Inter-Node Data Links

This chapter describes the creation of an inter-node data link (INDL) between a local Cisco 6732 node and a remote Cisco 6705 node. An INDL allows the provisioning of a remote node over an established (“nailed-up”) connection to the local node.

The provisioning of an INDL requires one node to be designated the **local node**, and another node designated the **remote node**. In this example, the Cisco 6732 serves as the local node, and the Cisco 6705 as the remote node. It is also possible to create an INDL between two Cisco 6732 nodes.

Note The following procedures are also used to create a **non-data link**. A non-data link does not allow provisioning of a remote node, but it can still be used to carry inter-node traffic and cross connects.

Note An INDL created on an MSDSL-2W card must use the **HDLU** framing type. Before creating an INDL, provision the MSDSL-2W line for HDLU framing.

Each node must be provisioned with a separate “half link” before the INDL can be used. Complete the following procedures to establish communications with an INDL:

- Create a Local Half Link
- Create a Remote Half Link
- Verify the INDL

Create a Local Half Link

To create a half link from the local node to the remote node, complete the following steps starting in net view:

Step 1 Connect the EMS workstation to the local node (Cisco 6732).

Step 1 Go to the EMS net view. (See Figure 6-1.)

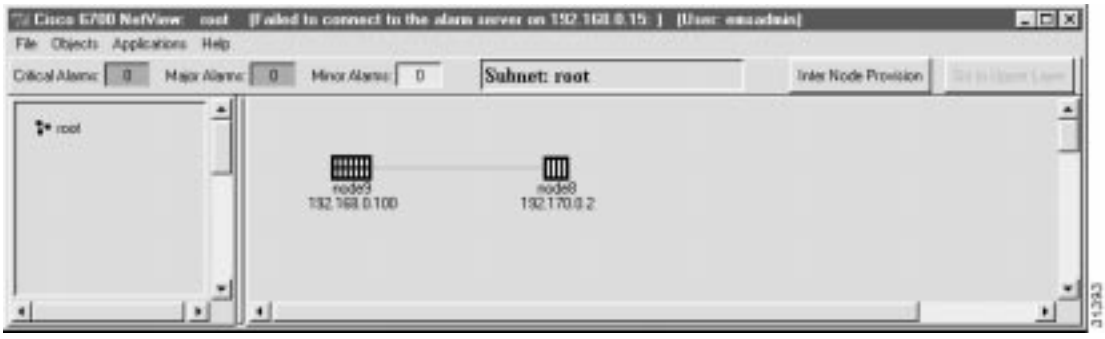
Figure 6-1 Net View

Step 2 Click and drag a line from the local node (Cisco 6732) to the remote node (Cisco 6705). (See Figure 6-2.)

Figure 6-2 Draw Line to Remote Node

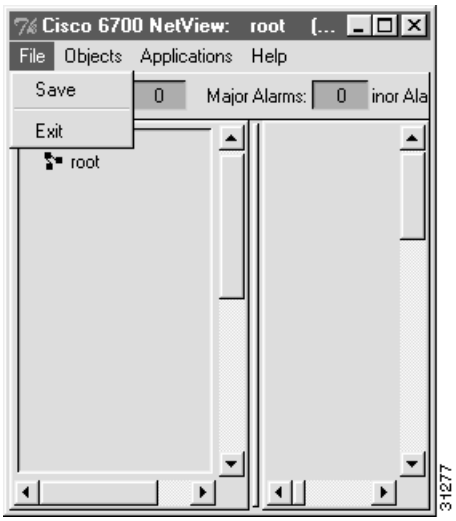
Step 3 This creates a visual link between the two nodes. (See Figure 6-3.)

Figure 6-3 Visual Link



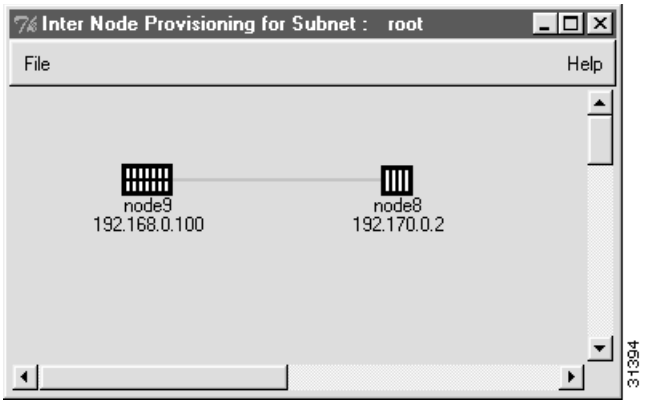
Step 4 From the menu bar, select **File > Save** to save the visual link.

