Configuration Tables and Fields

This chapter describes the fields in the tables accessed through the Configure menu.These tables describe sites, links, traffic types, and more. This data can be created and edited with the NMT, or imported into the tables from other systems.

Network topologies are defined by sets of tables. Each table entry defines a network element, and each table field defines a specific characteristic of that element.

The Site table, which defines the switch locations, is the only mandatory table. In the other tables, you usually only need to define the site name field in the other tables. You can use the NMT default values in almost all cases to get familiar with the modeling process.

There is no order requirements in these tables. Use the CONFIG/UTILITY to sort the table entries automatically.

General Table Information

The following legend refers to the Notes column in the tables that follow. Refer to this legend when deciding whether to edit an NMT default value.

- M—Mandatory. If you are revising this table, you must revise this field.
- E—Evaluate. If you are revising this table, you should consider revising this field. For instance, this field may require modification if you are working with a tiered network, an ISP, a network that requires highly regulated bandwidth, or one in which cost factors must be highly regulated.
- O—Optional. If you are revising this table, you need not revise this field. Defaults are generally suitable.
- P—Parts. Required for generating an accurate parts list.
- H—Help. Press F12 or the Help key to call up a list of choices.
- X—Entries generated by the NMT that cannot be edited.

The DBF column lists the DBF field name, and any additional translation information. There are also columns for the CET (CWM) and TPI (WANDL) translations.

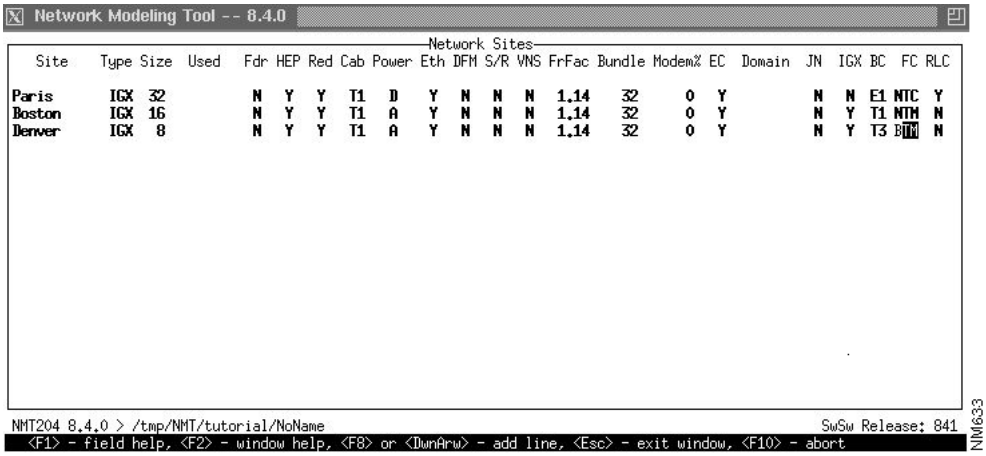
An asterisk in the Configuration Extraction Tool (CET) column or the Third Party Interface (TPI) column indicates that the CET and/or the TPI supports a particular field. For instance, the CET extracts site names from the Cisco Wan Manager (CWM) database, so there is an asterisk in the site row of the CET column in Table 4-1. The asterisk indicates that the field is translated as described in the legend above. If the translation is more complex, it is described in the CET or TPI column.

Sites Table

The sites table contains information about all sites in your network. All other tables using the sites field rely on the information in this table. To display the sites table, select **Site** from the Configure menu. The two most important fields of the site table are the site name and the node type field. The site name field defines the label string of the site, and must be valid and unique. The node type field defines what kind of switch is at this location.

Use the NMT Site Table to explicitly specify all feeder equipment in the MGX, BPX, and IPX products. You can also provision feeders and additional routing IGX shelves as required by the connection demand.

Figure 4-1 NMT Network Sites Table



The primary CWM data source for the site table is the node table. The primary WANDL data source and target for the site table is the MUXLOC file.The Site Table fields are described in Table 4-1

Table 4-1 .Site Table

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Site	–	M/H	Site name (up to 10 characters). Names are case sensitive. Keep the names short and easy to remember. This field must be revised before you revise any other fields or tables.	NAME	* Reduced to unique 10 char name if longer than 10 chars.	Translated to both Short name and Long name*
Node Type	IGX	M/H	Type of product (IGX, BPX, MGX, IPX).	TYPE	* Limitations: IGX not recognized until Release 8.2.	nodeparam file
Type Used	–	X	Protected field that shows the size of the node after the NMT builds a network.	n/a		

Table 4-1 .Site Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Site Type	Switch	M/H	Function of platform at the site. Can be a switch, feeder, controller or a stand alone unit.	STYPE	*	Restrictions imposed on links
SwRel		O	Software release of the switch(es) at this site. If blank, this field defaults to the global value defined in the Model Settings.	SW_REL	*	
PC	Blank	P	Processor card. If Blank, use the latest.	NPC	* From card table. Default value used until Release 9.1.	
Red	Y	P	Redundancy. Y—site has redundant components. N—site does not have redundant components.	RED		
Cab	T1	P	Cabinet. Specifies cabinet type (T1—American or Far Eastern; E1—European).	CABINET		
Power	A	P/H	Power supply.	AC_DC		
DFM	N	O	Data Frame Multiplexing. Y—site uses DFM. N—site does not use DFM. If a data connection terminating at this site has a DFM setting of Y, it takes precedence over the site setting.	DFM		
S/R	P	O	Save/Restore. Y—site uses save/restore configuration software. N—site does not use save/restore configuration software.	S_R		
FrFac	1.14	O	Frame Relay Factor. Multiplier to account for frame overhead on the IPX Mux Bus. (The 1.14 default is an IPX legacy setting.)	FR_FAC		
Bundle	24	O	Maximum number of connections that can be routed simultaneously. Default is 32; choose between 1 and 29.	BUNDLE		
Modem%	0	E	Percentage of modem traffic on voice connections originating at this site.	MODEM_PCT		

Table 4-1 .Site Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
IGX	Y	E	Type of feeder node. Y—feeder nodes should be IGX. N—feeder nodes should be IPX. This field applies only if NMT needs to add a feeder node.	IGX		
TF	N	E	Tiered Feeder Flag. *Y*- for feeder; *N*- for router. This field applies only to added feeder nodes.	TF		
BC	T1	E/H	Back card. Feeder link back card. This field applies only to added feeder nodes.	BC		
FC	NTM	E/H	Front card. Feeder link front card. This field applies only to added feeder nodes.	FC		
RLC	N	E	Redundant link card. Specifies whether link is redundant. This field applies only to added feeder nodes.	RDL		
NPA			NPA of the site location. Not used in NMT but carried for reference and used in WANDL.	NPA		*
NXX			NXX of the site location. Not used in NMT but carried for reference and used in WANDL.	NXX		*
LON			Longitude of site location. Not used in NMT but carried for reference and used in WANDL. Several different formats are available in the string field.	LON		F: muxloc
LAT			Latitude of site location. Not used in NMT but carried for reference and used in WANDL. Several different formats are available in the string field.	LAT		F: muxloc
RA	H	0	Routing algorithm version of Autoroute. Use 'H' for minimum hops, 'C' for Least Cost, and 'CD' for least cost with delays.	RM		
PNNI	Blank	0	Y/N flag indicating whether the node is capable of PNNI routing or not.	PNNI	*	

Table 4-1 .Site Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
PNNI_PG	N	0	name of the PNNI group, as defined in the PNNI Domains table. If the name in this table is not in the PNNI Domain table, then it is just represents a logical grouping that the user can define any way they wish.	PNNI_PG		
PGL_PR	0	0	The Peer Group Leader Election Priority is a numeric value determining which site will be the peer group leader. The highest value in the peer group will be the leader.	PGL_PRI	*	*
Xrstr	N	0	**Y**/**N** flag for transit restriction. If **Y**, the PNNI node cannot be used for transit calls (via connections).	XR		
MAPV			Map vertical coordinate. Can be loaded and unloaded from the NMT map process.	VER	* Only available if CWM or SV+ map has been configured.	* If no NMT longitude/latitude fields, use this to create latitude in table muxloc Also written to graphcoord file.
MAPH			Map horizontal coordinate. Can be loaded and unloaded from the NMT map process.	HOR	* Only available if CWM or SV+ map has been configured.	* If no NMT longitude/latitude fields, use this to create longitude in table muxloc Also written to graphcoord file.
CT	Blank	0	Country code. A two digit country code carried but not used by NMT. Used in WANDL for tariff lookups.	CT		*
Weight	0	0	User defined weight that can be used for generating links and/or connections using the MESH commands in the CONFIG/UTILITIES menu.	WEIGHT		nodeweight file
Network		0	The network domain name this site is assigned to.	NET_NAME		* DOMAIN in the muxloc file.

Configuring Sites Example

This section provides an example for configuring Sites.

Step 1 Enter the information shown in Table 4-2 into the Sites table.

Table 4-2 Field Changes for the Sites Table

Site	Type	Power	IGX	BC (Back Card)	FC (Front Card)	RLC (Redundant Link Card)
Paris	IGX	D	N	E1	NTC	Y
Boston	IGX	A	Y	T1	NTM	N
Denver	IGX	A	Y	T3	BTM	N

Note Except where noted in this table, each node uses default values.

Step 2 Use the left and right arrows to highlight **Configure** and press **Enter**.

Step 3 Select **Sites** and press **Enter**. A new sites table is displayed.

Note Select a menu choice by using the up and down arrow keys, or by typing the first letter of the item selected.

Step 4 Highlight the Site field by pressing the Down arrow. Type **Paris**. You have now created a site.

Step 5 To modify the NMT default site values, cursor or tab to each of the fields listed in Table 4-2, and enter the data that applies to the Paris site. There are two ways to enter data:

1. Press the **Help** key to see a list of choices. Lists of choices are available for most fields that accept three or more non-numeric values. Make a selection using the cursor and press **Enter**.
2. Type directly into the field. Press the **Delete** key if you make a mistake.

