

# **Configuring and Managing Host-Based X.25 Links**

**HP 3000 MPE/iX Computer Systems**

**Edition 5**



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## Preface

This manual describes the configuration, operation, and management of X.25 network connections for users of HP 3000 Series 900 systems with host-based network management. Host-based X.25 connections are available on systems running MPE XL release 3.1 or later MPE/iX release.

You should use this manual only if the connections you are configuring are host-based X.25 connections. To configure X.25 connections for PC-based systems, refer to *Configuring Systems for Terminals, Printers, and Other Serial Devices, Using the OpenView DTC Manager*, and the *HP 3000/iX Network Planning and Configuration Guide* instead of this manual.

You should be familiar with X.25 concepts and know which X.25 facilities are included in your network subscription. You should also be familiar with NMMGR, the tool used to configure network connections. If not, refer to *Using the Node Management Services (NMS) Utilities* manual for information.

This manual includes step-by-step instructions to assist you in configuring all aspects of host-based X.25 connections for a system. It includes a description of DTCCNTRL, the command used to start, stop, dynamically reconfigure, and obtain status about host-based X.25 system-to-system and PAD connections. It also includes an explanation of and instructions for using the X.25 log formatting tool, EVLOG.

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### NOTE

MPE/iX, Multiprogramming Executive with Integrated POSIX, is the latest in a series of forward-compatible operating systems for the HP 3000 line of computers.

MPE/iX is a superset of MPE XL. All programs written for MPE XL will run without change under MPE/iX. You can continue to use MPE XL system documentation, although it may not refer to features added to the operating system to support POSIX (for example, hierarchical directories).

MPE V is the old operating system for HP 3000s, not based on the PA-RISC architecture. MPE V software can be run on the PA-RISC (Series 900) HP 3000s in what is known as *compatibility mode*.

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The chapters in this manual are organized as follows:

- Chapter 1, "Introduction," presents an overview of the host-based X.25 capabilities that are provided as part of the Fundamental Operating System (FOS). It describes network options, concepts, and diagnostic services for use with host-based X.25 links.

- Chapter 2, “Preparing to Configure DTCs,” details the information you will need before you can begin to configure DTS for systems with host-based X.25 connections. It also describes worksheets you can use to plan and record your DTS configuration.
- Chapter 3, “Configuring DTCs Step-by-Step,” provides step-by-step instructions for configuring DTCs for systems with host-based X.25 connections.
- Chapter 4, “Terminal and Printer Profiles,” describes what are terminal and printer profiles and how to create and modify your own profiles.
- Chapter 5, “Preparing to Configure X.25 iX System Access,” details the information you will need before you can begin to configure X.25 iX System Access for systems with host-based X.25 connections. It also describes worksheets you can use to plan and record your NS configuration.
- Chapter 6, “Configuring X.25 Links Step-by-Step,” provides step-by-step instructions for configuring X.25 iX System Access for systems with host-based X.25 connections.
- Chapter 7, “Managing Networks with DTCCNTRL,” describes how the DTCCNTRL command is used to start, stop, dynamically reconfigure, and obtain status about host-based X.25 system-to-system and PAD connections. Examples of command usage are included.
- Chapter 8, “Formatting Host-Based X.25 Log Files,” provides instructions for using EVLOG, the log formatter for X.25 log events. It includes a description of each of the EVLOG options.
- Appendix A, “Error Messages,” contains validation, datacommunication configurator (DCC), and DTCCNTRL error messages.
- Glossary, contains terms applicable to the network configuration process.

## **Related Publications**

*Managing Host-Based X.25 Links Quick Reference Card*

*HP 3000/iX Network Planning and Configuration Guide*

*Using the Node Management Services (NMS) Utilities*

*NS 3000/iX NMMGR Screens Reference Manual*

*NS 3000/iX Operations and Maintenance Reference Manual*

*NS 3000/iX Error Messages Reference Manual*

*NetIPC 3000/XL Programmer's Reference Manual*

*NS Cross-System Network Manager's Reference Manual*  
*Using NS 3000/iX Network Services*  
*NS Cross-System NFT Reference Manual*  
*Configuring Systems for Terminals, Printers, and Other Serial Devices*  
*Troubleshooting Terminal, Printer, and Serial Device Connections*  
*Using OpenView DTC Manager*  
*Berkeley Sockets/iX Reference Manual*  
*Customizing Terminal and Printer Type Files with Workstation Configurator*  
*Asynchronous Serial Communications Programmer's Reference Manual*  
*System Startup, Configuration, and Shutdown Reference Manual*  
*MPE/iX Commands Reference Manual*  
*HP2345A Datacomm and Terminal Controller Installation and Service Manual*  
*NS Over SNA/XL Configuration Guide*  
*HP SNMP/XL User's Guide*



# 1 Introduction

This manual provides a complete reference for the configuration, operation, and management of X.25 network connections for users of HP 3000 Series 900 systems with host-based network management. Host-based X.25 support is provided for both system-to-system and PAD communications.

This chapter describes the host-based X.25 capabilities. It includes the following:

- X.25 network options provided with host-based network management, including both system-to-system and PAD support services.
- The concepts you need to understand when you configure host-based X.25 connections.
- Operation of host-based X.25 system-to-system and PAD support services.
- Diagnostic services provided for use with host-based X.25 links.

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**NOTE**

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If you need to configure any host-based X.25 connections, then you can also use this manual to configure other terminal I/O connections.

## X.25 Network Connections

Many of the communications services available for HP 3000 Series 900 systems are provided through the Datacommunications and Terminal Controller (DTC). There are six types of DTCs currently supported: DTC 72MX, DTC 48, DTC 16, DTC 16iX, DTC 16MX and the DTC 16RX. The DTC 72MX, DTC 48 and the DTC 16 can support the **DTC/X.25 Network Access cards** that make communications over X.25 networks possible. The DTC 16iX, DTC 16MX and the DTC 16RX do not support the DTC/X.25 Network Access cards.

The **DTC 72MX** allows up to three connector cards, plus a LAN card. Up to three DTC/X.25 Network Access cards are supported. The **DTC 48** can contain up to six connector cards, up to three of which may be DTC/X.25 Network Access cards. Slot 0 must contain an asynchronous connector card, but slots 1 through 5 can contain any combination of asynchronous cards and DTC/X.25 Network Access cards. The **DTC 16** can contain up to two asynchronous connector cards and, optionally, a DTC/X.25 Network Access card as its third card.

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### NOTE

Throughout this manual, all DTCs supporting X.25 connections will be referred to generically, unless their type is significant to the topic under discussion.

---

## X.25 System-to-System Connections

Host-based X.25 system-to-system connections are supported through the **DTC/X.25 iX Network Link**. This NS 3000/iX link makes it possible for you to connect a HP 3000 Series 900 system to a public or private X.25 packet switched network (PSN).

The DTC/X.25 iX Network Link requires that you have at least one DTC/X.25 Network Access card installed in a DTC. You must also purchase and install the **X.25 iX System Access** software on the system.

## Device Connections Via PAD

PAD support makes it possible for asynchronous serial devices, such as terminals and serial printers, to be connected to the system through an X.25 network. Serial devices are connected to a PAD, or **Packet Assembler/Disassembler**. A PAD converts asynchronous character streams into packets that can be transmitted over a packet switched network. PAD packets follow the CCITT X.25 protocol recommendations.

The PAD support provided on MPE/iX systems conforms to the 1984 version of CCITT recommendations X.3 and X.29. Support is also provided for the 1980 recommendation. Packet sizes of 128, 256, and 512 bytes are supported. Access is provided for users of asynchronous serial devices connected to both public and private PADs.

A **public PAD** is a service provided by a **Public Data Network (PDN)**, such as TELENET or TRANSPAC. Public PADs can be used with either a dial-up or a leased line.

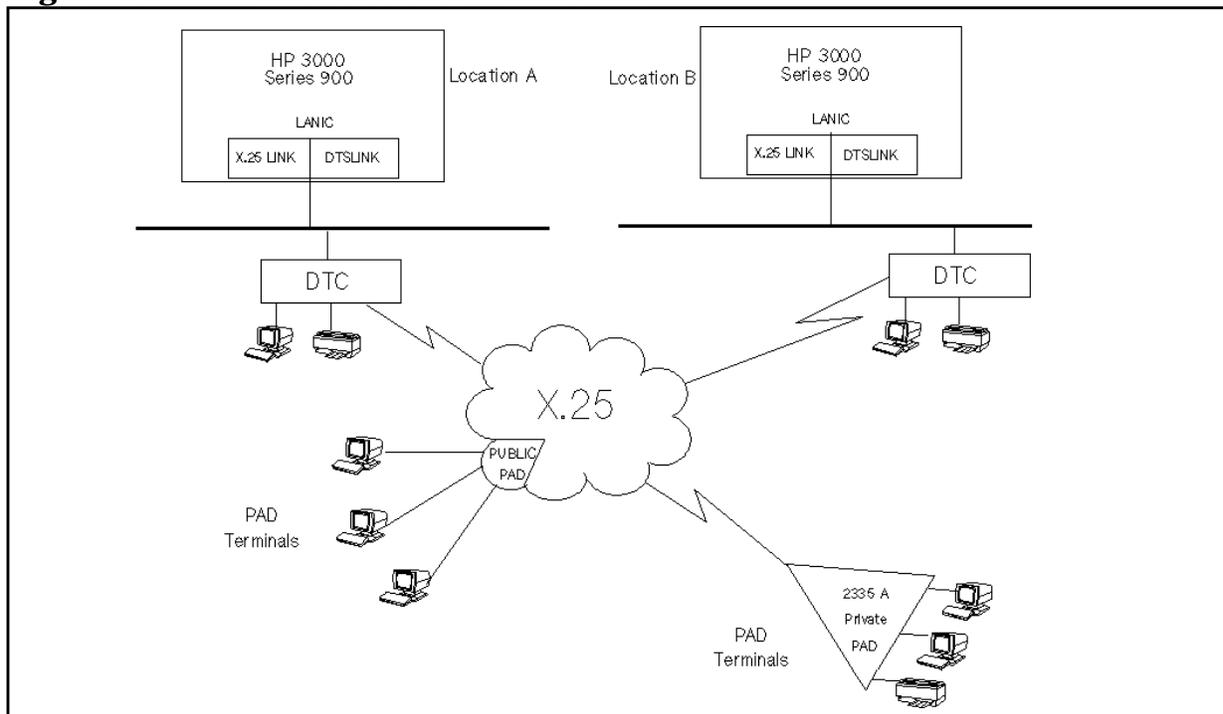
A **private PAD** is one that is connected to a PDN as a host node having its own X.25 network address, but behaves as a PAD when connected to another node. Private PADs require leased lines to the network. Hewlett-Packard provides several cluster controllers for use as private PADs.

