CHAPTER 7

Round Trip IP Connectivity Requirements

This tutorial describes how to check a baseline's existing IP connectivity requirements, as well as how to create new IP connectivity requirements for a baseline. Checking and modifying connectivity requirements can be accomplished using the initial baseline scenario created when a baseline is opened and loaded. Therefore, creating a new scenario is *not* required for this tutorial. This tutorial is used as the basis for subsequent tutorials in this document.

The following tasks are performed and described in this tutorial:

- an existing baseline is opened and loaded
- the baseline's topology is displayed
- end system connectivity requirements are created and applied to the initial baseline scenario
- the status of the end system connectivity requirements are assessed
- the initial baseline scenario's connectivity round trip path is displayed and inspected.

Tutorial

Step 1 From the Open Baseline window, select the *tutorial_baseline* baseline. Click on the **OK** button to load the *tutorial_baseline* baseline and create the baseline scenario.

Refer to "Creating and Opening a Baseline" for information about creating and opening a baseline. In this tutorial, the baseline (*tutorial_baseline*) created in the first tutorial is used. Figure 7-1 shows the Connectivity Tools window after the *tutorial_baseline* baseline was opened and loaded. By default, when a baseline is opened, an initial baseline scenario is created. It has the same name given to the baseline and is displayed and selected in the **Scenarios** list.

Note The Connectivity Tools window's **Requirements** and **Analysis** buttons are not implemented in the Connectivity Baseliner. These button's features are implemented in the Connectivity Solver.

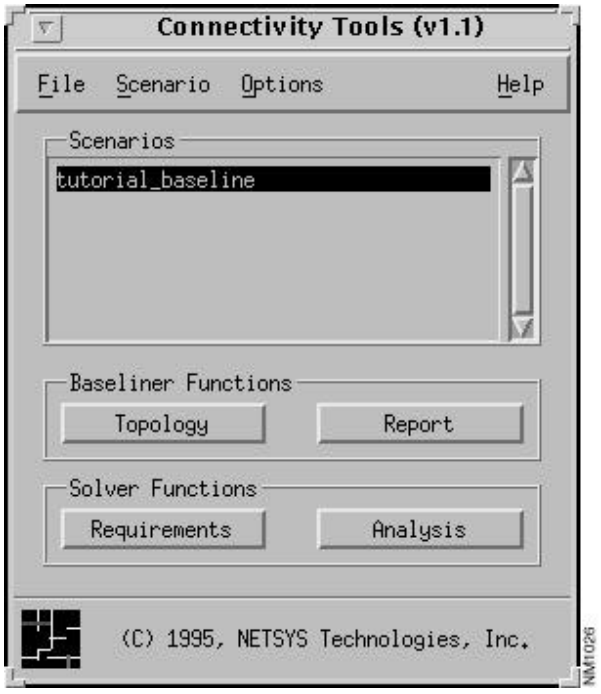

Figure 7-1 Connectivity Tools Window (Solver): Baseline Scenario Created

Step 2 Click on the **Topology** button in the Connectivity Tools window.

The *tutorial_baseline* scenario's topology is displayed in a campus IP view (the default) in the Topology window.

Step 3 Select the **View>Flat** menu option in the Topology window.

The topology is displayed in a flat IP view, as shown in Figure 7-2.