Step 6 Press the down arrow to insert a new line in the table.

Step 7 Repeat Step 4 and Step 5 for Boston, and Step 4 and Step 5 for Denver. The Sites table should look like the one shown in Figure 4-1.

Step 8 Press **Escape** to accept the entries and return to the **Configure** menu.

Links Table

The Links Table contains topological and cost information about every existing link or possible link candidate in the network.

Minimal Link Table Usage

For existing links, the Keep field should be set to the number of existing links, with the characteristics described in the record. The **Links** command displays existing links and possible links considered for the network design. The key fields in the link table are the site ends, the trunk type, and the keep field.

The primary CWM data source for the Links table is the link table. The WANDL translation for the link table is the bblink file. When translating from NMT to WANDL, a fixlink file identical to the bblink file is created. The Link Table fields are described in Table 4-3.

Table 4-3 Link Table

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Site 1	–	M/H	Name of site at one end of the link using a name from Sites table.	SITE1	*	*
Port ID 1	0	E	Logical slot/port number at Site 1 for the connection. Enter 0 and NMT assigns. Enter n.m to specify port.slot.	HUBID1	*	*
Site 2	–	M/H	Name of site at other end of the link using a name from Sites table.	SITE2	*	*
Port ID 2	0	E	Logical slot/port number at Site 2 for the connection. Enter 0 and NMT assigns. Enter n.m to specify port.slot.	HUBID2	*	*
M	Z	O/H	Media. Media type of trunk.	M		*
IF1	T3	O/H	Trunk type and capacity. The Trunk type is the interface used on the trunk and defines the backcard. An optional line size can be prepended.	TRUNK	* Y1 trunks shown as T1, and T2 trunks shown as T3. Until Release 9.1, broadband trunks were determined heuristically, based on port speed and card type.	*
IF2	blank	O/H	IF2 trunk type is used only if different from the first, in the case of virtual trunks.	TRUNK2	*	*
DS0	0	O/H	DS0 field is the number of sub-units for a DS1 line. 4 through 24 are valid for T1, and 4 through 30 are valid for E1. If the trunk is not a DS1 type, this field is ignored.	TRNK_CAP	*	*
Trnk_Cd		O/P/H	Trunk card. The front cards for this link.	TRNK_CARD1/ TRNK_CARD2	*/*	

Table 4-3 Link Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Keep	1	E	Number of existing links. If the Keep field is 0, the link will be ignored in the **route** command and considered for the **optimize** commands.	KEEP	* Since slot, port are included, this field is always set to 1.	*
Used	0	X	Shows the size of the node after the NMT builds a network using the optimize command.	n/a		
Reserve	600/600	O	Trunk reserve. Estimate of the overhead on each link needed for collecting network statistics and other administrative overhead. The reserve size is subtracted from the total link capacity prior to calculating routes. The units of statistical reserve can be in ATM cells (CPs) or Fastpackets (pps).	RESERVE1 / RESERVE2	*/* Defaults applied to links between BPX switches and tiered network feeders.	*/*
Rcv_Rate	0/0	O	Receive rate. Largest number of pps or cps that the node at site 1 can receive over a link from site 2. The second field is the largest number of pps or cps that the node at site 2 can receive over a link from site 1. Only used for broadband links (T3/E3) at IGX/IPX sites, or BXM links. The units are pps or cps respectively. If you enter 0 here, the default, NMT will set this field to the highest value possible for the card. Rcv_Rate supported on the AIT, ALM, BTM, and BXM card.	BB_MAX1 / BB_MAX2	*/*	*/*
Red	N	P	Redundancy. Specifies whether site has redundant components. Y—site has redundant components. N—sites does not have redundant components.	RED		
VT_Rate& Type	0	O	Virtual Trunk Rate. Bandwidth of the trunk in cells per second. (VTs must have VT in media field.)	VT_RATE	*	*
Traffic	Blank	0	Types of traffic allowed on this link. If blank, all types are allowed.	TRAFFIC		
LRd	N	O	Link redundancy. Y—spare trunk is used on redundant link (for BPX to IBX/IPX links only). N—spare trunk is not used on redundant link.	BACKUP		
Dist	0	E	Distance between sites in miles or kilometers. Must be consistent with the Line Cost table in the Maintenance menu.	DIST		

Table 4-3 Link Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
$/Mo	0	E	Cost per month of trunk from Site 1 to Site 2. If blank, NMT calculates cost using the Dist field and the data in the Line Cost Table (in the Maintenance menu). If you enter a value here, use zero in the Distance field.	COST_MO		
Instl	0	O	Installation cost of a trunk.	INSTALL		
Fdr1ID	0	E	Feeder 1 ID. Part ID for the IMATM trunk on an MGX 8220 edge concentrator.	FDR1ID		
Fdr2ID	0	E	Feeder 2 ID. Part ID for the IMATM trunk on an MGX 8220 edge concentrator.	FDR2ID		
IMA_RD	0	O	IMATM resiliency degree. Number of T1/E1 lines of AIMUX port that are allowed to fail before the AIMATM trunk goes down.	IMA_RES		
NTS_Q	0/0	O	Queue Depth in Transmit/Receive direction for Non Time Stamped connection loads. When the entry is 0, NMT will assume the default queue depth.	NTS_QDS/ NTD_QDR		
Voice_Q	0/0	O	Queue Depth in Transmit/Receive direction for Voice connection loads. When the entry is 0, NMT will assume the default queue depth.	DSI_QDS/ DSI_QDR		
Cost	10	O	The Least Cost Routing (LCR) weight.	WT		*
AR	Y	O	Y/N flag indicating if the link is Autoroute enabled.	AR		
PNNI	N	O	Y/N flag indicating if the link is PNNI enabled.	PNNI	Heuristic used for BPX nodes	
AggToken	0	O	The value used in the PNNI link aggregation algorithm. At least one link with a unique aggregation token will always be known in the PNNI logical topology.	AGG_TOK		
Comment		0	Comment field used in NMT only.	COMMENT		

Table 4-3 Link Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
AW	5040	O	Administrative weight used for least cost in the PNNI routing algorithm.	AW		
Comment			A free field comment field. Translates to the WANDL link label field if present.	COMMENT	Not available until sv+ Release 9.0.	The comment field is used as the link label in the bblink file. If this field is blank, a link label will be generated only if it is required to uniquely determine the link in WANDL.

Link Special Cases

This section describes link table configuration for the following special cases:

- ATM Trunks
- Virtual Trunks

IMATM Trunks

An IMATM trunk is an ATM link of one to eight DS1 lines. Each IMATM trunk card uses a slot of an AXIS shelf, and is connected to the BPX switch by means of a T3/E3 port on a BNI card. The trunk can be configured so it fails only if more than *n* DS1 lines fail. The NMT does not model IMATM trunk resiliency during failure analysis.

Table 4-4 IMATM Trunk Configuration

Topic	Required Settings	Comments
Specifying an IMATM Trunk	**Links table** Trunk (type) field: Specify a trunk of T1 or E1. Prepend the number of DS1s for the trunk, for example 5:T1 or 8:E1. Trunk (capacity) field: For E1 links, specify number of DS0 in the line: 30 for CCS signalling or 32 for Clear Channel signalling. Trunk card field: Specify IMA for both trunk front cards. IMA_RD field: enter the resiliency degree.	Both sites must be BPX. The IMA_RD field is on the second screen of the Links table.

Virtual Trunks

The virtual trunking feature introduces the concept of defining multiple trunks within a single trunk port interface. It was developed to provide connectivity for a hybrid network consisting of Cisco ATM switches through a public ATM cloud.

NMT models virtual trunks on BNI, BXM, BTM, and AIT ports. Refer to Table 4-5 for information on virtual trunk configurations.

Table 4-5 Virtual Trunk Configuration

Topic	Required Settings	Comments
Specifying a Virtual Trunk	**Links Table** M (Media) field: Enter VT Trnk_Cd field: Both ends must be specified. The ends can be different. VTRate field: Specify the VT rate in cells per second. ...&Type field: Define the ATM type of link (ABR, CBR, UBR, VBR, or leave blank if the links support all types of traffic).	If the back cards are different, the maximum size of VT is the minimum of the two protocols.

Voice Table

The Voice Table contains topological information about IGX voice connections in the network. The important fields in the voice table are the site ends, the type, and the BackCard field. The type defines the voice compression protocol, and the backcard defines the connection type at the customer's premise. The primary CWM source of the voice table is the USER_CONN table. The WANDL file for translation is the demand file. The Voice Table fields are described in Table 4-6.