All devices connected via PAD must support XON/XOFF protocol and must be configured to match the speed of the PAD and modem.

Only character mode and VPLUS applications are supported on PAD-connected devices. There are also some aspects of the way transmission occurs over PAD connections that cause differences in the way certain device control operations take place. See the *Asynchronous Serial Communications Programmer's Reference Manual* for a summary of these differences.

Figure 1-1 shows both PAD and X.25 system-to-system connections for HP 3000 Series 900 systems employing host-based network management.

**Figure 1-1 X.25 Network Connections**



## Host-Based X.25 Configuration Concepts

Host-based X.25 connections are configured using the **Node Management Configuration Manager (NMMGR)**. NMMGR allows you to completely configure both PAD support and system-to-system X.25 connections. For more information on NMMGR and its operation, see *Using the Node Management Services (NMS) Utilities* manual.

### DTS Configuration Branch

NMMGR takes you down specific configuration “branches” to allow you to enter configuration values required by various subsystems or products. The DTS branch allows you to configure the **Datacommunications And Terminal Subsystem (DTS)**, which defines the physical connections and configuration parameters for the computer, its DTCs, and all DTC-connected devices.

If you are configuring only PAD support, you need only traverse the DTS branch of NMMGR. You will use this branch to configure *both* locally connected devices and PAD connected devices. To access this branch of NMMGR, from the Main screen, answer “N” (no) to the question “Are you using OpenView DTC Manager?” and “Y” (yes) to the question “Do you have X.25 system-to-system or PAD connections?”. Press the **[Save Data]** key, then press the **[DTS]** function key.

Using the DTS configuration branch, you configure link information for the DTCs connected to the system. For each DTC, you specify the card types the DTC contains, along with logging class and PAD access information if one of the cards is a DTC/X.25 Network Access card. For each individual card, you configure device connection parameters pertinent to the card’s type.

For each DTC/X.25 Network Access card you configure, you also specify X.25 level 1, level 2, and level 3 parameters according to your X.25 network subscription. You may also elect to configure security for PAD access.

Complete step-by-step procedures for configuring the DTS branch are provided in Chapter 3, “Configuring DTCs Step-by-Step,” of this manual.

### NS Configuration Branch

Connections for system-to-system require that you traverse an NS configuration branch to configure X.25 iX System Access. You reach this branch by pressing the **[NS]** function key at the Main NMMGR screen.

Step-by-step procedures for X.25 iX System Access configuration are in Chapter 6, “Configuring X.25 Links Step-by-Step,” of this manual.

---

NOTE

The X.25 iX System Access procedure described in this manual assumes the use of guided configuration. While it is possible to configure this link using non-guided configuration, Hewlett-Packard strongly recommends the use of the guided configuration process.

---

## Nailed and Non-Nailed Connections

A **nailed** device is one that is permanently associated with an ldev number through the NMMGR configuration of an MPE/iX system. Any time a connection exists between a system and one of its nailed devices the same ldev number will belong to that device. This ldev number is reserved for the use of that connection and only that connection. While devices attached through a private or public PAD may be either nailed or non-nailed, all serial devices attached either locally or through a modem must be configured with nailed connections on host-based systems.

Since only nailed devices can be accessed programmatically, all printers must also be nailed, as must any other serial devices that will be accessed programmatically at any time.

A **non-nailed** device is a device that is able to establish a connection to an MPE/iX host system but has no permanently assigned ldev number in the NMMGR configuration file of that system. Instead, ldev numbers are dynamically associated with a device connection at the time the user requests the connection. The user of a non-nailed device is able to establish a session provided two conditions are met: a connection must be available on the host and the non-nailed device profile specified in the host configuration must match the characteristics of the device requesting the connection.

When the user at a PAD-connected device with a non-nailed connection logs on to the system, an ldev number is assigned from a pool of available ldev numbers defined through the host system's NMMGR configuration. When the connection is ended (the user logs off) the assigned ldev number is returned to the pool of ldev numbers and becomes available for use by a different device connection.

Non-nailed device connections provide several major advantages. They simplify the configuration that must be done on each MPE/iX system, since configuration values do not have to be entered separately for each PAD device that will be able to access that system. Non-nailed connections also make it possible for you to add serial devices to the network without having to reconfigure each host so that it will recognize the additional devices. Finally, configuring a pool of non-nailed devices makes it possible for the number of users with potential access to a system to exceed the session limit of the system. The pool of non-nailed ports that you configure cannot exceed the session limit, and the number of users logged on at a given time must still be within the session limit.

When the user connects to the system through a public PAD, the connection will use a non-nailed device on the host.

---

## Operation

When the HP 3000 is configured to use host-based X.25 networking configurations, the command `DTCCNTRL` is provided to allow operators to start and stop X.25 system-to-system or PAD connection support, obtain status about whether X.25 and PAD support are up, and to dynamically change many configuration parameters entered for the DTS subsystem without rebooting the system.

System Operator (OP) capability is required to obtain status and start and stop X.25 and PAD support. Network Administrator (NM) is required to perform dynamic configuration

## Dynamic Configuration

You can make many DTS changes dynamically without rebooting the system, or resetting and reuploading the DTC. This capability is available if you already have a valid network configuration file, and there were no errors reported by DCC during the last system reboot, or DTS shutdown and restart. This allows you to modify the DTS configuration without impacting all the users accessing the system through the DTC that was changed.

For more information on how to invoke dynamic configuration, see Chapter 7, “Managing Networks with `DTCCNTRL`,” of this manual, or the *Configuring Systems for Terminals, Printers, and other Serial Devices* manual.

## Automatic Configuration

Host-based management also gives you the capability to add and configure a new DTC automatically, without the need to specify most of the detailed configuration information, such as DTC cards and ldevs. This can be done within the `NMMGR` utility or at the session prompt with the command `DTCCNTRL`. Refer to Chapter 7, “Managing Networks with `DTCCNTRL`,” for further information on using automatic configuration to configure X.25 cards. See *Configuring Systems for Terminals, Printers, and Other Serial Devices* manual for more information on how to invoke automatic configuration.

## Obtaining Status

The `DTCCNTRL` Status function displays the current status of each DTC/X.25 Network Access card installed in a specified DTC. Use the Status function to determine whether or not X.25 or PAD support is currently active for a DTC/X.25 Network Access card. See Chapter 7, “Managing Networks with `DTCCNTRL`,” for more information on obtaining status using `DTCCNTRL`.

## Maintenance

To support the maintenance of host-based X.25 connections, the **Terminal Diagnostic Support Monitor (TermDSM)** utility supports additional command functions. These functions are part of the **DIag**, **DUmp**, **Reset**, and **Status** commands (capital letters indicate command abbreviations). Additionally, the TermDSM **Trace** command allows tracing of X.25 level 2 or level 3, or of a virtual circuit (VC).

Several of the **TermDSM** command functions now provide data about DTC/X.25 Network Access cards in addition to the data they provide about asynchronous cards. For example, the **DIag Selftest** function tests DTC/X.25 Network Access cards (SNPs) as well as asynchronous cards (SICs).

## Terminology

TermDSM uses designations for the types of cards it tests that you might not be familiar with. Asynchronous cards are referred to as **SICs**, or serial interface cards. Likewise, DTC/X.25 Network Access cards are referred to as **SNPs**. SNP is an abbreviation for synchronous network processor.

A number of the **TermDSM** commands use the SNP designation as a subcommand. For example, to capture information about a specific DTC/X.25 Network Access card and write it to a file you would enter the **DUmp** command in TermDSM, then enter the **SNP** subcommand, specifying the DTC number and card number as the SNP parameters.

## Trace Command Options

The trace function has been added to TermDSM so that X.25 packets can be traced at the DTC and card level.

Only one trace (and one trace option) can be active at a time.

To enable tracing you enter the TermDSM **Trace** command then choose a trace option through the **TRACEON** subcommand. Each of the three trace options are described. Depending on the trace level you specify, you will then be prompted for additional information.

## VC Trace

If you choose trace option 1, VC trace, you will be prompted for a VC (virtual circuit) number. Enter the number of the VC for which you want trace information. You will then be asked to specify a filter for the trace. You can choose either to trace headers only or to trace full packets. You will also be given the option of specifying a filename for the trace file.

## Level 2 Trace

If you choose trace option 2, level 2 trace, you will be prompted for the filter (trace headers only or full packets) and given the option of specifying a file name. No other information is required.

## Level 3 Trace

If you choose trace option 3, level 3 trace, you will be prompted for a VC type. Possible responses are `PAd`, to trace only PAD VCs, `SYS`, to trace system-to-system VCs, or `All`, to trace both PAD and system-to-system VCs that are active through the designated DTC and card. You will also need to specify the link name of the X.25 link. You will then be prompted for the filter (trace headers only or full packets) and given the option of specifying a file name.

For a complete description of TermDSM and its use with all DTC connection card options, see *Troubleshooting Terminal, Printer, and Serial Device Connections* manual.

