



## NMT Reports

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This chapter describes the different types of reports generated by the NMT. NMT ascii reports are generated with each run of either the **Route** command or the **Optimize** command. Some of these reports can be viewed from the **Display** menu. All can be written to disk from the **Report** menu. **Define Input Screen** determines which reports to include in the output file, and **Generate** creates and names the output file. Most reports are fairly straight forward in the information they present.

Some reports are also output in DBF format, and are included in the SSI interface to Excel. These reports can be translated to comma separated value (CSV) format using the dbf2csv command line utility.



Note

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For a more detailed description of the NMT reports, see the HELP/DISPLAY menu in the NMT application.

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The types of reports are described below:

### Site Report

The Site report displays summary information of the provisioning and cost of each site. If the Node Num field is greater than one, NMT provisioned multiple switches at that site location.

### Link Report

The Link report displays basic provisioning and cost information about the links.

### Network Summary Report

The Network Summary report contains the total network costs and global statistics about the routing of connections in the network. The routing summary includes average hop count and histogram data of the hop counts.



Note

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In selecting reports in the REPORT/DEFINE menu, the Network Summary report has two parts, Network Price and Routing Summary.

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## Link Load Report

The Link Load report displays the load resources on each link in the network, based on the static load model.

In the example below, den-sea is a cell based link where the bandwidth is 92% utilized. This link contains 80000 cells for CBR ATM traffic, 7515 cells of frame relay, and has a statistical reserve of 600, which is not included in the total. There are 55 PVCs on the first link.

The second link, nyd-pit, uses only 6% of the bandwidth, but has reached the maximum number of PVC's allowed on the link. Note that this is a packet based trunk, as the units are pps.

The third link, (lax-pit) is a T3 cell based trunk on a BTM card. The units displayed are packets because the constraint on this link is the number of packets that can be received by the IGX bus.

The fourth link, (lax-nyd) is also a cell based trunk. For this link, both the packet load and the cell load are listed because in this case the cell load is the constraint. This is because the combine time outs are set low so most voice and data cells contain only one packet. If the link is partitioned for both AutoRoute and PNNI, the usage of each is displayed.



### Note

The link load report has a DBF output format.

```

----- Link Load -----
Trunk Span          Load      Used      Maximum      Load      Max
Site1      Site2      Type      load      load      load      units      %Ld
-----
den         sea         Total    87515/   87515   96000/   96000   cps/cps   92
(1.1)      (1.1)      CBR      80000/   80000
          BData    7515/    7515
          RES     600/    600
          PVC     55/     55      1771/    1771   pvc/pvc
nyd         pit         Total    426/    426     8000/    8000   pps/pps   6
(3.1)      (3.1)      Voice    426/    426
          RES     600/    600
          PVC     213/    213     213/     213   pvc/pvc
lax         pit         Total    2904/   6824    80000/   80000   pps/pps   9
(5.1)      (4.1)      NTS     630/    630
          Voice    994/    994
          BData   1280/   5200
          RES     600/    600
          PVC     237/    237     1771/    1771   pvc/pvc
lax         nyd         Total    2824/   2824    10666/   10666   pps/pps
(3.1)      (4.1)      NTS     630/    630
          Voice    994/    994
          BData   1200/   1200
          RES     600/    600

          Total    2164/   2164     4830/    4830   cps/cps   51
          NTS     630/    630
          Voice    994/    994
          BData   540/    540
          RES     600/    600
          PVC     227/    227     1771/    1771   pvc/pvc

```

## ATM & FR Ports Report (or Bursty Data Ports Report)

The ATM and FR Ports Report lists all ports for each site that supports a connection found in the Bursty Connection Table. This report is output in DBF format.

## Data & Voice Ports Report (or Voice & Data Ports Report)

The Data and Voice Ports Report lists all ports for each site that supports a connection found in the Voice Connection Table and the Data Connection Table.

## Connection Routes Report

The Connection Report displays all routed connections and their complete routes.



**Note**

This is a long report. If you do not need to see the routed connections, use the **X** option in the REPORT/DEFINE menu to prevent the generation of a Connection Routes report. This improves performance.

## Failed Connections Report

The Failed Connections Report displays all the connections that could not be routed, and the reason. Possible reasons a connection failed are listed in Table 6-1.

**Table 6-1 Failed Connection Reasons**

Reason String	Meaning
Too Many Hops	Hop Count required to route the connection was too large. For AutoRoute, hop count maximum is 10.
No Path	No connectivity in the topology to route this connection.
No Direct Path	No direct route specified in the preferred/actual connection route.
Out of Capacity	Not enough bandwidth capacity on the lines.
Out of Space	Not enough index resources, usually VC count on a link is exceeded.
Out of Bus	Not enough bandwidth on a bus of one or more switches required to route the connection.
No Fdr Link Cap	Not enough bandwidth capacity on a feeder link.
Too Big Cost	Connection cannot be routed without exceeding the maximum cost specified. (This pertains to AutoRoute networks.)
Too Big AW	Connection cannot be routed without exceeding the maximum Administrative Weight (This pertains to PNNI networks.)
Too Big CTD	Connection cannot be routed without exceeding the maximum Cell Transfer Delay (This pertains to PNNI networks.)
Too Big CDV	Connection cannot be routed without exceeding the maximum Cell Delay Variance (This pertains to PNNI networks.)
Too Big CLR 0	Connection cannot be routed without exceeding the maximum Cell Loss Ratio of the first phase of policing (leaky bucket). (This pertains to PNNI networks.)
Too Big CLR 0+1	Connection cannot be routed without exceeding the maximum Cell Loss Ratio of the second phase of policing (leaky bucket). (This pertains to PNNI networks.)