Table 4-6 Voice Table

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Site 1	–	M/H	Site name of owner of a connection.	SITE1	*	*
Port ID 1	0	O	Logical slot/port number at Site 1 for the connection. Enter 0 and NMT assigns. Enter n.m to specify port.slot.	ID1	*	
Site 2	–	M/H	Site name of remote end of a connection.	SITE2	*	*
Port ID 2	0	O	Logical slot/port number at Site 2 for the connection. Enter 0 and NMT assigns. Enter n.m to specify port.slot.	ID2	*	

Table 4-6 Voice Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Qty	1	M	Quantity. Number of connections of the specified type.	CONNS	* Since slot and port are included, this field is always set to 1.	*
Type	C32	M/H	Type of voice connection.	TYPE	* Derived heuristically prior to Release 8.5. T connections shown as P; FastPAD CELP8 and CELP48 conns shown as ATC16.	*
E2E_TYPE	SPVC	M	The end to end type of the connection. PVC, SPVC, XPVC, Hybred and 1Ended are all valid.	E2E Coded: C - PVC S- SPVC H- Hybred X - XPVC E - Single ended		
Sig	CAS	O	Signalling type: channel associated signalling (CAS), or common channel signalling (CCS), or clear (CLR).	SIG		
PR	0	O	Rerouting priority—0 to 15, with 0 the highest rerouting priority.	COS	Defaults used prior to Release 8.5.	*
Ad	–	O/H	Restriction type. Ad is short for Avoid. Specify the media types that should be avoided when the connection is routed.	AVD		
Red	N	P	Redundancy. Specifies whether connections are going to be redundant. Applies to CDP redundancy.	RED		
%Util	40/40	E	Trunk utilization, based on minimum information rate (MIR) percentage. (Default is 40% because studies have shown that during conversations, one end of the line is unused 60% of the time.)	PCT_UTIL1 / PCT_UTIL2	Defaults used prior to Release 8.5 and for FastPAD. The data may be unreliable if it changed after adding a connection.	*/*

Table 4-6 Voice Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
BC	T1/T1	E/H	Back card type (CDP Set). Use workstation Help or F12 key for choice list.	BC1 / BC2	*/* Until Release 9.1, field was determined heuristically, based on the observed ports used.	
Fdr1ID	0	E	Feeder 1 ID. Logical port number for the connection at a 3810 or FastPAD feeder at the local site (not used).	FDR_ID	* MC 3810 feeders are not supported.	
Fdr2ID	0	E	Feeder 2 ID. Logical port number for the connection at a 3810 or FastPAD feeder at the remote site (not used).	FDR_ID2	* MC 3810 feeders are not supported.	
FdrBc	/	O/H	Feeder back card voice card type.	FDR_INT1 / FDR_INT2	*/*	
Index	0	O	SNMP Connection Index for CWM reference for this connection.	SNMP_INDEX	*	
Rt_Metrics	AW	M	How the connection is routed.	RT_MET		
Cost	0	O	Maximum cost allowed for the least cost routing path for this connection.	MAX_COST		
DR	N	O	Direct routing. Indicates that the connection must use the preferred route provided. If it cannot use the preferred route, the connection should not be routed.	DR		
Preferred_ Route		O	The preferred route of the connection. The first and last routing site are optional and all feeder sites are optional. An equal sign separates the site names. Specific links are specified by the slot.port for the incoming and/or outgoing port.	Route is stored in 19 fields: PR_SITE2, PR_SITE3, PR_SITE4, … PR_SITE20	* Available starting with Release 7.2. Specific Trunk not available until Release 8.4. Routes are not available on PNNI networks.	*

Table 4-6 Voice Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Current_Route		O	The current route, from CET extractions.	Route is stored in 19 fields: CR_SITE2, CR_SITE3, CR_SITE4, ... CR_SITE20	* Available starting with Release 7.2. Specific Trunk not available until Release 8.4. Routes are not available on PNNI networks.	
Comments	–	O	Comment field, maximum of 20 characters.	CIRCUIT_ID	Not available prior to Release 7.2, nor for SV+ release 8.4.	Comment field used as the connection label. If no comment field, a connection label is generated for WANDL demand file.

Data Table

The Data Table contains topological information about legacy data connections in the network. The important fields in the data table are the site ends, the type, and the BackCard field. The type defines the voice compression protocol, and the backcard defines the connection type at the customer's premise. The The primary CWM source of the Data table is the USER_CONN table. The WANDL file for translation is the demand file. The Data table fields are described in Table 4-7.

Table 4-7 Data Table

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Site 1	–	M/H	Site name of the owner of a connection.	SITE1	* Master node unavailable until release 8.1, assumed to be Site 1.	*
Port ID 1	0	E	Logical slot/port number at Site 1 for the connection. (You can assign or NMT will assign.)	ID1		
Site 2	–	M/H	Site name of the remote end of a connection.	SITE2	*	

Table 4-7 Data Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Port ID 2	0	E	Logical slot/port number at the remote site for the connection. (You can assign or NMT will assign.)	ID2		
Qty	1	M	Quantity. Number of data connections.	CONNS	* Since slot and port are included, this field is always set to 1.	*
Type	56	E/H	Data rate such as 19.2, or 19.2f for fast EIA (for example, interleaved data and event bytes).	TYPE	* Derived heuristically. Modifier F not available until Release 8.1; nx64, nx56 shown as the resulting product starting with Release 9.1.	*
E2E_TYPE	SPVC	M	The end to end type of the connection. PVC, SPVC, XPVC, Hybred and 1Ended are all valid.	E2E Coded: C - PVC S- SPVC H- Hybred X - XPVC E - Single ended		
EIA	2/2	O	Maximum signalling sampling rate, 0 to 20 times per second.	EIA1 / EIA2		
Cd	8	O	Encoding format. 7 for 7/8 coded data and 8 for 8/8 coded data. Connections of 1.344 Mbps or higher require 8/8.	CODE	* Defaults used until Release 7.2.	
PR	0	O	Rerouting priority. 0 to 15, with 0 the highest rerouting priority.	COS	Defaults used prior to Release 8.5.	*
Ad	–	O/H	Restriction type.	AVD		
Red	N	P	Redundancy. Specifies whether data connections are going to be redundant. Applies to CDP, SDP, and LDP Y-cable redundancy.	RED		
DFM	N	O	Data Frame Multiplexing. Y—connection requires DFM. When connections have DFM, the site value is ignored. N—connection does not use DFM.	DFM	* Default used until Release 7.2.	

Table 4-7 Data Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
%Util.	60/60	E	Connection utilization percentage for DFM connections; not used if DFM column is N.	PCT_UTIL1 / PCT_UTIL2	Defaults used prior to Release 8.5 and for FastPAD. The data may be unreliable if it changed after adding a connection.	*
BC	V/V	E/H	Back card type (L4, L8, D, R, V, S, E1, T1 and J1). Use workstation Help or F12 key for choice list.	BC1 / BC2	*/* Heuristic, based on observed number of ports used until Release 9.1.	
Fdr1ID	0	E	Feeder 1 ID. Logical port number for the connection at a 3810 or FastPAD feeder at the local site (not used).	FDR_ID1	* MC3810 feeders not supported.	
Fdr2ID	0	E	Feeder 2 ID. Logical port number for the connection at a 3810 or FastPAD feeder at the remote site (not used).	FDR_ID2	* MC3810 feeders not supported.	
FdrBc	/	E/H	Feeder back card. The line interface type at the feeder.	FDR_INT1		
Index	0	O	SNMP Connection Index for CWM reference for this connection.	SNMP_INDEX	*	
Rt_Metrics	AW	M	How the connection is routed.	RT_MET		
Cost	0	O	Maximum cost allowed for the Autoroute least cost routing path for this connection.	FDR_INT2		
DR	N	O	Direct routing. Indicates that the connection must use the preferred route provided. If it cannot use the preferred route, the connection should not be routed.	DR		
Preferred_Route		O	The preferred route of the connection. The first and last routing site are optional and all feeder sites are optional. An equal sign separates the site names. Specific links are specified by the slot.port for the incoming and/or outgoing port.	Route is stored in 19 fields: PR_SITE2, PR_SITE3, PR_SITE4, ... PR_SITE20	* Available starting with Release 7.2. Specific Trunk not available until Release 8.4. Routes are not available on PNNI networks.	*

Table 4-7 Data Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Current_Route		O	The current route, from CET extractions.	Route is stored in 19 fields: CR_SITE2, CR_SITE3, CR_SITE4, ... CR_SITE20	* Available starting with Release 7.2. Specific Trunk not available until Release 8.4. Routes are not available on PNNI networks.	
Comments	–	O	Comment field, maximum of 20 characters.	CIRCUIT_ID	Not available prior to Release 7.2, nor for SV+ release 8.4.	Comment field used as the connection label. If no comment field, a connection label is generated for WANDL demand file.

Bursty Table

The Bursty Table contains topological information about Frame Relay, ATM, and circuit emulation connections in the network. The important fields in the bursty table are the site ends, the type, and the BackCard field. The type defines the type of connection (Frame Relay, ATM, Circuit Emulation, or multi segment), and the backcard defines the connection type at the customer's premise. The MCR and PCR fields define the load parameters of the connection, and are key to estimating the bandwidth utilization, and the port speeds.

The primary CWM source of the Bursty table is the USER_CONN table. The WANDL file for translation is the demand file. The Bursty Table fields are described in Table 4-7.

Table 4-8 Bursty Table

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Site 1	–	M/H	Site name of the owner of a connection.	SITE1	* Master node unavailable until 8.1; assumed to be Site 1.	*
Port 1	0	E	Logical slot/port number at Site 1. (You can assign, or let NMT automatically assign.) For multiport channelized cards, the format is slot.line.port.	ID1	*	
Site 2	–	M/H	Site name of the remote end of a connection.	SITE2	*	*
Port 2	0	E	Logical slot/port number at Site 2. (You can assign, or let NMT automatically assign.) For multiport channelized cards, the format is slot.line.port.	ID2	*	
Qty	1	M	Quantity. Number of data connections.	CONNS	* Since slot, port, dlci (a VP1, VC1) are included, quantity is always set at 1.	*
Type	VBR	M/H	Type of connection. Select FR for Frame Relay, AMT=FR for ATM to Frame, FR=ATM for Frame Relay to ATM, or select ABR, CBR, or VBR for ATM connection.	TYPE	* Until Release 8.2, heuristic analysis determined whether ATM connections were ABR, CBR, or VBR.	*
E2E_TYPE	SPVC	M	The end to end type of the connection. PVC, SPVC, XPVC, Hybred and 1Ended are all valid.	E2E Coded: C - PVC S- SPVC H- Hybred X - XPVC E - Single ended		

Table 4-8 Bursty Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
FS	Y	O	Y/N flag indicating if the connection has ForeSight implemented or not. Foresight only applies to FR and ABR connections, or FR ATM multi segment connections.	FS		
MIR(SCR/ MCR)	64.0/64.0	M	Minimum Information Rate that is guaranteed (in kbps for FR or ATF), or Minimum Cell Rate for VBR/ABR (Ignored for CBR/UBR).	MIR1 / MIR2		*/*
PIR(PCR)	256.0/256.0	M	Peak Information Rate (burst rate) that is allowed (in Kbps for FR or ATF, or in cps for ATM).	PIR1 / PIR2	*/*	*/*
MBS	1000/1000	0	Maximum Burst Size for ATM VBR connections. The maximum number of cells that are allowed to burst over a period of time at a rate higher than the SCR.	MBS1 / MBS1		
%Util.	100/100	E	Statistical estimate of the percentage of time that a frame relay connection may actually be transmitting at the minimum information rate.	PCT_UTIL1 / PCT_UTIL2	*/* Defaults used for FastPAD. The data may be unreliable if it changed after adding a connection.	*/*
BC	V/V	M/H	Back card. Type of back card. See Help or F12 key for choice list.	BC1 / BC2	*/* SL back cards are shown as SM; number of lines on FRM back card is determined heuristically based on ports used and port speeds. Until Release 9.1, heuristic was based on ports used, connection type, and port speeds.	