## Trace Formatting

The trace file can be formatted with the NMDUMP utility. Enter option 2 at the prompt “Would you like to format a log or trace file” then select subsystem ID 60 for DTC/X.25 Link. For more information, refer to *Using the Node Management Services (NMS) Utilities* manual.

## Logging

Logging for host-based X.25 links is enabled and disabled in the NMMGR configuration file, as is the case for other link products. However, host-based X.25 log files are formatted through a tool called EVLOG (you *cannot* use the NMDUMP formatter for host-based log files). See Chapter 8, “Formatting Host-Based X.25 Log Files,” for instructions on using the EVLOG formatter.

## Event Log Files

Events are logged to two alternating log files for *each* DTC. When you bring the DTC up, it immediately begins logging to the first log file. The DTC records events to that file until too few bytes are available for the next log record entry. At this point, the DTC begins recording to the second log file. Alternating log files in this manner assures that at least five hundred records are always available for formatting and evaluation.

## Log File Name Format

The format of the log file names is as follows:

```
HnnnnnnA.PUB.SYS  
      (first log file)
```

HnnnnnnB.PUB.SYS  
(second log file)

All the host-based X.25 log files begin with the letter H. The second through the seventh digits correspond to the last six digits of the DTC address (remember, each DTC has its own set of two log files). The A or B at the end of the file name indicates whether it is the first or the second file.

Each file stores up to 500 records, with each record or packet being 132 bytes.

Hewlett-Packard recommends that you treat the files as read-only files. Once you have information that you want to format, copy the log file to another filename and format that file with the EVLOG formatter.

---

**NOTE**

Switching to a different file only occurs when the current file runs out of space. If you are concerned about limiting the number of records written and formatted, a timestamp filtering capability is available in the formatter.

---

## 2 Preparing to Configure DTCs

This chapter details the information you will need before you can configure the datacommunications and terminal subsystem (DTS) for host-based systems that include X.25 networking. DTS defines the physical connections and configuration parameters for the computer, its DTCs, and all DTC-connected devices. Sample worksheets are included to facilitate configuration.

Hewlett-Packard recommends that you complete the DTS configuration before configuring any NS network capabilities for your system.

This chapter describes how to:

- Plan the DTS configuration.
- Determine terminal and printer characteristics.
- Determine DTC characteristics.
- Determine X.25 network characteristics for both PAD and system-to-system connections.

---

**NOTE**

If you are not configuring X.25 networking capabilities on a system using host-based network management, you should use *Configuring Systems for Terminals, Printers, and Other Serial Devices* instead of this manual to configure DTCs and DTC connections.

---

## Plan the Network Configuration

Before you use NMMGR to configure DTS (the DTCs and DTC connections for your system), you must define the physical layout and configuration parameters for the computer, its DTCs, and all DTC-connected devices.

Configuration values that you must determine include a name for the computer and a link name and physical path for the link between the computer and its DTCs. You also need to associate a name with each DTC and define the characteristics of the devices connected to each DTC.

You must also define X.25 network values to be configured for each DTC that contains a DTC/X.25 Network Access card. You can configure each DTC/X.25 Network Access card to allow PAD device connections, system-to-system X.25 connections, or both.

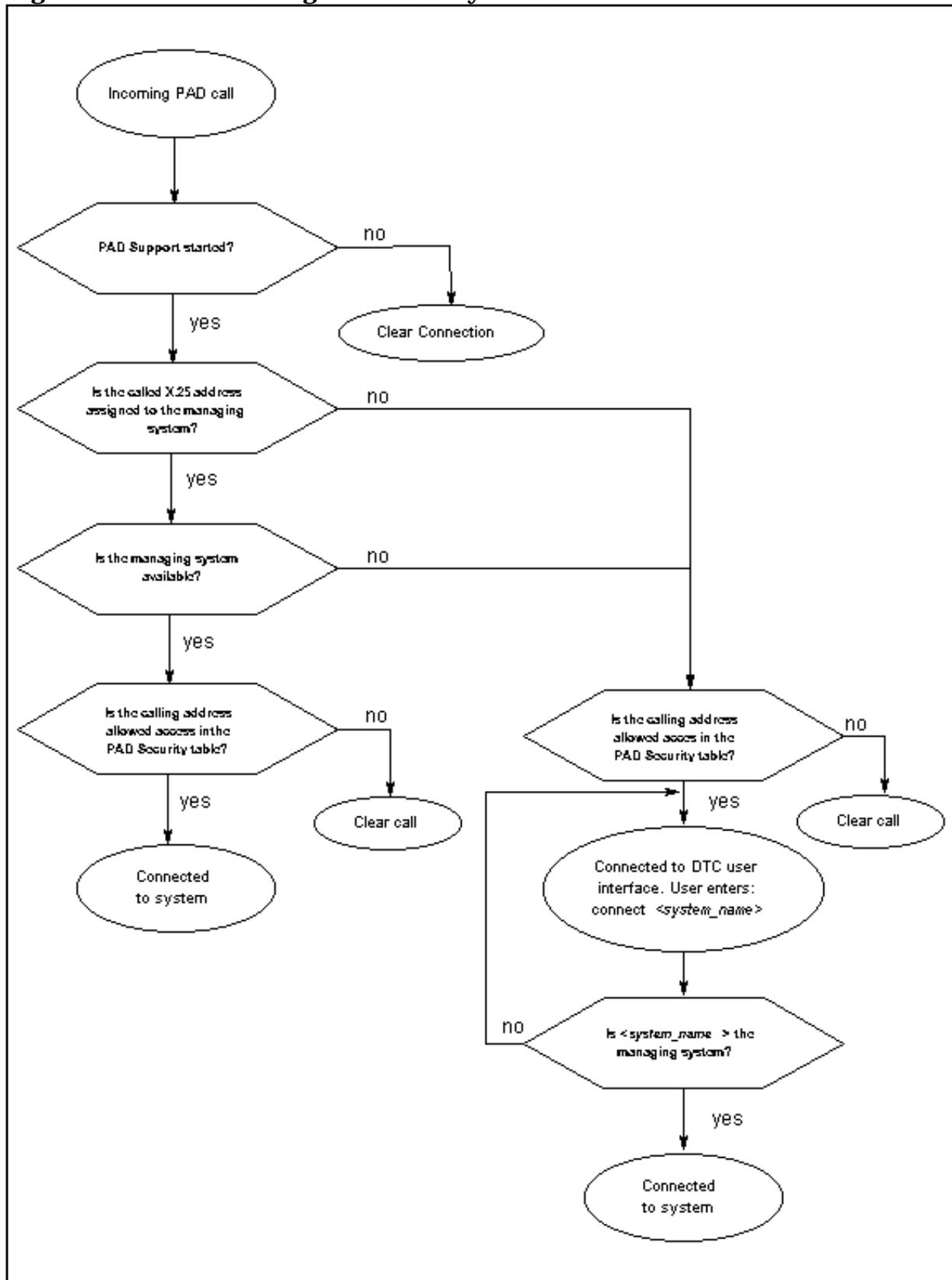
If you are configuring PAD connections, you can also configure incoming security. Security can be specified to either reject or accept incoming calls from specific addresses. The Incoming PAD Security flowchart shown in Figure 2-1 describes how incoming PAD calls are processed to allow or disallow access to the host-based MPE/iX system.

On the pages that follow, information and worksheets are provided to help define these required configuration parameters.

### Incoming PAD Security

Figure 2-1 shows how incoming PAD calls are processed to allow or disallow access to the host-based MPE/iX system.

**Figure 2-1 Incoming PAD Security Flowchart**



---

## Defining the HP 3000 System

The following configuration parameters are required to define the HP 3000 host for asynchronous device connections.

Local HP 3000

**Node Name** The name by which the HP 3000 Series 900 computer is known in your network. The format of a node name is *nodename.domain.organization*, where each field can contain 16 or fewer characters (alphanumeric, underscores, or hyphens). The first character of each field must be alphabetic. For example:  
ACCOUNTS.MKT2.HP.

**Link Name** The link name that is used by the HP 3000's Datacommunications and Terminal Subsystem (DTS) when device connections are established. It must start with a letter and can be up to eight alphanumeric characters. *DTSLINK* is the default and should be used for your DTS configuration.

Physical Path  
of LAN2C  
(Slot # of  
LANIC Card)

The location of the LANIC (Local Area Network Interface Controller Card) in the system's backplane. The location (slot number) of the LANIC within the cabinet must be specified.

The default physical paths (slot numbers) of the LANIC for HP 3000 computers are listed here. These defaults optimize performance and use of the computer's cabinet space. Before moving the LANIC into another slot, consult an HP representative.

HP 3000 Systems	Slot Number
920, 922, 935, 932, 935, or 949 with HPIB	4.3
920, 925, 935, or 949 with ALINK	4.2
9X7	56
9X8	56/56
930	8.4
950, 955, 960, 980	2/4.2
990/992, 991/995	0/40

---

## Defining the DTC

The following parameters are required to define each DTC used for connection between the HP 3000 and its asynchronous devices (terminals and printers). You can use the DTC Configuration worksheets as shown later in this chapter to record the values selected for each DTC.

**DTC Name**            A name for the DTC, up to eight alphanumeric characters, beginning with a letter. Each DTC configured on the system must have a unique name.

**DTC LAN Station**

**Address**            The local station address of the DTC. The HP 2345B (DTC 48) station address is printed inside the front cover. The HP 2340A (DTC 16) station address is printed on the label located on the upper right-hand corner of the back panel of the DTC. The HP J2070A (DTC 72MX) and J2062A/J2063A/J2064A (DTC 16iX/16MX/16RX) station address is printed on the label located at the lower center of the back panel of the DTC.

A typical LAN address looks like:

08-00-09-1A-11-11.

