

JCSS

JCSS Technical Reference Manual

10.0 Final (OPNET 2.5.2)

Contract HC1047-09-C-4020



Disclaimer: As of October 2007, NETWARS was redesignated by the Program Manager Office as the Joint Communication Simulation System (JCSSL). JCSSL was selected as the new industry name to better reflect the inherent joint communication capabilities of the software. Users should be aware that no software updates were conducted as part of the software name change.

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PATENTS

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Identification

Document Identification

Document Title: JCSS Technical Reference
Version: 10.0 Final

Software Identification

Product Name: JCSS
Product Release: 10.0

Documentation Conventions

This documentation uses specific formatting and typographic conventions to present the following types of information:

- Objects, examples, and system I/O
- Object hierarchies
- Computer commands
- Lists and procedures

Objects, Examples, and System I/O

- Directory paths and file names are in standard Courier typeface:

```
C:\JCSS\User_Data\Projects
```

- Function names in body text are in italics:

```
op_dist_outcome()
```

- The names of functions of interest in example code are in bolded Courier typeface:

```
/* determine the object ID of packet's creation module */  
src_mod_objid = op_pk_creation_mod_get (pkptr);
```

- Variables are enclosed in angle brackets (< >):

```
<JCSS path>\Scenario_Builder\op_admin\err_log
```

Object Hierarchies

Menu hierarchies are indicated by right angle brackets (>); for example:
Edit > Preferences > Advanced

Computer Commands

These conventions apply to Windows systems and navigation methods that use the standard graphical-user-interface (GUI) terminology such as click, drag, and dialog box.

- Key combinations appear in the form “press <button>+x”; this means press the <button> and x keys at the same time to do the operation.
- The mouse operations left-click (or click) and right-click indicate that you should press the left mouse button or right mouse button, respectively.

Lists and Procedures

Information is often itemized in bulleted (unordered) or numbered (ordered) lists:

- In bulleted lists, the sequence of items is not important.
- In numbered lists, the sequence of items is important.

Procedures are contained within procedure headings and footings that indicate the start and end of the procedure. Each step of a procedure is numbered to indicate the sequence in which you should do the steps.

Document Revision History

Table FM-1 Document Revision History

Release Date	Product Version	Chapter	Description of Change
April 2010	10.0 Final	All	<ul style="list-style-type: none"> • Updated references from 9.0 to 10.0 • Updated references from 15.0 to 16.0 • Changed from Draft to Final version
		1	<ul style="list-style-type: none"> • Added introduction for DoDAF Editor
		3	<ul style="list-style-type: none"> • Added note to “Filter > Devices” regarding application types supported. • Added menu items “Page Setup” and “Print Scenario” • Removed menu item “Traffic Flow Thresholds” • Added “Display Recorded Routes” and “Hide Routes” features • Added Visualize Protocol Configuration options: “ATM Routing Domains”, “VLAN Configurations”, “HAIZE Versions”, and “Clear Visualization” • Enhanced descriptions of “Set View for Subnet” and “Set View for Network” • Added topology import feature “From Circuit Switch Text Files” • Added topology feature “Generate IP Cloud Metrics Files> From Router Metrics Information” • Added topology feature “Role Assignment > Assign Roles” • Added topology feature “Import STK Orbit” • Updated Edge Connectivity Wizard screenshot • Updated figures for “Deploy Broadcast Network” • Updated “Export IER Report” • Removed steps under “Flows > Open Flows Browser” • Updated Table 3-5 to represent all current protocols in menu • Updated graphics for MOP options post-simulation

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
March 2010	10.0 Draft	All	<ul style="list-style-type: none"> Converted PDF files of JCSS Technical Reference into Adobe FrameMaker 7.0. and applied commercial OPNET product documentation style template to improve quality and update manual. Reformatted text as needed to fit new format and style.
		4	<ul style="list-style-type: none"> Revised “Creating IERs” section to include dialog box changes and new Record Routes feature Added “Creating Threads from ACE Analyst” Revised Integrating DoDAF Views Updated Procedure 4-21: Create IERs from DoDAF Editor Added Procedure 4-22: Create and Deploy Standard Applications from the DoDAF Editor Added Procedure 4-23: Creating Threads from DoDAF Editor Added section “Generating DoDAF Visio Reports” Added descriptions of new DoDAF views available for Visio output
		6	<ul style="list-style-type: none"> Updated “Running a Simulation” to include Record IER Route feature Revised Procedure 6-5 for clarity Added “Viewing Recorded IER Routes”
		Glossary	<ul style="list-style-type: none"> Added note and revised documentation references for Process Registry
March 2009	9.0 Final	3	<ul style="list-style-type: none"> Added reference to additional OPNET documentation available for applicable features. Removed View > Zoom > To Window. Added View > IERs submenu. Removed Traffic > Set Aggregate Traffic Preferences, Traffic > Show Aggregate Traffic, and Traffic > Hide Aggregate Traffic. Added Protocols > IPv4 submenu. In Configuration OPFAC, changed name of Standard NETWARS Node to IER Firing Rules Node.

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
January 30, 2009	9.0 Draft	Front matter	<ul style="list-style-type: none"> Updated JCSS Logo and text to reflect name change from Joint Communications Simulation System to Joint Communication Simulation System
		All	<ul style="list-style-type: none"> Updated document footers and applicable figures to reflect new JCSS version 9.0 Changed applicable figures to reflect update from env_db14.5 to env_db15.0, and file path names from 14.5.A to 15.0.A
		2	<ul style="list-style-type: none"> Added Help > Web - JCSS Home Page and Help > Web - JCSS Support Center
		3	<ul style="list-style-type: none"> Removed File > Refresh IER Text Files Removed Edit > Project Defaults > IER. Updated View > Background > Set Properties to reflect changes to dialog box options Added options to View > Layout submenu: Lay Out Nodes (Circular), Lay Out Nodes (Hierarchical), Lay Out Nodes (Schematic), Move Selected Nodes to Non-Geographic Positions, and Move Selected Nodes to Geographic Positions Added View > Visualize Network Configuration submenu with the following options: Link Datarate, Link Technology, WLAN connectivity (in 3DNL), Clear Visualization, and Show Interactively Changed View > Visualize Link Loads menu to View > Visualize Link Usage, and added Reset Utilization Value Label Positions option Added View > Set View for Subnet and View > Set View for Network submenus Added Scenarios > User-Defined Reports submenu with the following options: Open Live Report Table, and Generate Report from Template Added Scenarios > DoDAF Integration Added Scenarios > Network Difference Report submenu with the following options: Generate Report, Launch Last Web Report, and Open Network Difference Log

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
			<ul style="list-style-type: none"> • Added Scenarios > Object/Attribute Difference Report submenu with the following options: Generate Report, Define Report, View Last Report, and Launch Last Web Report with the following options: Specify Behavior, Stop Comparing, Global Preferences, Select Objects With Differences, and Select Objects Only In This Network, Reconcile Selected Object Differences, Track Changes From Object Defaults, Track Changes From Last Save, Track Changes From Now, Compare to Network, and Compare to Scenario • Added Scenarios > Model Completeness Analysis submenu with the following options: Generate Report, and Configure/Run • Added Scenarios > View Associated Output Tables • Added Topology > Import > From VNE Server • Added Topology > Export > To Spreadsheet, Topology > Export > To Visio, and Topology > Export > To Network Whiteboard • Added Topology > Export > Subnet Hierarchy to VNE Server as Groups submenu with the following options: Entire Network, and Selected Subnets • Added Topology > Import Performance Metrics submenu with the following options: From Text File, and Open Import Log • Added Topology > Configure Link Delays submenu with the following options: From Measured Delay Information, and Show Output Log • Added Topology > Rapid Configuration, Topology > Delete Unconnected Nodes, Topology > Deploy Wireless Network, and Topology > Open Edge Connectivity Wizard • Added Topology > 3DNL submenu with the following options: Display 3D Network View, Play 3DNL History, Add '3DNL Mapping' Attribute to Selected Nodes, Manage 3DNL Entities, Show Trajectories of Selected Nodes in 3D Visualizer, Hide Trajectories of Selected Nodes in 3D Visualizer, Manage 3D Visualization of Trajectories, Show Pathloss between Selected Nodes in 3D Visualizer, Hide Pathloss between Selected Nodes in 3D Visualizer, Manage 3D Visualization of Pathloss, and Visualize Antenna Coverage. • Added Topology > Clear Trajectory

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
			<ul style="list-style-type: none"> • Added Topology > Random Mobility submenu with the following options: Set Mobility Profile, Clear Mobility Profile, and Set Trajectory Created From Random Mobility • Added Topology > Shared Risk Groups submenu with the following options: New, Import, Export, and Visualize Operational Status • Reorganized Traffic > IERs submenu • Added Traffic > Flows > Export > To TR2 • Added Traffic > Flows > Merge Traffic Flows • Removed Traffic > Convert Traffic > Link Loads to Flows submenu. • Added NetMapper section • Removed DES > IER Results submenu • Added DES > Results > Compare Results
		4	<ul style="list-style-type: none"> • Added procedure to Edit JCSS Attributes for Assignment. template OPFAC/organizations
August 11, 2008	8.0 Final	All	<ul style="list-style-type: none"> • Removed all IER Database references
August 1, 2008	8.0 Final	2	<ul style="list-style-type: none"> • Updated System Editor figures to reflect removal of IER Database menu • Removed reference to setting an equipment list in the New Project Wizard
		3	<ul style="list-style-type: none"> • Updated Figures 3-1 and 3-6 • Corrected file path to template model list files • Updated Export Scenario > To Visio section to reflect only one .vdx file is created
		4	<ul style="list-style-type: none"> • Corrected file path to icon databases
		Appendix A	<ul style="list-style-type: none"> • Removed Promina Circuits and Satellite Links sections
July 11, 2008	8.0 Draft	All	<ul style="list-style-type: none"> • Updated figures to reflect product name change to JCSS from NETWARS
		2	<ul style="list-style-type: none"> • Added File > Import Packaged Project • Added File > Manage Model Files > Expand Project File Archive • Added Help > Documentation > JCSS Models User's Guides

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
		3	<ul style="list-style-type: none"> • Added File > Manage Model Files > Expand Project File Archive • Added File > Manage Model Files > Create Project File Archive... • Removed Edit > Projects Defaults > Mission Analysis • Added View > Visualize Protocol Configuration > IPv4 Interface Metrics > (options). • Added View > Visualize Protocol Configuration > HAIPE Versions. • Removed Scenarios > Reports > Mission Analysis Questions • Removed Scenarios > Reports > Task Organization • Added Scenarios > Generate Network Inventory Summary • Removed Topology > Configuration Utilities > TSSP > (options) • Removed Topology > Configuration Utilities > Multiplexer > (options) • Changed Topology > Import Topology > (options) to Topology > Import > (options) • Added Traffic > Convert Traffic > Link Loads to Flows > (options) • Added IER-specific sample figures to DES > Results > View Application Delay Tracking
December 13, 2006	6.2 Final	2	<ul style="list-style-type: none"> • Removed refs to User's Guides 1-4, since they are no longer built into the NETWARS software
		3	<ul style="list-style-type: none"> • Clarified use of Rules folders (pg TR-3-22) • Removed unnecessary step (old step 2) from View > Set Area of Interest section. • Removed reference to Map menu (changed to View > Background > Map Edit Mode). • Added Topology > Define Trajectory. • Updated Figure 3-151, Traffic Flows Import dialog box (now Figure 3-155), and accompanying text description. • Removed ref to traffic_import_suppress_unrecognized_sources_dialog preference from Unrecognized Traffic Assistant section. • Removed Traffic > Specify Core/Edge Devices. • Updated list of Capacity Planning web reports (pg TR-3-145).
		4	<ul style="list-style-type: none"> • Updated instructions for accessing Icon Database and locating files.
December 8, 2006	6.2 Final	1	<ul style="list-style-type: none"> • Removed descriptions of editors that are not provided with standard NETWARS

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
		2	<ul style="list-style-type: none"> Updated “Open Project” section to direct users to use the Project directory. Updated Figure 2-13 to reflect version 12.0. Updated Figure 2-19 and associated text to reflect new Preferences Editor
		3	<ul style="list-style-type: none"> Removed duplicate step from “Edit > Preferences > Device Model Map > New” section, and added ref to specific directory Updated figures 3-38, 3-79, 3-87, 3-88, 3-92, 3-170, 3-171, 3-179, 3-180, and 3-181 Added “DES > IER Results” section
		Appendix C	<ul style="list-style-type: none"> Updated refs from 11.5 to 12.0
November 3, 2006	6.2 Final	3	<ul style="list-style-type: none"> Provided updated figures: 3-1 (Scenario Builder with a project open); 3-3, 3-5, 3-7, and 3-33 (removed references to old UserGuide_SB_Scenario); 3-6 (removed Add Logical View button); 3-34 (removed Type of View drop-down list, and Re-use/Re-create options); 3-35 (added new Settings drop-down); 3-79 (names in CCSD Summary Report); 3-87 and 3-88 (clearer); 3-101 (Library treeview changes); 3-113 (added Classification drop-down); 3-111, 3-117, 3-187, and 3-188 (reflect new toolbar buttons) Added new figures 3-36 and 3-37 for network showcase feature Removed Map Menu (moved Map > Set Area of Interest to View > Set Area of Interest, moved Map > Background > <options> to View > Background > <options>, removed Map > Background > Add CADRG/CIB Raster catalog directories, moved and renamed Map > Background > Toggle Map Edit Mode to View > Background > Map Edit Mode, moved Map > LOS Settings to View > Show LOS > LOS Settings, moved Map > Clear LOS Ranges to View > Show LOS > Clear LOS Ranges, moved Map > Display LOS Legend to View > Show LOS > Display LOS Legend, moved Map > View OPFAC Distances to View > OPFAC Distances > View OPFAC Distances, moved Map > Remove OPFAC Distances to View > OPFAC Distances > Remove OPFAC Distances, removed Map > Define Trajectory, moved Map > Animate to Scenarios > Animate) Added Topology > Configuration Utilities > UHF DAMA SATCOM and Topology > Configuration Utilities > Cut-through > <options> Moved Terrain menu options to Topology menu Added Ctrl+W shortcut keys to Traffic Wizard section
		Appendices B, C, and D	<ul style="list-style-type: none"> Updated NETWARS System Administrator’s Manual and moved to new Appendices in this manual
October 13, 2006	6.2 Draft	1	<ul style="list-style-type: none"> Removed references to the IER Editor

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
		2	<ul style="list-style-type: none"> Updated System Editor and Sign-in figures to reflect version 6.2 Removed File > Open Editor and Open Editor dialog box Added File > New Project, File > Open Project, File > Open Subordinate Query, File > New Other, File > Open Other, File > Manage Model Files, and File > Recent Projects Added IER Database menu and options Added Help > Show All Logs
		3	<ul style="list-style-type: none"> Added File > Close, File > Page Setup, File > Print Graphs, and File > Manage Model Files Removed File > Close Project and File > Close Subordinate Query Added Edit > Save Object Selection Set, Edit > Load Object Selection Set, Edit > Edit Objects Using Template, and Edit > Edit Attribute Template Replaced Advanced Preferences dialog box with new Preferences Editor dialog box Added View > Show Logical Views, View > Show Network Topology, View > Show Network Showcase, View > Open Network Showcase Window, View > Demands, View > Paths, View > Annotations, View > Layout > Lay Out Nodes Interactively, View > Zoom > To Window, and View > Zoom > To All Updated Edit Visualization Preferences dialog box Changed View > Layout > Scale Selected Icons to View > Layout > Scale Node Icons Interactively Removed View > Network Views > Logical Updated Scenario menu to reflect name change to Scenarios menu. Added Scenarios > Scenario Components, Scenarios > Reports > CCSD Summary, and Scenarios > Reports > SLD Summary Added Protocols > Servers, Protocols > Mainframes, Protocols > TCP, Protocols > MPLS, Protocols > Ethernet, Protocols > FDDI, Protocols > MANET, Protocols > UMTS, and Protocols > Wireless LAN Removed Topology > Import > Template OPFAC into Library from XML Added DES > Choose Statistics (Advanced), DES > Expert Service Prediction, DES > Configure/Run Discrete Event Simulation (Advanced), DES > Restart Discrete Event Simulation, DES > Results > View Application Delay Tracking, and DES > Panel Operations > Reload Data Into All Panels Removed DES > Results > Compare Results Updated Choose Results dialog box
		4 & 5	<ul style="list-style-type: none"> Removed IER Editor chapter (functionality now accessible via System Editor's IER Database menu) and renumbered chapters
		Glossary	<ul style="list-style-type: none"> Removed references to the Scenario Conversion Module

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
March 30, 2006	6.1 Final	3	<p>Updated Traffic Flow Preferences dialog box figure to reflect checkbox options design</p> <p>Removed “Rename Scenarios “ feature from Manage Scenarios section</p> <p>Added Import Scenario > TNAPS to XML</p> <p>Removed Import Scenario > From Visio</p> <p>Added shortcut keys for configuring/viewing TSSP circuits</p> <p>Added Configuration Utilities > Multiplexer > Configure Multiplexer Circuits and View Multiplexer Circuits</p> <p>Noted the default username and password for the IER database</p>
		Appendix A	Removed Multiplexer Utility Nodes section
March 3, 2006	6.1 Draft	2	<ul style="list-style-type: none"> • Updated System Editor and Sign-in figures to reflect version 6.1 • Added Edit > Preferences > Device Model Map > (options) • Removed Help > Generate Support Info • Renamed Help > Error Log > View as Help > Error Log > Open • Renamed Help > Message Log > View as Help > Message Log > Open • Added Help > Session Log > (options)
		3	<ul style="list-style-type: none"> • Updated “Deploying Satellite Links” section to reflect new tabbed design of Satellite Bent Pipe Link Deployment dialog box • Updated TSSP Circuit Deployment dialog box figure (and corresponding text description) to reflect new tabbed design • Updated View TSSP Circuits dialog box figure (and corresponding text description) to reflect new column names • Removed Traffic > Convert Traffic > Flows to IERs
		4	<ul style="list-style-type: none"> • Added Edit > Preferences
		5	<ul style="list-style-type: none"> • Updated figure (and text) to reflect name change from “Icon Editor” to “Icon Database”, and new toolbar buttons • Added File > Exit
		Front Matter	<p>Changed refs in Documentation Conventions section to be NETWARS-specific rather than OPNET-specific (i.e, changed <opnet_user_home>...\ ref to <NETWARS path>\Scenario_Builder\.)</p>
November 14, 2005	5.2 Final	2	<ul style="list-style-type: none"> • Added statement (“Please contact NETWARS CM to register your license.”) to Starting License Manager section • Changed Express method description to “(Requires authorized access.)” in Adding a License section • Updated Task Tracking Workflow GUI figure.

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
		3	<ul style="list-style-type: none"> • Updated Edit > Project Defaults > IER figure • Updated View > Visualize Link Loads > Color by Link Load figure • Updated View > Network Views > Logical figure • Added Map > Background > Add CADRG/CIB Raster catalog directories • Renamed Scenario > Scenario Documentation as Scenario > Set Scenario Documentation • Corrected ref to old command (Topology > Import > Subordinate Response) in Scenario > Import Scenario > Subordinate Response. • Updated Object Palettes to include Tree view and reflect new icons • Updated Annotation Palette • Removed Topology > Link Operations > Deploy TSSP Groups • Added Deploying Satellite Links section • Added Topology > Configuration Utilities > TSSP > Configure TSSP Groups (Circuits) • Added Topology > Configuration Utilities > TSSP > View TSSP Group Configs (Circuits) • Updated Topology > Import Device Configuration Files • Removed Advanced Traffic Wizard • Updated Traffic Wizard figure • Removed Traffic > Convert Traffic > Link Loads to Flows • Removed Traffic > Convert Traffic > Open Conversion Log • Removed Traffic > Convert Traffic > Clear Conversion Log • Updated Terrain > Edit Parameter Sets figure
October 10, 2005	5.2 Draft	All	<ul style="list-style-type: none"> • Updated document footers and applicable screenshots to reflect new NETWARS version number
		1	<ul style="list-style-type: none"> • Added (optional) Server Characterization and Mainframe Characterization options to System Editor (File > Open Editor)

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
		2	<ul style="list-style-type: none"> • Added Edit > User Level options • Updated Figure 2-4 (Open Editor dialog box) to reflect addition of (optional) Server and Mainframe Characterization editors • Updated Figure 2-9 (Security Classifications dialog box) to reflect addition of Set Default button • Updated Figure 2-11 (Advanced Preferences dialog box) to reflect new prefs and correct CORE version in title bar) • Removed figure of License Manager Help dialog box (not necessary to document since Help changes with each version) • Added Previous Editor and Circulate Editors options to Windows menu. • Added Help > Documentation > User's Guides options
		3	<ul style="list-style-type: none"> • Removed references to 'demands'
		File Menu	<ul style="list-style-type: none"> • Updated File > Close Project to reflect that both the project and the Scenario Builder window close (instead of the project only) • Updated Figure 3-6 (Briefings dialog box) to reflect addition of Add Logical View button • Added Figure 3-7 (Print Preview dialog box) • Renamed File > Package as File > Package Project Files, and old File > Package submenu 'Project Files' as 'Project' • Added File > Recent Projects (with submenu) to replace old list of recent projects • Removed File > Close Scenario Builder • Renamed File > Exit NETWARS as File > Exit
		Edit Menu	<ul style="list-style-type: none"> • Renamed Edit > Select All in Subnet as Edit > Select All • Added Edit > Find Node/Link • Renamed Edit > Select as Edit > Group Selection/Action > Selection Filter • Renamed Edit > Apply Action as Edit > Group Selection/Action > Action Filter • Renamed Edit > Object Palette as Topology > Open Object Palette • Renamed Edit > Annotation Palette as Topology > Open Annotation Palette • Moved Edit > Device Model Map submenu to Edit > Preferences > Device Model Map. • Added Edit > Preferences > Device Model Map > Open • Renamed Edit > Defaults > Device Model Map as Edit > Preferences > Device Model Map > Choose. • Removed Edit > Defaults > Demands, Edit > Defaults > Bandwidth Requirements, and Edit > Defaults > Application Conversion

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
		View Menu	<ul style="list-style-type: none"> • Added View > Show Scenario Treeview • Added View > Layout > Geographic Positioning • Added View > Layout > Layout Nodes Automatically (Balanced) • Renamed & moved View > Edit Visualization Preferences to View > Layout > Edit Display Preferences • Renamed & moved View > Zoom In to View > Zoom > To Rectangle • Renamed & moved View > Zoom to Selection to View > Zoom > To Selection • Renamed & moved View > Zoom Out to View > Zoom > Unzoom • Renamed View > Redraw as View > Refresh Workspace • Removed View > Network Views > Organization Systems and View > Network Views > Device Systems • Renamed View > Network Views > Logical Views as View > Network Views > Logical • Renamed Figure 3-42 (View Filtering dialog box) as Logical View Selection dialog box & added detail to dialog box options • Renamed & moved View > Set View Properties to Map > Background > Set Properties • Added View > Visualize Protocol Configuration > IP Tunnel Configuration
		Map Menu	<ul style="list-style-type: none"> • Renamed Map > Set Area of Operations as Map > Set Area of Interest • Replaced Figure 3-45 (Set Area of Operations dialog box) with new Set Area of Interest dialog box • Updated Figure 3-46 (Setting background view properties) to reflect addition of Translucency column and Edit CADRG/CIB Properties button • Replaced Figure 3-47 (Set Area of Operations dialog box) with new Choose Border Map dialog box • Renamed Map > Background > Import Image as Map > Background > Add Image Map • Renamed Map > Background > Import Background Image as Map > Background > Add Image • Removed Map > Background > Import JMTK Data • Renamed Map > Background > Import MIF Data as Map > Background > Add MIF Map • Added Figure 3-50 (MIF Import Log dialog box) • Updated Figure 3-57 (Define Trajectory dialog box) to reflect changes • Added Figure 3-58 (Trajectory Segment Information dialog box)

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
		Scenario Menu	<ul style="list-style-type: none"> • Added Scenario > Manage Scenarios and Figure 3-64 (Manage Scenarios dialog box) • Removed Scenario > Remove Scenario • Renamed Scenario > Import as Scenario > Import Scenario • Renamed Scenario > Import > NETWARS Scenario as Scenario > Import Scenario > From NETWARS • Renamed Scenario > Import > OPNET Modeler Scenario as Scenario > Import Scenario > From OPNET Modeler • Renamed Scenario > Import > Scenario from XML as Scenario > Import Scenario > From XML • Renamed Scenario > Import > Scenario from Visio XML as Scenario > Import Scenario > From Visio • Removed Scenario > Export > Export to HTML • Renamed Scenario > Export as Scenario > Export Scenario • Renamed Scenario > Export > Scenario to XML as Scenario > Export Scenario > To XML • Added Scenario > Export Scenario > To JNMS • Renamed Scenario > Export > Scenario to Visio XML as Scenario > Export Scenario > To Visio • Renamed Scenario > Summary Tables as Scenario > Reports • Renamed Scenario > View Task Organization Report as Scenario > Reports > Task Organization • Added Scenario > Reports > User-Defined Reports > Open Live Report Table and Scenario > Reports > User-Defined Reports > Generate Report from Template. • Added Scenario > Generate Scenario Web Report and Scenario > Generate Scenario Bitmap • Added Figures 3-87 (Generate Scenario Web Report dialog box), 3-88 (Displaying Scenario Web Report in Web Browser), and 3-89 (Model Image Capture Preview dialog box)
		Topology Menu	<ul style="list-style-type: none"> • Added Topology > Open Library Treeview and Figure 3-95 (Library Treeview) • Renamed Topology > Device Creator as Topology > Create Custom Device Model • Renamed Topology > Import > Subordinate Response as Scenario > Import Scenario > Subordinate Response • Renamed Topology > Export > Subordinate Response as Scenario > Export Scenario > Subordinate Response • Added Topology > Link Operations > Deploy TSSP Groups and Figure 3-101 (TSSP Circuit Deployment) • Removed Topology > Link Operations > Redeploy Link

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
		Traffic Menu	<ul style="list-style-type: none"> • Added Traffic submenus for Traffic Wizard, IERs, Flows Device/Link Loads, and Convert Traffic • Added descriptions of Traffic Wizards (Simple & Advanced) • Removed Traffic > Collector Import Settings and Traffic > Visualize submenus • Renamed Traffic > IER/Demand Import Options as Traffic > IERs > Set Import Options • Renamed Traffic > Specify Demands as Traffic > IERs > Specify IERs • Added Traffic > IERs > Import from IER Report • Renamed Traffic > Visualize > Export Traffic Report as Traffic > IERs > Export IER Report • Added Traffic > IERs > Export IERs to XML • Renamed Traffic > Import Flows > (options) as Traffic > Flows > Import > (options). • Renamed Traffic > Create Traffic Flows as Traffic > Flows > Create Flows. • Replaced Create Traffic Demands dialog box in Figure 3-132 with Create IP Unicast Traffic Flows dialog box • Renamed Traffic > Visualize > Open Flows Browser as Traffic > Flows > Open Flows Browser • Renamed Traffic > Visualize > Export Traffic Flows as Traffic > Flows > Export to Spreadsheet • Updated Figure 3-139 (Export Traffic Flows dialog box) • Renamed Traffic > Import Device/Link Baseline Loads > (options) as Traffic > Device/Link Loads > Import > (options) • Removed Traffic > Convert NETWARS Applications to Demands • Renamed Traffic > Convert Applications to Flows as Traffic > Convert Traffic > Applications to Flows • Updated Figure 3-140 (Convert Applications to Flows dialog box) to remove Time Step settings • Renamed Traffic > Convert Link Loads to Flows > Configure/Convert as Traffic > Convert Traffic > Link Loads to Flows • Renamed Traffic > Convert Traffic Flows to NETWARS Demands as Traffic > Convert Traffic > Flows to IERs • Renamed Traffic > Convert Link Loads to Flows > Open Conversion Log as Traffic > Convert Traffic > Open Conversion Log • Renamed Traffic > Convert Link Loads to Flows > Clear Conversion Log as Traffic > Convert Traffic > Clear Conversion Log. • Added Traffic > Generate Traffic Web Report • Renamed Traffic > Visualize > Visualization Aggregate Traffic Preferences as Traffic > Set Aggregate Traffic Preferences • Renamed Traffic > Collector Import Settings > Specify Core/Edge Devices as Traffic > Specify Core/Edge Devices.

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
		Protocols Menu	<ul style="list-style-type: none"> • Added Protocols > LDP, Protocols > RSVP, Protocols > VLAN, and Protocols > STP • Removed Protocols > MPLS and Protocols > DPT • Updated Figure 3-149 (Terrain Data Directory Preferences dialog box) to reflect addition of Format drop-down list and support for terrain data type 'OpenFlight' • Updated Figure 3-151 (Import Elevation Lines dialog box) to reflect reorganization of dialog box fields, etc. • Updated Figure 3-153 (Evaluation Settings dialog box) to reflect reorganization of dialog box buttons.
		NetDoctor Menu	<ul style="list-style-type: none"> • Added NetDoctor > Auto-Generate Report Template..., NetDoctor > Suppress Messages, NetDoctor > Rule Development..., and NetDoctor > Options • Removed NetDoctor > Security
		DES Menu	<ul style="list-style-type: none"> • Removed DES > Record Animation for Subnet • Added DES > Record Packet Flow Animation for Subnet and DES > Record Node Movement Animation for Subnet • Removed DES > Color Links by Utilization. • Removed DES > Clear Link Visualization. • Removed DES > Panel Operations > Export Panels > To HTML.
		Windows Menu	<ul style="list-style-type: none"> • Added Previous Editor and Circulate Editors options to Windows menu
		Glossary	<ul style="list-style-type: none"> • Removed 'Demands' from Glossary
April 1, 2005	5.1 Final	Cover	<ul style="list-style-type: none"> • Changed release date to April 1, 2005, and removed OPNET contact info from Identification section
March 21, 2005	5.1 Final	1	<ul style="list-style-type: none"> • Added ACE to ACE Whiteboard section
		2	<ul style="list-style-type: none"> • Added ACE option to System Editor (File > Open Editor)
		2 & 3	<ul style="list-style-type: none"> • Corrected definition of functional names in Edit > Preferences > Functional Profiles.
		3	<ul style="list-style-type: none"> • Added View > Zoom to Selection and View > Layout options • Added Scenario > New/Duplicate/Previous/Next Scenario • Updated Figure 3-18 to reflect new button placement

Table FM-1 Document Revision History (Continued)

Release Date	Product Version	Chapter	Description of Change
February 21, 2005	5.1 Final		<ul style="list-style-type: none"> • No changes
February 7, 2005	5.1 Draft	All	<ul style="list-style-type: none"> • Ported existing Word document (NETWARS v 4.2) into Adobe FrameMaker 7.1, and applied commercial OPNET product documentation style template to improve quality and update manual. Reformatted text as needed to fit new format and style. <p>Content changes:</p> <ul style="list-style-type: none"> • Updated applicable screenshots to reflect new NETWARS version number • Added reference to ACE doc in chapter 1, and added ACE Whiteboard option to System Editor (File > Open Editor) and Scenario Builder (Traffic > Import Flows) • Removed Capacity Planning > Restore Link Colors and Capacity Planning > Show Link Legend • Removed Alternate Link Cost field from Capacity Optimization Settings Advanced Parameters dialog box

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Procedure 3-3	Opening a Subordinate Query	JCSS-3-7
Procedure 3-4	Generating a Scenario Briefing	JCSS-3-8
Procedure 3-5	Finding a Node/Link	JCSS-3-14
Procedure 3-6	Using a Selection Filter	JCSS-3-15
Procedure 3-7	Using Group Actions	JCSS-3-16
Procedure 3-8	Creating a New Model Map	JCSS-3-23
Procedure 3-9	Open a Node Model	JCSS-3-32
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Procedure C-1	Edit Template OPFAC/Organization Attributes	JCSS-C-3
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1 Introduction

The JCSS Technical Reference Manual is a comprehensive reference and guide that covers all aspects of JCSS operation and use. It contains over 200 figures that provide visual examples of the JCSS interfaces, step-by-step procedures, and other important JCSS features and concepts.

Organization of the chapter topics is menu-based, meaning topics are grouped and ordered according to the various menus and menu options available in the respective JCSS interfaces.

Editor Interfaces

The capabilities of the JCSS software are organized into separate editors:

- The System Editor
- The Scenario Builder, and
- Other optional editors that require an extra license (To learn more about available editors, refer to the IT Guru documentation suite.)

System Editor

The System Editor acts as an entry point to the remaining editors. It allows you to access user and profile information as well as the task assistant interface.

Scenario Builder

The Scenario Builder allows you to build template OPFACs and organizations, define infrastructure and Information Exchange Requirements (IERs) between OPFACs and organizations, specify movement and geographical context for OPFACs and organizations, and run discrete event simulations for developed scenarios. You can open and work with multiple projects simultaneously, and easily cut, copy, and paste supported objects (Organizations, OPFACs, devices, links, etc.) between them.

Additionally, the Scenario Builder provides you with the option of deploying a communications infrastructure using a top-down approach. More specifically, the Lead Planner sets up the planning view and sends the initial scenario to the Subordinate Planners. The Subordinate Planners modify their portion of the initial plan and then send it back to the Lead Planner who integrates them into a complete plan.

The Scenario Builder allows you to optimize link and broadcast network capacities as well as traffic load. The optimization of the link and broadcast network capacities is implemented by changing the size of links and broadcast networks while the optimization of the traffic load is implemented by changing the load caused by the IERs.

This editor also allows you to view results of the simulation. After the simulation is complete, the Simulation Domain creates text files that capture the results of the simulation. The Scenario Builder reads these files and displays the results graphically as Measures of Performance (MOPs). The MOPs focus on the ability of selected communication equipment to send and receive information (e.g. file transfers, situation awareness updates, e-mail messages, etc.).

Finally, this editor integrates with other independent frameworks, such as the Department of Defense Architecture Framework (DoDAF). Using these integrations, you can easily import and export network information between JCSS and other software tools. JCSS can then be used to expedite and improve standardized processes by providing more detailed communications results through simulations versus other estimation methods.

2 System Editor

The System Editor is the editor that opens first when you start JCSS. From the System Editor, you can open any of the other JCSS editors, like the Scenario Builder. The System Editor allows you to access user and profile information, as well as the task assistant interface.

Accessing the System Editor

Starting up the JCSS software launches the System Editor and a Sign In dialog box, as shown below.

Figure 2-1 System Editor

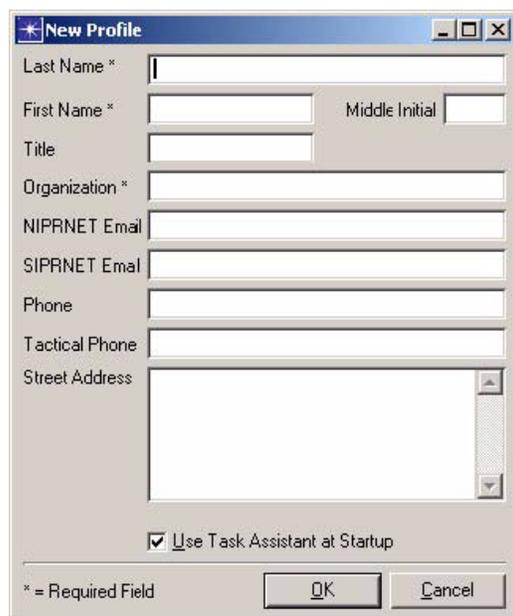


Figure 2-2 Sign-in Dialog Box



Procedure 2-1 Creating a New Login Profile

- 1 Launch the New Profile dialog box, shown below, by clicking the New button in the Sign In dialog box. The * designates a required field and must be filled-in to continue the sign-in process.

Figure 2-3 New Profile Dialog Box

The screenshot shows a Windows-style dialog box titled "New Profile". It contains the following fields and controls:

- Last Name * (required)
- First Name * (required)
- Middle Initial
- Title
- Organization * (required)
- NIPRNET Email
- SIPRNET Email
- Phone
- Tactical Phone
- Street Address (text area)
- Use Task Assistant at Startup
- * = Required Field
- OK button
- Cancel button

- 2 Enter required information and any optional information.
- 3 Click OK.

JCSS will save up to five (5) user names so that multiple users can use the software without re-typing their user information. This information is used to track the changes made in the scenario by each planner. Subordinate Planners also use this information when they need to send the subordinate response files back to the Lead Planner. If you have logged in before, select your name from the drop-down menu. To enable the Task Assistant to open upon sign-in, ensure that the Use Task Assistant at Startup is checked.

➔ The Sign In dialog box displays again with the new user name in the Profile field.

- 4 Sign in by clicking the Sign In button or, if you elect to edit your profile, you may do so at this time by clicking the Edit button.

End of Procedure 2-1

File Menu

Figure 2-4 System Editor's File Menu



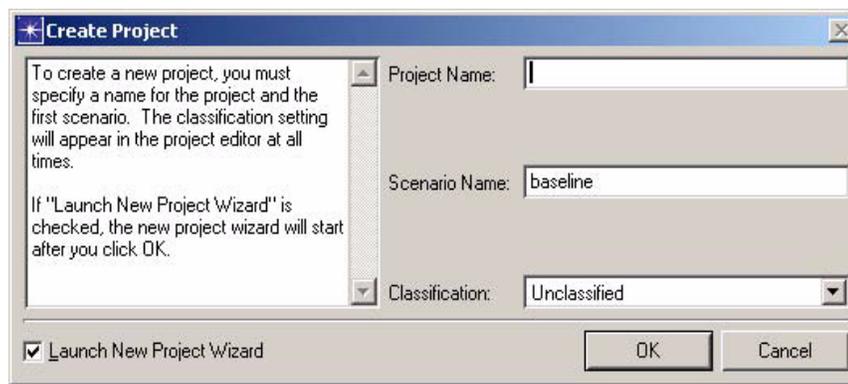
New Project

File > New Project... Opens a new Scenario Builder and displays the Create Project dialog box. Create a new project, the first step in the Lead Planner's workflow. You can simply name and launch a generic project, or use the New Project Wizard to select and set the area of operations, top-level units (including their locations and templates), an owner for each unit, and the types of equipment to use in the new project.

Procedure 2-2 Creating a New Project

- 1 Specify the names for the project and the initial scenario in the Create Project dialog box.

Figure 2-5 Creating a New Project



- 2 Select a classification level for the project in the Create Project dialog box.

- Click OK. If Launch New Project Wizard is not checked, then JCSS creates a generic project using the names you have designated. If Launch New Project Wizard is checked, then JCSS displays a sequence of dialog boxes that enable you to make selections specific to your new project.

Note—The names for both the project and the scenario cannot contain any spaces or special characters. In addition, the scenario name cannot be the same as any existing OPFAC; it must be unique.

End of Procedure 2-2

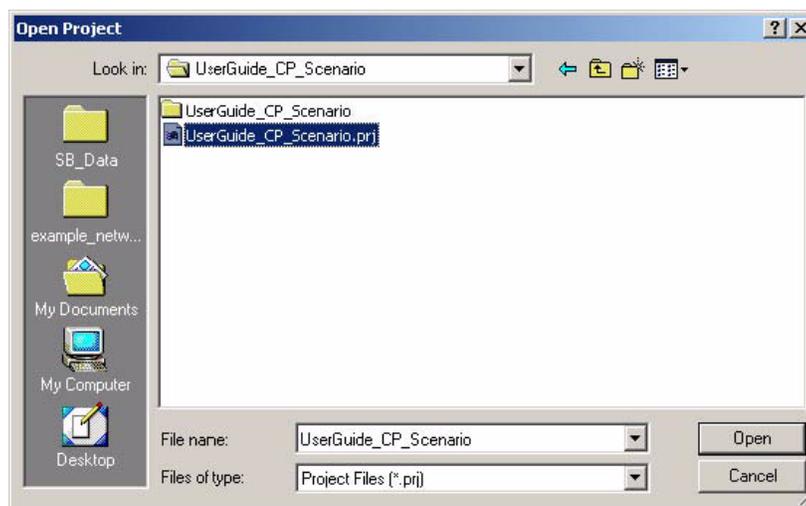
Open Project

File > Open Project... Displays the Open Project dialog box in which you can select a project file to open, and then opens the selected file in a new Scenario Builder.

Procedure 2-3 Opening an Existing Project

- Navigate to the Project directory, and select the .prj file corresponding to the project that you wish to open.

Figure 2-6 Project File Chooser



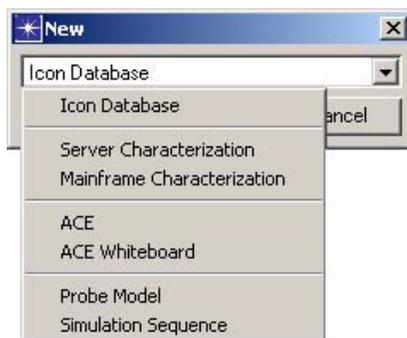
End of Procedure 2-3

Open Subordinate Query

File > Open Subordinate Query... Displays the Open Subordinate Query dialog box in which you can select a query file to open, and then opens the selected file in a new Scenario Builder.

New Other **File > New Other...** Displays the New dialog box which lists standard OPNET editors from which you can select to create.

Figure 2-7 New Other Dialog Box



Open Other **File > Open Other...** Displays the Open dialog box which lists standard OPNET files from which you can select to open.

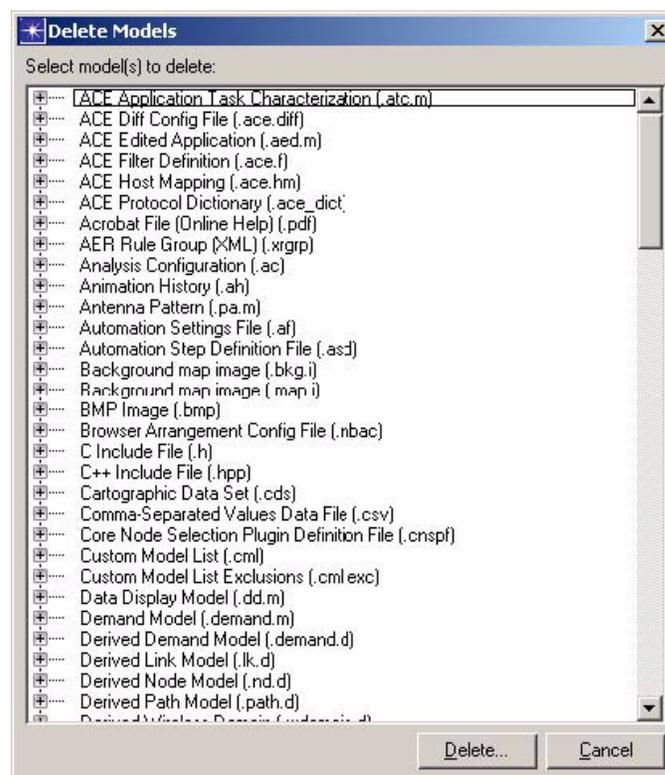
Import Packaged Project... **File > Import Packaged Project...** Displays the Zip File Browser dialog box in which you can select a zip file to open, and then opens the selected file in a new Scenario Builder.

Manage Model Files **File > Manage Model Files > (option)** This submenu lists options which allow you to manage model files.

**Manage Model
Files > Delete Model
Files**

File > Manage Model Files > Delete Model Files Displays a list of models from which you can select to delete files, as shown.

Figure 2-8 Delete Models Dialog Box



**Manage Model
Files > Add Model
Directory**

File > Manage Model Files > Add Model Directory Displays the Directory Browser in which you can create a new directory for models.

**Manage Model
Files > Refresh
Model Directories**

File > Manage Model Files > Refresh Model Directories JCSS maintains a list of folders called the model directories (or mod_dirs for short) where the models are stored. Models include OPFACs, organizations, projects and scenarios, icon databases, and device models. When you move such models around on the hard drive using Windows Explorer, the software does not recognize the change. To make the software aware of the changes, use this option.

**Manage Model
Files > Expand
Project File Archive**

File > Manage Model Files > Expand Project File Archive Displays the Files > Expand Select OPNET Components File Archive dialog box in which you can select an Project File .opcfa file to expand. Archive

Recent Projects

File > Recent Projects > (option): This submenu lists recently opened projects for easy re-opening.

Exit JCSS

File > Exit JCSS Exits JCSS.

Edit Menu

Figure 2-9 System Editor's Edit Menu



Login Information

Edit > Login Information: Lets you edit user profile information. After modifying profile information, click OK.

Figure 2-10 Select User Dialog Box



Change User

Edit > Change User Change the current signed in user and sign in information at any time by using the System Editor.

Procedure 2-4 Changing User

- 1 To change the user's profile, choose the user's name from the drop-down menu, as shown in the figure below.

Figure 2-11 Select User Dialog Box



2 Click OK when modifications are complete.

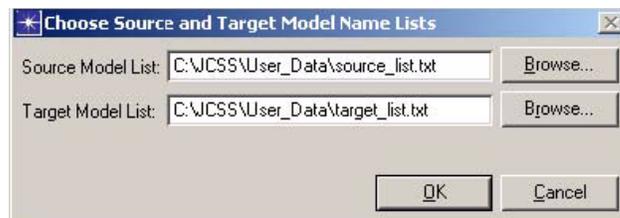
End of Procedure 2-4

User Level	Edit > User Level > (option) Switch between JCSS interfaces (simple to complex) by selecting one of the available User Level options. JCSS menus change to reflect the selected User Level. Higher User Levels display more menu items and menu headers. You can switch between User Levels at any time, so that all menu items can be available if you so choose. Switching the User Level affects all open editors.
User Level > Beginner	Edit > User Level > Beginner Select this User Level to access a simplified JCSS interface. The Beginner interface hides access to many of the functionalities of the system without removing the capabilities themselves. This results in an interface that is reduced in complexity, and is easier to navigate for beginner JCSS users.
User Level > Intermediate	Edit > User Level > Intermediate Select this User Level to access a JCSS interface that exposes more functionalities of the system than the Beginner level, but less than the Advanced level. This results in an interface that is reduced in complexity, and is easier to navigate for intermediate users.
User Level > Advanced	Edit > User Level > Advanced Select this User Level to access the full-featured JCSS interface. The Advanced interface exposes all of the functionalities of the system. This results in an interface that is more complex, and best utilized by more experienced JCSS users.
Preferences	Edit > Preferences > (option) Display and edit JCSS preference settings.
	Note —These menu options perform the same functions as the Preferences options under the Edit menu in the Scenario Builder.
Preferences > Device Model Map	Edit > Preferences > Device Model Map > (option) Set default device model map files.

**Preferences >
Device Model Map >
New...**

Edit > Preferences > Device Model Map > New... Using the Choose Source and Target Model Name Lists dialog box, select the paths to where you want new source and target model list .txt files to reside, and then click OK.

Figure 2-12 Choose Source and Target Model Name Lists Dialog Box



**Preferences >
Device Model Map >
Open...**

Edit > Preferences > Device Model Map > Open... Using the Device Model Map Browser, navigate to and select an existing JCSS device model map .xml file to open, and then click Open.

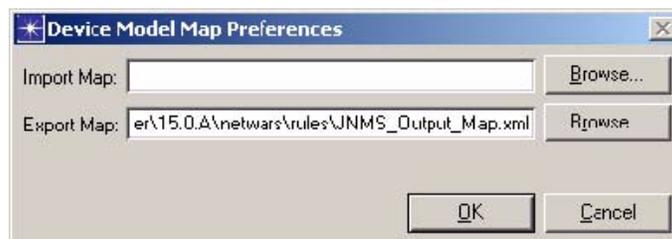
Figure 2-13 Device Model Map Browser



**Preferences >
Device Model Map >
Choose...**

Edit > Preferences > Device Model Map > Choose... Using the Device Model Map Preferences dialog box, navigate to and select a device model map .xml file to import into JCSS as needed, and then click OK.

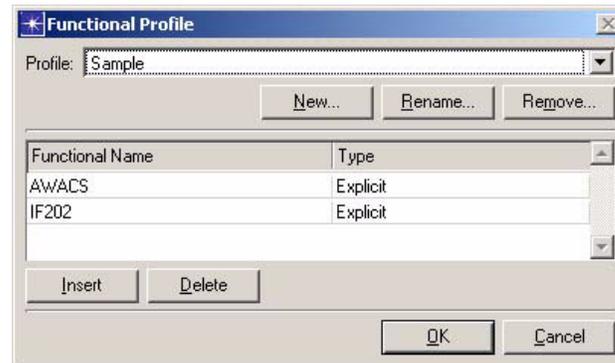
Figure 2-14 Device Model Map Preferences Dialog Box



**Preferences >
Functional Profiles**

Edit > Preferences > Functional Profiles Set default functional profiles and functional names. Every OPFAC has one or more functional names. A functional name maps an IER or series of IERs to a producer/consumer OPFAC pair. A collection of such functional names is called a functional profile. A functional profile can be defined locally on an individual OPFAC, or globally, so that it is available to all OPFACs and across different scenarios.

Figure 2-15 Functional Profile Dialog Box



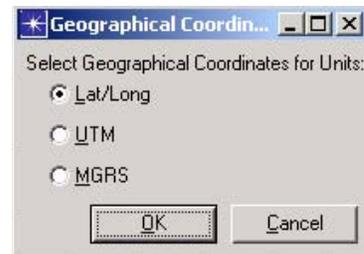
From this dialog box, you can do the following; when finished, click OK.

- Add, rename, or remove functional profiles as needed
- Insert, delete, or edit functional names as needed.

**Preferences >
Geographical
Coordinates**

Edit > Preferences > Geographical Coordinates Sets the default Geographical geographical coordinate system view displayed in the workspace of the Coordinates Scenario Builder. There are three types of geographical coordinate systems available in JCSS: Lat/Long, UTM, and MGRS.

Figure 2-16 Geographical Coordinates Dialog Box



Procedure 2-5 Setting Geographical Coordinates

- 1 Choose Edit > Preferences > Geographical Coordinates.
- 2 Select the Lat/Long, UTM, or MGRS radio button.
- 3 Click OK.

End of Procedure 2-5

**Preferences >
Owners List**

Edit > Preferences > Owners List Sets owner information for units marked for subordinate query.

Figure 2-17 Owner List Dialog Box



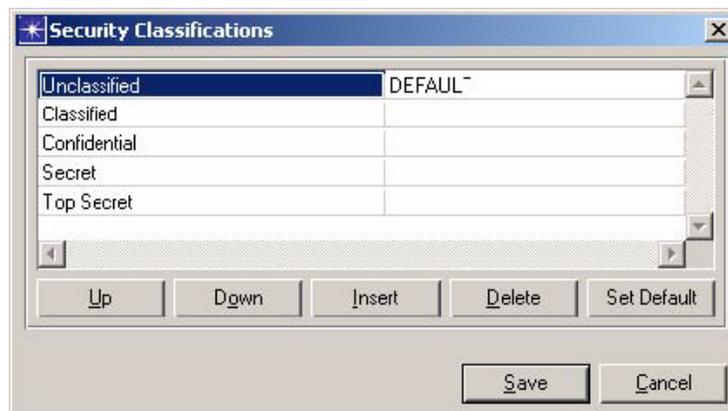
Owner information contains four fields: Last Name, First Name, Title and Organization. All fields, except the Title field, are required fields. Modify existing records or add/delete records to the list as needed.

**Preferences >
Security Classifications**

Edit > Preferences > Security Classifications Sets security classification for a variety of items in a scenario, such as devices and IERs. This dialog allows you to add, remove, or change values in the list of recognized security classification values. The list is used to populate drop-down lists in edit fields and table cells that specify security classification values. Since some fields and cells only allow values from this list, you will need to modify this list in order to specify custom security classifications. Any value is permitted, although duplicates are not allowed in the list.

The list order indicates the classifications' levels of restriction. Less restrictive classifications appear toward the top of the list.

Figure 2-18 Security Classifications Dialog Box



A value in the list may be modified by selecting and editing it

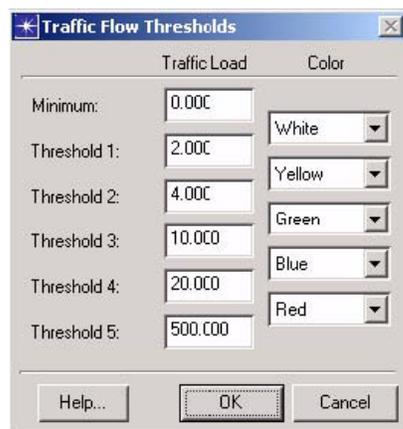
- The Up button moves the selected value toward the top of the list
- The Down button moves the selected value toward the bottom of the list

- The Insert button inserts a blank entry above the selected value
- The Delete button deletes the selected value
- The Set Default button sets the selected classification as your default
- The Save button saves all changes. Once saved, the changes will affect all edit fields and table cells, but the values stored in those attributes will not be modified.

**Preferences > Traffic
Flow Thresholds**

Edit > Preferences > Traffic Flow Thresholds Specify a minimum value and the colors to be used for each threshold; traffic flow thresholds are used in conjunction with the Aggregate Traffic Flows feature. Flows are colored based on the threshold they fall under. If the load of an aggregate flow is more than the highest threshold, the flow is colored black. If the load is lesser than the minimum threshold, the flow is not displayed. The default minimum value is 0 Kbps.

Figure 2-19 Traffic Flow Thresholds Dialog Box

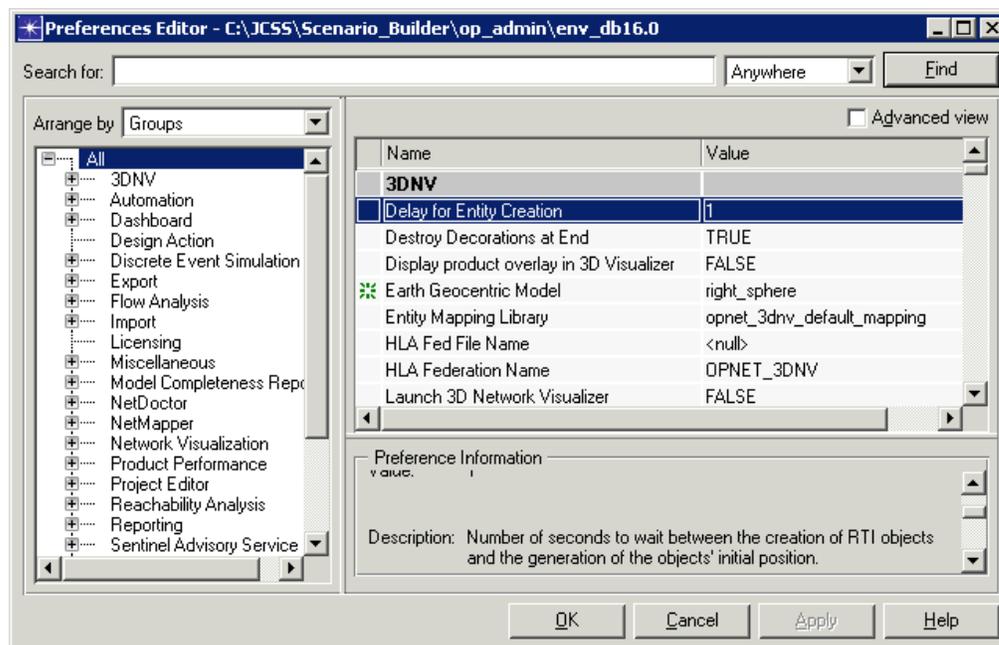


Set desired traffic load/color combinations, and then click OK.

**Preferences >
Advanced**

Edit > Preferences > Advanced View and/or set environment attributes, or “preferences”, that control program operation. These values are stored in the environment database file (env_db for short).

Figure 2-20 Sample Preferences Editor



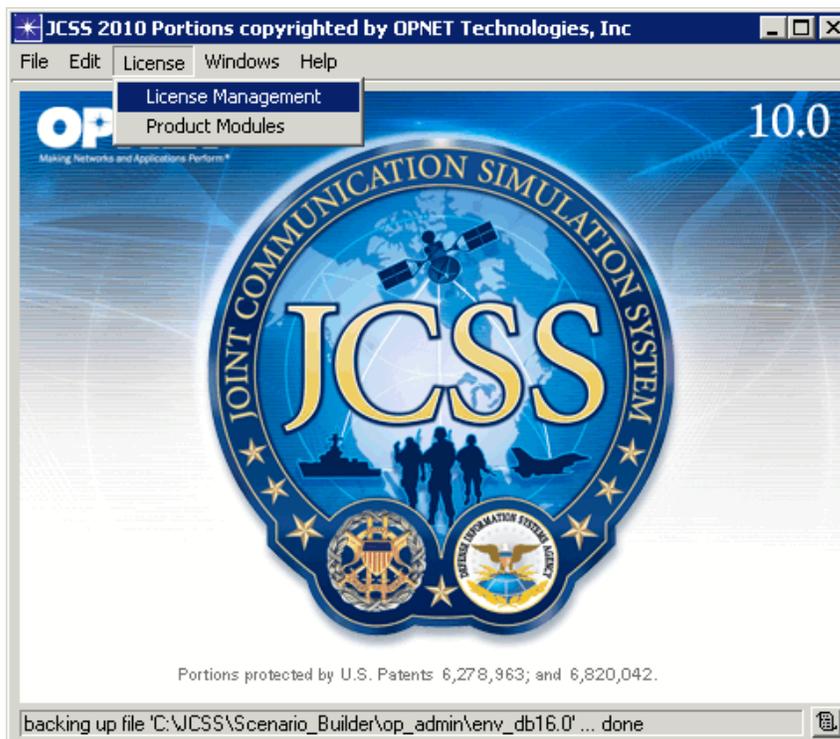
Procedure 2-6 Editing Preferences (Advanced)

- 1 Use the Search for field (and drop-down list) to search for preferences that contain specific words or values (Anywhere specifies to search Tags, Names, Values and Descriptions; In Names specifies to search Tags and Names only; In Values specifies to search Values only.)
- 2 Use the Arrange by drop-down list to display preferences by category (Groups specifies to arrange preferences by group; Source specifies to arrange preferences by source.)
- 3 Check (or uncheck) the Advanced view checkbox to toggle between showing an advanced or basic view of the preferences table (basic view shows the name and value of each preference; advanced view shows the name, tag, source of the preference's value and the value itself.)
- 4 Edit desired preference values by clicking in the corresponding Value cell, selecting or typing the new value, and then pressing the <Enter> key on your keyboard.
- 5 Click OK to save edits and close the Preferences Editor.

End of Procedure 2-6

License Menu

Figure 2-21 System Editor's License Menu



License Management

License > License Management A license conveys the right to use an application. A single license typically bundles one or more applications (such as Modeler), the simulation program, and one or more modules.

Licenses are allocated on a per-component basis. A component that is part of a license (perhaps a module such as TMMGUI) may be free and can be given to any requester, even if another component of the same license (most likely an application program) is in use.

License Terminology

- Add license—Add a license to the machine's license file
- Deregister License—Remove a license from a machine's license file (it is then free to be installed on a different machine)
- License—Authorization to use an OPNET product
- License Manager—Software interface for performing license operations
- License Server—A service running on a machine that will distribute licenses to other computers

- Revoke License—Free a license that is currently in use
- Standalone Mode—A licensing mode in which only the local machine can obtain the licenses

License Attributes

- License number—Specifies the software license. A single license may bundle several programs (for example, 100/1 that includes the programs IT Guru, Expert Service Prediction, and Multi-Vendor Import will be shown as three separate lines in the License Manager interface.)
- Program name—Specifies which programs are included in the license (such as IT Guru and the Radio module).
- Status—Identifies the state of the program.
 - A free program (shown in green) is available to the next user who requests it
 - An in use program (shown in white) is unavailable.
 - An expired program (shown as yellow with red X) is no longer valid
- License expiration—Displays a date or the word "permanent," depending on the type of license purchased
- Maintenance expiration—An expiration date. It is not possible to buy perpetual maintenance.
- User—Shows the user 's name if the license is in use
- Host—Shows the machine where the license is being used

License Files

Files for dedicated licenses (as opposed to floating licenses) are stored in the OPNET_license directory.

Note—When it is time to install a new version of the software, do not delete the license files.

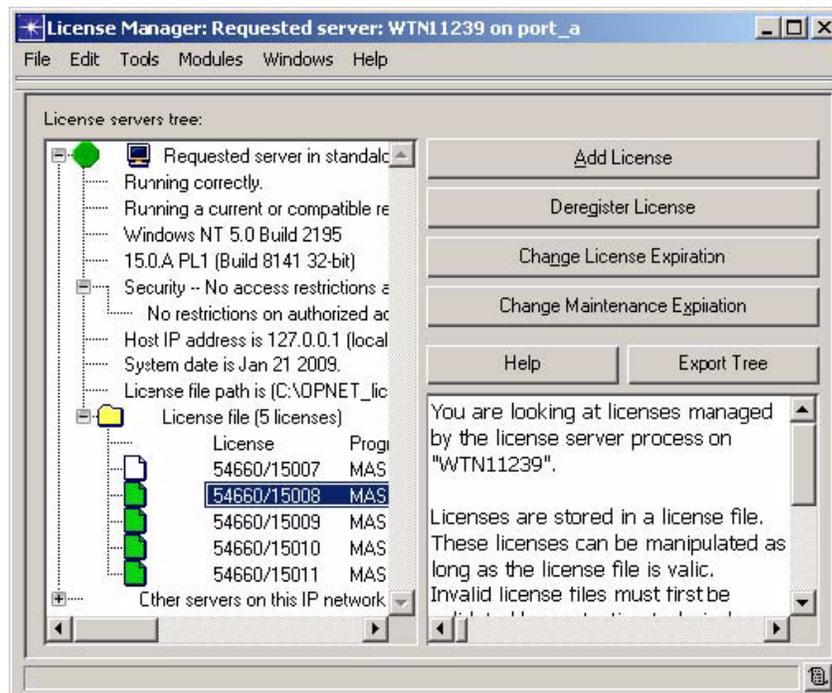
Starting License Manager

The License Manager can be accessed from the Start Menu or the System Editor. If you need to perform license maintenance, it is better to access the License Manager from the Start Menu (JCSS does not need to obtain a license).

Note—Please contact JCSS CM to register your license.

- To access License Manager from the Start Menu, simply select it from the Start/Programs/JCSS/License Manager menu option
- To access License Manager from the System Editor, select it from the License menu

Figure 2-22 License Manager: Requested Server Dialog Box



The License Manager contains details about the license server that you requested during the installation of JCSS. The License Manager also provides a Help menu that can be accessed by clicking the Help button.

Procedure 2-7 Adding a License

- 1 Click the Add License button on the License Manager to display the Choose Transaction Method dialog box.

Figure 2-23 Choose Transaction Method Dialog Box



- 2 Choose from one of four transaction methods:

- Express —Automatic via the Internet (Requires authorized access)
- Browser—Through a Web browser if the Express method does not work
- Email—Exchange Codes with OPNET via Email
- Offline—Exchange codes with OPNET via Telephone or Fax

End of Procedure 2-7

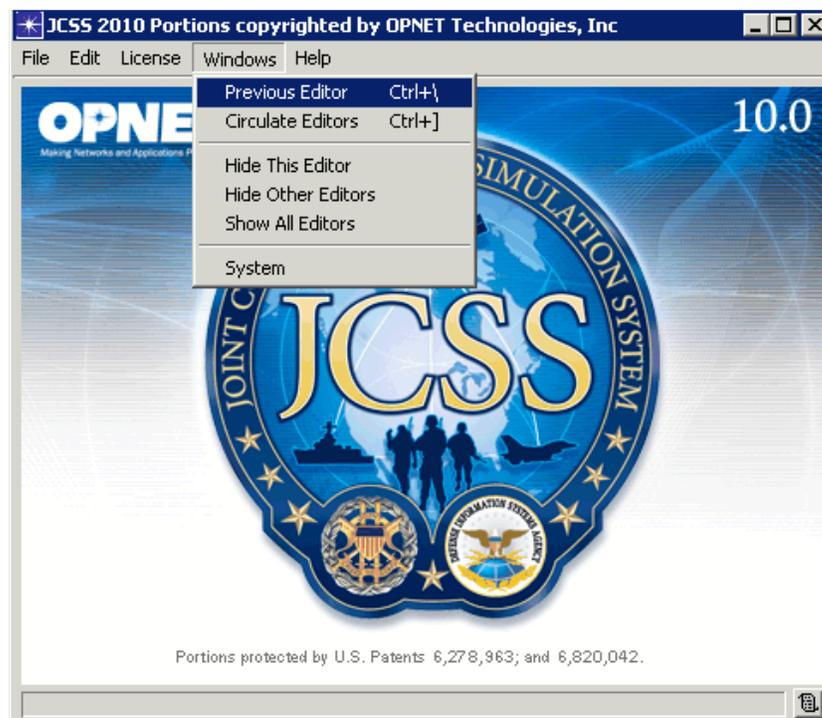
Product Modules

License > Product Modules Select active modules. Product Modules refer to additional licensed OPNET functionality. For example, JCSS uses the Terrain Modeling Module GUI (TMMGUI) and Multi-Vendor Import (MVI) product options, which are licensed under the JCSS license. (JCSS can also make use of NetDoctor and Simulation licenses to further enable the JCSS-resident functionality.)

If a module is deactivated using this option (by deselecting the checkbox next to a module name) the corresponding features of that module will not be active in JCSS. For example, the Terrain menu will not be available in JCSS if the TMMGUI module is deactivated.

Windows Menu

Figure 2-24 System Editor's Windows Menu



Previous Editor

Windows > Previous Editor Make the previously displayed editor the current editor.

- Circulate Editors** **Windows > Circulate Editors** One at a time, make each open editor the current editor.
- Hide This Editor** **Windows > Hide This Editor** Hide the current editor. If another editor is open, that editor is made the current editor.
- Hide Other Editors** **Windows > Hide Other Editors** Hide all open editor windows except the current one.
- Show All Editors** **Windows > Show All Editors** Re-display any hidden editors.

Help Menu

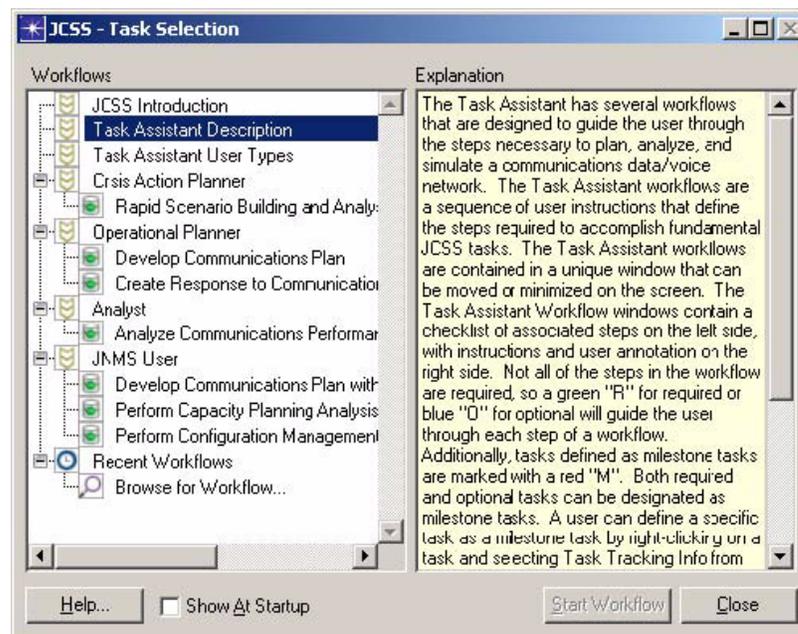
Figure 2-25 System Editor's Help Menu



- Task Assistant** **Help > Task Assistant** Display a list of workflows available to the planners. A workflow is simply an outline of steps to guide the planner through the flow of tasks associated with the particular mission being addressed.

The Task Assistant dialog box is shown below. The treeview on the left hand side of the dialog box shows the list of workflows available, and the explanation for those is provided in the pane on the right.

Figure 2-26 Task Assistant Dialog Box

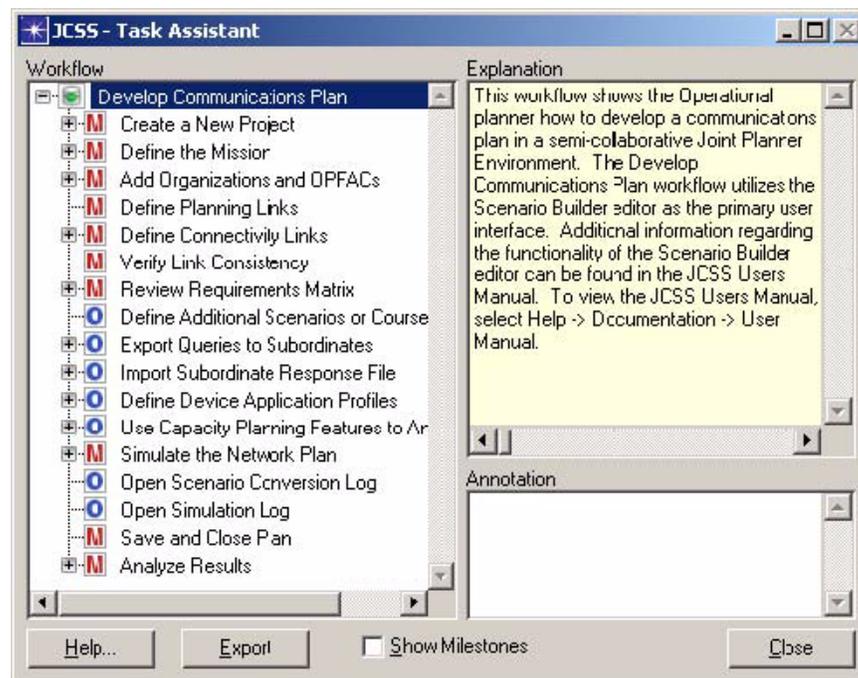


The list of workflows displayed in the Task Assistant dialog box are organized based on categories of user tasks and most recently used workflows.

- 1) To start a workflow, first select the workflow and then use either the Start Workflow button or simply double-click the workflow of interest.
- 2) To review the items within each workflow, click the plus sign to the left of the workflow category.