Figure 6-4 Net View Menu



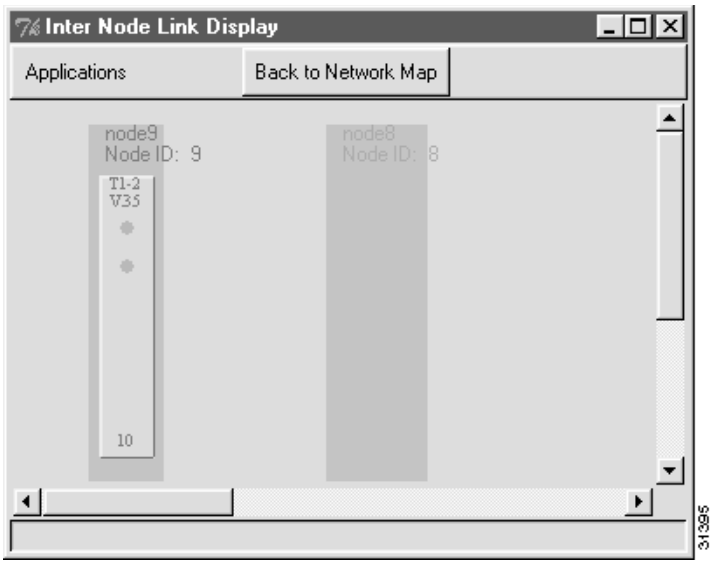
Step 5 Click on the **Inter-Node Provision** button (located in the upper right corner of the net view window). EMS launches the inter-node provisioning window. (See Figure 6-5.)

Figure 6-5 Inter Node Provisioning Window



Step 6 Double-click the line between the two nodes. EMS launches the inter-node link display. (See Figure 6-6.)

Figure 6-6 Inter-Node Link Display

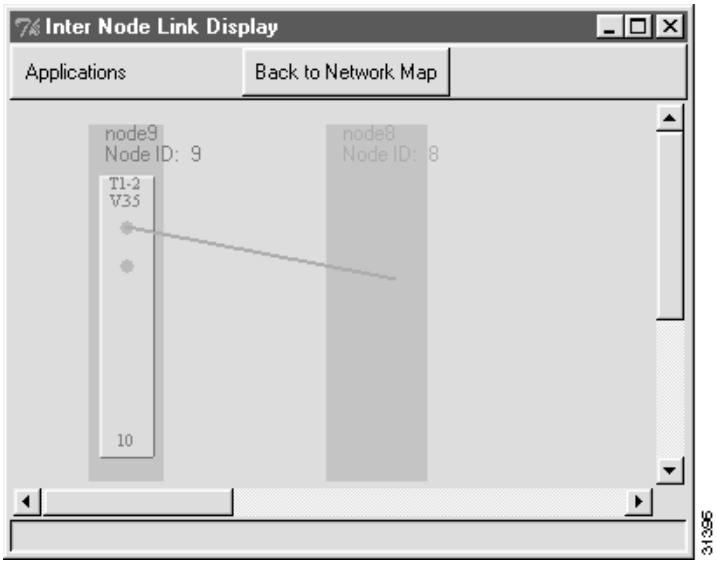


Note The local node (Cisco 6732), on the left side of the display, shows the installed cards that can be used to create an INDL. The remote node (Cisco 6705), shown as a gray box on the right side of the display, does not display any card information.

Step 7 Select a line from the local node display that will be provisioned with the half link.

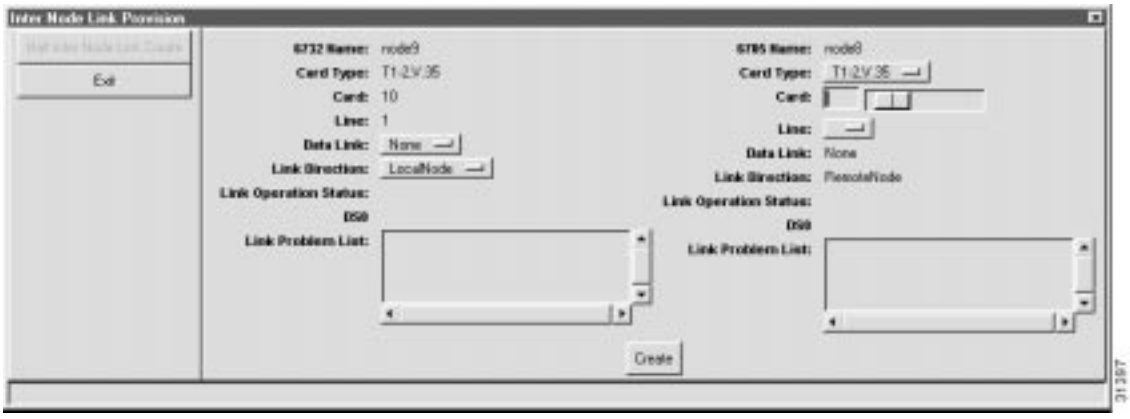
Step 8 Click and drag a visual link from the line on the local node to the remote node. (See Figure 6-7.)