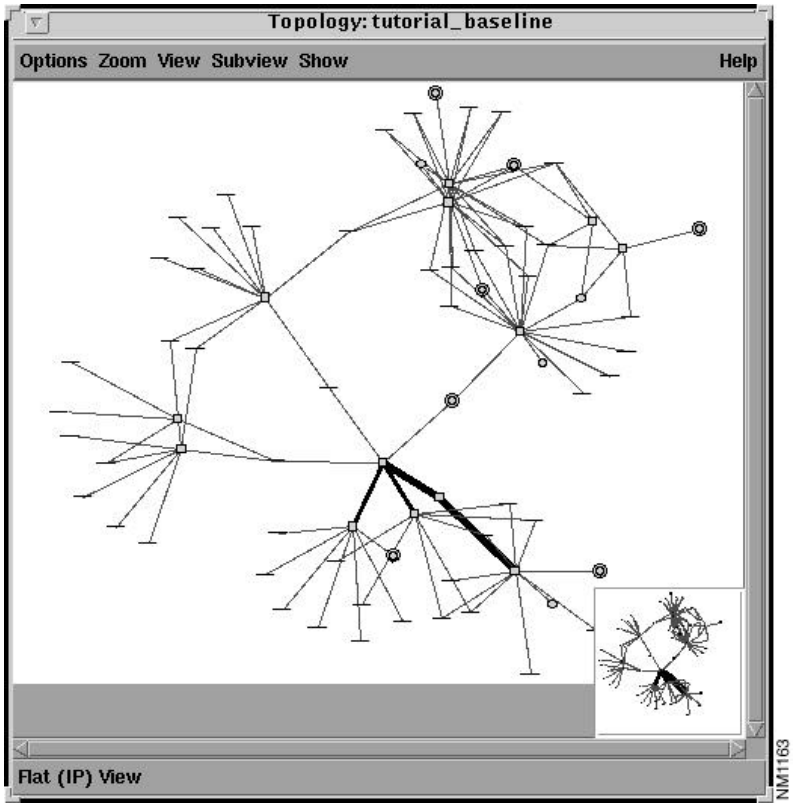

Figure 7-2 *tutorial_baseline* **Topology Window**

Step 4 With the *tutorial_baseline* scenario selected in the Connectivity Tools window's **Scenarios** list, click on the **Requirements** button.

To create end system connectivity requirements, the Requirements feature is used. Connectivity requirements are created, viewed, loaded, unloaded, deleted, and undeleted using this feature. The Requirement Sets window is displayed, as shown in Figure 7-3.

Figure 7-3 **Requirement Sets Window**

A list of network connectivity requirement file sets, if any exist, containing the connectivity requirements for the *tutorial_baseline* scenario, is displayed in the **Requirement Files** list.

Requirement File entries preceded by an asterisk indicate connectivity requirements implicitly derived from the router configuration files. These connectivity requirement file sets can not be edited or deleted.

The implicitly derived **Routing Loops** requirement set is provided to find routing loops caused by IP redistribution. When you select the **Routing Loops** requirement set and then load it for analysis by clicking on the **Load** button followed by the **OK** button, a list of all the redistribution IP routing loops detected during analysis is displayed in the Requirements Analysis window. The results are a set of paths showing the identified routing loops. Each path displays a source address set to a port address of a router involved in the loop and a destination, which is a subnet or end point address, identifying the Routing Table destination involved in the routing loop. The path also shows a set of routers involved in a loop.

Step 5 Click on the **New** button.

The New Requirement Set window, shown in Figure 7-4, is displayed. Create a new set of protocol dependent (in this case IP) connectivity requirements and save them to the file specified in this window.

Step 6 Specify **`tcp_telnet_test`** in the **Name** field, then click on the **OK** button.

A name must be assigned to the new set of IP connectivity requirements. By default, IP is selected as the requirement type.

Figure 7-4 New Requirement Set Window

Upon clicking on the **OK** button, the Requirements window is displayed. No requirements are defined in the *tcp_telnet_test* requirement set as yet, therefore the Requirements pane is empty.

Step 7 Click on the **Add** button in the Requirements window.

The Add IP Requirements window, shown in Figure 7-5, is displayed. New requirements to the *tcp_telnet_test* requirements set are created using this window. Allow (**Permit** button selected) a TCP/Telnet connection from port `200` of source end system `netsys9b.fddi0.0.es` (selected from the **Sources** list) to port `23` (automatically specified in the **Destinations Port** field when the **telnet/tcp** entry is selected from the list) of destination end system `netsys9a.fddi3/0.0.es` (selected from the **Destinations** list). The default transport control protocol is TCP.

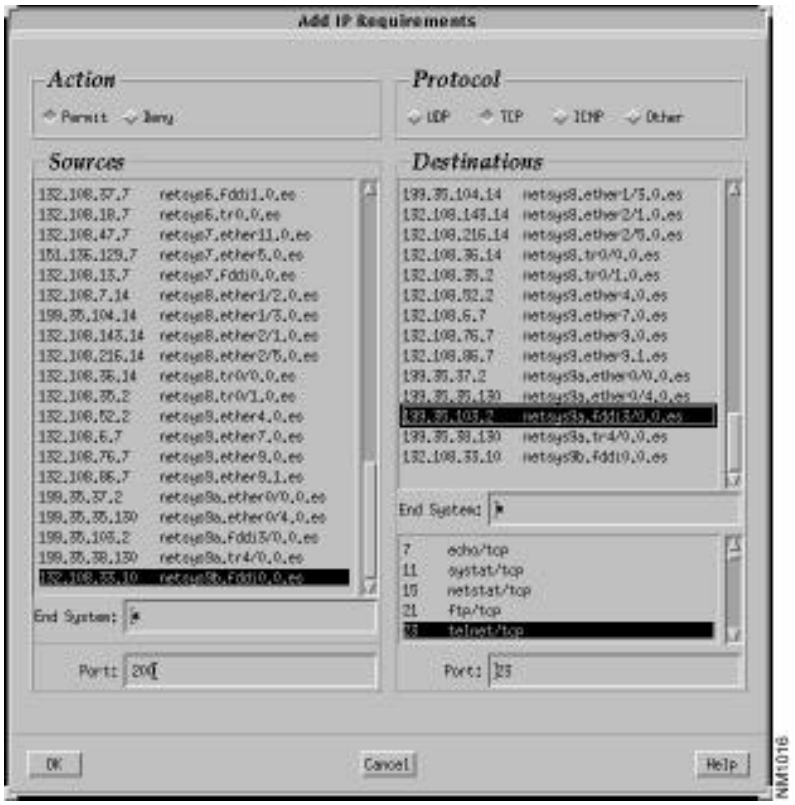

Figure 7-5 Add IP Requirements Window

Step 8 Click on the **OK** button to add the new requirements.