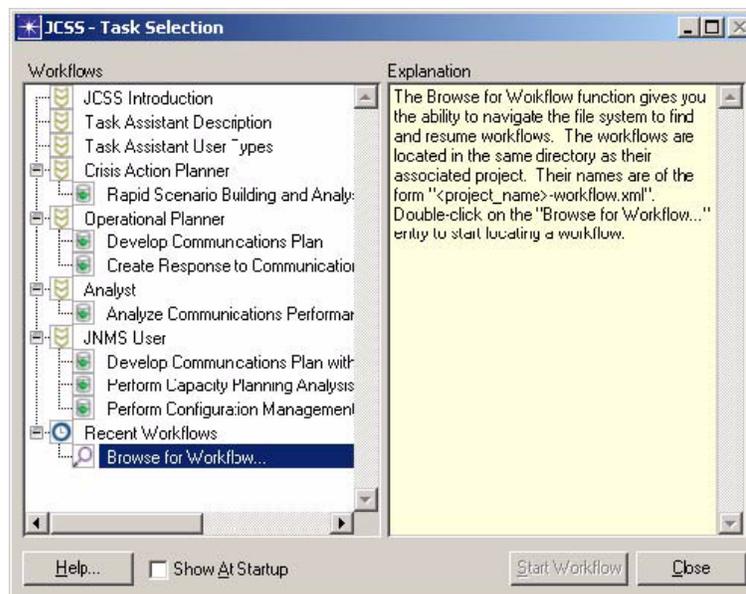
Assume that you have decided to develop a communications plan. You would select Develop Communications Plan by double-clicking the icon to the left of the text. This calls the Develop Communications Plan task.

Figure 2-27 Develop Communications Plan Task



In the figure above, each line item of the workflow has a letter to the left of the text indicating whether it is a milestone (M), an optional (O) or a required (R) task. In addition, many of the tasks can be expanded, by clicking the plus sign to reveal details on what steps are necessary to complete each task. Additionally, each line of the workflow is supplemented by details on how to complete that task in the Explanation pane located on the right side of the Task Assistant dialog.

- 1) If you do not find the workflow of interest, choose the Browse for Workflow option under the Recent Workflows in the Task Assistant dialog box to locate the desired workflow.

Figure 2-28 Task Assistant Browse for Workflow

- 2) If you chose not to use the Task Assistant workflows, exit by clicking the Close button.

Task Tracking

This feature, available from the Task Assistant, provides you with the capability to track timeline, dates due, milestones, and percent done for the planning tasks associated with the plan being developed. Task tracking information is available from the Task Tracking dialog box.

Procedure 2-8 Using Task Tracking

- 1 Right-click on a particular task or on the workflow in the Task Assistant, and select Task Tracking Information. If you click on the workflow name and select Task Tracking Information, the workflow dialog box launches.
- 2 Check Edit Workflow Time Information and enter the number of days for the entire workflow.
- 3 Click OK to save changes and close the dialog box.

➔ The figure below shows workflow time information.

Figure 2-29 Entering Number of Days for Entire Workflow

- 4 Right-click on a task and choose Task Tracking Information to launch the Task Tracking dialog box, as shown below.

Figure 2-30 Task Tracking Dialog Box



The Task Tracking dialog box shows the milestone information, and the percent task completion. The Task Tracking dialog box provided above shows that the selected task is a milestone task (also known from the "M" icon for this task). The task is currently 50% complete. It has a task weight of 1, and days to finish (from start of the workflow) is 1.

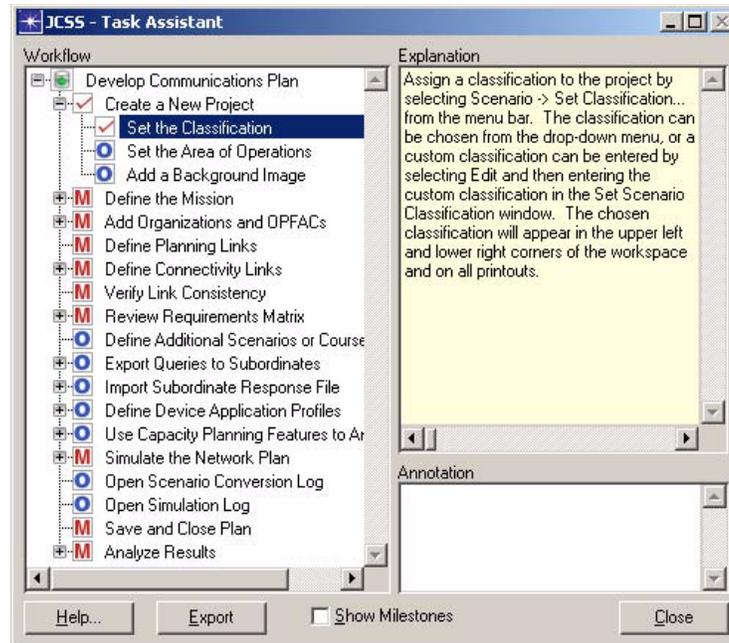
- 5 To edit this milestone information, check Edit Milestone Information. You can then change task weight and days to finish.
- 6 Update the percent task completed accordingly.

A particular task can be completed by setting its task completion percent to 100 (from the Task Tracking dialog box, as shown above), or by double-clicking the task from the Task Assistant. When a milestone task is completed, the icon in the Task Assistant dialog box changes from "M" to display a check mark.

In order to complete a milestone task, all of its required and milestone sub-tasks need to be complete. If they are not complete, you will be prompted to do so. Similarly, a completed task can be marked incomplete, either by entering a value for task completion percent that is less than 100, or by double-clicking the completed task from the Task Assistant dialog box.

In the figure below, task Create a New Project is complete (as indicated by the check-mark). Percent task completion is set to 100 in the Task Tracking Information dialog box.

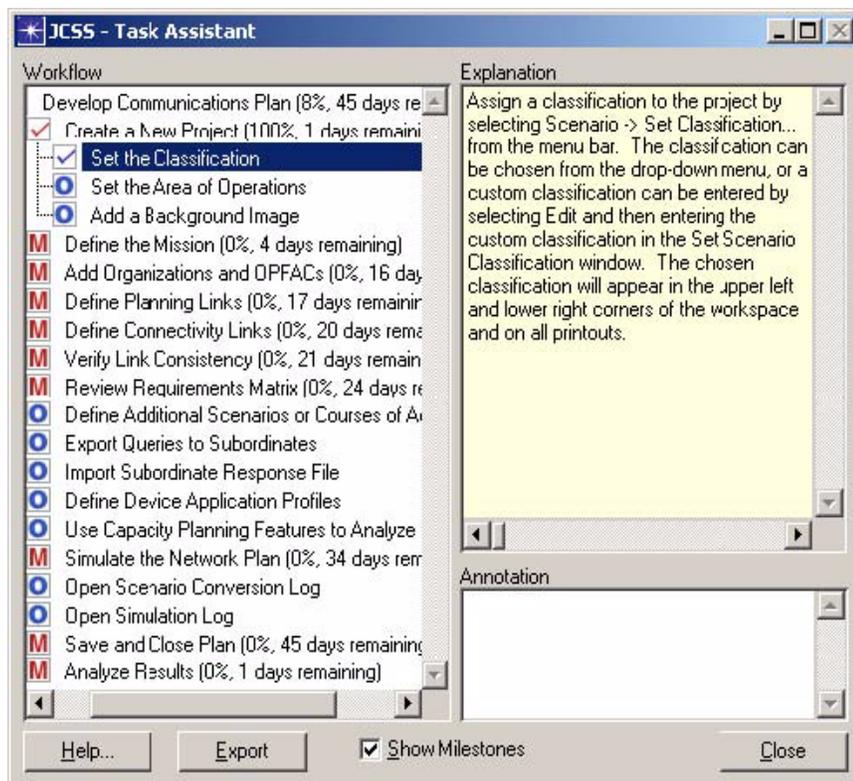
Figure 2-31 Completing a Task



➔ If a milestone is overdue, it is flagged with a red "X".

- 7 Toggle the milestone display on or off using the Show Milestones checkbox at the bottom of the Task Assistant. This will display/hide the completion percentage and days remaining for the milestone tasks, and for the entire workflow. The completion percentage for the entire workflow is calculated as a function of the completion percentage of each of the milestone tasks, and their relative task weights.

Figure 2-32 Show Milestones



- 8 Click the Export button to be prompted for a filename and location to save the task information as a tab-delimited text file. This file can be opened in MS Project (choose Default Task Information for the Import Mapping when opening the file).

End of Procedure 2-8

Documentation

Help > Documentation > (option) Access the JCSS documents discussed below:

User's Manual

Help > Documentation > User's Manual Open the JCSS User's Manual using Adobe Acrobat Reader. Acrobat Reader software can be optionally installed with JCSS. The JCSS User's Manual is a guide that covers basic aspects of JCSS operation and use. It contains figures that provide visual examples of the JCSS interfaces, step-by-step procedures, and other important JCSS features and concepts.

Technical Reference Manual

Help > Documentation > Technical Reference Manual Opens this document, the JCSS Technical Reference Manual, using Adobe Acrobat Reader.

Software Release Bulletin (SRB)

Help > Documentation > Software Release Bulletin (SRB) Opens the JCSS Software Release Bulletin using Adobe Acrobat Reader. Acrobat Reader software can be optionally installed with JCSS. The SRB contains release notes for the current version of JCSS.

JCSS Acronyms

Help > Documentation > JCSS Acronyms Opens the JCSS Acronyms table using Adobe Acrobat Reader. Acrobat Reader software can be optionally installed with JCSS. The JCSS Acronyms table contains definitions for acronyms commonly used with JCSS.

JCSS Models User's Guides

Help > Documentation > JCSS Models User's Guides > (option) Opens the JCSS Models User's Guides using Adobe Acrobat Reader. These guides cover CTP, EPLRS, H.323, Link 16, PEP, Promina, UHF SATCOM, and Voice Models.

IT Guru Documentation

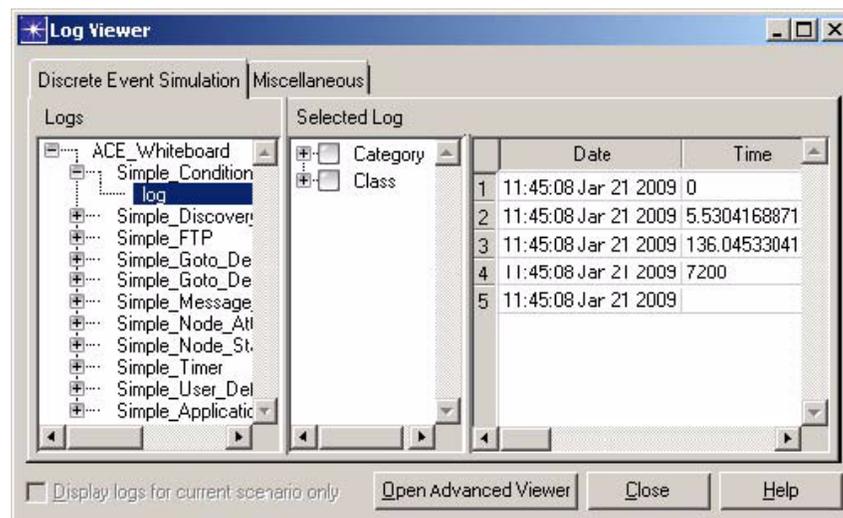
Help > Documentation > IT Guru Documentation Open the complete IT Guru document set. IT Guru is an OPNET commercial-off-the-shelf (COTS) product that models the behavior of networks—many JCSS features are based on IT Guru features. In this JCSS Technical Reference Manual, many references will ask you to access the IT Guru documentation for further details on certain features.

The IT Guru documentation contains a global index and a search query feature that enables you to quickly find needed information.

Show All Logs

Help > Show All Logs... Launches the Log Viewer.

Figure 2-33 Log Viewer

**Error Log**

Help > Error Log > (option) If errors occur during the operation of JCSS, they are logged in this error log file.

Error Log > Open

Help > Error Log > Open Using this menu option, you can open the error log file to view the error messages in a text editor.

Error Log > Clear...

Help > Error Log > Clear... Clear the error log file of the selected range of error messages.

Message Log	Help > Message Log > (option) Status updates that monitor the performance of JCSS are logged in this message log file.
Message Log > Open	Help > Message Log > Open Using this menu option, you can open the message log file to view the status messages in a text editor.
Message Log > Clear	Help > Message Log > Clear Clear the message log file of all status messages.
Session Log	Help > Session Log > (option) Basic file operations during the current session are logged in this session log file.
Session Log > Open	Help > Session Log > Open Using this menu option, you can open the session log file to view the session messages in a text editor.
Session Log > Clear...	Help > Session Log > Clear.. Clear the session log file of the selected range of session messages.
Web - JCSS Home Page	Help > Web - JCSS Home Page Launches DISA's JCSS Home Page in your browser window.
Web - JCSS Support Center	Help > Web - JCSS Support Center Launches DISA's JCSS Support Center Home Page in your browser window. You need a network Username and Password to access this site.
About JCSS	Help > About JCSS View information about the OPNET core software version, the models version, and copyright information.

3 Scenario Builder

The Scenario Builder is the JCSS interface for creating, modifying, and saving projects and scenarios; it allows you to develop a complete communications plan.

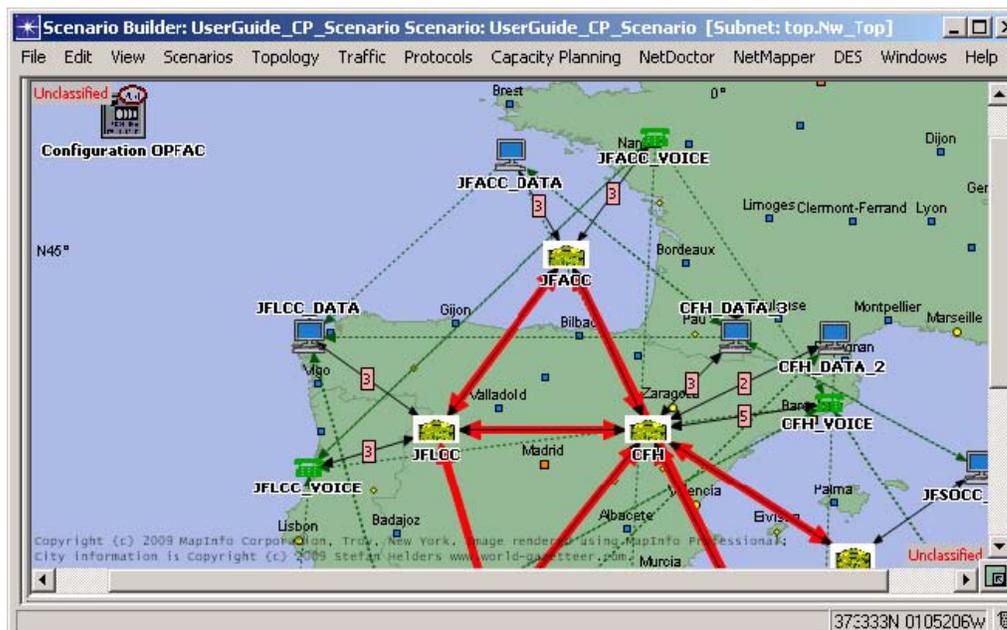
The Scenario Builder is also used to evaluate and optimize network performance. Given a network and the traffic, it runs the optimization and comes up with suggestions for optimal link and network capacities.

Additionally, this interface analyzes the results of a simulation session. It converts output from a simulation session into data that is viewable and grouped into Measures of Performance (MOPs).

Accessing the Scenario Builder

When you choose to either open an existing project in JCSS or create a new project, the Scenario Builder displays.

Figure 3-1 Scenario Builder



File Menu

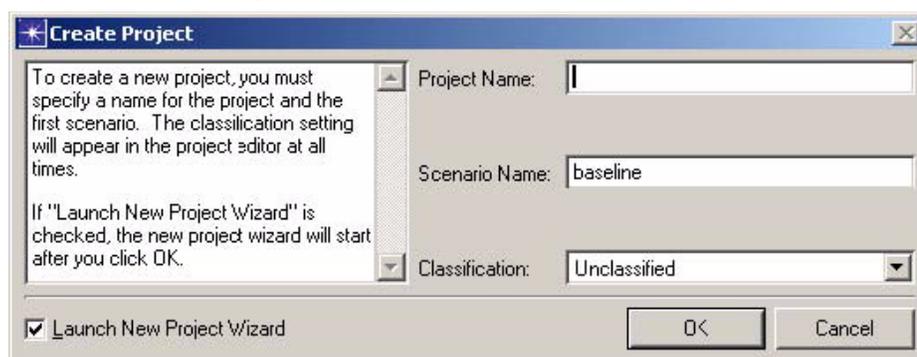
New Project

File > New Project Creates a new project, the first step in the Lead Planner's workflow. You can simply name and launch a generic project, or use the New Project Wizard to set equipment types, area of operations, and top-level units and locations to use in the new project. Use the following procedure to create a new project.

Procedure 3-1 Creating a New Project

- 1 Select File > New Project.
 - A new Scenario Builder opens and the Create New Project dialog box appears.
- 2 Specify the names for the project and the initial scenario in the Create Project dialog box.

Figure 3-2 Creating a New Project



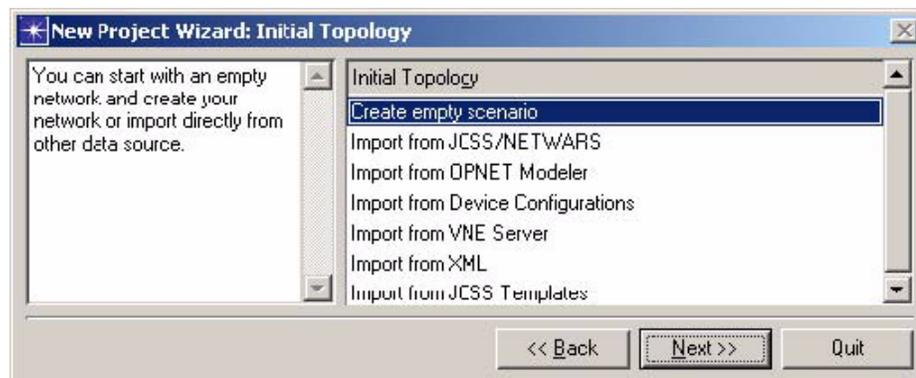
Note—The names for both the project and the scenario cannot contain any spaces or special characters. In addition, the scenario name cannot be the same as any existing OPFAC; it must be unique.

- 3 Select a classification level for the project in the Create Project dialog box.
- 4 Click OK.

If Launch New Project Wizard is not checked, then JCSS creates a generic project using the names you have designated. You can skip the remaining steps in this procedure.

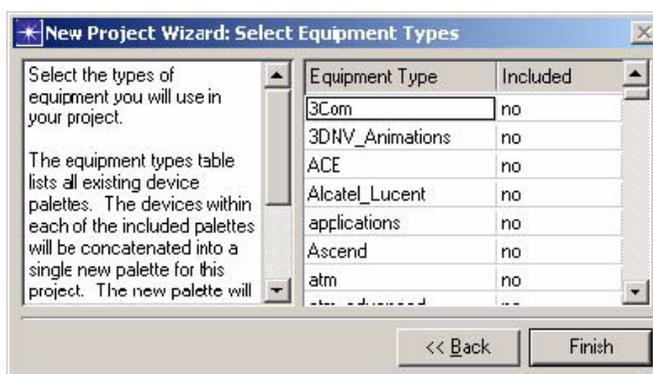
OR

If Launch New Project Wizard is checked, then the Initial Topology dialog box displays.

Figure 3-3 Initial Topology Dialog Box

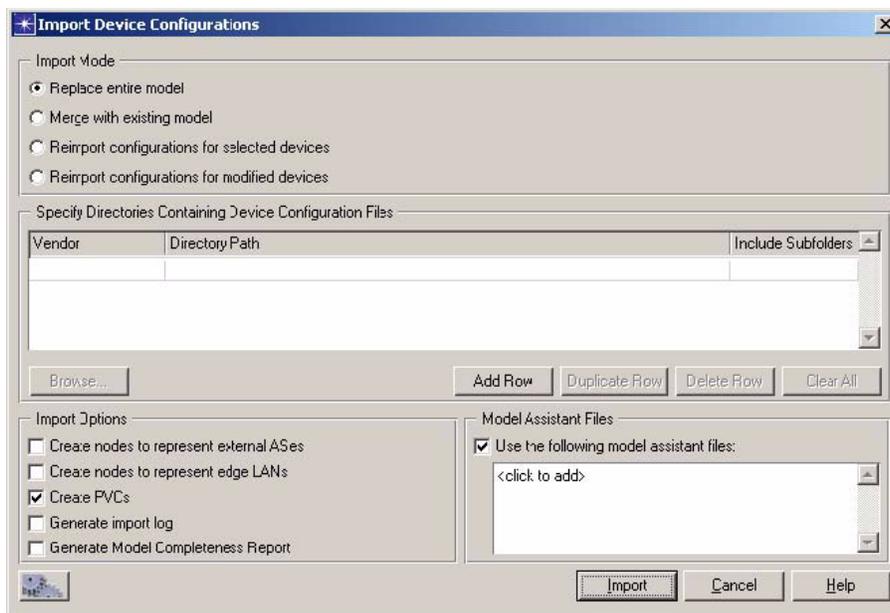
- 5 Choose to create an empty scenario or import from one of the various data sources, and then click Next.

- 5.1 If you choose Create empty scenario, a blank scenario is created. The Select Equipment Types dialog box displays.

Figure 3-4 Select Equipment Types Dialog Box

Select the types of equipment that you will use in your project, and then click Finish.

- 5.2 If you choose Import from JCSS/NETWARS, a file chooser dialog box displays. Select the appropriate nt.m file.
- 5.3 If you choose Import from OPNET Modeler, a file chooser dialog box displays. Select the appropriate nt.m file.
- 5.4 If you choose Import from Device Configurations, the Import Device Configurations dialog box displays.

Figure 3-5 Import Device Configurations Dialog Box

Specify the location of the device configuration files and how these files should be integrated into the existing topology (if it already exists), and then click Import.

- 5.5** If you choose Import from VNE Server, the VNESI process begins. VNESI is a COTS feature which allows you to create a network model based on information imported from VNE Server. You can import both topology and traffic information using imported VNE Server data.

Enter your VNE Server hostname in the Import from VNE Server dialog box, and then click OK.

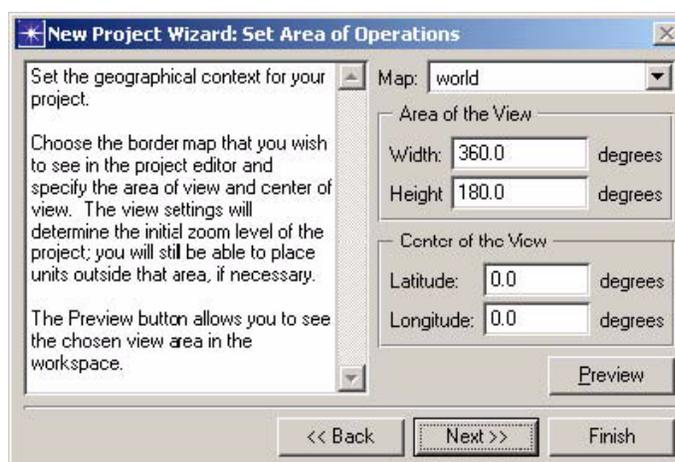
A second Import from VNE Server dialog box displays. Specify the import mode you want to use, based on the following table, and then click Import..

Table 3-1 VNE Server Import Modes

Import Mode	Usage	Description
Create/Replace network using the most recent VNE Server data	Use when starting a new scenario or when you want to erase all existing information in the current model to replace with VNE Server data.	If checked, the current VNE Server data is used to create a network model. "Create" appears if you are in a new scenario; "Replace" appears if you are in an existing scenario
Incrementally update network using the most recent VNE Server data	Use when you want to update the current model with any changes that have occurred in VNE Server since the last import.	If checked, VNE Server updates the current network model with all recorded changes in VNE Server since the original import.
Replace network using an existing archive	Use when you want to replace the current model with information contained in a VNE Server archive file.	If checked, a network model is created using the archived network specified in the drop-down menu. This menu is populated based on available archives from VNE Server.

- 6 If you choose Import from XML, a file chooser dialog box displays. Select the appropriate xml file.
 - 6.1 If you choose Import from JCSS Templates, the Set Area of Operations dialog box displays.

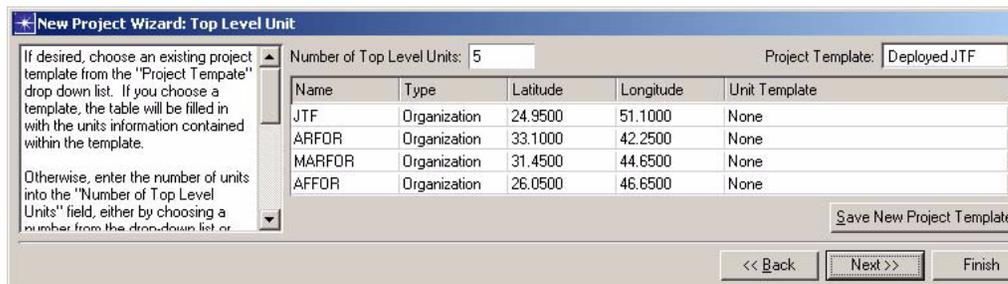
Figure 3-6 Set Area of Operations Dialog Box



Note—The Set Area of Operations dialog box provides the coordinates where the template Organizations/OPFACs will reside inside the scenario. The Area of the View and Center of the View are updated depending on the selected View. The Top-Level Units and Location utilize this information to provide base coordinates for any imported Organizations/OPFACs.

Select the Area of the View and Center of the View, and then click Next. The Top Level Unit dialog box displays.

Figure 3-7 Top Level Unit Dialog Box



6.2 Choose an existing project template from the Project Template drop-down list, or type the number of units in the Number of Top Level Units field, and then click Next.

7 At the end of the import, the Select Equipment Types dialog box displays. Select the types of equipment that you will use in your project, and then click Finish.

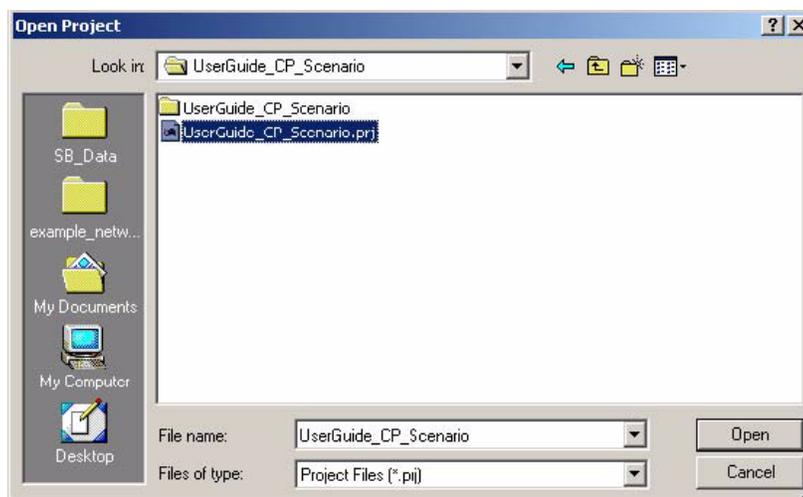
End of Procedure 3-1

Open Project

File > Open Project Use the following procedure to open an existing project in the Scenario Builder.

Procedure 3-2 Opening a Project in Scenario Builder

- 1** Select File > Open Project or click the Open Existing Project toolbar button.
 - The Open Project dialog box displays.
- 2** Double-click on the project folder of interest, select the corresponding .prj file, and then click Open.

Figure 3-8 Opening a Project in Scenario Builder**End of Procedure 3-2****Save Project/ Save Project As**

File > Save Project or File > Save Project As: Save changes to existing projects in the Scenario Builder by using either the Save or Save As option.

- 1) To save the changes you made to an existing project in the Scenario Builder, select the Save option, or
 To save the changes you made as a separate project in the Scenario Builder, select the Save As option.
- 2) Specify the desired name in the subsequent dialog box, and then click OK.

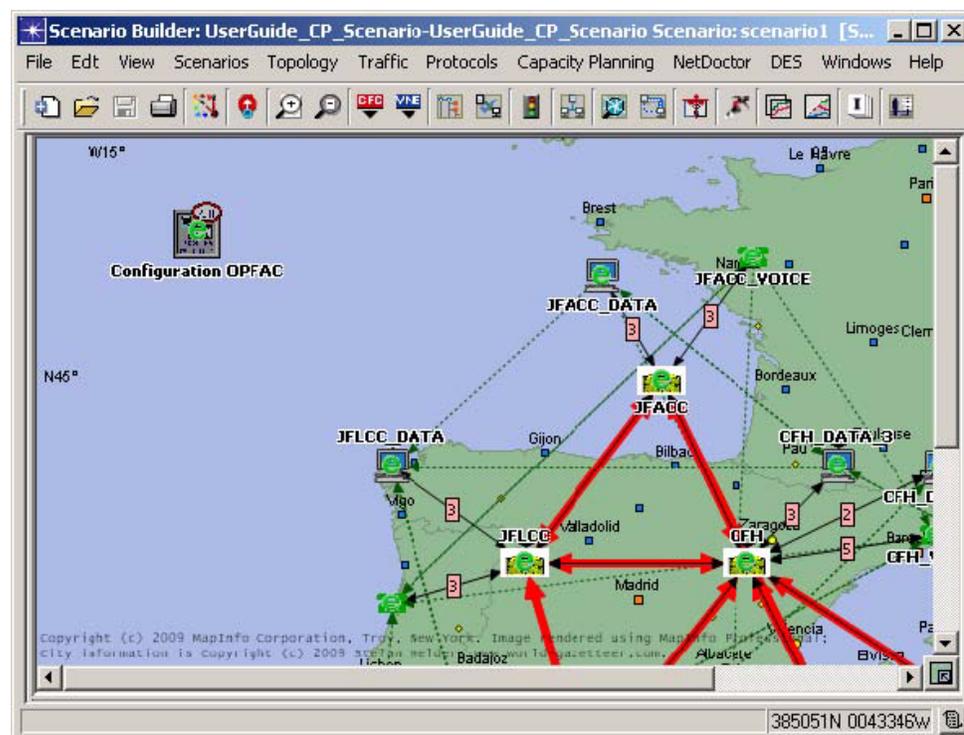
Open Subordinate Query

File > Open Subordinate Query Use the following procedure to open a subordinate query.

Procedure 3-3 Opening a Subordinate Query

- 1 Select File > Open Subordinate Query.
 - ➔ The Open Subordinate Query dialog box appears, and then opens the selected subordinate query file in a new Scenario Builder. The Subordinate Planner is prompted to select the appropriate file to be edited.
- 2 Select the file by double-clicking on it.
 - ➔ The project that you selected opens in a new Scenario Builder. The green "e" icon on top of the units indicates that the Senior-level Planner has marked these units to be edited by the Subordinate Planner. Other units that have a red lock icon on top indicate that the Subordinate Planner may only view these units and cannot edit them. Lock units are hidden by default upon opening.

Figure 3-9 Opened Subordinate Query

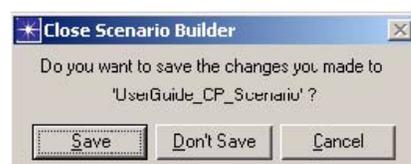


End of Procedure 3-3

Close File

File > Close Close the open project or subordinate query file. You will be prompted to save your project. Choose the desired option. The selected project and its Scenario Builder window close.

Figure 3-10 Closing a Project

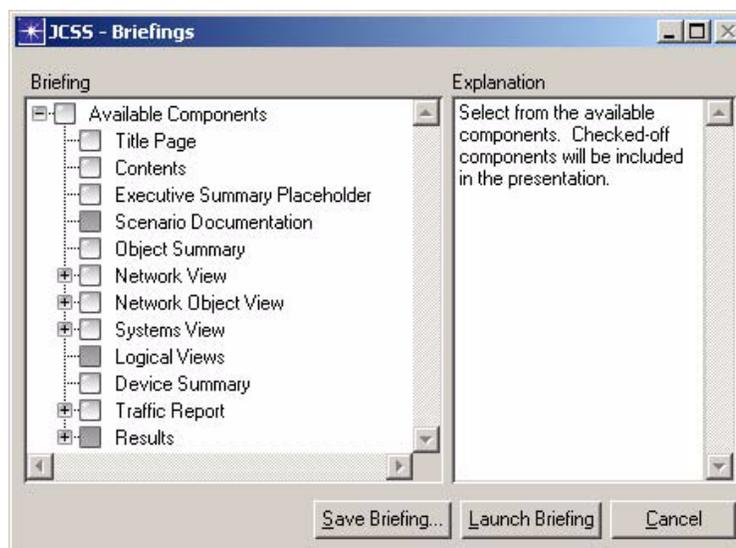


Generate Scenario Briefing

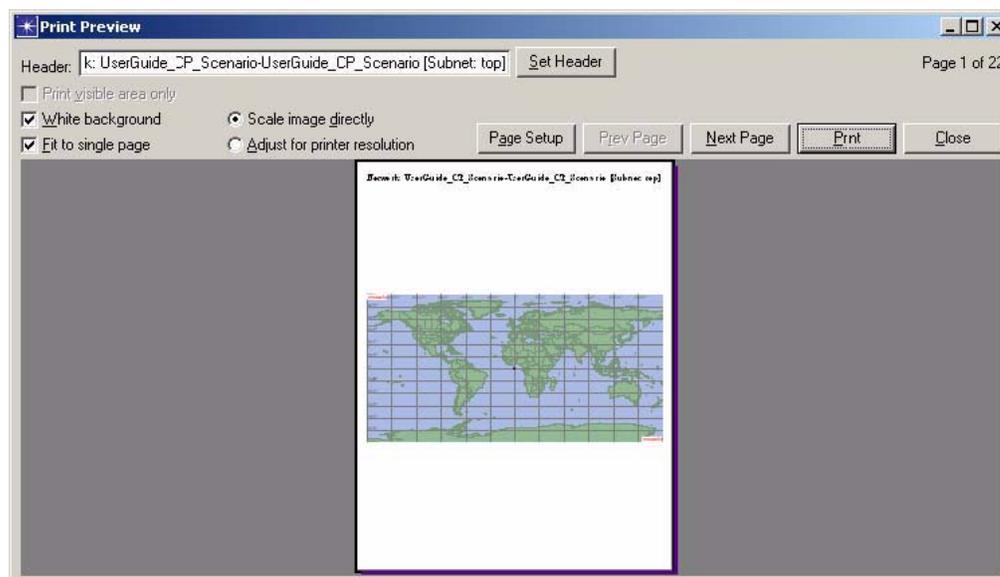
File > Generate Scenario Briefing Exports scenario information directly to a PowerPoint (.ppt) file. Customize the briefings by selecting desired components from a set of elemental briefing components. A graphical user interface (GUI) is provided to enable you to choose the briefing components that you want to include, and then generate the briefings.

Procedure 3-4 Generating a Scenario Briefing

- 1 Select File > Generate Scenario Briefing.
 - ➔ The Briefings dialog box opens.

Figure 3-11 Briefings Dialog Box

- 2 Choose from the available components shown on the left side of the dialog box. The explanation of the selected components displays on the right side text box. Some of the components may not be available and will be shown disabled in the dialog box accordingly.

Figure 3-12 Print Preview Dialog Box

- 3 From the preview, browse through the pages and make choices about the following:
 - 3.1 Set the header to be used on each printed page
 - 3.2 Use the background color as it appears on the workspace, or click the White background checkbox to use a white background.

- 3.3 If you check Fit to single page, the contents of a subnet print in one page; if not, each subnet prints across multiple pages. The total number of pages displays at the top right corner of the preview window.
- 3.4 Choose to either scale the image directly, or adjust for printer resolution.
- 3.5 Click Page Setup if you want to select the mode (landscape or portrait), paper size, etc.
- 4 Click Print, and select the desired printer.

End of Procedure 3-4Page

Page Setup	File > Page Setup Selects the page size and orientation for printing.
Print Scenario	File > Print Scenario Allows you to print out different subnet views for the current scenario as shown in the Project Editor. Opens a print preview window that allows you to specify print parameters and send to a printer.
Print Graphs	File > Print Graphs After you have defined and displayed graph panels, you can print the visible graphs.
Manage Model Files	File > Manage Model Files > (option) This submenu lists options which allow Files you to manage model files.
Manage Model Files > Delete Model Files	File > Manage Model Files > Delete Model Files Displays a list of all models Files > Delete from which you can select to delete files.
Manage Model Files > Add Model Directory	File > Manage Model Files > Add Model Directory Displays the Directory Files > Add Model Browser in which you can create a new directory for models.
Manage Model Files > Refresh Model Directories	File > Manage Model Files > Refresh Model Directories JCSS maintains a list of folders called the model directories (or mod_dirs for short) where models are stored. Models include OPFACs, organizations, projects and scenarios, icon databases, and device models. When you move models around on the hard drive using Windows Explorer, the software does not recognize the change. To make the software aware of the changes, use this option.
Manage Model Files > Expand Project File Archive	File > Manage Model Files > Expand Project File Archive Displays the Select OPNET Components File Archive dialog box in which you can select an Project File .opcfa file to expand.
Manage Model Files > Create Project File Archive	File > Manage Model Files > Create Project File Archive Displays the Package Project Components dialog box in which you can package files into an .opcfa file. Archive

Recent Projects	File > Recent Projects This submenu lists recently opened projects for easy re-opening.
Package Project Files	File > Package Project Files Provides you with the ability to package and import JCSS data files. It serves as a convenient mechanism to exchange JCSS data with other users and with JCSS Support.

There are different options for including different files in the package. These various options are available from the Package Project Files menu. Four different options are available for packaging the files; and there is one menu item for importing packaged files.

A zipped archive is created as a result of choosing one of the package menu items. The zipped archive contains the following files for the various options:

- Project—Project, scenario, subordinate query, traffic, trajectory, OPFAC and organization files, simulation model files (if they exist)
- Project with Simulation Results—Project files as indicated in the Project Files option and simulation results files
- Project for JCSS Support—Project files as indicated in the Project Files option and other files needed by JCSS Support (env_db files, various log files etc.)
- Custom OPFACs and Organizations—All OPFAC and organization files under the Custom OPFACs and Custom Organizations folders
- Import—Displays the Zip File Browser dialog box in which you can select a zip file to open, and then opens the selected file in a new Scenario Builder. To import package file, choose Import from the Package Project Files menu. A file chooser is presented to browse for the zipped archive containing JCSS files. After you select the archive file to be imported, a dialog box with the different import options displays (see figure below.)

Figure 3-13 Import Package Options



Backup copies of files being replaced are created by default. You can disable this by deselecting the checkbox in the dialog box shown above.

If you choose to be prompted for each file separately, then for every conflicting file, a dialog box displays. From this dialog box, you can choose to not overwrite the existing file, to replace the existing file, or to quit the import process.

Note—Info-ZIP's Zip and UnZip¹ are used to create and import the zip file.

Exit **File > Exit** Shut down the entire JCSS program. If there are editors that are open, you will be prompted to save the contents of those editors. When all open editors have been acknowledged and closed, the software is shut down.

Edit Menu

Undo **Edit > Undo** Undo editing operations.

Only the following actions can be undone:

- Adding a unit (includes OPFAC and organization), device, or association (includes intra OPFAC link, inter OPFAC link, satellite link, broadcast network, relationship and circuit) from the palette or library.
- Moving a unit, device, association, or any group of these objects in the workspace.
- Deleting a unit, device, association, or any group of these objects in the workspace or using Scenario Builder treeview.
- Modifying attributes on devices; all attribute changes made while the Edit Attributes dialog box is open will be considered a single action.

Some actions may prevent certain, or all, prior actions from being undone (for example, saving a project file.) Immediately following a save to disk, there will be no undoable actions.

There is no limit on the number of actions that can be undone; however, the actions can only be undone in the reverse order in which they were performed.

Redo **Edit > Redo** Redo the undone operations. The actions can only be redone in the reverse order in which they were undone, which means that the last undone action will be the first one to be redone.

1. Copyright (c) 1990-1999 Info-ZIP. All rights reserved. "Info-ZIP" software is provided "as is," without warranty of any kind, express or implied. In no event shall Info-ZIP or its contributors be held liable for any direct, indirect, incidental, special or consequential damages arising out of the use of or inability to use this software. Info-ZIP retains the right to use the names "Info-ZIP," "Zip," "UnZip," "WiZ," "Pocket UnZip," "Pocket Zip," and "MacZip" for its own source and binary releases.

Any action (editing operation which includes add, delete, move, modify) performed after performing Undo will clear the Redo stack, and the undone operations cannot be redone.

Cut **Edit > Cut** Cut selected, supported objects on the workspace to the clipboard, and remove them from the workspace. If unsupported objects are attached to a supported object, then the unsupported objects are also removed from the workspace but not maintained on the clipboard.

Supported Objects:

- Organizations
- OPFACs
- Devices
- External links
- Internal links
- Satellite links
- Broadcast networks
- OPNET demand objects

Unsupported Objects:

- Radio links
- Circuits
- Relationships
- OE
- Configuration OPFAC

Copy **Edit > Copy** Copy selected, supported objects on the workspace to the clipboard.

Supported Objects:

- Organizations
- OPFACs
- Devices
- External links
- Internal links

- Satellite links
- Broadcast networks
- OPNET demand objects

Unsupported Objects:

- Radio links
- Circuits
- Relationships
- OE
- Configuration OPFAC

Paste **Edit > Paste** Paste all objects on the clipboard to the workspace.

Delete **Edit > Delete** Delete the objects selected on the workspace.

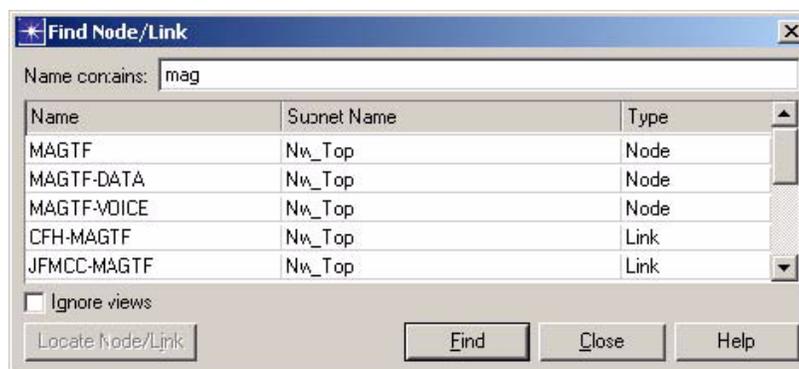
- 1) Select the objects that need to be deleted. To select multiple objects, press the <Ctrl> key on the keyboard while clicking on the objects.
- 2) Once the objects are selected, use this menu option or use the key on the keyboard to delete them.
- 3) Confirm the deletion.

Select All **Edit > Select All** Select all the objects in the current subnet. Once the objects are selected, perform edit operations (like move, delete, etc) on these objects as needed.

Find Node/Link **Edit > Find Node/Link** You can search for an object (such as a node, subnetwork, link, or path) based on its name (part or all of the name.) Every object whose name contains the string you specified is selected and listed. Or you can leave the search field blank to find all objects in the network. Use the following procedure to find a node or link.

Procedure 3-5 Finding a Node/Link

- 1 Select Edit > Find Node/Link.
 - The following dialog box appears.

Figure 3-14 Find Node/Link Dialog Box

- 2 Enter a text string in the Name contains field to search for specific names. Leave this field blank to find all objects in the network.
- 3 Click Find.
 - ➔ Found objects are highlighted in the display (any objects in the display that were previously highlighted are de-selected.) The Find Node/Link dialog box displays a list of the searched objects, including their names, subnet names, and types.
- 4 Select the name of an object in the list, and click Locate Node/Link.
 - ➔ The display changes to locate and highlight the selected object.

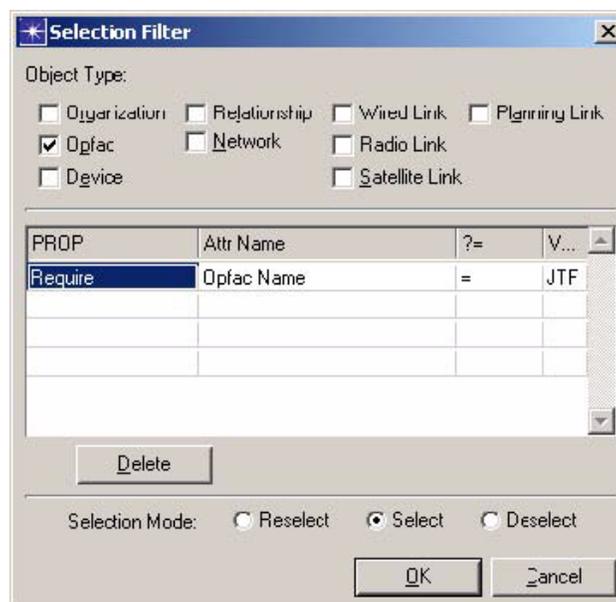
End of Procedure 3-5

Group Selection/Action > Selection Filter

Edit > Group Selection/Action > Selection Filter Select multiple objects based on their attributes.

Procedure 3-6 Using a Selection Filter

- 1 Select Edit > Group Selection/Action > Selection Filter.
- 2 Select the type of object by clicking the appropriate check box.
- 3 Choose the attribute to be used for selecting objects from the drop-down menu. The list of attributes changes dynamically with the type of objects chosen for selection.
- 4 From this list, select one or more attributes and specify the matching criteria. If there are objects of the selected type that match the attribute selection criteria specified, they are marked as selected.

Figure 3-15 Selection Filter Dialog Box

The table used for specifying the matching criteria has four columns.

- PROP - If set to Require, an object must satisfy all attribute criteria for selection; if set to Consider, an object must satisfy at least one of the attribute criteria for selection.
- Attr Name - Name of the attribute used as the selection criteria.
- ?= - Specifies the type of matching to be used. For a string, the only option is a complete match or equal to. For numeric values, the satisfying condition could be less than, greater than, or equal to the specified value.
- VALUE - Value that the attribute must match for selection.

Multiple attributes can be used as matching criteria. Attributes can also be deleted as needed.

- 5 Click the OK button; the software goes through all the objects in the scenario looking for those that match the specified criteria. When it finds objects that match the given criteria, it marks those objects as selected.

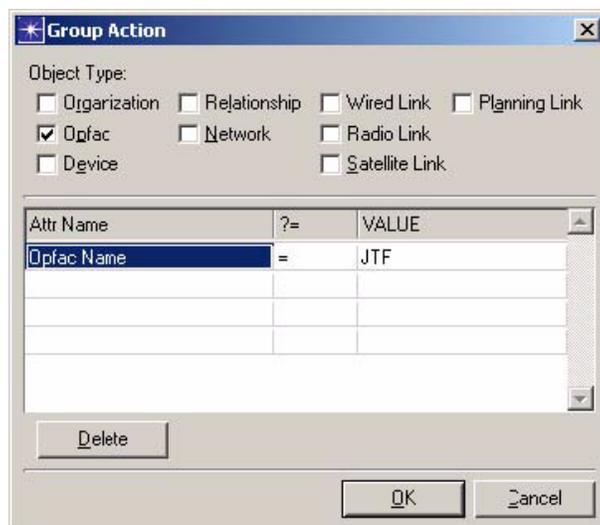
End of Procedure 3-6

Group Selection/Action > Action Filter

Edit > Group Selection/Action > Action Filter Used in conjunction with the object selection feature. A similar interface is provided for applying action on the selected objects.

Procedure 3-7 Using Group Actions

- 1 Select Edit > Group Selection/Action > Action Filter.
 - ➔ The following dialog box appears.

Figure 3-16 Group Action Dialog Box

- 2 Select the type of object to which you want to apply group action.
- 3 Select the attribute that needs to be changed. In the above example, the Opfac Name attribute is selected.
- 4 Specify the value. In the previous example, JTF is specified as the name to be set on all selected OPFACs.
- 5 Click OK. The software goes through all the selected organization objects in the scenario and sets the trajectory attribute on them.

End of Procedure 3-7***Save Object Selection Set***

Edit > Save Object Selection Set... Allows you to save an object selection set to a .setset file in the SB_Data directory.

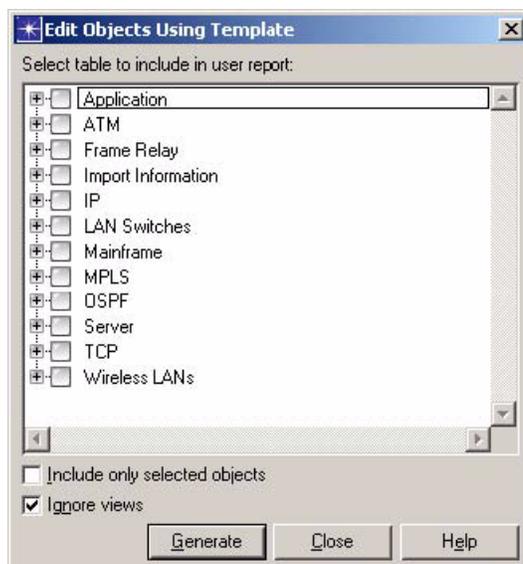
Load Object Selection Set

Edit > Load Object Selection Set... Allows you to choose a saved object selection set file from the SB_Data directory to load.

Edit Objects Using Template

Edit > Edit Objects Using Template... Allows you to specify the content you want to include in your report. When you generate a report (by clicking Generate), your content settings are saved and will be reloaded the next time you generate a report.

Figure 3-17 Edit Objects Using Template Dialog Box

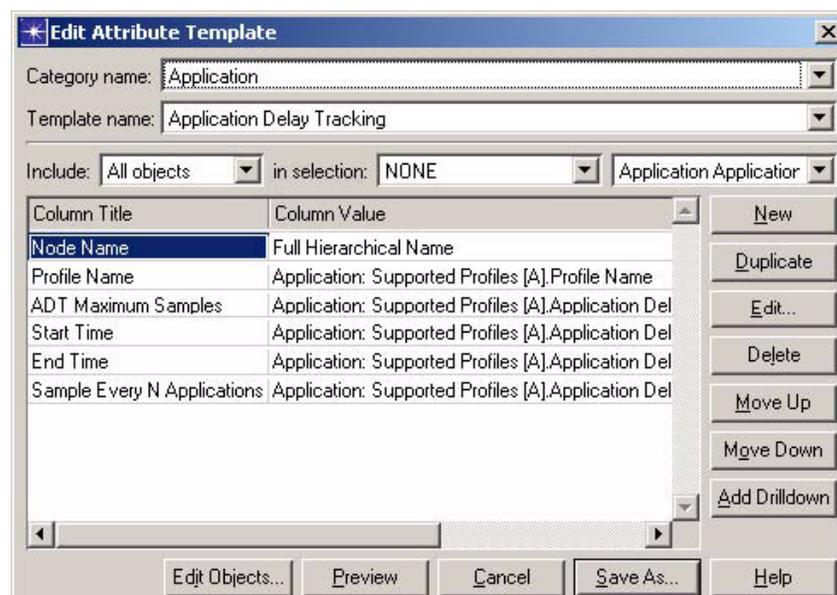


- Select tables to include in user report (treeview)—Specifies which tables of which categories should be included in the report. To select an entire category of tables, click on the top-level category entries. To select an individual table, expand the top-level category subtree and click on the table entry. Selected tables and categories show a green check mark. Categories with some but not all of its tables selected display a green dot instead.
- Include only selected objects in report (checkbox)—Indicates that table data will be collected only for objects that are currently selected in the network.
- Ignore views (checkbox)—Indicates that table data will be collected even for objects that are not in the current view or views of the network.
- Generate (button)—Generates the table data for all of the selected tables.
- Close (button)—Closes the dialog box but retains any table selections.

Edit Attribute Template

Edit > Edit Attribute Template... Allows you to edit the objects in your attribute Template templates.

Figure 3-18 Edit Attribute Template Dialog Box

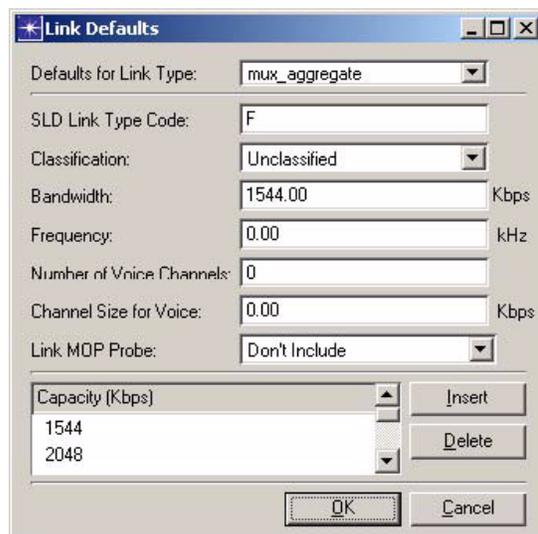


- 1) Select the Category name and Template name of the attribute template that you want to edit.
- 2) Use the buttons on the right-hand side of the table to create new or duplicate table rows, edit or delete rows, move rows up or down, and add drilldown.
- 3) Click Edit Objects... to open the dialog box to edit objects in the template.
- 4) Click Preview to view the edited template. 5) Click Save As... to save the edited template.

**Project Defaults >
Link**

Edit > Project Defaults > Link Specify the default values for a link's attributes based on the link type.

Figure 3-19 Link Defaults Dialog Box

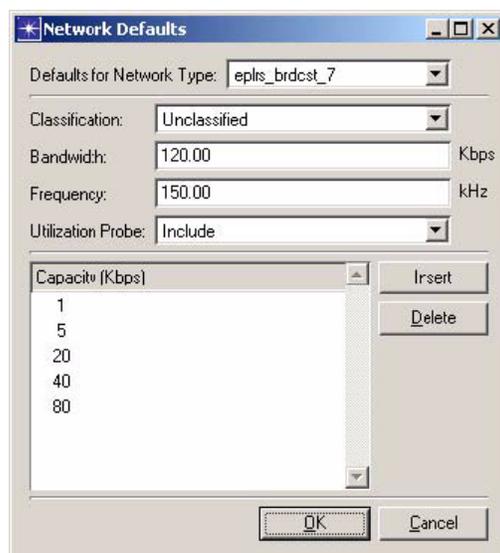


- 1) Specify the desired default values for a particular link type.
- 2) If needed, change the default values for another type by choosing the desired type from the Defaults for Link Type drop-down menu.
- 3) Click the OK button to save the default values.

**Project Defaults >
Network**

Edit > Project Defaults > Network Specify the default values for a broadcast network's attributes based on the network type.

Figure 3-20 Network Defaults Dialog Box



- 1) Specify the desired default values for a particular network type.

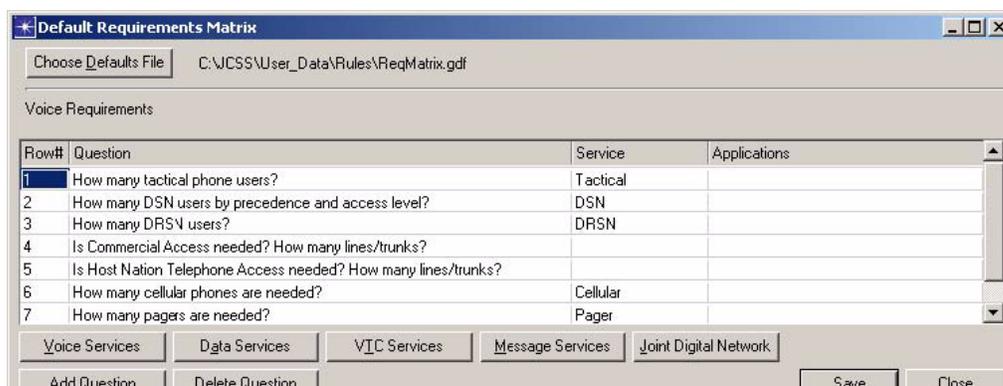
- 2) If needed, change the default values for another type by choosing the desired type from the Defaults for Network Type drop-down menu.
- 3) Click the OK button to save the default values.

Project Defaults > Requirements Matrix

Edit > Project Defaults > Requirements Matrix Edit the default requirements matrix questions that are applied to all new projects and scenarios created in the Scenario Builder. All fields are editable and can be modified by clicking on a cell and entering new values.

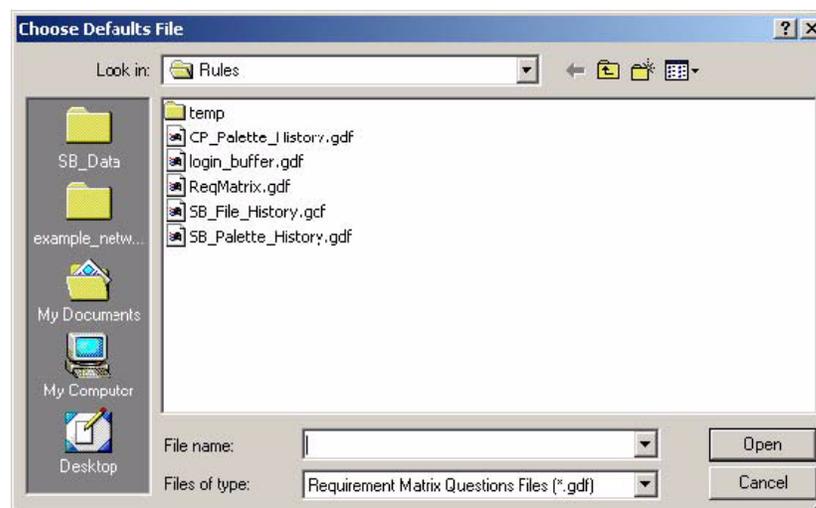
The Applications column displays application names for the specified service. If there is more than one application for the service, a comma separates application names with no space after the comma separator.

Figure 3-21 Default Requirements Matrix Dialog Box



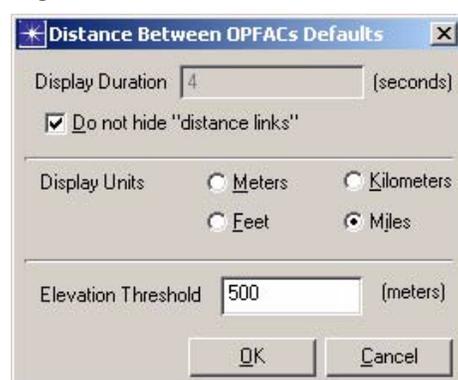
Clicking on the buttons below the table displays different functional areas. Questions can be added or deleted via the Add Question and Delete Question buttons.

By default, the Save button saves the changes and replaces the ReqMatrix.gdf file located in the Rules directory. To change the default file, click the Choose Defaults File button. Selecting this button launches a file chooser dialog box. Select the desired default file; the contents of the alternate file import into the Defaults Requirements Matrix dialog box.

Figure 3-22 Specifying the Requirements Matrix Defaults File

**Project Defaults >
Distance Between
OPFACs**

Edit > Project Defaults > Distance Between OPFACs Configure the preferences for the Distance Between OPFACs feature. See field descriptions OPFACs below.

Figure 3-23 Distance Between OPFACs Defaults

- **Display Duration**—Specifies the amount of time that the OPFAC Distance Links will display if you do not have the "Do not hide "distance links" preference enabled.
- **Do not hide "distance links"**—Specifies whether the Scenario Builder will automatically hide the OPFAC Distance Links after a specified amount of time (refer to the Display Duration field above).
- **Display Units**—Sets the units in which the OPFAC Distance Links will display their distances.
- **Elevation Threshold**—Determines whether the distance calculation will consider the Earth's curvature. If both OPFACs' altitudes fall below this value, it will consider the Earth's curvature, but it will not if either OPFACs' altitude exceeds or equals this value.

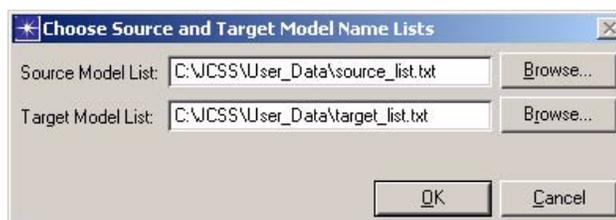
**Preferences >
Device Model Map >
New**

Edit > Preferences > Device Model Map > New Bridge the differences in model names/naming conventions that exist between JCSS and Network Engineer. Device model mapping allows you to define a mapping between two sets of device model names. During export of data, the JCSS XML processing code can substitute model names in the source data with alternate names in the target data. Use the following procedure to create a new model map.

Procedure 3-8 Creating a New Model Map

- 1 From the Scenario Builder, select Edit > Preferences > Device Model Map > New.
 - The Choose Source and Target Model Name Lists displays. Use this dialog box to select a source model list and a target model list; this means that device model names in the source list will be replaced with designated model names in the target list.

Figure 3-24 Choose Source and Target Model Name Lists Dialog Box



- 2 Click the Browse button for the Source Model List.
 - The Source Model List Browser dialog box displays.

Figure 3-25 Source Model List Browser



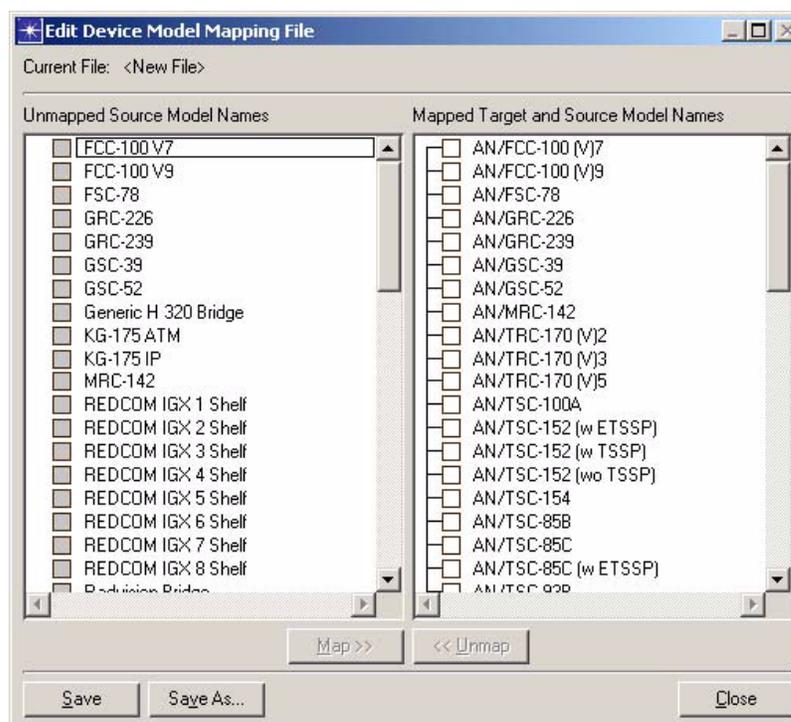
- 3 Open the appropriate Rules folder.

Note—JCSS provides template source and target model list files from which you can choose in the JCSS/Scenario_Builder/14.5.A/netwars/rules directory. You can select a template file, modify it, and save it under a new name in the User_Data/Rules folder to use again. Remember: Save your rules files to the default User_Data/Rules folder so you can easily find them again.

- 4 Select the desired input file and then click Open.

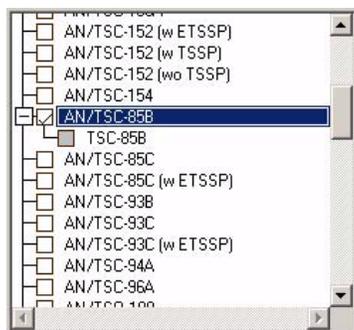
- 5 Click the Browse button for the Target Model List. Repeat steps 3-4, this time selecting an output file as the target model list.
- 6 Click OK.
 - The Edit Device Model Mapping File dialog box displays.

Figure 3-26 Edit Device Model Mapping File Dialog Box



Devices in the Unmapped Source Model Names panel (from the source model list) can be mapped to only one device in the Mapped Target and Source Model Names panel (from our target model list). However, it is possible to map more than one source name to the same target name (many-to-one mapping).

- 7 Select the desired model in the Unmapped Source Model Names panel. Next, in the Mapped Target and Source Model Names panel, select one or more models.
- 8 Click the Map>> button.
 - The source device name displays under the target device name in the Mapped Target and Source Model Names panel.

Figure 3-27 Mapped Devices

- 9 Click the Save button. The Device Model Map Browser dialog displays. Name the file in the File Name field and then click Save.

End of Procedure 3-8

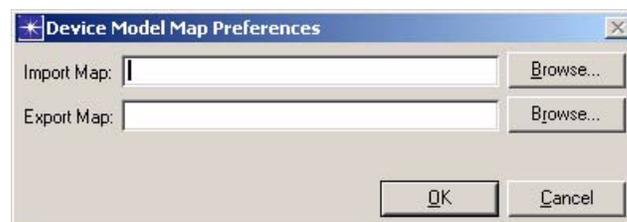
**Preferences >
Device Model Map >
Open**

Edit > Preferences > Device Model Map > Open Launches the Device Model Map Browser dialog box which enables you to select a previously created device model map to edit using the Edit Device Model Mapping File dialog box.

**Preferences >
Device Model Map >
Choose**

Edit > Preferences > Device Model Map > Choose

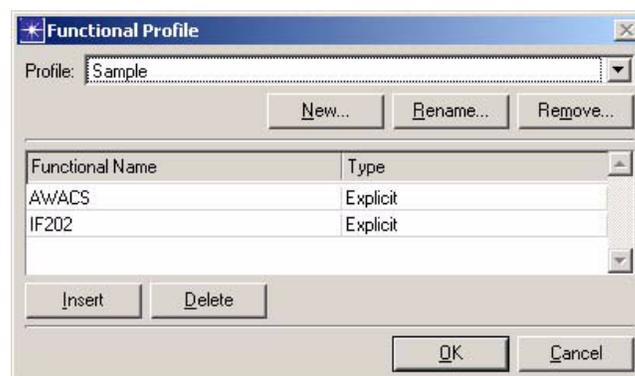
Use this dialog box to select an import map (source model list) and an export map (target model list) defaults for device model mapping.

Figure 3-28 Device Model Map Preferences Dialog Box

Click the Browse buttons for the Import Map and Export Map fields to select desired device model maps. Click OK when finished selecting.

Preferences > Functional Profiles

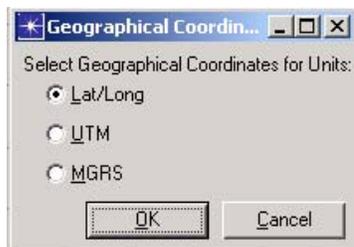
Edit > Preferences > Functional Profiles Set default functional profiles and functional names. Every OPFAC has one or more functional names. A functional name maps an IER or series of IERs to a producer/consumer OPFAC pair. A collection of such functional names is called a functional profile. A functional profile can be defined locally on an individual OPFAC, or globally, so that it is available to all OPFACs and across different scenarios.

Figure 3-29 Functional Profile Dialog Box

- 1) Add, rename, or remove functional profiles as needed.
- 2) Insert, delete, or edit functional names as needed.
- 3) Click OK.

**Preferences >
Geographical
Coordinates**

Edit > Preferences > Geographical Coordinates Sets the default geographical coordinate system view displayed in the workspace of the Scenario Builder. There are three types of geographical coordinate systems available in JCSS: Lat/Long, UTM, and MGRS.

Figure 3-30 Geographical Coordinates Dialog Box

- 1) Select the Lat/Long, UTM, or MGRS radio button.
- 2) Click OK.

**Preferences >
Owners List**

Edit > Preferences > Owners List Set owner information for units marked for subordinate query. Modify existing records or add/delete records to the list as needed.

Figure 3-31 Owner List Dialog Box

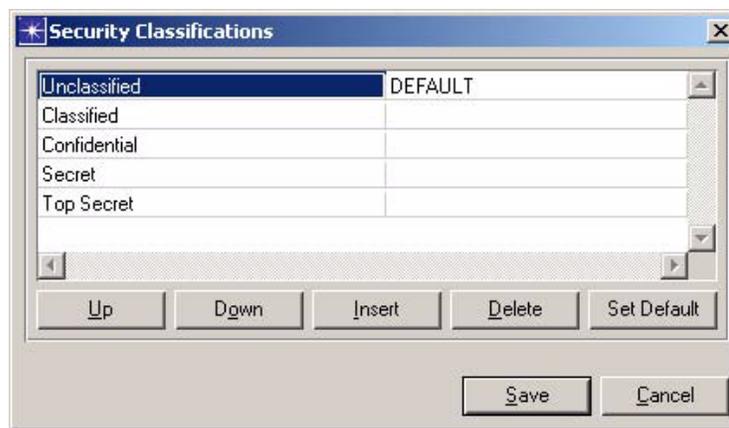
Owner information contains four fields: Last Name, First Name, Title and Organization. All fields, except the Title field, are required fields.

**Preferences >
Security
Classifications**

Edit > Preferences > Security Classifications Set security classification for a variety of items in a scenario, such as devices and IERs. This dialog allows you to add, remove, or change values in the list of recognized security classification values. The list is used to populate drop-down lists in edit fields and table cells

that specify security classification values. Since some fields and cells only allow values from this list, you will need to modify this list in order to specify custom security classifications. Any value is permitted, although duplicates are not allowed in the list.

Figure 3-32 Security Classifications



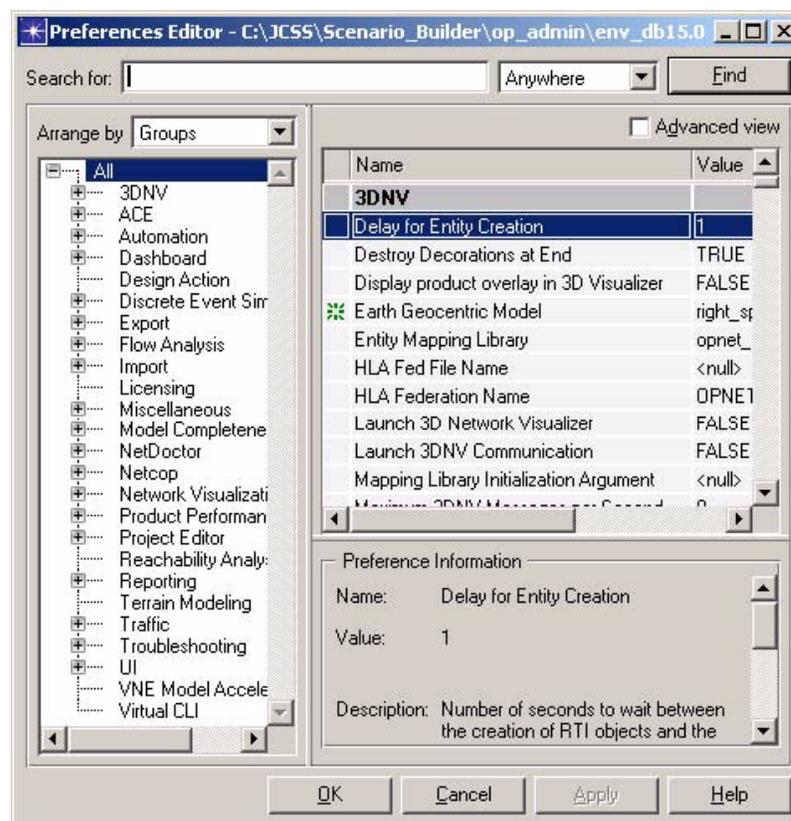
The list order of an entry indicates the classification's level of restriction. Less restrictive classifications appear toward the top of the list.