Figure 6-7 Draw Line to Remote Node



Step 9 After creating the visual link, EMS launches the inter node link provision window. (See Figure 6-8.)

Figure 6-8 Inter-Node Provision Window



Step 10 In the inter-node link provision window, set the following parameters:

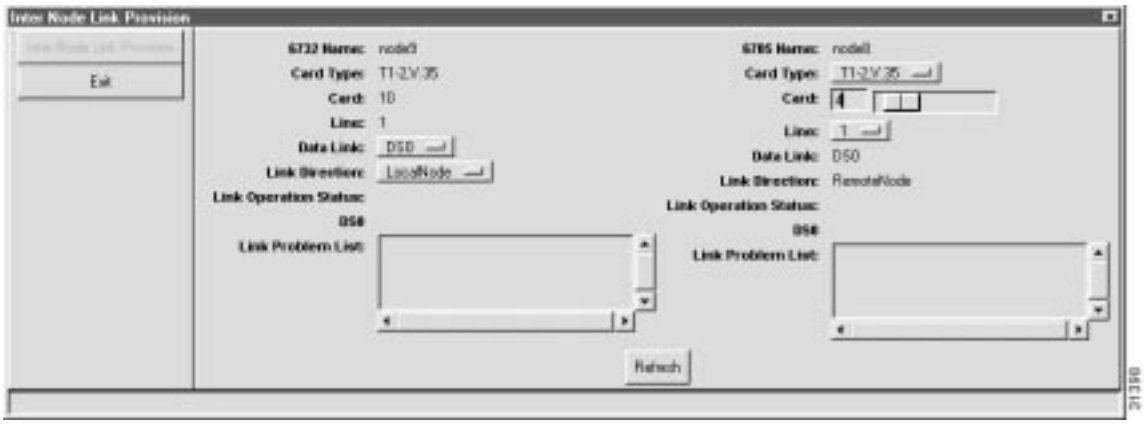
- **Data Link**: set to **DS0** (uses a DS0 channel for the data link) or **FDL** (uses DS1 overhead bandwidth for the data link). Cisco recommends the DS0 format; some line cards (particularly the OC3-AUPSR card) can not use the FDL format.

Note To create a non-data link (used only for cross connects), set the **Data Link** field to **None**.

- **Link Direction**: set to **LocalNode**
- **Card Type**: set to type of card used in the remote node
- **Card**: set to the slot number of the card used in the remote node.
- **Line**: set to the line number used in the remote node.

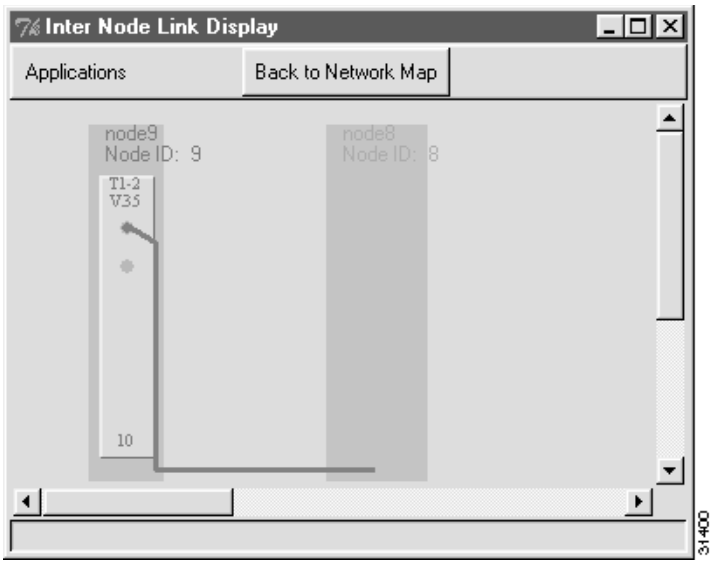
Step 11 Click **Create** (at the bottom of the window). EMS changes the **Create** button to **Refresh**. (See Figure 6-9.)

Figure 6-9 Local Half LInk Created



Step 12 Click **Exit** to close the inter node link provision window. EMS returns to the inter-node link display. (See Figure 6-10.)