For DTC 16RX access to an HP 3000 in an MPE/iX host-based management environment, use the value 00-00-00-00-00-00 as the DTC 16RX LAN address. Configuration of the DTC 16RX is done on the HP 9000 host using DTC 16RX Manager.

**DTC Node**  
**Name**

A fully qualified node name of the DTC, in the form *nodename.domain.organization*, where each field can contain 16 or fewer characters (alphanumeric, underscores, or hyphens). The first character of each field must be alphabetic.

Assign meaningful node names. For example, ACCTS.IXNET.ACCTG and PAY.IXNET.ACCTG are meaningful names for two nodes on the same Local Area Network (LAN) within the accounting department. One node (ACCTS.IXNET.ACCTG) is used by the accounts staff. The other node (PAY.IXNET.ACCTG) is used by the payables staff. The *domain* field is the same because the nodes belong to the same network. The *organization* field is the same because the nodes belong to the same internetwork.

DTC IP Address

(optional) The internet protocol (IP) address of the DTC. The IP address is optional. It is used if your HP 3000 is configured as part of a network and you want the DTC to be able to respond to PING/iX requests.

An IP address is made up of a network portion and a node portion. The address is formed as four fields of decimal numbers where each number is a value ranging from 000 to 255.

The following shows examples of three classes of IP addresses:

Class A:     nnn . xxx . xxx . xxx

Class B:     nnn . nnn . xxx . xxx

Class C:     nnn . nnn . nnn . xxx

where nnn represents the network portion and xxx represents the node portion of the address. The class of the IP address is determined by the value of the left most group of nnn and has the following ranges:

Class A:     001–126

Class B:     128–191

Class C:     192–254

Network and node portions of all zeroes or 255 are not allowed for DTC addresses. These are special values. All devices configured with the same network portion are considered to be on the same network. The node portion must be unique for all nodes on a network.

You can obtain a Class B or Class C IP address from:

Government Systems, Inc.  
Attn: Network Information Center  
7990 Boeing Ct.  
Vienna, VA 22183  
(800) 364-3642 or FAX: (703) 821-6161

For DTC 16RX access to an HP 3000 in an MPE/iX host-based management environment, the IP address of the DTC 16RX is configured using the DTC 16RX Manager on the HP 9000 host and not on the HP 3000. Any value entered for the DTC 16RX in NMMGR will be ignored.

DTC Cards (or  
DTC Boards)

The number and types of connector cards in the DTC. (The cards are also referred to as **boards**.) DTC 16 can have up to 2 asynchronous cards and 1 DTC/X.25 Network Access card, DTC 48 up to 6 cards, and DTC 72MX up to 4 cards.

DTC 16iX/16MX/16RX has its two port connectors built directly onto its backplane for support of up to 16 asynchronous devices. It does not have removable cards; you do not specify the number or type of cards for a DTC 16iX/16MX/16RX.

The valid card types are:

**For DTC 16 and DTC 48:**

- D for direct connect cards (up to 8 ports per card),
- M for modem connect cards (up to 6 ports per card),
- X for DTC/X.25 Network Access cards (for connection).

**For DTC 72 MX:**

- L for the LAN card, pre-installed in slot 0
- A for asynchronous processor boards (up to 24 ports per card for direct and modem connections)
- X for DTC/X.25 Network Access cards (for X.25 connection).

DTC Event  
Logging

For each DTC, logging class 1 logs catastrophic events and will always be enabled. Class 2 logs critical events; class 3 logs non-critical events; classes 4 and 5 log informative events and class 6 provides statistical information. It is recommended that you only enable classes 4 through 6 when you encounter problems, because they will generate and log a substantial number of events. The log files could use a significant amount of disk space.

Event logging classes do not apply for access to an HP 3000 in an MPE/iX host-based management environment using a DTC 16RX; any values entered in these fields for the DTC 16RX will be ignored.

## Defining the DTC Connector Cards

Connector cards (also called **boards**) in the DTC allow terminals, printers, and other serial devices to be connected to the DTC for communication with an HP 3000 Series 900. You can use the DTC Card Configuration worksheet as shown later in this Chapter, to record the values selected for each DTC card.

For each connector card in a DTC, you must define the characteristics of its ports for connection to terminals, printers, and other serial devices. The following parameters are required.

- Card Number** The card number specifies which card in the DTC is being configured.
- DTC 16s allow 2 connector cards, labeled card # 0 and card # 1, with the third slot (card # 2) reserved for a DTC/X.25 Network Access card. When looking at the rear panel of the DTC, card # 0 is located on the left, card # 1 is in the middle, and card # 2 is on the right.
- DTC 48s allow up to 6 connector cards, labeled card # 0 to 5.
- DTC 72MXs allow up to 3 connector cards plus a LAN card that is preinstalled in slot 0; the connector cards are labeled card # 1 through 3.
- For the DTC 48 and 72MX, card # 0 resides at the bottom of the DTC and card # 1 resides above it, and so on.
- Note that DTC 16iX/16MX/16RX does not have connector cards. Its port connectors are built directly onto its backplane.
- Direct or Modem Connect** You must specify whether a direct or modem connection is used for the ports on a card. Direct connections are used for devices that reside near the DTC. Modem connections are used for communications over telephone lines.
- Port Number** Each port on a connector card is assigned a number, starting with port # 0 on the left most side of the card.
- Logical Device Number (LDEV)** Each port needs a logical device (ldev) number assigned to it, if the DTC is managed by an HP 3000. The ldev number is used by MPE/iX to designate devices. Devices with ldevs permanently assigned to them are

called **nailed** devices. Printers and UPSs, as well as devices that will be programmatically accessed, must be nailed devices. Each nailed ldev number assigned in NMMGR must be unique.

For host-based DTC management, you may have PAD ports without ldev numbers assigned to them; hence they are **non-nailed** devices. Non-nailed devices have ldev numbers that are assigned from a pool of available ldev numbers for the duration of the device connection to the system.

#### Terminal and Printer Profiles

Each port needs to be assigned a profile. A profile defines a set of characteristics for a terminal, printer, or another serial device. A profile can be of five types: **terminal profile, printer profile, PAD terminal profile, PAD printer profile, or Host port profile.** See *Configuring Systems for Terminals, Printers, and Other Serial Devices* manual for more information on the characteristics determined by the profiles, and a list of the profiles that are supplied in the sample configuration file.

If the characteristics provided in the sample profiles are different from those required by the terminals and printers connected to your DTCs, then you can define new profiles.

It is suggested that you use default profiles TR10D96 for direct connect terminals and PR18D96 for direct connect printers or PR22D24 for HP printers with status checking. For PAD terminals and printer, use the defaults TR24PAD and PR26PAD, respectively. For UPSs, use the default profile UP10D12.

The name of the profile can be up to eight characters long and must start with a letter, followed by letters and numbers. At any one time, up to 1024 profiles can be configured per system.

## Determine X.25 Connection Characteristics

You must define characteristics for the X.25 PAD or system-to-system connections you are configuring. Values need to be configured for each DTC/X.25 Network Access card mounted in the DTCs for the system you are configuring.

Whether you are configuring system-to-system, PAD connections, or both, you will need to define values for levels 1, 2, and 3 of the X.25 network. Most of these values are defined by your X.25 network subscription and you can transfer these values directly to the DTC X.25 Card Configuration — Level 1 and 2 Worksheet shown later in this Chapter, and the DTC X.25 Card Configuration — Level 3 and Miscellaneous Worksheet shown later in this Chapter.

If you are configuring system-to-system connections for an X.25 network, you will need to define an X.25 link name, the maximum number of SVCs, and remote X.25 addresses and security designations. Once you have decided on your system-to-system configuration, you can use the DTC X.25 Card Configuration — System-to-System Worksheet shown later in this Chapter.

If you are configuring nailed PAD connections, you can use the DTC X.25 Card Configuration — Nailed PAD Connections Worksheet shown later in this Chapter.

If you are defining nailed PAD connections, you may also wish to configure security. To do so, you list remote X.25 calling addresses and specify whether you want all calls from the listed addresses to be blocked, or all calls from the listed addresses (and only the listed addresses) to be accepted. Once you have decided on the security to be configured, use the DTC X.25 Card Configuration — PAD Security Worksheet shown later in this Chapter, to list the remote X.25 addresses.

---

## Configuration Worksheets

Before you start NMMGR, use the worksheets provided here to gather the necessary configuration information. Make copies of these worksheets and fill in the parameter information, then use the worksheets to guide you through configuration in NMMGR.

## DTC Configuration Worksheet

Fill out worksheet as shown in Figure 2-2 for each DTC you are configuring.

Figure 2-2 DTC Configuration Worksheet

<h3>DTC Configuration Worksheet</h3> <p>(Use one worksheet for each DTC)</p>	
DTC Type (check one):      DTC 16 <input type="checkbox"/> DTC 16iX <input type="checkbox"/> DTC 16MX/RX <input type="checkbox"/>	
DTC 48 <input type="checkbox"/> DTC 72MX <input type="checkbox"/>	
DTC Name: _____	
DTC LAN station address: ___-___-___-___-___-___	
DTC node name ( <i>node.domain.organization</i> ): _____	
DTC IP address: _____	
Card Type as installed in the DTC:	Event Logging Class Enabled (Y or N):
CARD #    TYPE #	1        _____
0        _____	2        _____
1        _____	3        _____
2        _____	4        _____
3        _____	5        _____
4        _____	6        _____
5        _____	
<h3>NOTE:</h3>	
DTC Card Type Can Be:  For DTC 16 & : D (for direct) DTC 48    M (for modem) X (for X.25)	Number of Cards:  DTC 16:        3 cards (0 - 1) DTC 48:        6 cards (0 - 5) DTC72MX:      4 cards (0 - 3)
For DTC 72MX: L (for LAN) A (for Async, direct & modem) X (for X.25)	
For DTC 16iX/16MX/16RX: not applicable	



## DTC X.25 Card Configuration — Level 1 and Level 2 Worksheet

Fill out worksheet as shown in Figure 2-4 for each DTC X.25 Network Access card you are configuring.