Table 4-8 Bursty Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
FrontCard		O	Front card. In some cases, multiple front cards can support a service on a platform. In those cases, you can specify the front card you want.	FC1 / FC2	Only filled in for FRSM-HS cards.	
Application	blank	O	Only required for VISM connections. Describes if the connection is a Bearer or a Signalling connection	APP Values are blank, B (Bearer) or S (signalling)		
Fdr1ID	0	E	Feeder 1 hub ID. The slot port address on the MGX 8220, 3810, or FastPAD at Site 2, if any. Slot represents both the slot and line. Enter 0 for NMT to assign.	FDR_ID1	* FastPAD and MC 3810 feeders not supported	
Fdr2ID	0	E	Feeder 2 hub ID. The slot port address on the MGX 8220, 3810, or FastPAD at Site 2, if any.	FDR_ID2	* FastPAD and MC 3810 feeders not supported	
FdrBC	/	E/H	Feeder back card—the line interface type at the feeder.	FDR_INT1 / FDR_INT2	Only MGX 8220 feeders supported	
FdrFC	/	E/H	Feeder frontcard—the line interface type at the feeder. In some cases, multiple front cards can support a service on a platform. In those cases, you can specify the front card you want.	FDRFC1 / FDRFC2		
Red	N	P	Enter Y for frame relay cards that are to be redundant.	RED		
Pr	0	O	Rerouting priority—0 to 15, with 0 the highest rerouting priority.	COS	Defaults used until Release 8.1 (8.2 for ATM)	
Ad	–	O/H	Restriction type. Link media types that this connection should avoid.	AVD	Defaults used until Release 8.1 (8.2 for ATM).	
CBRT	N	O	Cell based routing flag. If set to ‘Y’, the connection can be routed only on the cell base routing cards. The traffic will never be permitted to be converted into packets.	CB		

Table 4-8 Bursty Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Endpoint Address			The ID of the connection. DLCI for FR, VPC/VCI for ATM. These addresses are the IDs of the connection as it enters and exits the ATM WAN cloud.	ADDRESS1 / ADDRESS2	*	*
Routing Address			The ID of the connection's primary routing segment.	RT_ADDRESS1/ RT_ADDRESS2		
Index	0	O	SNMP connection index for StrataView+ data base. This is the numeric identifier required for the administration of a connection created by the Connection Manager in CWM.	SNMP_INDX		
Rt_Metrics	AutoRoute	M	How the connection is routed. Use AutoRoute for AutoRoute. The type of autoroute used will be determined by the AR field in the site table for end one. Use AW, CTD or CDV for PNNI routing. AW routes strictly based on administrative weights, CTD considers delays, and CDV considers delay variance.	RT_MET A - Autoroute, W - PNNI Least Cost, D - PNNI Delay, E - PNNI Delay with variance	AW assumed for MGX 8850, Release 2.	
Cost	100	O	Maximum cost allowed for the Autoroute least cost routing path for this connection.	MAX_COST		
DR	N	O	Direct routing. Indicates that the connection must use the preferred route provided. If it cannot use the preferred route, the connection should not be routed.	DR		
Preferred_ Route		O	The preferred route of the connection. The first and last routing site are optional and all feeder sites are optional. An equal sign separates the site names. Specific links are specified by the slot.port for the incoming and/or outgoing port.	Route is stored in 19 fields... PR_SITE2, PR_SITE3, PR_SITE4, ... PR_SITE20	Not available until Release 7.2. Specific Trunk not available until Release 8.1. Current route not available for SV+ release 8.1 or 8.2. Routes are not available on PNNI networks.	

Table 4-8 Bursty Table (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Current_Route		O	The current route, from CET extractions.	Route is stored in 19 fields... CR_SITE2, CR_SITE3, CR_SITE4, ... CR_SITE20	Not available until Release 7.2. Specific Trunk not available until Release 8.1. Current route not available for SV+ release 8.1 or 8.2. Routes are not available on PNNI networks.	
Comments	–	O	Comment field. Maximum of 20 characters.	CIRCUIT_ID	Not available prior to Release 7.2, nor for SV+ release 8.4.	Comment field used as the connection label. If no comment field, a connection label is generated for WANDL demand file.

Bursty Table Special Cases

The Bursty Traffic Table configuration information will be different for the following special cases:

- ATM Connections
- Two Segment Connections

The configuration for these types of connections are described in the sections that follow.

ATM Connections

Use the NMT to model ATM connections in the Bursty Traffic Table. Refer to Table 8-1 for information on modeling ATM connections.

Table 4-9 ATM Connection Configuration

Topic	Required Settings	Comments
Modeling ATM Connections	**Bursty Traffic table** Site 1, Site 2 fields: Enter the connection end-point sites.	The ATM sites must be in the Site table and must support ATM traffic types (such as an MGX 8850, a BPX, an MGX 8230 or MGX 8250, or an IGX switch with 8.2.5 functionality).
	Quantity: Enter the number of connections.	
	Type field: Enter ABR, CBR, VBR, or UBR.	
	MCR Fields: Enter minimum cell rate (or Committed Information Rate or Sustainable Cell Rate for UBR).	All traffic values (MCR, PCR, QIR, CIR) are given in cells per second for ATM traffic.
	PCR Fields: Enter peak cell rate.	

Two Segment Connections

Use the NMT to model ATM to Frame Relay interworking connections and ATM to Circuit Emulation connections. Refer to Table 4-10 for information on modeling ATM and FR connections. Refer to Table 4-11 for information on modeling ATM to CE connections.

Table 4-10 FR ATM Interworking Connection Configuration

Topic	Required Settings	Comments
Modeling ATM to Frame Relay	**Bursty Traffic table** Type field: Enter ATM=FR or FR=ATM.	Use ATM=FR when the ATM interface at Site1 interworks to a Frame Relay interface at Site2. Use FR=ATM when a Frame Relay interface at Site1 to interworks to an ATM interface at Site2. The ATM end must support the specified traffic type (i.e., must be a BPX or an IGX with 8.2.5 functionality). All traffic values (MIR, PIR, FR=ATM) are given in kbps for ATM traffic

Table 4-11 ATM to Circuit Emulation Connection Configuration

Topic	Required Settings	Comments
Modeling ATM to CE	**Bursty Traffic table** Type field: Enter ATM=CE or CE=ATM.	Use ATM=CE when the ATM interface at Site1 interworks to a Circuit Emulation interface at Site2. Use CE=ATM when the ATM end is at Site 2 and CE is at Site 1. All values (MIR,PIR) are in Kbps and the circuit should be configured as a CBR where MIR equals PIR.

Interface Table

The Interface Table contains topological and partition information about ports in the network.

The primary CWM source for the interface table is the PORT table. For the WANDL translation, the Interface table is translated into optional parameters in either the BBLINK file or the DEMAND file, which cross reference the NMT link or connection record based on the slot/port string.

Note The Interface table is called the Port table in the MS Excel and DBF interface.

The Interface Table fields are described in Table 4-12.

Table 4-12 Interface Table (Port Specific Parameters)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Site	–	M/H	Site name.	SITE	*	*
PortID	0	O	Slot/port address used for linking the NMTs Bursty traffic table to the port table. Also used for bundling.	HUBID	*	
FeederPort _ID	0	E	Slot/port address (cross reference) in the port table. Also used for bundling.	FDR_ID	*	

Table 4-12 Interface Table (Port Specific Parameters) (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Speed	0	O/H	Clock speed of the access port. Values range from • 56 to 2048 kbps for frame relay • 3622 to 38336 for ATM on an AUSM on an MGX 8220 edge concentrator. • 80000, 96000, or 353208 for ATM on a BPX, depending on the type of port **Note** A port speed of 0 has no effect on the speed of the specified port.	SPEED	* Limitation: Older devices, the MC3810 and FastPAD are not supported.	*
Iftype	0	O	Interface Type. Applies to MPSM connections only.	IF	*	
Lines	0	O	Number of T1/E1 lines in IMA port.	IMA_L	*	
Frame		O	Number of ATM cells in IMA Frame.	IMA_F	*	
EngMinBw	0	O	Minimum Cell Rate in egress (transmit) direction for the partition. Zero value means no partitioning.	EGR_MIN_BW		
EngMaxBw	0	O	Maximum Cell rate in egress (transmit) direction for the partition. Zero value means no partitioning.	EGR_MAX_BW		
MinLCN	0	O	Minimum number of channels in the PNNI partition. Zero value means no partitioning.	MIN_LCN		
MaxLCN	0	O	Maximum number of channels in the PNNI partition. Zero value means no partitioning.	MAX_LCN		
BF	0	O	Booking Factor used to calculate committed cell rate that contributes to the interface load. Ranges are from 1% to 200%. If 0 is specified, the globally assigned value is used for this connection. This applies to PNNI connections only, and is similar to %Util for Autoroute connections.	BF		
Partition		0	Specification of the partition that most of the remaining fields in this table apply to. Blank entry refers to the whole port. AutoRoute, PNNI, or MPLS can be specified. If multiple MPLS partitions, MPLS2 can be used for the 2nd MPLS partition.	PART		

Table 4-12 Interface Table (Port Specific Parameters) (continued)

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
IngMinBw	0	0	Minimum bandwidth in cps in the ingress (receive) direction reserved for this partition. Zero value means no specification	ING_MIN_BW		
IngMaxBw	0	0	Maximum bandwidth in cps in the ingress (receive) direction reserved for this partition. Zero value means no specification.	ING_MAX_BW		
AW	0	0	Administrative weight for PNNI. Overrides the AW value specified in the link table. A value of 0 is ignored. **Note** The field only applies to PNNI.	AW		

Feeder Table

The Feeder table contains topological information about feeder connections in the network.