A value in the list may be modified by selecting and editing it. The Up button moves the selected value toward the top of the list. The Down button moves the selected value toward the bottom of the list. The Insert button inserts a blank entry above the selected value. The Delete button deletes the selected value. The Set Default button sets the selected classification as your default. The Save button saves all changes. Once saved, the changes will affect all edit fields and table cells, but the values stored in those attributes will not be modified.

**Preferences >
Advanced**

Edit > Preferences > Advanced Display the Preferences Editor and set environment attributes that control program operation. These values are stored in a file called the environment database file (env_db for short).

Figure 3-33 Preferences Editor Dialog Box



- **Search for**—Enables you to search for preferences. The system searches for words or values containing the specified text in whole or in part (a wildcard search is assumed.) From the drop-down menu, select the preference information to include in the search: Anywhere specifies to search Tags, Names, Values and Descriptions; In Names specifies to search Tags and Names only; and In Values specifies to search Values only.
- **Arrange by**—Enables you to display preferences by category. From the drop-down menu, select Groups to arrange preferences by group (filters the list of displayed preferences to a specific group by selecting the group in the treeview,) or Source to arrange preferences by source (preferences are classified based on the source of their values.)
- **Advanced view (checkbox)**—Toggles between showing an advanced or basic view of the preferences table. In the basic view, the table shows the name and value of each preference. In the advanced view, the table shows the name, tag, source of the preference's value and the value itself.
- **OK (button)**—Saves changes and closes the Preferences Editor.

- Cancel (button)—Closes the Preferences Editor without saving changes.
- Apply (button)—Saves changes.

View Menu

Show Logical Views

View > Show Logical Views... Specify filtering parameters for logical views.

Figure 3-34 Logical View Selection Dialog Box



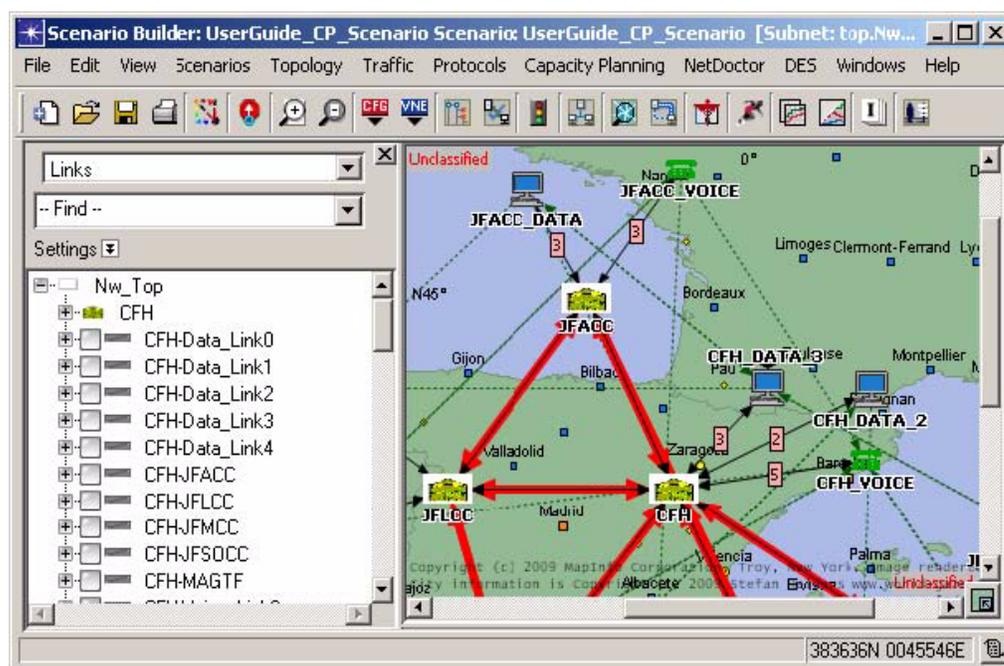
- **Network Layer Filters**—Enables you to hide all devices except for those of a particular layer of the network. (Note that this doesn't necessarily mean OSI network layer, but instead, it means the various devices that use a particular protocol.) Network Layer Filters shown are only those which apply to the deployed network.
- **Security Classification Filters**—Enables you to filter elements of the network based on their security classifications. Any custom classifications added in the Operational view will be available here as well for filtering.
- **Duration and Start Time**—These parameters are used to get the Capacity Planner graphs that are used for filtering for various layers.
- **Consider Link Capacities (checkbox)**—This is another parameter used to get the Capacity Planner graphs. A link capacity considered filter will result in the Capacity Planner creating a graph that may not show complete physical connectivity of the devices due to link load. A link capacity ignored filter will result in a graph that shows complete physical connectivity of the devices regardless of link load.

- Create View (button)—Creates the type of view that you specified and loads it into a Network Showcase window. The filter specifications are applied to the logical view model.
- Save Settings (button)—This button is available from the Operational View and gives you the option to save the settings instead of creating a logical view network with the specified settings at this time.
- Close (button)—Closes the dialog without making any changes to the model.

Show Network Browser

View > Show Network Browser Use the Network Browser, a pane that lists objects (organizations, OPFACs, nodes, devices, links, etc.) in the network, to locate objects in the workspace and edit their attributes.

Figure 3-35 Network Browser



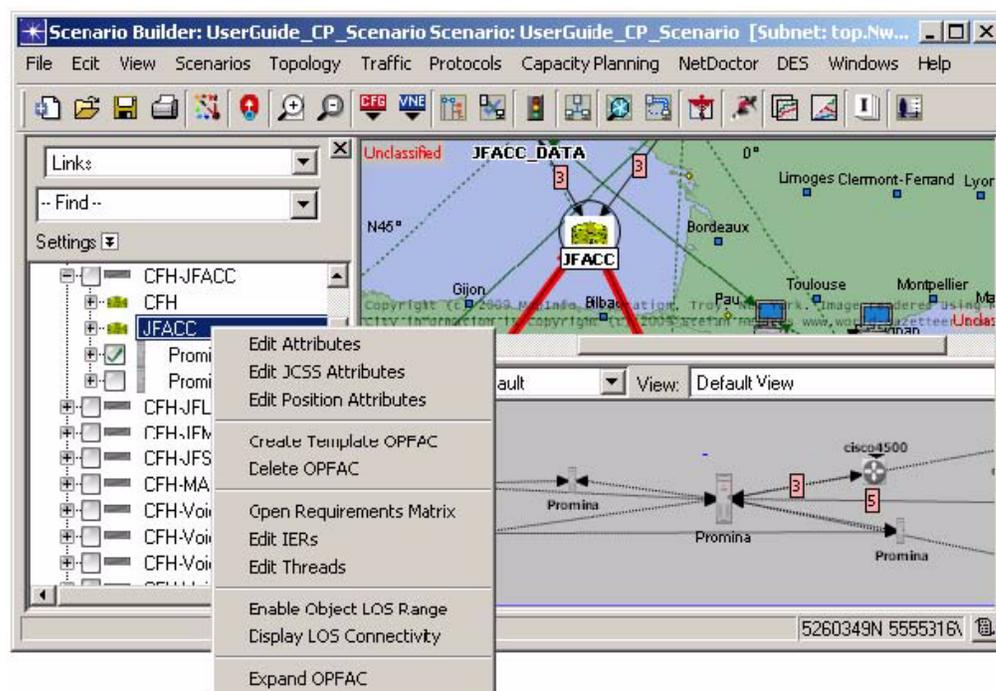
You can modify the object list by applying filters. Available filters include the following:

- Classification—Filters based on the classification attribute on each device
- Equipment Type—Filters based on the equipment type attribute on each device
- Ownership—Shows the associated owner for each device in the scenario. Used with Collaborative Planning
- Broadcast Networks—Shows all of the broadcast networks in the scenario and to which OPFACs/devices they are attached

- Relationships—Shows all of the relationships in the scenario and to which OPFACs they apply
- Satellite Links or Radio Links—Shows all of the satellite (or radio) links in the scenario and to which OPFACs/devices they are attached

Click on an object in the object list to display it in the workspace (upper-right.) Select and check an object to display it in a Showcase window (lower-right.) Use options provided on the right-click menu to modify object attributes.

Figure 3-36 Network Browser with Showcase Window and Right-Click Menu

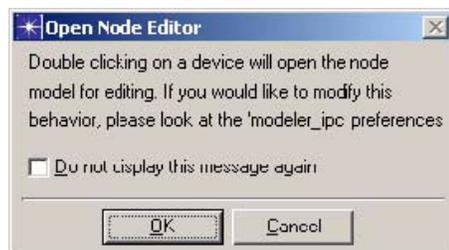


If you have an OPNET Modeler license, you can easily open node models in Modeler by double-clicking on a device in the workspace. Use the following procedure to open a node model.

Note—For derived models, you must open the parent instead.

Procedure 3-9 Open a Node Model

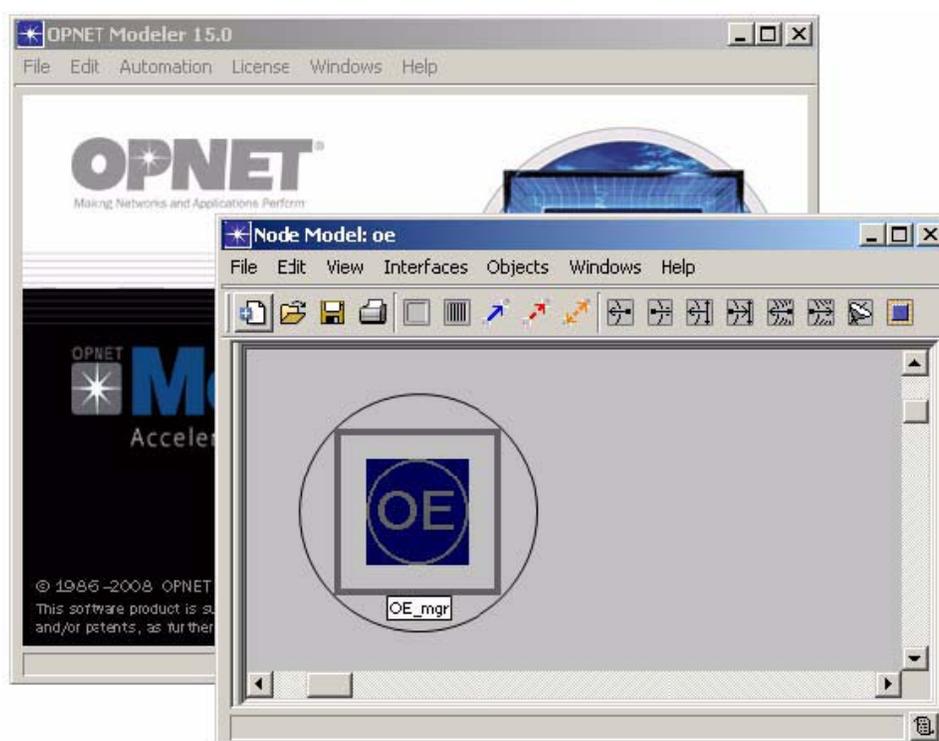
- 1 Double-click on a node model. The following message dialog displays.

Figure 3-37 Open Node Editor Message Dialog Box

2 Click OK.

➔ OPNET Modeler launches and displays the node model.

Note—Note that Modeler will not launch if you do not have a license for it.

Figure 3-38 Opening a Node Model in OPNET Modeler

End of Procedure 3-9

Using the Preferences Editor in JCSS, you can set preferences for the Modeler launch feature:

- `modeler_ipc.enable`—Enables (set to TRUE) or disables (set to FALSE) the Modeler launch capability.

- `modeler_ipc.port`—Sets your port preference for Modeler launch. Specify the port number you want to use to connect to Modeler when opening node models.
- `modeler_ipc.show_dialog`—Shows (set to TRUE) or hides (set to FALSE) the Open Node Editor message dialog on Modeler launch.

Consult the documentation for OPNET Modeler for instructions on using Modeler with node models.

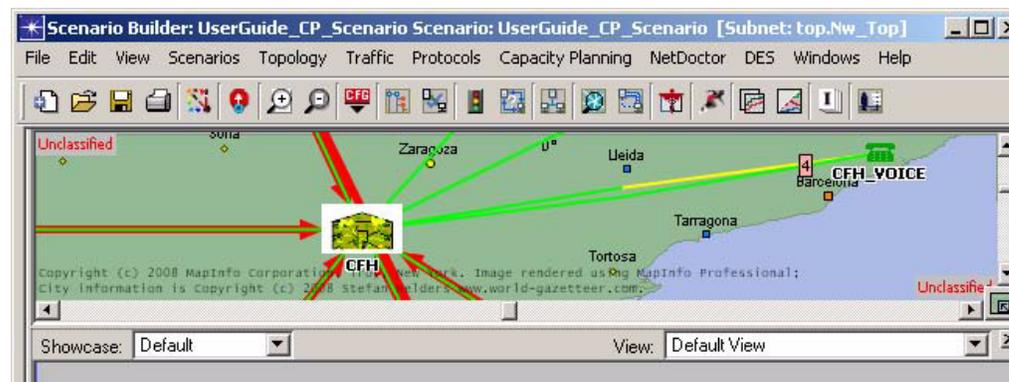
Show Network Topology

View > Show Network Topology Toggles the view of the network topology on and off in the Scenario Builder workspace.

Show Network Showcase

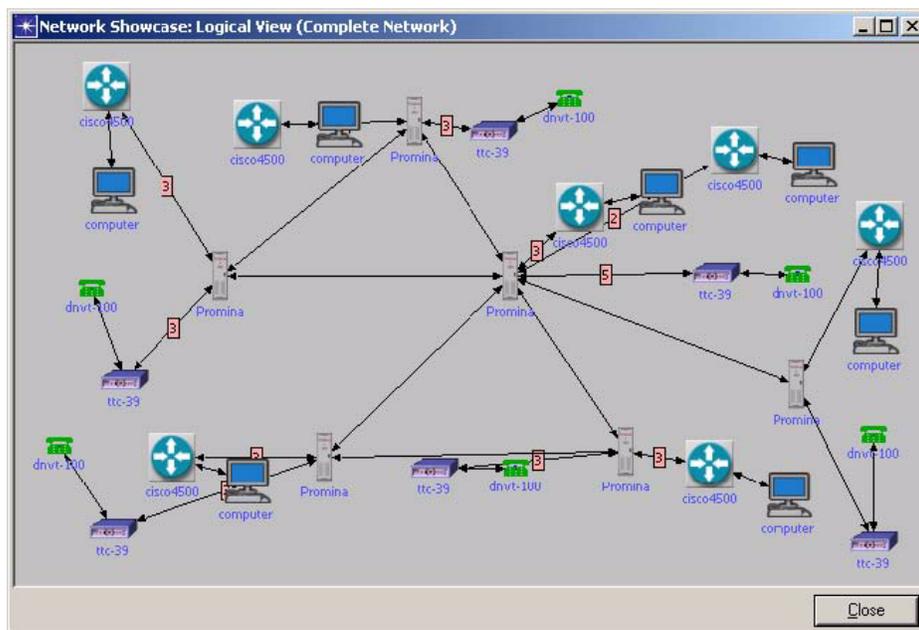
View > Show Network Showcase Toggles the showcase display on and off in the Scenario Builder window. Allows you to choose to use the default showcase (or select another showcase to use from the Showcase drop-down menu) and the default view (or select another view from the View drop-down menu.) You can also create a new showcase, and import, duplicate, rename or delete a showcase using options in the Showcase drop-down menu.

Figure 3-39 Show Network Showcase in Scenario Builder

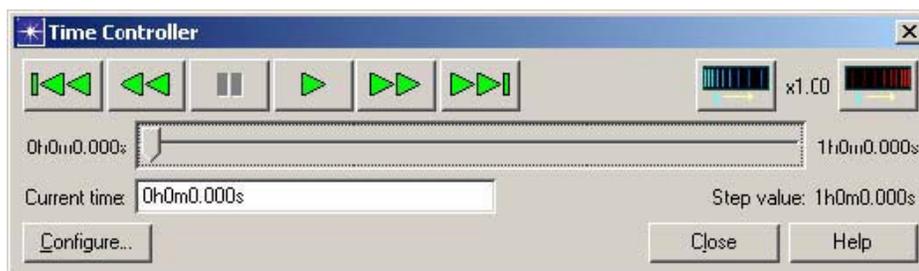


Open Network Showcase Window

View > Open Network Showcase Window Allows you to select a saved network showcase and display it in a separate window.

Figure 3-40 Network Showcase Window**Show Time Controller**

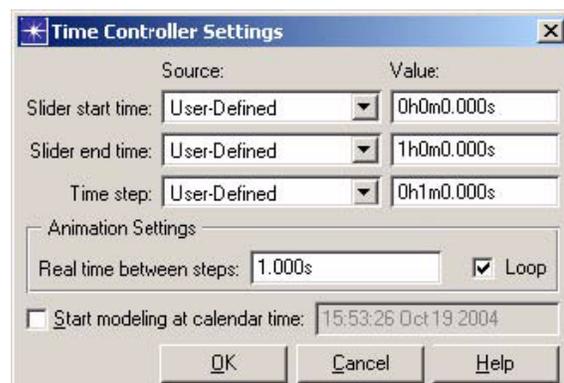
View > Show Time Controller Displays the Time Controller dialog box that allows you to change the current network time visualized in the editor and animate the time change effect.

Figure 3-41 Time Controller Dialog Box

The Time Controller dialog box shows the current network time (text field), value for the time step which is used for stepping forward or backward using the animation buttons, animation control buttons (to Jump to start to reset the network time to the slider start time, Step backward to decrease network time by one time step, Play forward or Pause animation, Step forward to increase network time by one time step, Jump to end to set network time to slider end time, Slow down play and Speed up animation), and a time slider which provides an alternative way to change the current network time.

Click the Configure button to display the Time Controller Settings dialog box, which allows you to set and change Time Controller values.

Figure 3-42 Time Controller Settings Dialog Box



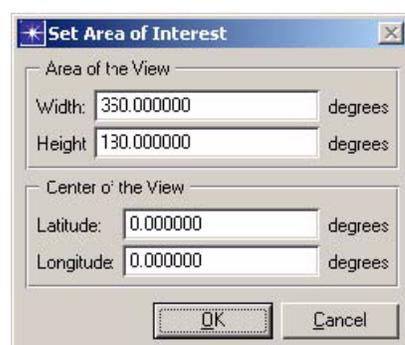
Set Area of Interest

- Slider start time, Slider end time, and Time step—Specifies the source plug-in for the slider start time, end time, and time step values. If User-Defined is selected, you can enter the value in the corresponding field.
- Real time between steps field—Specifies the speed of the animation.
- Loop checkbox—If checked, animation restarts after completion.
- Start modeling at calendar time—Check and type a value if you want to specify a calendar time for the network start time. Otherwise, the start time is assigned the symbolic value of 0.0.

Set Area of Interest

View > Set Area of Interest Provide geographical context to the scenario.

Figure 3-43 Set Area of Interest Dialog Box



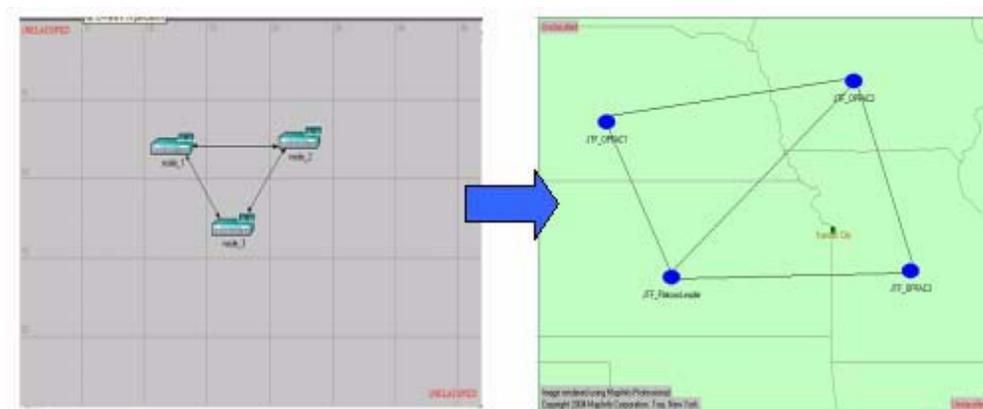
The geographic focus can be specified by entering values for Area of the View and Center of the View. These attributes determine the location and size of the displayed view of the map. For example, if the center of view is (0,0) and the area of view is (width = 100, height = 50), then the portion of the map that would be displayed will be from (50W, 25N) to (50E, 25S).

The geographic focus also determines the relative range at which OPFACs (and their devices) are located from each other. This is of significance when exchanging IERs/traffic during a simulation. While TSC-85 radios and wire links have no range limitations, TRC-170 radios and tactical broadcast networks only work within a limited range of each other. For example, if two TRC-170 radios are more than 150 miles apart, then all packets transmitted between them will be dropped, resulting in failed IERs.

Go to Parent Organization

View > Go to Parent Organization or click the **Go to Parent Organization** toolbar button Change the view in the workspace to the next higher level in the network. For example, if this option were selected inside an OPFAC, the next level up would include the parent OPFAC. Similarly, if this option were selected for an OPFAC inside an organization, the next level up would be the parent organization.

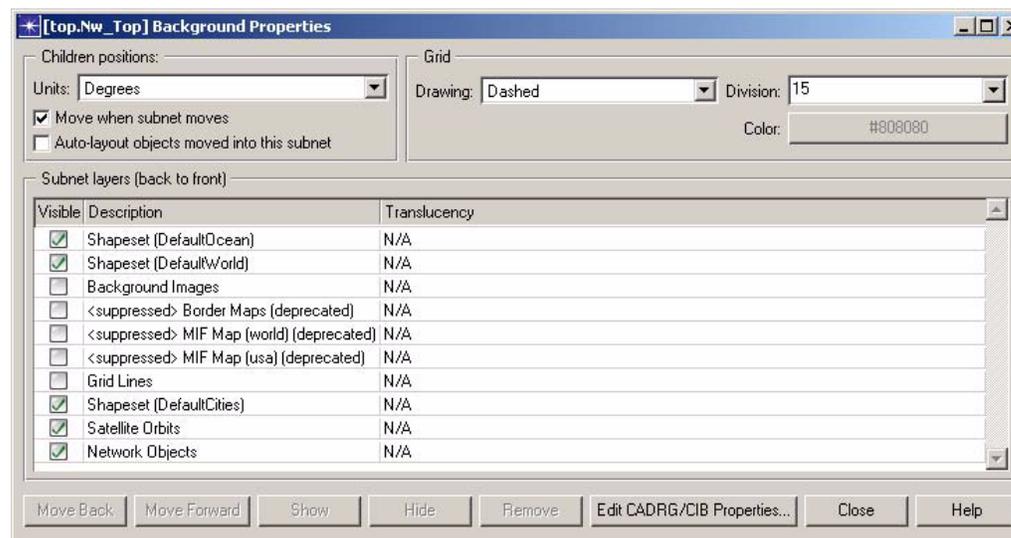
Figure 3-44 Go to Parent Organization



Setting Background View Properties

View > Background > Set Properties Control the display properties and other characteristics of the current subnetwork.

Figure 3-45 Setting Background View Properties



- Define units and other characteristics of the current subnet:
 - Units drop-down menu-Sets the scale of the network display grid. By default, the units are the same as the parent subnet. The units can be degrees, meters, kilometers, feet, miles, or logical. Units in the top subnet are always in degrees.
 - Move when subnet moves checkbox-Specifies whether objects in the subnet are moved when the subnet itself is moved. Uncheck this option if you want objects to remain in the same global location when the parent subnet is moved. This option is available only when subnet units is in degrees.
 - Auto-layout objects moved into this subnet-Specifies whether to automatically reposition nodes moved into the subnet to produce an aesthetically pleasing layout. Uncheck this option if you want objects moved into subnet to remain at their current global position.
- Define the grid line properties:
 - Drawing drop-down menu-Sets the style of the grid lines as disabled (hidden), solid, or dashed.
 - Division drop-down menu-Sets the number of units between each grid line.
 - Color button-Sets the color of the grid lines.
- Specify the subnet layers to display in the network view and the order in which they appear:
 - Visible column-Specifies whether the subnet layers are visible. A green checkmark indicates that the subnet layer is visible. By default, all subnet layers are set to visible. To change the setting, click the checkbox or the Show/Hide button.
 - Description column-Identifies the subnet layers that can be shown in the network view.
 - Translucency column-Specifies the level of layer content translucency with a value between 0 (opaque) and 100 (transparent). Note that only layers with CADRG/CIB and MrSID raster images support translucency.

- Set the order and visibility of the subnet layers:
 - Move Back button-Moves the selected subnet layer from front to back in the display.
 - Move Forward button-Moves the selected subnet layer from back to front in the display.
 - Show button-Sets the selected subnet layer as visible in the display.
 - Hide button-Sets the selected subnet layer as hidden in the display.
 - Remove button-Removes the selected subnet layer from the display.
 - Edit CADRG/CIB Properties... button-Opens a dialog box with configurations of background slices with CADRG/CIB rasters. Requires a Terrain Modeling Module license.
 - Close button-Closes the dialog box. Move layers backward and forward to indicate the layer ordering in the workspace.

Background > Set Border Map

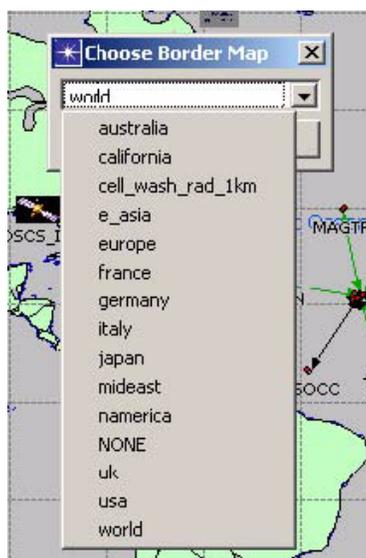
View > Background > Set Border Map Specify a border map for a scenario. Border maps use stylized lines to define political and geographical areas. JCSS comes with a library of border maps that represent a geographic area described by latitude and longitude.

Use the following procedure to specify a border map.

Procedure 3-10 Setting Border Map

- 1 Select View > Background > Set Border Map.
- 2 Choose the border map from the drop-down menu. Note that the border map list is a finite list and may not be modified.

Figure 3-46 Selecting a Border Map



- 3 If the desired map is not in the list, select the world map and zoom in to the desired location.

End of Procedure 3-10

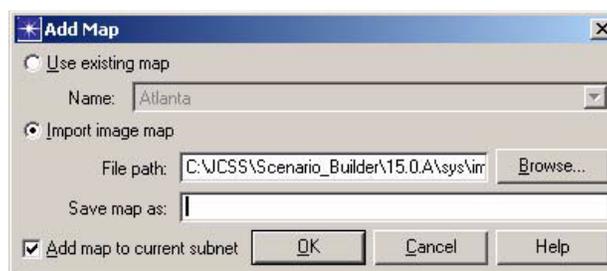
Background > Add Image Map

View > Background > Add Image Map Import an image into the scenario using the following procedure:

Procedure 3-11 Adding an Image Map

- 1 Choose an option of importing an existing map or specifying the file path to an image map located on the hard drive; select desired map.
- 2 Click OK.

Figure 3-47 Importing an Image Map



End of Procedure 3-11

Background > Add MIF Map

View > Background > Add MIF Map Import MIF maps, which are files that provide additional geographical information on a border map, such as roadways, waterways, regions, and counties. Several MIF maps come standard with JCSS. Use the following procedure to import MIF maps:

Procedure 3-12 Adding a MIF Map

- 1 From the MIF menu, select the desired MIF map.

Figure 3-48 Importing MIF Data



- 2 Click Close. The MIF map automatically imports.

End of Procedure 3-12

Background > Show MIF Log

View > Background > Show MIF Log Display the MIF Import Log dialog box.

Figure 3-49 MIF Import Log Dialog Box



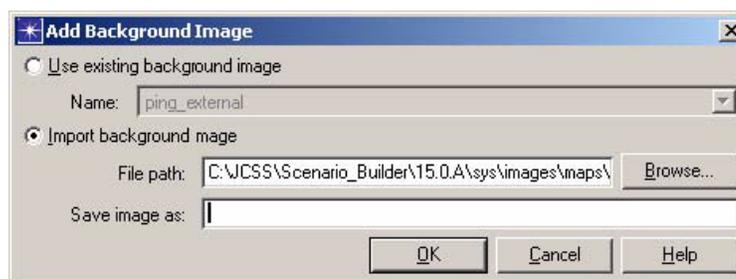
Background > Add Image

View > Background > Add Image Import ordinary background images, i.e., those images that do not include geographical information, into a scenario. Background images differ from background image maps in that they are described by referencing points on an x-y axis. Use the following procedure to add images in the Scenario Builder:

Procedure 3-13 Adding a Background Image

- 1 Select View > Background > Add Image.
- 2 In the Add Background Image dialog box, select the Import background image radio button, and then click Browse to select the TIFF file to import.

Figure 3-50 Importing a Background Image



- 3 Select Open and then OK to import the image.
- 4 Next, JCSS enters Map/Background Editing mode. In this mode, you can edit image maps and backgrounds, but not border maps. To select/move/resize image maps or backgrounds, simply click, right-click or drag them. You can also copy, cut and paste maps/backgrounds.

- 5 After you are done, exit Map/Background Editing mode by right-clicking on one of the maps or backgrounds and choosing Exit Map Editing Mode, or by selecting View > Background > Map Edit Mode.

End of Procedure 3-13

Background > Add CADRG/CIB Raster Catalog Directories

View > Background > Add CADRG/CIB Raster Catalog Directories... Select a raster catalog directory from which to import.

Background > Add MrSID Image

View > Background > Add MrSID Image... Select a MrSID image file (*.sid) to import.

Note—For more information about this feature, please refer to the OPNET IT Guru documentation set, available via Help > Documentation > IT Guru Documentation.)

Background > Map Edit Mode

View > Background > Map Edit Mode Modify background images. Once this mode is selected, edit the image as desired using techniques described in the following table.

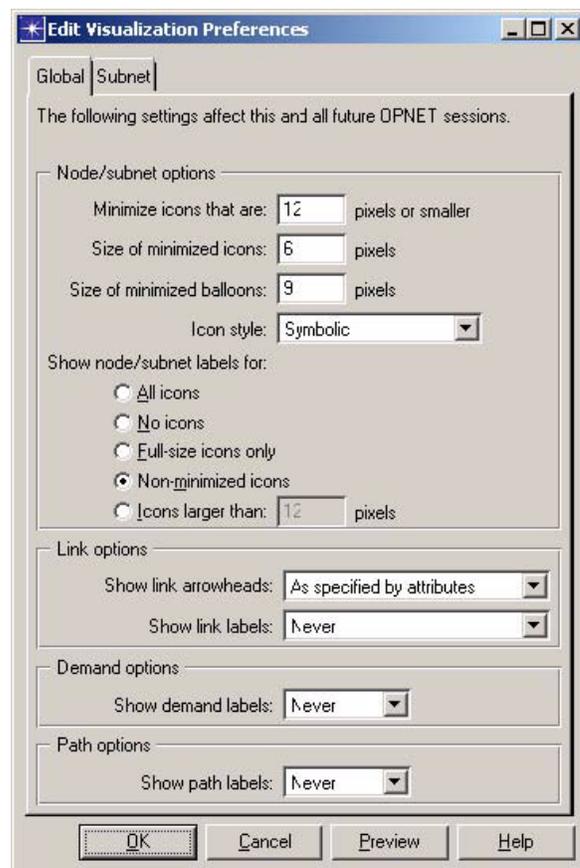
Table 3-2 Edit Image Map Operations

To...	Follow These Steps
Resize an image map	Right-click on the image map and drag one of the handles on the image map. Right-click on the image map and choose Set Location and Size and fill in the desired values
Move an image map	Drag the object to the desired location. Right-click on the image map and choose Set Location and Size and fill in the desired values.
Remove an image map from the workspace	Click on the image map and press the <Delete> key.
Exit map edit mode	Right-click on the image map and select Exit Map Editing Mode.

Edit Display Preferences

View > Edit Display Preferences Edit preferences that control the visualization of the network. Preferences can be controlled on either the global or subnet level. Those preferences specified at the subnet level take precedence over any global settings. The subnet preferences are retained per subnet and can only be changed from this dialog box for the active subnet.

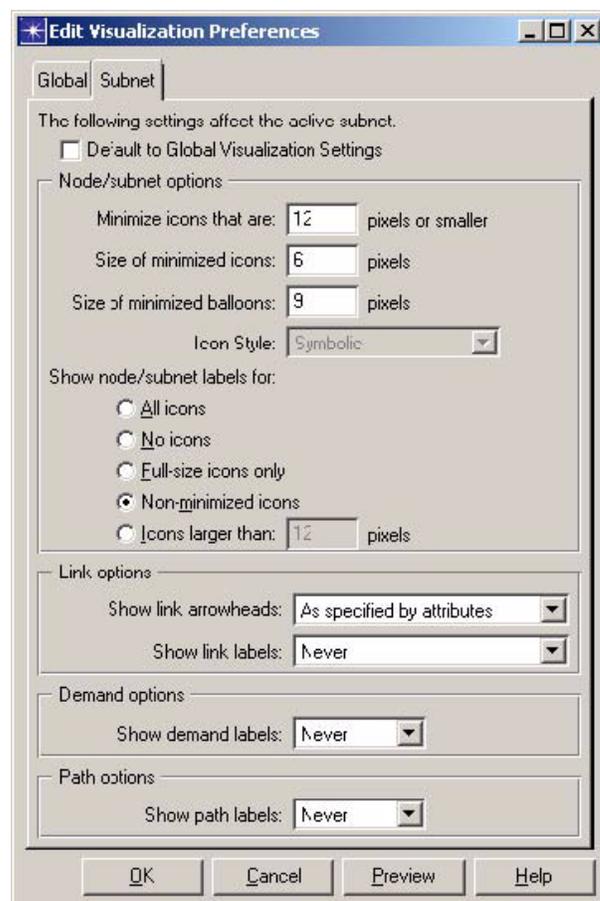
Figure 3-51 Edit Visualization Preferences Dialog Box—Global Tab



Global preferences are available on the Global tab:

- Minimize icons that are X pixels or smaller—Determines at what size icons become minimized. If an object appears smaller than the specified number of pixels, it is drawn using its minimized icon, as specified by its minimized icon attribute. This setting also changes the `network_visualization.minimized_icon_pixel_threshold` environment preference.
- Size of minimized icons—Determines the size, in pixels, of all minimized icons in the network. It also changes the `network_visualization.minimized_icon_size` environment preference.
- Size of minimized balloons—Determines the size, in pixels, of all minimized balloons in the network. It also changes the `network_visualization.minimized_balloon_size` environment preference.
- Icon style—Specifies the model icon style to display. Select Symbolic or Chassis.

- Show node/subnet labels for—Specifies which nodes and subnet objects display labels. It also changes the `network_visualization.show_node_labels` environment preference. The selections have the following effects:
 - All icons—Labels appear on all objects.
 - No icons—No labels appear on any node or subnet objects.
 - Full-size icons only—Labels only appear on objects that have not been scaled below their original full size.
 - Non-minimized icons—Labels appear on any icons that have not been minimized.
- Icons larger than X pixels—Labels appear on any icons that are larger than the specified number of pixels. It also changes the `network_visualization.show_labels_icon_pixel_threshold` environment preference.
- Show link arrowheads—Specifies which links have arrowheads. It also changes the `network_visualization.show_link_arrowheads` environment preference. The selections have the following effects:
 - Never—No arrowheads appear on any link objects.
 - As specified by attributes—The appearance of arrowheads is determined beach link object's arrowheads attribute.
 - For simplex links only—For all simplex links, the appearance of arrowheads is determined by each link object's arrowheads attribute. For all other link types, no arrowheads display.
- Show link labels—Specifies which links have labels. It also changes the `network_visualization.show_link_labels` environment preference. The selections have the following effects:
 - Never—No link labels appear on any link objects.
 - Always—Link labels appear on all link objects.
 - For off-page links only—Link labels appear on links that are drawn out of the active subnet.
- Show demand labels—Specifies which demands have labels. It also changes the `network_visualization.show_demand_labels` environment preference. The selections have the following effects:
 - Never—No demand labels appear on any demand objects.
 - Always—Demand labels appear on all demand objects.
- Show path labels—Specifies which paths have labels. It also changes the `network_visualization.show_path_labels` environment preference. The selections have the following effects:
 - Never—No path labels appear on any path objects.
 - Always—Path labels appear on all path objects.

Figure 3-52 Edit Visualization Preferences Dialog Box—Subnet Tab

Subnet preferences are available on the Subnet tab.

- **Default to Global Visualization Settings** checkbox—Determines if the subnet inherits the global preferences, or uses the subnet settings specified in the dialog box. If checked, the subnet-level dialog box controls are disabled. If unchecked, the subnet settings can be specified for the active subnet.
- **Minimize icons that are X pixels or smaller**—Determines at what size icons become minimized in the subnet. If an object appears smaller than the specified number of pixels, it is drawn using its minimized icon, as specified by its minimized icon attribute.
- **Size of minimized icons**—Determines the size, in pixels, of all minimized icons in the active subnet.
- **Size of minimized balloons**—Determines the size, in pixels, of all minimized balloons in the active subnet.
- **Icon style**—Specifies the model icon style to display. Select Symbolic or Chassis.

- Show node/subnet labels for—Specifies which nodes and subnet objects display labels in the active subnet.
 - All icons—Labels appear on all objects.
 - No icons—No labels appear on any node or subnet objects.
 - Full-size icons only—Labels only appear on objects that have not been scaled below their original full size.
 - Non-minimized icons—Labels appear on any icons that have not been minimized.
 - Icons larger than X pixels—Labels appear on any icons that are larger than the specified number of pixels.
- Show link arrowheads—Specifies which links have arrowheads in the active subnet. The selections have the following effects:
 - Never—No arrowheads appear on any link objects.
 - As specified by attributes—The appearance of arrowheads is determined by each link object's arrowheads attribute.
 - For simplex links only—For all simplex links, the appearance of arrowheads is determined by each link object's arrowheads attribute. For all other link types, no arrowheads display.
- Show link labels—Specifies which links have labels in the active subnet. The selections have the following effects:
 - Never—No link labels appear on any link objects.
 - Always—Link labels appear on all link objects.
 - For off-page links only—Link labels appear on links that are drawn out of the active subnet.
- Show demand labels—Specifies which demands have labels in the active subnet. The selections have the following effects:
 - Never—No demand labels appear on any demand objects.
 - Always—Demand labels appear on all demand objects.
- Show path labels—Specifies which paths have labels in the active subnet. The selections have the following effects:
 - Never—No path labels appear on any path objects.
 - Always—Path labels appear on all path objects.
- OK button—Closes the dialog box. All settings take effect immediately, including modification of global environment preferences and subnet-level settings.

- Cancel button—Closes the dialog box and returns to the original display without making changes to the visualization settings, global environment attributes, or subnet-level settings.
- Preview button—All of the settings changed take effect immediately, although the environment preferences and subnet settings are not retained unless you click OK.

Refresh Workspace

View > Refresh Workspace Redraw/refresh the workspace view.

Layout

View > Layout > (option) You can customize the appearance of objects in your workspace by scaling the icons to a larger or smaller size, and moving icon labels that overlap. JCSS provides commands that will perform these functions automatically for you, or you can make adjustments manually to selected icons using the Scale Selected Icons dialog box..

Automatic Icon Scaling

View > Layout> Automatic Icon Scaling Toggle on and off the ability to adjust icon sizes automatically to minimize overlap.

Layout > Automatic Label Placement

View > Layout> Automatic Label Placement Toggle on and off the ability to adjust label positions automatically to prevent overlap with adjacent icons.

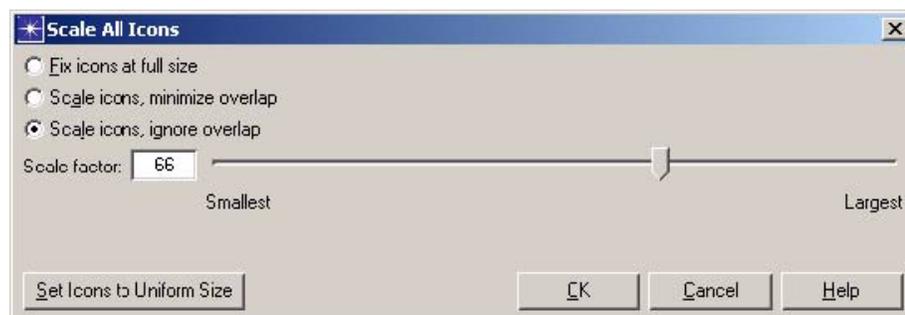
Layout > Scale Node Icons Interactively

View > Layout > Scale Node Icons Interactively Scale/change the size of node/subnet icons. For example, if an icon is 12 x 12 pixels at full size, you can scale the icon to 50% so that it appears at half-size (6 x 6 pixels).

If you scale an icon below a certain size, the icon becomes minimized—that is, it appears as a simple shape rather than as a bitmap.

Procedure 3-14 Scaling Node Icons Interactively

- 1 Choose View > Layout > Scale Node Icons Interactively.
 - ➔ The Scale All Icons dialog box displays.

Figure 3-53 Scale All Icons Dialog Box

- 2 Scale the selected icons by the desired amount.

- Select the Fix icons at full size radio button to scale selected icons to their full size (as defined by the icon bitmaps). When zooming in or out in the workspace, the icons remain at full size regardless of the zoom level. This behavior is achieved by setting the "threshold" attribute on the selected objects to a value of 0. Selecting this option disables the icon scaling slider and the uniform size button.
 - Select the Scale icons, minimize overlap radio button to use the Scale Factor slider and field to scale all of the selected icons, except those that would overlap other icons if they were scaled any larger. The size can range from 1% to the percentage at which all of the icons will appear full size. This maximum percentage will vary, depending on the icon size when you open this dialog box.
 - Select the Scale icons, ignore overlap radio button to use the Scale Factor slider and field to scale all of the selected icons equally, even those that overlap. The size can range from 1% to the percentage at which all of the icons will appear full size. This maximum percentage will vary, depending on the icon size when you open this dialog box.
 - To scale all selected icons to the same size (that is, to the current size of the smallest icon in the selection set), click the Set Icons to Uniform Size button and then use the slider. A progress bar appears as the icons are updated.
- 3 Click OK to change the selected icons as specified and close the dialog box. A progress bar appears as the icons are updated. If no changes are necessary, the dialog box will simply close.
 - 4 Click Cancel to close the dialog box without making any of the specified changes.

End of Procedure 3-14

Layout > Lay Out Nodes Interactively

View > Layout > Lay Out Nodes Interactively... Use this option to change the position of various node/subnet/utility objects.

Figure 3-54 Layout Network Objects Dialog Box



- Algorithm drop-down menu—Specifies the currently selected layout algorithm. The layout algorithm determines how the positions of the selected objects will change when the Run button is clicked. The algorithms are:
 - Expand/Contract—Moves the selected network objects away from or toward the Mark icon (the movable green cross icon in the Project Editor workspace).
 - Expand/Contract Horizontally—Moves the selected network objects horizontally away from or toward the Mark icon.
 - Expand/Contract Vertically—Moves the selected network objects vertically away from or toward the Mark icon.
 - Rotate—Moves the selected network objects as if they were rotated about the Mark icon.
 - Disperse—Moves the selected network objects with the specified layout region.
- Layout region drop-down menu—Specifies a rectangular region for the algorithm to operate on. This element will be disabled if the selected algorithm does not use a particular layout region.
- Percentage/Degrees combo field—Specifies a variable parameter to customize the behavior of the selected layout algorithm. The label changes between Percentage and Degrees, depending on the selected algorithm. You can either drag the slider or enter a number directly to specify the value. This is disabled, if the selected algorithm does not use a parameter value.
- OK button: Closes the dialog box—The position changes become permanent and a single undo command is added to the editor's undo stack.
- Cancel button—Closes the dialog box after undoing all position changes that were made while this dialog box was open.
- Run button—Performs the selected layout algorithm upon the current selection set or, if no objects are selected, all objects in the current subnet.
- Undo button—Undoes the effect of the last algorithm run or the last object drag. The dialog box maintains a local undo stack since the time it was opened, so you can undo repeatedly to return to any earlier state. This button is disabled if there are no operations that can be undone.

- Redo button—Redoes the effect of the last local undo operation. Until you run another algorithm or directly drag objects, you can redo repeatedly to return to any previously undone state. This button is disabled if there are no operations that can be redone.
- Undo All button—Undoes the effect of all algorithm runs and object drags since the dialog box was opened. This has the same effect as repeatedly clicking the Undo button until it becomes disabled.

Note—While the Layout Network Objects dialog box is open, the toolbar and the menu bar of the editor window are disabled. However, the editor workspace is still active. You can change the selection set, and you can directly drag selected objects around. Any drags are considered part of the interactive layout operation and will be undone if you cancel out of this dialog box. Also, while this dialog box is open, the Mark icon (a green cross) is present at the center of the current selection set. This icon represents the Mark point used by various algorithms. You can drag this icon around without dragging any network objects and without changing the current selection set.

***Layout > Lay Out
Nodes (Balanced)***

View > Layout> Lay Out Nodes (Balanced) Selecting this option automatically balances the layout of nodes in the current view. The sites in the current subnet are repositioned to produce an aesthetic layout. This operation can make a crowded network easier to work with and is faster than manually repositioning sites. You can control which sites are moved as follows:

- If no sites are selected, every site in the current subnet is considered for repositioning.
- If one or more sites are selected, only the selected sites are considered for repositioning.

If there are unconnected groups of sites in the subnet, this operation also balances the spacing between the groups. This step can be disabled with the `network_layout.adjust_unconnected_groups` preference.

***Layout > Lay Out
Nodes (Simple)***

View > Layout> Lay Out Nodes (Simple) Selecting this option automatically simplifies the layout of nodes in the current view. The sites in the current subnet are repositioned to produce an illustrative, but not necessarily aesthetic, layout. The algorithm used by this operation is faster and uses less memory than the balanced algorithm used by the Lay Out Nodes (Balanced) operation. Thus, it is better for subnets with large numbers of sites.

***Layout > Lay Out
Nodes (Core
Centric)***

View > Layout> Lay Out Nodes (Core Centric)... Use this option to create a meaningful network layout, based on core nodes. The layout places core nodes in the center. All other nodes are placed around the core nodes based on the quantity of links. Nodes attached to the network with only one link are placed furthest from the core nodes. Nodes with no link attachments to the network are placed on the left side of the workspace.

Core nodes are determined using one of the following methods:

- **Select Core Nodes with Most Connections**-Core nodes are determined based on the quantity of links. Nodes with the highest quantity of links are designated as core nodes.
- **Use Selected Nodes**-Select one or more nodes, subnets, and/or utility objects. Selected objects are designated as core nodes.

Layout > Lay Out Nodes (Circular)

View > Layout> Lay Out Nodes (Circular) Selecting this option automatically lays out nodes in the current view circularly. The nodes in the current subnet are repositioned to produce a circular network layout that shows interconnected ring and star topologies. The circular layout emphasizes group and tree structures with a network.

Layout > Lay Out Nodes (Hierarchical)

View > Layout> Lay Out Nodes (Hierarchical) Selecting this option automatically lays out nodes in the current view hierarchically. The nodes in the current subnet are repositioned to produce a hierarchical layout that shows a precedence relationship. The hierarchal layout emphasizes flow.

Layout > Lay Out Nodes (Schematic)

View > Layout> Lay Out Nodes (Schematic)... Selecting this option automatically lays out nodes in the current view schematically. The nodes in the current subnet are repositioned to produce a schematic layout with right-angled links. The overlapping of links is kept to a minimum, depending on the size and complexity of the network.

Layout > Geographic Positioning

View > Layout > Geographic Positioning Toggle on and off the current view mode to logical/physical.

Layout > Move Selected Nodes to Non-Geographic Positions

View > Layout > Move Selected Nodes to Non-Geographic Positions Toggle on and off the current view mode for the selected nodes to non-geographic mode.

Layout > Move Selected Nodes to Geographic Positions

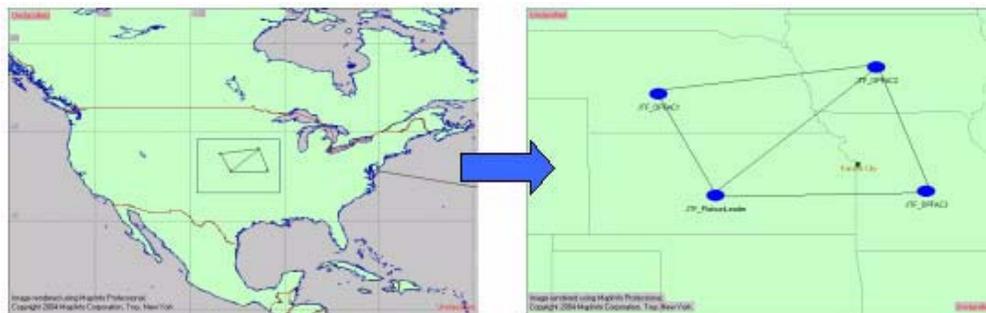
View > Layout > Move Selected Nodes to Geographic Positions Toggle on and off the current view mode for the selected nodes to geographic mode.

Zoom > To Rectangle

View > Zoom > To Rectangle or press <Ctrl>+<I>, or use the Zoom In option from the shortcut menu, or click the Zoom In toolbar button: Get a close-up view of the object in question in the workspace. Apply this option multiple times to obtain an ever-closer view.

To use this feature, select the **Zoom > To Rectangle** command, and then drag the cursor to define a rectangular shaped region to be magnified.

Figure 3-55 Zoom to Rectangle



- Zoom > To Selection** **View > Zoom > To Selection** or press **<Ctrl>+<Shift>+<Z>**: Get a close-up view of a selected area or object in the workspace. Drag the cursor to define a rectangular shaped region to be magnified, and then select the **Zoom > To Selection** command.
- Zoom > Unzoom** **View > Zoom > Unzoom** or press **<Ctrl>+<U>**, or use the **Zoom Out** option from the shortcut menu, or click the **Zoom Out** toolbar button: Restore the workspace view to the previous zoom level.
- Zoom > To All** **View > Zoom > To All** or press **<Ctrl>+<Alt>+<Z>**: Zoom out on the workspace so it shows active areas in the window.
- Filter** **View > Filter > (option)** Apply a number of different filters to the scenario.
- Filter > Selected Objects** **View > Filter > Selected Objects** Filters can be applied on objects that have been selected on the workspace. The objects could have been selected by manually clicking on them, or by the use of the selection filter.

Figure 3-56 Filter Map Dialog Box



Using this option, you can hide the selected objects or show only the selected objects. An option is also provided to redisplay all objects.

Filter > Devices

View > Filter > Devices Filters can be applied to devices based on the type of applications they support. Filtering can be done based on the functional area or the service. For example, if you are interested in viewing just the SIPRNET portion of the scenario, you can apply a device filter and specify SIPRNET as the service of interest. All other devices will be hidden. If an OPFAC has no visible devices, the OPFAC is hidden as well.

Figure 3-57 Filter OPFACs and Devices Dialog Box



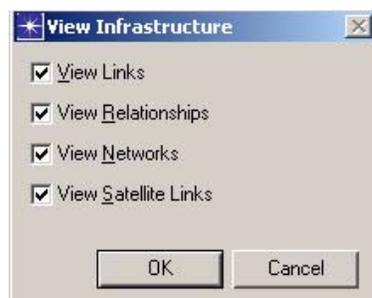
You can display the result of this filtering operation either on the workspace or in a table. The table displays the OPFAC name, device name, application name, functional area and service.

Note—This feature does not work with the standard applications. Instead, it works with the applications specified in the Requirements Matrix, which is a part of the Collaborative Planning feature.

Filter > Infrastructure

View > Filter > Infrastructure Show or hide the different types of infrastructure like relationships, links, broadcast networks and satellite links. By default, all infrastructures are displayed and all the options are checked. If you want to hide a certain type of infrastructure, uncheck that option and all infrastructure of that type will be hidden.

Figure 3-58 View Infrastructure Dialog Box



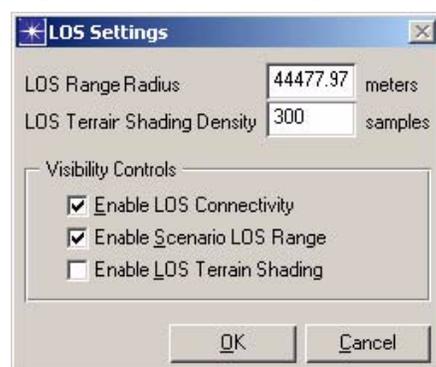
For example, if you do not want to view relationships in the scenario, you can go to this interface and uncheck the option View Relationships.

Filter > Hide Locked Units	View > Filter > Hide Locked Units Hide all locked units in the Subordinate Planner query file.
Filter > Restore Full View	View > Filter > Restore Full View View all locked units. In the Subordinate Planner query file, all locked units are hidden by default.
Network Views	View > Network Views > (option) JCSS offers a number of different views of the scenario. Each of these views offers the user a different perspective of the network.
Network Views > Planning	View > Network Views > Planning This view is useful for someone working in a collaborative planning environment. Using this view, the planner can display only the planning portions of the scenario and hide all others. Organizations, OPFACs and planning links are all part of the planning view. Devices and connectivity links are hidden in this view.
Network Views > Connectivity	View > Network Views > Connectivity If a planner is not interested in the planning links and just wants to view the connectivity links in the network, he can choose this menu option. Planning links and OPFACs without any devices are hidden in this view. For example, if you do not want to view relationships in the scenario, you can go to this interface and uncheck the option View Relationships.
Filter > Hide Locked Units	View > Filter > Hide Locked Units Hide all locked units in the Subordinate Planner query file.
Filter > Restore Full View	View > Filter > Restore Full View View all locked units. In the Subordinate Planner query file, all locked units are hidden by default.
Network Views	View > Network Views > (option) JCSS offers a number of different views of the scenario. Each of these views offers the user a different perspective of the network.
Network Views > Planning	View > Network Views > Planning This view is useful for someone working in a collaborative planning environment. Using this view, the planner can display only the planning portions of the scenario and hide all others. Organizations, OPFACs and planning links are all part of the planning view. Devices and connectivity links are hidden in this view.
Network Views > Connectivity	View > Network Views > Connectivity If a planner is not interested in the planning links and just wants to view the connectivity links in the network, he can choose this menu option. Planning links and OPFACs without any devices are hidden in this view.
Network Views > Planning and Connectivity	View > Network Views > Planning and Connectivity The planner can use this menu option to return to the default view, which includes the planning and connectivity elements in the scenario.

Network Views > Operational	View > Network Views > Operational Selecting this menu item will switch from a Systems or Logical View back to the default view of the scenario, the same view that loads when you first open the scenario in Scenario Builder.
Network Views > OPFAC Systems	View > Network Views > OPFAC Systems Selecting this menu item will switch from the current view, the Operational View or some other type of Systems View, to the OPFAC Systems View. The OPFAC Systems View expands the contents of the organizations, collapses the contents of the OPFACs, and redraws the links to connect to their respective devices.
Save Current Unit View	View > Save Current Unit View Set a default view to which you can return.
Restore Saved Unit View	View > Restore Saved Unit View Return to the saved view. If you are interested in the planning links and just wants to view the connectivity links in the network, he can choose this menu option. Planning links and OPFACs without any devices are hidden in this view.
LOS Settings	View > Show LOS > LOS Settings Set the parameters for the editor to control what LOS visualizations are displayed and how they appear.

Note—The LOS that you see takes into account the position as well as the altitude for that device. You can set the altitude for an OPFAC via the OPFAC Attributes dialog box (right-click on the OPFAC and select Edit JCSS Attributes.) By default, altitude is set by terrain and measured in meters. You can enter an altitude value in another unit of measurement (such as kilometers, feet, yards, or miles), and JCSS will automatically convert the measurement to meters the next time you open the OPFAC Attributes dialog box.

Figure 3-59 LOS Settings



- **LOS Range Radius**—Measured in meters, this specifies the size of the circle that may appear around an organization or OPFAC. It is a nominal range, and this single setting affects all LOS Visualization in the editor. For reference, 10,000 meters is the typical transmission limit when terrain elevation data is not available. Transmitters assisted by elevation could transmit many times this distance.

- **LOS Terrain Shading Density**—Specifies the number of samples to check within the LOS Range Radius for determining LOS Terrain Effects Shading. More samples give a more accurate representation, but can also slow display as more information must be considered to update Terrain Effects Shading.
- **Enable LOS Connectivity**—Allows the editor to display LOS Connectivity links when selected for organizations or OPFACs. Enabled by default.

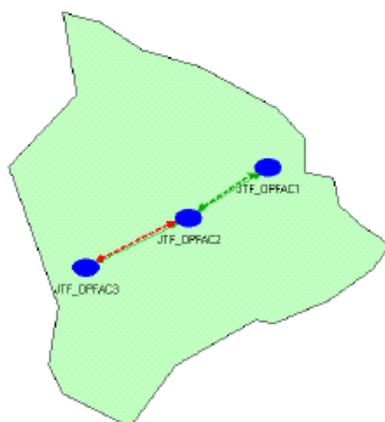
LOS Connectivity is a thick, dashed, double-headed arrow. The color of the arrow indicates whether the two objects could communicate. Connectivity is bi-directional and independent of specific device characteristics.

Connectivity is based on signal loss between the transmitter and receiver positions as determined by the Longley-Rice signal propagation model.

LOS Connectivity exists between OPFACs. Organizations that contain OPFACs may display LOS Connectivity links when they are collapsed. Enabling LOS Connectivity on an organization enables LOS Connectivity on all subordinate organizations and OPFACs. An organization that contains no subordinate OPFACs will not display any LOS Connectivity links (it would not be able to join a broadcast network or connect via point-to-point links either).

LOS Connectivity works through broadcast networks and point-to-point transmission links to determine all of the OPFACs to which a selected Organization or OPFAC could possibly communicate and designates the state of that communication link. LOS Connectivity links are attributes of their end points. The existence of LOS Connectivity links indicates that one or both of the objects at an end of the link has LOS Connectivity enabled. LOS Connectivity links disappear when neither end point has LOS Connectivity enabled, in either the top-level organization or any subordinate organization or OPFAC. LOS Connectivity link coloration is automatically updated when either end point moves for any reason, including mouse dragging, attribute changes, or animation, to reflect the LOS closure state at the new location.

Figure 3-60 LOS Connectivity

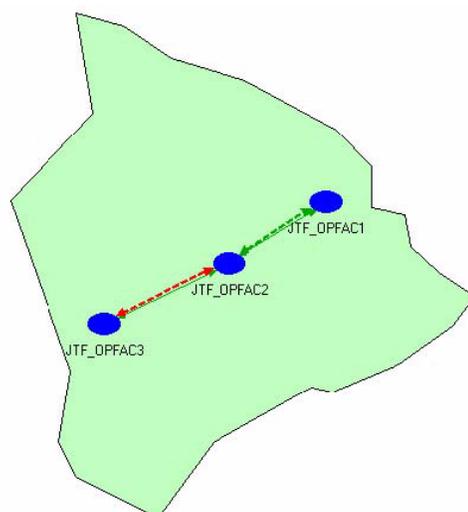


- **Enable Scenario LOS Range**—Allows the editor to display LOS Range circles and Terrain Effects Shading for selected organizations or OPFACs. Enabled by default.

LOS Range is a circle of a fixed radius placed around the organization or OPFAC in question. The circle represents a ground distance and is used as a reference for the distance from a particular object. There is a single setting for the range that pertains to all LOS Ranges displayed in the entire scenario. The LOS Range is a nominal indicator, having no direct connection to a particular device's transmission range. The LOS Range does indicate the limit of the area within which locations may be sampled for determining LOS Terrain Shading.

Any organization or OPFAC may display an LOS Range without regard for the type of device contained within or even if an OPFAC or device is contained. The LOS range simply indicates a distance.

Figure 3-61 LOS Range



- Enable LOS Terrain Shading—Allows the editor to display Terrain Effects Shading if LOS Range is also enabled. Disabled by default.
- Terrain Effects Shading indicates portions of the area around an organization or OPFAC where a radio receiver could not receive a hypothetical transmission from the object.

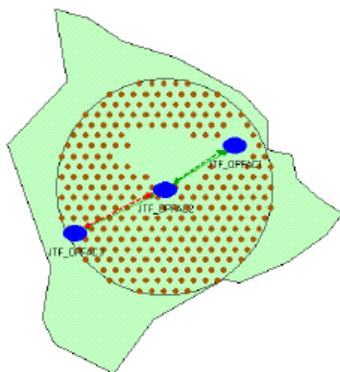
Since the LOS Range defines the limit of the area where LOS Terrain Shading is tested, LOS Range must be enabled to view LOS Terrain Shading. Disabling LOS Range on an object also disables LOS Terrain Shading.

Like LOS Range, LOS Terrain Shading does not indicate anything about the specific OPFACs or devices contained within the designated object. It simply indicates that if the object contained a radio transmitter, that radio transmitter would or would not be able to communicate with a generic radio device at a particular location.

LOS Terrain Shading works by testing for LOS closure at a predetermined number of sample locations evenly spaced throughout the circle formed by the LOS Range. You can select the number of samples to take.

LOS Terrain Shading updates when the selected object moves for any reason, whether by mouse dragging, attribute change, or animation.

Figure 3-62 Terrain Effects Shading



**Show LOS > Clear
LOS Ranges**

View > Show LOS > Clear LOS Ranges Clears LOS range circles and terrain effects shading for all units.

**Show LOS > Display
LOS Legend**

View > Show LOS > Display LOS Legend Display the LOS Legend, which explains the color-coding of LOS Connectivity as well as LOS Ranges and Terrain Shading. The Auto-Display Legend checkbox determines whether the LOS Legend will automatically appear following the activation of LOS visualization. Clearing the checkbox will prevent this automatic display.

Figure 3-63 LOS Legend



**OPFAC Distances >
View OPFAC
Distances**

View > OPFAC Distances > View OPFAC Distances Create OPFAC Distance Links (LOS Connectivity Links with a label showing the distance between each pair of OPFACs) between all selected OPFACs.

**OPFAC Distances >
Remove OPFAC
Distances**

View > OPFAC Distances > Remove OPFAC Distances Remove any OPFAC Distance Links currently existing in the scenario.

Links

View > Links > (option) Sub-menu allows you to select whether or not you want to show or hide all links from the view.

Demands

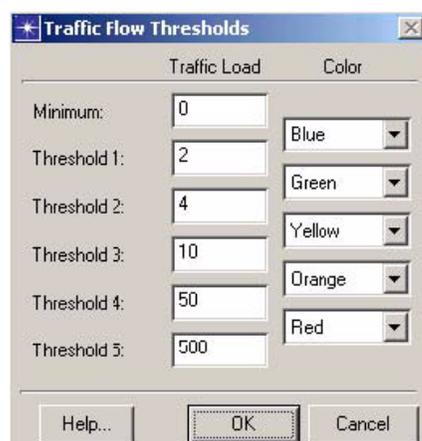
View > Demands > (option): Sub-menu allows you to select whether or not you want to show or hide all demands from the view.

IERs

View > IERs > (option): Sub-menu allows you to select whether or not you want to show all, show selected, or hide all IERs from the view. You can also color IERs by aggregate load (or hide aggregate load coloring), and set IER color thresholds.

- IERs > Show All** **View > IERs > Show All** Select this option to show all IERs in the view.
- IERs > Show Only Selected** **View > IERs > Show Only Selected** Select this option to show selected IERs in the view.
- IERs > Hide All** **View > IERs > Hide All** Select this option to hide all IERs from the view.
- IERs > Color by Aggregate Load** **View > IERs > Color by Aggregate Load** Select this option to color IERs in the view by aggregate load.
- IERs > Hide Aggregate Load Coloring** **View > IERs > Hide Aggregate Load Coloring** Select this option to hide aggregate load coloring from the view.
- IERs > Set IER Color Thresholds** **View > IERs > Set IER Color Thresholds** Sub-menu allows you to select whether or not you want to show all, show selected, or hide all IERs from the view. You can also color IERs by aggregate load (or hide aggregate load coloring), and set IER color thresholds. Specify a minimum value and the colors to be used for each threshold. This feature is used in conjunction with the Aggregate Traffic Flows feature. Flows are colored based on the threshold they fall under. If the load of an aggregate flow is more than the highest threshold, the flow is colored black. If the load is lesser than the minimum threshold, the flow is not displayed. The default minimum value is 0 Kbps.

Figure 3-64 Traffic Flow Thresholds Dialog Box



Set IER color thresholds, and then click OK.

- IERs > Display Recorded Routes (DES)...** **View > IERs > Display Recorded Routes (DES)** Opens the Route Report for IER Routes window. If you have recorded IER routes during a simulation, you can view the results using this option.
- IERs > Hide Routes** **View > IERs > Hide Routes** When you have displayed recorded routes in the workspace, use this option to hide the recorded routes visualization.

Circuits	View > Circuits > (option) Sub-menu allows you to select whether or not you want to show or hide all circuits from the view.
Paths	View > Paths > (option) Sub-menu allows you to select whether or not you want to show or hide all paths from the view.
Wireless Domains	View > Wireless Domains > (option) Sub-menu allows you to select whether or not you want to show or hide all wireless domains from the view.
Annotations	View > Annotations > (option) Sub-menu allows you to select whether or not you want to show annotations in the subnet, and show, hide, minimize or clear annotation balloons from the view.
Visualize Protocol Configuration	View > Visualize Protocol Configuration > (option) Control the display of protocol configuration using the following options: <ul style="list-style-type: none">• IP Interface Status—Shows whether the connected interface is active or shutdown. A green up arrow indicates that interface is active whereas a red down arrow indicates that the interface is shutdown.• IP Routing Protocols—Shows the routing protocols that are configured on the router interfaces.• IP Address Types—Shows the IP address types on the network by color, along with a legend to explain the color-coding.• IP QoS Configuration—Shows the IP QoS configuration on the links.• IP Security Configuration—Shows the packet filtering security configured on the links.• IP Tunnel Configuration—Shows the router tunneling configured on the network.• BGP Peers—Shows the BGP peering (neighbor) relationships in the network. EBGP confederation peers are shown in dark green, EBGP peers are shown in blue, all other colors indicate IBGP peers. You can view the tool tip of a peering visualization for more information about the peers. For networks using route reflection, the visualization also indicates if a router is a reflector or a client.• OSPF Area Configuration—Shows the OSPF areas configured on the router interfaces.• IPv4 Interface Metrics—Shows legends for IGP, OSPF, ISIS, IGRP, EIGRP, and MPLS TE metrics• ATM Routing Domains—Shows which ATM routing protocols are configured on the switch ports.• VLAN Configuration—Shows the VLANs configured in the network.

- HAPE Versions—Shows the HAPE versions deployed in the network.

Note—For more information about this feature, please refer to the OPNET IT Guru documentation set, available via Help > Documentation > IT Guru Documentation.)

Clear Visualization

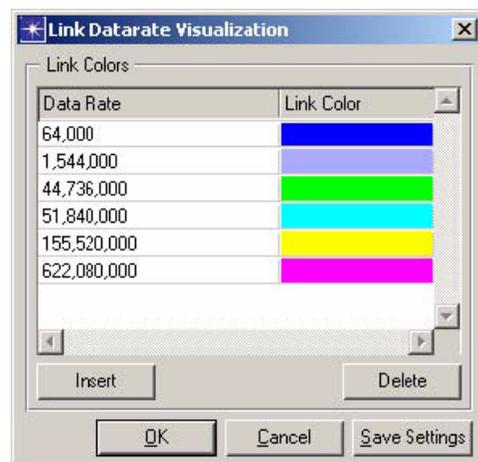
View > Visualize Protocol Configuration > Clear Visualization Removes all protocol configuration visualizations from the workspace.

Visualize Network Configuration

View > Visualize Network Configuration > (option) Control the display of network configuration using the following options:

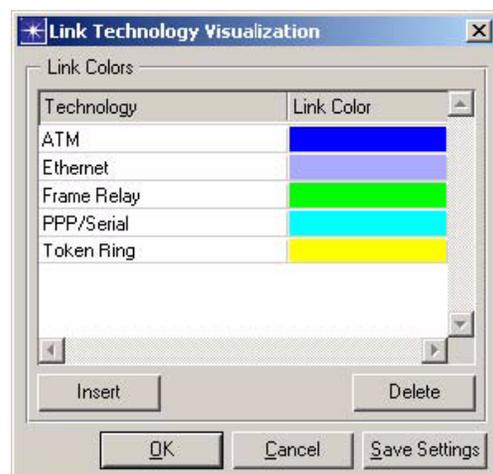
- Link Datarate—Designate the colors to use by data rate when visualizing link usage.

Figure 3-65 Link Datarate Visualization Dialog Box



- Link Datarate—Designate the colors to use by data rate when visualizing link usage.
- Link Technology—Designate the colors to use by technology when visualizing link usage.

Figure 3-66 Link Technology Visualization Dialog Box



- WLAN connectivity (in 3DNV)—View WLAN connectivity in 3DNV.
- Clear Visualization—Removes all network configuration visualizations from the workspace.
- Show Interactively—Show network configuration visualizations interactively.