**Figure 2-4** DTC X.25 Level 1 & 2 Worksheet

**DTC X.25 Card Configuration -- Level 1 and 2 Worksheet**

DTC name \_\_\_\_\_ Card number \_\_\_\_\_

Level 1:

Line speed \_\_\_\_\_

Level 2:

Packet Switched Network name \_\_\_\_\_

CCITT X.25 standard \_\_\_\_\_

Frame size (N1) \_\_\_\_\_

Retransmission timer (T1) \_\_\_\_\_

Timer T3 (if using 1984 CCITT) \_\_\_\_\_

Retransmission count (N2) \_\_\_\_\_

Unacknowledged frame number (K) \_\_\_\_\_

Modulo \_\_\_\_\_

## DTC X.25 Card Configuration – Level 3 & Miscellaneous Worksheet

Fill out worksheet as shown in Figure 2-5 for each DTC X.25 Network Access card you are configuring.&

**Figure 2-5 DTC X.25 Card Level 3 and Miscellaneous Worksheet**

**DTC X.25 Card Configuration -- Level 3 & Misc. Worksheet**

DTC name \_\_\_\_\_ Card number \_\_\_\_\_

X.25 card address \_\_\_\_\_

Maximum number of PAD connections \_\_\_\_\_

Logical Channel Identifier (LCI) Range:		
	Low	High
PVCs	_____	_____
One-way incoming SVCs	_____	_____
Two-way SVCs	_____	_____
One-way outgoing SVCs	_____	_____

Default Flow Control:		
	In	Out
Window Size	_____	_____
Packet size	_____	_____
Throughput class	_____	_____

Flow control negotiation? \_\_\_\_\_

Throughput class Negotiation? \_\_\_\_\_

Use of D-bit? \_\_\_\_\_

Extended packet sequence number? \_\_\_\_\_

## DTC X.25 Card Configuration — System-to-System Worksheet

Fill out worksheet as shown in Figure 2-6 for each DTC X.25 Network Access card for which you are configuring system-to-system connections.

**Figure 2-6** DTC X.25 Card Configuration — System-to-System Worksheet

**DTC X.25 Card Configuration - System-to-System Worksheet**

DTC name \_\_\_\_\_ Card number \_\_\_\_\_

X.25 link name \_\_\_\_\_

Maximum number of Switched Virtual Circuits (SVCs) \_\_\_\_\_

System X.25 address \_\_\_\_\_

Enter remote X.25 addresses and security (IN=in, OU=out , IO=in and out):

Address	Security	Address	Security	Address	Security
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

(Use additional sheets if you need to list more X.25 address for this DTC/X.25 Network Access card.)

## DTC X.25 Card Configuration – Nailed PAD Worksheet

Fill out worksheet as shown in Figure 2-7 for each DTC X.25 Network Access card for which you are configuring nailed PAD connections.

**Figure 2-7**      **DTC X.25 Card Configuration — Nailed PAD Worksheet**

**DTC X.25 Card Configuration - Nailed PAD Connections Worksheet**

DTC name \_\_\_\_\_ Card number \_\_\_\_\_

Enter nailed PAD information as shown below:

Ldev	Profile	Device Name	Remote Device (PAD) X.25 Address	CUG No. (Optional)
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

(Use additional sheets if you need to list more nailed PAD connections for this DTC/X.25 Network Access card.)

## DTC X.25 Card Configuration — PAD Security Worksheet

Fill out worksheet as shown in Figure 2-8 for each DTC X.25 Network Access card for which you are configuring PAD security.

**Figure 2-8** DTC X.25 Card Configuration — PAD Security Worksheet

DTC X.25 Card Configuration -- PAD Security Worksheet			
DTC name _____	Card number _____		
Enter nailed PAD information as shown below:			
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
(Use additional sheets if you need to list more remote X.25 addresses for this DTC/X.25 Network Access card's security list.			

---

## Configuring With NMMGR

NMMGR, the Node Management Configuration Manager, is the utility used by HP 3000 Series 900 to configure asynchronous device connections. The parameters described previously in this chapter are entered in NMMGR through a screen-by-screen user interface. These parameters are then stored by NMMGR into the HP 3000 network configuration file `NMCONFIG.PUB.SYS`. You must have Node Administrator (NA) or Node Manager (NM) capability to run NMMGR. Additionally, you must have System Manager (SM) capability to perform automatic SYSGEN cross-validation. You must be logged on the SYS account to modify the configuration file.

To start NMMGR, type the following command at the MPE prompt:

```
NMMGR.PUB.SYS
```

Figure 2-9 shows the screen flow for configuring terminals, printers, and other serial devices in NMMGR. Use the function keys that are located at the bottom of each screen to visit the next screen on the flowchart. The [Prior Screen] key can be used to display the screen most recently visited prior to the current screen as shown in the flowchart.

Chapter 3, “Configuring DTCs Step-by-Step,” shows the step-by-step process for configuring terminals, printers, and other serial devices using NMMGR, for host-based management.

---

**NOTE** You can use the NMMGR maintenance mode interface to manage network directory and configuration files. You can also use the interface to generate job streams to update remote network directory and configuration files. Refer to the *Configuring Systems for Terminals, Printers, and other Serial Devices* manual for more information on the maintenance mode commands and the `SUMMARYCONF` command.

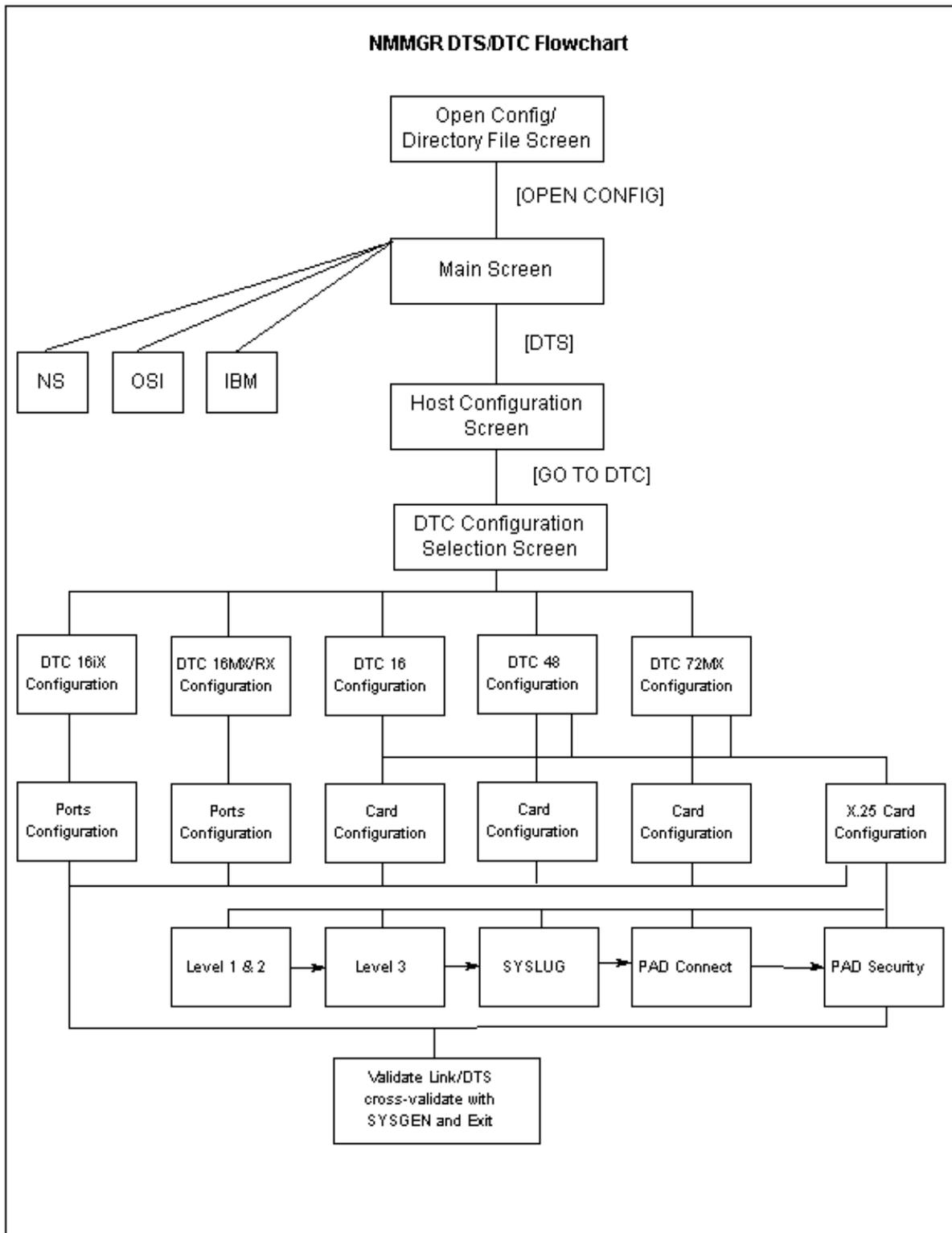
---

---

**NOTE** In addition to the DTS subsystem, NMMGR is used to configure other network subsystems on the HP 3000 Series 900, such as NS (Network Services), IBM, and OSI. NMMGR provides many functions and utilities that are beyond the scope of this manual. Refer to *Using the Node Management Services* for detailed information on NMMGR.

---

**Figure 2-9 NMMGR DTS/DTC Screen Flow**



# 3                    **Configuring DTCs Step-by-Step**

This chapter provides step-by-step instructions for configuring Datacommunications and Terminal Controllers (DTCs) for systems using host-based network management. If you are using this manual to configure DTCs, it is assumed that X.25 network connections will be part of the host-based configuration.