Figure 6-10 Inter Node Link Display with Local Half Link



The newly created half link is shown as a blue line connecting the local node and remote node.

Step 13 Click **Back to Network Map** (at the top of the window) to return to the net view.

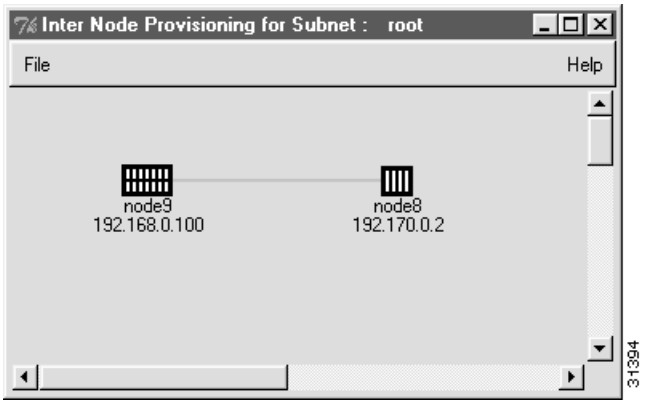
Create a Remote Half Link

After creating the INDL half link on the local node, a similar half link must created on the remote node—in this example, the Cisco 6705.

Step 1 Connect the EMS workstation to the remote node (Cisco 6705).

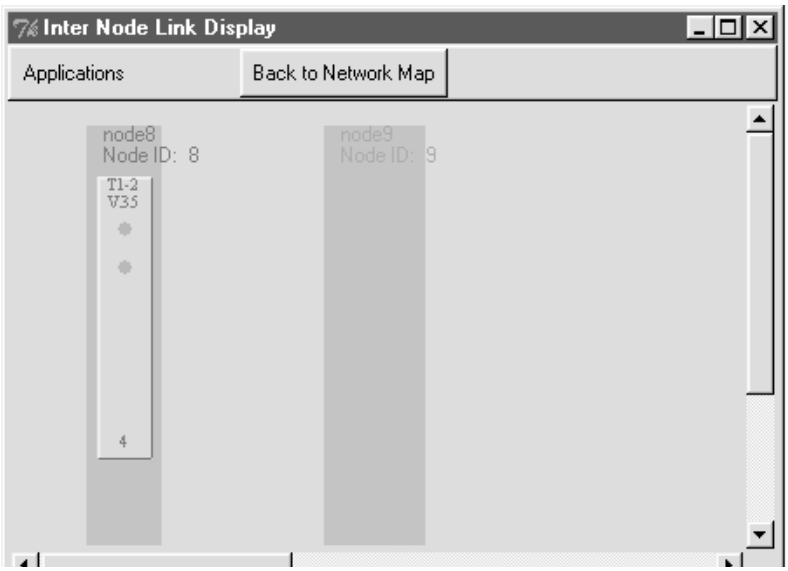
Step 2 Click on the **Inter-Node Provision** button (located in the upper right corner of the net view window). EMS launches the inter-node provisioning window. (See Figure 6-11.)

Figure 6-11 Inter-Node Provisioning Window



Step 3 Double-click the line between the two nodes. EMS launches the inter-node link display. (See Figure 6-12.)

Figure 6-12 Inter-Node Link Display



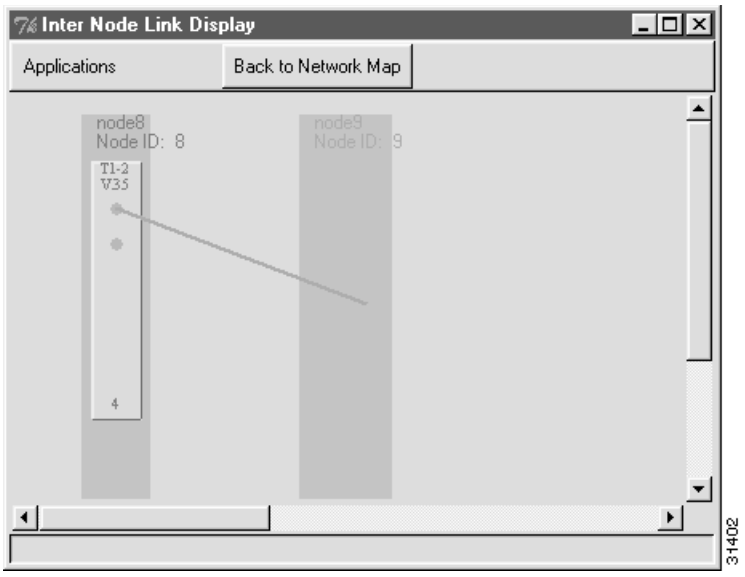
Note In the inter-node link display, the remote node (Cisco 6705) is at the left side of the display. The local node (Cisco 6732), shown as a gray box, is at the right side of the display.