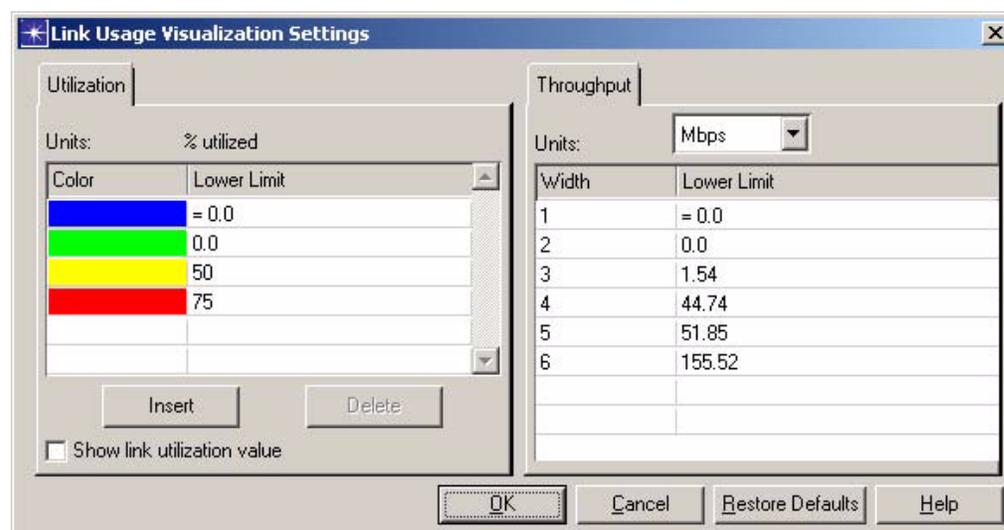
Visualize Link Usage

View > Visualize Link Usage > (option) •Control the display of link usage with the options discussed below.

Visualize Link Usage > Settings

View > Visualize Link Usage > Settings Designate your choice of link usage colors and thickness.

Figure 3-67 Link Visualization Settings Dialog Box



- **Color Settings table**—Lists the colors to use when visualizing link usage, and shows the utilization value that corresponds to each color. The Lower Limit number represents the percentage of the link that is utilized. Click Insert to add a new row to the table, or Delete to delete the selected row from the table.
- **Width Settings table**—Lists the link thickness to use when visualizing link usage. The Lower Limit number represents the throughput value that corresponds to each link thickness.
- **Preview button**—Applies the current settings to the network. This button appears only if link load visualization is enabled.
- **OK button**—Saves the specified settings and closes the dialog box.
- **Cancel button**—Closes the dialog box without saving the current settings.
- **Restore Defaults button**—Resets the dialog box to the default link visualization settings.

Visualize Link Usage
> Color by Link Usage

View > Visualize Link Usage > Color by Link Usage Set the link colors and thickness based on the link's peak, average, or current utilization (depending upon which one you choose in the Color links based on data from and using the drop-down list boxes) and throughput statistics respectively.

The recorded statistic values and the peak time are reported in the display that appears when you move your mouse over any link. These statistics were collected from a Capacity Planning Evaluation. The link statistics are computed taking into consideration the entire duration of the Capacity Planning Evaluation.

You must first run a Capacity Planning Evaluation before you can visualize utilization.

Figure 3-68 Color by Link Usage



Visualize Link Usage
> Clear Visualization

View > Visualize Link Usage > Clear Visualization Removes all link usage visualizations from the workspace.

Visualize Link Usage
> Show Legend

View > Visualize Link Usage > Show Legend Displays a legend that explains the current link usage visualization settings.

**Visualize Link Usage
> Reset Utilization
Value Label
Positions**

View > Visualize Link Usage > Reset Utilization Value Label Positions: Resets the utilization value label positions for link usage visualizations.

Set View for Subnet

View > Set View for Subnet > (option) Sub-menu allows you to select and apply a network view to the current subnet. You can apply a view to the current subnet only or to the entire network. If you add, remove, or change the properties of any network object, choose View > Refresh Workspace; this ensures that Project Editor reflects the current view accurately. When the scenario or subnetwork has a view applied, the view name appears in the title bar.

Set View for Network

View > Set View for Network > (option) Sub-menu allows you to select and apply a network view to the current network. If you add, remove, or change the properties of any network object, choose View > Refresh Workspace; this ensures that Project Editor reflects the current view accurately. When the scenario or subnetwork has a view applied, the view name appears in the title bar.

Scenarios Menu

New Scenario

Scenarios > New Scenario or press <Ctrl>+<Shift>+<N> Create a new blank scenario as described below:

Procedure 3-15 Creating a New Scenario

- 1 Select Scenarios > New Scenario.
- 2 Enter a name for the new scenario in the New Scenario Name field, and then click OK.

Figure 3-69 Creating a New Scenario



- The new scenario is blank and contains no data. The Scenario Builder indicates in the title bar the current open scenario.

End of Procedure 3-15

Duplicate Scenario **Scenarios > Duplicate Scenario** or press <Ctrl>+<Shift>+<D>: Create an exact duplicate of an existing scenario under a new name. Enter a name for the new scenario in the Duplicate Scenario Name field, and then click OK.

Figure 3-70 Duplicating a Scenario



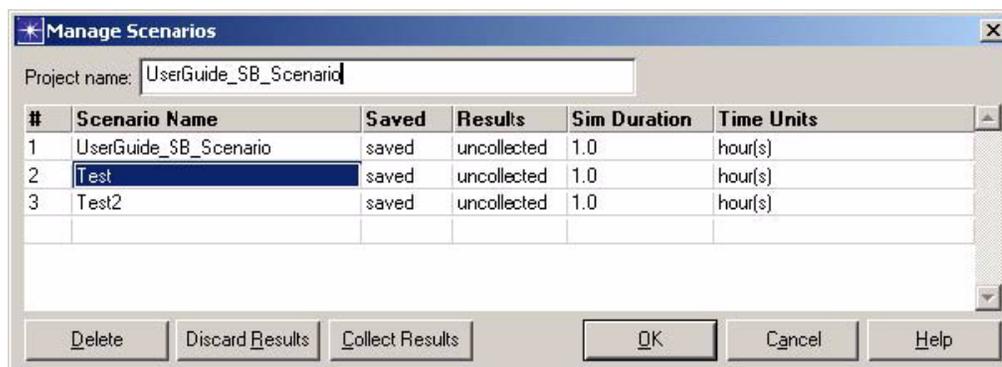
The new scenario is an exact copy of the current scenario, which can serve as the baseline scenario. The Scenario Builder indicates in the title bar the current open scenario.

Manage Scenarios **Scenarios > Manage Scenarios** View each scenario in the project and its status. Buttons and drop-down menus enable you to do the following:

- Add new scenarios,
- Duplicate scenarios,
- Delete scenarios,
- Run a simulation,
- Change the simulation duration,
- Delete results, and
- Reorder scenarios in the list.

Click in each table cell to edit its contents. Brackets indicate a change to the scenario is requested, and will be applied when you click OK.

Figure 3-71 Manage Scenarios Dialog Box



- Project Name field—Saves the project under a different name. If you enter a new name and save your project, the project is saved under the new name. This is similar to the File > Save Project As... feature.
- Scenario Table columns:
- #—Changes the order of the scenarios in the table.
 - Scenario Name—Lists the name of each scenario.
 - Saved—Shows if a scenario is saved or unsaved. Clicking within a cell also lets you delete a scenario.
 - Results—Shows the state of the results of each scenario simulation. "Uncollected" means that a probe file exists, but you have not run a simulation. "Out of date" means that the set of chosen results, simulation configuration, or network model has changed since the results file was created.
 - Sim Duration—Specifies the length of time to run the simulation. Use it with the Time Units column.
 - Time Units—Specifies the time units that apply to the simulation exam: seconds, minutes, hours, days, or weeks. Used with the Sim Duration column.
- Delete—Deletes scenarios that you select.
 - Discard Results—Deletes results from a scenario.
 - Collect Results—Runs the simulation and collects statistics you specify.
 - OK—Closes the Manage Scenarios dialog box, and runs any simulations that are waiting.
 - Cancel—Closes the Manage Scenarios dialog box without making changes.

Click in each table cell to edit its contents. Brackets indicate a change to the scenario is requested, and will be applied when you click OK.

Previous Scenario

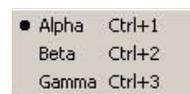
Scenarios > Previous Scenario or press <Ctrl>+<Up>: Display the previous scenario in the project. provides a quick way of surveying the relevant attributes of a number of network objects without generating a full report and searching for the rows of interest. It can also sometimes be more handy than, for example, opening the Edit Attributes dialog box for each of the objects of interest.

Next Scenario

Scenarios > Next Scenario or press <Ctrl>+<Down>: Display the next scenario in the project.

Switch To Scenario

Scenarios > Switch To Scenario Switch between the scenarios associated with a project, as a project can have scenarios. A black bullet indicates the current scenario open in the Scenario Builder. Select the desired scenario.

Figure 3-72 Switch Between Scenarios

When the project is saved, the scenario that is currently open is set as the default scenario.

Set Classification

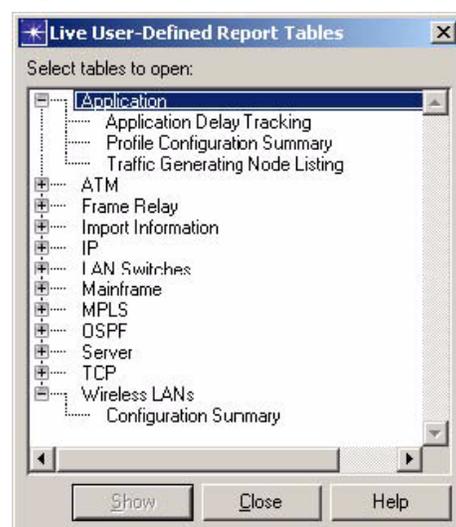
Scenarios > Set Classification Set the classification of a scenario. Every project in JCSS has a classification. The default classification is Unclassified. Select a classification from a drop-down list or specify a user-defined classification. Once the classification is set, the classification string will always appear at the top-left and bottom-right hand corners of the workspace.

User-Defined Reports

Scenarios > User-Defined Reports > (option) Sub-menu allows you to select to open live report table, or generate report from template.

User-Defined Reports > Open Live Report Table

Scenarios > User-Defined Reports > Open Live Report Table Open one or more user-defined report tables in “live” mode. This means the tables will not only show the corresponding values given the current selection set, but will also automatically repopulate themselves whenever the selection set changes. This provides a quick way of surveying the relevant attributes of a number of network objects without generating a full report and searching for the rows of interest. It can also sometimes be more handy than, for example, opening the Edit Attributes dialog box for each of the objects of interest.

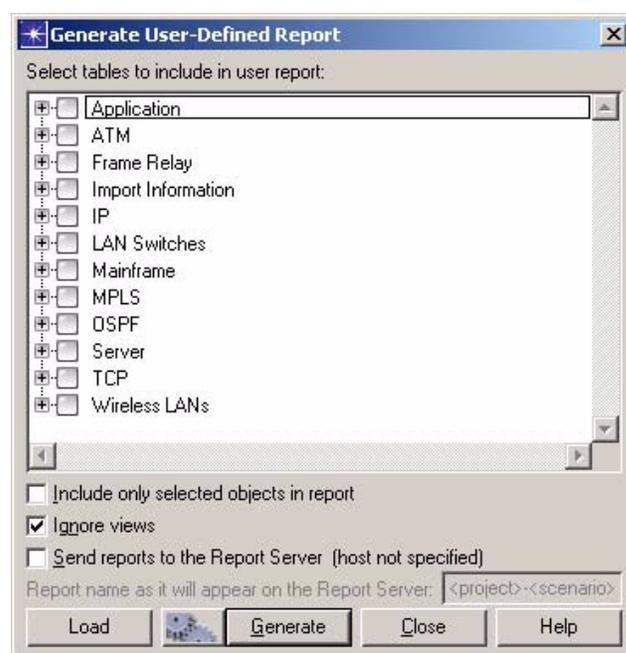
Figure 3-73 Live User-Defined Report Tables Dialog Box

- Select tables to open treeview—Specifies which table of which category should be opened. Expand the top-level category subtree and left-click on the desired table entry. You can select multiple tables by holding down the control key while left-clicking or by clicking-and-dragging a rectangular selection. Selecting a top-level category tree row itself does not imply selecting all or any of its tables; it is simply ignored.
- Show button—Builds and opens individual user-defined report table dialog boxes for each of the tables you have selected.
- Close button—Closes this dialog box but not any of the user-defined report tables you might have opened.

User-Defined Reports > Generate Report from Template

Scenarios > User-Defined Reports > Generate Report from Template Specify the content you want to include in your report.

Figure 3-74 Generate User-Defined Report Dialog Box



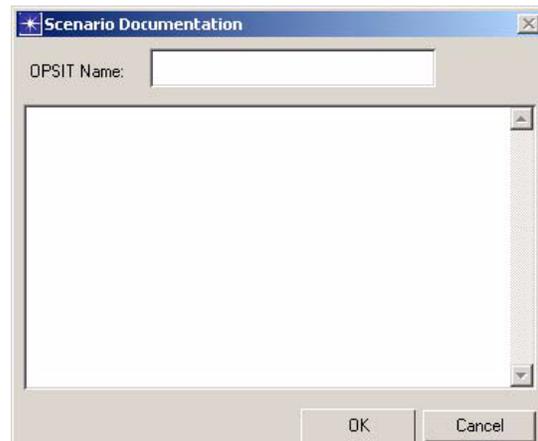
- Select tables to include in user report treeview—Specifies which tables of which categories should be included in the report. To select an entire category of tables, click on the top-level category entries. To select an individual table, expand the top-level category subtree and click on the table entry. Selected tables and categories show a green checkmark. Categories with some but not all of its tables selected display a green dot instead.
- Include only selected objects in report checkbox—Indicates that table data will be collected only for objects that are currently selected in the network.
- Ignore views checkbox—Indicates that table data will be collected even for objects that are not in the current view or views of the network.

- Send reports to the Report Server (<host>) checkbox—Indicates that reports should be sent to Report Server. This option is active only when a Report Server license is available.
 - Report name as it will appear on the Report Server text field—Specifies a name for the report in Report Server.
- Generate button—Generates the table data for all of the selected tables. Content settings are saved and will be reloaded the next time you generate a report.
- Close button—Closes the dialog box but retains any table selections.

Set Scenario Documentation

Scenarios > Set Scenario Documentation Access a free-form text box to enter scenario purpose, traffic, and topology notes to be stored with the scenario for documentation purposes. The scenario's Operational Scenario In Time (OPSIT) name is also entered here.

Figure 3-75 Scenario Documentation Dialog Box



- 1) Type desired text in the Scenario Documentation field.
- 2) Enter desired value in the OPSIT Name field.
- 3) Click OK.

DoDAF Integration

Scenarios > DoDAF Integration (option) Sub-menu allows you to integrate select Department of Defense Architecture Framework (DoDAF) views using the DoDAF editor or generate a Microsoft Visio diagram of a given view.

**DoDAF Integration >
DoDAF Editor...**

Scenarios > DoDAF Integration > DoDAF Editor... Integrate select Department of Defense Architecture Framework (DoDAF) views:

- OV-3 Operational Information Exchange Matrix—Information exchanged between nodes and the relevant attributes of that exchange such as media, quality, quantity, and the level of interoperability required.
- SV-6 Systems/Services Data Exchange Matrix—Specifies the characteristics of the system data exchanged between systems. This product focuses on automated information exchanges (from OV-3) that are implemented in systems. Non-automated information exchanges, such as verbal orders, are captured in the OV products only.

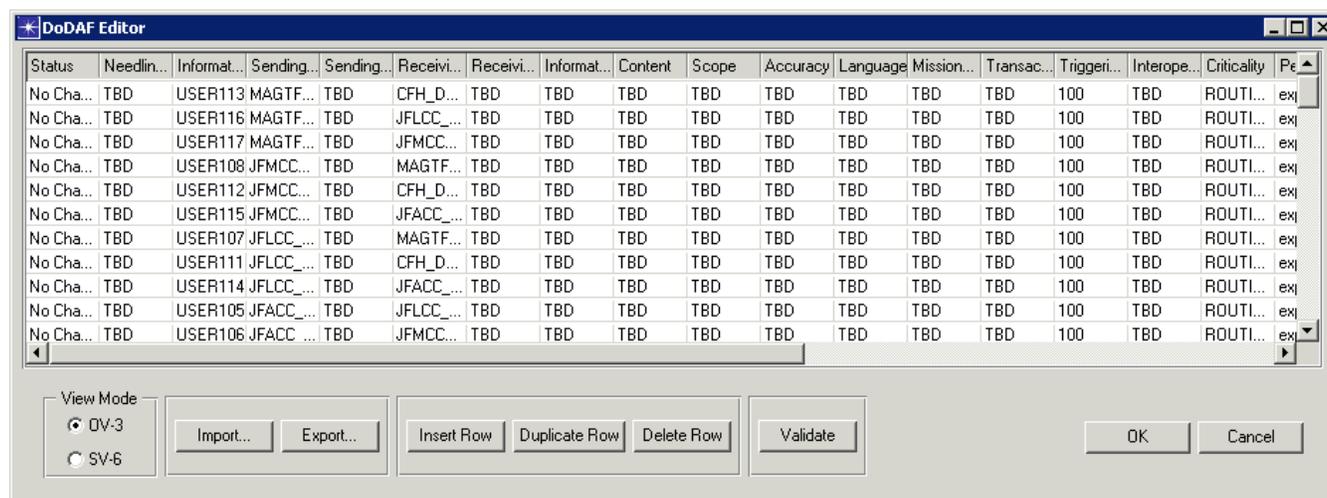
You can import the traffic (IERs) defined by either of the two views and use it in simulations. You can also modify the IERs and export the new traffic as OV-3 and SV-6 views.

- 1) Create a network model in JCSS that represents the topology (not the traffic) of the network to be modeled. The model should contain all the OPFACs will be used by the OV-3 and SV-6 views.

Note—You can still manually create any IERs which would not be imported from DoDAF documents.

- 2) Choose Scenarios > DoDAF Integration > DoDAF Editor.... The DoDAF Editor displays.

Figure 3-76 DoDAF Editor



The DoDAF Editor controls all operations regarding import, modification, and export of DoDAF-defined traffic. Each row of the opened table shows the properties of one of the existing IERs (if any) in the network.

- 3) Click Import to import the traffic defined in an OV-3 or SV-6 view. Select the format of the DoDAF view from the list of supported formats in the DoDAF Import Format dialog box, click Import, and then select the file containing the OV-3 or SV-6 view from the Open dialog box.

Note—IERs, threaded IERs, and standard applications can be managed in this editor, as well.

- 4) After the import, all the traffic defined in the DoDAF file displays in the table in the DoDAF Editor. Investigate the traffic and its properties and make changes, if desired.
- 5) Use the OV-3 and SV-6 radio buttons at the bottom-left corner of the DoDAF Editor to switch between the OV-3 and SV-6 display modes and see traffic properties from both view points.
- 6) Add or delete IERs, threaded IERs, or standard applications using the Insert Row, Duplicate Row, and Delete Row buttons.
- 7) Click OK. All IERs in the table are deployed in the network. Any required information for any traffic source, which may not have been specified in the DoDAF view and has not been corrected, will be filled by its default value by the system. Additionally, any devices or OPFACs specified in the table will be created automatically if they didn't exist in the scenario before.
- 8) Run the scenario and analyze the performance of the network under the traffic defined by the DoDAF views. Choose Scenarios > DoDAF Integration > DoDAF Editor... to open the table again, make changes to the IERs if necessary, and re-deploy the modified traffic in the network. Repeat the procedure in this way until satisfactory results are obtained.
- 9) Create a new OV-3 or SV-6 representation of the traffic in the network by selecting the desired view through the OV-3 and SV-6 radio buttons and clicking Export. Select from a list of supported formats for creating the DoDAF views.

**DoDAF Integration >
Generate Visio
Reports...**

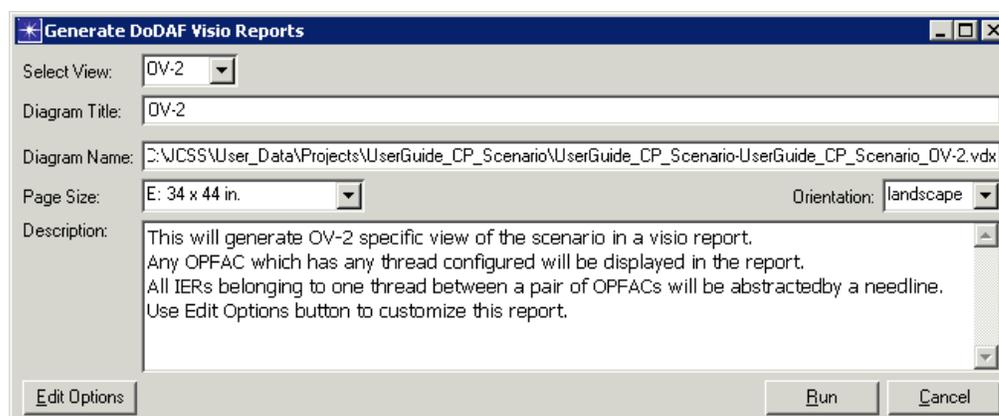
Scenarios > DoDAF Integration > Generate Visio Reports... Generate Microsoft Visio diagrams to represent a given view of the network. Supported views include the following:

- OV-6c—The OV-6c view provides a time-ordered examination of the information exchanges between participating operational nodes as a result of a particular scenario.
- SV-10c—The SV-10c view provides a time-ordered examination of the system data elements exchanged between participating systems (external and internal), system functions, or human roles as a result of a particular scenario.

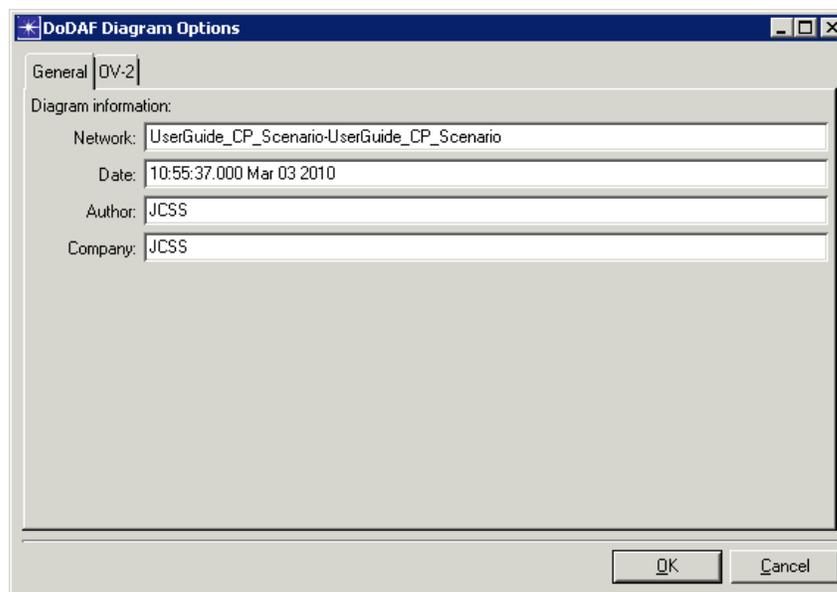
- **OV-2**—The OV-2 view graphically depicts the operational nodes (or organizations) with needlines between those nodes that indicate a need to exchange information. The graphic includes internal operational nodes (internal to the architecture) as well as external nodes.
- **SV-2**—The SV-2 view depicts pertinent information about communications systems, communications links, and communications networks. SV-2 documents the kinds of communications media that support the systems and implements their interfaces as described in SV-1. Thus, SV-2 shows the communications details of SV-1 interfaces that automate aspects of the needlines represented in OV-2.

- 1) Select Scenarios > DoDAF Integration > Generate Visio Reports.... The Generate DoDAF Visio Reports dialog box appears.

Figure 3-77 Generate DoDAF Visio Reports Dialog Box



- 2) Select the view for which you want to generate a report.
- 3) Change the default Diagram Title, if desired.
- 4) Change the default Diagram Name and output location, if desired.
- 5) Change the Page Size and Orientation, if desired.
- 6) Click the Edit Options button if you wish to change the diagram properties. The General tab contains basic elements for the diagram, while the view-specific tab contains view-specific elements, such as line thickness and Subnet/Node Icons specification. Click OK when done editing to close the Edit Options dialog box and return to the DoDAF Visio Reports dialog box.

Figure 3-78 DoDAF Visio Reports Edit Options

7) Click Run to generate the Visio diagram.

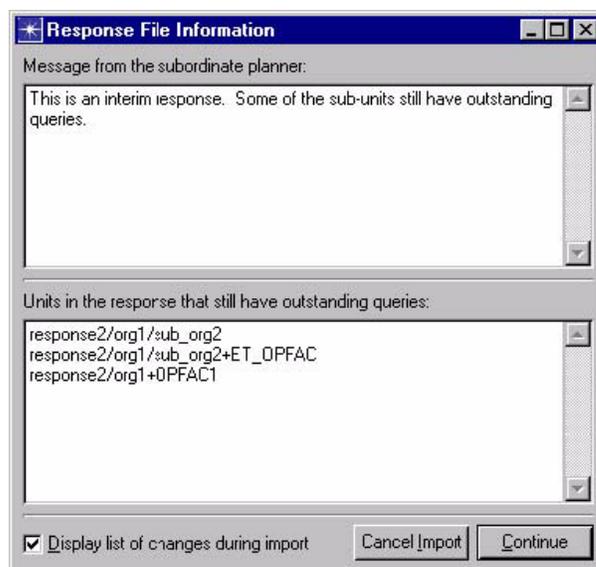
Import Scenario

Scenarios > Import Scenario > (option) Import scenarios from the sources discussed below.

Import Scenario > Subordinate Response

Scenarios > Import Scenario > Subordinate Response The Lead Planner imports subordinate response files from the Subordinate Planners into the original scenario.

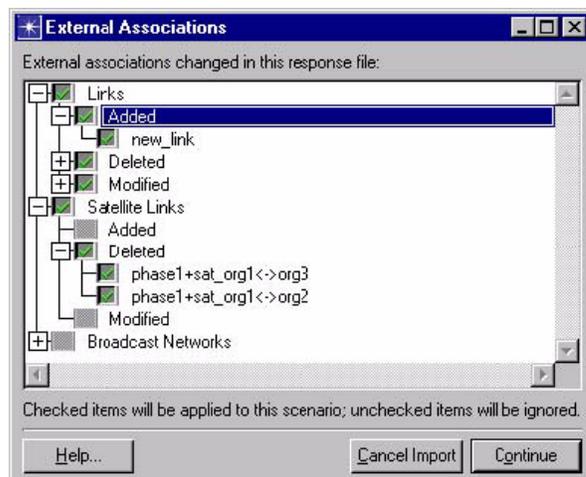
- 1) Open the original project (or the subordinate query file if you are an Intermediate Planner.)
- 2) Select Scenarios > Import Scenario > Subordinate Response, and choose a response file received from a subordinate. The dialog box below displays.

Figure 3-79 Response File Information Dialog Box

The edit area at the top of the dialog box will display the message that the Subordinate Planner entered when generating the response (this will contain the string "<none>" if the subordinate did not enter a message). The other edit area will display the hierarchical names of the units in the subordinate response that still have outstanding queries (once again this will contain the string "<none>" if there are no such units). These are shown to the Lead Planner because they are an indication that the response is an interim response. The Display list of changes during import checkbox controls whether or not the Changes dialog box will appear, as discussed later in this section.

- 3) Click the Continue button to proceed with the import. During the import, if the subordinate has made any changes to external associations (links, satellite links, and broadcast networks that connect an editable unit to a locked unit), the Lead Planner will be given options to import or ignore the changes. This will be accomplished through a treeview dialog box that breaks down the different types of external associations according to the type of change (add, delete, or modify).

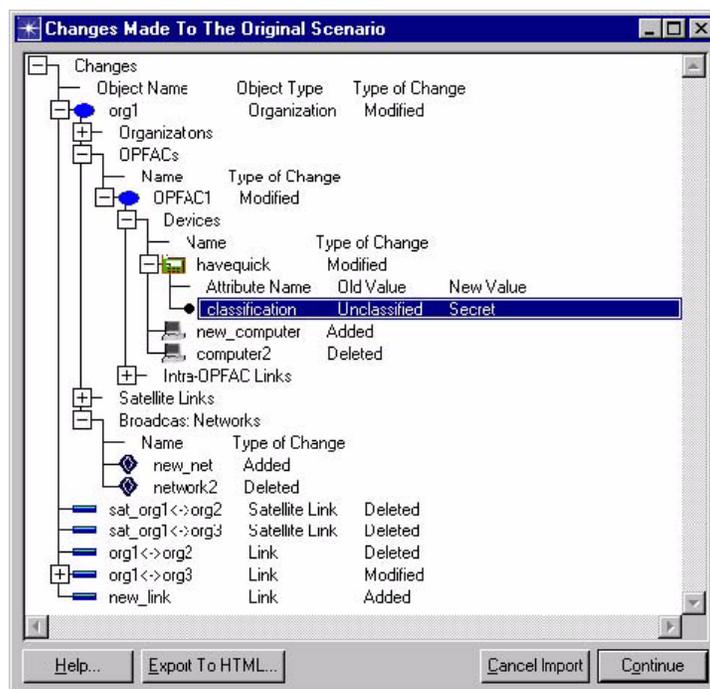
Figure 3-80 External Associations



Items that are checked off will be imported, and unchecked items will be ignored. All items will be checked by default when the dialog box opens. Note that this dialog box will not appear if no changes were made to external associations.

- 4) Proceed with the import by clicking the Continue button. If the Display list of changes during import checkbox was checked on the Message dialog box, the next step in the import process will be to display the Changes Made to the Original Scenario dialog box, which is shown below.

Figure 3-81 Changes Made to the Original Scenario



Note that this dialog box will display directly after the Response File Information dialog box if there were no modifications to external associations. Otherwise, it will display after clicking the Continue button on the External Associations dialog box. The main feature of this dialog box is a treeview that displays all of the changes that will be made to the Lead Planner's scenario if the import is completed. For each object that was changed by the subordinate, the treeview lists whether it was added, deleted, or modified. If it was modified, you will be able to expand the entry to see more information about the modifications that were made. For most objects, this will be a list of the attributes that changed, along with the old and new values. However, organizations and OPFACs are more complex since they can have child objects. So, expanding one of those entries will show a listing of the types of child objects that were changed, and inside each of those will be more information about the exact changes that were made to the child objects. The above example shows how the individual changes within an organization can be viewed.

- a) The contents of the treeview can be exported to HTML by clicking the Export To HTML button. Clicking the Cancel Import button will stop the import process.
- 5) Click the Continue button to perform the actual import. After the import is complete, a "Subordinate Response import complete" message will be printed in the message buffer.

After this import process is repeated for each of the subordinate response files, the Lead Planner will have a consolidated view of the entire scenario based on the requirements specified by his subordinates.

**Import Scenario >
From
JCSS/NETWARS**

Scenarios > Import Scenario > From JCSS/NETWARS Combine the organization structures of different scenarios automatically, thereby eliminating the need to duplicate another scenario's organization structure manually. The organization structure of the imported scenario is added to the top level of the current scenario.

- 1) In the Import Scenario dialog box, select the scenario for which the organization structure is to be imported.
- 2) Click Open. The newly added organization structure displays both in the treeview and in the workspace.

**Import Scenario >
From OPNET
Modeler**

Scenarios > Import Scenario > From OPNET Modeler Import scenarios already developed in the OPNET Modeler and create the JCSS specific objects/hierarchy. The location information is intact in the newly created OPFACs and organizations. The new structure is below the newly created scenario to which the modeler scenario is imported.

- 1) Create a new Scenario.
- 2) Select Scenarios > Import Scenario > From OPNET Modeler.

- 3) In the subsequent Import Scenario from OPNET Modeler dialog box, select the scenario for which the organization structure is to be imported.
- 4) When prompted to save OPFACs, click OK. Saving the OPFACs is necessary to reuse the OPFACs in other scenarios and to run simulation. The newly added organization structure displays both in the treeview and in the workspace.

***Import Scenario >
From XML***

Scenarios > Import Scenario > From XML Import a scenario in XML format into JCSS.

- 1) Create a new project (or start with an already existing project). Import Scenario > TNAPS to XML
- 2) Choose Scenarios > Import Scenario > From XML.
- 3) Select the XML file to be imported and then click Open to start the import process. At the end of this process, the scenario represented by the XML file has been imported into the current project.

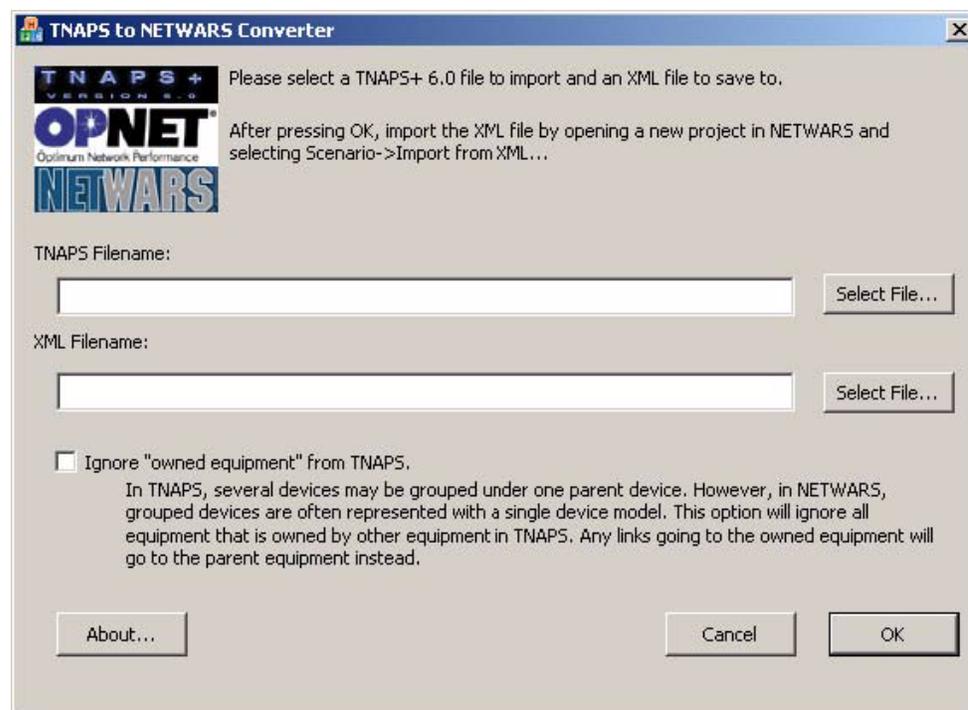
***Import Scenario >
TNAPS to XML***

Scenarios > Import Scenario > TNAPS to XML Convert a TNAPS file into an equivalent JCSS XML representation of the network.

The converter reads transmission nodes, data network, circuit switch network, links, circuits, transmission node layout, site mux plan, site equipment inventory, mode and link properties/configurations, and ports. It does not read message switch network, local long circuits, unrouted circuits, circuits with sub-groups and sub-channels, and TNAPS annotations.

- 1) Select Scenarios > Import Scenario > TNAPS to XML to run the TNAPS converter. The TNAPS to NETWARS Converter dialog box displays.

Figure 3-82 TNAPS to NETWARS Converter Dialog Box



- 2) Select a TNAPS 6.0 file to open and an XML filename to which you want to save, and then click OK.

The TNAPS file converts into XML, and a message box displays to inform you of its success. Click OK to close the message box.

- 3) Now you can create a new project in the Scenario Builder and import the new XML file into it (select Scenarios > Import Scenario > From XML.)

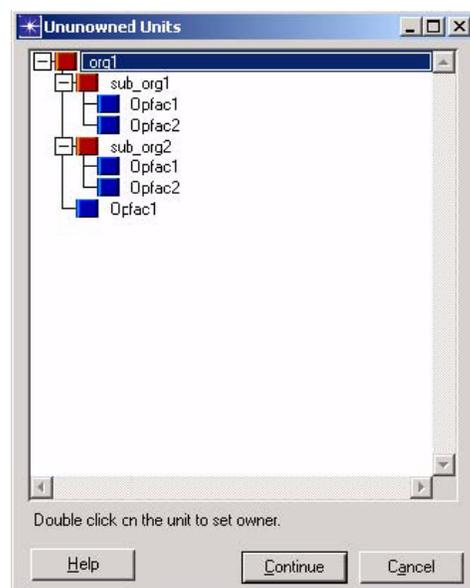
Export Scenario

Scenarios > Export Scenario > (option): Export scenarios to the formats discussed below.

Export Scenario > Subordinate Query

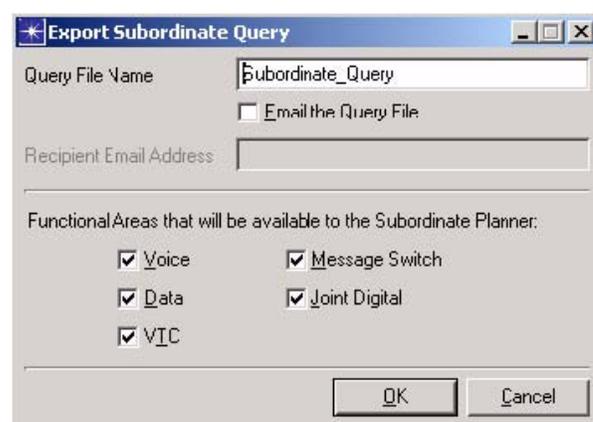
Scenarios > Export Scenario > Subordinate Query Export a subordinate query file and send it to Subordinate Planners to get the subscriber requirements. Various Subordinate Planners fill different portions of the scenario. The Lead Planner marks portions of the scenario to be editable by a Subordinate Planner by setting owner information on units. Units will be editable for the subordinate if the organization of the Subordinate Planner matches the organization field in the owner information. Otherwise, units will be locked; therefore, the Lead Planner must remember to set the correct owner information on units before exporting the subordinate query file.

- 1) If the scenario contains any units that do not have owner information set, the planner will be warned and given a chance to set the owner information before the subordinate query file is created. The dialog box shown below contains un-owned units in the current scenario in a treeview format.

Figure 3-83 Unowned Units Dialog Box

Double-click on a unit to set owner information, which will display the Set Owner dialog box. Expand the treeview on an organization and set owner on individual sub-units. Note that you can continue the export process with un-owned units in the scenario, however, those un-owned units will become locked to the Subordinate Planners.

- 2) Specify a name for the subordinate query file, option to automatically send the subordinate query file via email, and the functional areas that will be available to the Subordinate Planner in the following dialog box.

Figure 3-84 Export Subordinate Query File

The Lead Planner has the option in the dialog box to email the exported subordinate query to a recipient. If the email option is selected and the recipient's email address specified, not only is the file saved to the disk, but it is sent to the Lead Planner's default email application using MAPI. If the email application is configured for MAPI server support, an email message is created addressed to the recipient's email address with the subordinate query file attached to the email. Preview the message and click the Send

button. If the email application is configured for MAPI to automatically send the email, the email is sent without the preview option. Much of the behavior of MAPI is dependent on the particular email application and its MAPI configuration. If the auto-email option is not selected, send it to the Subordinate Planners by whatever means available, such as FTP or use a location on a shared network drive.

- 3) Click OK; the subordinate query file is written to the disk and is located in <JCSS path>\User_Data\Projects\<current project>\<current phase>\Subordinate_Queries\.
- 4) Save the project directly by clicking the Yes button. Once the subordinate query file has been generated, all units with yellow marked icons will change to an orange folder icon indicating that there's an outstanding query.

Figure 3-85 Outstanding Query in a Scenario

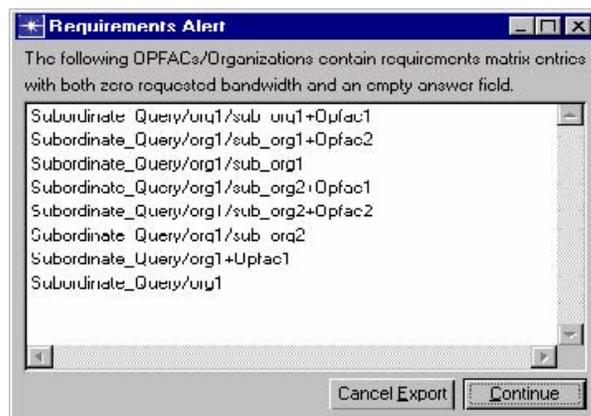


**Export Scenario >
Subordinate
Response**

Scenarios > Export Scenario > Subordinate Response Send the scenario back to the Lead Planner after the Subordinate Planner has elaborated the network and specified the subscriber requirements.

- 1) A check will be performed to see if there are any empty Requirements Matrix entries on any editable units. Any Requirements Matrix entries that have zero requested bandwidth and an empty answer field are considered to be empty. If there are empty entries, an alert dialog box as shown below will display.

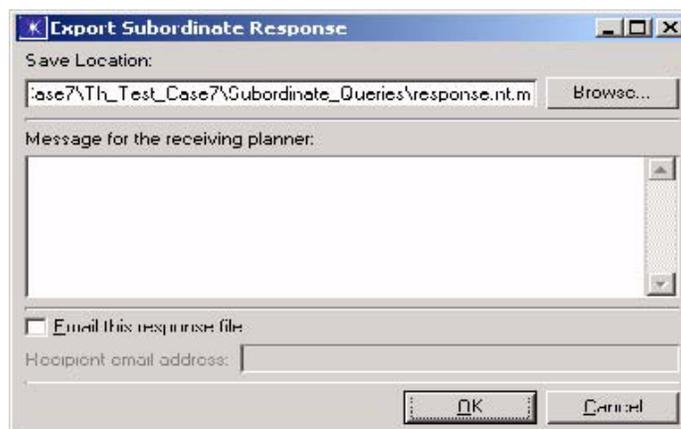
Figure 3-86 Alert Dialog Box when Exporting Response



This dialog box alerts the Subordinate Planner with a list of organizations and OPFACs that have at least one empty Requirements Matrix entry. Continue the export process or cancel the export.

- 2) If the Subordinate Planner clicks the Continue button, or if there were no empty fields, the Export Subordinate Response dialog box displays.

Figure 3-87 Export Subordinate Response Dialog Box



This dialog box serves three purposes: specify the save location for the response file, enter a message for the receiving planner, and email the response file.

- 3) To specify the save location, either type the full path in the Save Location field, or click the Browse button and choose the path from the resulting file chooser.
- 4) To enter a message for the receiving planner, type the message in the Message for the receiving planner field. The message will be shown to the receiving planner during the response import process.
- 5) To automatically email the response file that is generated, check the Email this response file checkbox and enter the destination email address in the Recipient email address field. If the recipient's email address is specified, MAPI is used to create a new email message in the Subordinate Planner's default email application. The subordinate response file is attached to this email. Depending on the MAPI configuration of the default email application, the email may or may not be previewed by the Subordinate Planner. Much of the behavior of MAPI is dependent on the particular email application and its MAPI configuration. If the auto-email option is not selected, send it to the Subordinate Planners by whatever means available, such as FTP or use a location on a shared network drive.
- 6) Click OK.

Export Scenario > To XML

Scenarios > Export Scenario > To XML Export the contents of a scenario to XML. This allows for easy transfer of projects and scenarios between computers. The XML file is written to the folder that contains the scenario file. The exported XML file contains all the information in the scenario, except for some traffic information.

Export Scenario > To JNMS

Scenarios > Export Scenario > To JNMS Export the scenario to JNMS.

Export Scenario > To Visio

Scenarios > Export Scenario > To Visio Export the scenario to Visio XML. A <scenario name>.vdx file is created in the scenario folder.

Network Difference Report

Scenarios > Network Difference Report > (option) Use the network difference report to identify real-world network differences between two network scenarios, such as network protocol and device configuration. Network difference reports are useful when you want to know exactly how a network has evolved from one scenario to the next or how networks imported from different sources vary.

Network Difference Report > Generate Report

Scenarios > Network Difference Report > Generate Report Create a web report of the network topology changes between two scenarios.

Figure 3-88 Configure/Run Network Differences Dialog Box



- Report Title field—Specify the title for the report generated.
- Current field—Indicates the name of the current project/scenario.
- Previous drop-down lists—Specify the project/scenario that you want to compare to the current one.
- Send report to Report Server checkbox—Select this to send this report to the Report Server specified in the user's report_server_name preference. This is disabled if no Report Server is specified.
- Automation—Opens a dialog box to specify settings for reports generated by automation. This option is only available to users with Automation module licenses.
- Run—Creates a web report of the network topology changes between the current and specified scenarios.
- Cancel—Closes the dialog box without saving any changes.

Network Difference Report > Launch Last Web Report

Scenarios > Network Difference Report > Launch Last Web Report Opens the last network difference report that you generated.

Network Difference Report > Open Network Difference Log

Scenarios > Network Difference Report > Open Network Difference Log: Open the network difference log for the last network difference report that you generated.

Reports

Scenarios > Reports > (option) Access the reports to view summary information in a table format. These options, as well as steps for working with these features, are discussed below.

Reports > CCSD Summary

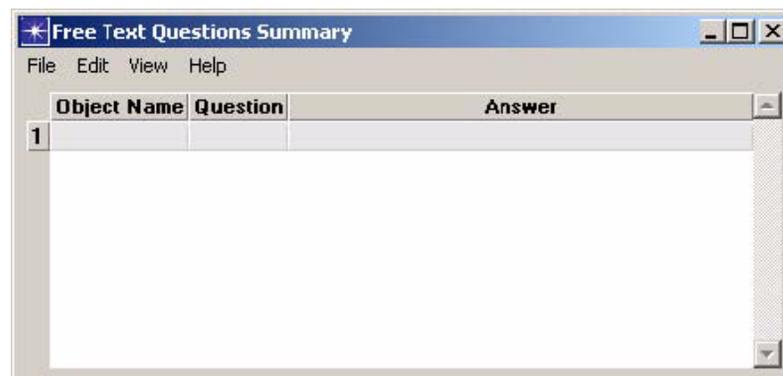
Scenarios > Reports > CCSD Summary View a CCSD Summary report.

Figure 3-89 CCSD Summary Report

	Name	Type	Source Subscriber	Destination Subscriber	Source Device & Port	Destina
1	Promina - Promina	Promina	CFH-DATA.cis...	JFSOCC-DATA.ci...	CFH.Promina.l_pt...	JFSOCC
2	Promina - Promina 1	Promina	CFH-DATA.cis...	JFACC-DATA.cisc...	CFH.Promina.l_pt...	JFACC.P
3	Promina - Promina 2	Promina	CFH-DATA.cis...	JFLCC-DATA.cisc...	CFH.Promina.l_pt...	JFLCC.P
4	Promina - Promina 3	Promina	CFH-DATA_2...	JFMCC-DATA.cis...	CFH.Promina.l_pt...	JFMCC.F
5	Promina - Promina 4	Promina	CFH-DATA_2...	MAGTF-DATA.cis...	CFH.Promina.l_pt...	MAGTF.I
6	Promina - Promina 5	Promina	CFH-VOICE.ttc...	JFSOCC-VOICE.ttc...	CFH.Promina.l_pt...	JFSOCC
7	Promina - Promina 6	Promina	CFH-VOICE.ttc...	JFACC-VOICE.ttc...	CFH.Promina.l_pt...	JFACC.P
8	Promina - Promina 7	Promina	CFH-VOICE.ttc...	JFLCC-VOICE.ttc...	CFH.Promina.l_pt...	JFLCC.P
9	Promina - Promina 8	Promina	CFH-VOICE.ttc...	JFMCC-VOICE.ttc...	CFH.Promina.l_pt...	JFMCC.F
10	Promina - Promina 9	Promina	CFH-VOICE.ttc...	MAGTF-VOICE.ttc...	CFH.Promina.l_pt...	MAGTF.I
11	Promina - Promina 10	Promina	JFACC-DATA.c...	JFLCC-DATA.cisc...	JFACC.Promina.l...	JFLCC.P
12	Promina - Promina 11	Promina	JFACC-DATA.c...	JFMCC-DATA.cis...	JFACC.Promina.l...	JFMCC.F
13	Promina - Promina 12	Promina	JFLCC-DATA.c...	MAGTF-DATA.cis...	JFLCC.Promina.l...	MAGTF.I

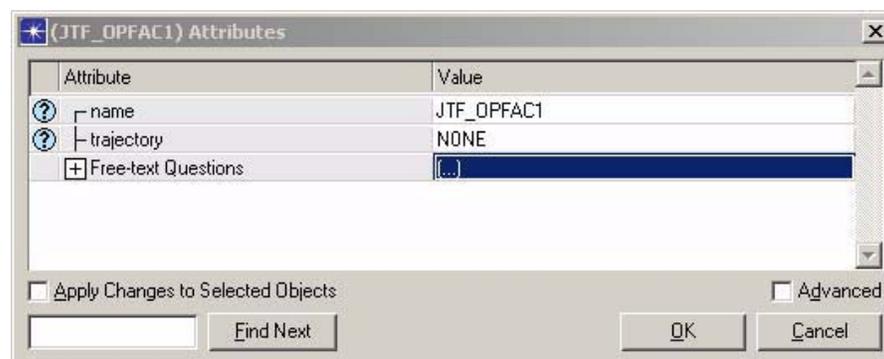
Reports > Free-Text Questions

Scenarios > Reports > Free-Text Questions View a summary report of free-text questions attached to organizations, OPFACs, and devices. This provides a mechanism for the planners to communicate with each other using free text. This is especially useful when a Subordinate Planner wants to communicate with a Lead Planner since the mission analysis question interface cannot import back new questions added by the Subordinate Planner.

Figure 3-90 Free-Text Questions Report


Object Name	Question	Answer
1		

These questions and answers are stored as attributes on the objects and can be accessed by right-clicking on the object and selecting Edit Attributes and clicking the Value column next to the Free-Text Questions attribute.

Figure 3-91 Free-text Questions Stored as Object Attributes


Attribute	Value
name	JTF_OPFAC1
trajectory	NONE
Free-text Questions	(...)

Apply Changes to Selected Objects
 Advanced

Find Next
 OK Cancel

Reports > IP Addresses

Scenarios > Reports > IP Addresses Examine the IP addresses for all connected interfaces on the devices. The IP Address Summary report contains the device name, interface name, IP address and subnet mask information. Buttons at the bottom of the table export the contents to an Excel file or to a HTML file, and print the contents to the default printer, respectively. You cannot edit any of the fields in this table.

Figure 3-92 IP Address Summary Report

Device Name	Interface	IP Address	Subnet Mask
Alpha/JTF_Org_Company+JTF...	IF0	Auto Assigned	Auto Assigned
Alpha/JTF_Org_Company+JTF...	IF1	Auto Assigned	Auto Assigned
Alpha/JTF_Org_Company+JTF...	IF2	Auto Assigned	Auto Assigned
Alpha/JTF_Org_Company+JTF...	IF3	Auto Assigned	Auto Assigned
Alpha/JTF_Org_Company+JTF...	IF4	Auto Assigned	Auto Assigned
Alpha/JTF_Org_Company+JTF...	IF5	Auto Assigned	Auto Assigned
Alpha/JTF_Org_Company+JTF...	IF6	192.0.0.2	255.255.255.0
Alpha/JTF_Org_Company+JTF...	IF7	192.0.1.2	255.255.255.0
Alpha/JTF_Org_Company+JTF...	IF8	Auto Assigned	Auto Assigned
Alpha/JTF_Org_Company+JTF...	IF9	Auto Assigned	Auto Assigned
Alpha/JTF_Org_Company+JTF...	IF10	Auto Assigned	Auto Assigned
Alpha/JTF_Org_Company+JTF...	IF11	Auto Assigned	Auto Assigned
Alpha/JTF_Org_Company+JTF...	IF0	Auto Assigned	Auto Assigned
Alpha/JTF_Org_Company+JTF...	IF1	Auto Assigned	Auto Assigned

Reports > Links

Scenarios > Reports > Links View a list of all links in the scenario along with some of the key attributes like name, bandwidth, type of link, etc. Buttons at the bottom of the table export the contents to an Excel file or to a HTML file, and print the contents to the default printer, respectively.

Figure 3-93 Links Summary Report

Name	Source	Destination	Bandwidth (Kbps)	Type	Num Voi...	Voice Chann...	Planning
SDN-SIPRNET_CI...	Execution/BAH...	Execution/DISN+	44736.00	T3	0	16.00	No
CFH_Promina-JFS...	Execution/CFH...	Execution/JFSOC...	1544.00	promina_wan_link	0	16.00	No
CFH-BAHRAIN_S...	Execution/CFH...	Execution/BAHRA...	1024.00	Bent Pipe	0	16.00	Not Applicable
CFH-JFACC	Execution/CFH...	Execution/JFACC...	512.00	Bent Pipe	0	16.00	Not Applicable
CFH-JFMCC	Execution/CFH...	Execution/JFMCC...	256.00	Bent Pipe	0	16.00	Not Applicable
CFH-JFLCC	Execution/CFH...	Execution/JFLCC+	256.00	Bent Pipe	0	16.00	Not Applicable
LFH-MAG I F	Execution/LFH...	Execution/MAG I F...	256.00	Bent Pipe	U	16.00	Not Applicable
BAHRAIN-SIPRNET	Execution/BAH...	Execution/BAHRA...	10000.00	10BaseT	0	16.00	No
DISN-Email-SIPR...	Execution/DISN...	Execution/DISN+	44736.00	T3	0	16.00	No
DISN-NIMA_Serv...	Execution/DISN...	Execution/DISN+	44736.00	T3	0	16.00	No
CFH-Promina-SIP...	Execution/CFH...	Execution/CFH+Pr...	256.00	wire_ptp	0	16.00	No
CFH-SIPRNET_R...	Execution/CFH...	Execution/CFH+SI...	256.00	wire_ptp	0	16.00	No

Reports > Requirements

Scenarios > Reports > Requirements View a summary report of the bandwidth requirements for all the organizations in the scenario. When this table is launched, there is one row for every top-level organization in the scenario. Each row has the name of the organization followed by the required bandwidth for each service type. The default functional area is Voice.

- 1) View the requirements summary for a different functional area by clicking on the appropriate button.

Figure 3-94 Requirements Summary Report

Unit/Device	SIPRNET	NIPRNET	CwAN	JWICS	GBS
Nw_Top/BAHRAIN	0	0	0	0	0
Nw_Top/DSCS_IO	0	0	0	0	0
Nw_Top+Promina_Utility	0	0	0	0	0
Nw_Top/DISN	0	0	0	0	0
Nw_Top/CFH	0	0	0	0	0
Nw_Top/JFACC	0	0	0	0	0
Nw_Top/JFMCC	0	0	0	0	0
Nw_Top/JFSOCC	0	0	0	0	0
Nw_Top/JFLCC	0	0	0	0	0
Nw_Top/MAGTF	0	0	0	0	0
Nw_Top+Configuration OPFAC	0	0	0	0	0

* The bandwidth values are displayed in Kbps

Voice Services Data Services VTC Services Message Services Joint Digital Network

Create Conflict Report Export to File Export to HTML Print Show Unit Close

- Click on the organization name to view its sub-organizations examine a breakdown of the bandwidth requirement for each sub-organization.
- Export the contents of the table to an Excel spreadsheet, to HTML, or send it directly to a printer.

Reports > SLD Summary

Scenarios > Reports > SLD Summary View a list of all SLDs in the scenario along with some of the key attributes like name, location, equipment, etc. Buttons at the bottom of the table export the contents to an Excel file or to a HTML file, and print the contents to the default printer, respectively.

Figure 3-95 SLD Summary Report

	SLD	Endpoint A Name & Port	Endpoint B Name & Port	Link Type	Data Rate (Kbps)
1	FAA01001	NCTAMSPAC_F...	NCTAMSPAC_Far...	wire_ptp	1152.030000
2	FAA02001	NCTAMSPAC_F...	NCTAMSPAC_Far...	wire_ptp	256.030000
3	FAA03001	NCTAMSPAC_F...	NCTAMSPAC_Far...	PPP_DS1	1544.030000
4	FAA04001	NCTAMSPAC_F...	NCTAMSPAC_Far...	wire_ptp	786.030000
5	FAA05001	NCTAMSPAC_F...	NCTAMSPAC_Far...	wire_ptp	256.030000
6	FAA06001	NCTAMSPAC_F...	NCTAMSPAC_Far...	wire_ptp	512.030000
7	FAA10002	JTF_HQ.JTF.L...	JTF_HQ.DATA_C...	100BaseT	100000.030000
8	FBB01001	NAVFOR.NAVF...	NAVFOR.DATA_...	wire_ptp	786.030000
9	FBB02001	NAVFOR.NAVF...	NAVFOR.VOICE_...	wire_ptp	256.030000
10	FBB03001	NAVFOR.NAVF...	NAVFOR.VTC_Co...	wire_ptp	256.030000

Reports > User-Defined Reports

Scenarios > Reports > User-Defined Reports > (option) Select from these options to open user-defined reports in live mode, and specify the content you want to include in your reports.

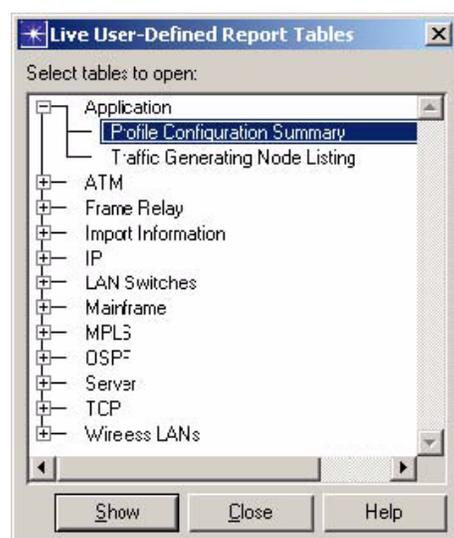
**Reports >
User-Defined
Reports > Open Live
Report Table...**

Scenarios > Reports> User-Defined Reports > Open Live Report Table... Open one or more user-defined report tables in live mode. This means the tables will not only show the corresponding values given the current selection set, but will also automatically repopulate themselves whenever the selection set changes. This provides a quick way of surveying the relevant attributes of a number of network objects without generating a full report and searching for the rows of interest. It can also sometimes be more handy than, for example, opening the Edit Attributes dialog box for each of the objects of interest.

Note—This functionality is supported independently of the Generate Report from Template... functionality, so it will neither create a new report nor discard any existing report information.

- 1) Select Scenarios > Reports> User-Defined Reports > Open Live Report Table... The Live User-Defined Report Tables dialog box displays.

Figure 3-96 Live User-Defined Report Tables Dialog Box

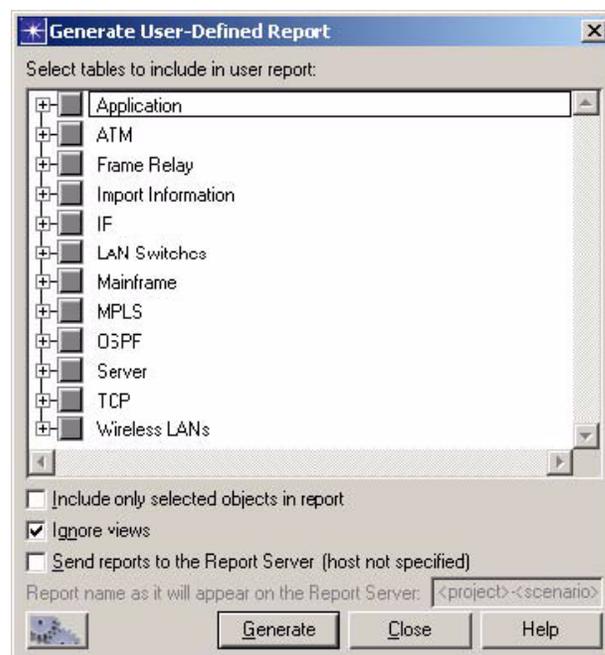


- 2) Expand the top-level category subtree and left-click on the desired table entry to select it for opening. You can select multiple tables by holding down the <Ctrl> key while left-clicking or by clicking-and-dragging a rectangular selection. Selecting a top-level category tree row itself does not imply selecting all or any of its tables; it is simply ignored.
- 3) Click Show to build and open individual user-defined report table dialog boxes for each of the tables you have selected. Click Close to close this dialog box but not any of the user-defined report tables you might have opened.

**Reports > Generate
Report from
Template...**

Scenarios > Reports> User-Defined Reports > Generate Report from Template... Specify the content you want to include in your report.

- 1) Select Scenarios > Reports> User-Defined Reports > Generate Report from Template... The Generate User-Defined Report dialog box displays.

Figure 3-97 Generate User-Defined Report Dialog Box

- 2) Specify which tables of which categories should be included in the report by selecting them in the treeview. To select an entire category of tables, left-click on the top-level category entries. To select an individual table, expand the top-level category subtree and left-click on the table entry. Selected tables and categories show a green check mark. Categories with some but not all of its tables selected will display a green dot instead.
- 3) Click the Include only selected objects in report checkbox if you want table data to be collected only for objects that are currently selected in the network.
- 4) Click the Ignore views checkbox if you want table data to be collected even for objects that are not in the current view or views of the network.
- 5) Click the Send reports to the Report Server (<host>) checkbox if you want to send reports to the Report Server. This option is active only when a Report Server license is available.
 - a) Specify a name for the report in the Report Server in the Report name as it will appear on the Report Server text field.
- 6) Click Generate to generate the table data for all of the selected tables. Your content settings are saved and will be reloaded the next time you generate a report.
- 7) Click Close to close this dialog box but retain any table selections.

**Object/Attribute
Difference Report**

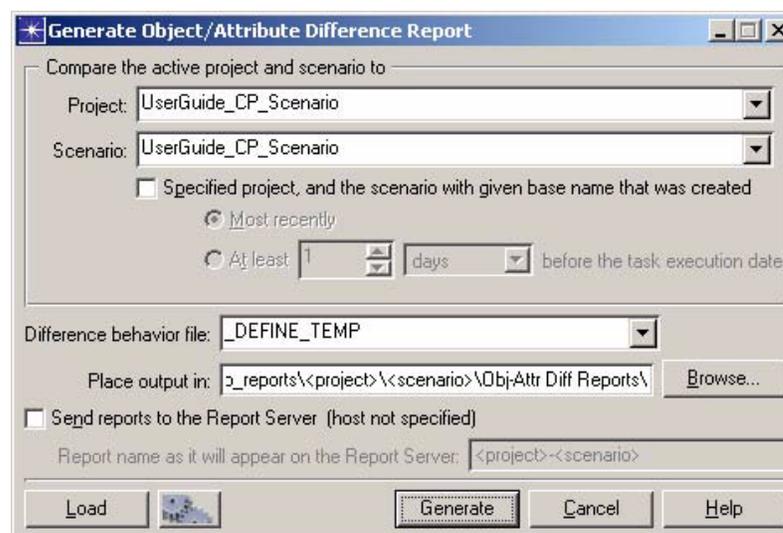
Scenarios > Object/Attribute Difference Report > (option) Use the object/attribute difference report to identify differences between two networks that you want to compare.

**Object/Attribute
Difference Report >
Generate Report**

Scenarios > Object/Attribute Difference Report > Generate Report Specify the networks that you want to compare, and generate an object/attribute difference report.

- 1) Select Scenarios > Object/Attribute Difference Report > Generate Report. The Generate Object/Attribute Difference Report dialog box displays.

Figure 3-98 Generate Object/Attribute Difference Report Dialog Box



- 2) Compare the active project and scenario to drop-down menus—Specify which project and scenario to use when generating the report. Begin by selecting a project from the Project drop-down menu, and then use the Scenario drop-down menu to choose the scenario. The selected scenario is always compared to the currently active scenario.
- 3) Specified project, and the scenario with given base name that was created checkbox—Indicates that the scenario should be chosen based on the specified name and the date the scenario was created. If the checkbox is not selected, the scenario is chosen based on the name chosen in the Scenario drop-down menu. This option is available only to users with an Automation module license.
- 4) Most recently radio button—Indicates that the most recent version of the scenario should be used for the comparison. This option is available only to users with an Automation module license.

- 5) At least radio button—Indicates the version of the scenario that should be used for the comparison. OPNET will select the scenario that was created some specified time period ago. The time period can be expressed in days or weeks. For example, if a user sets the time period to 1 week, OPNET will choose the version of the scenario that was created 1 week before the difference report generation began. This option is available only to users with an Automation module license.
- 6) Difference behavior file drop-down menu—Specify the behavior file that should be used when generating the report. Behavior files control which objects and attributes are included or omitted when comparing the two scenarios. To view a behavior file, select Scenarios > Object/Attribute Difference Report > Define Report.
- 7) Place output in—Specify where the report will be saved.
- 8) Browse button—Opens a browser, which allows you to choose where the report will be saved.
- 9) Send reports to the Report Server checkbox—Indicates that the report will be sent to the Report Server specified in the user's report_server_name preference.
- 10) Report name as it will appear on the Report Server—Specifies the name of the report as it will appear on the Report Server. The special value < project > will be replaced with the actual project name when the report is published. Similarly, < scenario > will be replaced with the name of the scenario used to generate the report.
- 11) Automation button—Saves the current settings to an automation file that may be used when creating automation tasks. This option is available only to users with an Automation module license.
- 12) Load button—Loads the settings from a previously saved automation file. This option is available only to users with an Automation module license.
- 13) Generate button—Generates the report.
- 14) Cancel button—Closes the dialog box.

**Object/Attribute
Difference Report >
Define Report**

Object/Attribute Scenarios > Object/Attribute Difference Report > Define Report
Specify the Difference Report content you want to include in your object/attribute difference report.

- 1) Select Scenarios > Object/Attribute Difference Report > Define Report. The Define Object/Attribute Difference Report:unnamed dialog box displays.

Figure 3-99 Define Object/Attribute Difference Report Dialog Box

Define Object/Attribute Difference Report: unnamed

Objects to Compare

Subnets Nodes Links Paths Demands Wireless domains Annotations

Treat IP interfaces as objects Include hidden nodes

Exclude objects by attribute:

Objec: Type	Attribute	Condition	Value

Add Row
Delete Row

Attributes to Ignore During Comparison

Ignore all non-modeling attributes

Ignore position attributes

Ignore transmitter and receiver attributes

Ignore specific attributes:

Objec: Type	Attribute

Add Row
Delete Row

Results to Compare

Graphs Tables

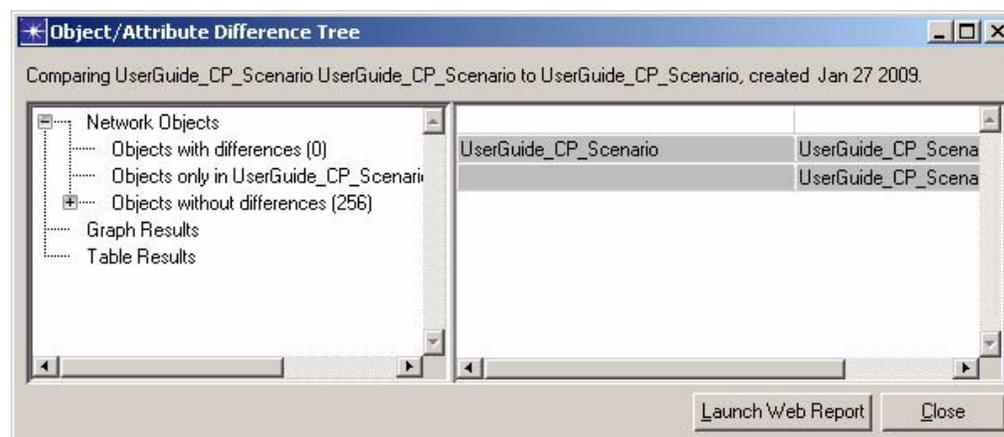
Load... Generate... Cancel Save As...

- 2) Select objects to compare, and specify objects to exclude by identifying specific attributes to ignore.
- 3) Click Save As to save your report definition to a file for repeat use.
- 4) Click Generate. The Generate Object/Attribute Difference Report dialog box displays. In the Generate Object/Attribute Difference Report dialog box, click Generate to generate the report.

**Object/Attribute
Difference Report >
View Last Report**

Scenarios > Object/Attribute Difference Report > View Last Report Opens the last object/attribute difference report that you generated in an Object/Attribute Difference Tree dialog box.

Figure 3-100 Object/Attribute Difference Tree Dialog Box



**Object/Attribute
Difference Report >
Launch Last Web
Report**

Scenarios > Object/Attribute Difference Report > Launch Last Web Report Opens the last object/attribute difference report that you generated in a web browser.

**Live Object/Attribute
Difference**

Scenarios > Live Object/Attribute Difference > (option) The Live Object/Attribute Difference view option is a visualization mode that uses icons to identify changes in a network scenario and in individual objects. Use the Live Object/Attribute Difference option to identify and track:

- Object/Attribute Differences—Includes differences between the current scenario and a reference scenario, changes to the current scenario since the last saved, and future changes to the current scenario (Track Changes from Now operation.)
- Object Differences—Includes attribute changes that differ from an object's creation defaults, and
- Text Differences—Includes text object changes, such as an annotation or a text-based attribute.

When Live Object/Attribute Difference mode is enabled, the current scenario is compared with a reference scenario. The reference scenario is one of the following, depending on the view mode:

- A separate scenario (Compare to Network or Compare to Scenario)
- A previous state of the current scenario (Track Changes from Last Save or Track Changes from Now)

The workspace and the Network Browser mark changed objects in the network and show icons to identify:

- Objects with relevant differences—You can specify the criteria used to determine a “relevant difference” between two objects.
- Objects with no counterparts—An “object with no counterpart” is an object that exists in the current scenario only, and has no corresponding object in the reference scenario.
- Subnets with changed objects—If any object in a subnet has changed, an icon appears over the subnet.
- Subnets that contain objects with no counterparts.
- Objects with no relevant differences—These icons appear only when you compare two scenarios, not when you track changes in one scenario.

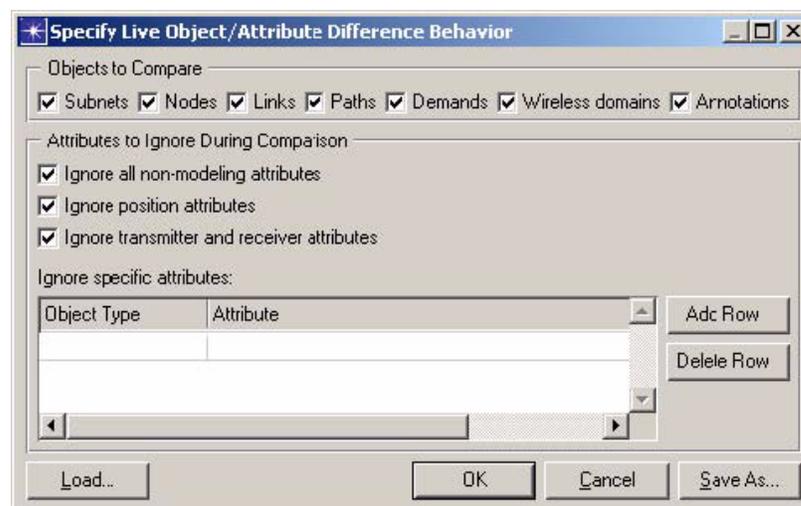
Select from the available Scenarios > Live Object/Attribute Difference options to specify object/attribute difference behavior, stop comparing, set global preferences, select and reconcile objects, track changes, and compare networks or scenarios.