Table 4-13 Feeder Table

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Site	—	M/H	Site name.	SITE	*	
Port_ID	0	E	Slot/port ID used for linking the NMT's Bursty traffic table to the port table. Also used for bundling.	HUB_ID	*	
Name	—	O	Feeder name. May be left blank.	NAME	MC3810 not supported until Release 9.1.	
Type		O/H	Choice of 38-1, 38-3, 38-8 for 3810 1-, 3-, or 8-slot chassis respectively; FP-4 or FP-8 for FastPAD 4-port or 8-slot units, respectively; p11 or p44 for 1- or 4-shelf port concentrators, or MGX 8220 for an MGX 8220 edge concentrator. Generic choices of 3810, FP, and PC are provided. When these are chosen, NMT will select the least cost unit.	TYPE	MC3810 not supported until Release 9.1.	
Speed	64	O/H	Clock speed of the port to which the feeder is connected. MGX 8220 speeds are fixed based on interface type. Speeds for the other feeders can range from 19.2 to 2048 kbps depending on the feeder and the interface.	SPEED	MC3810 not supported until Release 9.1.	

Card Table

The Card table is an optional table that specifies the cards that populate the chassis. Links and connections may use these cards.

Table 4-14 Card Table

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
Node	—	M/H	Site name of the chassis being specified.	SITE	*	
Slot	—	M/H	Slot that the remainder of the fields in this table applies to.	SLOT	*	
Status	—	M/H	Status of the card. For manually entering data, consider ACTIVE, REDUNDANT, STANDBY, RESERVE. For CWM extracted data, the actual state of the card will be listed.	STAT	*	
Frontcard	—	M/H	Front card residing at this site and slot. Note that NMT will reserve the slot for cards the model does not yet support. (VISM for example)	FTYPE	*	
RedSlot	—	M/H	Slot supporting redundancy. For active cards, defines the slot of the standby or redundant card for 1:N redundancy. For standby or redundant cards, it specifies the active card.	RSLOT	*	
Backcard	—	M/H	Back card associated with the front card.	BTYPE	*	
Backcard2	—	M/H	Secondary back card associated with the front card, if applicable. Double height MGX cards can have secondary back cards.	BTYPE2	*	
FwRev	—	M/H	Frmware revision of the front card. Extracted from CWM, not used by NMT.	FFW	*	
HwRev	—	M/H	Hardware revision of the front card. Extracted from CWM, not used by NMT.	FHW	*	
FC_Serial	—	M/H	Serial number of the front card. Extracted from CWM, not used by NMT.	FSERIAL	*	
BC_HwRev	—	M/H	Hardware revision of the back card. Extracted from CWM, not used by NMT.	BHW	*	
BC_Serial	—	M/H	Serial number of the back card. Extracted from CWM, not used by NMT.	BSERIAL	*	
BC2_HwRev	—	M/H	The hardware revision of the secondary back card. Extracted from CWM, not used by NMT.	BHW2	*	
BC2_Serial	—	M/H	The serial number of the secondary back card. Extracted from CWM, not used by NMT.	BSERIAL2	*	

Groups and Network Table

The Groups and Network Table defense the PNNI Peer groups, their parameters, and their relationships. In WANDL, this data is translated to the HPNNI file.

Note In the MS Excel and DBF interface, this table is called Groups.

Table 4-15 Groups and Network Table

Field	Defaults	Notes	Description and Comments	DBF	CET	TPI
PG_Name	Blank	M	PNNI Peer Group name. NMT requires this name have the same format as a site table name.	NAME		
Parent_PG	Blank	O	Peer Group name of the parent group. Leave blank if the group has no parent. Note that parents must be defined earlier in the table than their children.	PARENT		
PNNI	Y	M	A Y/N flag, indicating if this groups is a PNNI group or just a logical group. If Y, for PNNI group, then this label should appear in the site table for PNNI groups, and all data fields apply. If N, for a logical group, then this group should appear in the network field in the site table, and only the mapX and mapY fields are relevant.			
Level	0	O	Peer Group Level: The level of the PNNI network hierarchy this peer group belongs too. A parent must always have a smaller numeric value than their children.	LEVEL		
Complex	N	O	Enter **Y** if the peer group has to be aggregated in the next higher level of hierarchy using complex node representation algorithm. Enter **N** for simple node representation.	CMPLX		
PGL_PR	N	O	The Peer Group Leader Election Priority is a numeric value determining which site will be the peer group leader. The highest value in the peer group will be the leader.	PGL_PRI		
Xrstr	N	O	Enter **Y** if the peer group cannot be used for transit (via) calls.	RSTR		
mapX	0	O	Horizontal coordinate on the NMT map for this Peer group location.	HOR		
mapY	0	O	Vertical coordinate on the NMT map for this Peer group location.	VER		

Nodes Table

The Nodes Table defines node types the NMT does not support. Future switches, other Cisco WAN or feeder platforms, or other vendor switches can be defined in this table.

Note The Nodes table is not translated from CWM or to WANDL.

Table 4-16 Nodes Table

Field	Defaults	Notes	Description and Comments	DBF	CET	TP
NodeType	Blank	M	Name of the node type.	NAME		
BaseType	GENERIC	M	If the NodeType is closely based on an existing type supported by NMT, enter that type here. Otherwise, enter 'GENERIC'.	TYPE		
Size	32	M	Number of slots in this type of node.	SIZE		
CTL	64	M	Number of circuit lines allowed on the node.	CTLS		
PTL	30	M	Number of packet lines (trunks) allowed on the node.	PTLS		
PTLConns	4000	M	Number of connections allows in each PTL connected to this node type.	PTL_CONNS		
NodeConns	3500	M	Maximum number of connections that can terminate on this type of node.	TERM_CONNS		
VIA_conns	—	M/H	Number of connections that can pass through the node type without termination	VIA_CONNS		
PNNI_Conns	—	M/H	Number of PNNI connections that can terminate or pass through (via) at this node type.	PNNI_CONNS		
Bus_Load	—	M/H	Maximum bus load of this node type, in Mbits/sec.	BUS_CAP		
IFC	--	M/H	Maximum PNNI Interfaces on this PLATFORM	IFCS		

Network Settings

The model settings page contains global parameters used in defining settings in the network. Table 3-14 describes the global parameters used to define network settings.

Table 4-17 Model Setting Configuration

Parameter	Modeling Effect
BPX/IGX SwSw Release	The switch software release to assign to all BPX and IGX switches in the network. Specific sites can override this global value if they have an entry in the swrel field in the site table.
MGX SwSw Release	The switch software release to assign to all MGX switches in the network. Specific sites can override this global value if they have an entry in the swrel field in the site table.
V Delay Limit	Maximum delay (in ms) that can be sustained for this connection type, if applicable.
C Delay Limit	Maximum delay (in ms) that can be sustained for this connection type, if applicable.

Table 4-17 Model Setting Configuration (continued)

Parameter	Modeling Effect
P Delay Limit	Maximum delay (in ms) that can be sustained for this connection type.
A Delay Limit	Maximum delay (in ms) that can be sustained for this connection type, if applicable.
NTS Delay Limit	Maximum delay (in ms) that can be sustained for this connection type, if applicable.
CVM-CVM Delay Limit	Maximum delay (in ms) that can be sustained for this connection type, if applicable.
Voice Combine Timeout	Timeout (units * 0.125 ms) to combine fast packets to cell for voice connections. Range is 0-255.
TS Data Combine Timeout	Timeout (units * 0.125 ms) to combine fast packets to cell for time stamped data connections. Range is 0-255.
NTS Data Combine Timeout	Timeout (units * 0.125 ms) to combine fast packets to cell for non time stamped data connections. Range is 0-255.
Link Booking Factor	For PNNI, the global booking factor to be applied to all PNNI link ports. Range is from 1 to 200. Individual ports can be specified using the Interface Table.
Line Booking Factor	For PNNI, the global booking factor to be applied to all PNNI line ports. Range is from 1 to 200. Individual ports can be specified using the Interface Table.
CAC Algorithm	For PNNI, which Connection Admission Control Algorithm to use.
CTD for CBR	Cell Transfer Delay for CBR class of service in microseconds.
CTD for VBR	Cell Transfer Delay for VBR class of service, both real time and non real time, in microseconds.
CDV for CBR	Cell Delay Variation for CBR class of service in microseconds.
CDV for VBR	Cell Delay Variation for VBR class of service in microseconds.
CLR for CBR	Cell Loss Ratio for CBR class of service. Enter integer N, where N is an exponent of 10**(-N). Range is 6 through 10.
CLR for VBR	Cell Loss Ratio for VBR class of service. Enter integer N, where N is an exponent of 10**(-N). Range is 6 through 10.
AvCR Prop. Multiplier	For PNNI, used in the algorithm to determine significant change of link AvCR. Expressed as a percentage, range is 1-99
AvCR Minimum Threshold	For PNNI, used in the algorithm to determine significant change of link AvCR. Expressed as a percentage, range is 1-99
CTD Prop. Multiplier	For PNNI, this proportional multiplier is used to determine significant change of link cell transfer delay. Expressed as a percentage, range is 1-99
CDV Prop. Multiplier	For PNNI, this proportional multiplier is used to determine significant change of link cell delay variation. Expressed as a percentage, range is 1-99
Equal Path Epsilon	The connection can only be routed using a restricted media. A satellite link, for instance.
Load Balancing Rule	For PNNI, used if an alternate path exists for a given connection
On-Demand Routing Rule	For PNNI, defines the algorithm of calculating route for on-demand route request
Link Selection Rule	For PNNI, defines the sorting order of horizontal parallel links between two nodes from the same peer group.
Maximum Crankbacks	For PNNI, maximum number of crankbacks allowed on the routing node. Range is 1-5

Model Options

Selecting **Model options** from the **Config<Global** menu allows you to specify the model parameter settings listed in Table 4-17.