The newly defined requirement entry is now displayed in the *tcp_telnet_test* file's requirements as partially shown in the modified Requirements window in Figure 7-6.

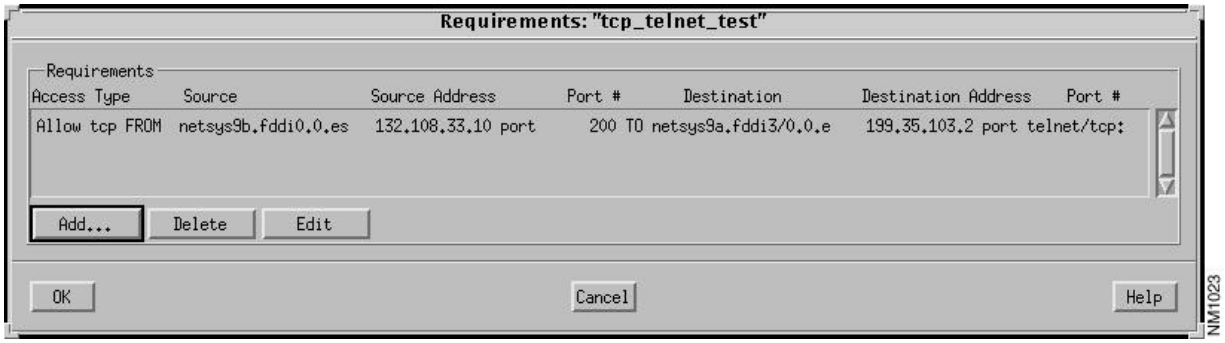

Figure 7-6 New Requirements File Window

Step 9 Click on the **OK** button to create the *tcp_telnet_test* requirement file set.

The Requirement Sets window now displays the *tcp_telnet_test* file name entry in the **Requirement Files** list, as shown in Figure 7-7.

Figure 7-7 Requirement Sets Window Modified

Step 10 Select the *tcp_telnet_test* file set from the **Requirement Files** list then click on the **Load** button followed by the **OK** button.

The *tcp_telnet_test* connectivity requirements are loaded for analysis. The results of the analysis are viewed from the Requirements Analysis window, partially shown in Figure 7-8. That is, the status of each connectivity requirement loaded for analysis, can be viewed. In this case, one path was found between the two end systems (`netsys9b.fddi0.0.es` and `netsys9a.fddi3/0.0.es`). To view the entire contents of the window, use the horizontal slider bar.

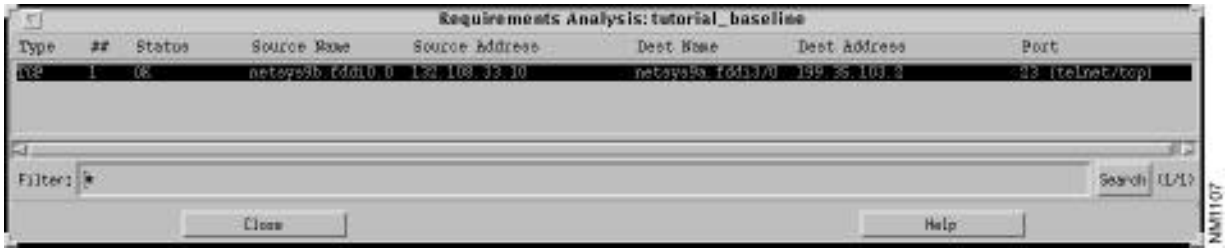

Figure 7-8 Requirements Analysis Window: tcp_telnet_test Requirements

When multiple paths are found, the entries can be sorted by status (default), number of routes, source and destination names, and source and destination addresses. The **Filter** field can be used to locate and display entries whose type, status, source or destination names, source or destination addresses, or destination port values match the value specified in this field.

Step 11 Select the lone entry to highlight the route between the two end systems in the Topology window, as shown in Figure 7-9.