Step 4 Select the line from the remote node display to be provisioned with the half link.

Note The line selected on the remote node must be **the same line** used in the "Create a Local Half Link" section on page 6-1.

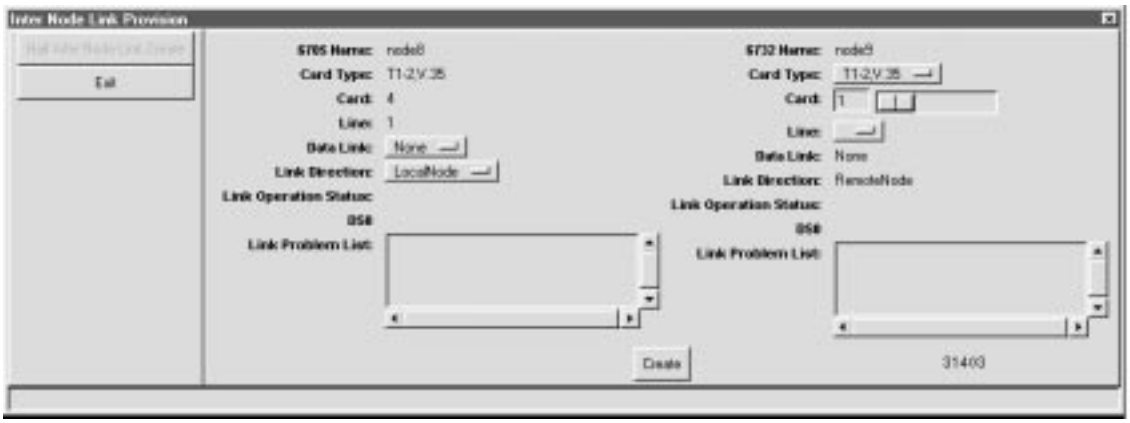
Step 5 Click and drag a visual link from the local line to the remote node. (See Figure 6-13.)

Figure 6-13 Draw Line to Remote Node



Step 6 After creating the visual link, EMS launches the inter node link provision window. (See Figure 6-14.)

Figure 6-14 Inter Node Link Provision Window



Step 7 In the inter-node link provision window, set the following parameters:

- **Data Link**: set to **DS0** (uses DS0 line 1) or **FDL** (uses DS1 overhead bandwidth). Cisco recommends the DS0 format; some line cards (particularly the OC3-AUPSR card) can not use the FDL format.

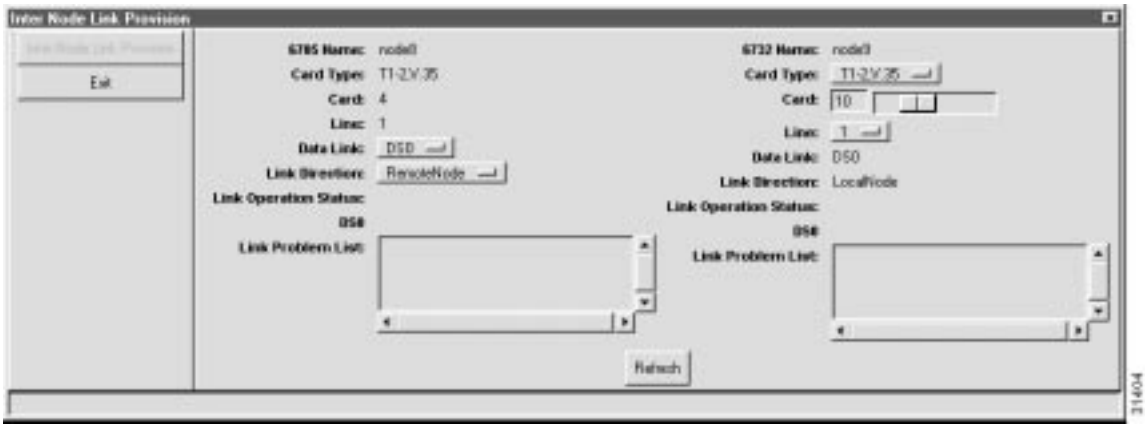
Note The data link selection must be consistent with the selection in the "Create a Local Half Link" procedure. For example, if the local node is provisioned to use a DS0 data link, the remote node must use a DS0 data link as well.

Note To create a non-data link (used only for cross connects), set the **Data Link** field to **None**.