Before using NMMGR to configure DTCs, you should complete the worksheets provided. See Chapter 2, “Preparing to Configure DTCs,” for more information on planning your configuration and filling out the configuration worksheets.

This chapter includes step-by-step instructions to help you perform the following tasks:

- Configure host information.
- Configure information for each DTC connected to the system.
- Configure information for each direct connect and modem card contained in any DTC connected to the system.
- Configure information for each DTC/X.25 Network Access card contained in any DTC connected to the system, including:
  - X.25 level 1, 2, and 3 parameters.
  - System-to-system local user group information.
  - Nailed PAD connections and PAD security.
- Validate your network configuration (SYSGEN cross-validation is done automatically within NMMGR).

---

**NOTE**

If you are configuring a system that does not require X.25 system-to-system or PAD configuration, use *Configuring Systems for Terminals, Printers, and Other Serial Devices* instead of this manual.

---

## Network Configuration Overview

Information required for network configuration on the host is contained in one file. The name of this configuration file is `NMCONFIG.PUB.SYS`.

When building a new configuration file, it is not necessary to define every field. This is because a sample configuration file is supplied with the MPE/iX operating system. The sample configuration file is called `NMSAMP1.PUB.SYS`. Hewlett-Packard recommends using the sample file as a template for initial configuration.

---

**CAUTION**

Use the sample configuration file for first time configurations only. Information previously configured using `NMMGR`, and stored in `NMCONFIG.PUB.SYS`, will be overwritten when the sample file is copied to `NMCONFIG.PUB.SYS`.

The `NMCONFIG.PUB.SYS` file can be modified using `NMMGR`. Only one configuration file can be active at a time and the active file must be called `NMCONFIG.PUB.SYS`. Accordingly, modified or new configuration files must be copied to `NMCONFIG.PUB.SYS` before they can be used by the system.

---

**CAUTION**

If ANY other configuration file is copied to `NMCONFIG.PUB.SYS` or `NMCONFIX.PUB.SYS` then dynamic configuration will be disabled until a DTS shutdown and restart is done or the system is rebooted. This includes other files from the same system or files copied from other systems.

---

---

## Copy the Sample File

Use `NMSAMP1.PUB.SYS` as a template for first time configuration. This file is supplied with the MPE/iX operating system. Do not modify `NMSAMP1.PUB.SYS`. Instead, copy the sample configuration file into `NMCONFIG.PUB.SYS` and then modify the file as necessary.

To copy `NMSAMP1.PUB.SYS` into `NMCONFIG.PUB.SYS`, enter these commands at the MPE/iX prompt (:):

```
HELLO MANAGER.SYS,PUB
FILE CONFIG=NMCONFIG.PUB.SYS;DEV=1
FCOPY FROM=NMSAMP1.PUB.SYS;TO=*CONFIG;NEW
```

---

### NOTE

“DEV=1” must be specified in the `FILE` equation to specify that the `NMCONFIG.PUB.SYS` file is to be stored to system disk 1.

## Modify the Network Management Configuration File

The network management configuration file (`NMCONFIG.PUB.SYS`) contains information that is referenced during system boot-up. A step-by-step procedure for creating or updating the host's network management configuration file follows.

---

**NOTE**

---

Before modifying the `NMCONFIG.PUB.SYS` file, make a backup copy of it. If the modifications made to the configuration file are successful, purge the backup copy.

### Step 1: Begin the Configuration Process

Run the `NMMGR` program. Node manager (NM) or network administrator (NA) capabilities are required to run this program. To run `NMMGR`, enter the following command at the MPE prompt and then press the [Return] key.

```
NMMGR.PUB.SYS
```

---

**NOTE**

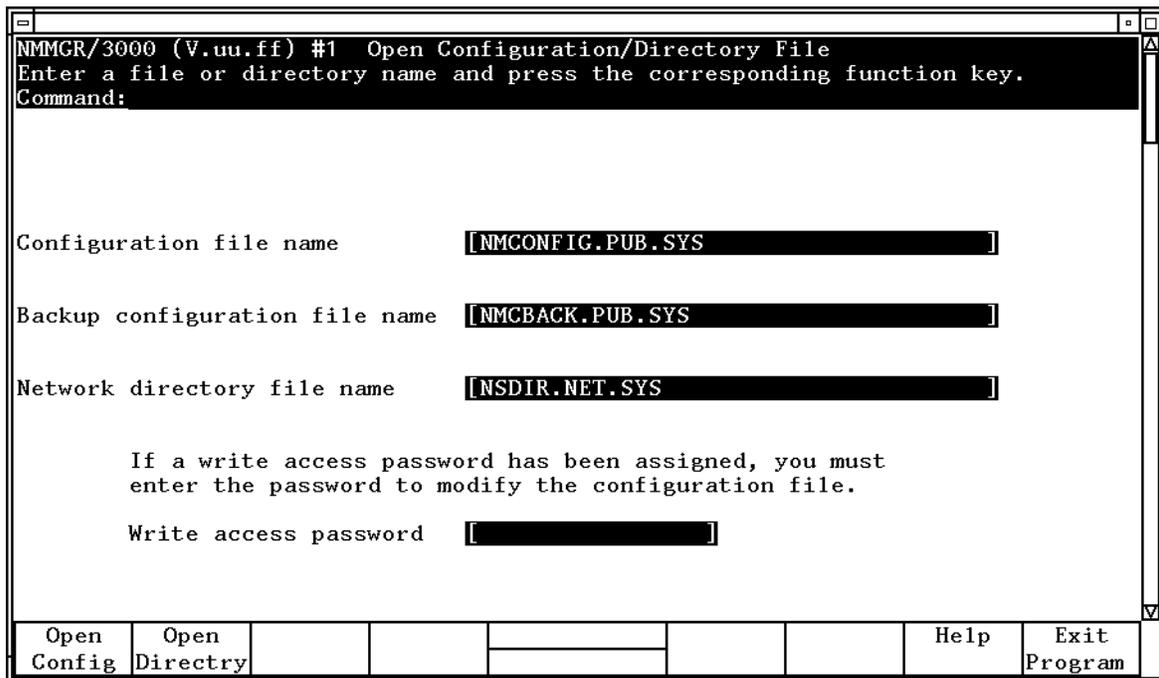
---

You must be logged on to the `SYS` account to modify the configuration file.

### Step 2: Open the Network Management Configuration File

The Open Configuration/Directory File screen is displayed (Figure 3-1). This screen lets you specify the configuration and backup file names.

**Figure 3-1** Open Configuration/Directory File Screen



Follow the steps listed here to enter data for this screen. Refer to “Fields” subsection on the next page for detailed information about each field on the screen.

1. NMCONFIG.PUB.SYS is the name required by the software. Verify that this name is displayed in the Configuration file name field.
2. Verify that the name of the correct backup configuration file is in the Configuration file name field. The default is NMCBACK.PUB.SYS.
3. Press the [Open Config] function key.
4. If the configuration file you are opening does not exist, the following message will appear on the message line at the top of the screen:

Config file does not exist; press Open Config again to create it.

Press the [Open Config] key again to confirm the creation of the file you specified.

#### Fields

Configuration file name The only valid configuration file name the system recognizes for use by the network subsystem is NMCONFIG.PUB.SYS .

You can create or modify a configuration file using a different name and save it as an **offline configuration file**. You can use offline configuration files as a means of creating and storing configurations that you want to use in the future. When you are ready to use an offline configuration file, rename it as `NMCONFIG.PUB.SYS`, validate within NMMGR (SYSGEN cross-validation is done automatically within NMMGR). Use `DTCCNTRL` to shutdown and restart DTS or reboot the system.

Backup  
configuration

file name     A backup file name must be specified whenever a configuration file is opened or created. The default backup configuration file name is `NMCBACK.PUB.SYS`. The backup file will be automatically updated with the contents of the configuration file each time the configuration file is successfully validated.

Network  
directory file  
name

The Network directory file must be configured for each new X.25 node (unless you will only be accessing the node using direct level 3 access). This field is only used for X.25 network management. The network directory contains information that one X.25 node needs in order to communicate with other X.25 nodes. The only network directory file name supported by HP is `NSDIR.NET.SYS`.

Write access  
password

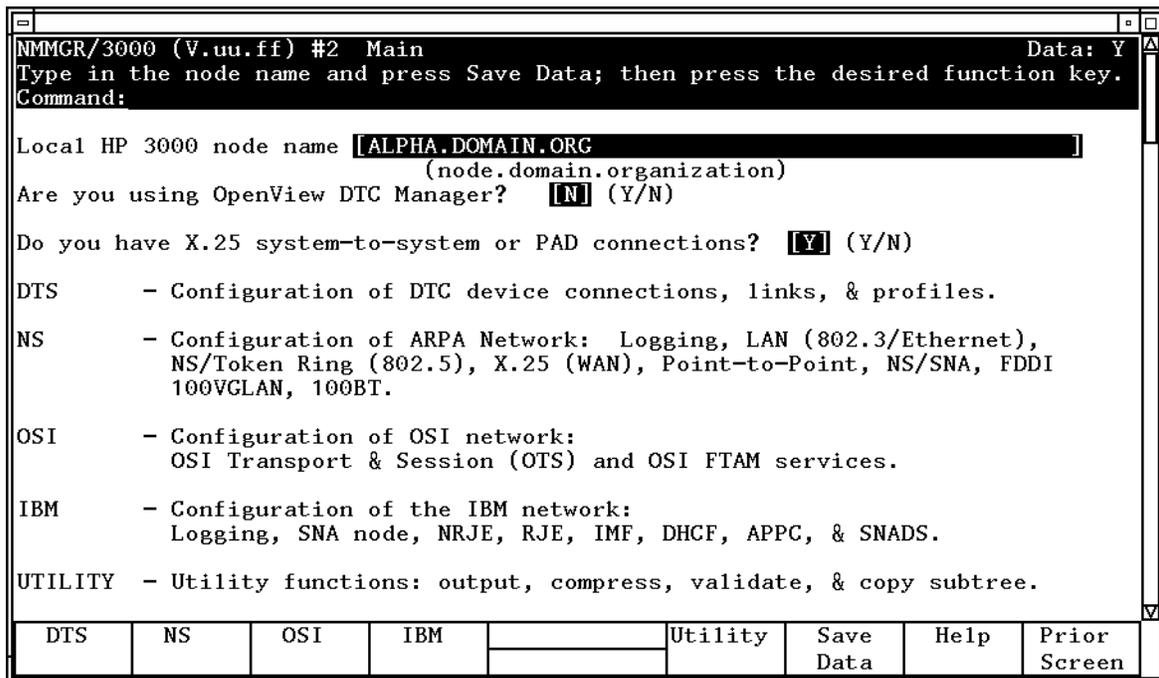
The password is an optional feature. If a password has been assigned, you must enter it in the password field to update the configuration file. It is possible to open the file without using an assigned password, but the file will be in read only mode and NMMGR will not accept any changes.