Table 4-18 Execute Menu Model Parameter Settings

Setting	Defaults	Description
Optimize LDI Ports	**Y**	**Y**—NMT tries to optimize the cost of the LDP cards by using lower cost LDP-4 cards instead of LDP-8 cards. If no, NMT only uses LDP-8 cards. You can still explicitly call for an LDP card with a specific line count.
Group Bursty Conns	**Y**	**Y**—NMT groups connections when their number exceeds the maximum number of LCONS. An LCON is a resource required for each network route with similar properties. The grouping of connections allows more routed connections in a network. If no, NMT does not group connections and fails to build a site when a grouping is required.
Distribute Groups	**Y**	**Y**—NMT optimizes the grouping of connections to smooth network loading. If no, NMT does not optimize grouping.
Use SRM-3T3 on MGX 8220	**N**	**Y**—NMT will provision an SRM-3T3 service redundant module on all MGX 8220 shelves. If no, NMT will provision an SRM-3T3 service redundant module only if the case connection interface requires it.
Bundle Voice with CCS	**Y**	**Y**—NMT will bundle voice connections with CCS signalling and create a transparent connection (type **T**) to carry line signalling. If No, NMT will not bundle voice connections; it is your responsibility to specify the channel for CCS signalling.
Use Preferred Route	**Y**	**Y**—route the connection with the preferred route if one exists. If no, use the current route. **Note** This does not apply to failure analysis. **Note** CET Extractions will set this field to 'N'.
Use Port ID	**Y**	**Y**— NMT assigns slots and ports based on hub and feeder IDs. If no, NMT treats all ID fields as though they were zero filled, and provisions links and connections using its own algorithms.
Port ID Over Redundancy	**N**	**Y**—the system eliminates the redundant card if another card has requested the hub ID of the backup card. If no, the system gives backup cards precedence over another card that was assigned the same port. In this case, NMT overrides the hub ID and moves one of the connections to a different location.
New Share with Port ID	**N**	**Y**—NMT allows connections IDs of zero to share ports with connections having IDs other than zero. If no, NMT does not allow this.

Table 4-18 Execute Menu Model Parameter Settings

Setting	Defaults	Description
Share Redundancy	**Y**	**Y**—non-redundant connections can share cards that are used on redundant connections, essentially getting redundancy for free. If no, non-redundant connections cannot share these cards, and are provisioned by a separate non-redundant service module.
Reserve pkt/swt	**N**	**Y**—hold a packet switch in reserve for the VDP background test of standby cards.
Adavtive VAD	**N**	**Y**—all voice connections will be treated as they are in the PROTECT state.
Use Time Stamp Queue	**Y**	**Y**—then low speed data connections on LDP and SDP cards will be used
Bundle Parts	**Y**	**Y**—provision bundled parts when possible in the parts list.
FR Route Choice	**Y**	**Y**—route FR connections for optimal bandwidth usage. If **N**, route FR connections for optimal performance.
Priority Bumping	**N**	**Y**—use the priority bumping algorithm for re-routing of connections. Connections with higher COS can bump lower priority connections in order to reroute.
Model PNNI RCC & SSC	**Y**	**Y**—automatically create and provision the PNNI signalling connections; the PNNI Hello Protocol (RCC) and the PNNI Signalling Protocol (SSC).
Special Settings Menu	**N**	Add two new menus which enable you to alter internal parameters of basic Cisco products.

Feeders

Specify all feeder equipment in the MGX, IGX, and IPX products explicitly in the Sites table. You can also use the NMT to provision feeders as required by the connection demand. You can even provision additional routing IGXs.

Implicit and explicit feeder generation is discussed in the following sections:

- Modeling Implicit Feeders
- Modeling Explicit Feeders

Modeling Implicit Feeders

To allow NMT to generate implicit feeders, enter the following information into the Site Table:

- hub site
- link connecting the hub to the feeder

Enter information about both the hub and feeder interfaces in the Traffic tables. For implicit feeders, connection endpoints are the hub nodes. The actual feeder ends cannot be referenced directly. IGX, IPX, and MGX8820 feeder nodes can be implicitly generated by NMT. The MGX 8850, if used as a feeder, must be an explicit feeder.It can not be an implicit feeder.

Implicit IGX and IPX feeders are generated when a BPX is used as the hub node for Voice or Data Traffic. They are also generated when a BPX is used as the hub node for Frame Relay Traffic not designated for an MGX 8220.

Implicit IGX and IPX feeders can be generated when an IGX is used as the hub, but only when the traffic demands on the IGX exceed the resources of one node. Therefore, if the hub is an IGX, and you want to design IGX or IPX feeders, it is better to make the feeders explicit.

Implicit MGX 8820 feeders are generated when a BPX is used as a hub node, and the Bursty Traffic table contains connections designated for MGX 8220.

Refer to Table 4-19 for information on modeling an implicit feeder tiered network with the NMT.

Table 4-19 Tiered Network Configurations with Implicit Feeders

Topic	Required Settings	Comments
IPX/IGX Feeders	**Sites table** Site field: Enter the name of the hub node Type field: Enter BPX or IGX. Tiered feeder flag: Enter **Y** if implicit IPX should be a tiered feeder. IGX field: Enter **N** for IPX and **Y** for IGX. BC field: Enter T3 or E3. FC field: Enter AIT. RLC field: Enter **Y** for trunk card redundancy.	Only IGX and BPX can be used as hubs. An IGX hub will only generate implicit feeders when the resources required exceed those allowed by an IGX. Specify type of feeder for BPX/IGX type of site in the Sites table; specify the type of the link between hub and feeder. The redundancy of feeder links is determined by the RLC field in the Sites table.
	Voice, Data, or Bursty Traffic tables Site fields: Enter the name of the hub node Type field: Enter any valid IGX or IPX Voice, Data, or Frame Relay connection type (that is not supported on BPX.) BC field: Enter T1, E1, V, X, or other valid voice or data back cards. Fdr BC field: Leave blank or enter line interface for access feeder such as Port Concentrator, MC3810, or FastPAD.	Voice and data connections on IPX or IGX tiered network feeders may only terminate on another IPX or IGX feeder. Hub IDs and feeder IDs are not defined for implicit IPX/IGX feeders. To specify the physical location of feeder trunks and lines, you must make the feeder node explicit by having it appear in the Sites table. In the Bursty Traffic table, verify that the connection originates or terminates on the IPX feeder as a Frame Relay connection.
MGX 8220 Feeders: General Instructions	**Bursty Traffic table** Site field: Enter the site name. Must be BPX site. Type field: any from the list of choices. BC (Back Card) field: Enter the back card that connects the BPX to the BNM card on the MGX 8220 edge concentrator. Fdr BC (Feeder Back Card) field: Enter the customer interface on the MGX 8220 service module.	MGX 8220 edge concentrators are provisioned from the BC and Fdr BC fields in the Bursty Traffic table. If the back card specified can support MGX 8220, and the feeder back card can support the traffic type with an MGX 8220 service module, NMT will provision an MGX 8220 edge concentrators. The Fdr BC field determines the connection interface to the MGX 8220 feeder. The NMT determines the front card (FRSM, AUSM or CESM), based on the feeder back card selected. If T3 is selected as the feeder back card, the NMT assigns as SRM-3T3 service module. If connection type implies AUSM card, the PCR value determines the port speed and whether more than one T1/E1 is required.

Table 4-19 Tiered Network Configurations with Implicit Feeders (continued)

Topic	Required Settings	Comments
MGX 8220 Feeders: Port to Multiport	**Bursty Traffic table** Fdr I/D fields (Feeder identification fields): ID values must be assigned. ID values can be • Slot.Port for AUSM and CESM cards (e.g., 5.3); this format can be used also for FRSM cards to specify physical port (line) without specifying logical port. • Slot.Line.Port for FRSM card (e.g., 5.2.6). • Zero, indicating no unique port constraint.	By assigning IDs to the ports of the MGX 8220 service module cards, you can put the connection on a particular port. Feeder IDs can also control port-to-multiport connections.
MGX 8220 Feeders: Multiple Feeders at a Site	**Bursty Traffic table** Hub ID field • All connections associated with a specific MGX 8220 should have the same hub ID throughout the Bursty Traffic table. • It is not necessary to use the HUB ID field for the site at the other end of the connection. • Hub ID values can be — Slot.Port (e.g., 12.2) — Zero, indicating no unique port constraint	You need to configure a site with multiple MGX 8220 feeders only if you require connections between the feeders or if you need to associate specific connections with specific feeders (e.g., if the feeders are at different locations). Assign hub IDs to identify the port of the BNI/BXM card on the BPX switch that connects to the specific MGX 8220 edge concentrator.

Modeling Explicit Feeders

To allow the NMT to model explicit feeders, enter the following information about the feeder site into the Site table:

- link connecting the hub and feeder in the Link table
- connection interfaces in the Traffic tables (as if the node were not a feeder).

For explicit feeders, connection endpoints are the feeder nodes.