- **Link Direction**: set to **RemoteNode**
- **Card Type**: set to type of card used in the local node (in this example, the Cisco 6732)
- **Card**: set to slot number of the card used in the local node.
- **Line**: set to facility number of the line being used in the local node.

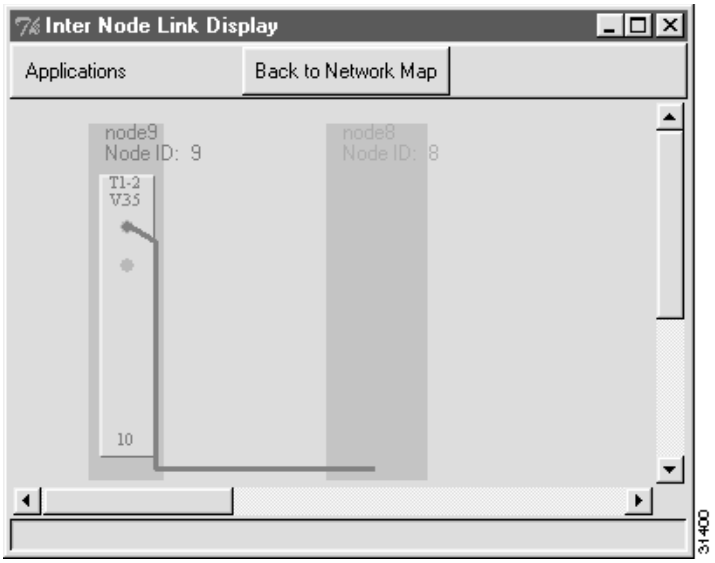
Step 8 Click **Create** (at the bottom of the window). EMS changes the **Create** button to **Refresh**. (See Figure 6-15.)

Figure 6-15 Remote Half LInk Created



Step 9 Click **Exit** to close the inter node link provision window. EMS returns to the inter-node link display. (See Figure 6-16.)

Figure 6-16 Inter-Node Link Display with Local Half Link



The newly created half link is shown as a blue line connecting the remote node and local node.

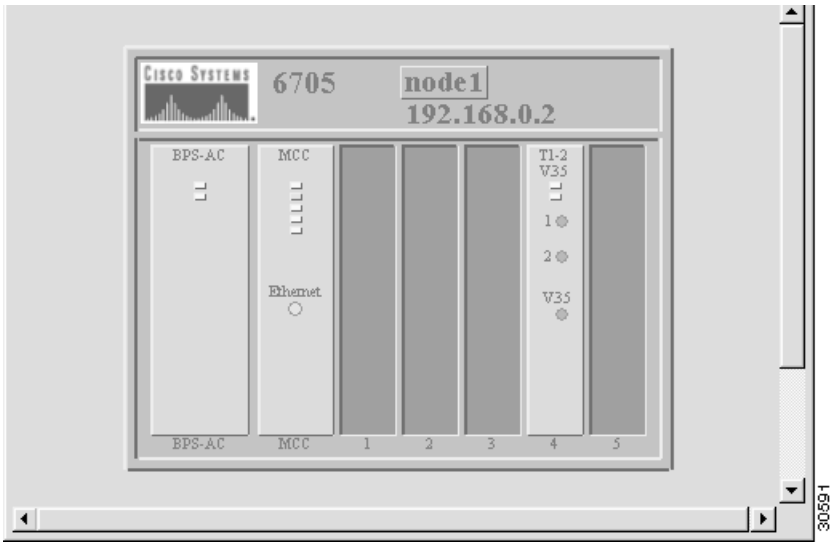
Step 10 Click **Back to Network Map** (at the top of the window) to return to the net view. (See Figure 6-17.)

Figure 6-17 Net View with Visual Link

Note This step completes the creation of a non-data link. The non-data link can now be used to carry traffic and cross connects between the local and remote node.