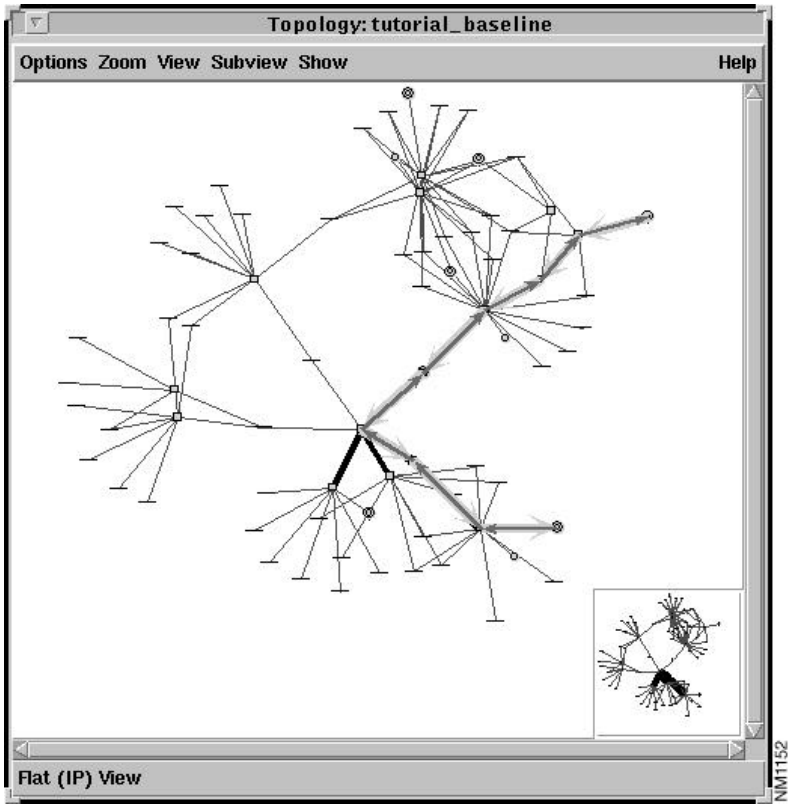

Figure 7-9 Topology Window: Round Trip Path Highlighted

The thicker highlighted line represents the route from the source router (**netsys9b**) to the destination router (**netsys9a**). The thinner highlighted line represents the return path from the destination router (**netsys9a**) to the source router (**netsys9b**).

Step 12 Double-click on the selected connectivity requirement entry in the Requirements Analysis window.

A corresponding Round Trip Path window is displayed, as shown in Figure 7-10. This window provides the end system names, addresses, and ports, the current status of the path, and a list of the devices and network elements that make up the path from the source end system to the destination end system. Selecting an entry in the **Round Trip Path** list highlights that network component's icon and displays its name and/or network address in

the Topology window. Based on the information provided in this and the Topology windows, the current connectivity requirements can be identified, from not only a component standpoint, but visually as well.

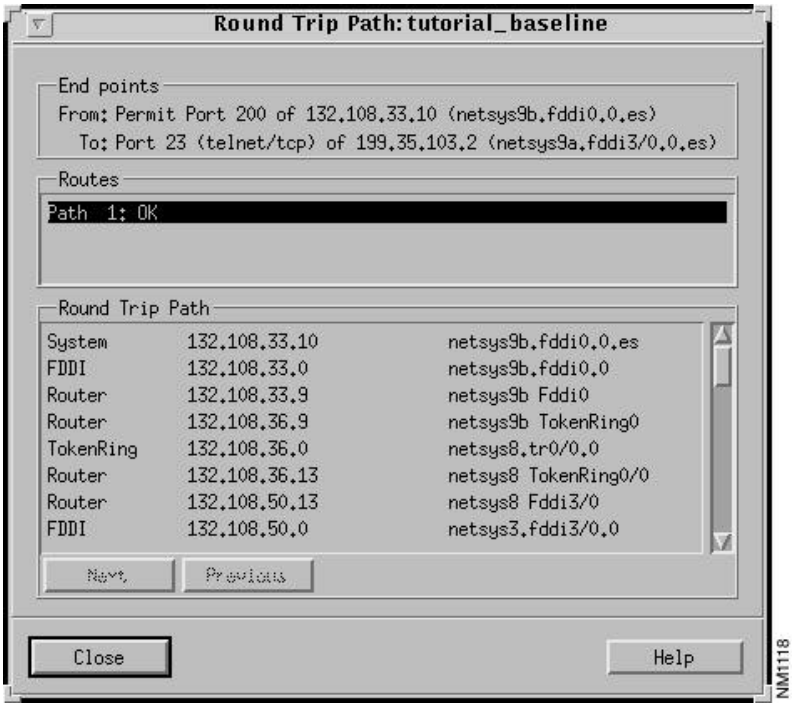

Figure 7-10 Round Trip Path Window

Step 13 Start with the first entry listed in the **Round Trip Path** list then click on each subsequent entry or the **Next** button.

Do this with the Topology window displayed to follow the route from the source router to the destination router. Upon reaching the destination router, the “Reached destination-turn around” message is displayed in the **Round Trip Path** list. Continuing the process follows the return path from the destination router back to the source router.