If a password has not been assigned, you should ignore the password field. If you want to assign a password for the system you are configuring, refer to *Using the Node Management Services (NMS) Utilities* manual.

### Step 3: Configure the Local Node Name

The Main screen is displayed after you press the **[Open Config]** key (Figure 3-2). This screen lets you specify the HP 3000 host's name. It also asks whether you are using the HP 3000 host or an OpenView Windows Workstation (PC) for DTC management, and if you are using X.25 or PAD.

**Figure 3-2 Main Screen**



1. Assign a node name to the HP 3000 host in the "Local HP 3000 node name" field. Use the format *nodename.domain.organization*.

If your HP 3000 host is the only computer in your network, you may enter any node name. If you have several computers on your network, you must make sure the node names for each host are unique.

2. In the field after the question, "Are you using the OpenView DTC Manager?", enter an N.

This means that you will **not** use the OpenView DTC Manager (that is, use a PC to manage your DTCs).

Instead, you will use the HP 3000 host to manage your DTCs. If you specify "Y" for using OpenView DTC Manager refer to the *Configuring Systems for Terminals, Printers, and Other Serial Devices* manual.

3. In the field after the question, "Do you have X.25 system-to-system or PAD connections?", enter an Y for yes.
4. After you enter the information on the screen, press the [Save Data] function key to save your entries.
5. After the data is saved (the Data flag in the upper right-hand corner is Y), press the [DTS] function key.

## Fields

Local HP 3000

node name The local HP 3000 node name is the name by which the HP 3000 Series 900 computer is known in the network. The format of a node name is *nodename.domain.organization* where the total number of characters is 50 or fewer, and each field contains 16 or fewer characters (alphanumeric, underscore, or hyphens). The first character of each field must be alphabetic.

The *nodename* portion of each node name must be unique within the node's network. The *nodename.domain* portion of each node name must be unique within the internetwork. HP recommends that all nodes on the network be assigned the same domain and organization.

Assign meaningful node names. For example, *MKTG.ITG.HP* and *LAB.ITG.HP* are meaningful names for two nodes on the same Local Area Network (LAN) within Hewlett Packard. One node (*MKTG.ITG.HP*) is used by the marketing department. The other node (*LAB.ITG.HP*) is used by the lab. The *domain* field is the same because the nodes belong to the same network. The *organization* field is the same because the nodes belong to the same internetwork.

Are you using  
OpenView DTC  
Manager?

If you answer yes (Y) to this question, NMMGR assumes you are using a PC to manage your system and takes you to the corresponding set of screens. If you answer no (N), NMMGR assumes you are using host-based network management and takes you to the set of screens required for host configuration. If you are using this manual, you should enter an N in response to this question. (If you *are* using a PC to manage your network, see *Configuring Systems for Terminals, Printers, and Other Serial Devices* for the correct configuration procedures.)

Do you have  
X.25 system-to-  
system or PAD  
connections?

If you answer yes (Y) to this question, NMMGR assumes you are configuring X.25 connections and takes you to the set of screens required to configure DTC X.25 Network Access Cards. If you answer no (N), NMMGR assumes you have no need to configure X.25 connections and takes you to a different set of screens. If you are using this manual, you should enter a Y in

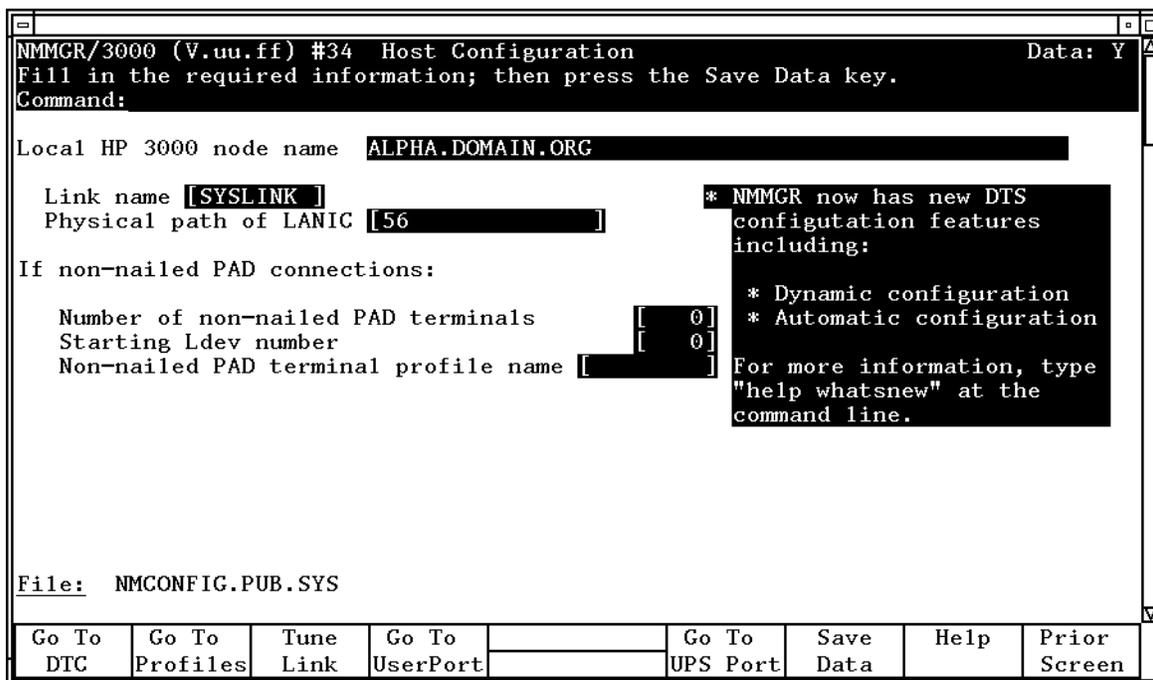
response to this question. (If you are *not* configuring X.25 connections, see *Configuring Systems for Terminals, Printers, and Other Serial Devices* manual for the correct configuration procedures.)

### Step 4: Configure the Link

The Host Configuration screen is displayed when you press the [DTS] function key at the Main screen (Figure 3-3).

This screen is used to configure the Datacommunications and Terminal Subsystem (DTS) on the HP 3000. DTS defines the interaction between the system and any asynchronous devices, such as terminals and printers.

**Figure 3-3 Host Configuration Screen (Host-Based)**



1. "Local HP 3000 node name" is a display-only field. Verify that it is correct.
2. The "Link name" field displays DTSLINK. This is used by the HP 3000 DTS subsystem. Use this default.
3. In the "Physical path of LANIC" field, type the slot number for the LANIC card in the host. See the default list for commonly used slot numbers.

4. Verify that the cursor is in the `Number of non-nailed PAD terminals` field. Type the number of non-nailed PAD terminals, as listed on the worksheets. This is the maximum number of PAD terminals, not configured as nailed PAD terminals, that can logon to the computer.
5. Verify that the cursor is in the `Starting Ldev Number` field. Type in the ldev number where the non-nailed pool should start. The non-nailed PAD devices will be configured with the starting ldev number and higher.

For example, if the number of ldevs is 2 and the starting ldev number is 200, then the non-nailed ldevs would be 200 and 201. If 201 is already configured as a nailed device then the non-nailed devices would be 200 and 202.

6. Verify that the cursor is in the `Non-nailed PAD terminal profile name` field. Type the name of the terminal profile that the non-nailed PAD terminals will use, as listed on the worksheets.
7. Press the **[Save Data]** function key.

Press the **[Go to DTC]** function key to proceed to Step 5: Select DTC Type.

---

**NOTE**

The **[Go To UserPort]** key is used to configure the user port (default ldev 21) on the NIO console. Pressing this key takes you to the HP Support Modem Port Screen for configuring the ldev, the line speed, modem type, and parity of the user port. The configuration of user port is only supported for the NIO LAN console card (for example, HP 3000 Series 9X7 and 9X7 LX). Refer to the *Configuring Systems for Terminals, Printers, and Other Serial Devices* manual for more information on the user port.

---

**NOTE**

The **[Go To UPS Port]** key takes you to the Uninterruptible Power Supply Port Screen. This screen is used to configure the ldev number, line speed, and parity on a port of the SCSI/Console LAN card (default ldev 22) to support an uninterruptible power supply (UPS) connection. This port is only available and supported on HP 3000 Series 9X8 systems. Refer to the *Configuring Systems for Terminals, Printers, and Other Serial Devices* and to *Performing System Manager Tasks* for more information on the UPS.

A UPS can also be connected to a DTC port via a configuration process that does NOT use the **[Go To UPS Port]** key. Refer to the *Configuring Systems for Terminals, Printers, and Other Serial Devices* manual for information on how to connect a UPS to a DTC port.