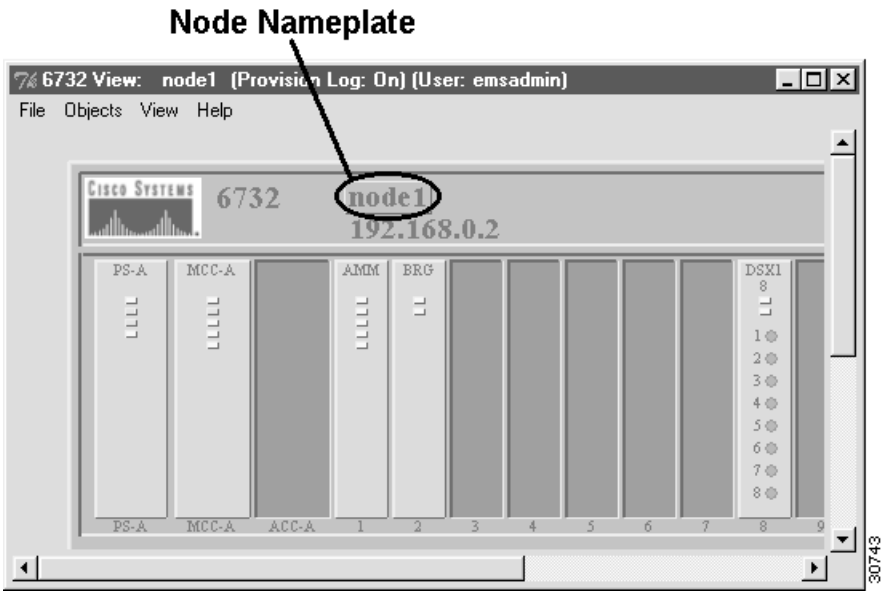
Step 11 Open the remote node (Cisco 6705) by double-clicking the remote node icon in net view. EMS launches the node view of the remote node. (See Figure 6-18.)

Figure 6-18 Node View of Remote Node



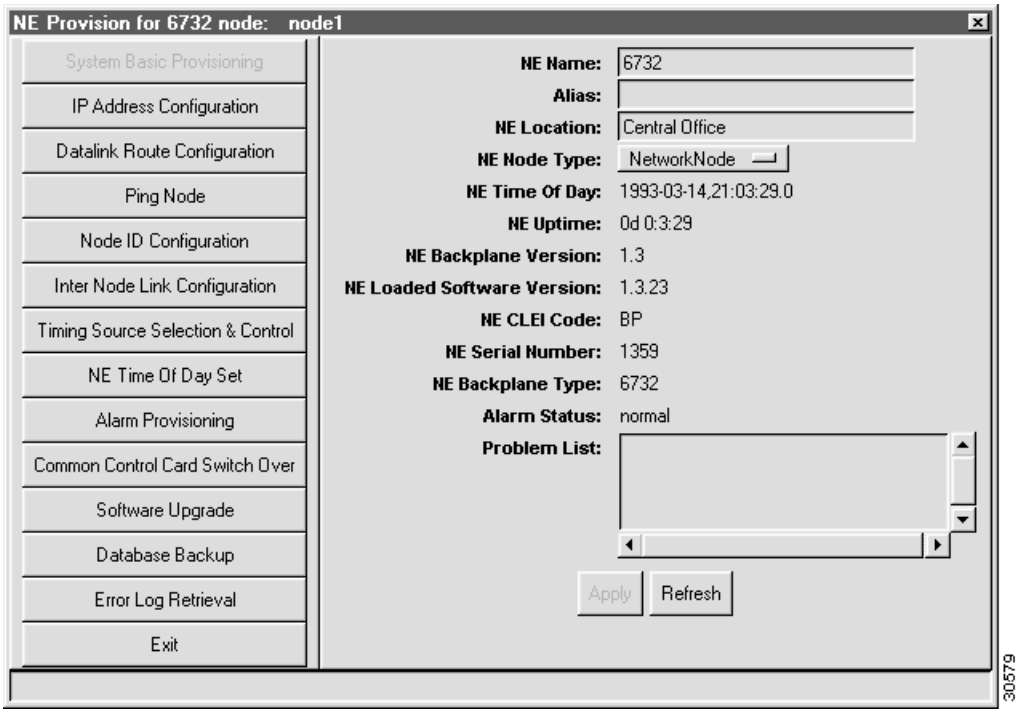
Step 12 Double-click the node nameplate. (See Figure 6-19.)

