



# Overview of the Network Modeling Tool

---

This chapter provides an overview of the Network Modeling Tool (NMT) application.

The NMT is the primary application of the Cisco WAN Design Tools. The NMT verifies the provisioning and predicts the routing behavior of the network. The NMT supports the following Cisco ATM platforms:

- MGX series
- BPX series
- IGX series

For each major switch software release, the NMT verifies the physical and logical provisioning of the front and back cards that support the specified topology. The NMT also verifies connection routing and rerouting capabilities of each supported switch in the network.

The other Cisco WAN Design Tools enable the exchange of information between the NMT and other applications, such as Cisco WAN Manager (CWM), Excel, and WANDL. The NMT works in conjunction with the following Cisco WAN Design Tools:

- Configuration Extraction Tool (CET)
- Spread Sheet Interface (SSI)
- Third-Party Interface (TPI)
- Cisco Network Designer (CND)

## Functionality of the NMT

The NMT is a menu driven application that enables you to model the behavior of both simple and complex networks. The NMT processes information provided by you and returns a proposed configuration. This configuration can then be modified and reprocessed to add redundant links, support additional sites, and so forth. You can also perform failure analysis of the network model by failing selected links and then evaluating the rerouting capability of the remaining links. The NMT allows you to interface with WANDL and other applications to further optimize the network design.

Only a few fields need to be completed for the NMT to generate a configuration. To create the best configuration possible, you must have extensive knowledge of computer networks, including ATM and Frame Relay networks. In addition, entering precise values for optional fields helps the NMT provide you with a precise parts list that you can use to order Cisco products.

Once the NMT processes your data, it provides configuration information in the following form:

- Updated tables—The NMT modifies your configuration tables as necessary to create a working configuration.
- Reports—The NMT generates a series of reports that describe links, nodes, part numbers, and costs.
- Graphical display—The NMT displays your network design graphically with node icons and maps.
- Import/Export—The NMT displays data that is imported from and exported to other systems.

The NMT always selects the newest available hardware components for each function, based on the software release you specify. You can explicitly request older cards from the NMT input tables.



Note

---

Some obsolete parts are not supported by the NMT.

---

## Cisco Products Supported by the NMT

The NMT supports the following Cisco equipment and functions:

- MGX 8220, MGX 8230, and MGX 8250 edge concentrators—MGX Edge concentrators enable a wide range of user services to be supported by the BPX service node. Interfaces supported by the NMT include the following:
  - Frame Relay
  - ATM User-to-Network Interface (UNI)
  - Circuit emulation
  - $n \times$  T1/E1 inverse multiplexing for ATM (IMATM AUSM-8) UNI
  - One 3T3 interface using the SRM-3T3 module
- MGX 8850, MGX 8830, and MGX 8950 switches—Enables a wide range of user services to be supported by the BPX service node. Interfaces supported by the NMT include the following:
  - Frame Relay
  - ATM User-Network Interface (UNI)
  - Circuit emulation
  - $n \times$  T1/E1 inverse multiplexing for ATM (IMATM AUSM-8) UNI
  - One 3T3 interface using the SRM-3T3 module
- BPX switch—A standards based high-capacity (9.6 Gb) broadband ATM switch that provides backbone ATM switching and delivers a wide range of user services. Fully integrated with the IPX and IGX switches, the BPX switch provides broadband ATM services when ASI and BXM cards are used. It also provides a variety of narrowband services; these services are provided by tiered network configurations that use IPX switches and MGX 8220 feeders.

The BPX switch supports the following high density Broadband Switch Module (BXM) cards that provide standard interfaces for connecting to cell-based equipment by way of the ATM User-Network Interface (UNI):

- BXM DS3/E3 supports E3/DS3 native ATM access and trunk ports
- BXM 155 supports OC-3/STM-1 native ATM access and trunk ports
- BXM 622 supports OC-12/STM-4 native ATM access and trunk ports

- BXM cards support ATM and Frame Relay services. BXM cards also enable the configuration of permanent virtual circuits (PVCs) or switched virtual circuits (SVCs) for the following defined service classes:
  - Constant bit rate (CBR)
  - Variable bit rate (VBR)
  - Unspecified bit rate (UBR)
  - Available bit rate (ABR)
- SES PNNI Controller—Attaches to a BPX switch to provide Private Network-to-Network Interface (PNNI) signaling and routing for the establishment of ATM switched virtual circuits (SVCs) and soft permanent virtual circuits (SPVCs) over a BPX 8600 wide area network (WAN). Features supported by the NMT include PNNI Routing, resource partitioning, and shelf provisioning.
- IGX switch—A multi-service ATM networking switch that provides interfaces to support legacy and emerging broadband applications. The IGX switch supports ATM technology over subrate, narrowband E1 and T1 interfaces, and broadband E3 and T3 trunks. The IGX switch is used as the basis for leased-line metropolitan area networks (MANs) and WAN networks.
- Generic Node—The NMT allows you to create your own node type for an ATM switch or feeder. Use the node table to provide the high level specifications for the WAN product.
- Obsolete Equipment—The NMT models obsolete equipment that users may encounter in CWM extracts, and need to model for upgrade considerations. The following obsolete platforms are modeled:
  - IPX switch
  - 3810 feeder
  - FastPad feeder
  - Port Concentrator Shelf Feeder
- Basic Usage—The NMT models the WAN network using a classic node, link, and demand model. The nodes are the sites in the site table, which are provisioned as Cisco MSSBU WAN switches. The links are the inter switch trunks in the link table. The connections are specified in the voice, data, and bursty table.

The NMT provisions the network using the latest Cisco equipment, unless otherwise specified. The NMT verifies that the network will route all connections and reports on resources that have been exceeded.

## Data Translation Tools

The Cisco WAN Design Tools include data translation tools that use data exchanged between the NMT and other network design software aides to create a complex network model. These data translation tools allow the NMT to interface with other Cisco products as well as third-party products. [Table 1-1](#) describes the data translation tools.

**Table 1-1 Data Translation Tools**

Data Translation Tool	Description
Configuration Extraction Tool (CET)	Reads the database of a Cisco Wan Manager (CWM) system, and creates an NMT configuration file with all critical topology and connection information. For further description, see Chapter 10, "Using the Configuration Extraction Tool."
Third Party Interface (TPI) conversion plug-in	Translates NMT Data into WANDL format. WANDL is a design product that helps you optimize generic networks. TPI also provides translation from WANDL-to-NMT configuration files. For more information, see Chapter 11, "Using the Third Party Interface."
SpreadSheet Interface (SSI) conversion plug-in	Translates the NMT configuration file tables into standard DBF and XLS formatted files, for use in other systems. It also supports an EXCEL XLS interface for entering, modifying, and analyzing integer data. Several NMT reports are also available in DBF and XLS. For more information, see Chapter 12, "Using the SpreadSheet Interface."
Cisco Network Designer (CND) import tool	Loads an NMT into the CND as a project. The CND provides low level local configuration of each site on a network, and generates graphic displays and a Bill of Materials (BOM).