Live Object/Attribute Difference > Specify Behavior

Scenarios > Live Object/Attribute Difference > Specify Behavior Specify the criteria used to define object/attribute differences. You can exclude irrelevant object types and attributes from the comparison and thereby track differences of interest only.

- 1) Select Scenarios > Live Object/Attribute Difference > Specify Behavior. The Specify Live Object/Attribute Difference Behavior dialog box displays.

Figure 3-101 Specify Live Object/Attribute Difference Behavior Dialog Box



- 2) In the Objects to Compare section, select objects of interest to compare.

- 3) In the Attributes to Ignore During Comparison section, specify attributes to ignore:
 - a) Ignore all non-modeling attributes checkbox-Ignore attributes that do not affect discrete event simulation or Flow Analysis results (examples: "color", "line style", "creation source".)
 - b) Ignore position attributes checkbox-Ignore attributes that specify physical locations of objects (examples: "x position", "y position", "trajectory".)
 - c) Ignore transmitter and receiver attributes checkbox-Ignore attributes specific to wireless objects (examples: "channel", "ragain model", "ber model".)
- 4) In the Ignore specific attributes table, ignore specific attributes during the comparison. Ignored attributes are excluded from the final report. In addition, these attributes are ignored when comparing the same object between scenarios.
- 5) Click Load to load difference settings from a template file.
- 6) Click Save As to save your difference settings to a template file for repeat use.
- 7) Click OK to close the dialog box.

***Live Object/Attribute
Difference > Stop
Comparing***

Scenarios > Live Object/Attribute Difference > Stop Comparing Turn off Live Difference mode and clear all difference visualizations from the workspace.

***Live Object/Attribute
Difference > Global
Preferences***

Scenarios > Live Object/Attribute Difference > Global Preferences > (options): Specify global preference settings for Live Object/Attribute Difference. Choose from the following options:

- **Suppress Legend**—Specifies whether to display the legend that appears in the lower-left corner of the workspace while Live Object/Attribute Differences is active. The legend describes the active tracking mode and meaning of each icon used to mark the various network objects.

Note—This operation sets the `network_diff.suppress_live_legend` preference.

- **Use Icons in Workspace and Browser, Use Icons in Workspace Only, or Use Icons in Browser Only**—Specifies where to use the icons for Live Object/Attribute Differences.

Note—This operation sets the `network_diff.live_icon_use` preference.

Live Object/Attribute Difference > Select Objects With Differences

Scenarios > Live Object/Attribute Difference > Select Objects With Differences
 Select all objects, in all subnets, that are marked as changed. A subnet object is selected only if it has relevant attribute changes.

Live Object/Attribute Difference > Select Objects Only In This Network

Scenarios > Live Object/Attribute Difference > Select Objects Only In This Network
 Select all objects, only in this network, that are marked as changed.

Live Object/Attribute Difference > Reconcile Selected Object Differences

Scenarios > Live Object/Attribute Difference > Reconcile Selected Object Differences
 Reconcile differences for all objects that meet the following conditions:

- Are currently selected, or reside within a selected subnet
- Have counterparts in the reference scenario

In this case, “reconcile differences for an object” means that all relevant settings for the current object are set so that it becomes equivalent to its counterpart in the reference scenario.

If a subnet is selected, this operation reconciles all objects in that subnet that have counterparts in the reference scenario.

You can undo and redo this operation using the corresponding operations in the Edit menu.

Live Object/Attribute Difference > Track Changes From Object Defaults

Scenarios > Live Object/Attribute Difference > Track Changes From Object Defaults
 Track all attribute settings that differ from the creation defaults for an object. The "creation default" settings for an object are the initial settings of an object when it is created manually (for example, by dragging from the object palette).

Note—This view mode marks changes in an object's Attributes dialog box only, not in the workspace.

Live Object/Attribute Difference > Track Changes From Last

Scenarios > Live Object/Attribute Difference > Track Changes From Last Save:
 Track past changes in the current scenario (since the last time the project was saved).

Live Object/Attribute Difference > Track Changes From Now

Scenarios > Live Object/Attribute Difference > Track Changes From Now: Track future changes in the current scenario.

Live Object/Attribute Difference > Compare to Network

Scenarios > Live Object/Attribute Difference > Compare to Network: Compare the current scenario to a scenario in a different project.

**Live Object/Attribute
Difference >
Compare to
Scenario**

Scenarios > Live Object/Attribute Difference > Compare to Scenario:
<scenario_name> Compare the current scenario to a scenario in the same project.

**Model
Completeness
Analysis**

Scenarios > Model Completeness Analysis > (option) Configure and run a Model Completeness Analysis.

The Model Completeness Analysis is an option that you can specify during or after import, which can be used to validate configuration information that you import from VNE Server. The reports produced by Model Completeness Analysis can help you assess your imported model before you go on to perform other analyses.

Note—This manual does not discuss in detail how to use and understand Model Completeness Reports. The discussion is limited to general workflow from the JCSS point of view. Consult the IT Guru documentation set, available via Help > Documentation > IT Guru Documentation, for complete details.

**Model
Completeness
Analysis > Generate
Report**

Scenarios > Model Completeness Analysis > Generate Report Run an analysis and generate a Model Completeness Report.

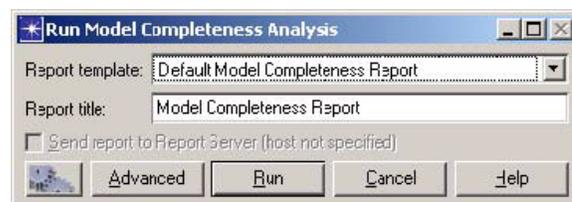
The Model Completeness Analysis is based on tests, contained in templates, that are applied to the network model. A default template is included in JCSS, but you can customize it or create new templates.

The report will launch in a web browser and will be sent to your Report Server, if so configured.

**Model
Completeness
Analysis >
Configure/Run**

Model Scenarios > Model Completeness Analysis > Configure/Run Select a template to run.

Figure 3-102 Run Model Completeness Analysis Dialog Box



- Report Template drop-down list—Select from a list of available predefined templates to run the Model Completeness Report.
- Report title field—Specifies the title for the reports generated for the current template.
- Send report to Report Server:—Select this checkbox if you want to send this report to the Report Server defined in your installation.

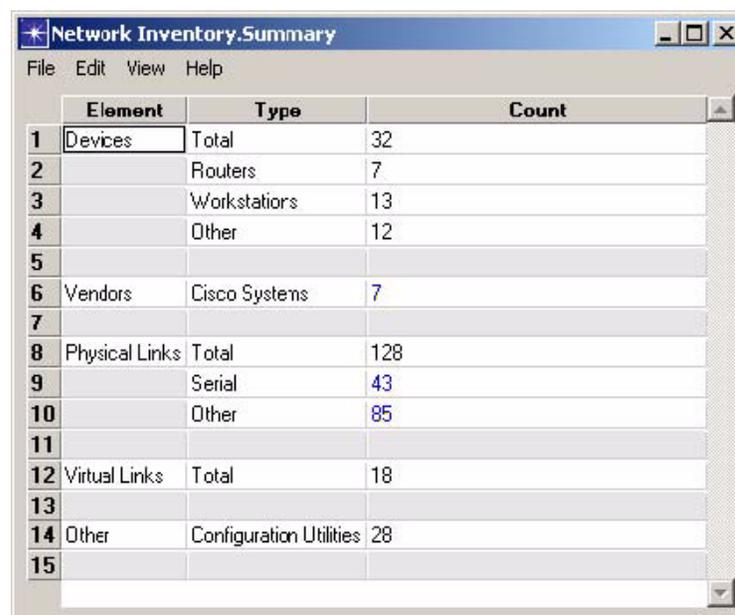
- Automate—Saves settings for automation.
- Advanced—Opens the advanced dialog box, which lets you specify more options or create and save new templates.
- Run—Saves the current template and runs the Model Completeness Report. Launches report after execution completes.
- Cancel—Closes the dialog box without saving any of the information you entered. Prompts you to confirm the cancel operation if template settings have changed since loading.

Generate Network Inventory Summary

Scenarios > Generate Network Inventory Summary: Launch a Network Inventory Summary report. After an import, and on a periodic basis, you may want to see how many devices are in your network and of what type. If you have a rather small imported network model, it is a simple task to visually gather this information. For larger networks, however, it is a time-consuming, error-prone task to take inventory. The Network Inventory Summary report is available at any time after an import. Running a Network Inventory Summary report after an incremental import allows you to keep your inventory files up-to-date.

- 1) Choose Scenarios > Generate Network Inventory Summary. The Network Inventory Summary dialog box displays.

Figure 3-103 Network Inventory Summary Dialog Box



	Element	Type	Count
1	Devices	Total	32
2		Routers	7
3		Workstations	13
4		Other	12
5			
6	Vendors	Cisco Systems	7
7			
8	Physical Links	Total	128
9		Serial	43
10		Other	85
11			
12	Virtual Links	Total	18
13			
14	Other	Configuration Utilities	28
15			

The report includes:

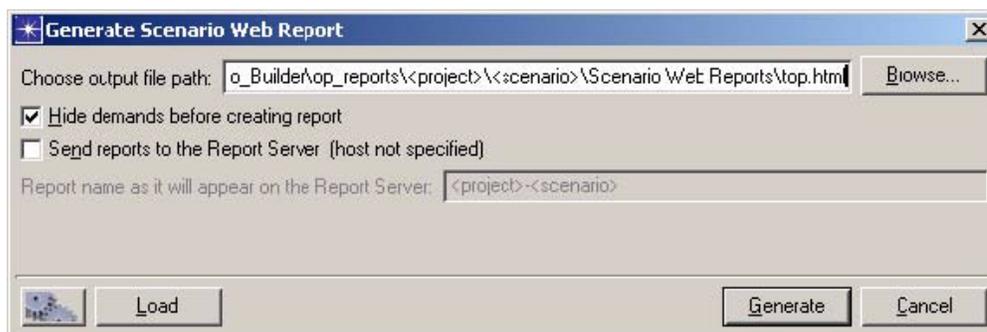
- a) Devices—A total count of devices, and a breakdown by device type.
- b) Vendors—A count by vendor.
- c) Physical Links—A total count of physical links, and a breakdown by type.
- d) Virtual Links—A total count of virtual links, and a breakdown by type.

- e) Other—A total count of other types of devices in the model, including network clouds, application models, configuration utilities, etc.
- 2) If a count listing is in blue text, you can click it to drill down even further.
- 3) To export the report to a spreadsheet, ASCII file, web report, or XML, choose File > Export > (option) in the Network Inventory Summary dialog box. Exporting the report makes it easier to use the information for analysis, management reporting, and other requirements.

Generate Scenario Web Report

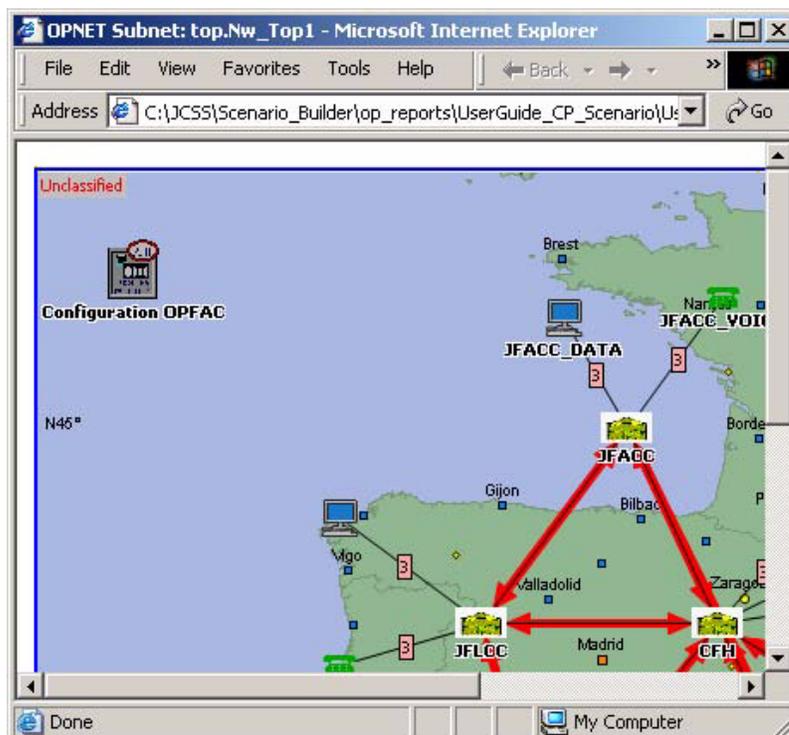
Scenarios > Generate Scenario Web Report Choose the location where you Web Report want to save the scenario web report, and then generate the report.

Figure 3-104 Generate Scenario Web Report Dialog Box



Click Generate to create the scenario web report. Navigate to the folder in which you saved the web report, and open it in your chosen web browser.

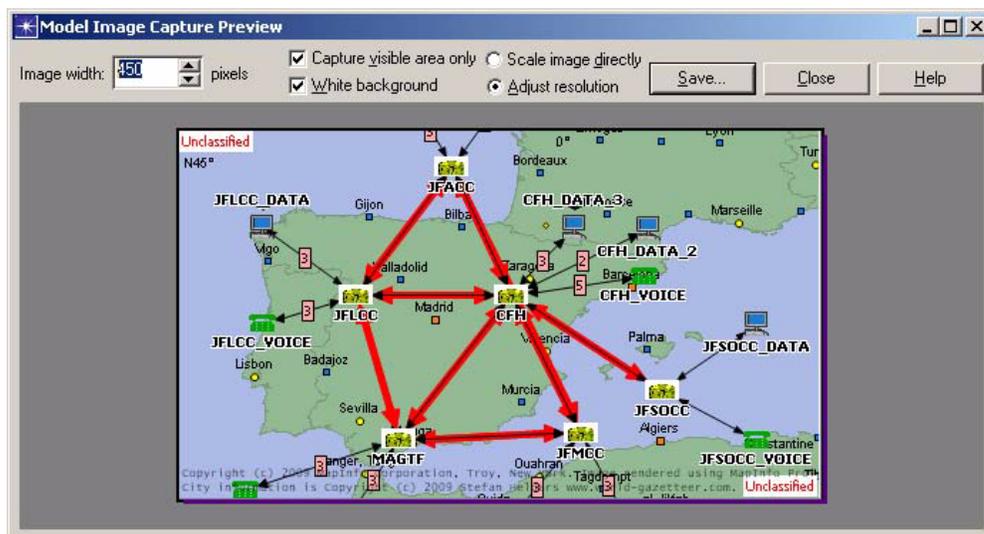
Figure 3-105 Displaying Scenario Web Report in Web Browser



Generate Scenario Bitmap

Scenarios > Generate Scenario Bitmap Export a bitmap image of the model in the active window and set parameters of the export file.

Figure 3-106 Model Image Capture Preview Dialog Box



Use the bitmap image controls to set the elements of the bitmap:

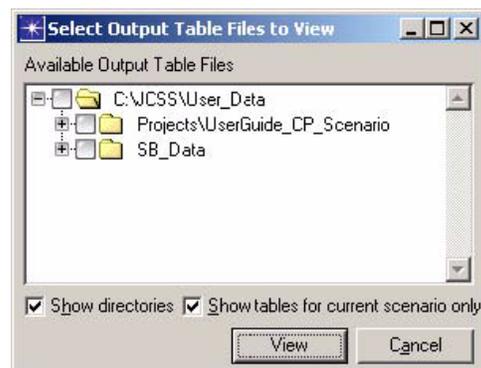
- **Image width**—Lets you set the bitmap width using the up and down arrows. The height is adjusted accordingly.
- **Capture visible area only**—Captures only the area visible in the editor window. When unselected, the entire subnetwork or model is captured.
- **White background**—Sets the bitmap background color to white, which improves contrast and visibility.
- **Scale image directly**—Sets the bitmap to the same level of detail as seen in the editor, regardless of the bitmap size.
- **Adjust resolution**—Adjusts the level of detail based on the target bitmap size, that is, reduces the level of detail in smaller bitmaps and increases detail in larger ones.

Click **Save** to open the **Select Captured Image Location** dialog box, and select the directory to which the bitmap file is saved and name the file. Click **Close** to close the **Model Image Capture Preview** dialog box.

**View Associated
Output Tables**

View Associated Scenarios > View Associated Output Tables Select output table files to view Output Tables in the Results Browser.

Figure 3-107 Select Output Table Files to View Dialog Box



Click View, and the Results Browser displays your generated results. The Results Browser is used to view simulation and analysis results and to perform parametric studies. With the Results Browser, you can use any collected statistics available on your computer to create new graphs, add statistics to existing graphs, or view tabular results.

In the Results Browser, click Generate Web Report to send your results to a Web Report.

Topology Menu

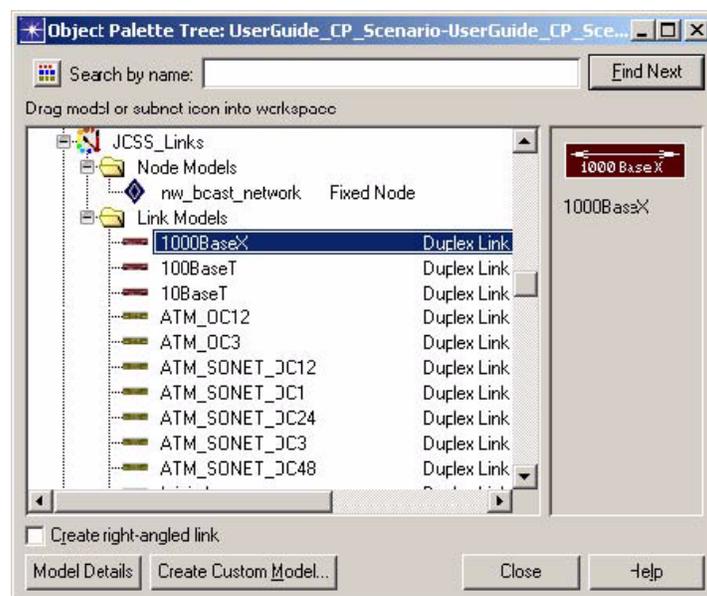
Open Object Palette

Topology > Open Object Palette or click the Open Object Palette toolbar button to access object palettes. JCSS provides a variety of object palettes which contain nodes, devices, links, and paths (circuits.) Once a new project is created, start building the network topology using the models provided in the object palettes. All of these objects are easily added to a scenario using the drag-and-drop technique.

Displaying Object Palettes

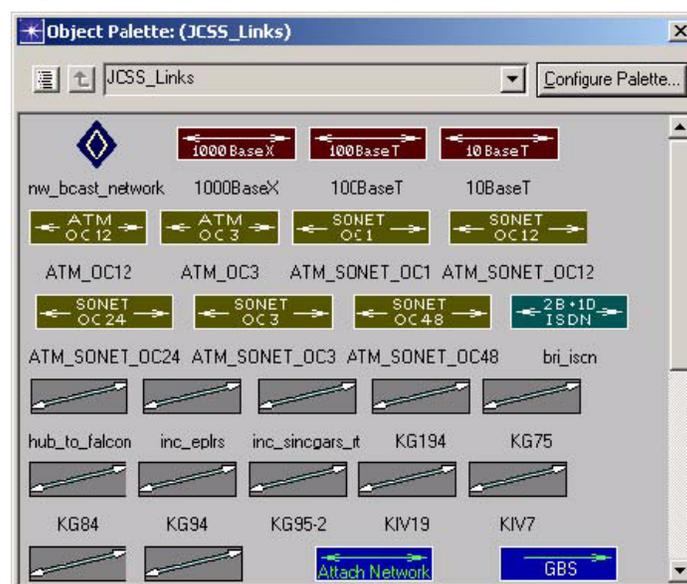
The object palettes display in either a treeview style or an icon view style, depending upon how your environment preferences are set.

Figure 3-108 Object Palette by Treeview



In the Object Palette Tree view, click the Open Palette In Icon View icon button (upper left corner) to replace this dialog box with the Object Palette Icon view that displays only a single palette file at a time. The palette file initially displayed will be either the default palette of the scenario or, if the tree selection is within a particular palette file tree element, the palette that contains the current tree selection.

Figure 3-109 Object Palette by Icon View



Note—The view style in which the object palettes display changes based on the value specified for the `network_palette.style` environment preference. You may set the object palette view style preference via `Edit > Preferences > Advanced`.

Adding Objects to a Scenario

Adding an instance of a device model to a network (from either style object palette) is as simple as dragging an icon to the workspace.

- 1) Select and drag an icon from the palette to the workspace to create a new object. The newly created object in the network is an instance of the corresponding model.

Whenever possible, planners are encouraged to use the JCSS standard models as opposed to the more generic models contained in the other model palettes. The JCSS models are designed to gather specific Measures of Performance (MOPs), which will be useful when modeling the network at a later point.

Note—JCSS device models must be used as endpoints for sending and receiving traffic. If generic device models are used as endpoints, JCSS will not be able to produce the traffic.

- 2) Once you drag an icon from the palette to the workspace, you may continue creating objects of the same type and model by clicking again in the workspace as needed.

- 3) Right-click in the workspace to stop creating new objects.

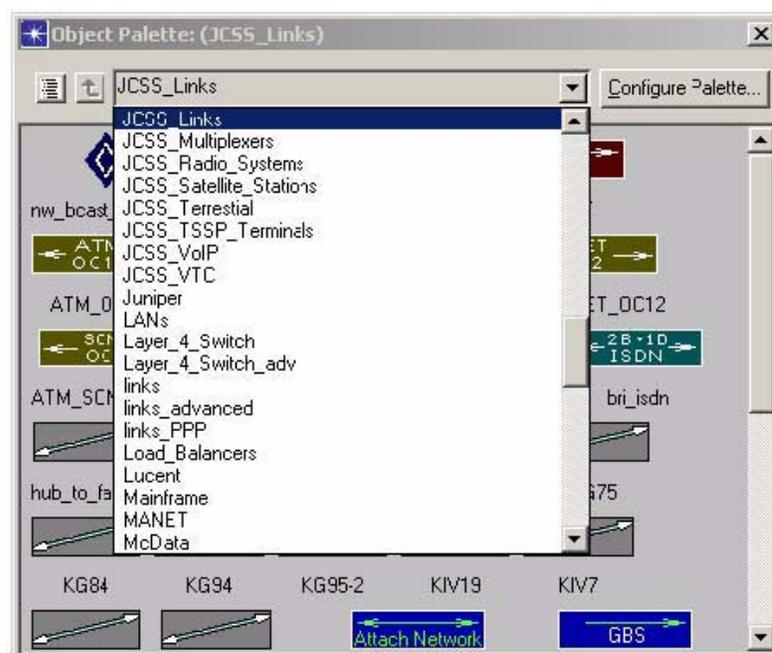
Some object types, like paths and demands, use a right-click menu during the creation process. In those cases, you should pick the appropriate menu operation to complete or cancel the object creation.

- 4) Right-click a device icon in the workspace, and open a shortcut menu to set the name of the device or set different model attributes that influence the behavior of the model. Device attributes can be changed by clicking on a cell and typing or selecting a new value.

Using Dynamic Listing Option for Object Palettes

The software provides you with the option of displaying the object palettes in two modes: alphabetical or dynamic. In alphabetical mode, the palettes display in alphabetical order; in dynamic mode, the five most recently used object palettes display at the top followed by the alphabetical listing.

Figure 3-110 Dynamic Palette Listings Mode

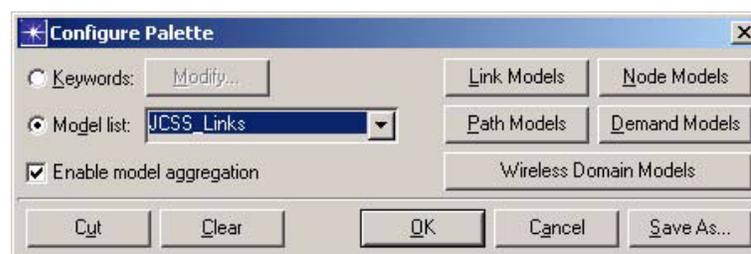


The order in which the palettes display changes based on the value specified for the `palette_listing` environment preference. You may set this preference via `Edit > Preferences > Advanced`.

Configuring Custom Palettes

- 1) Click the `Configure Palette` button located at the upper-right corner of an Object Palette Icon view dialog box. The `Configure Palette` dialog box displays.

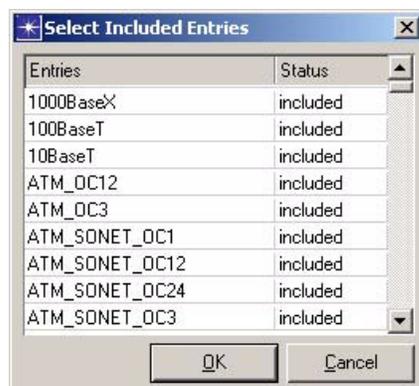
Figure 3-111 Configure Palette Dialog Box



- 2) Click the appropriate Models button to add or remove specific models or units from the palette.

- 3) Toggle the Status column to either included or not included to add or remove models units from the palette. To conclude, click OK, specify the name of the palette in the Save As dialog box, and then click OK to save the new configuration.

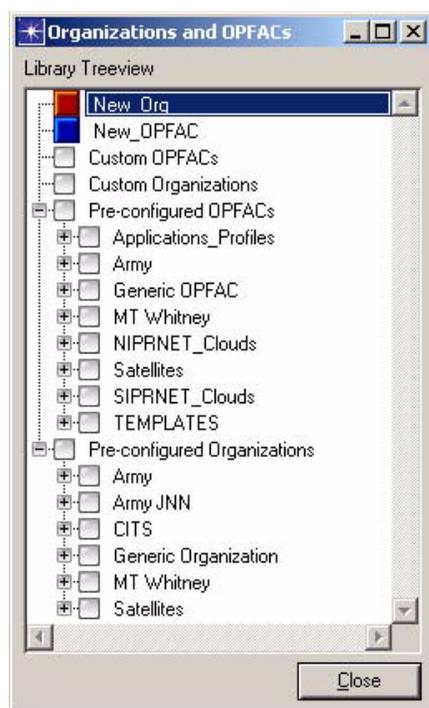
Figure 3-112 Select Included Entries Dialog Box



**Open Library
Treeview**

Topology > Open Library Treeview Add Organizations and OPFACs to scenarios by dragging and dropping them from the Library Treeview onto the Scenario Builder window.

Figure 3-113 Library Treeview



**Open Annotation
Palette**

Topology > Open Annotation Palette Add graphic elements to a scenario to help organize it visually or call attention to key elements. The annotation palette includes five types of objects: Box, Ellipse, Line, Text, and Icon.

- 1) Click on the desired annotation object in the annotation palette.

Figure 3-114 Annotation Palette

- 2) Create
 - a) A box or an ellipse by dragging an outline of the shape in the workspace.
 - b) A line by clicking in the workspace for the start of the line and each vertex (direction change) and then double-clicking to end.
 - c) Text by clicking on the workspace where the text is to be inserted, and then entering text in the text edit pad that displays.
 - d) An icon annotation by clicking in the workspace where you want the annotation to appear. To specify the icon to use, right-click on the annotation object and choose Edit Attributes; then set the "icon name" attribute. You can specify an icon from any icon database included in your model directories.
- 3) When you have finished creating an annotation object, you can:
 - a) Click to define another box, ellipse, line, or icon.
 - b) Right-click to stop creating boxes, ellipses, lines, or icons.
 - c) Click in the annotation palette to create a different type of annotation.
- 4) Modify the annotation object's attributes to customize its appearance. Select the object, and then right-click and select Edit Attributes to display the Attributes dialog box and make your changes.

Adding an annotation object does not affect a scenario's functionality in any way.

Import **Topology > Import > (option)** Import various files relating to topology. The following import options are discussed in the sections below:

- From Device Configurations
- From VNE Server
- Circuits
- Link Specification
- From Configlets

**Import > From
Device
Configurations**

Topology > Import > From Device Configurations Device Imports (DCI) lets you generate a network model by importing configuration

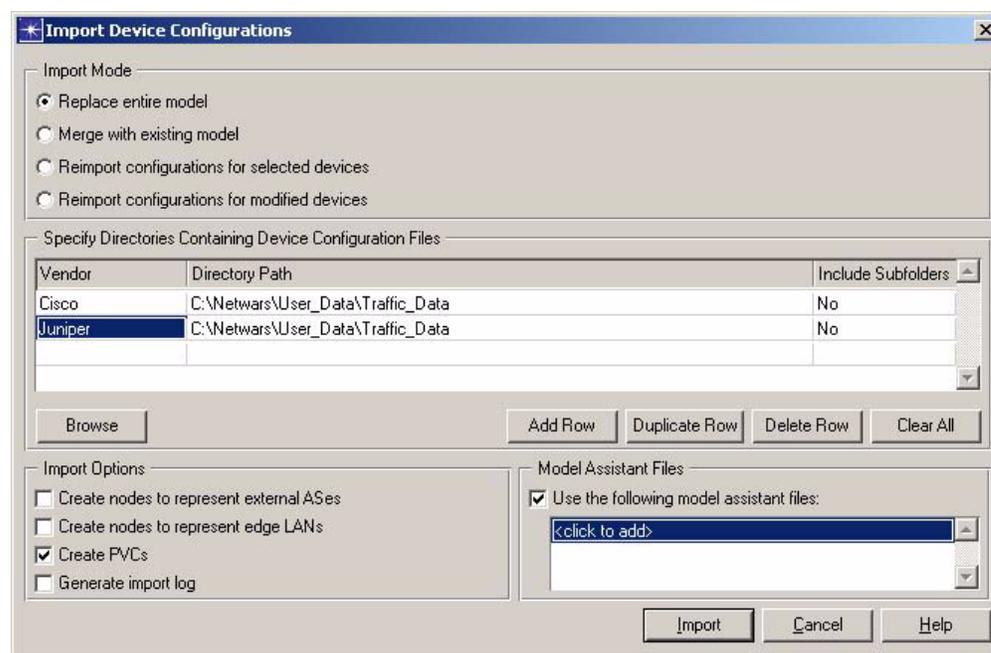
Configurations data for Juniper routers, Cisco routers, and Cisco Catalyst switches. DCI uses the data in the configuration files to set the OPNET attributes that control routing and switching behavior.

OPFACs that are created as part of the import process will house a single device; the icon of that OPFAC will be same as the icon of the device inside.

Note—This section does not discuss in detail how the device configurations are converted to the network topology from the OPNET core software point of view. The discussion is limited to general workflow from the JCSS point of view. Consult the IT Guru documentation set, available via Help > Documentation > IT Guru Documentation, for complete details.

- 1) The device configuration files can be imported in a new scenario or on top of an existing scenario. To perform a new import, create a new project. If you want to import these files on top of an existing network and then selectively add the various imported components to this network, open the relevant project.
- 2) Select Topology > Import > From Device Configurations. The Import Device Configurations dialog box displays.

Figure 3-115 Import Device Configurations Dialog Box



- 3) Select how this import affects the existing topology (if one exists):
 - a) Replace entire model radio button—Use this option when creating a new project or scenario, or when you want to overwrite the existing topology.

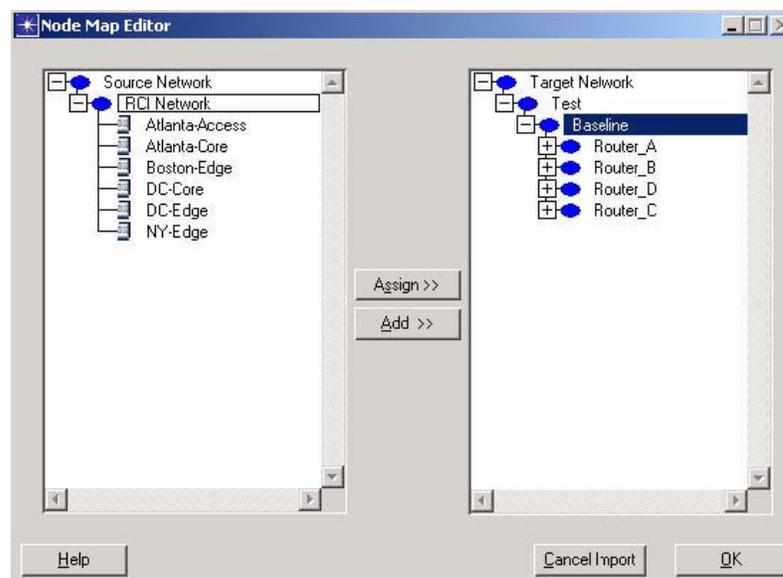
-
- b) Merge with existing model radio button—Use this option to add devices to the existing topology. If some of the devices are already in the topology, these devices are replaced (that is, re-imported) using the configuration files of this import. The Mapping Editor displays upon import so that users can map devices to the current network.
 - c) Reimport configurations for selected devices radio button—Select this option to reimport the device configuration files of the nodes that are currently selected in the workspace. DCI imports the files from the same location specified in the original import.
 - d) Reimport configurations for modified devices radio button—Select this option to reimport any device configuration files in the current topology that were modified since the last import. DCI imports the files from the same location specified in the original import.
- 4) Specify where the configuration files are located by vendor(s), directory path and whether to include subfolders in this directory path table. If you previously imported device configuration files, your previous selection is configured; you can keep the selection or change it. Multiple directories are supported.
 - 5) Select the desired import options:
 - a) Create nodes to represent external ASes—Creates dummy objects to represent missing external BGP (EBGP) neighbors.
 - b) Create nodes to represent edge LANs—Creates LAN objects for active router interfaces that are not connected. By connecting these interfaces to LAN objects, no active router interfaces are left unconnected after the import.
 - c) Create PVCs—Creates PVCs based on network data, if available; if this is not available, PVCs are created for all possible pairs of devices in the network.
 - d) Generate import log—Creates a log of actions during the import. You can access the log through the object or workspace pop-up menus after the import.
 - 6) Specify one or more model assistant files. These files can be model assistant files, which have a .ma extension, or import assistance files, which have an .ia extension. Consult the IT Guru documentation set, available via Help > Documentation > IT Guru Documentation, for information about model assistant files.

- 7) Click Import. During the import process, various nodes can be created by the core DCI process for the end devices. The following table lists the corresponding JCSS models that will be created:

Table 3-3 DCI And JCSS End Station Models

DCI End Station Models	JCSS End Station Models
ppp_wkstn_adv	nw_ppp_wkstn_adv
10BaseT_LAN	nw_ethernet_wkstn_adv
100BaseT_LAN	nw_ethernet_wkstn_adv
1000BaseX_LAN	nw_ethernet_wkstn_adv
fr_wkstn_adv	No current support
atm_wkstn_adv	No current support
16TR_LAN	No current support
FDDI_LAN	No current support

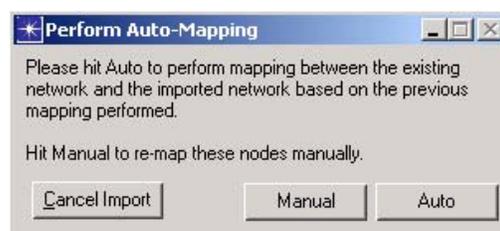
- 8) If the Merge with existing model import option was selected, the Node Map Editor displays.

Figure 3-116 Node Map Editor Dialog Box

- a) Add—Adds a node (router) from the imported network to the original network. Successful addition of the node requires that you select a node in the Source Network treeview and an OPFAC/organization in the target network before the addition can be performed.

- b) Assign—Assigns or map a node (router) from the imported network to the original network. Successful assignment of the node requires that you select a node in the source network treeview and another node in the target network before the addition can be performed.
- c) OK—Closes the mapping editor dialog box and performs any link creation as necessary.
- d) Cancel Import—Cancels any changes made to the network due to mapping or assignment and brings you back to the original scenario.
- e) Auto-Mapping Feature—Performs the mapping if router configuration files have been previously imported into this scenario. The Perform Auto-Mapping dialog box displays to confirm the mapping of the nodes based on the mapping performed in the previous imports.

Figure 3-117 Perform Auto-Mapping



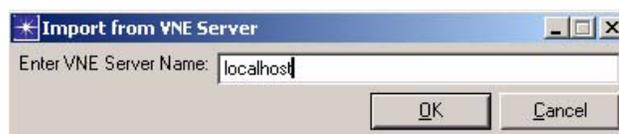
- f) Manual or Auto—Continues with the auto mapping or manual mapping. The main dialog box for the node mapping will still display allowing you to map any nodes that were not mapped as part of the auto-mapping operation.
- g) Cancel Import—Cancels the import procedure.

Import > From VNE Server

Topology > Import > From VNE Server Create a network model based on information imported from VNE Server.

- 1) Choose Topology > Import > From VNE Server. The Import from VNE Server dialog box displays.

Figure 3-118 Import from VNE Server Dialog Box



- 2) Specify the name of the VNE Server from which you want to import, and then click OK. A second Import from VNE Server dialog box displays.
- 3) In the VNE Server Name field, specify the hostname or IP address and port for the VNE Server.
 - a) If you are running import on the same machine as the VNE Server, use "localhost" as the server name.

- b) If the VNE Server is in the same domain in which you are running import, enter the hostname without domain extension or enter the IP address of the VNE Server.
 - c) If the VNE Server is in a different domain, enter the server name as hostname.domain, i.e. vneserver.opnet.com, or enter the IP address of the VNE Server.
 - d) The default port number is 900. If you are importing from a VNE Server installed on Linux, change the port number to 3001. If you are importing from VNE Server on any port other than 900, enter the server name as hostname:port (or hostname.domain:port) or IP address and port (i.e., ip_address:port).
- 4) Specify the import mode you want to use:
- a) Create network using VNE Server data radio button—Use when starting a new scenario or when you want to erase all existing information in the current model to replace with VNE Server data. If selected, the current VNE Server data is used to create a network model. "Create" appears if you are in a new scenario; "Replace" appears if you are in an existing scenario.
 - b) Incrementally update network using the most recent VNE Server data radio button—Use when you want to update the current model with any changes that have occurred in VNE Server since the last import. If selected, VNE Server updates the current network model with all recorded changes in VNE Server since the original import.
 - c) Create network using an existing archive radio button—Use when you want to replace the current model with information contained in a VNE Server archive file. If selected, a network model is created using the archived network specified in the drop-down menu. This menu is populated based on available archives from VNE Server.
- 5) On the Options tab, specify the import options as follows:
- a) Include collected configuration files checkbox—Gathers the configuration files of the devices to be imported along with all other import data. When this option is used, you can right-click on any imported node for which a configuration file exists and select View Device Configuration Source Data.
 - b) Append operational data checkbox—When you include collected configuration files, you can also choose to append the operational data. This lets you append operational data to the configuration file collected by VNE Server in the import. The operational data can include CDP data and other data that can be used in a subsequent import using Device Configuration Import.
 - c) Generate import log checkbox—Creates a log of actions during the import. You can access the log through the object or workspace pop-up menus after the import.

-
- d) Generate Model Completeness Report checkbox—Runs a Model Completeness Report on the imported model based on the last template you used. If you have never generated a Model Completeness Report, the default template is used.
 - e) Use the following model assistant file(s) checkbox and list box—Choose model assistant files that specify certain import-related information (i.e., data rates, connectivity).
- 6) On the Topology tab, specify topology-related import options as follows:
 - a) Group nodes into subnets (based on VNE Server groups) checkbox—Uses the VNE Server groups to create node grouping, in subnets, in the imported model.
 - b) Create tunnel based connections checkbox—Infers logical tunnel clouds based on tunnel end-point information when there is no physical path inferred
 - c) Create nodes to represent external ASes checkbox—Creates dummy objects to represent missing external BGP (EBGP) neighbors.
 - d) Create nodes to represent edge LANs checkbox—Creates LAN objects for active router interfaces that are not connected. By connecting these interfaces to LAN objects, no active router interfaces are left unconnected after the import.
 - e) Filters—Specify the amount of data to include in the import.
 - 7) On the Traffic tab, traffic that is available from the VNE Server is displayed, such as link loads or flows. Specify traffic-related import options as follows:
 - a) Include?—Click on the value in this column to enable or disable the inclusion of the available traffic data.
 - b) Traffic type—Displays the available traffic type you can configure in this row.
 - c) Traffic information—Displays the available traffic information gathered from the VNE Server.
 - d) Modify?—Click on "Edit..." in this field to open the Rollup Configuration dialog box. Customize the way in which you want to rollup the available information, depending on what exists in VNE Server.
 - 8) On the Metrics tab, performance metrics, CPU utilization, and RAM utilization data for the following device types are available and can be configured when the data is collected on the VNE Server:
 - Acme Packet Net-Net 4000 Session Border Controllers (SBC)
 - Cisco devices using IOS and IOS XR
 - 9) Click Import.

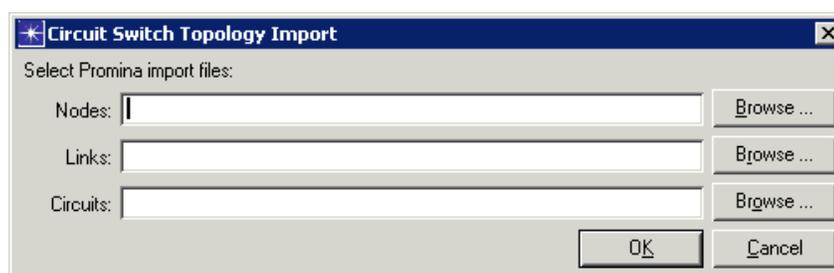
**Import > From
Circuit Switch Text
Files**

Topology > Import > From Circuit Switch Text Files Import circuit information from a tab-delimited text file. Depending on the information contained in the file, the import process may do one of the following:

- All circuit switch data files use the following formatting conventions:
- Each line in the file describes one node, trunk link, or call.
- The attributes in each line are separated by tabs.
- The import process ignores any line beginning with a number sign (#).

- 1) Select Topology > Import > From Circuit Switch Text Files. The following dialog box appears.

Figure 3-119 Import from Circuit Switch Text Files



- 2) To specify a data file, click the Browse button for the corresponding file, then specify the directory and file in the Select File dialog box. Alternatively, you can type a path directly into the edit field.
- 3) Click OK to import the entries. Your circuit switch data is imported, a network topology is created, and the relevant attributes are set in the nodes, links, and call demand objects. The import process is complete.

**Import > Link
Specification**

Topology > Import > Link Specification Import link information from text files. The link specification is separated into two sections—the JCSS attributes and the standard OPNET attributes. If a link with the specified hierarchical name already exists in the scenario, the changes are applied to the existing link. If there are no links with the specified hierarchical name, a new link is created with the specifications provided in the text file.

**Import > From
Configlets**

Topology > Import > From Configlets Import topology from configlets (configuration files.) Only those devices which have configuration files associated with them can be re-imported via this feature.

Export

Topology > Export > (option) Export various file types relating to topology.

Export > Circuits

Topology > Export > Circuits Export information about all circuits in the scenario to a tab-delimited file. JCSS examines all devices in the scenario that have circuits defined and writes the circuit information to a text file in the project directory with the following naming convention:
 <project>-<scenario>-circuits.txt.

Each section of the text file starts with a circuit_type field, followed by a field listing the name of the circuit type. The sections of the file are sorted by circuit type.

Export > To Spreadsheet

Topology > Export > To Spreadsheet Export the topology to a spreadsheet.

Export > To Visio

Topology > Export > To Visio Export showcase(s) and subnet(s) to Visio .vdx (Visio XML drawing) format files.

Figure 3-120 Export to Visio Dialog Box



- Subnets drop-down list—Specify the subnet(s) to export. Choose one of the following: None, Current subnet, or All subnets.
- Showcases drop-down list—Specify the showcase(s) to export. Choose one of the following: None, Current showcase, or All showcases.
- Generate user-defined tables checkbox—Specify whether to export user-defined tables for generating reports.
- Page Layout—Specify the page layout orientation and size. Choose one of the following:
 - Portrait radio button—Specifies 8.5 x 11 inches.
 - Landscape radio button—Specifies 11 x 8.5 inches.
 - Custom radio button—Specifies a custom size. When selected, specify the height and width.
- Launch Visio on export checkbox—Specifies to open the exported file automatically after exporting a file.

- Export button—The Export file selection dialog box displays to specify the file name, type (.vdx or .vsx), and the location for the file.
- Cancel button—Closes the dialog box without saving any changes.

Export > To Network Whiteboard

Topology > Export > To Network Whiteboard Export showcase(s) and subnet(s) to the Network Whiteboard editor.

Figure 3-121 Export to Network Whiteboard Dialog Box



- Subnets drop-down list—Specify the subnet(s) to export. Choose one of the following: None, Current subnet, or All subnets.
- Showcases drop-down list—Specify the showcase(s) to export. Choose one of the following: None, Current showcase, or All showcases.
- Generate user-defined tables checkbox—Specify whether to export user-defined tables for generating reports.
- Page Layout—Specify the page layout orientation and size. Choose one of the following:
 - Portrait radio button—Specifies 8.5 x 11 inches.
 - Landscape radio button—Specifies 11 x 8.5 inches.
 - Custom radio button—Specifies a custom size. When selected, specify the height and width.
- Export button—The Generate User-Defined Report dialog box appears if you are exporting user-defined tables. After selecting tables or if user-defined reports are not exported, the Network Whiteboard editor appears with the exported topology.
- Cancel button—Closes the dialog box without saving any changes.

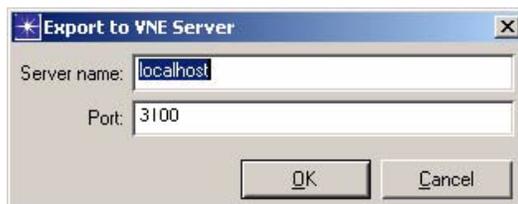
Export > Subnet Hierarchy to VNE Server as Groups

Topology > Export > Subnet Hierarchy to VNE Server as Groups > (option): Export entire network or selected subnets to VNE Server.

Export > Subnet Hierarchy to VNE Server as Groups > Entire Network

Topology > Export > Subnet Hierarchy to VNE Server as Groups > Entire Network Export the entire network to VNE Server..

Figure 3-122 Export to VNE Server Dialog Box



In the Export to VNE Server dialog box, specify the name and port of the VNE Server to which you want to export the network, and then click OK.

Export > Subnet Hierarchy to VNE Server as Groups > Selected Subnets

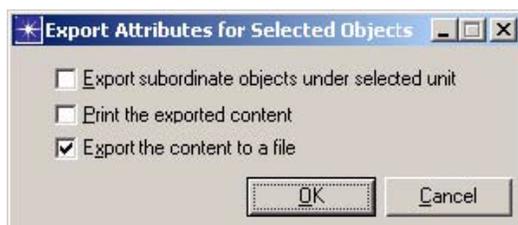
Topology > Export > Subnet Hierarchy to VNE Server as Groups > Selected Subnets Export the selected subnets to VNE Server.

Export > Attributes for Selected Objects

Topology > Export > Attributes For Selected Objects Export the selected object attributes to text files.

- 1) Select the objects of interest (e.g., nodes and links).
- 2) Choose the Topology > Export > Attributes for Selected Objects option. The Export Attributes for Selected Objects dialog box displays.

Figure 3-123 Export Attributes for Selected Objects Dialog Box



- 3) After making the appropriate selection select OK. The Save As dialog box displays prompting you to select the desired location and specify the file name to which to save the attribute text file on the hard drive.

Export > Attributes

Topology > Export > Attributes for All Objects Export all object attributes to text files.

- 1) The Export Attributes for All Objects dialog box displays.

Figure 3-124 Export Attributes for All Objects Dialog Box

- 2) After making the appropriate selection select OK. The Save As dialog box displays prompting you to select the desired location and specify the file name to which to save the attribute text file on the hard drive.

**Export > Selected
Area to Bitmap**

Topology > Export > Selected Area to Bitmap Specify an arbitrary area on the workspace and export the contents to an image file.

- 1) Drag a rectangle around the area of interest for the screen capture.
- 2) In the Model Image Capture Preview window, set desired image options and click Save.
- 3) In the Select Captured Image Location dialog box, choose a file format, file name, and location, and then click Save.

**Export > Visible
Area to Bitmap**

Topology > Export > Visible Area to Bitmap Capture the visible area of a subnet as a screen shot and save it as a GIF or TIF file.

- 1) In the Model Image Capture Preview window, set desired image options and click Save.

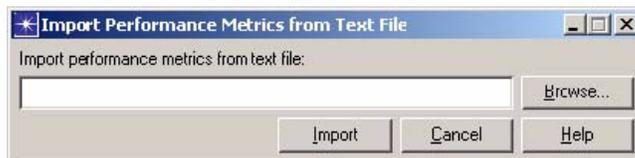
Figure 3-125 Model Image Capture Preview Window

- 2) In the Select Captured Image Location dialog box, choose a file format, file name, and location, and then click Save.
- 3) Click OK.

Import Performance Metrics **Topology > Import Performance Metrics > (option)** Import performance metrics for devices in your network.

Import Performance Metrics > From Text File **Topology > Import Performance Metrics > From Text File** Add performance metrics information from a text file after the import. This option allows you to import operational performance metrics from a .csv file that can be applied over an existing network model for further analysis.

Figure 3-126 Import Performance Metrics from Text File Dialog Box



- Use the Browse button to open a file chooser—Select the file you want to import into the current project.
- Click Import to accept the specified path to the text file, import the file, and close the dialog box when finished.

A summary report is displayed after the import to show the metrics that were imported. The import log is an important source of information for troubleshooting. If entries are skipped or anything fails during the import from a text file, select **Topology > Import Performance Metrics > Open Import Log...** to see an import log dialog box.

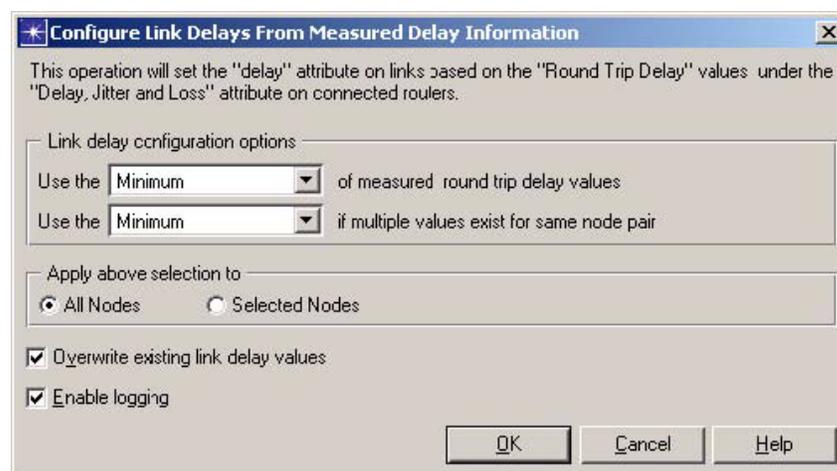
Import Performance Metrics > Open Import Log **Topology > Import Performance Metrics > Open Import Log** Display log file entries after importing a performance metrics text file.

Configure Link Delays **Topology > Configure Link Delays > (option)** Configure link delays based on measured delay values.

**Configure Link
Delays > From
Measured Delay
Information**

Topology > Configure Link Delays > From Measured Delay Information Specify link delays based on measured delay values contained in the Performance Metrics.

Figure 3-127 Configure Link Delays from Measured Delay Information Dialog Box



- Link delay configuration options—Specify the type of round trip delay to use and how multiple delay values are handled for a given node pair.
 - Use the ___ of measured round trip delay values—Specify which delay value of the measured information (Maximum, Minimum, Average, or 95th percentile) is to be used for configuring link delays.
 - Use the ___ if multiple values exist for same node pair—Specify whether the Maximum, Minimum, or Average of multiple values are to be used if multiple values exist for a given node pair.
- Apply above selection to—Specify the nodes whose Round Trip Delay information will be used for configuring the link delays.
 - All Nodes radio button—Uses the available information from all nodes in the network model.
 - Selected Nodes radio button—Uses the available information from the nodes you selected in the network model.
- Overwrite existing link delay values checkbox—Specify if existing link delay values should be overwritten with the new calculated delay values based on the selections made above. If checked, any existing link delays on links will be overwritten by new values. If unchecked, previously set delays will be preserved on links.

Note—Links with the delay values set to the default ("Distance Based") will always be modified regardless of this checkbox.

- Enable logging checkbox—Specify if an output error log is to be created. If checked, an output log will be created which contains details of skipped "Delay, Jitter and Loss" information, as well as a configuration summary. To view the output error log, select Topology > Configure Link Delays > Show Output Log. If unchecked, no output log is created.
- Click OK to configure the link delays based on the selected configuration options.

Configure Link Delays > Show Output Log

Topology > Configure Link Delays > Show Output Log Display output log with details of skipped "Delay, Jitter and Loss" information as well as a configuration summary after configuring link delays.

Generate IP Cloud Metrics File > From Router Metrics Information...

Topology > Generate IP Cloud Metrics File > From Router Metrics Information Generates performance metrics for a cloud based on router information. In imported networks in which delay and loss metrics have been imported for routers, the performance metrics for the cloud nodes can be determined from the metrics in the router nodes. A new dialog box opens that allows you to specify whether to use the minimum, maximum, average, or 95th percentile of the measured round trip delay and of the measured packet loss specified in the delay, jitter, and loss metrics of the routers.

The process results in the generation of a performance metrics file for each cloud device in the network. Each file, corresponding to a specific cloud node, contains performance metrics information accumulated from router nodes connected to the cloud node.

Role Assignment > Assign Roles

Topology > Role Assignment > Assign Roles Sets the role attribute on multiple devices and network objects in your current network scenario to organize, analyze, and report on sets of objects in the network model.

The main steps to assign roles are as follows:

- 1) Choose Topology > Role Assignment > Assign Roles to open the dialog box.
- 2) Specify the role names by entering the role names in the Role(s) list.
- 3) Select devices from the left-pane treeview.
- 4) Use "Assign To" button to assign one or more roles to one or more devices.

Note—You can assign more than one role to an object by entering a comma-separated list of role names.

**Role Assignment >
Scan for Assigned
Roles**

Topology > Role Assignment > Scan for Assigned Roles Scans the network for existing roles and lets you select or unselect sites with specific roles. The basic steps to scan for assigned roles are as follows:

- 1) Choose Topology > Role Assignment > Scan Network For Roles. After you scan the network for existing roles, the available roles display in the options to select or unselect sites with specific roles.
- 2) Choose Topology > Role Assignment > Select Sites With Roles or Unselect Sites With Roles.
- 3) Select the role you want to select or unselect from the menu.

Model Assistant

Topology > Model Assistant > (option) Edit model assistant files, apply the data to your network, and save the data to reuse later. A model assistant file is an ASCII text file that specifies a set of changes to a scenario. You can specify multiple changes in one file, then apply the file to make multiple changes in one operation. For example, you can create a model assistant file to:

- Create subnetworks, nodes, and links,
- Set object attributes,
- Import node aliases, and
- Specify object locations.

**Model Assistant >
Edit File**

Topology > Model Assistant > Edit File Edit model assistant files.

- 1) The Edit Model Assistant File dialog box displays. This dialog box contains multiple tabbed pages; each page has fields for entering the data you want to apply. If you want to edit an existing file, click Load, choose the file to load, and click OK. The dialog box updates each tabbed page to reflect the data in the loaded file.
- 2) Specify the information you want to apply on each page (click the tabs to view specific pages).
 - a) If you do not want to apply a certain type of data, leave the page empty.
 - b) If you want to reset all settings on all pages and reenter your data, click Clear.
 - c) If you want to save your data to a model assistant file so you can reuse it later, click Save.
- 3) Click Apply to apply your data to the network, or Close to close the dialog box without applying your data.

**Model Assistant >
Apply File**

Topology > Model Assistant > Apply File Apply the selected model assistant file.

Model Assistant > Open Error Log **Topology > Model Assistant > Open Error Log** View errors that occur when the model assistant file is applied to your scenario.

Model Assistant > Save Current Topology to File **Topology > Model Assistant > Save Current Topology to File** Create a model assistant file based on your current topology.

Create Custom Device Model **Topology > Create Custom Device Model...** Create your own new device models, in addition to using the built-in model objects provided by JCSS and creating derived models. Create several different types of network components, including routers, bridges, hubs, workstations, switches, LANs, and vendor devices. For complete instructions, consult the IT Guru documentation set, available via Help > Documentation > IT Guru Documentation.

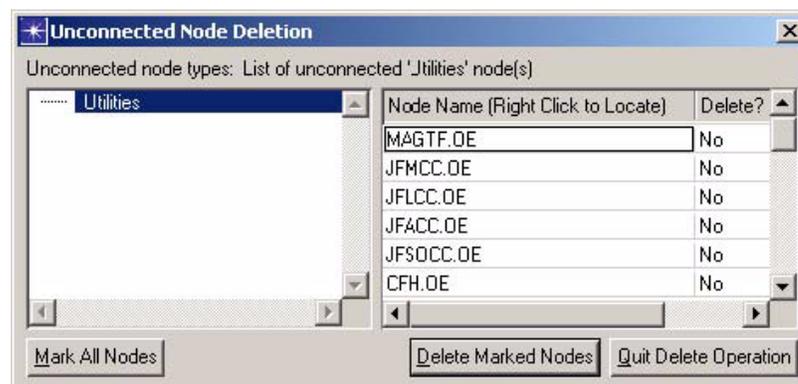
Rapid Configuration **Topology > Rapid Configuration** Create network components using the rapid configuration feature. A network configuration, or topology, refers to a model's set of nodes and links and their arrangement within the network. Rapid configuration allows you to build common network topologies quickly and easily. You can select the type of network configuration to be built—such as a ring or bus—and specify its node models, link models, and arrangement all at once, without having to create and specify each network component individually. You can also control the number of nodes that will be in the network and the type of link that will be used to connect the nodes.

Seven rapid configuration topologies are available: Bus, Full Mesh, Randomized Mesh, Tree, Ring, Unconnected Network, and Star.

Each type of configuration can be created using the Rapid Configuration operation. Through a series of dialog boxes, select the type of configuration to be created, specify the number of nodes, and select the node or link models to be associated with them. You can also control how the nodes will be arranged and their location within the workspace. After the specifications are entered, the configuration is constructed in the workspace.

Delete Unconnected Nodes **Topology > Delete Unconnected Nodes** Delete marked nodes.

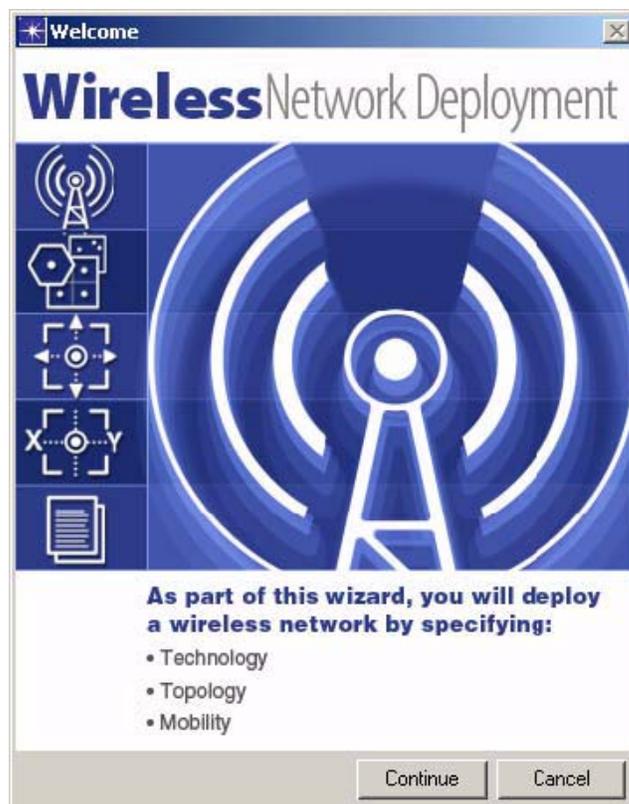
Figure 3-128 Unconnected Node Deletion Dialog Box



Deploy Wireless Network

Topology > Deploy Wireless Network Use the Wireless Deployment Wizard to create a wireless network by specifying parameters for technology, topology, and mobility. You can use the wizard iteratively to deploy multiple network segments into the same project.

Figure 3-129 Wireless Deployment Wizard



Click Continue. The wizard will prompt you through the screens. After defining your parameters, you can save them into a file in the last stage of the wizard, and reuse them.

**Open Edge
Connectivity Wizard**

Topology > Open Edge Connectivity Wizard Use the Edge Connectivity Wizard to create IP connectivity between the enterprise sites in your network model. By specifying the WAN interfaces that connect to your Service Provider network, you can create Layer-3 IP clouds that connect the sites. You can create as many IP clouds that you need to model the IP connectivity, and then save the configuration to a Model Assistant (MA) file. The MA file can be applied as part of topology import.

Figure 3-130 Edge Connectivity Wizard

Follow the steps of the wizard to:

- Create new IP cloud definitions,
- Manage a set of IP cloud definitions,
- Use MA files to Save/Load IP cloud definitions, and
- Apply IP cloud definitions on the current network model.

Link Operations

Topology > Link Operations > (option) Use the sub-menu options to perform link consistency checks and define valid links between devices using a wizard-like feature.

**Link Operations >
Deploy Link**

Topology > Link Operations > Deploy Link Quickly define valid links between devices using a wizard-like feature.

- 1) Select two devices (through GUI or Network Browser) and then select Topology > Link Operations > Deploy Link (or press <Ctrl> + L.)

- 2) If more than one device is present in an OPFAC, the Select Devices dialog box displays. Select the desired devices to connect and then click Next.

Figure 3-131 Select Devices Dialog Box

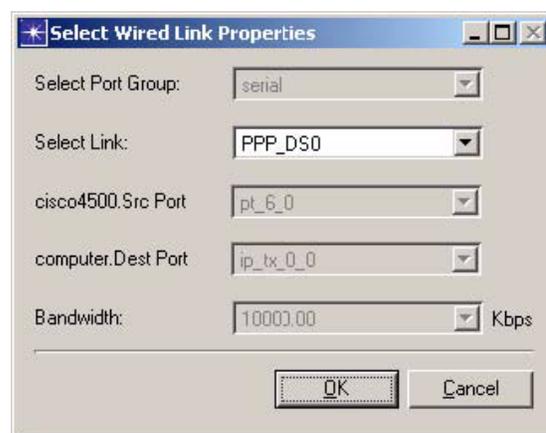


If a selected OPFAC has only one device, then the device will be selected by default and the Select Devices dialog box will be skipped. If the OPFAC doesn't have a device, an error will be flagged.

This feature will be only applicable to the fixed nodes (only wired ports will be considered for selection.)

- 3) The best default link available and a list of the other applicable link types displays. A series of the most common default bandwidths for the selected link type is also provided as well as the first available ports applicable to the chosen link as default ports. Use the default values or select the desired values, and then click OK.

Figure 3-132 Select Wired Link Properties Dialog Box



An inter-OPFAC link or intra-OPFAC link will be created with the user-defined attributes between the two devices, depending on whether the selected devices are within one OPFAC or different OPFACs.

Deploying Satellite Links

Defining satellite links can be performed using a procedure similar to defining other links.

- 1) Select two OPFACs or devices and then select Topology > Link Operations > Deploy Link (or press <Ctrl> + L.)

- 2) If more than one device is present in an OPFAC, the Select Devices dialog box displays. Select the desired devices to connect and then click Next.

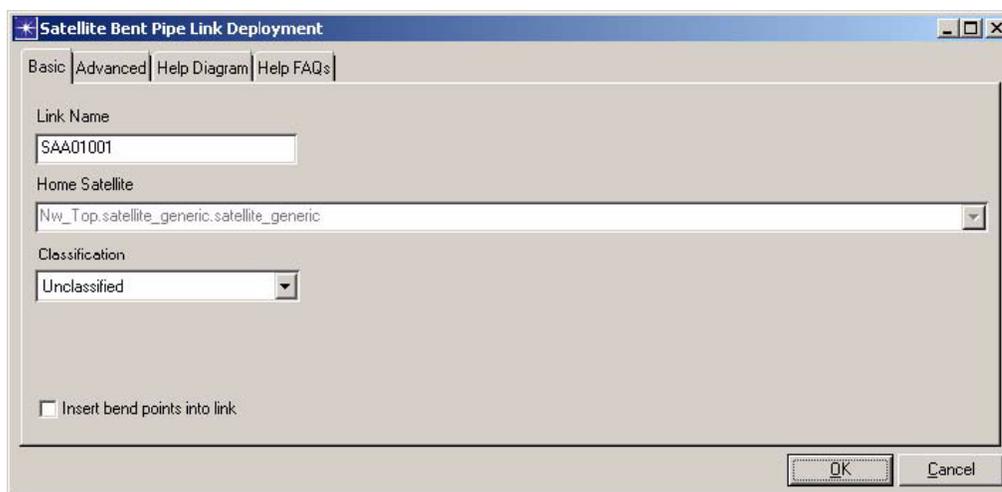
Figure 3-133 Sample Select Devices Dialog Box



If a selected OPFAC has only one device, then the device will be selected by default and the Select Devices dialog box will be skipped. If the OPFAC doesn't have a device, an error will be flagged.

- 3) The Satellite Bent Pipe Link Deployment dialog box displays.

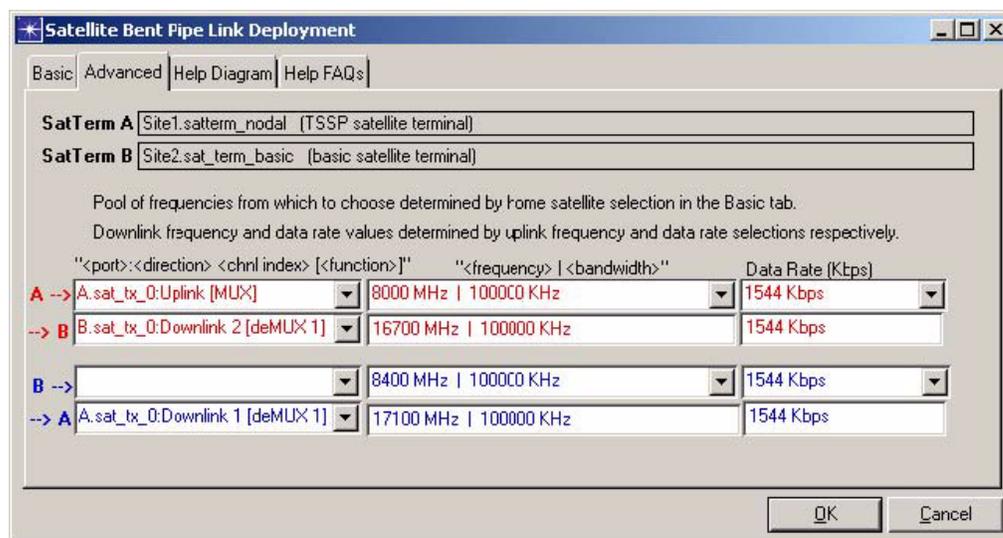
Figure 3-134 Satellite Bent Pipe Link Deployment Dialog Box—Basic



The Basic tab displays the default Link Name, and allows you to select the Home Satellite which provides the available frequencies.

- a) Click the Advanced Tab. The following screen displays.

Figure 3-135 Satellite Bent Pipe Link Deployment Dialog Box—Advanced

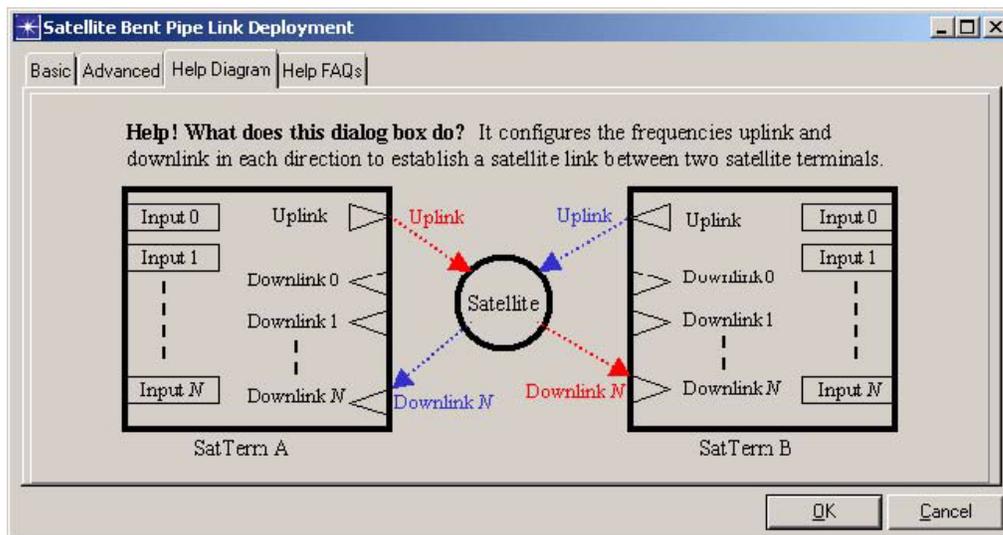


Based on the frequencies provided by the chosen Home Satellite, this screen allows you to configure the frequencies uplink and downlink (in each direction) to establish a satellite link between the two selected satellite terminals.

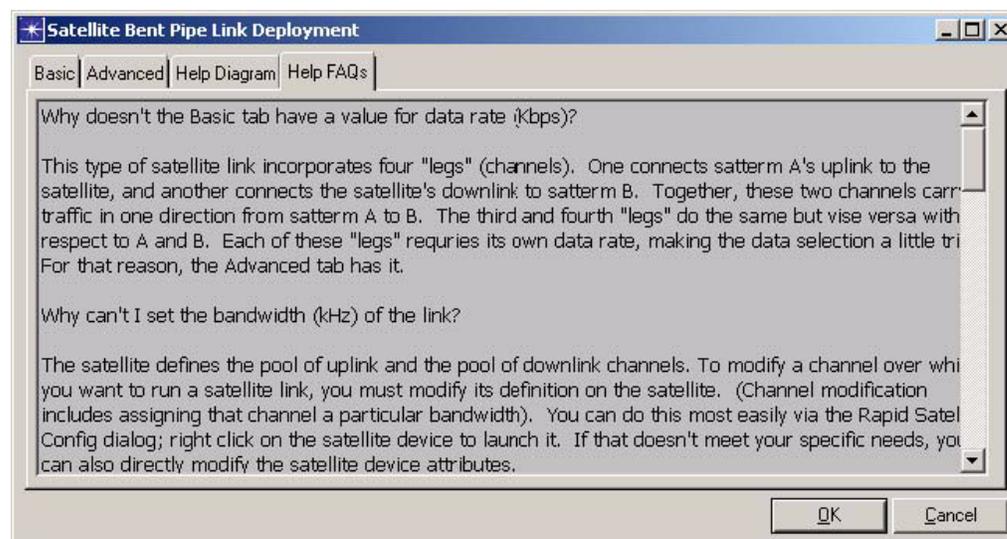
The fields of this screen are pre-populated for you with the best available default link.