IGX and IPX nodes can be modeled as either hub or feeder nodes. The MGX 8820 can only be modeled as a feeder. Beginning with NMT 9.2, the MGX 8820 can be an explicit feeder as well as an implicit feeder.

The MGX 8850 is also modeled in NMT 9.2. As a feeder node, the MGX connects to the BPX. If modeled as a feeder, The MGX 8850 node must be explicit.

Refer to Table 4-20 for information on modeling an explicit feeder tiered network with the NMT.

Table 4-20 Tiered Network Configurations with Explicit Feeders

Topic	Required Settings	Comments
Explicit Feeders: General Instructions	**Model Settings table** Make sure that the value of Switch Software Release is set to the release that is to be modeled.	
	Site Table Node Type field: Enter IGX, IPX, BPX, MGX8220, MGX8850, or any other valid Node Type. Fdr field: Enter Y. PC field: Leave blank, for all nodes except Popeye 2; if you are configuring a Popeye 2, enter PXM45.	
	Link Table Site1/Site2 fields: Enter the hub site name and the feeder site name. Trunk fields: Enter the appropriate T1, E1, T3, E3, OC3, or OC12 interface that connects the hub and feeder nodes. Trunk Card fields: Enter the front cards at the hub and the feeder nodes for the trunk that connects them.	You must enter the trunk between the hub and the feeder manually. NMT will not automatically generate it. Only IGX and BPX nodes may be hubs. IGX nodes may have only IGX or IPX feeders. BPX nodes can have MGX8220 and MGX8850 feeders as well.
	Voice, Data, or Bursty Traffic tables Site field: Enter the explicit feeder site name. Must be a site that has Y in the Fdr field in the Site table. Type field: any from the list of choices. BC (Back Card) fields: Enter the customer interface on the feeder node.	Only IGX and IPX feeders support Voice and Data Traffic. You must enter a feeder site name for NMT to put the connection on the feeder node. Even though you are referencing a feeder node, use the BC fields, and not the FdrBC fields.
Explicit Feeders: Port to Multiport	**Bursty Traffic table** Hub I/D fields: ID values must be assigned. ID values can be • Slot.Line.Port (e.g., 5.2.6) for multi-port channelized card (e.g., FRSM, UFMC). • Slot.Port (e.g., 5.3) for single-port channelized cards (e.g., FRM-E1) and for multi-port unchannelized card (e.g., FRM-4V, AUSM);this format can be used also for multi-port channelized cards to specify physical port (line) without specifying logical port. • Zero, indicating no unique port constraint.	By assigning Hub IDs to the connection endpoints, you can put the connection on a particular port. Hub IDs can also control port-to-multiport connections.

Obsolete Products

The sections that follow discuss obsolete products and configurations. These sections are included to describe CWM extraction data and migration planning.

Networks with Access Feeders or Access Concentrators

IPX and IGX switches can include devices that do the following tasks:

- concentrate small connections into large ones
- convert normal voice or legacy data connections into Frame Relay connections.

The NMT supports three access feeders that concentrate or convert data: the MC3810, the FastPAD, and the Port Concentrator. One IGX or IPX node can support up to 64 of these devices. Using NMT to model connections that terminate on these access feeders is similar to modeling MGX 8220 feeders for a tiered network.

MC3810

The NMT supports the MC3810 configured as a feeder to an IGX switch. The MC3810 concentrates voice and data connections into Frame Relay connections. The NMT configures as many MC3810s as are required to support the traffic. The NMT generally sets the feeder trunk speed to the minimum speed that can carry the traffic.

The NMT designs MC3810s automatically when MC3810 connections are added to the Voice Traffic, Data Traffic, or Bursty Traffic table, and the model is based on switch software release versions 8.2.5 to 8.3.9, or 8.5.0 and above.

Refer to Table 4-21 for information on modeling a network using the MC3810.

Table 4-21 MC3810 Configuration

Topic	Required Settings	Comments
Setting MC3810 Release	**Model Settings table** Make sure that the value of Switch Software Release is set to the release that is to be modeled. If that value is one that defaults to MC3810 (825 to 839, or 850 and above), NMT will design MC3810s for any non-voice feeder connections. All other values default to FastPAD for non-voice feeder connections.	If the NMT default value (920) is used, NMT will automatically design MC3810s for all feeder connections, except for voice connection types that are exclusively for FastPad.
Adding MC3810 data connections	**Data Traffic table** Type field: Enter the data traffic speed. If the speed exceeds 512 Kbps, do not use the Data Traffic table; use the Bursty Traffic table instead. BC (Back Card) field: For each end of the connection, enter the back card of the FTC/ FTM card that links the hub IPX/IGX switch to the MC3810 (T1, E1, V, or X). Fdr BC (Feeder Back Card) field: Enter the connection interface on the line side of the MC3810.	Each MC3810 data connection must originate and terminate on a MC3810. If the switch software release does not support the MC3810, NMT designs FastPADs. The minimum speed for synch data is 19.2 kbps. For legacy data like HDLC, use the Bursty Traffic table.
Adding MC3810 dedicated voice connections	**Voice Traffic table** Type field: Enter C32, A32, G729, G729V, G729A, or G729AV. The types refer to compression algorithms; all G types are 8 kbps. BC (Back Card) field: For the MC3810 end of the connection, enter the back card of the FTC/FTM card that links the hub IPX/IGX switch to the MC3810 (T1, E1, V, or X). Fdr BC (Feeder Back Card) field: For each end of the connection having a MC3810, enter V for analog voice, or T1 or E1 for digital voice.	MC3810 dedicated voice connections can have one end at a MC3810 and the other at a CDP, CVM, or UVM card at an IPX or IGX switch. For each feeder back card entry, the NMT establishes a dedicated virtual circuit that connects one voice port on a MC3810 to one voice port on another MC3810 or on an IPX/IGX switch.

Table 4-21 MC3810 Configuration (continued)

Topic	Required Settings	Comments
Adding MC3810 bursty data connections	**Bursty Traffic table** Type field: Enter FR. BC (Back Card) field: On the connection side that uses a MC3810, enter the back card of the FTC card that links the hub IPX/IGX switch to the MC3810 (T1, E1, V, or X). On the other side of the connection, enter the back card of the FRP/FRM (also T1, E1, V, or X). Fdr BC (Feeder Back Card) field: For the connection side with a MC3810, enter the connection interface on the line side of the MC3810. MIR field: Specify the bandwidth requirements on the feeder trunk and the network backbone. PIR field: Specify the port and bus bandwidth requirements	A MC3810 data connection can have one end at a MC3810 and the other at an IPX/IGX FRP/FRM card. At least one end of the connection must have an entry in the Fdr BC field in order for a MC3810 to be designed. If the switch software release does not support the MC3810, NMT designs FastPADs. Remember to set the connection bandwidth by adjusting the MIR and PIR fields.
Setting up switched voice connections	**Voice Traffic table** • Quantity field: Set the number of connections between a pair of MC3810s to the estimated peak number of simultaneous calls between the two destinations. • Type field: Enter Session. • BC (Back Card) field: Select valid FTC back card (V, X, T1, E1). • Fdr BC (Feeder Back Card) field: Leave blank. Create dummy MC3810 connections: • Site 1, Site 2. Connect each site entered above to itself, e.g., Boston, Boston. • Hub ID fields: Optional. Hub 1 ID and Hub 2 ID can be used to specify the slot port of each end of the connection. Connect a site entered above to itself, e.g., 8.1.8.1. This connection is intrasite, intracard, and intraport. • Quantity field: The number of dummy connections should equal one half the peak number of simultaneous calls expected between the MC3810 and all other switched voice destinations. • Type field: Enter the voice traffic speed type. • Fdr BC (Feeder Back Card) field: Enter V for the voice.	To add MC3810 switched voice connections, i.e., voice connections between at least one voice port on a MC3810 connected to at least one voice port on many MC3810s, you must perform a two-step process: connect the MC3810s and add dummy MC3810 connections.

Table 4-21 MC3810 Configuration (continued)

Topic	Required Settings	Comments
Setting up multiple MC3810s at the same site	**Data Traffic table, Voice Traffic table, Bursty Traffic table** • Hub ID field: The ID is given to the port of the FTC/FTM card on the IPX/IGX that connects to the specific MC3810. ID values can be — 0, indicating no unique port constraint. — Slot and port: mm.nn where mm = 1 to 32 and nn = 1 to 31	For connections between multiple MC3810s at a site or to associate specific connections with specific MC3810s, use the Hub ID field for all MC3810 connections that originate or terminate at that site. All connections associated with one specific MC3810 should have the same Hub ID throughout the three traffic tables.
Changing Default Parameters	**Feeders table** • Hub ID field: Enter Slot Port (e.g., 6.4). • Type field: Enter 3810 for any MC3810. • Speed field: Enter the speed you want. **Data Traffic table, Voice Traffic table, Bursty Traffic table** • Hub 1 ID field: Enter the Hub ID value entered in the Feeders table (e.g., 6.4). • Hub 2 ID field: Enter the appropriate Hub ID value.	You can specify the maximum speed of the feeder trunk, for example, 64 kbps, 128 kbps, or 256 kbps. If you specify a speed of 0, NMT chooses the best one.

FastPAD

A FastPAD connection is a connection where at least one end terminates on a FastPAD. FastPADs always connect to the network on a Frame Relay composite link to an FTM or FTC card. FastPAD enables you to concentrate voice and data connection types as a Frame Relay connection joined to an FTC or FRM card.

NMT designs FastPADs automatically when FastPAD connections are added to the Bursty Traffic, Data Traffic, or Voice Traffic table and the model is based on switch software release versions less than 8.2.5, or 8.4.0 to 8.4.9. NMT will also design FastPADs when FastPADs are specifically called for in the Feeders table and connection hub IDs match Feeders table hub IDs.