Figure 6-19 Node View and Node Nameplate



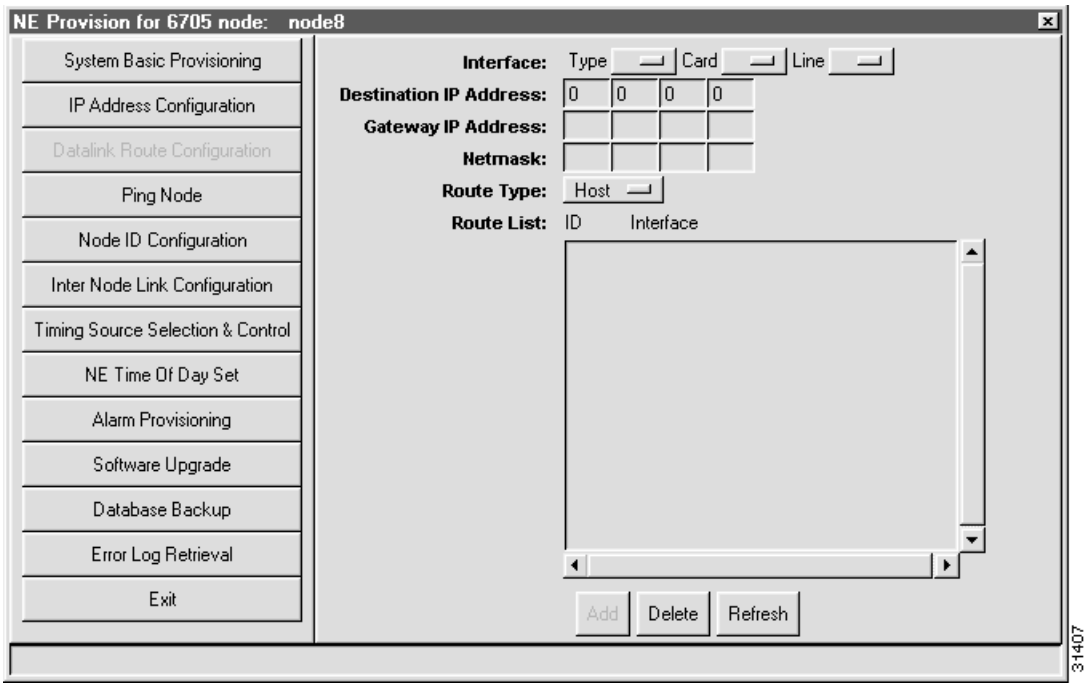
Step 13 EMS launches the NE provision window. (See Figure 6-20.)

Figure 6-20 NE Provision Window



Step 14 From the function bar on the left, click on the **Datalink Route Configuration** button. This brings up the datalink route configuration window. (See Figure 6-21.)

Figure 6-21 Datalink Route Configuration Window



Step 15 Set the following parameters in the datalink route configuration window:

- **Card Type**: Card used in the remote node (Cisco 6705)
- **Card**: Slot number of the card used in the remote node
- **Line**: Facility number of the line used on the card in the remote node
- **Destination Address**: Leave blank
- **Gateway Address**: IP address of the local node (Cisco 6732)
- **Netmask**: Leave blank
- **Route Type**: Set to **Default**

Click **Add** when finished.

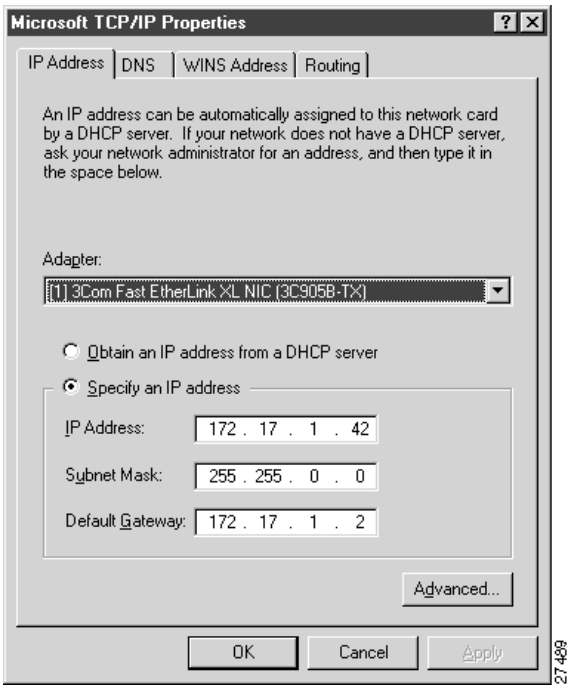
Step 16 Click the **Exit** button (from the function bar) to return to the node view.

Step 17 Select **File > Exit** to return to the net view.

Step 18 Using the TCP/IP configuration utility on your EMS workstation, set the **Default Gateway** to the same address as the local node (Cisco 6732) IP address.

Figure 6-22 shows the TCP/IP configuration window for Windows NT. For the complete TCP/IP configuration procedure, see the “Configure TCP/IP on the EMS Workstation” section on page 3-2.

Figure 6-22 Windows NT—TCP/IP Properties



Step 19 Click **OK** to configure TCP/IP on the EMS workstation, and reboot if necessary.

Verify the INDL

To verify the INDL has been successfully created, connect a EMS workstation to the local node (Cisco 6732). Open EMS net view and double click on the remote node (the Cisco 6705). The remote node should open, displaying the node view. This means EMS is able to use the INDL to access the remote node.