- b) Click the Help Diagram tab. The following screen displays a diagram which explains the function of this dialog box .

Figure 3-136 Satellite Bent Pipe Link Deployment dialog box—Help Diagram



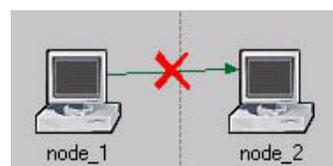
- c) Click the Help FAQs tab. The following screen displays a scrollable list of Frequently Asked Questions and answers regarding satellite link deployment.

Figure 3-137 Satellite Bent Pipe Link Deployment Dialog Box—Help FAQs

- 4) Use the default link values provided in the Satellite Bent Pipe Link Deployment dialog box (or select the desired values), and then click OK. The newly deployed satellite link displays in the workspace.

**Link Operations >
Verify Links**

Topology > Link Operations > Verify Links Perform inter and intra OPFAC link consistency checks. Inconsistent links (e.g., links not connected to the right ports on the end points of the link) will be marked with a red X in the workspace. This option can also be launched using the Verify Link Consistency toolbar button.

Figure 3-138 Inconsistent Links

In addition, the results of the link consistency check will be displayed in the Cross Classification Check dialog box

Figure 3-139 Cross Classification Check Dialog Box

	Device	Classification	Device	Classification	Link Type
1	Nw_Top.JFLCC_DATA.cis...	Secret	Nw_Top.JFLCC_DATA.co...	Unclassified	wired
2	Nw_Top.JFACC_DATA.cis...	Secret	Nw_Top.JFACC_DATA.co...	Unclassified	wired
3	Nw_Top.JFMCC_DATA.co...	Unclassified	Nw_Top.JFMCC_DATA.ci...	Secret	wired
4	Nw_Top.JFMCC.Promina	Secret	Nw_Top.JFMCC_VOICE.it...	Unclassified	wired
5	Nw_Top.MAGTF.Promina	Secret	Nw_Top.MAGTF_VOICE.t...	Unclassified	wired
6	Nw_Top.JFSOCC.Promina	Secret	Nw_Top.JFSOCC_VOICE....	Unclassified	wired
7	Nw_Top.CFH.Promina	Secret	Nw_Top.CFH_VOICE.ttc-39	Unclassified	wired
8	Nw_Top.JFLCC.Promina	Secret	Nw_Top.JFLCC_VOICE.it...	Unclassified	wired
9	Nw_Top.JFACC.Promina	Secret	Nw_Top.JFACC_VOICE.it...	Unclassified	wired
10	Nw_Top.MAGTF_DATA.ci...	Secret	Nw_Top.MAGTF_DATA.c...	Unclassified	wired

**Link Operations >
Clear Links**

Topology > Link Operations > Clear Links Remove red Xs marking inconsistent links in the workspace.

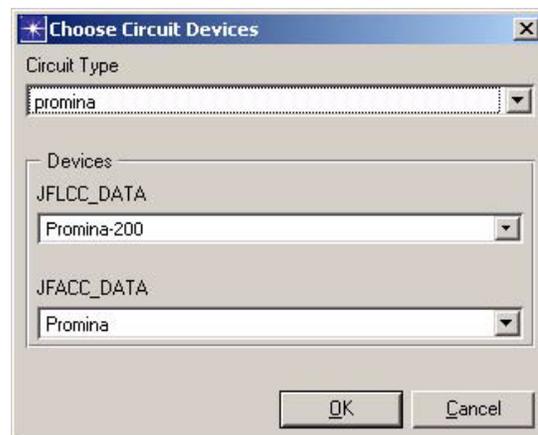
**Link Operations >
Import Links from
File**

Topology > Link Operations > Import Links from File Imports links from designated link import file.

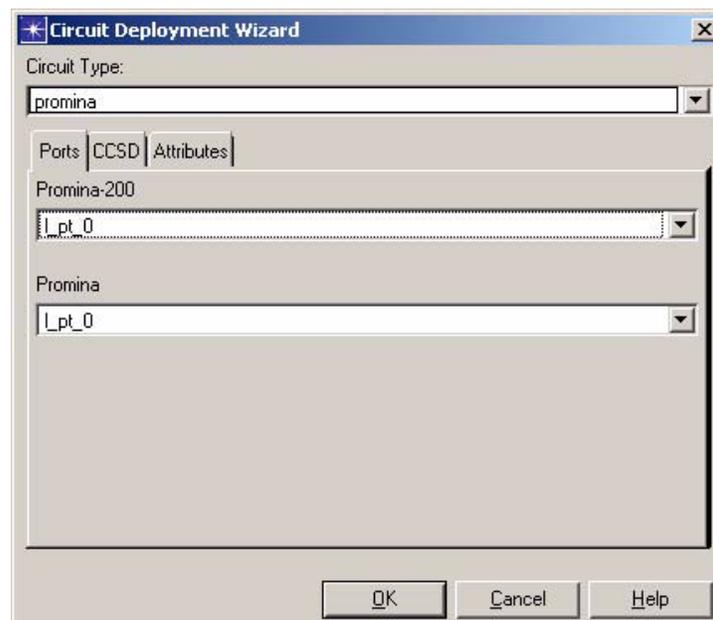
Deploy Circuit

Topology > Deploy Circuit Follow the steps in the Circuit Wizard to configure the desired circuit. All circuit devices (i.e., SCREAM, SHOUTip, CTP, Promina, TSSP, and Multiplexers) are deployed using the same procedure. A sample generic Circuit Wizard workflow – using Prominas as an example – is provided below.

- 1) Select Topology > Deploy Circuit (or press Ctrl + D) to start the wizard. You must select at least two compatible circuit devices or OPFACs that contain circuit devices; otherwise, an error will be prompted and the wizard is terminated.
- 2) As prompted, select the appropriate devices in the Choose Circuit Devices dialog box, and then click OK.

Figure 3-140 Choose Circuit Devices Dialog Box

The Circuit Deployment Wizard displays.

Figure 3-141 Circuit Deployment Wizard Ports Tab

- 3) On the Ports tab, specify the ports for the selected source and destination Promina devices in the scenario.
- 4) On the CCSD tab, configure the CCSD codes for the Promina circuit.

Figure 3-142 Circuit Deployment Wizard CCSD Tab

Circuit Type: promina

Ports | **CCSD** | Attributes

CCSD Name: CCMBAAAAB

Agency: C - Joint Staff

Purpose and Use: CM - COMM Management

Type of Service: B - DSN Access Line

From User: A - JTF

To User: A - JTF

Sequential Code: USCENTCOM (AA - C9) AB

Use CCSD name

OK Cancel Help

5) On the Attributes tab, configure the circuit's attribute values.

Figure 3-143 Circuit Deployment Wizard Attributes Tab

Circuit Type: promina

Ports | CCSD | **Attributes**

Name	Range	Value	Units
Circuit Speed		Auto-Sense	Kbps
Call priority	0-15	7	
Preempt priority	0-15	0	
Terrestrial routing		Do not care	
Encryption routing		Do not care	
Fiber routing		Do not care	
Call type		Permanent	
Direction		Dual	

OK Cancel Help

6) Click the OK button to complete the Promina circuit configuration and deploy the circuit.

Deploy Broadcast Network

Topology > Deploy Broadcast Network Define broadcast networks by selecting units in the workspace, and then selecting Topology > Deploy Broadcast Network.

- 1) Select the source and destination OPFACs or organizations in the workspace, and then select Topology > Deploy Broadcast Network (or press Ctrl + Shift + B). The Network Attributes dialog box displays.

Figure 3-144 Defining Broadcast Network Radio Attributes

Network Name:

Mode of Operation:

Classification:

Start Time: Stop Time:

Radio Attributes | Choose Devices | Optimization Attributes

Attribute Description	Range	Value	Unit
Default Frequency	30 - 90	30	MHz
Channel Bandwidth		25	KHz
Data Rate		16000	bps
Power	0.25 - 5	0.25	Watts
FHSS Modeling		Disabled	
└ FHSS Model		Abstract	
└ FHSS Low Frequency	30 - 90	30	MHz
└ FHSS High Frequency	30 - 90	90	MHz
└ FHSS Channel Spacing		10	KHz
└ FHSS Hop Set Size		20	
└ FHSS Hop Sequence Generation		Random	
└ FHSS Hop Duration		10.0	Secs

OK Cancel

- 2) Type a name for the broadcast network in the Network Name field.
- 3) On the Radio Attributes tab, enter the desired attributes for default frequency, channel bandwidth, and data rate. In addition, if the radio supports Frequency Hopping, additional attributes for frequency hopping spread spectrum (FHSS) will appear which can also be configured.
- 4) On the Choose Devices tab, select devices for the corresponding OPFACs or organizations.

Figure 3-145 Defining Broadcast Network Devices

Network Name:

Mode of Operation:

Classification:

Start Time: Stop Time:

Radio Attributes | **Choose Devices** | Optimization Attributes

OPFAC	Selected Device
HUMVEE_1	SINGARS
HUMVEE_2	SINGARS
HUMVEE_3	SINGARS

OK Cancel

- 5) On the Optimization Attributes tab, enter the desired attributes for possible capacities, and target and maximum utilization.

Figure 3-146 Defining Broadcast Network Optimization Attributes

Network Name:

Mode of Operation:

Classification:

Start Time: Stop Time:

Radio Attributes | Choose Devices | **Optimization Attributes**

Possible Capacities (Kbps)

Capacity	Status
7.20	

Help Insert Row Delete Row

Target Utilization: Data %

Maximum Utilization: Data %

OK Cancel

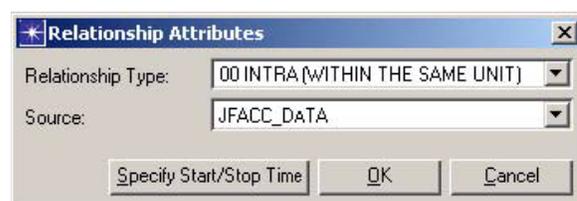
- a) Possible Capacities table: Specifies all of the capacities that the optimization engine can use when mutating solutions. For example, if there are two capacities specified, then the engine will be able to set either of them as the suggested capacity for this network. The Capacity column is where the capacity is specified. The Status column is used to mark the "original" capacity and the "current" capacity (or "Orig/Current" if the current capacity is also the original capacity.)
 - b) Insert Row button: To add a new capacity, click this button and type the new capacity into the Capacity column of the new row.
 - c) Delete Row button: To remove a capacity, select a cell in the row and click this button.
 - d) Target Utilization: Specifies the target utilization to be achieved on this network. The default value is to use the global values specified in the Capacity Optimization Settings dialog. You can override this just on this network by specifying a new value.
 - e) Maximum Utilization: Specifies the maximum utilization that is allowed on this network. The default maximum utilization is set to use the global values specified in the Capacity Optimization Settings dialog. You can override this just on this network by specifying a new value.
- 6) Click OK to create the newly defined broadcast network.

Deploy Relationship

Topology > Deploy Relationship Define relationships by selecting units in the workspace, and then selecting Topology > Deploy Relationship.

- 1) Select the OPFACs that you want to associate in the workspace, and then select Topology > Deploy Relationship (or press Ctrl + Alt + R). The Relationship Attributes dialog box displays.

Figure 3-147 Creating a Relationship



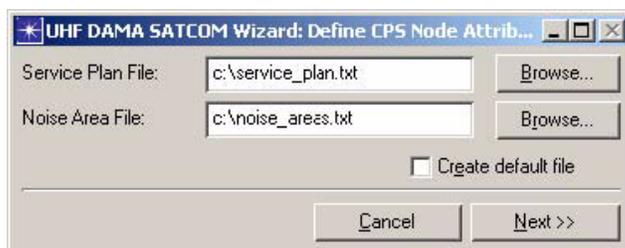
- 2) Select the type of relationship from the Relationship Type drop-down menu.
- 3) Select the source OPFAC from the Source drop-down menu.
- 4) Click OK. The relationship between the selected OPFACs is created.

Configuration Utilities > UHF DAMA SATCOM

Topology > Configuration Utilities > UHF DAMA SATCOM Follow the steps in the Configuration Wizard to configure the desired UHF DAMA SATCOM utility node. You must select at least one NCS device and two terminals in order to start the wizard.

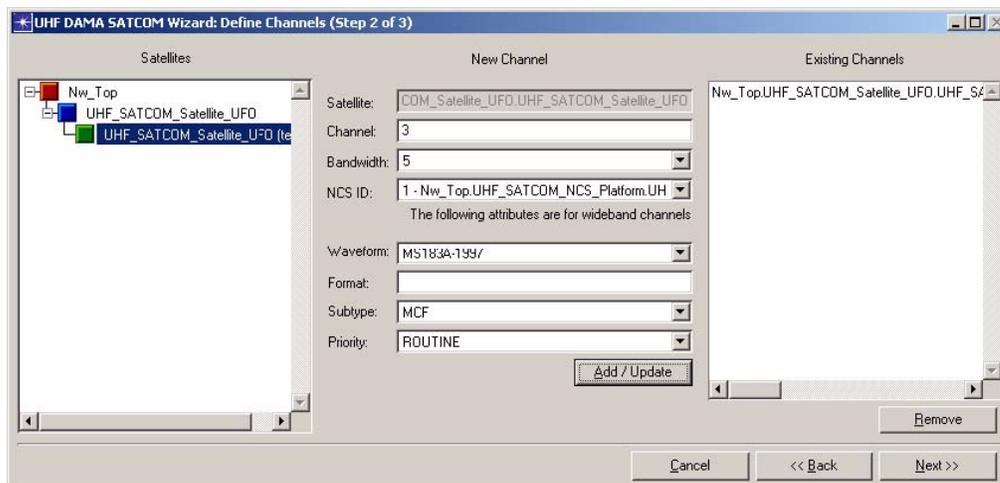
- 1) Select Topology > Configuration Utilities > UHF DAMA SATCOM to start the wizard.

Figure 3-148 UHF DAMA SATCOM Wizard: Define CPS Node Attributes (Step 1 of 3) Dialog Box



- 2) Browse and select a service plan file, and browse and select a noise area file (or check Create default file to create a default file.) Click Next>> to continue.

Figure 3-149 UHF DAMA SATCOM Wizard: Define Channels (Step 2 of 3) Dialog Box

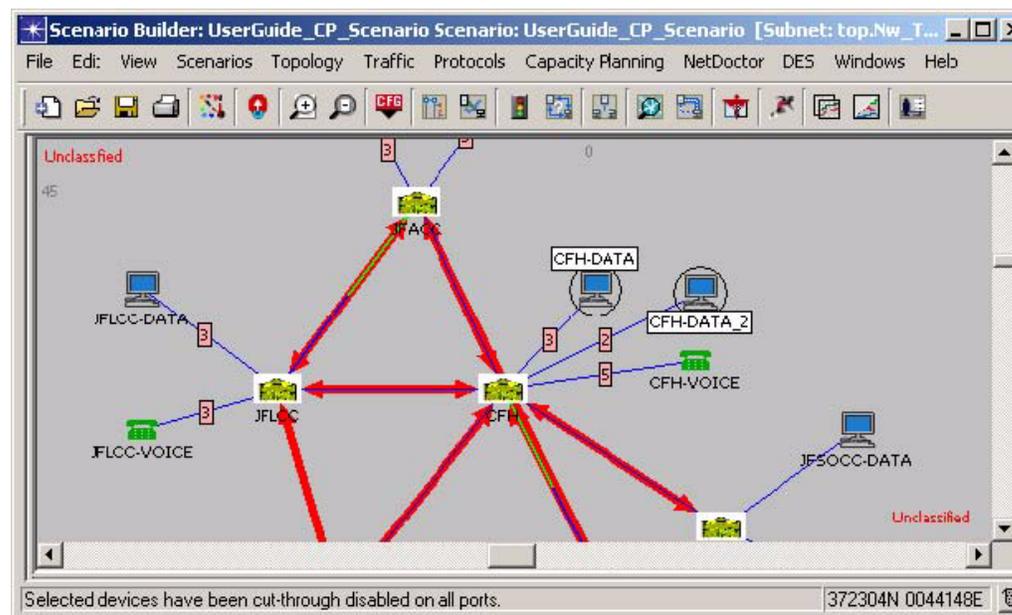


- 3) Specify the settings for the channel that you want to define, and then click Next>> to continue.

Configuration Utilities > Cut-through > Disable

Topology > Configuration Utilities > Cut-through > Disable Cut-through on Selected Devices (All Ports) Select two cut-through enabled devices that you want to be cut-through disabled, then select this command (or press Ctrl + Alt + D). The selected devices will be cut-through disabled on all ports. (Note the message that displays in the status bar at the bottom of the Scenario Builder window.)

Figure 3-152 Disable Cut-Through on Selected Devices



Set Owner

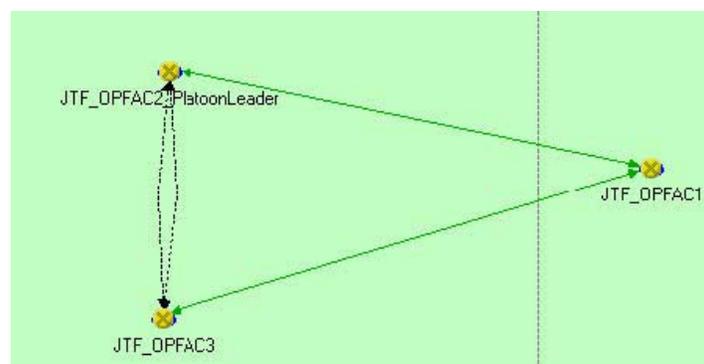
Topology > Set Owner Determine which units are needed for subordinate's input (performed by Lead Planner), and then mark them for subordinate input by setting ownership information.

Alternative method to access this option: right-click on a unit and select Edit JCSS Attributes, and then click the Set Owner button.

- 1) Select units to be marked for subordinate before accessing this option.
- 2) After this option is accessed, click on the Last Name drop-down menu to select an owner.
 - a) An owner can be set on multiple units through one operation by enabling the Applying owner information on all selected units option.
 - b) If the desired owner is not listed in the drop-down menu, add the desired owner to the list by clicking on the New Owner button.

Figure 3-153 Set Owner Dialog Box

Once the owner information is applied to the desired units, those units will display a yellow icon indicating the owner has been set and those units have been marked. Units are unmarked by default; therefore, the Lead Planner must remember to set ownership information on the units before exporting the subordinate query files to Subordinate Planners.

Figure 3-154 Owner Information Set on Desired Units

Remove Owner **Topology > Remove Owner** Remove ownership from selected units.

Alternative method to access this option: right-click on the unit, select Edit JCSS Attributes, click the Set Owner button, and then enable the Unset Owner Information checkbox.

- 1) Select units to be unmarked before accessing this option. Once the remove owner operation is applied, the yellow icons are removed.

Terrain **Topology > Terrain <options>** This menu is available only if a Terrain Modeling Module GUI (TMMGUI) license is obtained. Use this feature to import terrain data, view the terrain profile and study the effects of the atmosphere on the communication.

JCSS supports the following terrain data formats:

- DTED Level 0

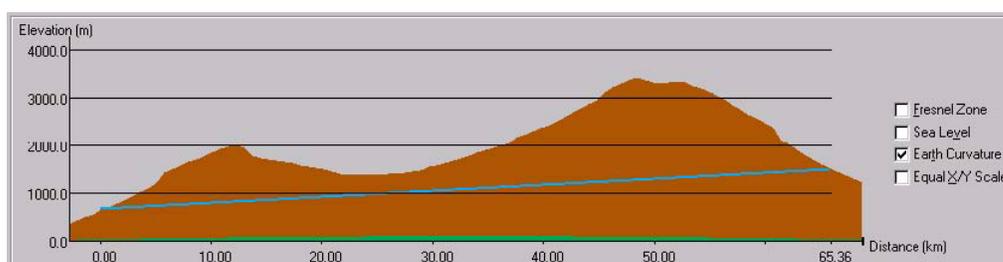
- DTED Level 1
- 15-minute DEM data
- 2-arc-second DEM data
- 1-degree-DEM data

**Terrain > View
Terrain Profile**

Topology > Terrain > View Terrain Profile View the terrain profile between two points.

- 1) In View Profile mode, click on one point and then click on the second point. This will display the terrain profile between the two selected points.

Figure 3-155 Terrain Profile



Terrain > Set Propagation Model

The brown area indicates terrain. Using this interface, you can turn on or off the Fresnel Zone and also the Earth's curvature (which is represented by the green arc). The blue line in the profile can be used to determine whether line-of-sight exists between the two points. If the blue line crosses over the terrain or the Earth's curvature, there is no line-of-sight.

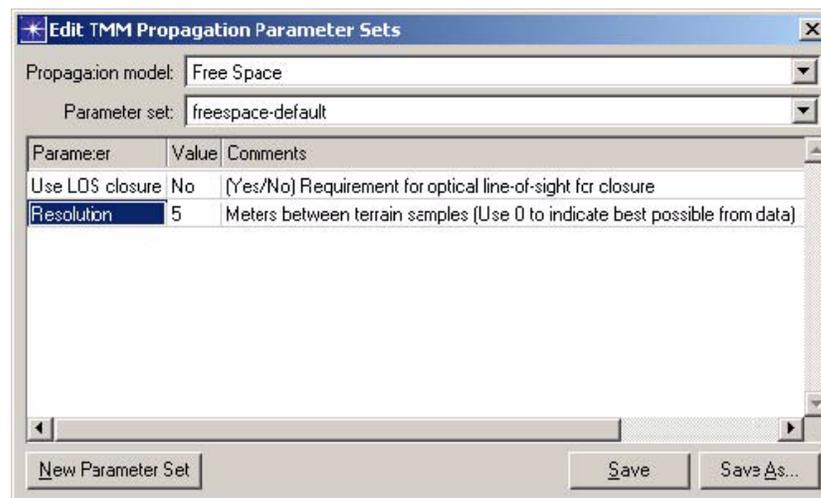
**Terrain > Set
Propagation Model**

Topology > Terrain > Set Propagation Model Set the model used by the TMMGUI module for representing the atmospheric conditions. Example propagation models include the Free-Space model and the Longley-Rice model. You can also create user-defined propagation models.

Terrain > Edit

Topology > Terrain > Edit Parameter Sets Access the tabular interface for Parameter Sets making changes to the propagation models.

Figure 3-156 Edit TMM Propagation Parameter Sets Dialog Box

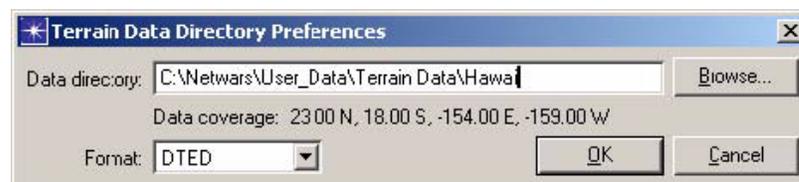


- 1) From the drop-down menu, select the propagation model to modify.
- 2) Once the desired changes to the propagation model are made, save it to the same model or save it to a new model (using the Save or Save As buttons) and close this table.

**Terrain > Specify
Terrain Data
Directory**

Topology > Terrain > Specify Terrain Data Directory Set the directory where JCSS will access terrain data.

Figure 3-157 Terrain Data Directory Preferences Dialog Box



- 1) Type in the folder name where the files are stored or use the Browse button to browse to that location using the file browser.

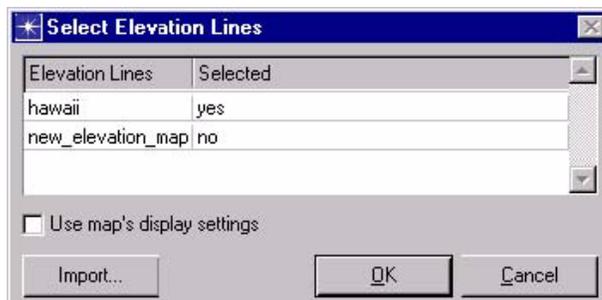
JCSS supports three types of terrain data: DTED, USGS DEM, and OpenFlight. The specified folder must contain the files of the specified type.

**Terrain > Rebuild
Terrain Data Catalog**

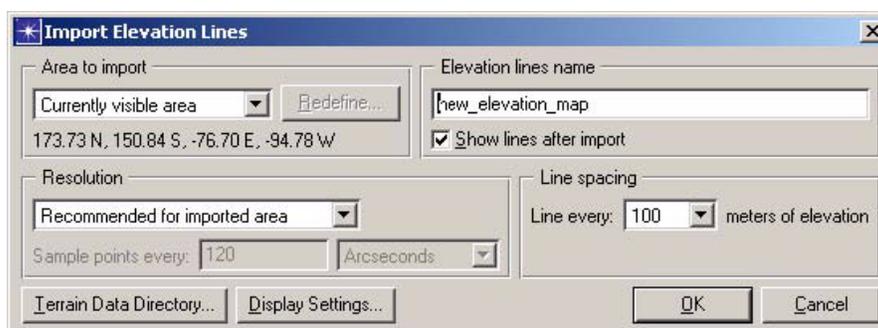
Topology > Terrain > Rebuild Terrain Data Catalog Refresh terrain data before import if files are added to the terrain data directory or changes are made to the location of the terrain data directory. JCSS does not automatically detect the changes.

**Terrain > Set
Elevation Maps**

Topology > Terrain > Set Elevation Maps Set elevation or contour lines on the map. If terrain data has already been imported, it can be saved as elevation lines and can be reused in future sessions of JCSS. This saves the time taken to import the data and create the elevation lines.

Figure 3-158 Select Elevation Lines Dialog Box

- 1) If there are no elevation lines for the area of interest, import terrain data and use the new elevation lines. Click the Import button to launch the Import Elevation Lines dialog box.

Figure 3-159 Import Elevation Lines Dialog Box

- 2) When importing the data, specify the following information:
 - a) Area to Import—Specifies the portion of the map corresponding to which one you want to import the terrain information. You have three choices: Currently Visible Area, Entire Subnet, or Define Area.
 - b) Elevation Lines Name—Identifies a name for the elevation lines being imported. By saving the elevation lines, you can avoid going through the import process again.
 - c) Resolution—Indicates the number of sample points per unit.
 - d) Line Spacing—Specifies how far away the elevation lines are spaced when imported into the scenario.
 - e) Terrain Data Directory—Click this button to select the folder that contains the terrain data. This launches the same interface as the Terrain > Specify Terrain Data Directory menu option.

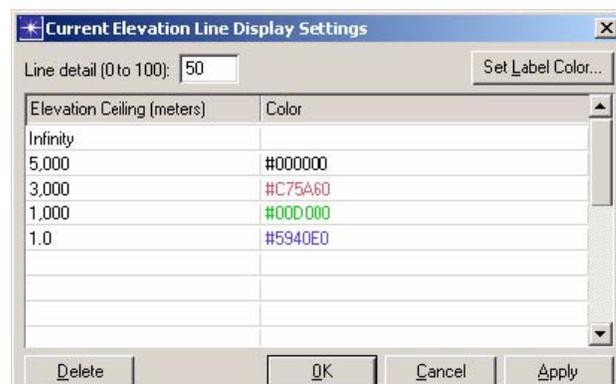
- f) **Display Settings:** Click this button to control the display preferences. This option launches the same interface as the **Terrain > Edit Map Display Settings** option.

3) Click OK.

**Terrain > Edit Map
Display Settings**

Topology > Terrain > Edit Map Display Settings Specify map display settings, such as the colors and thresholds to be used for the elevation lines.

Figure 3-160 Current Elevation Line Display Settings Dialog Box



3DNV

Topology > 3DNV > (option) Use the 3DNV options to display 3D network views, play 3DNV history, add '3DNV Mapping' attribute to selected nodes, manage 3DNV entities, show/hide and manage trajectories and pathloss of selected nodes in 3D Visualizer, and visualize antenna coverage.

3D Network Visualizer (3DNV) functionality lets you create three-dimensional animations based on topology information, node relationships, performance statistics, and terrain data. You can, for example, use 3DNV to visualize network characteristics such as node placement, line-of-sight restrictions, transmission quality, throughput, delay, and message status information.

Note—For more information about this feature, please refer to the OPNET IT Guru documentation set, available via **Help > Documentation > IT Guru Documentation.**)

These options are available only to users with 3D Network Visualizer GUI, Terrain Modeling, and Wireless product module licenses.

**3DNV > Display 3D
Network View**

Topology > 3DNV > Display 3D Network View View 3D animation of a network model in the workspace.

3DNV > Play 3DNV History

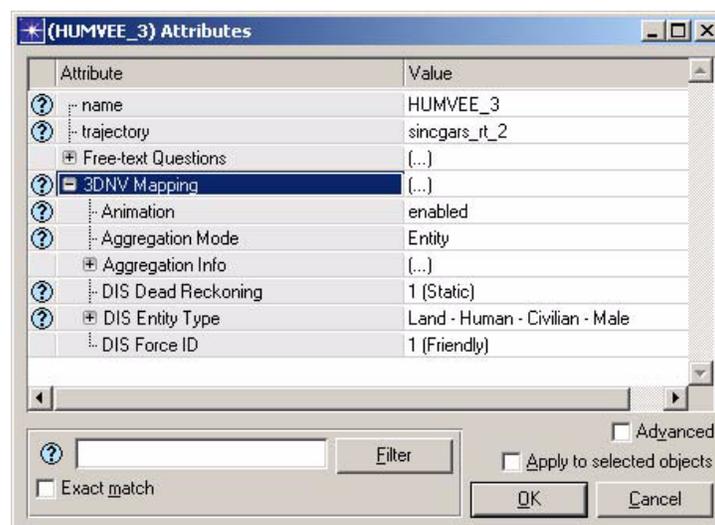
Topology > 3DNV > Play 3DNV History Choose a 3DNV history file to play.

Figure 3-161 Choose 3DNV History File Dialog Box

**3DNV > Add '3DNV Mapping' Attribute to Selected Nodes**

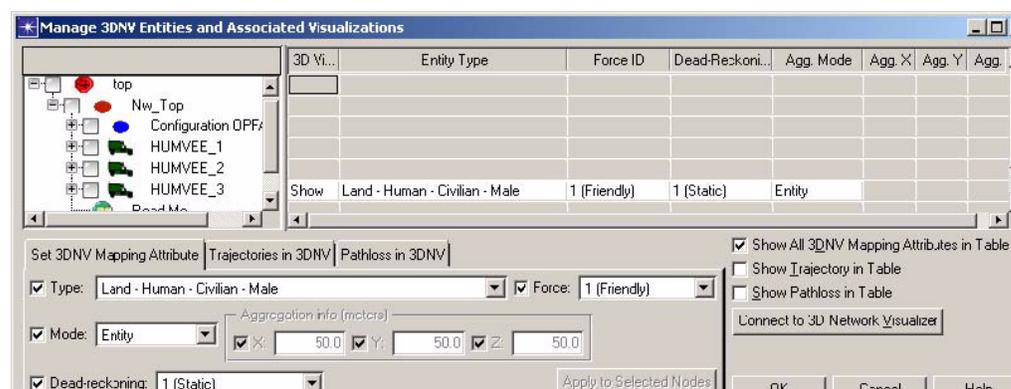
Topology > 3DNV > Add "3DNV Mapping" Attribute to Selected Nodes: Create '3DNV Mapping' extended attribute for the selected nodes and subnets.

Figure 3-162 Sample Attributes Dialog Box with "3DNV Mapping" Attribute

**3DNV > Manage 3DNV Entities**

Topology > 3DNV > Manage 3DNV Entities Assign, review, and modify the 3DNV Mapping attribute, which maps an OPNET node to a 3D model in 3D Network Visualizer. Also, enable the optional visualization of a node's trajectory or the pathloss between wireless nodes.

Figure 3-163 Manage 3DNV Entities and Associated Visualizations Dialog Box



In the Manage 3DNV Entities and Associated Visualizations dialog box, the treeview displays the subnets and nodes present in the network model, while the table presents associated information for the nodes.

The checkboxes next to the subnets in the treeview indicate whether none, some or all of the included nodes have an associated 3D Network Mapping attribute. (Nodes do not have similar checkboxes because that information is shown in the associated table.)

Which columns are shown in the table depends on what options are selected, as controlled by the Show All 3D Network Mapping Attributes in Table, Show Trajectory in Table, and Show Pathloss in Table checkboxes. Gray values indicate that no associated data is present.

- 3D View column-Displays the value of the "Animation" field of the 3D Network Mapping attribute, indicating whether to show or hide the corresponding node in 3D Network Visualizer when the scenario is visualized. When the scenario is visualized, toggling this value will cause the corresponding 3D model to appear or disappear in 3D Network Visualizer.
- Entity Type column-Displays the value of the "DIS Entity Type" field of the 3D Network Mapping attribute. You can modify the node's mapping by clicking on a defined cell value, which opens a pop-up menu containing the defined symbolic values. When the scenario is visualized and the node is shown, changing this value causes the corresponding 3D model to be updated appropriately in 3D Network Visualizer.
- Force ID column-Displays the value of the "DIS Force ID" field of the 3D Network Mapping attribute. You can modify the node's mapping by clicking on a defined cell value, which opens a pop-up menu containing the defined symbolic values.
- Dead-Reckoning column-Displays the value of the "DIS Dead Reckoning" field of the 3D Network Mapping attribute. You can modify the node's mapping by clicking on a defined cell value, which opens a pop-up menu containing the defined symbolic values.
- Agg. Mode column-Displays the value of the "Aggregation Mode" field of the 3D Network Mapping attribute. You can modify the node's mapping by clicking on a defined cell value, which opens a pop-up menu containing the defined symbolic values. If the aggregation mode is "Aggregate", the Agg. X, Agg. Y, and Agg. Z table cells are defined.
- Agg. X, Agg. Y, and Agg. Z columns-Displays the x, y, and z fields of the "Aggregation Info" field of the 3D Network Mapping attribute. These columns are defined only for Aggregate objects.
- 3D Traj. column-Indicates whether the associated trajectory can be or is shown in 3D Network Visualizer. Only "shown" nodes with an associated 3D Network Mapping attribute can also display their trajectories. NONE and VECTOR trajectories are not shown in 3D Network Visualizer.
- Trajectory column-Displays the current value of the "trajectory" attribute of the site. Clicking on a defined cell opens a pop-up menu containing a list of possible trajectories.

- Color column-Displays the current value of the "color" attribute of the site, which controls the color of the associated trajectory. Clicking on a defined cell opens a color picker dialog box to change the color.
- Pathloss in 3D column-Indicates whether the associated node with a wireless transceiver should be included in the visualization of pathloss computations between nodes. Pathloss is shown as a line between every pair of possible nodes, with the pathloss value displayed next to the line and controlling the color of the line.
- Set 3D Network Mapping Attribute tab-Contains a set of controls used to assign attribute values to a set of selected nodes. If a node doesn't have a 3D Network Mapping attribute already, a new extended attribute is automatically added with its initial value based on these controls. If a node already has a 3D Network Mapping attribute, the attribute fields are updated appropriately based on these controls.
- Trajectories in 3D Network tab-Contains a set of controls used to control the visualization of trajectories in 3D Network Visualizer.
- Pathloss in 3D Network tab-Contains a set of controls used to control the visualization of pathloss information in 3D Network Visualizer.
- Connect to 3D Network Visualizer button—Establishes a connection with 3D Network Visualizer (via the 3D Network Communication RTI) so that nodes with an associated 3D Network Mapping attribute and a 3D View column setting of 'Show' are displayed appropriately. The visualization will also include enabled trajectories or pathloss information for visualized nodes. After connection has been established, this button's label changes to
- Disconnect from 3D Network Visualizer. Clicking the button severs the communication, which removes all visualizations from 3D Network Visualizer.
- OK button—Closes the dialog box, keeping all changes made to the various attributes and preferences.
- Cancel button—Closes the dialog box, reverting all the changes made to the various attributes and preferences to the settings they had before the dialog box was opened.

3D Network > Show/Hide Trajectories of Selected Nodes in 3D Network Visualizer

Topology > 3D Network > Show Trajectories of Selected Nodes in 3D Network Visualizer and Topology > 3D Network > Hide Trajectories of Selected Nodes in 3D Network Visualizer Show and/or hide visualization of selected nodes' trajectories in 3D Network Visualizer.

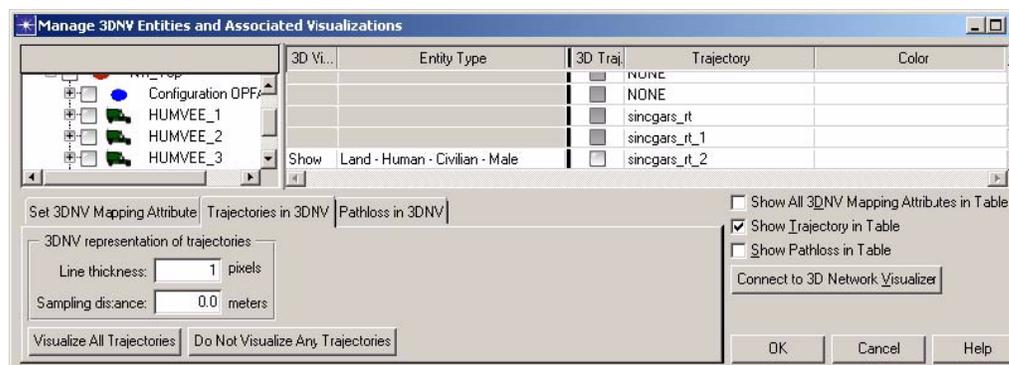
3D Network > Manage 3D Visualization of Trajectories

Topology > 3D Network > Manage 3D Visualization of Trajectories Control the visualization of trajectories in 3D Network Visualizer.

- In the Manage 3D Network Entities and Associated Visualizations dialog box, select the Show Trajectory in Table checkbox, and the Trajectories in 3D Network tab.

- Line thickness field—Specifies the thickness of the 3D lines displayed in 3D Network Visualizer. This sets the "3dnv.trajectory_thickness" preference.

Figure 3-164 Manage 3DNV Entities and Associated Visualizations Dialog Box—Trajectories in 3DNV Tab



- Line thickness field—Specifies the thickness of the 3D lines displayed in 3D Network Visualizer. This sets the "3dnv.trajectory_thickness" preference.
- Sampling distance field—Specifies the sampling distance used to break a potentially long trajectory segment into an appropriate number of 3D lines. A value of 0 indicates that no sampling is to take place, with one 3D line per segment. This sets the "3dnv.trajectory_sampling_distance" preference.
- Visualize All Trajectories button—Displays all node trajectories in 3D Network Visualizer, selecting the checkboxes in appropriate cells of the 3D Traj. Column as each trajectory is drawn. A progress bar is displayed during the operation. Canceling the progress bar stops the operation with the trajectories drawn to that point left selected.
- Do Not Visualize Any Trajectories button—Hides all node trajectories in 3D Network Visualizer, unselecting the checkboxes in appropriate cells of the 3D Traj. Column as each trajectory is hidden. A progress bar is displayed during the operation. Canceling the progress bar stops the operation with the trajectories hidden to that point left unselected.

3DNV > Show/Hide Pathloss between Selected Nodes in 3D Visualizer

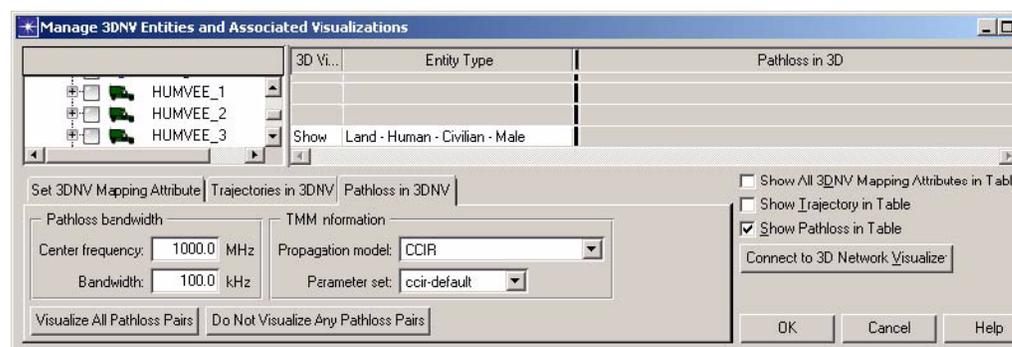
Topology > 3DNV > Show Pathloss between Selected Nodes in 3D Visualizer and Topology > 3DNV > Hide Pathloss between Selected Nodes in 3D Visualize
Show and/or hide visualization of selected nodes' pathloss information in 3D Network Visualizer.

3DNV > Manage 3D Visualization of Pathloss

Topology > 3DNV > Manage 3D Visualization of Pathloss Control the visualization of pathloss information in 3D Network Visualizer.

- In the Manage 3DNV Entities and Associated Visualizations dialog box, select the Show Pathloss in Table checkbox, and the Pathloss in 3DNV tab.

Figure 3-165 Manage 3DNV Entities and Associated Visualizations Dialog Box—Pathloss in 3DNV Tab

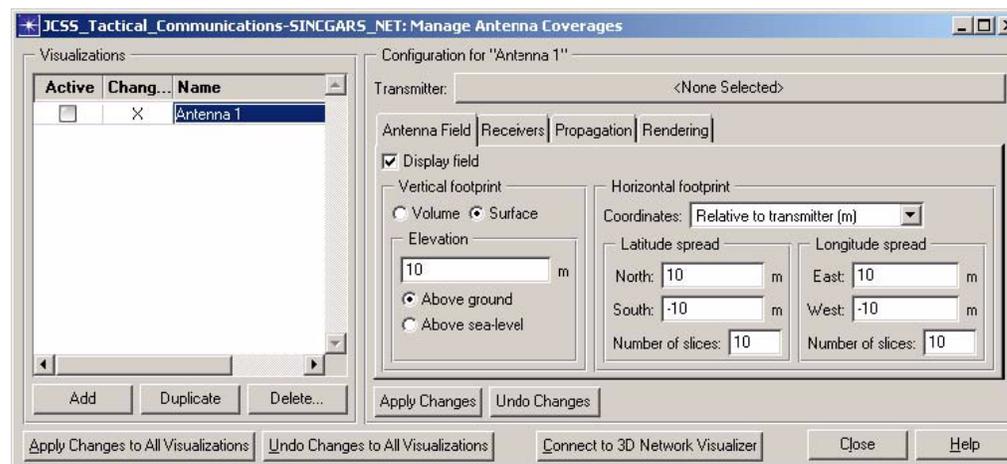


- Center frequency field—Specifies the center frequency used for pathloss computation. This sets the "3dnv.pathloss_center_frequency" preference.
- Bandwidth field—Specifies the bandwidth used for pathloss computation. This sets the "3dnv.pathloss_bandwidth" preference.
- Propagation model drop-down menu—Specifies the propagation model used for pathloss computation. This modifies the propagation model information in the scenario.
- Parameter set drop-down menu—Specifies the set of propagation parameters used for pathloss computation. This modifies the propagation model information in the scenario.
- Visualize All Pathloss Pairs button—Includes all nodes with wireless transceivers in the pathloss display, selecting the checkboxes in appropriate cells of the Pathloss in 3D column as the pathloss for each node is drawn. A progress bar is displayed during the operation. Canceling the progress bar stops the operation with the pathloss shown to that point left selected.
- Do Not Visualize Any Pathloss Pairs button—Removes all nodes with wireless transceivers from the pathloss display, unselecting the checkboxes in appropriate cells of the Pathloss in 3D column as the pathloss for each node is hidden. A progress bar is displayed during the operation. Canceling the progress bar stops the operation with the pathloss hidden to that point left unselected.

**3DNV > Visualize
Antenna Coverage**

Topology > 3DNV > Visualize Antenna Coverage Configure and visualize antenna "gain fields" for the current scenario.

Figure 3-166 Manage Antenna Coverages Dialog Box



In the Manage Antenna Coverages dialog box, the Visualizations area includes a table showing the list of defined visualizations and buttons to manage that list.

- **Active column**-Used to specify that the visualization should be displayed in the 3D Network Visualizer if the scenario is currently connected with it. Selecting the checkbox while a connection is established results in the corresponding 3DNV graphical elements being created.
- **Changes column**-When marked, indicates that some of the visualization settings have been changed since the last update of the graphical elements. This column becomes marked as soon as some control is modified for the visualization. It becomes unmarked when the visualization changes are applied or undone.
- **Name column**-Name of the visualization. Double-click on a name value to edit it.
- **Add button**-Used to create a new visualization. Clicking this button opens another dialog box in which to enter the new visualization's name.
- **Duplicate button**-Used to create a new visualization by duplicating the currently selected one. All settings are duplicated, except for the visualization's name. Clicking the name brings up another dialog box in which to enter the new visualization's name.
- **Delete... button**-Used to delete the currently selected visualization. Clicking it brings up another dialog box to confirm or cancel the deletion.

In the Manage Antenna Coverages dialog box, the Configuration area includes controls to display and modify the settings of the currently selected visualization.

- Transmitter button—Defines the transmitter module to visualize using an antenna field. Clicking on the button opens a dialog box showing a hierarchy of all wireless transmitter modules in the scenario.
- Tabs—Provides access to visualization settings for Antenna Field, Receivers, Propagation, and Rendering.
- Apply Changes button—Updates the visualization based on the values in the controls. If the visualization is currently displayed in the 3D Network Visualizer, the various graphical primitives will be updated or regenerated appropriately based on the settings.
- Undo Changes button—Resets the visualization's settings to the last applied values, or (if changes were never applied) to the original settings that existed when the dialog box was opened or the visualization created. If the visualization is currently displayed in 3D Network Visualizer, the various graphical primitives will be updated or regenerated appropriately based on the settings.

Other controls In the Manage Antenna Coverages dialog box include:

- Apply Changes to All Visualizations button—Same as clicking Apply Changes for every visualization that has pending changes.
- Undo Changes to All Visualizations button—Same as clicking Undo Changes for every visualization that has pending changes.
- Connect to 3D Network Visualizer button—Establishes a connection with 3D Network Visualizer (via the 3D Network Communication RTI) so that nodes with an associated 3D Network Mapping attribute are displayed appropriately. The visualization will also include enabled antenna field visualizations.

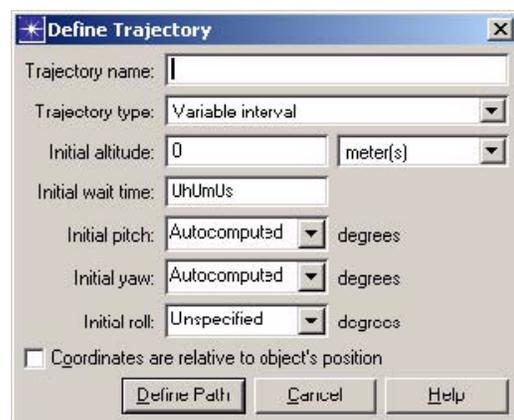
After connection has been established, this button's label changes to Disconnect from 3D Network Visualizer. Clicking the button severs the communication, which removes all visualizations from 3D Network Visualizer.

- Close button—Closes the dialog box, prompting you to save if any changes were made to any visualization's settings.

Define Trajectory

Topology > Define Trajectory Create a trajectory defined in segments.

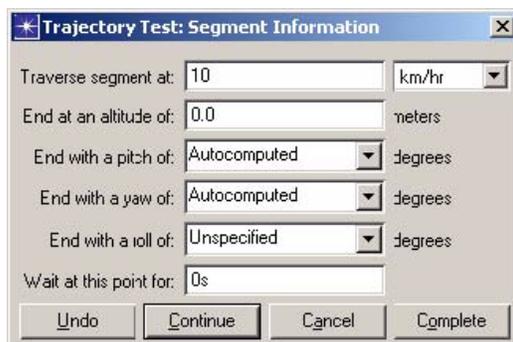
- 1) Define a trajectory type, how long the unit waits at the starting location before it starts moving, and the altitude at which the unit is when it starts its trajectory.
 - a) Trajectory name—Sets the name of the trajectory.
 - b) Trajectory type—The types are Variable interval and Fixed interval.

Figure 3-167 Define Trajectory Dialog Box

- c) Initial altitude—This field sets the initial altitude of the trajectory. Choose the units of measurement for the altitude with the drop-down menu.
 - d) Initial wait time—In a variable-interval trajectory, the initial wait time pauses a mobile object for a specified time before it covers the next segment.
 - e) Initial pitch—Sets the initial pitch of the trajectory. Possible assignments are: Autocomputed to assign a value automatically according to the trajectory; Unspecified to not assign any value; or 0.0, which you can edit to assign an explicit value.
 - f) Initial yaw—Sets the initial yaw of the trajectory. Possible assignments are: Autocomputed to assign a value automatically according to the trajectory; Unspecified to not assign any value; or 0.0, which you can edit to assign an explicit value.
 - g) Initial roll—Sets the initial roll of the trajectory. Possible assignments are: Autocomputed to assign a value automatically according to the trajectory; Unspecified to not assign any value; or 0.0, which you can edit to assign an explicit value.
 - h) Coordinates are relative to object's position—You can specify a trajectory that is either relative to an object's initial position or has its own absolute initial position. If you define a relative trajectory, all objects that are assigned this trajectory will trace out the same path starting at their initial positions. If you define an absolute trajectory, all the objects that are assigned this trajectory jump to the trajectory's initial position before traversing it. Also indicate whether the trajectory's path points are absolute or relative to the object's current location.
- 2) Click Define Path to enter trajectory definition mode, display the Trajectory Status dialog box, and change the cursor into a line tool in the Project Editor. This is used to draw a node's mobile trajectory; the path displays in red.

- 3) When you define a variable interval trajectory, the Trajectory Segment Information dialog box displays after you create a path. This dialog box is used to specify trajectory information for each segment.

Figure 3-168 Trajectory Segment Information Dialog Box



- 4) Click Continue to add a segment, and/or click Complete when you are finished.
- 5) From the Scenario Builder, right-click on the desired unit to open the shortcut menu.
- 6) Select Edit JCSS Attributes. The OPFAC/Organization Attributes dialog box displays.
- 7) Select the name of the trajectory from the Trajectory drop-down menu.
- 8) Click OK.

Figure 3-169 Assigning Trajectory

The assigned trajectory displays as a light-green arrow.

Figure 3-170 Assigned Trajectory**Clear Trajectory**

Topology > Clear Trajectory Assignment Clear the trajectory attribute on all Assignment or selected mobile nodes.

Figure 3-171 Clear Trajectory Assignment Dialog Box

Note—For more information about this feature, please refer to the OPNET IT Guru documentation set, available via Help > Documentation > IT Guru Documentation.)

Random Mobility

Topology > Random Mobility > (option) Configure and/or clear Mobility Profiles, and set the trajectory created from Random Mobility on all or selected mobile nodes in this network.

Trajectories and orbits specify deterministic paths for mobile sites. To model random movement, you can use the random mobility feature. Random mobility lets you define a rectangular region in which a site will move during a simulation. You can define this region by specifying x-y coordinates or by using a mobility domain (a special kind of wireless domain). During simulation, the site randomly selects a destination in the region and moves toward it at a specified or randomly chosen speed. Upon reaching its destination, the site pauses a configurable length of time before it repeats the process by selecting another random destination.

A mobility configuration object holds random mobility parameters as "profiles", making it easy to reuse them. Profiles are applied to specified sites using Topology > Random Mobility > Set Mobility Profile. Even if multiple sites in a network use the same profile, their movements will be different because the destination for each site is chosen randomly and independently.

Note—For more information about this feature, please refer to the OPNET IT Guru documentation set, available via Help > Documentation > IT Guru Documentation.)

Random Mobility > Set Mobility Profile

Topology > Random Mobility > Set Mobility Profile Select the Mobility Profile to configure on the selected mobile nodes in this network.

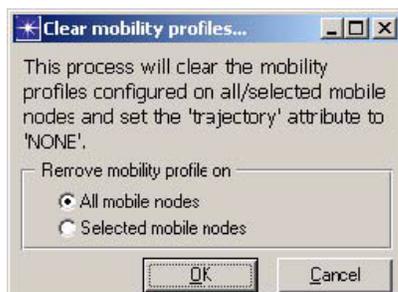
Figure 3-172 Configure Mobility Profile on Selected Nodes Dialog Box



**Random Mobility >
Clear Mobility Profile**

Topology > Random Mobility > Clear Mobility Profile Clear the mobility profiles on all or selected mobile nodes.

Figure 3-173 Clear Mobility Profiles Dialog Box



**Random Mobility >
Set Trajectory
Created From
Random Mobility**

Topology > Random Mobility > Set Trajectory Created From Random Mobility Assign random trajectories to one of more sites.

- 1) Select the mobile sites to which you want to apply random trajectories. To apply trajectories to all mobile sites, leave them all unselected.
- 2) Choose Topology > Random Mobility > Set Trajectory Created From Random Mobility.

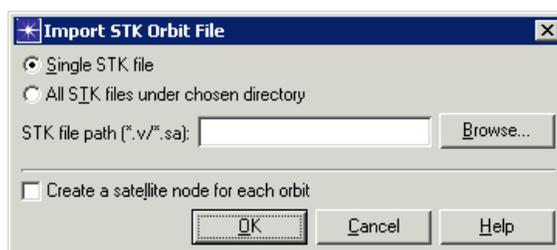
For each selected site (or all sites), JCSS looks for a random trajectory from the current scenario and, if found, applies it to the corresponding site.

Import STK Orbit

Topology > Import STK Orbit Imports an STK orbit file (wireless functionality only). The general steps are as follows:

- 1) In any project, choose Topology > Import STK Orbit.

Figure 3-174 Import STK Orbit



- 2) Choose either Single STK file or All STK files under chosen directory.
- 3) Select the checkbox “Create a satellite node for each orbit” if you want to create individual satellite nodes in the topology. These individual nodes are placed in the top subnet workspace for each imported orbit automatically. For each satellite node, its name is set to the corresponding imported orbit and it displays the imported orbit in top subnet.

4) Enter the full path name of the desired orbit file, or use the Browse button to display and select the file.

5) Click OK.

Shared Risk Groups

Topology > Shared Risk Groups > (option) Create shared risk groups, import and/or export *.srgi data files for shared risk groups, and visualize which network objects are members of a failed risk group.

A shared risk group defines a failure relationship between two sets of network objects, where failures in one set cause failures in the other set. You can use risk groups to model risk factors that can cause failures in a production network but do not exist as actual objects in the network model. To do this, you can create a risk group in which the risk element set is empty and the impacted element set contains objects that depend on the "missing" object.

After creating risk groups, you can view and edit them in the Network Browser.

Shared Risk Groups > New

Topology > Shared Risk Groups > New Create a risk group manually. Verify that all the network objects you want to specify as risk elements and impacted elements are present in the scenario, and then choose Topology > Shared Risk Groups > New.

The Network Browser opens, with the View filter menu set to Shared Risk Groups. A new risk group appears in the treeview.

- To rename a risk group, right-click on the group, choose Edit Attributes, and set the "name" attribute.
- Add the risk elements (if any):
- Select the nodes, links, and risk groups that you want to include in the risk element set. (If you want to select a risk group, you must select it in the Network Browser because risk groups are not visible in the project workspace.)
- In the Network Browser treeview, right-click on the risk group and choose Add Selected Objects as Risk Elements.

The selected objects are added under Risk Elements.

- Add the impacted elements to the group:
- Select the nodes, links, and risk groups that you want to include in the impacted element set. (If you want to select a risk group, you must select it in the Network Browser because risk groups are not visible in the project workspace.)
- In the Network Browser treeview, right-click on the risk group and choose Add Selected Objects as Impacted Elements.

The selected objects are added under Impacted Elements.

- Specify the failure propagation criterion for the risk group:
- Right-click on the risk group and choose Edit Attributes. The Attributes dialog box for the shared risk group displays.
- For the "failure propagation criterion" attribute, specify one of the following settings:
 - Any Risk Element Failed-All impacted objects are disabled if any member of the risk element set is disabled.
 - All Risk Elements Failed-All impacted objects are disabled only if all members of the risk element set are disabled.
- Close the Edit Attributes dialog box.

**Shared Risk Groups
> Import**

Topology > Shared Risk Groups > Import Select a Shared Risk Group Import File (*.srgi) to import, and then click OK in the Select SRG Import File dialog box.

Figure 3-175 Select SRG Import File Dialog Box



**Shared Risk Groups
> Export**

Topology > Shared Risk Groups > Export Create a data file for shared risk groups by exporting the shared risk groups defined in an existing scenario. Choose Topology > Shared Risk Groups > Export. As prompted, specify a file name for the saved Shared Risk Group Import File (*.srgi), and then click Save in the Save As dialog box. If desired, you can edit the resulting file in a text editor.

**Shared Risk Groups
> Visualize
Operational Status**

Topology > Shared Risk Groups > Visualize Operational Status > (option) Choose Topology > Shared Risk Groups > Visualize Operational Status > Visualize to display which network objects are members of a failed risk group. An icon appears over every network object that is currently failed due to its membership in a risk group. To clear the risk-group visualizations, choose Topology > Shared Risk Groups > Visualize Operational Status > Clear.

Note—If any risk-group elements are failed or recovered while status visualization is enabled, the visualization status does not refresh automatically; you must choose Topology > Shared Risk Groups > Visualize Operational Status > Visualize again to update the visualization.

Traffic Menu

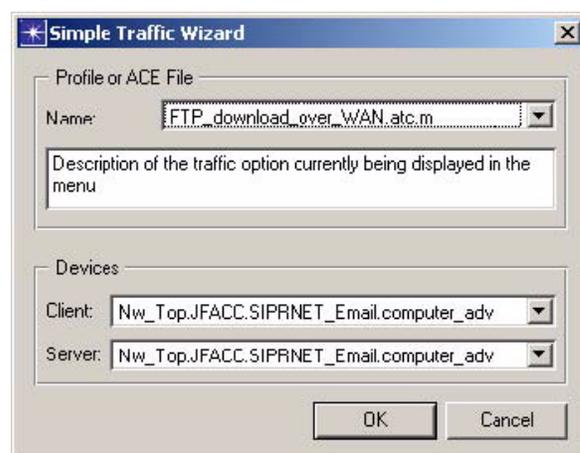
Traffic Wizard

Traffic > Traffic Wizard Launch the Traffic Wizard which provides you with a quick and simple way to deploy traffic within JCSS. Select two OPFACs, and then the Traffic Wizard walks you through selecting the end devices (and the profile to deploy between the client and server devices), and deploying a link between them.

Note—The Traffic Wizard will launch only if you have selected two OPFACs between which the traffic is to be deployed.

- 1) Select Traffic > Traffic Wizard (or press <Ctrl> + W) to launch the Traffic Wizard.

Figure 3-176 Traffic Wizard



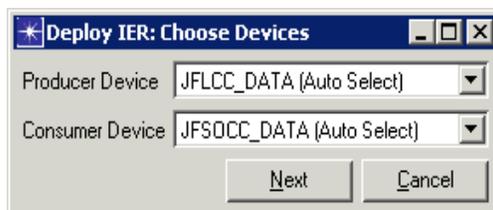
- 2) Select a profile to deploy, specify client and server devices, and then click OK.

IERs **Traffic > IERs > (option)** Create, deploy, and edit IERs and their attributes.

IERs > Deploy IERs

Traffic > IERs > Deploy IERs... Launches the IER Wizard which allows you to easily specify attributes and create IERs between one producer and one consumer.

- 1) Select two devices or OPFACs in the scenario.
- 2) Choose Traffic > IERs > Deploy IERs.... The Deploy IER: Choose Devices dialog box displays.

Figure 3-177 Deploy IER: Choose Devices Dialog Box

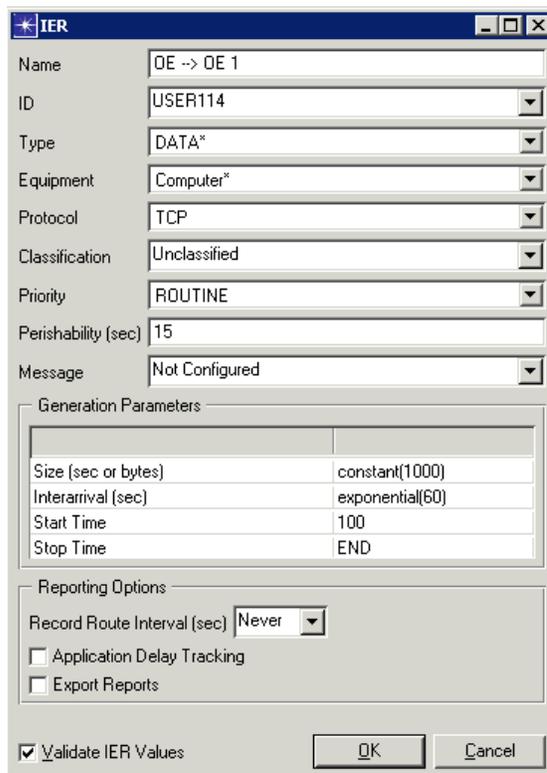
3) Verify the selection of Producer and Consumer(s) for the IER you want to create:

- a) Producer column—When creating new IERs, the producing OPFAC is displayed. Only one OPFAC may be selected at a time. Use the drop-down menu to select a different producer.

Note—If the Auto Select option is chosen for either the producer or consumer, a specific device will be chosen by the OPFAC's OE module at simulation time.

- b) Consumers column—When creating IERs, the consuming OPFAC is displayed. Use the drop-down menu to select a different consumer.

4) Click Next. The IER dialog box displays where a new IER can be created.

Figure 3-178 IER Dialog Box

Note—Options presented are based on the properties of the chosen devices. The Equipment type is set to the equipment type of the devices. The equipment type is also used to limit the available IER type choices. Finally, the classification field is limited to classifications supported by the devices

5) Specify attributes for the IER:

- a) Name—Name of the IER.
- b) ID—Identifies an IER in the database. The ID is used to identify the IER for reporting and can be set to any arbitrary string value. By default, it is set to "Use demand name" which means that the ID comes from the assigned name on the demand object.
- c) Type—This is the type of IER - voice, VTC or data.
- d) Equipment—This is the type of equipment that will be used to transmit this IER.
- e) Protocol—Defines the underlying Transport Layer protocol that traffic (IERs) will use for transmission. Typical transport layer protocols include TCP and UDP.
- f) Classification—Specifies the security classification of an IER. The security classification of an IER is one criterion that determines the system element through which the IER is transmitted. The default classification is "Unclassified."
- g) Priority—Determines the number of transmission retries and the wait time between successive retries.
- h) Perishability (sec)—Specifies the time in seconds for which the IER is alive. If the time taken by the IER to reach the destination from the source is greater than the perishability, the IER is recorded as "failed."
- i) Message—This field can be set to any value (usually in a *<tag>=<value>* format). Custom models can then parse this information and use it during the simulation. Multiple portions of information are separated by the ';' character.
- j) The following fields are not filtered in the IER properties dialog box; you can choose values as desired. The values will be validated when you click OK, if the "Validate IER Values" checkbox is selected.

Size—This is the size of the IER. For data IERs, the size is specified in bytes. For voice or VTC IERs, the size is specified in number of seconds.

Interarrival(s)—Represents the time, in seconds, between IER firings.

Start Time—Identifies the time, in seconds, in which the IER will begin firing after a simulation begins.

Stop Time—Identifies the time, in seconds, in which the IER will stop firing after the simulation begins.

- 6) Record Route Interval (sec)—Set the interval at which you wish to record IER routes during a simulation: Never (default), All (record all IER firings), Once (record only the first firing), or enter an integer in seconds.
- 7) Application Delay Tracking checkbox—If selected, enables application delay tracking.
- 8) Export Reports checkbox—If selected, enables exported reports.
- 9) Validate IER Values checkbox—If selected, performs a continuous validation of IER values.
- 10) Click OK to create the specified IER.

IERs > Deploy IERs (Advanced)

Traffic > IERs > Deploy IERs (Advanced) Launches the IER Rapid Deployment wizard, shown below, which allows you to create IERs for the entire scenario.

- 1) Choose Traffic > IERs > Deploy IERs (Advanced). The IER Rapid Deployment Wizard displays.

Figure 3-179 IER Rapid Deployment Wizard

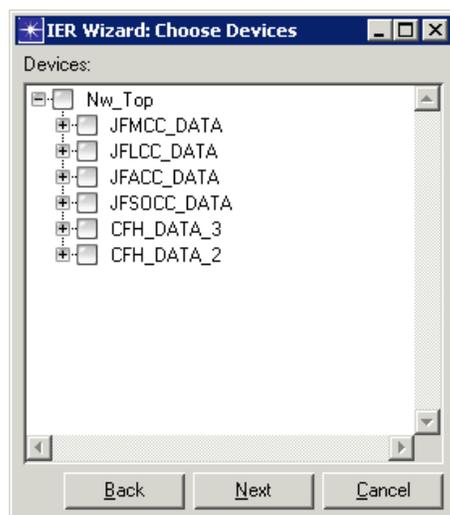
- 2) Specify traffic type, equipment type, and classification to be used for the IERs to be created. These properties are used to filter the list of possible producer and consumer devices. The set of possible values for these properties is obtained directly from the IER demand object, and the Decision Table entries from the IER Firing Rules table are used to filter the Equipment list based on the chosen Traffic Type.

- 3) Define the scope of the deployment, choosing from the following options:
- Full Mesh: Creates a mesh of bi-directional IER pairs among all devices that support the specified IER Type, Equipment, and Classification.

Note—A mesh is not created for intra-OPFAC IERs.

- To all other devices from a selected device: Creates individual IERs between the selected producer and all other devices that support the specified IER configuration and are not in the same OPFAC as the producer.
 - From all other devices to a selected device: Creates individual IERs between all devices that support the specified IER configuration and the selected consumer, provided that they are not in the same OPFAC as the consumer.
 - Multi-consumer IER: Creates a single multi-consumer IER between the selected producer device and all other devices in the scenario that support the specified IER configuration and are not in the same OPFAC as the producer.
- a) If you choose the Select Other Devices checkbox and click Next, the following dialog box appears. The tree is filtered to show only devices that support IERs with the specified type, equipment, and classification settings. Select as many devices from this tree as desired and click Next. Those devices will be used when creating IERs according to the deployment scope you chose.

Figure 3-180 IER Wizard: Choose Devices Dialog Box

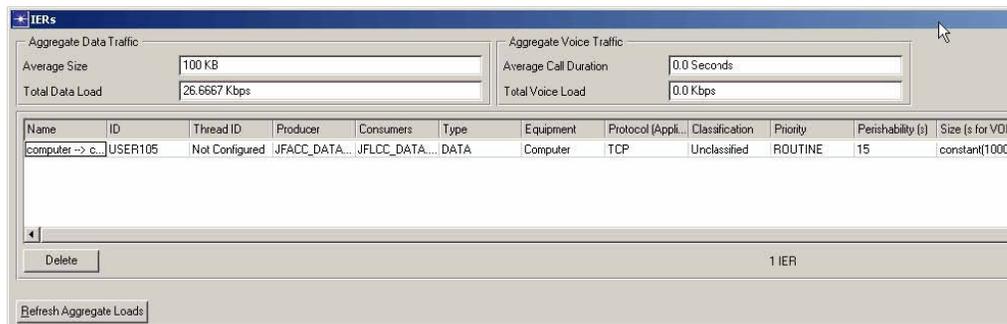


When you click Next, either on the initial wizard screen or on the Choose Devices dialog box, you will go to the IER dialog box shown in [Figure 3-178](#) on page JCSS-3-157. Follow the instructions that accompany that figure to complete the IER deployment.

IERs > Edit All

Traffic > IERs > Edit All IERs Display all IERs in a scenario in the IERs dialog IERs box for viewing and editing.

Figure 3-181 IERs Dialog Box



- 1) Average Data Traffic and Voice traffic fields-Displays the average size or duration and total load values for the Data and Voice categories.
- 2) IERs list box-Edit attributes of IERs.
- 3) Click Delete to delete the selected IER.
- 4) Click Refresh Aggregate Loads to update aggregate loads in the view.
- 5) Click OK to save your IER edits.

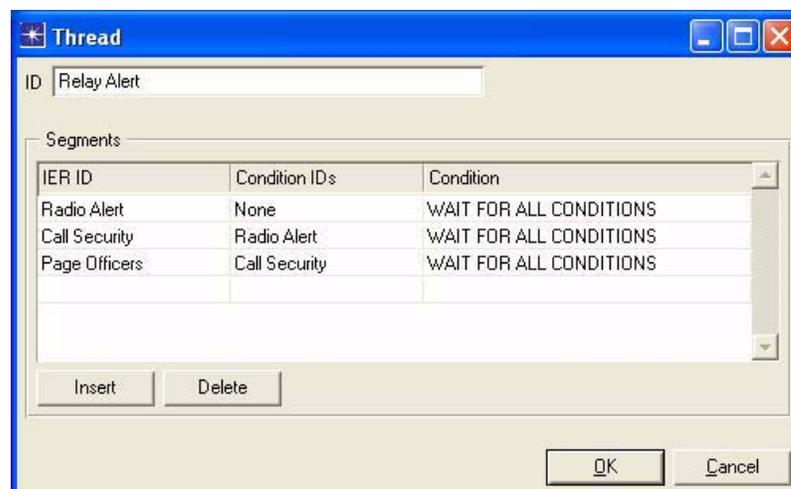
IERs > Edit IERs for Selected Objects

Traffic > IERs > Edit IERs for Selected Objects Display and edit a list containing all IERs associated with any subnet, node or demand that is selected in the workspace or Network Browser

IERs > Create Thread

Traffic > IERs > Create Thread Create and edit IER threads beginning with any IER in the scenario.

- 1) Select one or more IERs in the workspace or Network Browser.
- 2) Choose Traffic > IERs > Create Thread. The Thread dialog box displays.