The FastPAD comes in two sizes, one with eight slots and one with four slots, called the FastPAD micro. By default NMT

- Configures as many FastPADs as required to support the traffic
- Chooses an 8-slot FastPAD unless no more than four slots and one low-speed data port are needed, in which case the NMT chooses the FastPAD micro
- Acts on the assumption that the speed of the composite link is limited by the maximum speed supported by the FTC card (512 kbps)

Refer to Table 4-22 for information on modeling a network that uses FastPADs.

Table 4-22 FastPAD Configuration

Topic	Required Settings	Comments
Setting Switch Software Release	**Model Settings table** Make sure that the value of Switch Software Release is set to the release that is to be modeled. If that value is one that defaults to FastPAD (817 to 824, or 840 to 849), NMT will design FastPADs for any non-voice feeder connections. All other values default to MC3810 for non-voice feeder connections.	FastPADs will not be designed for non-voice connections under the default switch software release (920). To force NMT to use FastPADs, the Feeder Table must be used; see Changing Default Parameters below.
Adding FastPAD Data Connections	**Data Traffic table** Type field: Enter the data traffic speed. BC (Back Card) field: For each end of the connection, enter the back card of the FTC/FTM card that links the hub IPX/IGX switch to the FastPAD (T1, E1, V, or X). Fdr BC (Feeder Back Card) field: Enter the connection interface on the line side of the FastPAD (S, R, V, V1, or V6).	FastPAD data connections must originate and terminate on a FastPAD. If the switch software release supports the MC3810, NMT will design MC3810s, not FastPADs, unless the hub ID fields and the Feeder table are used. For each feeder back card entry, the NMT establishes a dedicated virtual circuit that connects one data port on one FastPAD to one data port on another FastPAD.
Adding FastPAD Dedicated Voice Connections	**Voice Traffic table** Type field: Enter ATC8, ATC12, ATC16, CELP8, or CELP48. The numbers refer to kbps. BC (Back Card) field: For each end of the connection, enter the back card of the FTC/FTM card that links the hub IPX/IGX switch to the FastPAD (T1, E1, V, or X). Fdr BC (Feeder Back Card) field: For each end of the connection, enter V for the VFC-03 card.	FastPAD dedicated voice connections must originate and terminate on a FastPAD. For each back card field entry, the NMT establishes a dedicated virtual circuit that connects one voice card on one FastPAD to one voice card on another FastPAD.
Adding FastPAD Bursty Data Connections	**Bursty Traffic table** Type field: Enter FR. BC (Back Card) field: If the end has a FastPAD, enter the back card of the FTC that links the hub IPX/IGX switch to the FastPAD (T1, E1, V, or X). If the end is not a MC3810, enter the back card of the FRP/FRM at that end (also T1, E1, V, or X). Fdr BC (Feeder Back Card) field: If the end has a FastPAD, enter the connection interface on the line side of the FastPAD (S, R, V, V1, or V6). If the end does not have a FastPAD, leave this field blank.	A FastPAD bursty data connection may have one end at a FastPAD and the other at an IPX/IGX FRP/FRM card. At least one end of the connection must have an entry in the Fdr BC.

Table 4-22 FastPAD Configuration (continued)

Topic	Required Settings	Comments
Setting Up Switched Voice Connections	**Voice Traffic table** Connect the FastPADs: • Quantity field: Set the number of connections between a pair of FastPADs to the estimated peak number of simultaneous calls between the two destinations. • Type field: Enter Session. • BC (Back Card) field: Select valid FTC back card (V, X, T1, or E1). • Fdr BC (Feeder Back Card) field: Leave blank. Create dummy FastPAD connections: • Site 1, Site 2 fields. Connect a site entered above to itself, e.g., Boston, Boston • Hub ID fields. Optional. Hub 1 ID and Hub 2 ID can be used to specify the slot port of each end of the connection. Connect a site entered above to itself, e.g., 8.1, 8.1. This connection is intersect, intracard, and interport. • Quantity field: The number of dummy connections should equal one half the peak number of simultaneous calls expected between the FastPAD and all other switched voice destinations. • Type field: Enter the voice traffic speed type. • Fdr BC (Feeder Back Card) field: Enter V for the VFC-03 card.	To add FastPAD switched voice connections, i.e., voice connections between at least one voice card on a FastPAD connected to at least one voice card on many FastPADs, you must perform a two-step process: connect the FastPADs and add dummy FastPAD connections.
Setting Up Multiple FastPADs at the Same Site	**Data Traffic table, Voice Traffic table, Bursty Traffic table** • Hub ID field: The ID is given to the port of the FTC/FTM card on the IPX/IGX switch that connects to the specific FastPAD. ID values can be — Port only: 0 — Slot and port: mm.nn Where mm = 1 to 32 and nn = 1 to 31	For connections between multiple FastPADs at a site or to associate specific connections with specific FastPADs, use the Hub ID field for all FastPAD connections that originate or terminate at that site. All connections associated with one specific FastPAD should have the same Hub ID throughout the three traffic tables.
Changing Default Parameters	**Feeders table** • Hub ID field: Enter Slot.Port (e.g., 6.4). • Type field: Enter FP-4 for a FastPAD Micro, FP-8 for a regular FastPAD, or FP to have the NMT determine which one to use. • Speed field: Enter the speed you want. **Data Traffic table, Voice Traffic table, Bursty Traffic table** • Hub1 ID field: Enter the Hub ID value entered in the Feeders table (e.g., 6.4). • Hub 2 ID field: Enter the Hub ID for the appropriate site.	You can specify a FastPAD or FastPAD micro unit and can specify the maximum speed of the composite link, i.e., 64 kbps, 128, kbps, or 256 kbps. If you specify FP (a generic FastPAD), NMT chooses the best one. If you specify 0 as the speed, NMT picks the best one.

Port Concentrator

The Port Concentrator provides a method for concentrating voice and data connection types as a Frame Relay connection extending to an FTC or FRM card. The NMT models and provisions Port Concentrators so that they support Frame Relay connections. The card is modeled as a 44-port FRP card, with the PC interface being optional but defaulting to V35.

Refer to Table 4-23 for information on modeling a network that uses port concentrators.

Table 4-23 Port Concentrator Configuration Notes

Topic	Required Settings	Comments
Instructing the NMT to Design Port Concentrators	**Bursty table** Type field: Select FR, ATM=FR, or FR=ATM. BC (back card) field: To specify a PC termination, enter PC in the BC field of the site that has the PC. The NMT rejects PC if the connection type is incorrect. Fdr BC (feeder back card) field: Each PC termination can also specify which PC interface is required. Enter V (for V.35), V1 (for V.11) or V2 (for V.28) in the corresponding Fdr I/F field. If you leave the field blank, the interface defaults to V.35. Hub ID (for Site 1 and Site 2) fields • The port ID is the slot.port ID for an FRP-PC card and is a virtual port. The virtual port range is from 1 to 44, where ports 1 to 11 are on physical port 1, 12 to 22 are on physical port 2, 23 to 33 are on port 3, and 34 to 44 are on port 4. • Hub IDs can be used to model over-subscription, port-to-multiport connections, and multiple PCs. • A hub ID of 0 allows NMT to do design. FdrID (Feeder ID) field: Not used **Access Ports table** Hub ID field: Slot is the PC slot and port is the virtual port (1 to 44). Do not use feeder slot or feeder port column. Speed field: Enter the port speed. If not supported, it will be rounded up to the nearest supported speed. Speeds 9, 14, 19, and 38 will be respectively interpreted as 9.6, 14.4, 19.2, and 38.4. If you have an Access Port table entry for a PC port, the port speed is determined by the connections assigned to it.	NMT designs port concentrators if, and only if, you enter connections that have port concentrator terminations. Geis bundling format is not supported for FRP-PC.

Tiered Networks

Tiered networks are a special network configuration of Cisco WAN switches. A tiered network consists of a BPX or IGX hub node linked to a maximum of 16 IPX/IGX nodes or MGX 8220/ MGX 8850 edge concentrators designated as feeder nodes. A feeder node provides the following features:

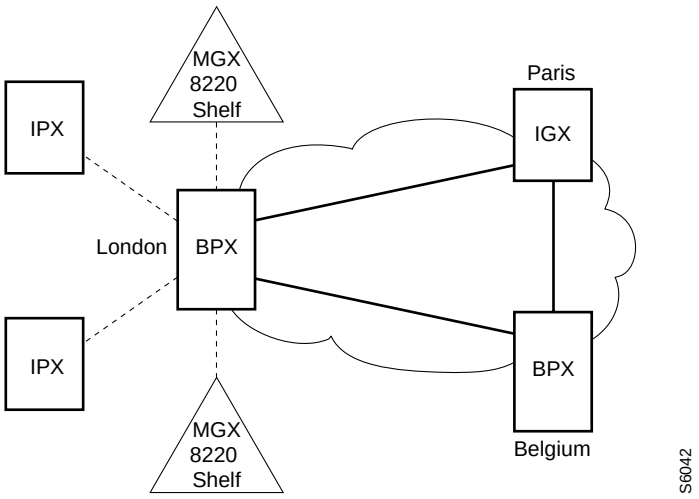
- It expands the port capacity of the BPX/IGX switch
- It has no routing capabilities, so it is not counted against the maximum number of switches allowed in the network.

Use a feeder node under the following circumstances:

- when a BPX switch does not support a required line interface, such as T1/E1/V35/X21
- when a BPX switch does not provide required network services, such as Frame Relay or circuit emulation.

In a tiered network, each feeder has only one link to the hub node. In the NMT, tiered network generation is driven by the type and the line interface of the connection for creating IPX/IGX feeders and MGX 8220/MGX 8850 edge concentrators. Figure 4-2 shows an example of a tiered network.

Figure 4-2 Example of a Tiered Network



If an IPX/IGX/MGX8220 feeder is not in the Sites table, but is generated by NMT, it is called an implicit feeder. When the node is in the Sites table, it is called an explicit feeder. The requirements for modeling implicit and explicit feeders differ.