Table 6-1 Failed Connection Reasons (continued)

Reason String	Meaning
Too Big Delay	Connection cannot be routed without exceeding the maximum delay. (This pertains to AutoRoute networks.)
No CellBase Path	Connection cannot be routed without being converted to FastPackets on older equipment, but the connection is not permitted to be converted to FastPackets.
No ATM Path	ATM connection cannot be routed without using trunks that do not support ATM types of load (on older Fastpacket equipment).
No COS Path	No path to support Class of Service connections. (This pertains to PNNI networks.)
Transit Rstr	No path that would not have via nodes configured as transit restricted. (This pertains to PNNI networks.)
Media Restricted	Connection can only be routed using a restricted media (for instance, a satellite link).

## Parts List Report

The parts list report lists parts required to provision the modeled network. The parts included are the chassis, front cards, back cards, and special shelves and units. Cables and optional parts are usually not included in the parts list report. Bundles are used if applicable.



Note

The Parts List Report is output in DBF format.

## Resource Report/Card Statistics Report

The Resource Report/Card Statistics Report displays the card cage for each system unit, and a brief listing of used and available ports. The card statistics report is the second part of the resource report. Release 15 of the Cisco WAN Modeling Tools models the UXM card, and has a new card statistics report for tracking the UBU usage of this and other cards. Below is a card statistics report for a two IGX networks with 295 ATF = FR interworking connections between the nodes, each MIR=64K, PIR=256K.

```

----- Card Statistics -----

Node: ATM_Side  Type: IGX-8  Bus Used: 40 UBUs out of 584

Slot Front Back      Type PVCs  Port  UBU/PS      Card Specific
Stat                Used    Used  Allc/Used/Max
1  A  NPM
2  S  NPM
3  A  UXM   3T3    Trunk 295   1    25   13   184  FPL=8%,  GWL=2%
4  A  UXM   3T3    Line  295   1    13   13   184  FPL=8%,  GWL=2%

Legends:
FPL - Fast Packet Load :    Percent of FP bus load / Total bus load.
GWL - Gateway Module Load : Percent of FP bus load / Max FP bus load.

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Node: FR_Side  Type: IGX-8  Bus Used: 118 UBUs out of 584

Slot Front Back      Type PVCs  Port  UBU/PS      Card Specific
Stat                Used    Used  Allc/Used/Max
1  A  NPM
2  S  NPM
3  A  UXM   3T3    Trunk 295   1    60   60   184  FPL=100%, GWL=100%

```

4	A	UFMC	T1	192	48	32	32	59
5	A	UFMC	T1	103	26	24	24	59

## Legends:

FPL - Fast Packet Load : Percent of FP bus load / Total bus load.

GWL - Gateway Module Load : Percent of FP bus load / Max FP bus load.

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This report tells us that the IGX switch with the ATM end is using 40 of its 584 UBU's, where the IGX switch with the FR end is using 118 UBUs. Looking to the UXM trunk card on slot 3 for both switches, the UXM trunk card at the ATM end is configured to reserve 25 UBUs of the bus, with the current traffic load requiring 13. The maximum setting for this value for a UXM card is 235. The FPL percent means that only 8% of the traffic on this card is in Fast Packets, and the GWL percent means that only 2% of the maximum Fast Packets are being used by the card. Note that the FP traffic here is internally signaling between the card and switch. At the FR end, the FPL is 100%, as all traffic on this card is FP. The GWL is also% 100 because this card can take no more FP traffic. It can take more ATM traffic.



Note

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Card Statistics output is in DBF format.

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## PNNI Topology Report

The PNNI Topology Report lists all the virtual links in the PNNI Topology.

## View Summary

The View Summary Report is generated from the FILE/VIEW SUMMARY menu. This report gives you an overview of the input plan CNF file. You can run this report without running the **ROUTE** or **OPTIMIZE** execute command.

The output of the View Summary can also be displayed with the **sniffcnf** command from the UNIX CLI.

The utility command has options for displaying summary information for all or specific site locations. See the “Utility Commands” section for more information.

## Using the Map Tool

The network topology map provides a useful tool for visualizing your network model. The map tool provides the following features:

- Graphical display of the topology
- Help for conducting fail analysis
- Allows you to visualize traffic levels

Start the map after running an NMT command (for example, **route**, **optimize**, or **failure analysis**). If you rerun an NMT command, select **Update** on the map to view the new results.

The map tool includes several menus, described in [Table 6-1](#).