Figure 3-182 Thread Dialog Box

- 3) Specify the ID and segments of the thread:
- 4) Click Insert to add segments to the thread. If one or more cells are selected in the table, clicking Insert adds a default segment in the row above the selected highest cell. If no cells are selected, the segment is added at the end of the thread. You can also simply edit a cell in the last row of the table to add a segment to the end of the thread.
- 5) Click Delete to remove segments from the thread. Delete is active only when cells are selected in the table. Clicking Delete removes all rows with selected cells.
- 6) Click OK to save the thread.

***IERs > Edit All
Threads***

Traffic > IERs > Edit All Threads Display and edit a table containing all threads in the scenario.

***IERs > Edit Threads
for Selected Objects***

Traffic > IERs > Edit Threads for Selected Objects Display and edit a list containing all threads associated with any subnet, node or demand that is selected in the workspace or Network Browser.

***IERs > Import >
Import IER Text File***

Traffic > IERs > Import > Import IER Text File In the Import IER Text File dialog box, select an IER Text File (*.txt) to import, and then click OK.

***IERs > Import >
Import IER Report***

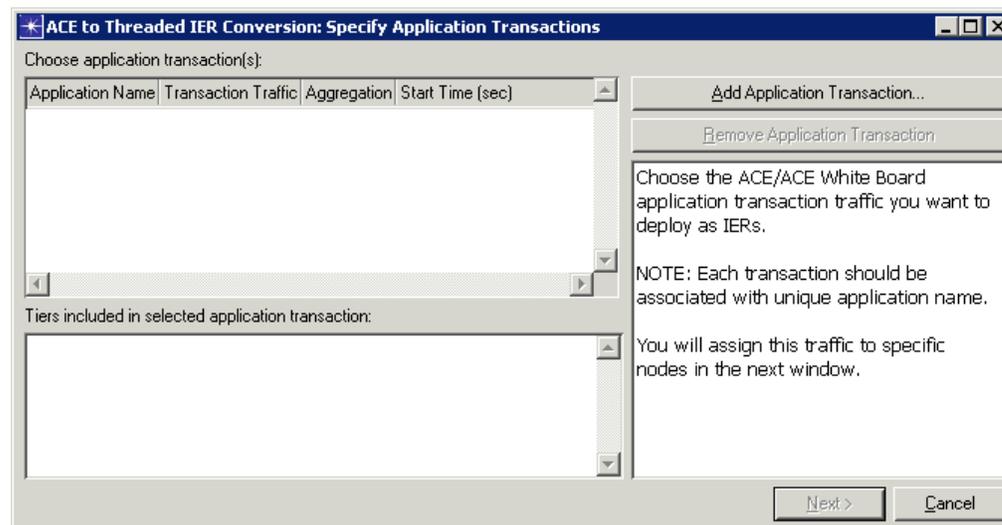
Traffic > IERs > Import > Import IER Report In the Import IER Report dialog box, select an IER Report File (*.txt) to import, and then click OK.

**IERs > Import >
Threads from ACE
Analyst**

Traffic > IERs > Import > Threads from ACE Analyst Opens the ACE to Threaded IER Conversion Wizard with which you can convert application transaction traffic from ACE or ACE Whiteboard files to IER threads in the JCSS Scenario Builder.

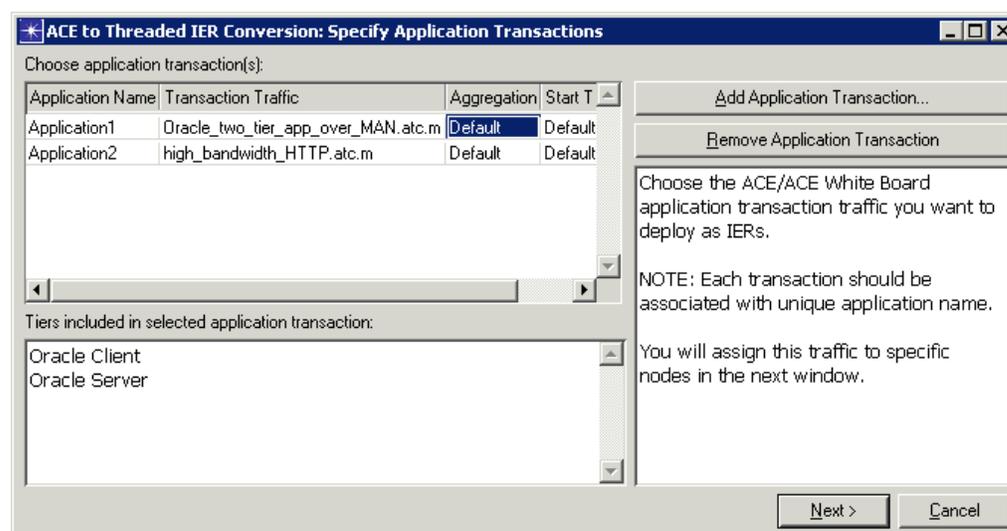
- 1) Choose Traffic > IERs > Import > Threads from ACE Analyst. The ACE to Threaded IER Conversion Wizard opens.

Figure 3-183 Import Threads from ACE Analyst Wizard



- 2) Click the Add Application Transaction... button to identify an ACE (atc.m) or ACE Whiteboard (aed.m) file to convert. A file chooser window opens. Select a file and click Open. The selected file appears under the Transaction Traffic column of the table

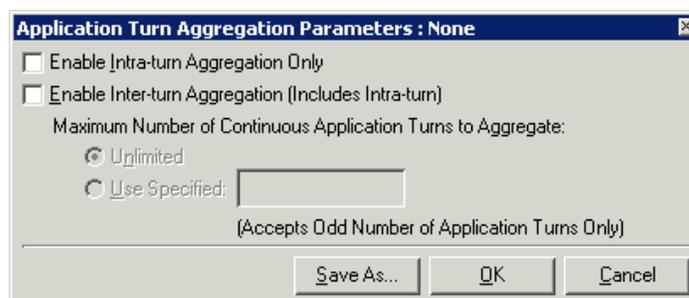
Figure 3-184 ACE to Threaded IER Conversion: Specify Application Transactions



- a) Application Name—Contains unique name <ApplicationN>, in which *N* is a number appended to make the name unique, is created for each application.
- b) Transaction Traffic—Contains the name of the ACE or ACE Whiteboard file you selected.
- c) Aggregation—Specifies the aggregation parameter values used while converting the traffic into IER threads. Aggregation parameters are defined in terms of application turns. An application turn is defined as a change in the flow of the application message. For example two consecutive application messages from a source to destination and vice versa defines a single application turn.

By default, if the selected file is an ACE file, then the corresponding Aggregation column value is set to Default. If the selected file is an ACE Whiteboard file, the corresponding Aggregation column value is set to None. You can change the Aggregation value by clicking in the column and selecting Default, None, or Edit... If you choose Edit..., another dialog box appears, which lets you specify how aggregation is to be handled. When finished, click OK to return to the previous dialog box.

Figure 3-185 Application Turn Aggregation Parameters



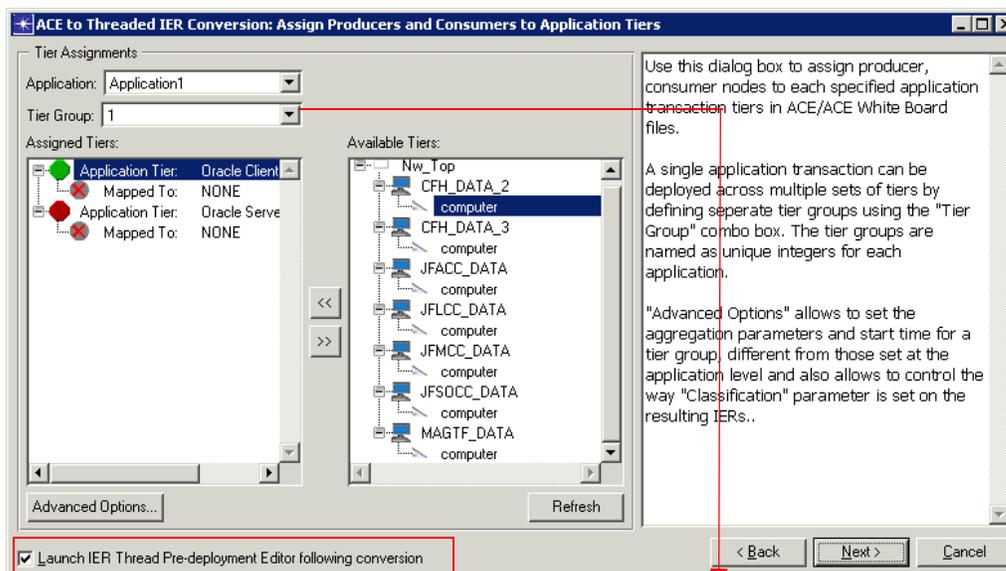
If you make any edits to the aggregation parameters, you will be asked whether to apply the changes and continue or go back to Save As a file for later re-use.

Enable Intra-turn Aggregation Only aggregates all the contiguous messages that flow from same source to the same destination. Each of the contiguous set of messages within an application turn is converted into a single IER of size and processing delay equal to the sum of the constituent messages.

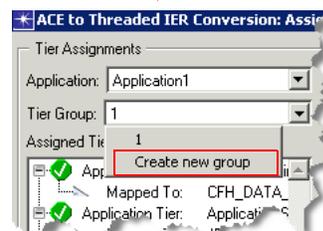
Enable Inter-turn Aggregation (includes intra-turn) implicitly enables and applies intra-turn aggregation to the application messages. The resulting intra-turn aggregated application messages are further aggregated across multiple contiguous application turns as specified by the inter-turn aggregation parameters. You can include an unlimited number of turns to aggregate, or you can specify an odd number of turns to aggregate.

- d) Start Time—Specifies the thread start time. This value is set to Default, but you can change this value to an integer in seconds. The Default value corresponds to the default value of the Generation Parameters > Start Time attribute of the IER_demand Traffic Flow model. If you specify a value under this column, the value is then set to the Generation Parameters > Start Time attribute of the start segment/IER of the IER thread.
- 3) Click Next. The Assign Producers and Consumers to Application Tiers dialog box appears.

Figure 3-186 Assign Producers and Consumers to Application Tiers



If you need to create a new tier group for application mapping, use the drop-down Tier Group menu option, as shown.

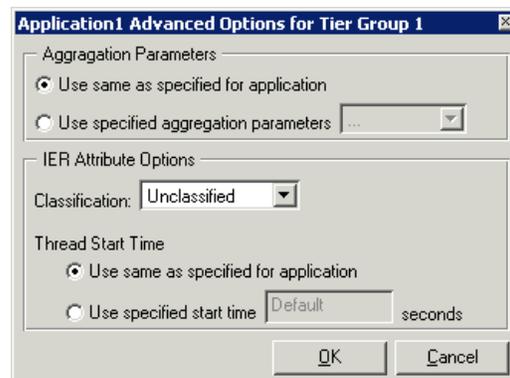


- 4) Assign producers and consumers for each threaded IER. You can add new devices or OPFACs in the workspace and return to the Assign Producers and Consumers dialog box. If you do so, click the Refresh button to refresh the listing.

For each application, the wizard creates one tier group, which you must define. If the same application needs to be deployed on a different tier group or on the same tier group with different settings, you need to create a new tier group by selecting the *Create new group* option from the Tier Group selection drop-down menu. Select a Tier in the left-side pane and select a tier in the right-side pane. Use the << or >> button to make the connection.

- a) Select the “Launch IER Thread Pre-deployment Editor following conversion” if you want to visualize the IERs prior to final deployment into the workspace. Use the pre-deployment editor to validate the conversion for simple application transactions, edit the appropriate IER attributes, and/or manually select and aggregate the application messages/IERs.
- b) Use the Advanced Options... button to further specify aggregation or IER attribute options for a tier group prior to deployment. Click OK when finished.

Figure 3-187 Advanced Options for a Tier Group



- 5) (Optional) Review the IERs in the Pre-Deployment Editor. Make changes as necessary.
- 6) Click Finish to deploy the IERs.

IERs > Export IER Report

Traffic > IERs > Export IER Report Export all traffic in the scenario (excluding threads) to a text file.

Flows

Traffic > Flows > (option) View and edit traffic flows in your network. Threads are groups of IERs that are fired in segments. Threads are a conditional sequence of IERs that represent complex real world information exchanges.

Flows > Open Flows Browser

Traffic > Flows > Open Flows Browser Opens the Traffic Center, which allows you to view and edit traffic flows in your network.

Flows > Import

Traffic > Flows > Import > (option) The Import sub-menu contains operations related to importing traffic.

Note—For more information about this feature, please refer to the OPNET IT Guru documentation set, available via Help > Documentation > IT Guru Documentation.)

What follows below is a sample workflow for importing Cisco Netflow traffic files; workflows are similar for the other data sources listed on the Traffic > Flows > Import submenu; however, there may be subtle differences.

Netflow Import Process

The traffic import for Netflow traffic files involves a two-step process. The first step involves the conversion of the traffic information included in the Netflow traffic file into traffic profiles for the appropriate nodes in the network while the second step involves converting the imported flow profiles into JCSS-specific traffic.

During the first step, each line in the Netflow traffic files is integrated into a traffic profile based on parameters such as the source and destination IP addresses and the aggregation scheme. Thus, if there are multiple lines in the file that have the same values for source, destination and aggregation scheme, then these lines will be integrated into a single traffic profile by the software. In the second step, each flow profile is converted into a single IER using the information that you provided in the Traffic Import Defaults dialog box.

The average size for the IER is calculated based on the total number of packets and total number of bits of the traffic profile while the inter-arrival time is calculated based on the difference between start and stop times and the total number of packets.

The minimum inter-arrival time, displayed in the Traffic Import dialog box, is used for those IERs where the calculated inter-arrival time is less than the user-specified minimum. In this case, the average size of the IER is increased proportionately. For example, if you specified inter-arrival time is 1 sec and the calculated inter-arrival time is 0.0002 secs, then the calculated average size is multiplied by the ratio of the user-specified minimum and the calculated inter-arrival time ($1/0.0002$) to get the new average size (new avg size = avg size x $1/0.0002$).

If the calculated inter-arrival time is greater than the user-specified inter-arrival time, the calculated average size is not modified. For the case where the user-specified value for the minimum inter-arrival time is greater than the difference between the start and stop times, the size is computed based on the total number of bits and this IER is sent only once during the simulation.

1) Collecting Netflow Traffic Data

The first step in importing traffic data is capturing or creating the Netflow traffic data file(s) to be imported. When capturing the Netflow traffic data, please ensure that the Netflow data file meets the following requirements:

a) The data file must use one of the following aggregation schemes:

RouterAS or RouterPrefix

CallRecord or DetailCallRecord

AsHostMatrix or DetailHostMatrix

- b) The file may use either Format A or Format 2.
- c) The file must be an uncompressed ASCII file. You may need to manually uncompress a file and/or convert it from binary to ASCII before you can import it.
- d) The file must have a four-digit extension where the extension follows the "MMSS" (mins-secs) format.
- e) The header of the file must include the correct format type, i.e. if the file is of Format A then the format field in the header must say Format A and not Format 2.
- f) The number of records in the file must match the number of records specified in the header of the file.

If the header of the file is incorrect, the Start and End times in the Import Traffic Flows dialog box will be set to Jan 1, 1970.

For additional details, please refer to the Traffic Import section in the MVI User's Guide of your Modeler documentation.

2) Getting Started

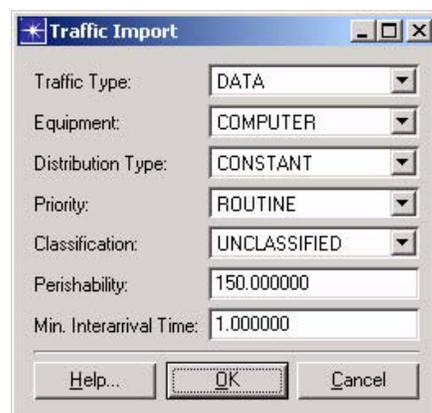
To import traffic from Cisco Netflow traffic files, a project must currently be open in the Scenario Builder. Once a project has been loaded, start the import process by choosing the Traffic > Flows > Import > From Cisco Netflow menu item. Note that this menu item will be disabled (grayed out) if no project is open.

3) Deleting Previously Imported Netflow IERs

If you already performed a Cisco Netflow traffic import and chose to save the IERs created from that import, the software launches the following dialog box. This dialog box provides you with the option to delete all those IERs that were created as a result of previous Cisco Netflow traffic data imports.

4) Specifying the Traffic Import Defaults

The Traffic Import dialog box displays. Specify values for the parameters required in converting the imported flow profiles into IERs.

Figure 3-188 Traffic Import Dialog Box

The minimum inter-arrival time is used for those IERs where the calculated inter-arrival time is less than the user-specified inter-arrival time. When this occurs, the average size of this IER is increased proportionately. If the calculated inter-arrival time is greater than the user-specified inter-arrival time, the average size computed from the flow profile is not modified. For the case where the user-specified value for minimum inter-arrival time is greater than the difference between the start and stop times, the size is computed based on the total number of bits and this IER is sent only once during simulation.

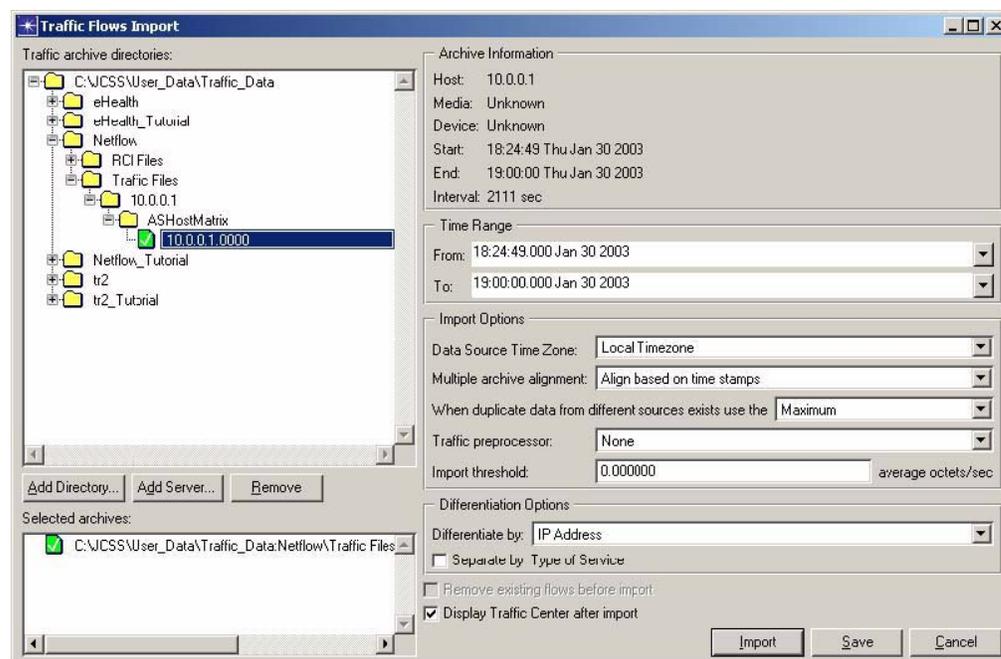
5) Choosing the Netflow File

After selecting the OK button in the Traffic Import dialog box, the Traffic Flows Import dialog box will be launched. Click the + signs for all the subdirectories that appear under the Netflow directory. Click the 10.0.0.1.0000 traffic file that is included in the ASHostMatrix directory.

The directory that appears in the Traffic Flows Import dialog box is determined by the `traffic_archive_dir` preference that may be set via the Preferences dialog box. By default, this preference is set to the `..\User_Data\Traffic_Data` directory on your machine.

6) Add and/or remove directories and/or servers from the Traffic archive

Figure 3-189 Traffic Flows Import Dialog Box



7) Specifying the Netflow Traffic Import Parameters

The Archive information corresponds to each traffic archive file and provides identifying information about the file:

- a) Host - Specifies the IP address of the probe.
- b) Media - The type of NetMetrix probe (Ethernet, FDDI, etc.) used to collect network traffic.
- c) Device - The name of the NetMetrix probe.
- d) Start - The start time of the traffic capture period.
- e) End - The end time of the traffic capture period.
- f) Interval - The amount of time between traffic collections.

The remaining sections include the following options that control the traffic import:

- a) From - Indicates the start time of the period of traffic to import.
- b) To - Indicates the end time of the period of traffic to import.
- c) Data Source Time Zone - Indicates the time zone.
- d) Multiple archive alignment - Indicates whether JCSS aligns or concatenates multiple archives from a single traffic server. This menu has three options:

Align Start of Each Archive - Each archive is aligned so that all traffic starts simultaneously (at simulation time = 0) and runs concurrently. This option is useful for archives from separate network probes that started simultaneously.

Align Archives Based on Time Stamps - The traffic is aligned based on the time stamps in each archive to replicate its real-world behavior. This option is useful for archives (from separate probes) that have overlapping time frames but did not start simultaneously.

Concatenate Archives - The archives are aligned by start time so that traffic runs consecutively: the traffic for each subsequent archive follows the traffic in the preceding archive. This option is most useful if you made successive runs from a single network probe.

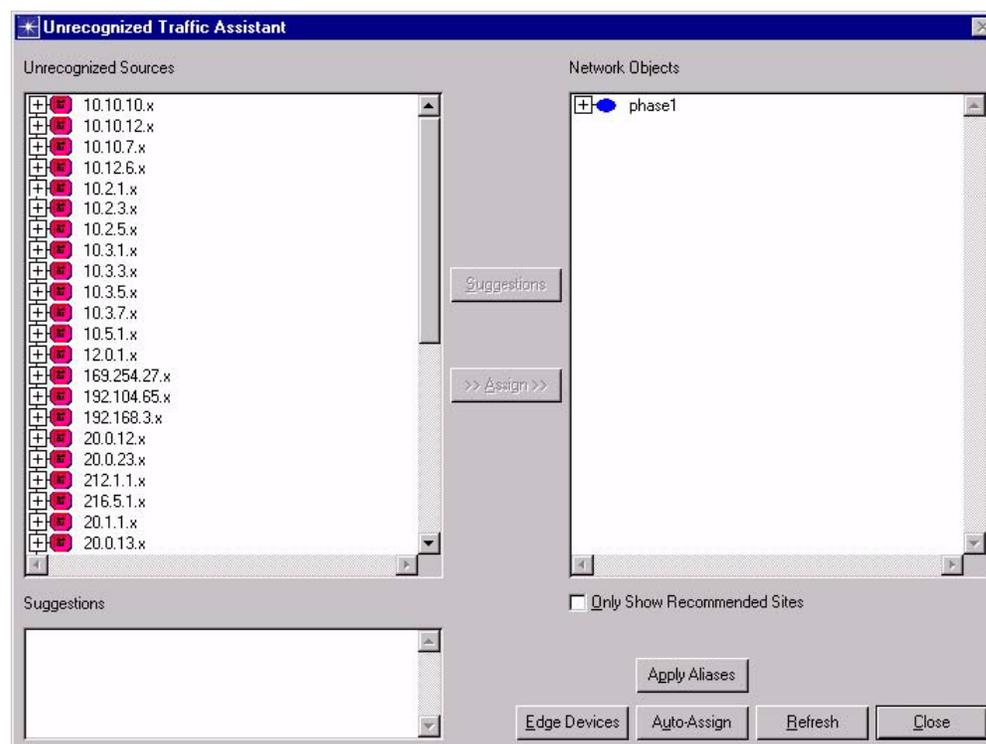
- e) When duplicate data from different sources exists use the - Indicates what merging mode to use when (1) you are importing from multiple traffic files, or, (2) you choose to retain (not overwrite) the current traffic data in your scenario. In both these cases the merge mode resolves any conflicting data in multiple traffic sources. Merging is useful when you have nodes on different segments, and probes on each segment as well. When nodes send traffic to one another, the probe on each segment will record the traffic, so that multiple values for the same traffic will be stored in the archive file. During import, you can set the Archive Merging Mode option either to Maximum, Addition, or Minimum. Setting the merge mode to Maximum selects the maximum of the two traffic values during import (this setting is most commonly used), while setting Minimum selects the smaller of the two traffic values. Choosing Addition adds the two traffic values.
- f) Traffic Preprocessor - This menu lets you import traffic archives that use ASCII formats unsupported by JCSS. You can create preprocessor scripts (either shell scripts or executable files) that convert a traffic file to a format that JCSS can import. By selecting an archive and then choosing a preprocessing script in this menu, you can automatically convert the archive to Flexible CSV (.tr2) format prior to the import. Note that you cannot assign a script to multiple archives-you must assign a script to each archive individually. The initial setting for all archives is None. This tells JCSS to import the files "as is," and is the correct setting for CSV, NetMetrix and Sniffer files.
- g) Import threshold - Specifies the import threshold in average octets per second.
- h) Aggregation options - Allows you to specify the method by which to aggregate traffic.

Select the Import button to proceed with the traffic import process.

8) Unrecognized Traffic

If OPNET could not map all the imported traffic to specific nodes in the network/scenario, the Unrecognized Traffic Assistant dialog box displays. You may then manually specify sources and/or destinations for any unrecognized traffic.

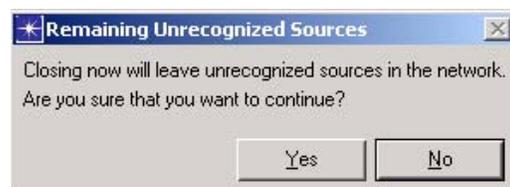
Figure 3-190 Unrecognized Traffic Assistant Dialog Box



For the cases where the exact source and destination nodes for the unrecognized traffic are unknown, you may assign certain nodes in your network to be edge devices. Specifying edge devices in your network will route this unrecognized traffic randomly between the edge devices in your network.

After you finish mapping some/all of your unrecognized traffic, select the Close button in the Unrecognized Traffic Assistant dialog box. The Remaining Unrecognized Sources dialog box displays, prompting you for confirmation to proceed with the traffic import.

Figure 3-191 Remaining Unrecognized Sources Dialog Box



Selecting Yes in this dialog box launches the Reimport Traffic dialog box, giving you the option of re-importing all the traffic in this network

Figure 3-192 Reimport Traffic Dialog Box

If you click the Yes button, the Import Flows dialog box will be displayed again and this time choosing the Import button will include all of your recognized traffic as well as any unrecognized traffic that was mapped using the Unrecognized Traffic Assistant. Clicking the No button will not include any unrecognized traffic that was mapped during the import.

9) Examining the IERs

After the traffic import is complete, a message indicating the number of IERs created from this traffic import displays in the message buffer at the bottom right corner of the Scenario Builder.

The IERs created from this import are populated as background IERs on the source node and therefore may be viewed using the View Traffic dialog box. The View Traffic dialog box is accessible both from the Define Infrastructures treeview as well as from the right-click menu option of an OPFAC.

IERs created from a Cisco Netflow traffic import are tagged with DMD_CNF in their IER ID.

10) Visualizing the IERs

To view these IERs in your workspace, zoom in so that your units are visible and select the Traffic > Show Aggregate Traffic option.

**Flows > Import >
Open Import Log**

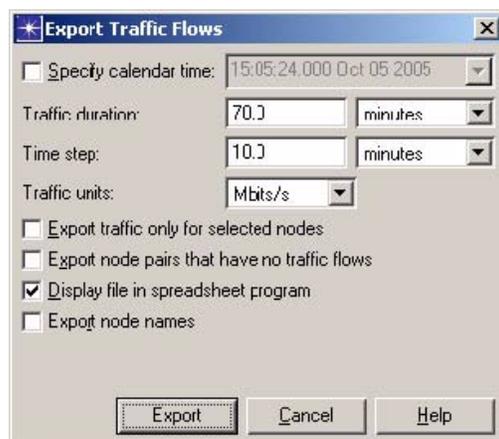
Traffic > Flows > Import > Open Import Log Opens the traffic flow import log, which contains error and diagnostic information generated during previous imports.

**Flows > Import >
Clear Import Log**

Traffic > Flows > Import > Clear Import Log Clears the link load import log.

Flows > Export > To Spreadsheet

Traffic > Flows > Export > To Spreadsheet Exports traffic flows to an ASCII file that can be viewed as a spreadsheet in Microsoft Excel.

Figure 3-193 Export Traffic Flows Dialog Box

These options allow you to set parameters for the exported traffic:

- **Specify calendar time checkbox and drop-down menu:** Sets the start time of the traffic that the file spans. The time steps reference this date and time in the file. The default is determined by the earliest time set in all existing traffic pairs, network base time, or current time. To specify a date and time other than the default, select Choose date/time from the Specify calendar time drop-down menu. The Set Date/Time... dialog box appears. Select a date and time and click OK.
- **Traffic Duration field:** Sets the total time the traffic file spans. It is determined by the length of the conversation pair traffic in the scenario.
- **Time Step field:** Sets the bucket size of the exported traffic.
- **Traffic Units drop-down menu:** Lists the units of the exported traffic. This is specified in bits/sec, Kbits/sec, Mbits/sec, or Gbits/sec.
- **Export traffic only for selected nodes check box:** When selected, only traffic for selected nodes in the scenario is considered for export. When unselected traffic for all nodes is considered for export. This option is useful when you want to view and edit traffic for a few objects.
- **Export node pairs that have no traffic flows check box:** When selected, the entire matrix of node pairs is exported, including node pairs that have no traffic flows. When unselected, only node pairs that have traffic flows between them are exported.
- **Display file in spreadsheet program check box:** When checked, the exported traffic file displays automatically in the program specified by the spreadsheet_prog preference (environment attribute).

- **Export node names check box:** Exports full hierarchical node names with the traffic data. If unchecked, node names are only exported if IP address information is missing. Including the node names with the export data affects the import of the data. The import engine attempts to match the traffic flow to its endpoints based on node name first, if available. If that lookup fails, then the endpoint IP addresses are used for matching.
- **Export button:** Accepts the current export settings, exports to a spreadsheet program, and closes the dialog box.

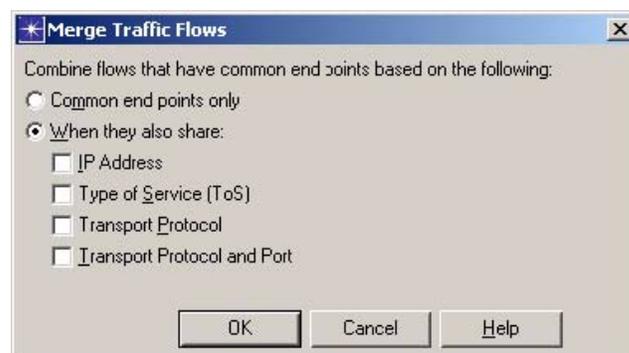
Flows > Export > To TR2

Traffic > Flows > Export > To TR2 Exports traffic flows to a TR2 (*.tr2) text file.

Flows > Merge Traffic Flows

Traffic > Flows > Merge Traffic Flows Combine selected traffic flows that have common endpoints only or common endpoints and specific characteristics. This operation is useful when you have multiple flows between the same node/destination and you want to reduce the number of flow objects in the scenario.

Figure 3-194 Merge Traffic Flows Dialog Box



- 1) Choose one of the two radio buttons (and select the matching characteristics for the second radio button) to combine traffic flows with common end points based on the selection.
- 2) Click OK to merge the selected traffic flows based on the criteria set by this dialog box.

Flows > Create Flows

Traffic > Flows > Create Flows Create IP traffic flows, which represent background traffic, between all or selected nodes in the network. The traffic flows can be a full mesh between all or selected nodes, or can be from one node to the remaining selected nodes (or all nodes in the case of no selection). In the latter case, you can specify the direction of the traffic.

This feature filters out all IP nodes in the network and provides a list of eligible nodes for which you can configure the flows. The traffic can also be specified in bits/packets.

Figure 3-195 Create IP Unicast Traffic Flows Dialog Box

Create IP Unicast Traffic Flows

Node selection

Full mesh between all nodes

To all other nodes from: BAHRAIN.SIPRNET_SDN_Router.cisco7000

From all other nodes to: BAHRAIN.SIPRNET_SDN_Router.cisco7000

Intensity

Packets/sec: 100

Bits/sec: 120000

Duration (secs): 3600

Characteristics

Description: Represents IP Unicast Traffic Flows

Color: ■

Get start time 13:04:58.000 Oct 05 2005

Characterize demands

Socket information

Destination IP address: Auto Assigned Source port: <Not Set>

Type of service: Best Effort (0) Destination port: <Not Set>

Protocol: IP

Create Cancel

in order to prevent duplication of traffic during simulation. It is recommended that a duplicate scenario be created prior to using this feature if you want to keep the application and profile configurations for later use. The following dialog box displays to input the required flow generation parameters.

Device /Link Loads > Import **Traffic > Device/Link Loads > Import > (option)** The Import sub-menu contains operations related to importing background traffic loads on devices and links; consult the IT Guru documentation set, available via Help > Documentation > IT Guru Documentation, for further details. The following options are available from the sub-menu:

Table 3-4 Device Link Loads > Import Sub-Menu Items

Menu Item	Description	Reference
From CA eHealth	Imports the background traffic load in a device or link from CA eHealth. (XDI module only)	XDI User's Guide: Importing Device/Link Loads
From MRTG	Imports the background traffic load on a device or link from MRTG traffic file. (XDI module only)	XDI User's Guide: Creating MRTG Link-Load Data
From InfoVista	Imports the background traffic load on a link from InfoVista reports. (XDI module only)	XDI User's Guide:Creating InfoVista Link-Load Data
From HP OpenView Performance Insight	Imports the background traffic load on a link from HP Openview Performance Insight reports. (XDI module only)	XDI User's Guide:Creating HP Openview Link-Load Data
From Text Files	Imports the background traffic load on a device or link from ASCII (.gbu) traffic files.	XDI User's Guide: Importing Device/Link Loads

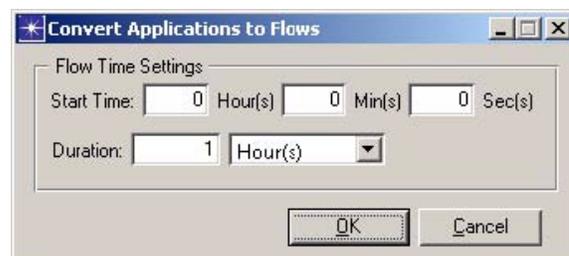
Device /Link Loads > Open Import Log **Traffic > Device/Link Loads > Open Import Log** Opens the traffic flow import log, which contains error and diagnostic information generated during previous imports.

Device /Link Loads > Clear Import Log **Traffic > Device/Link Loads > Clear Import Log** Clears the link load import log.

Convert Traffic > Applications to Flows **Traffic > Convert Traffic > Applications to Flows** Automatically convert standard OPNET application and profile configuration parameters into IP flow objects. This process turns the discreet application traffic into background flows for use in simulation or traffic visualization. After creating the flows, the application and profile configuration objects are cleared of all traffic information in order to

prevent duplication of traffic during simulation. It is recommended that a duplicate scenario be created prior to using this feature if you want to keep the application and profile configurations for later use. The following dialog box displays to input the required flow generation parameters.

Figure 3-196 Convert Applications to Flows Dialog Box



As shown above, the required parameters include:

- **Start-Time (Hours, Minutes, Seconds):** The start-time of the flow objects. This will effectively act to truncate all flow traffic recorded prior to the value provided. The flow's bps and pps values during this time will be set to 0.0. The input values must be integers.
- **Duration (Length, Units):** The duration of the simulated calculation window. This method corresponds to the Capacity Planning Optimization feature. The input value must be an integer. Flows will be aggregated for any source/destination pair. Thus, any number of applications that contribute to traffic between a given client and server will be aggregated into two flows with one for each direction of travel.

Generate Traffic Web Report

Traffic > Generate Traffic Web Report Launch the most recent Traffic web report which details all of the different types of traffic contained in the scenario.

Import Node Aliases > From Text File

Traffic > Import Node Aliases > From Text File... Select a file from which to import node aliases into a scenario.

Export Node Aliases > To Text File

Traffic > Export Node Aliases > To Text File... Export node aliases from a scenario to a text file. Edit the aliases using a spreadsheet program like Excel, and then import the aliases back into a scenario.

Protocols Menu

The Protocols menu contains operations related to the various protocols supported in the standard and specialized model libraries. The protocols are not documented in this manual; please refer to the OPNET documentation listed for each menu option below (consult the IT Guru documentation set, available via Help > Documentation > IT Guru Documentation):

Table 3-5 Protocols Menu Items

Menu Item	Description	Reference
Applications	Adds ACE application models to the existing network and configures application traffic.	Model User Guide
Servers	Manages server models	Model User Guide
Mainframes	Manages mainframe models	Model User Guide
TCP	Configures TCP	Model User Guide
IP	Configures IP addresses, dynamic routing protocols, type of service characteristics for conversation pair traffic, autonomous system numbers on routers, and ping traffic.	Model User Guide
Link16	Configures/assigns Time Slot Blocks (TSBs) on terminals in the network.	Model User Guide
IPv6	Configures IPv6 addresses, routing protocols, interface status, and runs readiness assessment and migration planner.	Model User Guide
BGP	Configures BGP start time, autonomous system numbers, and route redistribution from other protocols into BGP.	Model User Guide
EIGRP	Configures EIGRP start time and route redistribution from other protocols into EIGRP.	Model User Guide
IGRP	Configures IGRP start time and route redistribution from other protocols into IGRP.	Model User Guide

Table 3-5 Protocols Menu Items (Continued)

Menu Item	Description	Reference
IS-IS	Configures interface metrics, interface circuit types, system types, metric styles, and SPF calculation parameters.	Model User Guide
OSPF	Configures interface cost, OSPF start time, areas, and route redistribution.	Model User Guide
RIP	Configures RIP start time and route redistribution from other protocols into RIP.	Model User Guide
MPLS	Configure MPLS	Model User Guide
LDP	Enables/disables LDP protocol status on all/selected routers.	MPLS Model User Guide
RSVP	Enables/disables RSVP protocol status across connected interfaces on all/selected links.	Model User Guide
ATM	Configures oversubscription on a per-service class basis for all or selected nodes in the network.	Model User Guide
Frame Relay	Configures PVCs between nodes in the network	Model User Guide
Ethernet	Configures Ethernet	Model User Guide
FDDI	Configures FDDI	Model User Guide
VLAN	Configures virtual LANs (VLANs) for selected nodes and links.	Model User Guide
STP	Applies STP visualization to the current scenario.	VLAN Model User Guide
MANET	Configures MANET	DSR Model User Guide

Table 3-5 Protocols Menu Items (Continued)

Menu Item	Description	Reference
SIP	Allows visualization of SIP signaling routes after running Discrete Event Simulation	Model User Guide
UMTS	Configures UMTS	Model User Guide
Wireless LAN	Configures wireless LAN	Model User Guide
ZigBee™	Configures ZigBee™	Model User Guide

Capacity Planning Menu

Evaluate **Capacity Planning > Evaluate** or click the Evaluate Current Network toolbar button: Evaluate the scenario in its current state during the specified time interval or intervals. This is different from running an optimization in that it evaluates the scenario with the current capacities for links and networks. It does not mutate the capacities of the links and networks. It routes the traffic through the links and broadcast networks, and provides a summary of the scenario's current condition.

- 1) After choosing the Evaluate menu item or clicking the Evaluate Current Network toolbar button, the Evaluation Settings dialog box displays.

Figure 3-197 Evaluation Settings Dialog Box

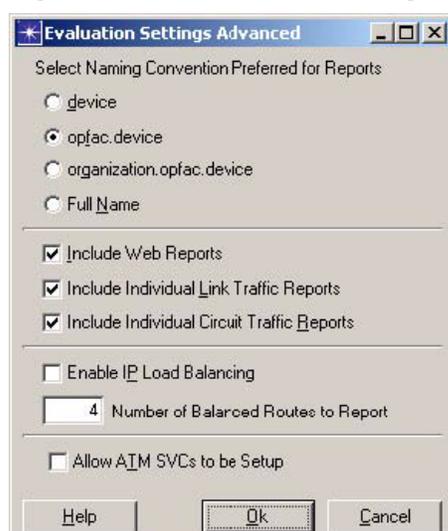
The Evaluation Settings dialog box allows you to set the number of time steps, length of each time step, and the start time. For example, if you know that your peak usage occurs from 9 A.M. to noon, you could evaluate that time period by setting number of time steps to 3, length of time step to 1 hour, and start time to 9 hours 0 minutes 0 seconds.

You can set the following parameters for the evaluation:

- a) **Number of Time Steps:** A Capacity Planning Evaluation can be done for multiple time steps by setting this value to an integer greater than one. Reports will be created for the evaluation at each time step as well as reports reflecting results over the entire time of evaluation. Must be an integer greater than zero.

- b) Length and Units of Time Steps: The length and units of the time steps used in the evaluation. The value selected must be an integer greater than zero. Units can be seconds, minutes, hours, days or weeks.
 - c) Start Time: The start time used for the evaluation in hours, minutes and seconds. All values must be integers greater than or equal to 0.
 - d) Advanced Parameters: Opens a dialog box for more parameters for the evaluation and reporting of the evaluation.
 - e) Click the Apply button to save any changes you made to the settings.
- 2) If you click the Advanced Parameters button to access advanced evaluation settings, the Evaluation Settings Advanced dialog box displays.

Figure 3-198 Evaluation Settings Advanced Dialog Box



You can set the following advanced parameters for the evaluation:

- a) Naming Convention: The names of all the devices and links that are in the report will use the naming convention selected here.
- b) Include Web Reports: If this option is selected, the link and circuit traffic reports are also selected. Unchecking this will disable the options for the individual reports.
- c) Include Individual Link Traffic Reports: If this option is selected, individual reports will be included in the web report for each link in the scenario. The reports will include all the traffic going directly over the link as well as any circuits that are going over the link. The reports will take longer to generate if this option is selected.
- d) Include Individual Circuit Traffic Reports: If this option is selected, individual reports will be included in the web report for each routable circuit. The reports will include all the traffic using the circuit. The reports may take longer to generate if this option is selected.

-
- e) Enable IP Load Balancing: If this checkbox is selected, IP load balancing will be done during the evaluation so that traffic will use multiple equal hop length paths.
 - f) Number of Balanced Routes to Report: If IP load balancing is selected, then the number of balanced routes to report can be selected. The entry must be an integer greater than 0. This number of route reports will be reported in the web reports
 - g) Allow ATM SVCs to be Setup: If this checkbox is selected, ATM SVCs will be setup during the evaluation when applicable.
 - h) Click the OK button to save any changes you made to the settings.
- 3) Once everything is set, click the Run button in the Evaluation Settings dialog box to start the evaluation.

The evaluation engine evaluates the specified number of time steps using only the traffic, circuits, devices, and links active at each time step. For traffic that is active during only a portion of the time step, the load will be prorated according to the fraction of the time step the traffic is active. Circuits, devices, and links will be considered active only if they are active at the end of the time period.

- 4) Once the evaluation is complete, the evaluation web reports launch automatically.

The web reports include the following reports for the overall evaluation: Executive Summary, Overall Peak Results, and Overall Average Results. Additionally there are a group of reports which are generated for each time step: Traffic Report, Link Utilization Report, Residual Bandwidth Report, Circuit Switch Link Report, Transmission Link Report, Data Link Report, ATM & CellXpress TVC Report, Frame Relay Report, TSSP Circuit Report,

and Multiplexer Circuit Report. There are also Route Reports for each routed circuit and traffic IER, and Unroutable Reports for each unroutable circuit and traffic IER. Each Individual Link also has a group of tables that show the circuit and traffic IERs which flow over it specifically.

If a load object (IER, IP Flow, Promina circuit, etc.) is unroutable, the Unroutable Report will list reasons why the load could not be routed. The following table lists all possible failure messages and their associated suggestions.:

Table 3-6 Route Failure Messages and Suggestions

Message	Suggestion
There was no path at the Promina layer.	Make sure all of the necessary links between Promina devices have been added to the scenario. Also, check for lower-level CellXpress circuit failures that could prevent Promina devices from communicating.
There was no path at the ATM layer.	Make sure all of the necessary links between ATM devices have been added to the scenario.
There was no path at the Frame Relay layer.	Make sure all of the necessary links between Frame Relay devices have been added to the scenario.
There was no path at the Voice layer	Make sure all of the necessary links between Voice devices have been added to the scenario. Also, check for lower-level Promina circuit failures that could prevent Voice devices from communicating.
There was no path at the IP layer.	Make sure all of the necessary links between routers have been added to the scenario. Also, check for lower-level circuit failures that could prevent IP routers from communicating.
An end device that can support this IER could not be located in the producer or consumer OPFAC.	Make sure the source and destination OPFACs both contain a non-failed end device that supports the IERs traffic type.
There was a mismatch in the number of layer 3 encryptors and decryptors in this route.	Make sure each layer 3 encryptor (NES, IP_ATM_TACLANE, etc.) has a corresponding decryptor.

Table 3-6 Route Failure Messages and Suggestions (Continued)

Message	Suggestion
Selected path for Promina circuit is invalid.	Make sure all necessary links between Prominas in the Selected Path have been added to the scenario. Also, check for lower-level CellXpress circuit failures that could prevent Promina devices from communicating.
Selected path for Promina circuit does not have sufficient bandwidth.	Increase the capacity of the links between Prominas in the selected path, or add additional links between the Prominas.
<xxx> circuit does not have enough bandwidth.	Increase the reserved bandwidth of the circuit.
<link_name> does not have enough bandwidth.	Increase the capacity of the link or add an additional link between the endpoints.

Capacity Optimization

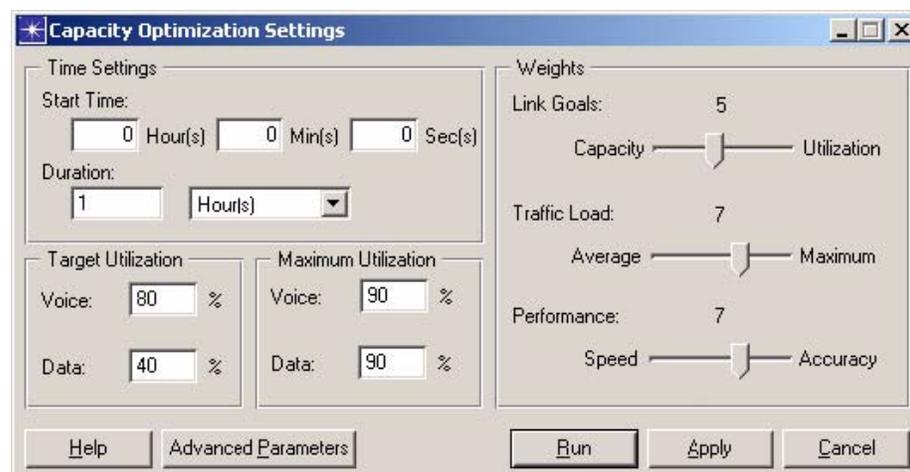
Capacity Planning > Capacity Optimization > (option) Run an optimization for capacity. Given a network and the traffic, the optimization process provides suggestions for optimal link and network capacities. If a link is over-utilized, optimization will suggest an alternate capacity that will support the IERs and keep the cost of the link down to the required minimum. If a link is under-utilized, optimization will decrease the capacity for that link. Capacity optimization options are discussed in the sections below.

Application profiles are converted to IERs when a user evaluates or optimizes a scenario for the first time. Once the profiles have been converted to IERs, they are retained as IERs. The conversion process is not initiated again unless you add more application profiles.

Capacity Optimization > Start Optimization

Capacity Planning > Capacity Optimization > Start Optimization Specify parameters that control how optimal solutions for the scenario are computed.

- 1) Select Start Optimization or click the Start Capacity Optimization toolbar button: The Capacity Optimization Settings dialog box displays.

Figure 3-199 Capacity Optimization Settings Dialog Box

These options let you set optimization parameters:

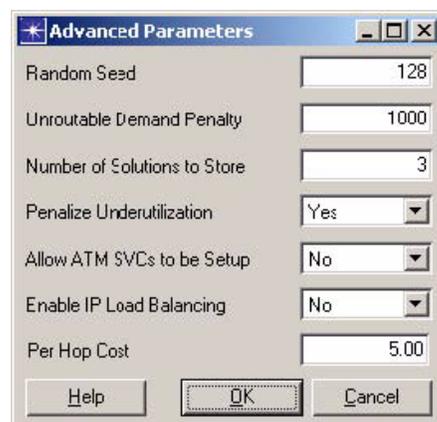
- a) **Time Settings:** Allows you to specify the start time and the duration for the optimization process. Only traffic that is active during the specified time frame is considered while optimizing.
- b) **Voice and Data Target Utilization:** Specifies the average percentage utilization we are trying to achieve on the voice and data portions of the trunks.
- c) **Maximum Utilization:** Specifies the maximum percentage utilization we are trying to achieve on the voice and data portions of the trunks.
- d) **Link Goals, Traffic Load, and Performance Weights:**

Link Goals: This value allows you to optimize for different criteria. If you want to minimize the capacity, move the slider to the left (towards Capacity). This will produce a final solution in which the capacity is reduced. If the target utilization is more important to you, move the slider to the right (towards Utilization). This will produce a final solution in which the link utilization values are closer to the target.

Traffic Load: This value allows you to control the load caused by the traffic on the network. If you set this value to 1, the engine uses the mean values from the distribution. As you increase this value, the engine uses values from the tail of the distribution. If the distribution type is "Constant," this parameter does not make a difference.

Performance - This value allows you to specify how fast or how accurate you want the optimization solution to be. If you set this slider at 1, the engine converges on a solution quickly at the cost of accuracy. If you set this slider at 10, the engine tries more configurations and the solution may be better, but it will take longer.

- 2) Click the Advanced Parameters button on the Capacity Optimization Settings dialog box. The Advanced Parameters dialog box displays.

Figure 3-200 Advanced Parameters Dialog Box

Configure advanced parameters, if needed, or use the default values:

- a) Random Seed: This is the seed value used by the random number generators in the optimization engine.
 - b) Unroutable Demand Penalty: This is the penalty that will be added to the optimization cost for each IER that is unroutable in this configuration.
 - c) Number of Solutions to Store: The optimization engine stores the configurations corresponding to the 'n' best solutions and you can switch back and forth between these solutions. This value specifies the number of such solutions to store.
 - d) Penalize Underutilization: The utilization cost depends on the difference between actual link utilization and target utilization, regardless of whether link utilization is over or under target utilization.
 - e) Allow ATM SVCs to be Setup: By not allowing ATM SVCs to be setup, you are forcing the Scenario Builder to always look for PVCs between gateway ATM devices. In this case, the route taken by the IER in the Scenario Builder will be the same as that in the simulation.
 - f) Enable IP Load Balancing: Allows you to disable or enable IP load balancing to be done during the evaluation so that traffic will use multiple equal hop length paths.
 - g) Per Hop Cost: This is a fixed cost that is computed for each load based on the number of device-to-device hops in the route. If there are multiple solutions that have the same objective cost, adding this cost will ensure that the solution in which the loads have the shortest path is chosen as the best solution.
- 3) Click Run to begin the optimization.

JCSS computes the routes for the traffic and then starts the optimization. After the optimization completes, a dialog box displays a summary of the optimization process:

- a) Original Average Values - Displays the values before the optimization process was started.

- b) Final Average Values - Displays the values at the end of the optimization.
- c) Summary Table - Displays a list of links and broadcast networks for which the optimization engine suggested changes. Click on a row in this table to display the Attributes dialog box for that link or network. This Attribute dialog box shows the original values and the current values suggested by the engine. You can accept the changes suggested by the engine or selectively reject the changes for some links while retaining the changes for the others by setting the Status field to “Reject.”

**Capacity
Optimization > Save
Optimization As**

Capacity Planning > Capacity Optimization > Save Optimization As Save the results of an optimization as part of the scenario, so that it is available for future comparisons.

During an optimization, JCSS might suggest changes to the link and network bandwidths or to the inter-arrival times of the IERs. If you save the project after an optimization, these values become the actual values and you will not be able the previous values.

To prevent losing the original values accidentally, you will be prompted by a dialog to save the scenario under a different name. If you choose this option, a copy of the scenario is made under the current project and the values in the original scenario are left unchanged.

- 1) Enter a name for the optimization and click OK. The name is used to identify the optimization in the Manage Results interface.

Figure 3-201 Save Optimization As Dialog Box

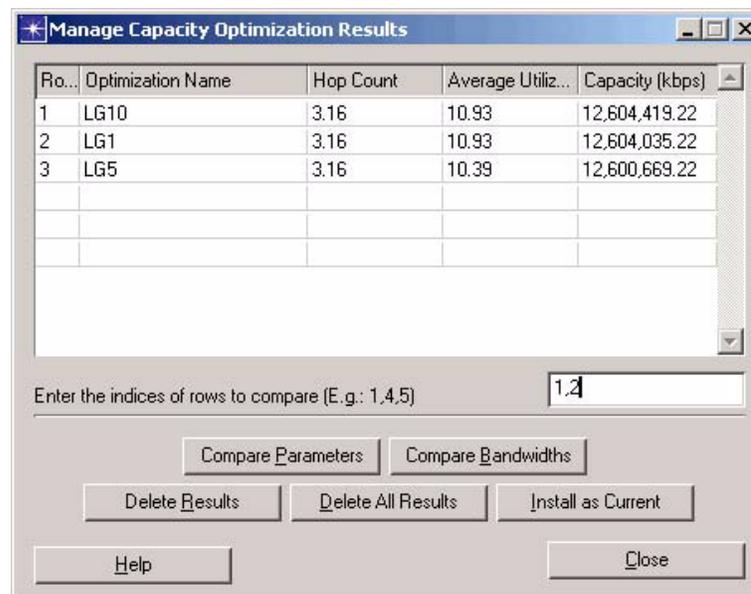


**Capacity
Optimization >
Manage
Optimization
Results**

Capacity Planning > Capacity Optimization > Manage Optimization Results

Access the Manage Capacity Optimization Results to delete optimization results from the scenario's state, compare optimizations, and make one of the optimization solutions the current solution.

Figure 3-202 Manage Capacity Optimization Results Dialog Box



Select the row number(s) for the optimizations to compare, delete, or install as current solution, and then click the corresponding button.

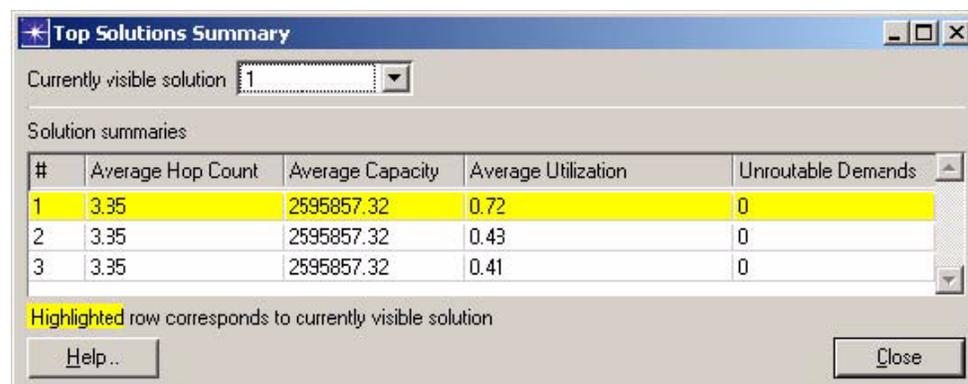
**Capacity
Optimization >
Examine Top
Solutions**

Capacity Planning > Capacity Optimization > Examine Top Solutions Examine top solutions returned by the optimization. At the end of optimization, the engine returns the best solution that it found so far. Sometimes the best solution might have suggestions that you do not agree with. In such cases, review a few of the top solutions and use the one that you think is the best. You can specify the number of top solutions that the engine must store. At the end of optimization, you can review the top solutions and pick the one that suits your needs.

You can specify the number of solutions to store using the Advanced Optimization Parameters.

- 1) The top most solution is highlighted in yellow. If you prefer a different solution, you can click on the drop-down menu at the top of the dialog box and change the currently visible solution.

Figure 3-203 Top Solutions Summary Dialog Box



**Capacity
Optimization >
Restore Original
Capacities**

Capacity Planning > Capacity Optimization > Restore Original Capacities
Restore the scenario's original capacities after an optimization is run.

Reports

Capacity Planning > Reports > (option) Open the listed reports.

**Reports > View Web
Report**

Capacity Planning > Reports > View Web Report Launch the most recent Capacity Planner web report for this scenario.

Reports > Settings

Capacity Planning > Reports > Settings Web report settings are used in the web reports produced after a Capacity Planning Evaluation or Optimization.

Figure 3-204 Web Report Settings Dialog Box



These options let you set report parameters:

- **Naming Convention:** The names of all the devices and links that are in the report will use the naming convention selected here.
- **Include Web Reports:** If this option is selected, the link and circuit traffic reports are also selected. Unchecking this will disable the options for the individual reports.

- **Include Individual Link Traffic Reports:** If this option is selected, individual reports will be included in the web report for each link in the scenario. The reports will include all the traffic going directly over the link as well as any circuits that are going over the link. The reports will take longer to generate if this option is selected.
- **Include Individual Circuit Traffic Reports:** If this option is selected, individual reports will be included in the web report for each routable circuit. The reports will include all the traffic using the circuit. The reports may take longer to generate if this option is selected.
- **Number of Balanced Routes to Report:** If IP load balancing is selected, then the number of balanced routes to report can be selected. The entry must be an integer greater than 0. This number of route reports will be reported in the web reports.

NetDoctor

NetDoctor is a powerful rules-based engine that proactively identifies incorrect device configurations, including policy violations and inefficiencies. NetDoctor exposes hidden problems that can be difficult to discover due to the sheer volume of configuration information distributed throughout the network.

NetDoctor rules are normally run against model attributes, which are set from device configurations that you can import from a production network. Also, some NetDoctor rules use simulation data to identify inconsistencies in the operation or performance of the network.

You can run all of the NetDoctor rules on a JCSS network, except for the ones that have JCSS devices in them, usually on the networks that are created from Device Configuration Import (DCI). For the networks with JCSS devices in them, you can run only rules that are devised for individual devices or a device group.

Note—A separate NetDoctor license is required in order to run NetDoctor in JCSS. A JCSS license does not include a NetDoctor license.

The table below outlines the main menu options under NetDoctor:

Table 3-7 NetDoctor Menu Items

Menu Item	Description
Configure/Run NetDoctor...	Configure, save, and run NetDoctor report templates.
Run NetDoctor...	Run NetDoctor using an existing report template.
Auto-Generate Report Template...	Create a NetDoctor Report Template.
View Recent NetDoctor Reports...	Choose a recently run NetDoctor report and open it in the appropriate viewer.
Configure/Run Trending	Configure and generate NetDoctor Trending reports. Note: NetDoctor trending is project-specific. You cannot trend NetDoctor data using scenarios from more than one project.
Open NetDoctor Log	Display the NetDoctor Log file contents.
Suppress Messages	Choose not to display NetDoctor messages.
Rule Development...	Create new or edit existing NetDoctor rules.
Options	Configure NetDoctor operation and report generation settings.

Please refer to the NetDoctor chapter under the IT Guru product documentation for details on using NetDoctor.

NetMapper

NetMapper provides up-to-date Microsoft Office Visio network diagrams "on demand." These diagrams extend beyond simple topology to feature detailed logical views of the network including: Layer 2-3, VPNs, OSPF, VLANs, etc. Also, Microsoft Office Visio diagrams allow you to print in various sizes including posters.

Note—A separate NetMapper license is required in order to run NetMapper in JCSS. A JCSS license does not include a NetMapper license.

The table below outlines the main menu options under NetMapper:

Table 3-8 NetMapper Menu Items

Menu Item	Description
Generate NetMapper Diagram...	Launches the Generate NetMapper Diagram dialog box that allows you to select a template from which to generate a new diagram, or generate a diagram based on a previously-generated diagram.
View Recent NetMapper Diagram...	Get information about generated diagrams, open them in Visio, and delete any old, unwanted diagrams
Publish Recent NetMapper Diagram...	Select a generated diagram to publish.
Open NetMapper Log	Opens the Log Viewer to view both text-based and event-based logs.

Please refer to the IT NetMapper chapter under the IT Guru product documentation for details on using NetMapper.

DES (Discrete Event Simulation) Menu

Configuration OPFAC

Every time a new scenario is created (or an older scenario is converted), a Configuration OPFAC will automatically be placed in the top-level subnet. Simulations cannot be run if this object is not present in the scenario, therefore, the Configuration OPFAC cannot be deleted or duplicated. The Configuration OPFAC is an actual OPFAC, and can be accessed via the treeview or the workspace (the default location for the OPFAC is 60, -150). The Configuration OPFAC contains (at least) these four utility nodes: Failure/Recovery, Wireless Failure/Recovery, IER Firing Rules Node, and QoS.

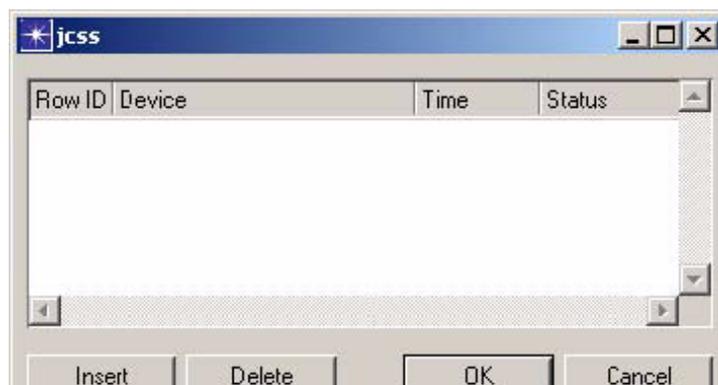
Failure/Recovery Node

JCSS failure/recovery functionality allows you to specify a time interval or period of time for which devices of an OPFAC are inoperable. You can also specifying failure and recovery times for organizations, links, individual devices, and OPFACs. This feature simulates equipment failures or loss of forces. Failure/recovery times are specified on the individual objects listed above, however, once specified, the failure/recovery times for all objects in the scenario reside on the Failure/Recovery node. This node can be deleted.

- 1) From the Scenario Builder, right-click on an organization, link, individual device, or OPFAC to open the shortcut menu.
- 2) On the shortcut menu, select Edit JCSS Attributes. The Attributes dialog box displays.

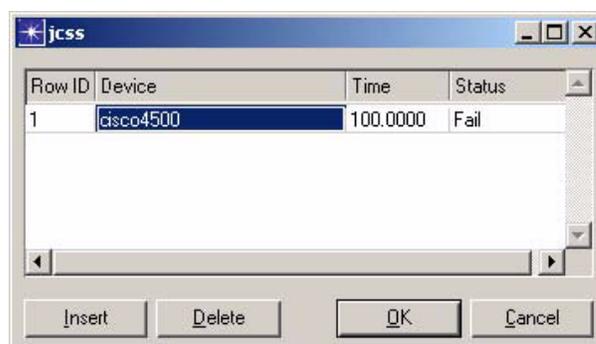
- 3) Click the Failure/Recovery button at the bottom of the dialog box. The Failure/Recovery Times dialog box displays.

Figure 3-205 Failure/Recovery Times Dialog Box

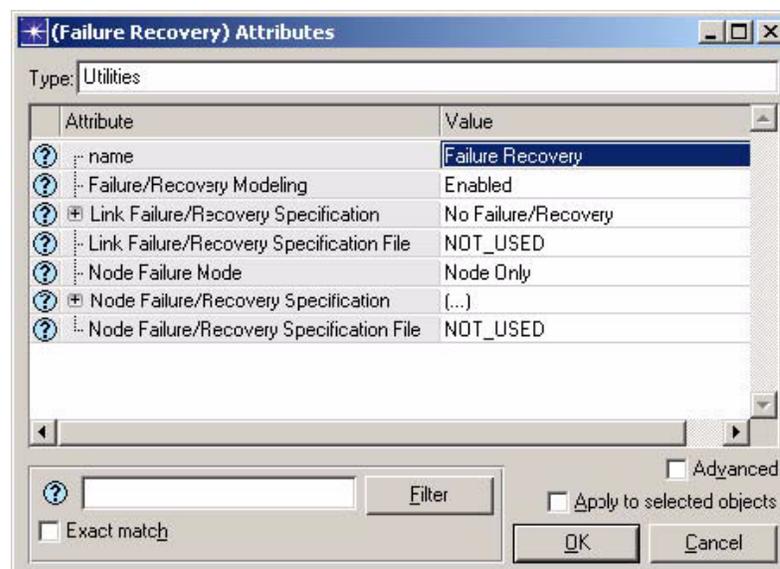


- 4) Click Insert. A failure/recovery time with default values displays in row 1. Edit the Device, Time, and Status fields as needed. Repeat as needed to create all failure/recovery times for the selected object.

Figure 3-206 Inserting a Fail Time



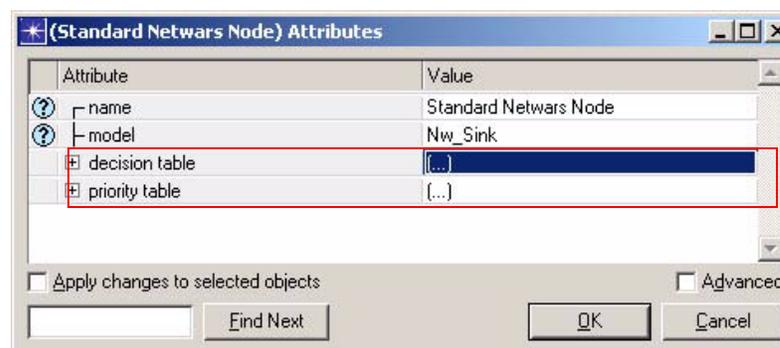
- 5) Click OK to close the Failure/Recovery Times dialog box, and then click OK again to close the Attributes dialog box. Repeat steps 1-5 to create failure/recovery times for other scenario objects.
- 6) To view all failure/recovery times for the scenario, right-click on the Failure/Recovery node in the Configuration OPFAC and select Edit Attributes.
- 7) Next, click in the Value cell of the Link Failure/Recovery Specification attribute and select (...) to view link failure/recovery times, or click the Value cell of the Node Failure/Recovery Specification attribute and select (...) to view node failure/recovery times.

Figure 3-207 Failure/Recovery Node Attributes**Wireless Failure/Recovery Node**

The Wireless Failure/Recovery node works in the same manner as the Failure/Recovery node explained above, except it is only used for wireless networks (i.e., broadcast networks). This node can be deleted.

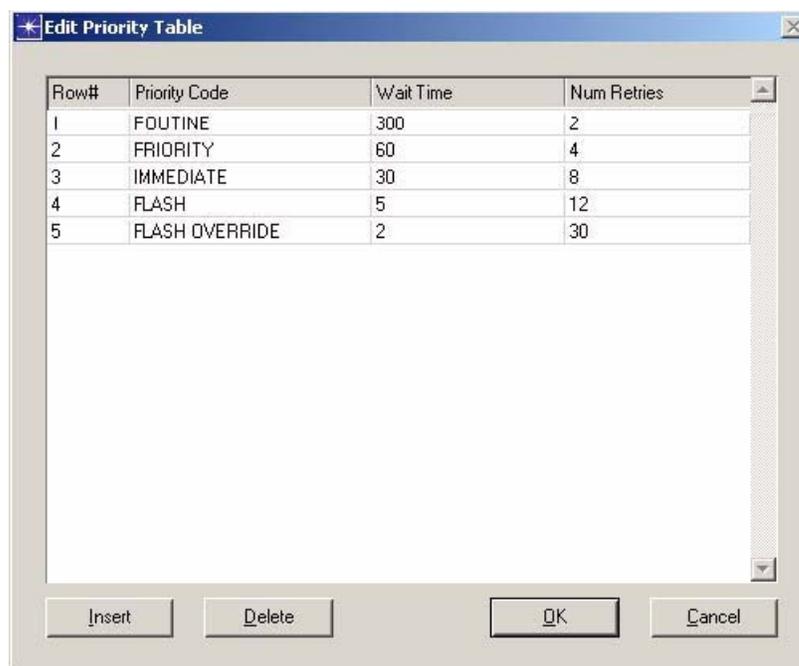
IER Firing Rules Node

The IER Firing Rules node must exist to run a simulation; therefore, it cannot be deleted. Before a simulation is executed, certain parameters that influence the behavior of the simulation can be configured from this node. These parameters, which specify the behavior of traffic during simulation, are configured through the Priority Table, Decision Table, and System Element Table. These tables are accessible via the IER Firing Rules node shortcut menu by selecting Edit Attributes.

Figure 3-208 Accessing the Decision Table and Priority Table

This table can be used to specify how the simulation deals with failed IER transmissions due to busy sending and receiving devices. For each precedence type, you can specify the number of retries and the wait time between retries.

Figure 3-209 Priority Table



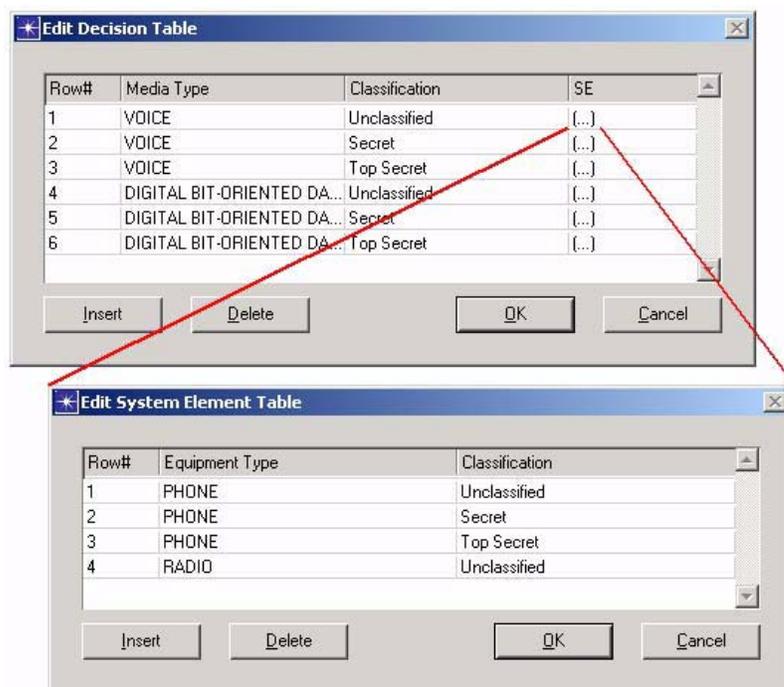
Row#	Priority Code	Wait Time	Num Retries
1	ROUTINE	300	2
2	PRIORITY	60	4
3	IMMEDIATE	30	8
4	FLASH	5	12
5	FLASH OVERRIDE	2	30

From this table we can see that if a Flash IER cannot be fired at the specified time, the simulation will wait for 5 seconds and try to send it again. For Flash, the simulation will try a maximum of 12 times before failing the IERs.

