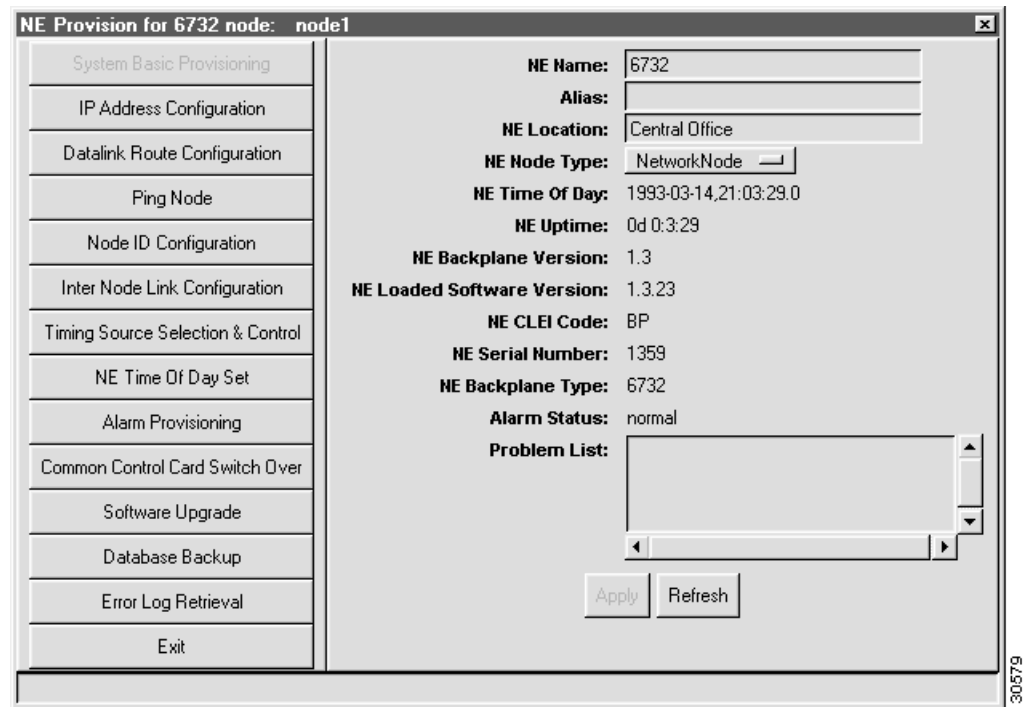
- Step 1** From node view, double-click the node nameplate. (See Figure 3-25.)

Figure 3-25 Node View and Node Nameplate



EMS launches the NE provisioning window. (See Figure 3-26.)

Figure 3-26 NE Provision Window



Provision Alarms

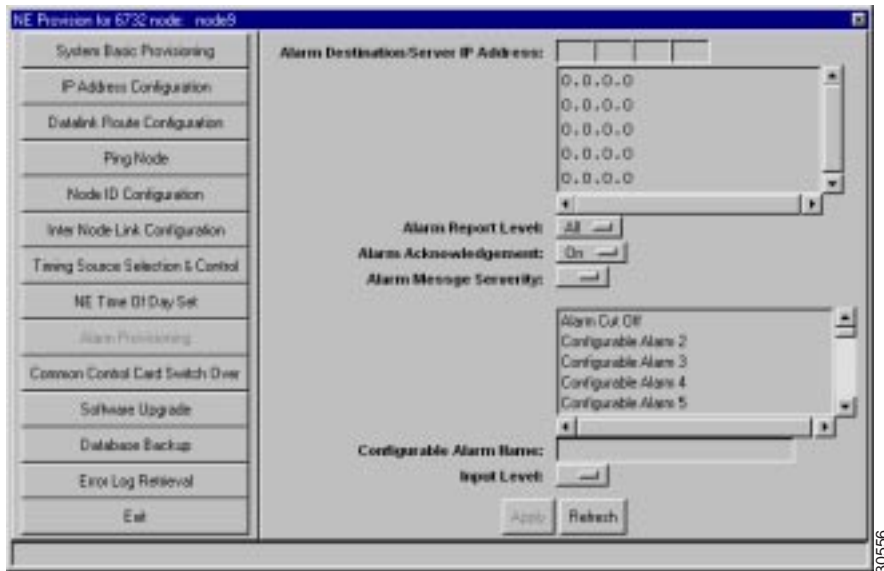
Each Cisco 6700 NE can send alarms to one or more EMS alarm servers. EMS workstations using Windows NT or UNIX use the EMS alarm server application to gather alarms from the Cisco 6700 network. Use of the alarm server is detailed in Chapter 12, “Element Management System Alarm Server.”

Note Each node must have at least one specified alarm destination.

To provision alarms for the NE:

Step 2 Click **Alarm Provisioning** (in the function bar). EMS displays the alarm provisioning window. (See Figure 3-27.)