Table 6-2 Map Tool Menus

Menu Bar	Selection	Description
<b>Map</b>	Map	Show or hide the map.
	Select	Select a map.
<b>Update</b>	Update Map	Import the latest configuration.
<b>Options</b>	Thresholds	Define thresholds at which traffic is considered excessive (critical) or close to excessive (warning).
	Black and White	Display the map in black and white.
<b>Utility</b>	Reset	Clear the map.
	About	Describes the map application.
	Save	Save the map.
	Quit	Close the map.
<b>Messages</b>	Browse Messages	Appears only if there are error messages.

**Note**

The **Access**, **Domains** and **Help** menus, and the **Configure** option in the **Utility** menu, are not enabled.

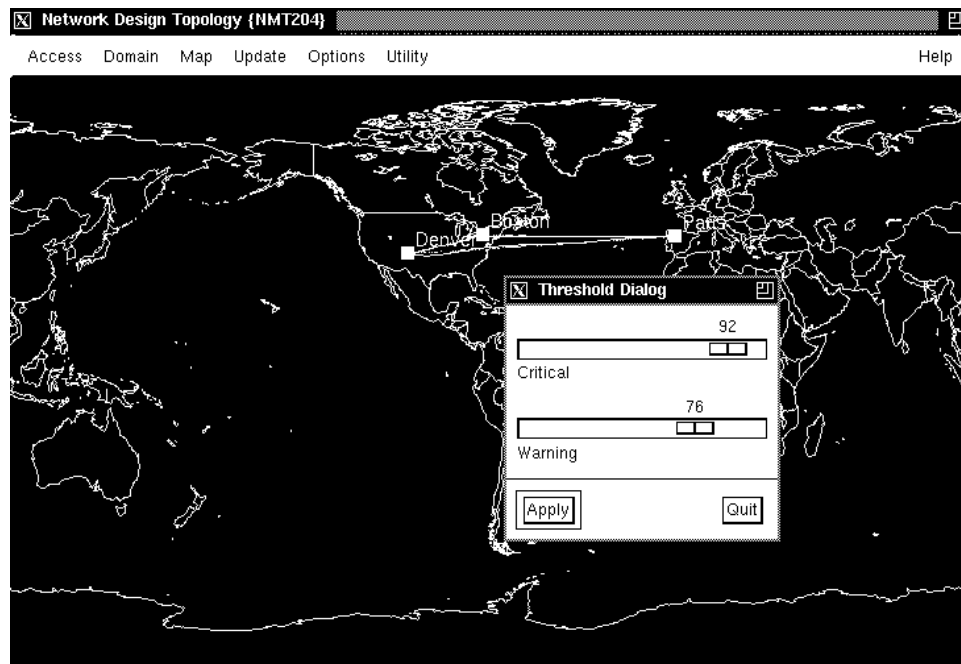
To enlarge a region of the map, hold down the left mouse button and select the region of the map you want to enlarge. To move a map, hold down the middle mouse button and drag the map within the window. To reduce an enlarged map, click one or more times on the right mouse button with your cursor in the map window. To return a map to its default size, reselect the map from the Map menu.

The map tool uses color coding to help you recognize important aspects of your network topology. The color coding is described in [Table 6-2](#).

Table 6-3 Network Topology Map Color Coding

Color	Node	Link
Green	Node is functioning normally.	Link is functioning normally and is below threshold capacity.
Yellow	Not applicable.	Link is above minimum but below high percent tolerance.
Red	Node is not working (or is being used for failure analysis), Not all connections at this node could reroute.	Link is above capacity threshold tolerance.

Figure 6-1 Example of Network Topology Map Showing Threshold Dialog Box



### Creating a Graphical Display

To create a graphical display of a new configuration, perform the following steps:

- Step 1** Select **Map** from the **Display** menu and drag the Map window to a suitable location on your screen. It may take several seconds for the Map window to display.



**Note** Select **Map** tool menus by using the left mouse button, except where noted.

- Step 2** Choose **Update** from the menu bar and click on **Update Map** to import the most recent configuration.
- Step 3** Choose **Map** from the menu bar in the Network Design Topology window and click **Select** to choose a map appropriate to your configuration.
- Step 4** Drag each node to its approximate location on the map. The node icons (colored squares) are stacked in the upper left corner of the window. Place your cursor over a node, hold down the left mouse button, and drag the node into place. Repeat this step for each node.
- Step 5** To save your map, choose **Utility** from the menu bar and select **Save**.

### Using the Map Tool with Fail Analysis

After performing a failure analysis, click on **Update** in the map window menu bar, and select **Update Map**. Any site that did not reroute a connection for any of the link failures turns red.

## Using the Map Tool to Analyze Traffic Levels

Click on the **Options** menu and select **Thresholds**. (See Figure 1-1.) The **Thresholds** dialog box contains two sliding bars, **Critical** and **Warning**, that allow you to define critical and warning as a percent of total bandwidth. By sliding the bar, you establish the threshold at which the amount of traffic is considered excessive (critical) or close to excessive (warning). The NMT displays excessive traffic in red, close to excessive traffic in yellow, and all other traffic in green.