Decision Table and System Element Table When creating IERs, you specify the producing and consuming OPFACs. You do not have to specify the device within the OPFAC that produces or consumes the traffic, but the simulation needs to know the device within the OPFAC that handles the traffic.

This device selection process can be left to the simulation with the help of the Decision Table and the System Element (SE) Table. These tables have a series of entries tying the type of traffic, the classification, and the equipment type to be used for that traffic to the actual device within an OPFAC.

Figure 3-210 Decision Table and System Element Table



When it is time for the simulation to send traffic, it looks for a matching entry in the Decision Table. If an entry is found, it looks in the SE table corresponding to that entry for a matching equipment type. Using the equipment type and classification obtained from these two tables, the simulation looks for a device within the producer and consumer OPFACs that can produce and consume the traffic.

The Priority Table and Decision Table can also be configured in the Configuration OPFAC utility.

Quality of Service (QoS) Node

The QoS node is used to define custom QoS schemes and apply quality-of-service constraints to your network. This node can be deleted.

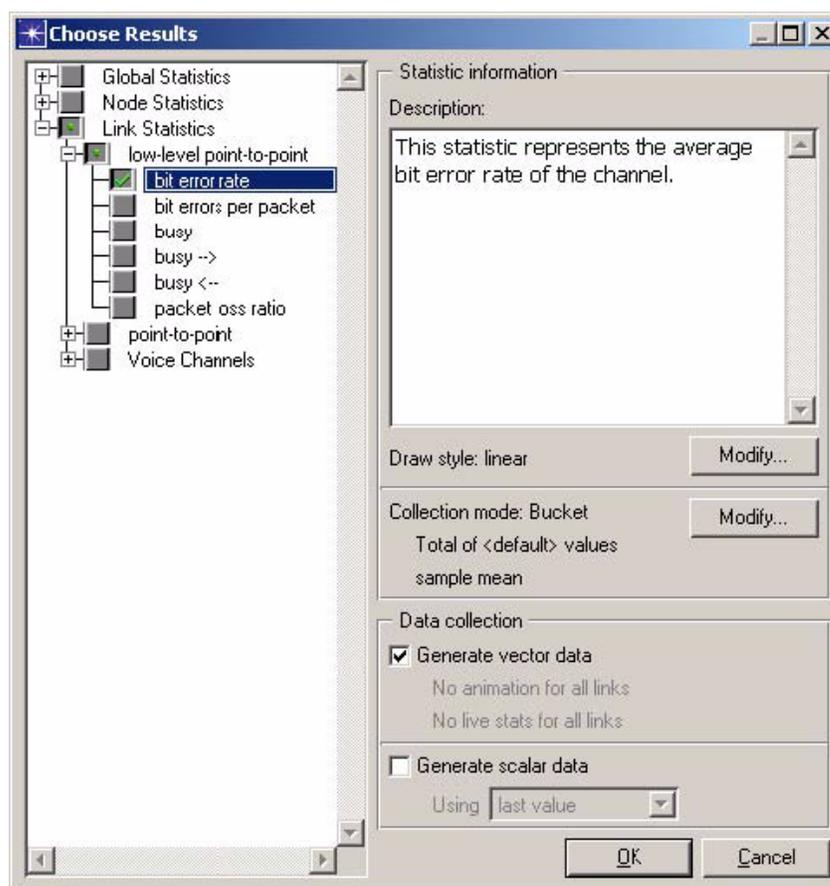
Before a simulation is executed, certain parameters that influence the behavior of the simulation can be configured.

Choose Individual

Statistics **DES > Choose Individual Statistics...** Choose statistics on devices, inter-OPFAC, and intra-OPFAC links to be collected during simulation.

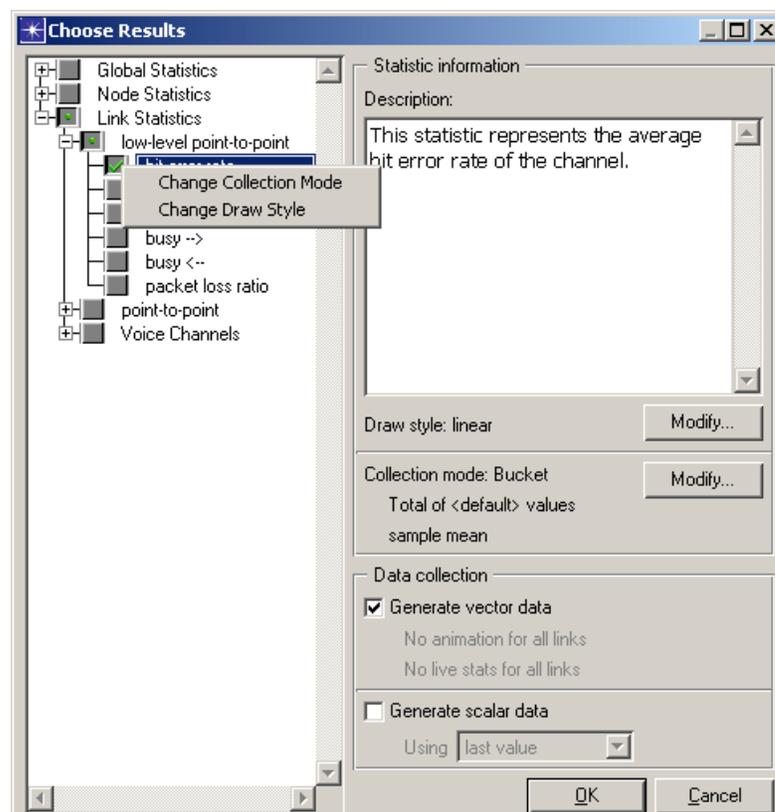
- 1) Select the object in the workspace for which the statistics will be collected (includes all devices, the OE, inter-OPFAC, and intra-OPFAC links).
- 2) Select DES > Choose Individual Statistics or select Choose Individual Statistics from the shortcut menu. The Choose Results dialog box displays.
- 3) Select statistics to be collected during a simulation by clicking the checkboxes next to the desired statistics.

Figure 3-211 Choose Results Dialog Box



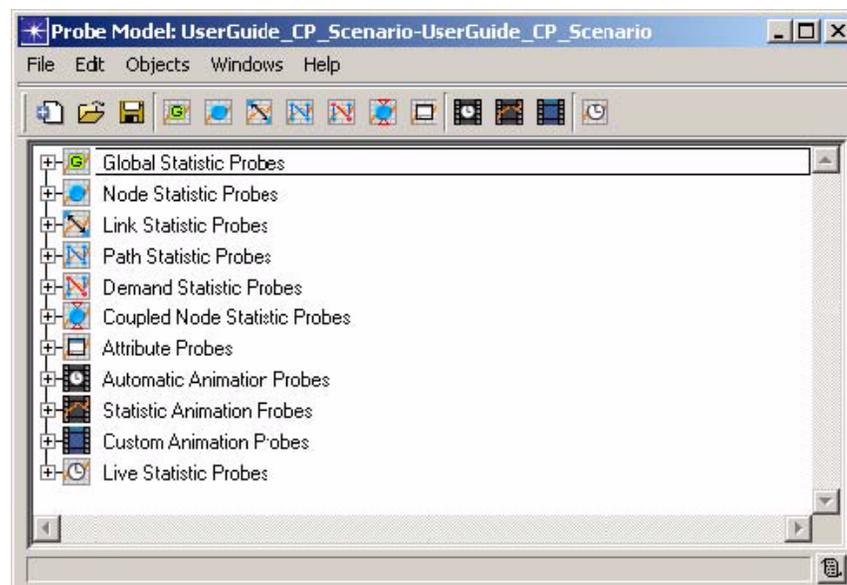
- 4) Right-click on the individual statistic to make changes to the collection mode or draw style.

Figure 3-212 Change Collection Mode or Draw Style

**Choose Statistics**

DES > Choose Statistics (Advanced) In the Probe Model window, choose (Advanced) advanced statistics on devices, inter-OPFAC, and intra-OPFAC links to be collected during simulation.

Figure 3-213 Probe Model Window



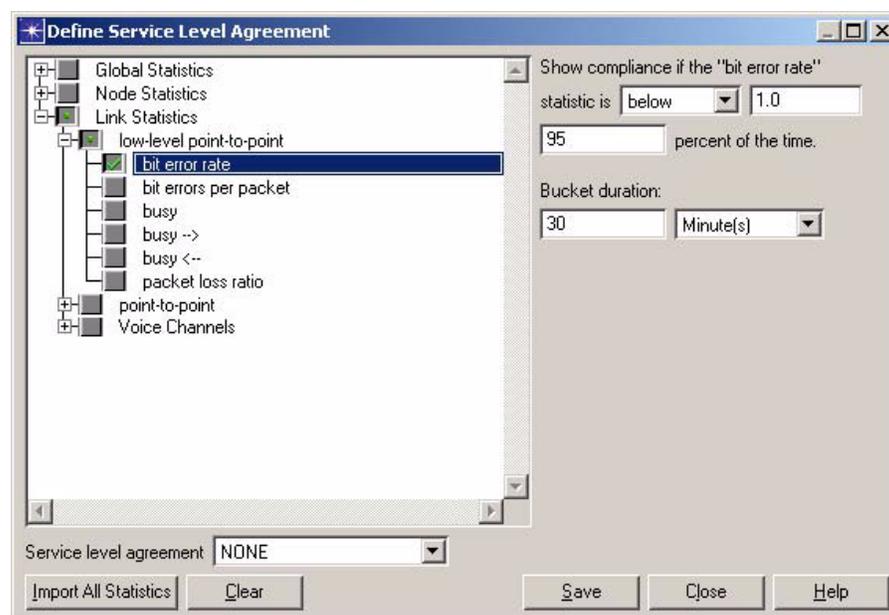
**Record Packet Flow
2D Animation for
Subnet and Record
Node Movement 2D
Animation for
Subnet**

DES > Record Packet Flow 2D Animation for Subnet and DES > Record Node Movement 2D Animation for Subnet Turn on or off the collection of animation data from the subnetwork. This data allows you to view the packet flow and (with the Wireless Module) node movement that occurs during a simulation.

**Expert Service
Prediction > Define
Service Level
Agreement**

DES > Expert Service Prediction > Define Service Level Agreement: Defines the thresholds for a service level agreement (SLA.)

Figure 3-214 Define SLA Dialog Box



- **Show Compliance drop-down menu/fields:** Displays a statistic's compliance with an SLA. An SLA can include thresholds for one or more statistics. To view a statistic's compliance, select it in the Statistic Browser. You must set each statistic's threshold individually; if you select multiple statistics and set a threshold, the threshold applies only to the last statistic you selected.
- **Bucket Duration field/drop-down menu:** Sets the duration for buckets for the simulation run. If a statistic has a bucket-capture mode set to time average, sum/time, or count, the SLA measures compliance for the entire simulation run. For all other statistics, it divides the total simulation run into buckets (set by the Bucket Duration field) and measures compliance for each bucket.
- **Service Level Agreement drop-down menu:** Allows edits to existing service level agreements.
- **Import All Statistics button:** Lists statistics for all models listed in the mod_dirs directory.
- **Clear button:** Deselects all statistics, and resets the statistics tree.

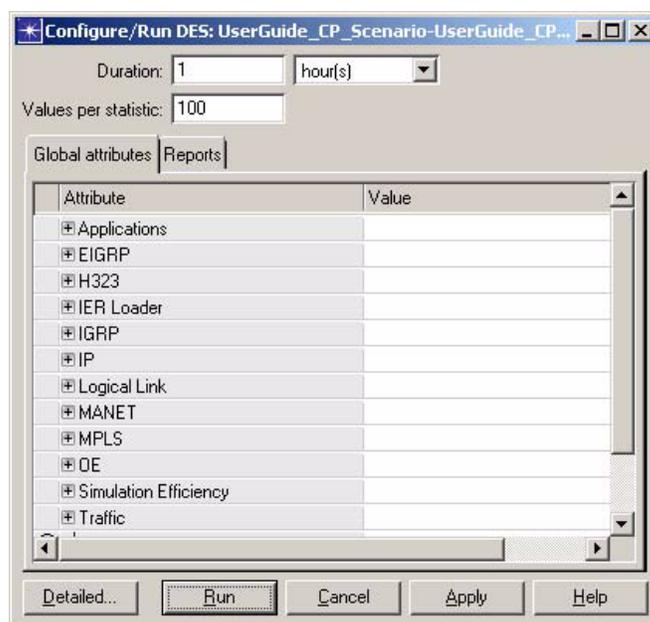
- Save button: Opens the Save As dialog box, which allows you to save the thresholds defined for the scenario.
- Close button: Opens the Confirm dialog box, which prompts you to save your changes before closing.

Configure/Run Discrete Event Simulation

DES > Configure/Run Discrete Event Simulation or click the Configure/Run Discrete Simulation button: Set the values of simulation attributes and control how a discrete event simulation (DES) runs in the current (or specified) scenario. The Configure/Run DES dialog box displays in simple mode. This dialog box has a set of commonly used dialog box controls, and two tabbed windows to configure DES inputs (Global attributes) and outputs (Reports.)

- 1) Set the duration of the simulation in the Duration field. The units are specified by the pull-down menu next to this field. This sets the duration simulation preference.
- 2) Set the number of values collected for each statistic in the Values per statistic field. This sets the num_collect_values simulation preference.

Figure 3-215 Configure/Run DES Dialog Box



- 3) Set the simulation attributes in the Global attributes window to the desired values. The Attribute table displays all simulation attributes declared by models involved in the scenario to be simulated and the values assigned to each attribute. Click on a question mark icon to display information about the corresponding attribute. Click on an Attribute Value to change it.

For details on the attributes that can be configured on the Global attributes page, refer to the OPNET Editors Reference Manual (consult the IT Guru documentation set, available via Help > Documentation > IT Guru Documentation).

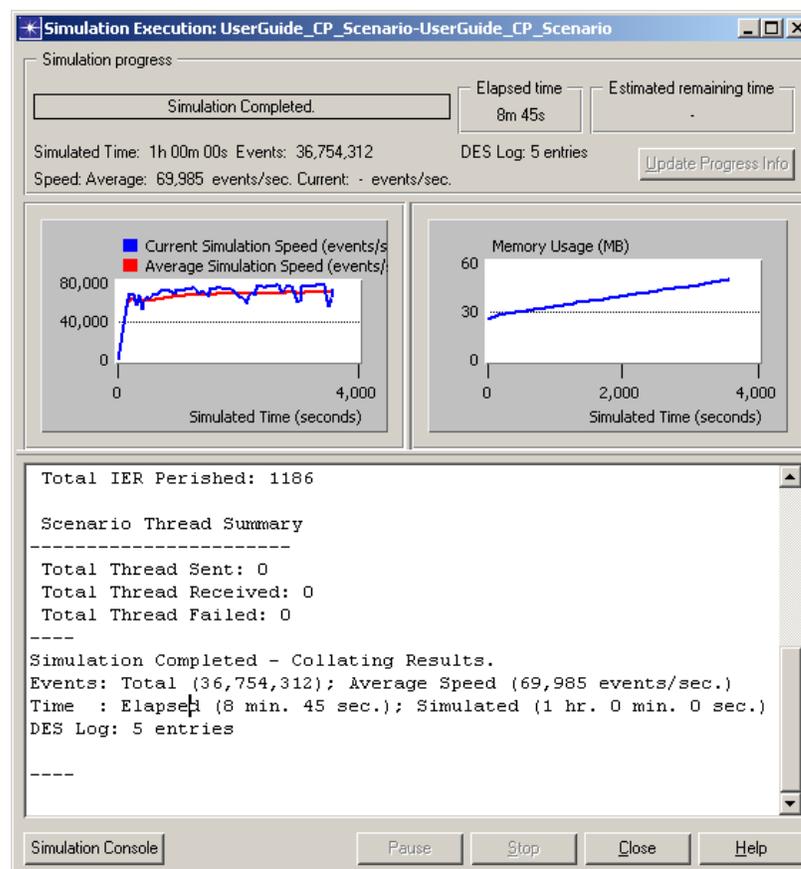
- 4) Click the Reports tab to select Statistics and Service Level Agreement (SLA) reports for the simulation to collect. Reports are predefined sets of statistic probes.
 - Record the following date and time in results label-Displays the date and time associated with the network model, if any.
 - Generate web report for simulation results checkbox-When selected, simulation results are included in a report viewed from a web browser.
 - Minimum number of decimal places for statistics in output reports
 - Number of entries displayed in 'Top N' reports counter—Sets the value of 'N'.
 - Statistics reports pane—Specifies the statistics reports to generate at the end of the simulation. Each selected value is added to the reports simulation preference.
 - Define Statistics Report button—Opens a dialog box used to define new statistics reports.
 - SLAs pane—Specifies the SLA reports to generate at the end of the simulation. Each selected value is added to the sla_reports simulation preference.
 - Define SLA Report button—Opens a dialog box used to define new SLA reports.
- 5) Click the Detailed button if you want to open the Configure/Run DES dialog box in “detailed” mode. Detailed mode lets you configure all of the parameters of DES, some of which are not available in the simple mode. This dialog box contains a treeview of information categories for configuring different aspects of the simulation.
- 6) Click Cancel to close the dialog box without saving any changed settings, or click Apply to save the current settings and keep the dialog box open, or click Run to save the current settings, close the dialog box, and run the simulation immediately. The simulation runs for set duration, displaying frequent progress updates in the viewing window until completion.

Run Discrete Event Simulation

DES > Run Discrete Event Simulation Run a simulation of the current scenario. The dialog box that appears displays the status of the simulation as it runs and allows you to pause or stop the simulation, if desired.

- 1) Choose DES > Configure/Run Discrete Event Simulation to open the Simulation Set dialog box.
- 2) If desired, set the simulation attributes.
- 3) Click the Run toolbar button. The Simulation Execution dialog box opens.

Figure 3-216 Simulation Execution Dialog Box



JCSS displays a series of messages in this dialog box. These messages show the progress of the simulation, beginning with the initialization stages and continuing with run-time statistics. The following statistics are displayed at each update:

- Time: Current simulation time.
- Events: Total number of events processed. An event usually signifies the arrival of a packet or an interrupt at a module, triggering some kind of response within the module.
- Speed: Average – Simulation Sequence graph displays the average number of simulation events per second of real time (measured since the beginning of the simulation).
- Speed: Current – Simulation Sequence graph displays the instantaneous number of simulation events per second (measured using real time over the last update interval).
- Time: Elapsed – Real running time of the simulation.

The following buttons stop, pause, and resume the simulation:

- Pause / Resume button—Pauses / Resumes the current simulation. You can save the output generated by the simulation up to this point when pausing the simulation.
- Stop button—Stops the current simulation. You can save the output generated by the simulation up to this point. (This acts as if `op_sim_end()` was invoked by model code.)

The following panels display:

- Simulation Speed panel—Displays a graph of the current and average event speed for the simulation.
- Memory Usage panel—Displays a graph of the OPNET-managed memory usage of the simulation.

4) When the simulation is finished, click Close.

If fatal errors are present in the scenario when a simulation is run, the simulation process is aborted. A pop-up dialog box instructs you to access the Scenario Conversion Log file, which details errors that correspond to incorrect scenario elements requiring adjustment prior to a successful simulation. The log file, which resides on the same level as the `nt.m` file, can be opened using any text editor. When the simulation is complete, a file named `<project name>-<phase name>.ov` is saved in the same location as the `nt.m` file. This file will be used for results analysis.

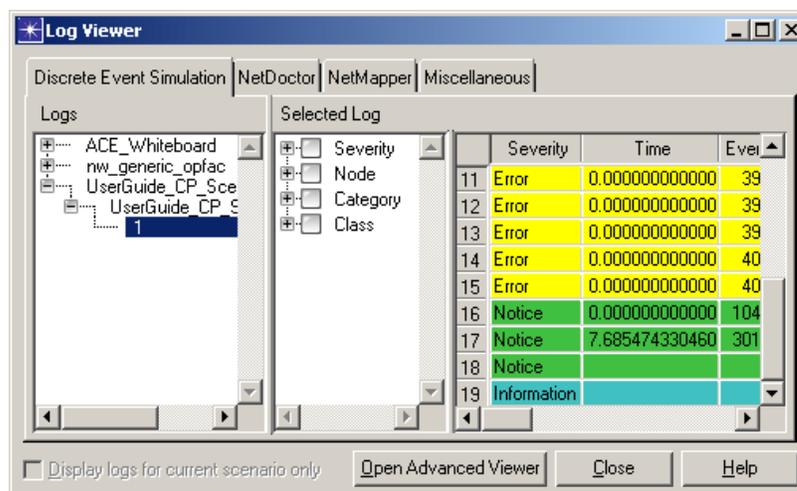
Restart Discrete Event Simulation

DES > Restart Discrete Event Simulation Restart a simulation of the current scenario.

Open DES Log

DES > Open DES Log Display the log of errors and significant simulation events maintained by JCSS during discrete event simulation. The DES log is written to a tab-delimited ASCII file. Because there may be many events in a DES log, a log browser is provided so that you can view only those events of interest to you.

Figure 3-217 DES Log Viewer



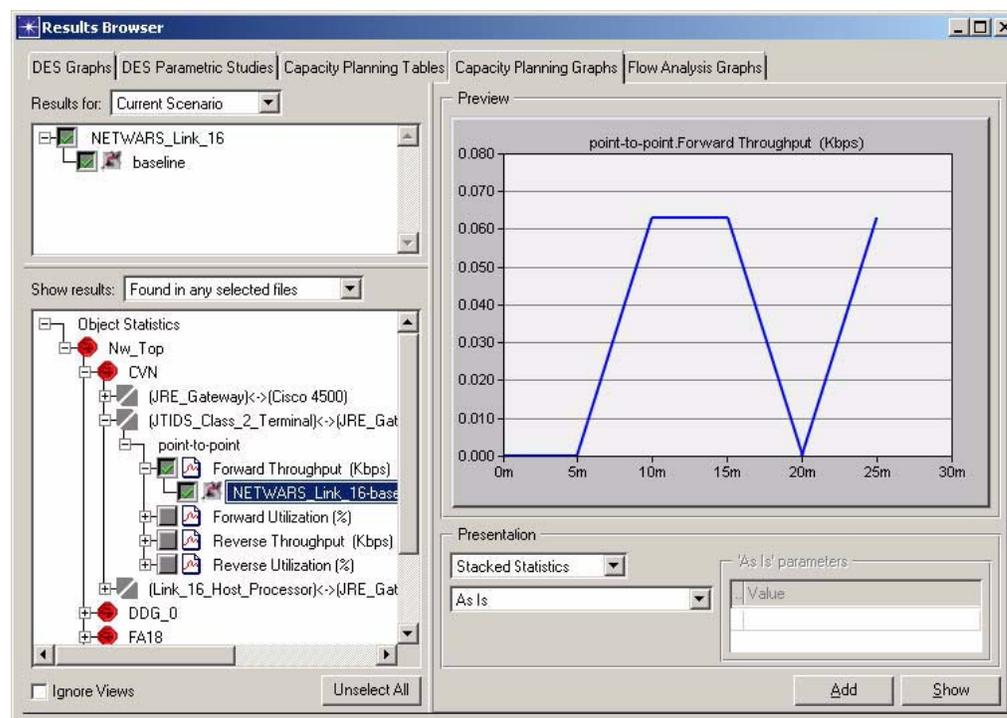
- 1) Click the module tabs to move between modules for which logs are available. The Miscellaneous tab gives you access to session and error logs.
- 2) Use the treeview provided in the Logs pane to select from the available logs associated with the selected module.
- 3) For text-based logs, the Selected Log pane displays a single pane with simple text descriptions of events. For event-based logs, it displays two panes. The first pane displays sections of the log. Select the section(s) that you want displayed. The second pane displays the log data, one event per row.
 - Click and drag the vertical lines in the header row to resize columns.
 - Click on an entry in the Message column to open an edit pad containing the full text of the message.
- 4) Check (or uncheck) the Display logs for current scenario only checkbox to specify whether the treeview (in the Logs pane) should list all logs or only those for the current scenario.
- 5) Click the Open Advanced Viewer button to open an advanced log viewer that provides additional capabilities using a menu bar. The additional capabilities include: changing which column is used to color-code a log entry, changing which columns are visible or filterable, saving the current viewer settings, and exporting the log information to a file.
- 6) Click the Close button to close the Log Viewer dialog box.

Results **DES > Results > (option)** Select one of the listed options to view simulation results in various formats.

Results > View Results

DES > Results > View Results Launch a graphical interface, the Results Results Browser, that allows the planner to browse a list of MOPs loaded from an output vector file and create graph panels to display the MOPs.

Figure 3-218 View Results



The list of MOPs is categorized and displayed in a tree on the left of the interface. Global statistics are calculated from all objects in the simulation. Object statistics are calculated from individual objects, which are primarily links and OPFACs. One or more statistics may be selected from multiple categories at any time.

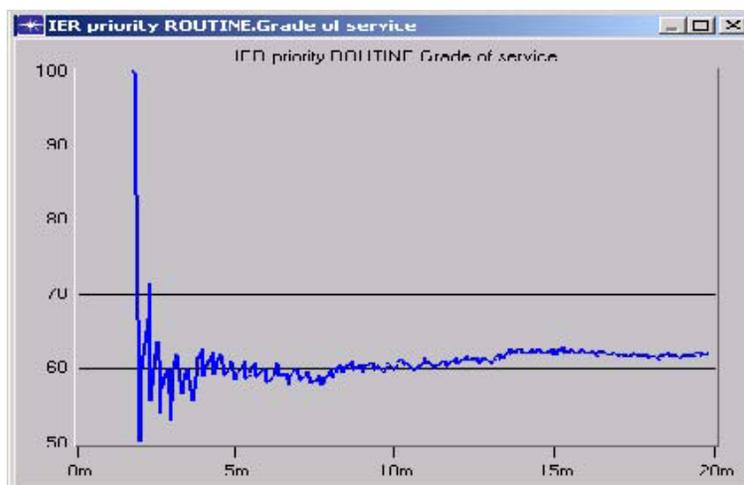
Configuration options may be set in the drop-down lists immediately above the lists and below the graph preview. These options control how multiple MOPs or a single MOP from multiple scenarios are combined in a graph panel, and allow the planner to apply filters to the raw MOP data.

If more than one output vector file has been loaded, the upper-left list allows the planner to configure the graph panel to contain graphs of the selected MOP from the most recently loaded file (Current Scenario), from all files (All Scenarios), or from individually selected files (Select Scenarios). If All Scenarios or Selected Scenarios is chosen, only one MOP may be selected.

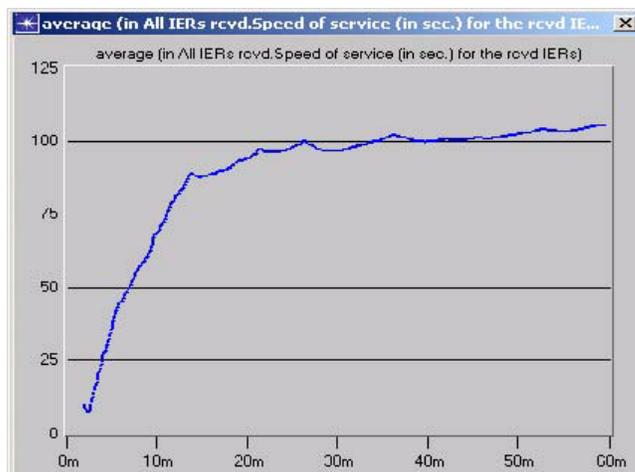
If multiple MOPs are selected, or a single MOP is being graphed from multiple files, the lower-right lists specify how the graphs will be combined on the graph panel. The Stacked Statistics option causes the panel to contain a separate graph for each MOP or file. The Overlaid Statistics option causes the panel to contain one graph on which all MOPs are plotted, using colors to distinguish the plots. The Individual Statistic option ensures that only one MOP can be selected at any time.

Once the graph has been configured, the planner may create an independent graph panel containing the MOP(s) by clicking on the Show button. The graph panel will have the same appearance as the preview, but will exist as an independent dialog and provide editing features that can further configure the graph. Any number of graph panels may be created by repeatedly selecting statistics, setting options, and clicking on Show.

Figure 3-219 MOP Graph Panel



MOP graphs should be interpreted in the same manner as a standard line graph. The graph heading displays the name of the MOP; the X axis always represents simulation time; and the Y axis represents various units of measurement, depending on the MOP selected.

Figure 3-220 Speed of Service MOP

The table below lists MOPs and their descriptions:

Table 3-9 MOP Descriptions

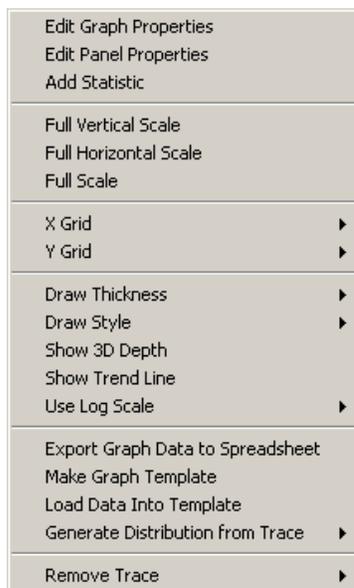
MOP	Description
IERs sent count	A cumulative count of IERs sent.
Number of blocks for each IER sent	The number of times each IER was blocked.
Perishability for the rcvd IERs	A cumulative count of IERs received where the delay (IER_Rcvd IER_Start) is greater than the IER_Perish time.
Speed of service (in sec.) for the rcvd IERs	The delay (IER_Rcvd IER_Start) computed for each received IER.
Forward Data Throughput (in bits/sec.)	The throughput of the point-to-point link in the forward direction.
Reverse Data Throughput (in bits/sec.)	The throughput of the point-to-point link in the reverse direction.
Forward Link Utilization (percent)	The utilization of the point-to-point link in the forward direction.
Reverse Link Utilization (percent)	The utilization of the point-to-point link in the reverse direction.
Broadcast Network Utilization	The broadcast network utilization during the simulation. A value of '1' indicates that the network was utilized, and '0' indicates that it was not utilized.
Connection latency (in sec.)	The latency (IER_Sent IER_Start) in establishing a connection.

Table 3-9 MOP Descriptions

MOP	Description
Grade of service	The percentage of IERs received within the IER_Perish time.
Message completion rate	The ratio of the number of IERs of type 'data' received to the number of those sent.
Message error rate	The ratio of the number of IERs of type 'data' that failed to the number which were sent.
Call completion rate	The ratio of the number of IERs of type 'voice' received to the number of those sent.
Blocking probability	The ratio of the number of IERs that were blocked at least once to the number which were sent.
End-to-end delay (in sec.)	The delay (IER_Rcvd IER_Sent) computed for each received IER.
Channel Utilization (percent)	The percentage of channels on this link that are used.
Voice Throughput (in bits/sec.)	The number of voice calls that go through this link.

MOP graphs allow user interaction. For example, examine statistics by placing the cursor over a segment of the trace to display a tool tip regarding graph coordinates, or zoom in on any segment of the trace by drawing a small box around the segment with the cursor. Right-clicking on an MOP graph opens a shortcut menu that allows manipulation of graph properties and other capabilities such as modifying the look and style of the graph, exporting the graph data to a spreadsheet, and creating a graph template.

Figure 3-221 MOP Shortcut Menu



Results > Compare Results

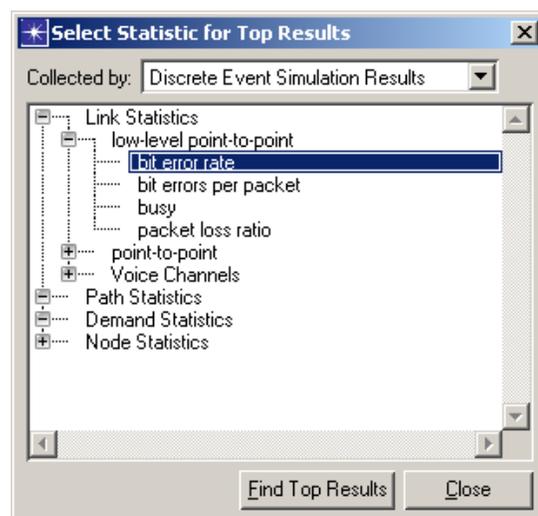
DES > Results > Compare Results Launches the Results Browser containing DES reports.

Results > Find Top Statistics

DES > Results > Find Top Statistics Launch a graphical interface that allows the planner to browse a list of MOPs loaded from an output vector file and create reports listing the objects that have the highest or lowest values for that MOP. Average, maximum, minimum, and standard deviation values may be evaluated for each MOP.

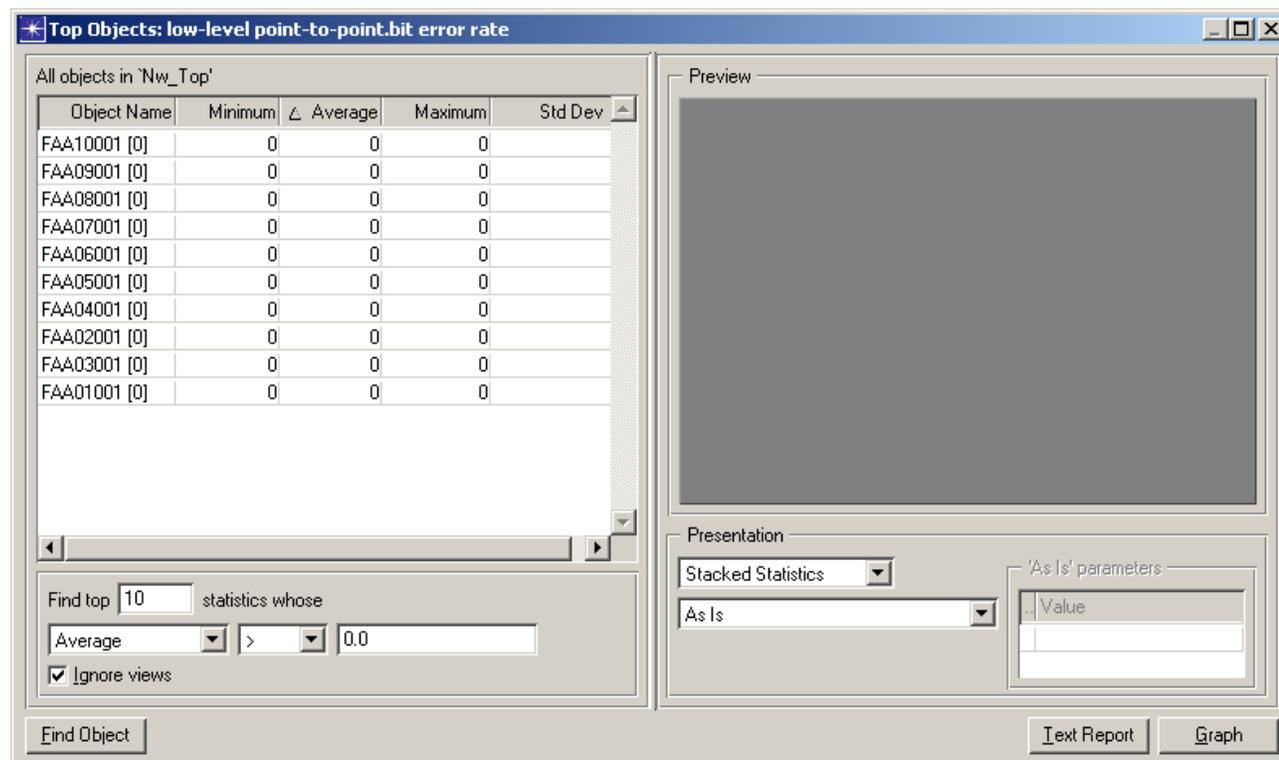
The primary interface is a list of available MOPs that can be evaluated.

Figure 3-222 Select Statistic for Top Results



- 1) Select a statistic and click the Find Top Results button to launch a report interface. Several report interfaces may be opened concurrently by selecting different MOPs and launching the interface for each in turn.

Figure 3-223 Top Results Report Interface



The report interface lists all objects that have recorded the selected statistic and displays the minimum, average, maximum, and standard deviation values calculated from each object's MOP data. Initially, the list is sorted in decreasing average values, but the planner may dynamically resort the list in increasing or decreasing order for each column by clicking on that column's header.

Both graph and text reports may be created from the report interface. The content of each report is controlled using the fields on the left of the report interface. The maximum number of objects included in the report is set in the Report on top N statistics field. Further constraints may be placed on the report by setting a boundary on allowed values for one of the four calculated columns. For example, the report can be constrained to include only objects for which the Average value is greater than (>) a specific value (1.0).

- 1) Create a graph panel containing the full MOP graph for all objects matching the constraints by clicking on the Graph button. The graphs for each object may be stacked or overlaid on the panel, and filters may be applied to the graphs, as specified in the two drop-down lists beside the Graph button.
- 2) Create a text report based on the constraints by clicking on the Text Report button. The text report will be displayed in a text-edit interface and may be saved from that interface.

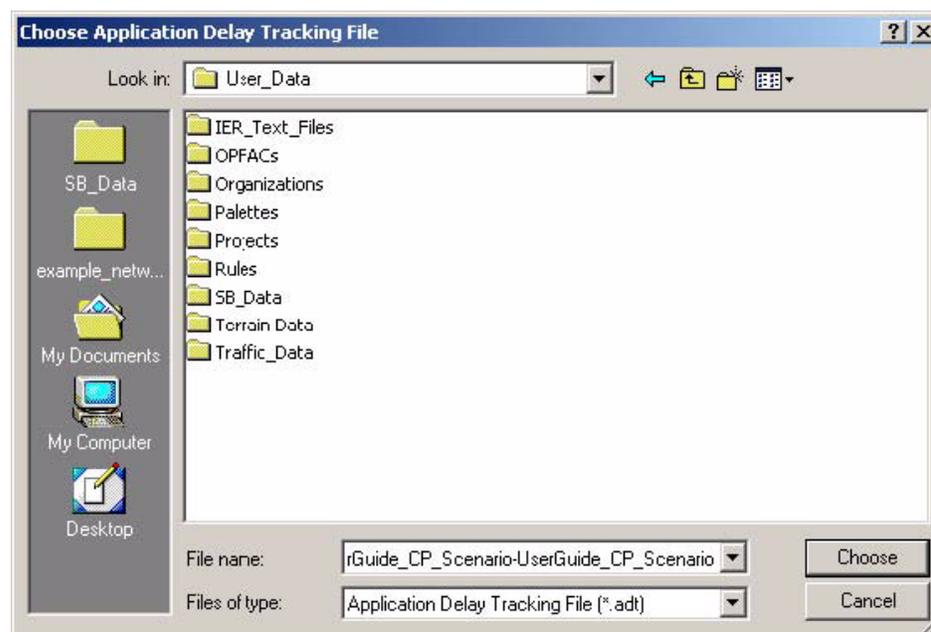
The Find Object button is not operational, since the Scenario Builder does not contain a scenario model in which to find the objects named in the list.

***Results > View
Application Delay
Tracking***

DES > Results > View Application Delay Tracking Select an application delay tracking file and use the Application Segment Tracking Viewer to display its data.

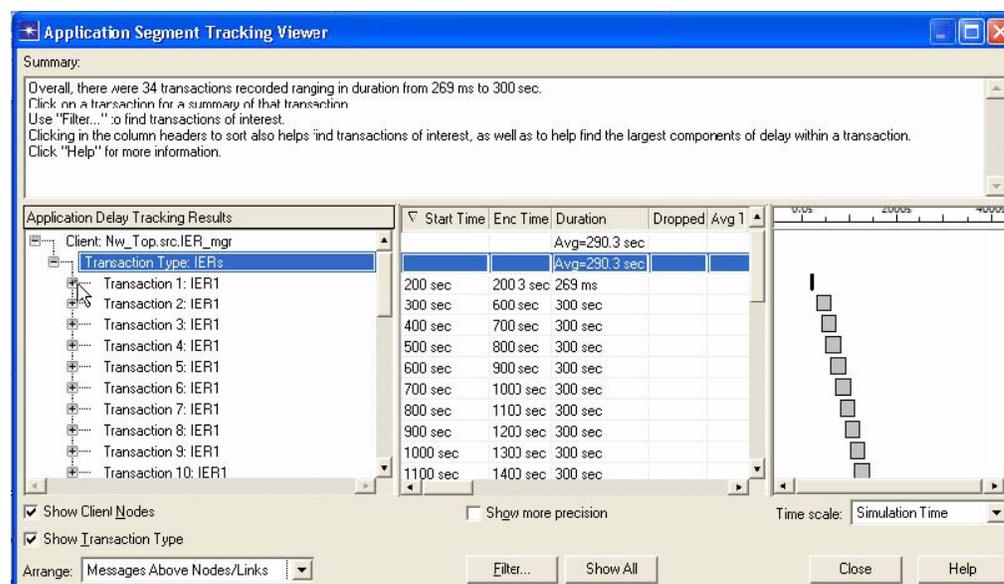
For example, you can track how each IER moves through the network.

Figure 3-224 Choose an Application Delay Tracking File



IER data displays in the Application Segment Tracking Viewer.

Figure 3-225 Application Segment Tracking Viewer



Results > View DES Reports

DES > Results > View DES Reports Displays output tables generated during a discrete event simulation.

Results > Generate Web Report	<p>DES > Results > Generate Web Report... Generates a Web report that contains one or more of the reports available in the Results Viewer.</p> <ol style="list-style-type: none">1) From the Select Tables for Web Report dialog box, choose the results you want to include in the Web report.2) Select the Include Network Diagram checkbox if you want the web report to include a graphic of the network topology.3) Click Generate.4) Select a directory for the HTML files and click OK.5) The web report is created and opens in the default Web browser.
Results > Launch Last Web Report	<p>DES > Results > Launch Last Web Report Opens most recently generated Web report in the HTML browser.</p>
Results > Import	<p>DES > Results > Import... Load a previously created .ov file. Select the file to load and then click OK; the data is loaded into the current project and is available for analysis. When multiple files are loaded, each file will be a distinct scenario. The name of the scenario will match the name of the output vector file. Multiple scenarios may be active in the Scenario Builder concurrently, so that their MOPs may be graphed and compared.</p>
Play 2D Animation	<p>DES > Play 2D Animation View collected animations. Toolbar buttons display to control operations for playing animation sequences, pausing animation, and speeding animation up or slowing it down. You can also load animation history files, view "real-time" animation (simultaneously with an executing simulation), and use a variety of operations to control how animation data displays. The largest area of the display-the animation viewing area-is where you can load and view animations. Animation displays in windows called viewers. A viewer is a rectangular region with an internal coordinate system. Viewer windows can be manipulated using the standard GUI operations for moving, resizing, scrolling, and circulating editor windows.</p> <p>The following toolbar buttons control animation operations:</p> <ul style="list-style-type: none">• Play: Activates any animation flow that has been established.• Pause: Pauses an animation indefinitely, until another operation reactivates it.• Restart: Restarts a paused or stopped animation flow from its beginning.• Terminate: Stops an animation flow. After it is stopped, an animation can be restarted only using the Restart Animation flow operation.• Slow Down Animation: Slows down the animation sequence in increments.• Speed Up Animation: Speeds up the animation sequence in increments.

Panels **DES > Panels** Display a list of all open panels and select one to make active.

Panel Operations **DES > Panel Operations > (option)** Select one of the operations listed below to control panel display.

- **Arrange Panels:**
 - **Show All:** This operation draws any analysis panels previously hidden.
 - **Hide All:** This operation hides all analysis panels that have been drawn.
 - **Distribute:** This operation arranges open panels along a grid but (unlike tile) does not redraw them to a uniform size.
 - **Cascade:** This operation arranges open panels in an overlapping pattern that ensures the title bar of each panel is visible. Panels are not redrawn to a uniform size, unlike the tile operation.
 - **Tile:** This operation redraws open panels to a uniform size and arranges them in a grid.
- **Panel Annotations:**
 - **Make All Panels Into Annotations:** Creates annotation objects from all open analysis panels.
 - **Delete All Panel Annotations:** Deletes all analysis panel annotations in the network.
- **Panel Templates:**
 - **Create From All Panels:** Makes all analysis panels in the current scenario into templates.
 - **Load With Latest Results:** Applies current statistics to all templates in the scenario.
- **Export Panels:**
 - **To BMP:** Creates BMP images of all graphs currently available in the Scenario Builder. Select a directory in which to place the new image files. One image file is then created for each graph.
 - **To TIFF:** Creates TIFF images of all graphs currently available in the Scenario Builder. Select a directory in which to place the new image files. One image file is then created for each graph.
 - **To PowerPoint:** Creates a PowerPoint document containing images of all graphs currently available in the Scenario Builder. Select a directory and provide a name for the new PowerPoint file.
- **Reload Data Into All Panels:** Reloads data into all panels.
- **Delete All Panels:** Deletes all analysis panels in the current scenario.

Windows Menu

<i>Previous Editor</i>	Windows > Previous Editor Make the previously displayed editor the current editor.
<i>Circulate Editors</i>	Windows > Circulate Editors One at a time, make each open editor the current editor.
<i>Hide This Editor</i>	Windows > Hide This Editor Hide the current editor. If another editor is open, that editor is made the current editor.
<i>Hide Other Editors</i>	Windows > Hide Other Editors Hide all open editor windows except the current one.
<i>Show All Editors</i>	Windows > Show All Editors Re-display any hidden editors.
<i>Configure Toolbar</i>	Windows > Configure Toolbar Customize the main toolbar by adding and deleting desired buttons, selecting button icons and names, and moving button order.

To add a toolbar button, select an available operation from the left pane and

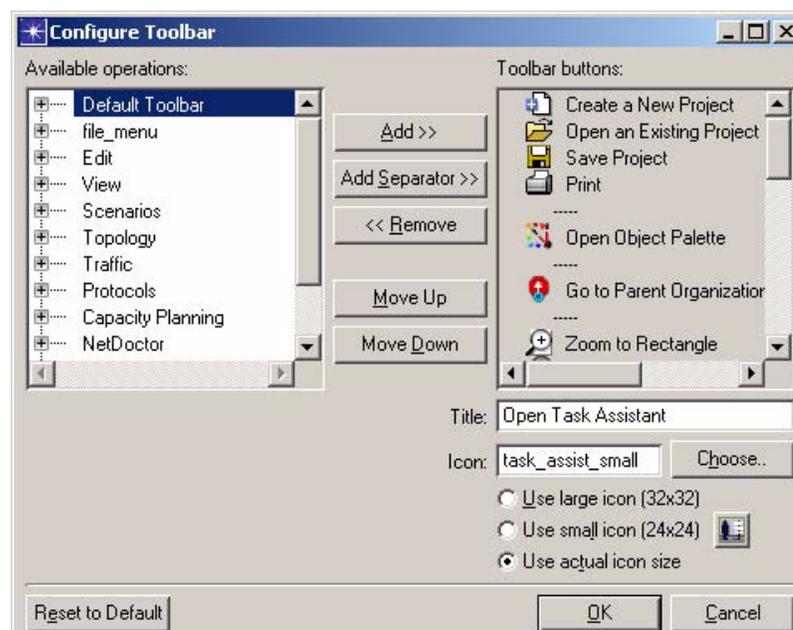
then click the Add>> button. Use the Move Up or Move Down buttons to position the button in the desired toolbar location. In the Title field, enter a button title. Next, click the Choose button and select the desired icon from the palette that displays. Click OK.

To remove a toolbar button, select a button in the right pane and then click <<Remove.

Use the Move Up or Move Down buttons to reposition a button in the toolbar.

Use the Add Separator>> button to add a divider between button icons.

Figure 3-226 Configure Toolbar Dialog Box



Show Toolbar **Windows > Show Toolbar** Show or hide the main toolbar.

Float Toolbar **Windows > Float Toolbar** Allow the main toolbar to be dragged and dropped anywhere in the viewing area.

Figure 3-227 Floating Toolbar



Note—The Configure Toolbar, Show Toolbar, and Float Toolbar options are also accessible on a shortcut menu, which is available by right-clicking on the toolbar.

System **Windows > System** Moves the System Editor window forward.

Help Menu

This menu is identical to the System Editor Help menu. See the Help Menu section in chapter 2 of this manual.

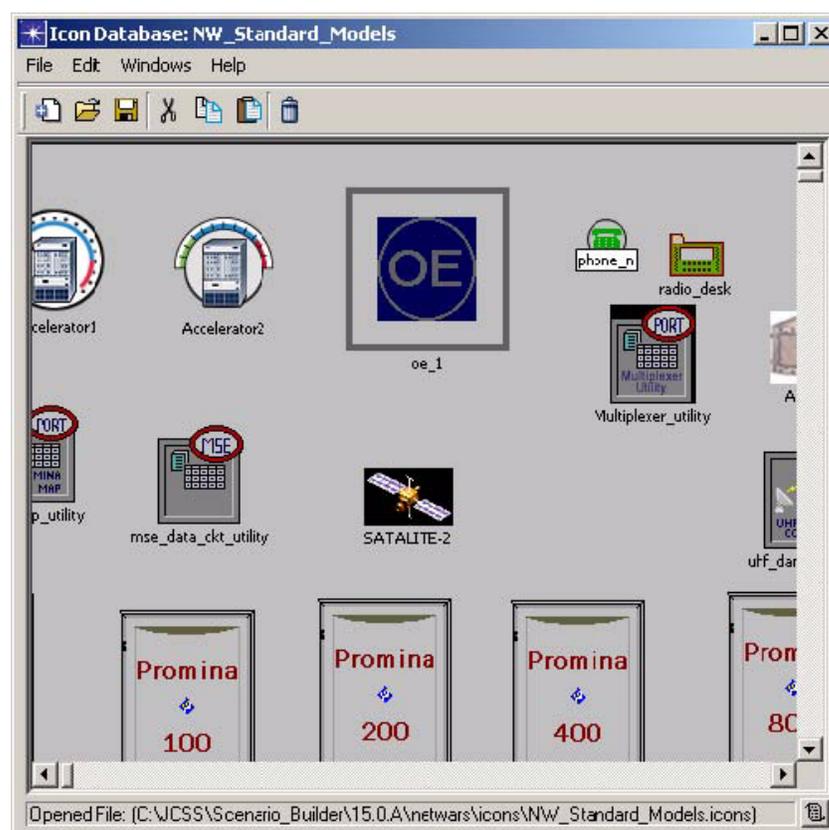
4 Icon Database

The Icon Database allows you to create new icons for OPFACs and organizations displayed within the Scenario Builder.

Accessing the Icon Database

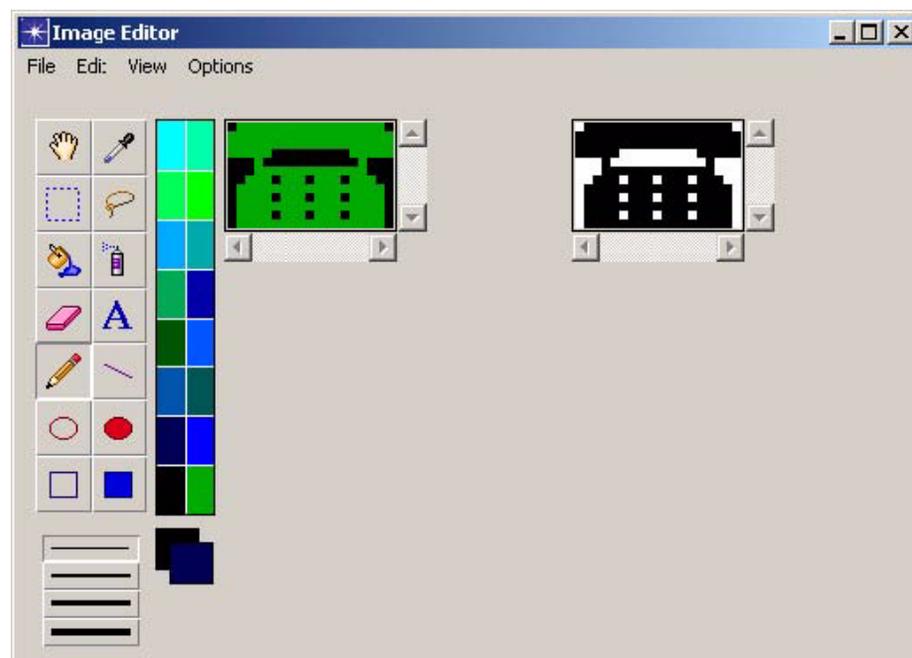
Access the Icon Database using the File > New Other or File > Open Other commands in the System Editor. The Icon Database is used to create new icon palettes (databases) that can be a collection of new customized icons and icons that are already present. The Image Editor that is a part of the Icon Database is used to create / modify the icons. The individual icons are organized into icon database files, with the suffix .icons. Many icon databases are included as part of JCSS; you can also create your own icon databases.

Figure 4-1 Icon Database



You may wish to modify icon databases; you may also wish to modify individual icons. Use the Icon Database window to modify the icon database. Use the Image Editor window to modify individual icons (double-click an icon in the Icon Database to launch the Image Editor.) You cannot create a single icon file, but you can create an icon database file that contains a single icon..

Figure 4-2 Image Editor



You cannot save an individual icon while in the Image Editor. To write the data related to an individual icon to disk, close the Image Editor and choose the Save operation in the Icon Database to save the entire database.

The icon databases included with JCSS are stored in various locations. Icons specific to JCSS are stored in:

JCSS/Scenario_Builder/16.0.A/netwars/icons.

COTS icons are stored in:

JCSS/Scenario_Builder/16.0.A/models/vendor_models

Other icon databases are in the appropriate model directory or in the sys directory. When you create an icon database, it is stored in your default directory (the first directory listed in your mod_dirs preference, typically op_models).

File Menu

New **File > New** Creates a new icon database. This will open a blank database to which new icons can be added and the database can be customized.

Open **File > Open** Opens an existing icon database. Once the database is opened, new icons can be added, existing icons can be deleted or modified using the image editor.

Close **File > Close** Closes the currently open icon database.

Save **File > Save** Retain changes to an icon database.

Save As **File > Save As** Save the current database under a different name. Specify a name and click OK; the icon database is stored in <User_Data>\SB_Data.

Manage Model Files **File > Manage Model Files > (option)** This submenu lists options which allow Files you to delete model files, add a model directory, or refresh model directories.

Exit **File > Exit** Closes all windows and exits JCSS.

Edit Menu

Cut Icon **Edit > Cut Icon** Cut the selected icon to the clipboard.

Copy Icon **Edit > Copy Icon** Copy the selected icon to the clipboard. **Paste Icon** **Edit > Paste Icon**: Paste the selected icon from the clipboard.

New Icon **Edit > New Icon** Create and add a new icon to an existing or new database. Click in the workspace to create a new icon with missing name as the name, and a default image for the icon.

Delete Icon **Edit > Delete Icon** Delete an icon from the icon database.

Preferences **Edit > Preferences** Display and edit JCSS preference settings.

Help Menu

This menu is similar to the System Editor Help menu. See the Help Menu section in [System Editor](#) on page JCSS-2-1.

App A Time Varying Infrastructure

You can define start and stop times for the infrastructure during a simulation run, which includes relationships. IERs will only be allowed to pass if they fall within the active time window of the infrastructure.

Relationships

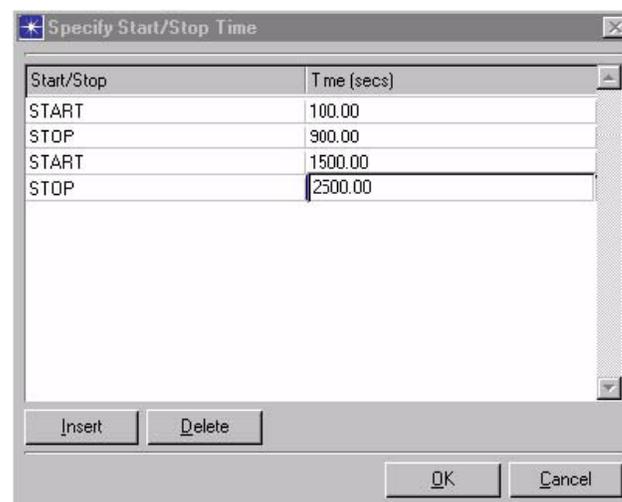
The Relationship Attribute dialog box includes a button to specify start and stop times.

Figure A-1 Relationship Attribute Dialog Box



Clicking on the Specify Start/Stop Time button allows you to specify different start and stop times for a relationship. Start and stop times must be entered consecutively START/STOP, START/STOP, etc., as shown below.

Figure A-2 Specify Start/Stop Time Dialog Box



IERs imported from a text file that are tied to an explicit relationship will have the start and stop times assigned to the relationship applied to them.

User-created IERs can also have a relationship associated with them. You can set this relationship from a list of all relationship types attached to the producer OPFAC. Start and stop times assigned to the relationship will be applied to the IER.

Imported IERs with implicit relationships are not tied to a relationship, so you have to manually specify the start and stop times for these IERs when viewing/editing traffic.

App B System Administration

Types of Administrators

System Administrators

System Administrators are determined and managed by local policies. They alone have the access to install and remove software from computers. They are members of the Administrators group, based on the user ID and password submitted to the operating system authentication management.

Local Administrator User Profile

- Every installation of JCSS has a Local Administrator user profile. You can login using this profile to make changes to the pre-configured section of the object library.
- JCSS stores the login information for the five (5) most recently used accounts. The Local Administrator profile is always available and is in addition to the five (5) most recent users.
- This special account does not have any security implications. Just as with any JCSS user profile, the Local Administrator account is not protected by a password.
- In addition to selecting a user profile when starting JCSS, the current user profile can be changed from the Edit > Change User menu item of the main JCSS window.

App C Operations and Maintenance Procedures

Object Library

JCSS does not enforce access restrictions on the Organization and OPFAC Library. Users should follow the policies and procedures of their organization when creating or modifying library contents. OPFAC and Organization Library

The OPFAC and organization library are divided into two parts:

- Custom Library
- Pre-configured Library

Custom Library

The custom library contains OPFACs and organizations that were created or modified by the user. All users have privileges to edit the contents of the custom library. You can make copies of the standard templates, store them in the custom library and then make changes to them. OPFACs and organizations in the custom library are called custom templates.

Pre-Configured Library

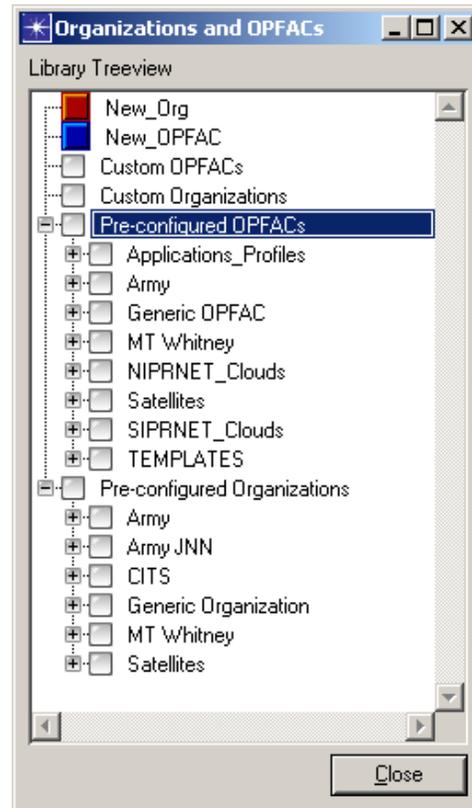
The pre-configured library contains doctrinal OPFACs and organizations. OPFACs and organizations in the pre-configured library are called pre-configured templates.

Only the local administrator has privileges to modify the contents of the pre-configured library, such as creating new or editing existing OPFACs and organizations, creating new folders, etc. All other users are prevented from making changes to the pre-configured library and their corresponding object palettes.

Even though editing privileges on the pre-configured library is limited to only the local administrator, any user can use its contents when building scenarios. A scenario can contain a combination of pre-configured and custom templates. It is also possible to have sub-folders within the above set of folders. Use of sub-folders allows you to further categorize the organizations and OPFACs within a service folder.

The figure below shows an example of a library treeview with the pre-configured folders and custom folders created by the user.

Figure C-1 Library Treeview with Custom and Pre-Configured Folders



OPFAC and Organization Palettes

In addition to the above treeview interface, users can also use objects from the OPFAC and organization palettes to build the scenario. To build a scenario, users can drag-and-drop OPFACs and organizations from the palettes on to the workspace.

There are four main folders to hold the custom and configured OPFACs and organization. They are:

- Custom OPFACs
- Custom Organizations
- Pre-configured OPFACs
- Pre-configured Organizations

Regardless of the sub-folder it is in, every OPFAC or organization will belong to one of the above four palettes.

Editing the Contents of the Library

You can edit the contents of the organization and OPFAC library. You can edit template attributes, rename templates, save them under a different name, delete them from the library, and undo or redo template units. Right-click menu options are provided for performing these operations.

If you login using the local administrator profile, you can perform the above operations on the pre-configured and custom sections of the library. If you login as a regular user, you can change the OPFACs or organizations in the custom section, but not the pre-configured section.

Procedure C-1 Edit Template OPFAC/Organization Attributes

- 1 Right-click on a template OPFAC/organization in the library treeview and choose Edit JCSS Attributes. The OPFAC/organization Attributes dialog box displays.
- 2 Make changes as needed to the available attributes, and then click OK. The attributes for the selected OPFAC/organization are changed.

End of Procedure C-1

Procedure C-2 Rename Template OPFAC/Organization

- 1 Right-click on a template OPFAC/organization in the library treeview and choose Rename Template.
- 2 Type a new name for the selected OPFAC/organization in the dialog box that displays, and change the folder to which the OPFAC/organization belongs. You can also create a new folder to store this OPFAC/organization. The selected OPFAC/organization will be renamed, and if you changed the folder, the files will be moved to the new location on disk. The treeview is also automatically updated.

End of Procedure C-2

Procedure C-3 Save Template OPFAC/Organization As

- 1 Right-click on a template OPFAC/organization in the library treeview and choose Save As.

- 2 Type a new name for the selected OPFAC/organization in the Save As dialog box, and change the folder to which the OPFAC/organization belongs. You can also create a new folder to store this OPFAC/organization. A copy of the selected OPFAC/organization will be made, and if you changed the folder, the files will be moved to the new location on disk. The treeview is also automatically updated.

End of Procedure C-3

Procedure C-4 Delete Template OPFAC/Organization

- 1 Right-click on a template OPFAC/organization in the library treeview and choose Delete Template.
- 2 Confirm the deletion as prompted to delete the selected OPFAC/organization from the library. The selected OPFAC/organization will be removed from its current location on disk. The treeview is also automatically updated.

End of Procedure C-4

Procedure C-5 Undo/Redo Template Units

- 1 Right-click on a template OPFAC/organization in the library treeview and choose Undo or Redo.
- 2 Confirm the operation as prompted. The treeview is also automatically updated.

End of Procedure C-5

OPNET License Server Management

Standalone Mode

The OPNET application licenses reside on the application computer. The licenses are not available to any other system.

Floating Mode (local)

The OPNET application licenses reside on the application computer, but the licenses are available to the local network as well as the host machine. The license server must run as a network service.

The OPNET License Server shuts down each time a user logs off or shuts down the machine. Users can also shut down the OPNET License Server through the License Manager, available from the JCSS main menu.

Floating Mode (external)

The OPNET application licenses reside on another computer, so this machine must compete for licenses with other computers on the local network.

License Server Files and Directories

C:\OPNET_license

This folder cannot be moved or renamed. It will contain license files for Standalone and Floating (local) licensing modes. The folder and all its files must be writable by Authenticated Users, or those users will be unable to acquire a lock on a license to use the application. licensing.ef

The location of this file is:

- JCSS\Scenario_Builder\16.0.A\sys\configs\global_prefs\licensing.ef

The format of the licensing.ef file is:

- license_server_standalone : true | false
- license_server : /LICENSE_SERVER/
- license_port : /LICENSE_PORT/

where:

- /LICENSE_SERVER/ is the local hostname
- /LICENSE_PORT/ is the desired port for the server
- license_server_standalone may be either true or false

env_db16.0

The env_db16.0 file contains option settings for JCSS and OPNET commercial modules. Among these options are license server settings. The env_db16.0 file can be edited manually or through the Edit > Advanced menu item. The env_db16.0 file license settings should be consistent with the settings in the licensing.ef file. The absence of license server settings in the env_db16.0 file means that the licensing.ef values take precedence.

The env_db16.0 file is located in the following location:
JCSS\Scenario_Builder\op_admin\env_db16.0.

Manually Configuring License Settings

Normally, configuration of license settings should be performed through the JCSS user interface. Manually changing configuration files should be used only as a last resort.

`/hostname/` represents the hostname of the localhost system. To determine the hostname of a system, open a DOS console and run the `hostname` command.

`/port/` represents the desired port, one of `port_a`, `port_b`, or `port_c`.

Procedure C-6 Configure Localhost Floating Licensing

- 1 Make sure that all JCSS windows are closed. This includes any JCSS editors as well as the OPNET License Manager.
- 2 The file named `licensing.ef` is located in `JCSS\Scenario_Builder\16.0.A\sys\configs\global_prefs`. Modify it as follows:
 - 2.1 Set `license_server_standalone` to `FALSE`
 - 2.2 Set `license_server` to `/hostname/`
 - 2.3 Set `license_port` to `/port/`
- 3 Modify the `env_db16.0` file located in `JCSS\Scenario_Builder\op_admin\` as follows:
 - 3.1 Set `license_server_standalone` to `FALSE`
 - 3.2 Set `license_server` to `/hostname/`
 - 3.3 Set `license_port` to `/port/`

End of Procedure C-6

Procedure C-7 Change from Localhost to External Floating Licensing

- 1 Using the License Manager, make sure that the localhost license server is shut down.
- 2 Close all JCSS applications.
- 3 The file named `licensing.ef` is located in `JCSS\Scenario_Builder\16.0.A\sys\configs\global_prefs`. Modify it as follows:
 - 3.1 Set `license_server_standalone` to `FALSE`
 - 3.2 Set `license_server` to `/hostname/`

3.3 Set license_port to /port/

4 Modify the env_db16.0 file located in JCSS\Scenario_Builder\op_admin\ as follows:

4.1 Set license_server_standalone to FALSE

4.2 Set license_server to /hostname/

4.3 Set license_port to /port/

End of Procedure C-7

Procedure C-8 Change from Localhost to Standalone Licensing

1 Using the License Manager, make sure that the localhost license server is shutdown.

2 Close all JCSS applications.

3 The file named licensing.ef is located in JCSS\Scenario_Builder\16.0.A\sys\configs\global_prefs. Modify it as follows:

3.1 Set license_server_standalone to TRUE

3.2 Set license_server to /hostname/

3.3 Set license_port to /port/

4 Modify the env_db16.0 file located in JCSS\Scenario_Builder\op_admin\ as follows:

4.1 Set license_server_standalone to TRUE

4.2 Set license_server to /hostname/

4.3 Set license_port to /port/

End of Procedure C-8

License Management and Product Modules

JCSS comes with a built-in license that allows you to run the program. A special “simulation runtime license” is required in order to run simulations. Additional licenses are required for ACE and NetDoctor modules.

If the module licenses are installed on a single license server rather than on individual machines, various machines can share licenses, which may reduce the total number of licenses required. Simulation runtime licenses, ACE licenses, and NetDoctor licenses must be purchased from OPNET (<http://www.opnet.com/products>).

To install module licenses, start by running JCSS (go to Start > Programs > JCSS > JCSS v10.0). From the System Editor main menu, select License > License Management.

Current instructions for loading and configuring OPNET License permits are available from the OPNET Support web site (<http://www.opnet.com/support>).

Log Files

The various log files assist in troubleshooting or tracking user activity. Users should examine the relevant log files before consulting JCSS Technical Support, and may be asked to include log files in submissions.

Note—All log files grow over time and can potentially become a constraint on system resources. Administrators should periodically check the sizes of the log files and prune the logs as needed.

nw_odbc_log

- Located in JCSS\User_Data
- Runtime log that records unusual events associated with extracting IER information, service provided by MSDE (Microsoft SQL Server Desktop Engine).

err_log

- Located in JCSS\Scenario_Builder\op_admin
- OPNET and JCSS application warnings, recoverable errors, errors, and program abort messages, with stack traces for context, are stored in this file.

Archiving and Backup Procedures

Project Packaging

Each project has a single .prj file in the project directory under JCSS\User_Data\Projects. The project folder and the .prj file have the same name as the project itself. A JCSS project may make use of other library files. Library files may be used by any number of projects. The only way to know which library files are included in a project is to examine the contents of the project.

Scenario Files

Each project consists of one or more scenarios. Each scenario is a subfolder under the main project folder. The scenario consists of a file with the extension '.nt.m' and possibly an XML file with the same base name.

Traffic Files

Demand Files

A demand file for each scenario, if one exists, would be located in the JCSS\User_Data\Projects\

IER Text Files

All IER Text files are available for use by every scenario. IER Text files are located in the JCSS\User_Data\IER_Text_Files directory and have an extension of '.txt'.

Organization Files

Organizations are represented by '.nt.m' files located in the JCSS\User_Data\Organizations directory. The project may include any, all, or none of the template organizations.

OPFAC Files

OPFACs consist of '.nd.m' and '.nt.m' files. The names of the various files that relate to a specific OPFAC have similar base names, though not identical.

All .nd.m file names contain the prefix "opfac_".

OPFAC .nd.m and nt.m files

The OPFACs used by a project/scenario may reside in any folder under the JCSS\User_Data\OPFACs folder. The '.nt.m' file includes all the OPFAC specific information while the '.nd.m' file is only necessary for an OPFAC to appear in a palette.

Trajectories

Trajectory files, ending in '.trj', may be applied to any organization or OPFAC in its JCSS attributes. Trajectory files may be stored in any directory included in the system's mod_dirs environment attribute. Many trajectory files are stored in the JCSS\User_Data\SB_Data directory, although they may be in other directories also.

App D Error Recovery Guidelines

Automatic Backup of Project Files

Project files are backed up automatically at a predetermined interval (the default setting is 15 minutes.) Users may modify the backup interval by selecting Edit > Preferences and changing the "backup_interval" preference. The backed up files have '-backup<index>' appended to the filename. You can load these backup files into the Scenario Builder.

Note—Setting the "backup_interval" preference to 0 turns the backup off.

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