Figure 3-27 Alarm Provisioning



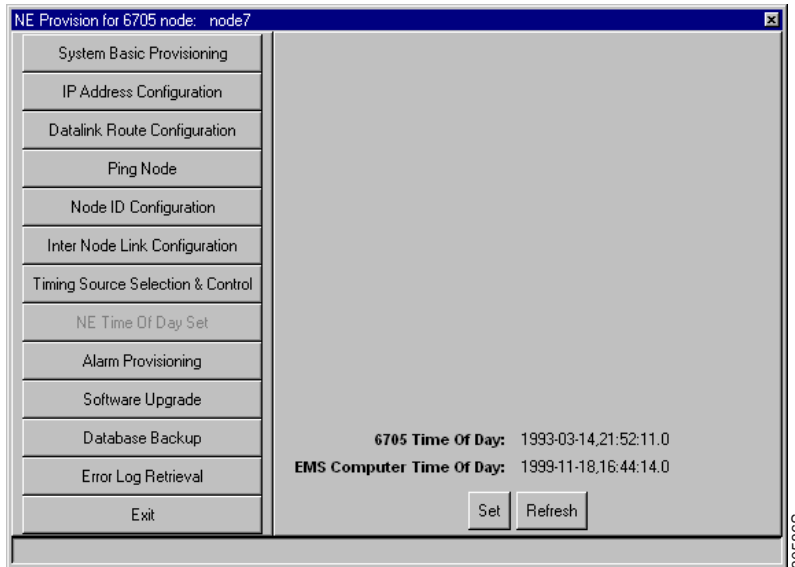
Step 3 In the **Alarm Destination/Server IP Address** field, enter the IP address of an alarm destinations (EMS alarm server).

Step 4 Click **Apply** when you are finished.

Provision NE Clock

Setting the node clock synchronizes the Cisco 6700 NE clock with the EMS clock. Select **NE Time of Day Set** from the management function list, then click the **Set** button to synchronize the NE clock with the EMS workstation clock. The **Refresh** button updates the time displayed on the screen.

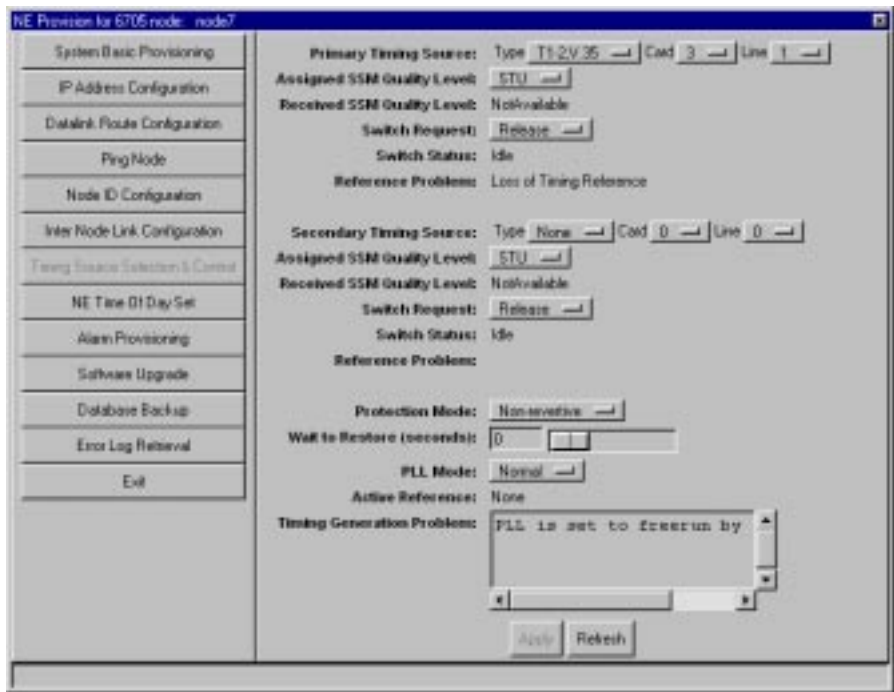
Figure 3-28 Set NE Time of Day



Provision Timing Source

From the NE provision window, select **Timing Source Selection & Control** to bring up the timing source provisioning window. (See Figure 3-29.)

Figure 3-29 Timing Source Selection and Control



Set the following fields to provision a timing source for the NE:

- **Primary Timing Source:** Select the **Type**, **Card**, and **Line** to provide timing.
- **Assigned SSM Quality Level:** Set to **STU** (synchronized tractability unknown).
- **Switch Request:** Select one of the following options:
 - **Release:** Timing sources will switch automatically upon loss of signal.
 - **ManualSwitch:** Timing source must be switched manually regardless of signal status.
 - **ForcedSwitch:** Forces timing source to switch.
- **Secondary Timing Source:** An optional secondary timing source can be specified here.
- **Protection Mode:** Select one of the following options:
 - **Non-revertive:** Timing source will not revert back to primary timing source.
 - **Revertive:** Timing source will revert back to primary timing source after a period of time, specified in the **Wait to Restore** field.
- **Wait to Restore:** Enter the minimum amount of time to wait before a recovered timing source becomes active again. This function is only applicable if the **Protection Mode** is set to **Revertive**.
- **PLL Mode:** Select one of the following options:
 - **Normal:** The NE synchronizes with selected timing source.
 - **Freerun:** The MCC is used as the timing source.
 - **Holdover:** The NE is to holdover from selected timing source.

Click **Apply** to provision a timing source or sources for the NE.