**Fields**

This screen is used to configure the information that applies to the host system. This information defines the interaction between the system and its asynchronous devices, such as terminals and serial printers.

Local HP 3000  
 node name      For display only. The local node name is configured on the Main screen.

Link name      The link name that will be used when device connections, including PAD device connections, are established. It must start with a letter and can be up to eight alphanumeric characters. (Note that this link name is different from the X.25 link name that you will configure on the X.25 Configuration screen during NS configuration.) The default is DTSLINK

Physical path of LANIC      This is the location of the DTS LANIC in the system's backplane.

The default physical path (slot numbers) for HP 3000 computers are listed below. These defaults optimize performance and use of the computer's cabinet space. Before moving the LANIC into another slot, consult an HP representative.

HP 3000 Systems	Slot Number
920, 922, 935, 932, 935, or 949 with HPIB	4.3
920, 925, 935, or 949 with ALINK	4.2
9X7	56
9X8	56/56
930	8.4
950, 955, 960, 980	2/4.2
990/992, 991/995	0/40

Number of non-nailed PAD terminals      The number of non-nailed PAD terminals that will be allowed to establish connections with this system over an X.25 network.

Other than entering the non-nailed PAD terminal profile name, no additional configuration is needed for non-nailed connections.

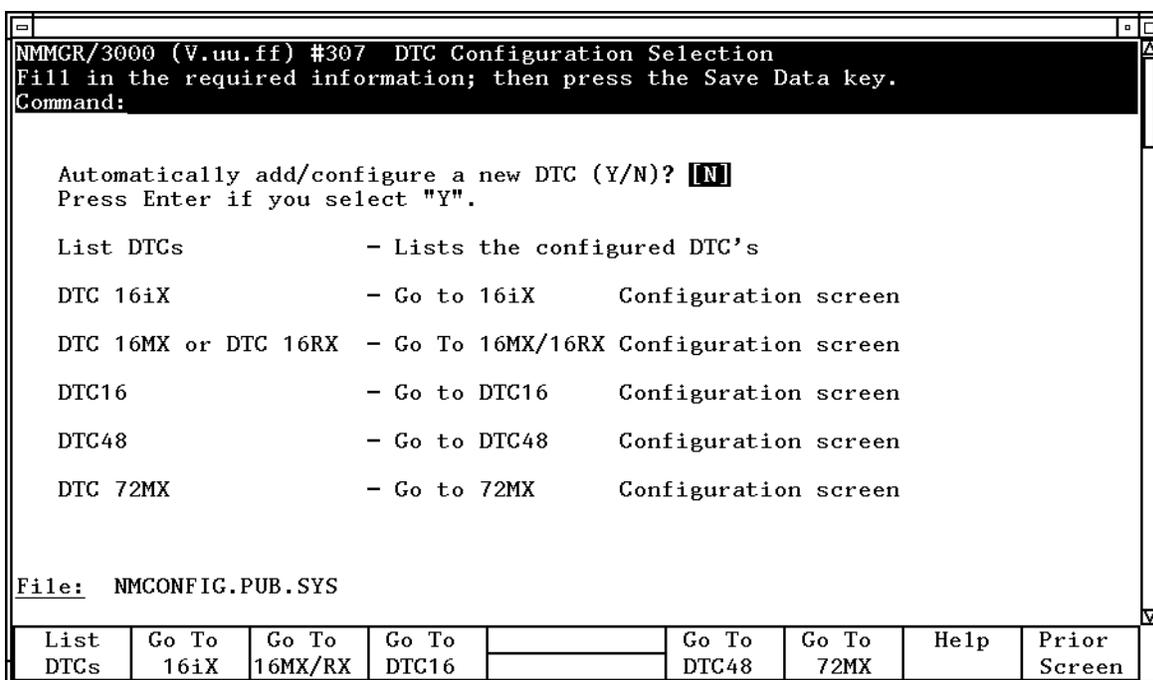
Starting ldev number      The ldev number where the pool of non-nailed PAD ldevs will be configured.

Non-nailed PAD  
 terminal profile  
 name           The terminal profile that will be used for all non-nailed  
                   PAD connections accepted by the system. PAD  
                   terminals must use a profile that defines the terminal  
                   type as terminal type 24.

## Step 5: Select DTC Type

The DTC Configuration Selection screen (Figure 3-4) is displayed when you press the [Go To DTC] key at the Host Configuration screen. Here you specify the type of DTC to configure.

**Figure 3-4**       **DTC Configuration Selection Screen**



1. Select the DTC type by pressing one of the function keys: [DTC16iX], [DTC16MX/RX], [DTC16], [DTC48], or [DTC72MX].

NMMGR will take you to the configuration screen for the specified DTC type.

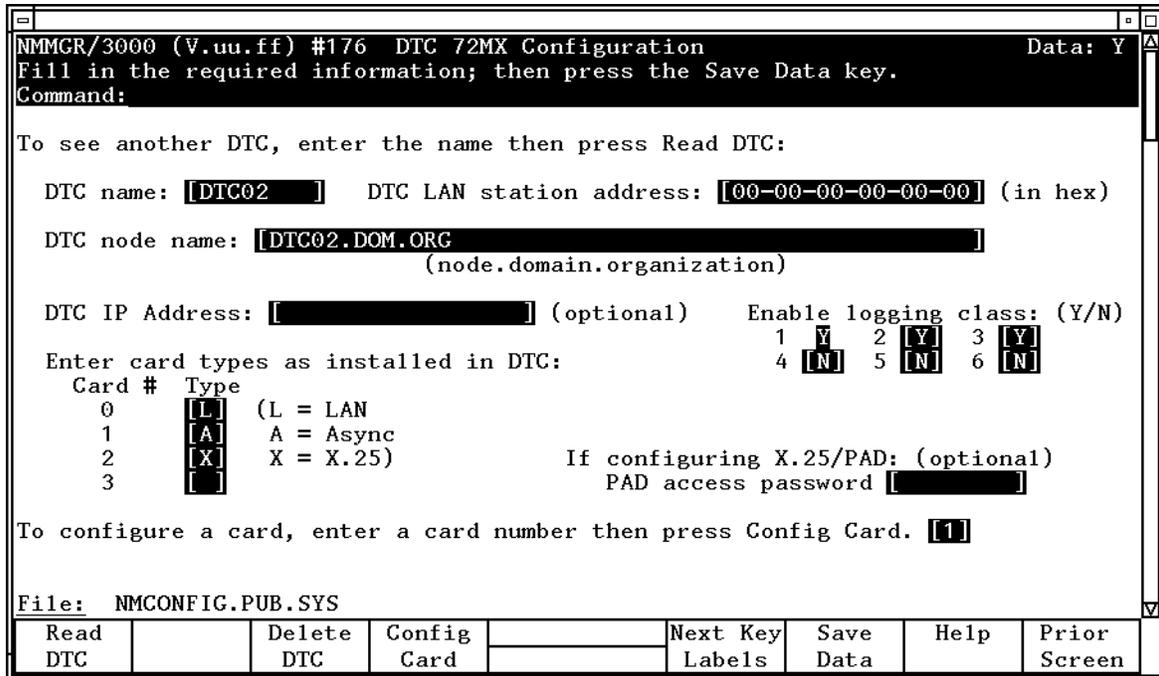
**NOTE**

You may use the [List DTCs] key on the DTC Configuration Selection screen to see a list of all DTC names configured on your system.

## Step 6: Specify DTC Configuration

The DTC Configuration screen is displayed after you select the DTC type at the DTC Configuration Selection screen. Figure 3-5 shows the DTC Configuration screen for a DTC 72MX. (DTC Configuration screens for DTC 16iX, DTC 16MX/RX, DTC 16, and DTC 48 vary slightly).

**Figure 3-5 DTC Configuration Screen**



1. Enter the DTC's name in the "DTC name" field.

The DTC name can be up to eight alphanumeric characters, beginning with a letter. *The DTC name must be unique on the system.* It is acceptable (and common) to use the *nodename* part of the "DTC node name" as the "DTC name".

2. Enter the DTC's LAN address in the "DTC LAN station address" field.

The LAN address can be found on a label inside the front cover or on the back panel of the actual DTC box.

For DTC 16RX access to an HP 3000 in an MPE/iX host-based management environment, you **must** use the value 00-00-00-00-00-00 as the DTC 16RX LAN address.

3. Type in the DTC's node name in the "DTC node name" field.

Use the format *nodename.domain.organization*, where *nodename* identifies the DTC. If there is more than one DTC on the network, the *nodename* of each DTC must be unique. The following are examples of valid DTC node names on the same network:

ALPHA.ACCTG.TEKLAB

BETA.ACCTG.TEKLAB

Note that "DTC name" and "DTC node name" are two different fields. However, it is acceptable (and common) to use the *nodename* part of the "DTC node name" as the "DTC name", such as:

DTC name = ALPHA

DTC node name = ALPHA.ACCTG.TEKLAB

4. (Optional) Enter an IP address for the DTC, if you want this DTC to be able to respond to PING/iX requests. Otherwise, leave the "DTC IP Address" field blank.

For DTC 16RX access to an HP 3000 in an MPE/iX host-based management environment, the IP address of the DTC 16RX is configured using the DTC 16RX Manager on the HP 9000 host and not on the HP 3000. Any value entered for the DTC 16RX in this field will be ignored.

Refer to Chapter 2, "Introductory Screens," for more information on IP addresses.

5. Enable the event logging classes that you want. It is recommended that you enable classes 2 and 3 and disable classes 4 through 6. See "DTC Event Logging" in Chapter 2, "Introductory Screens," for information on these event logging classes.

Note that logging class 1 is not configurable and is always enabled.

Event logging classes do not apply for access to an HP 3000 in an MPE/iX host-based management environment using a DTC 16RX; any values entered in these fields for the DTC 16RX will be ignored.

6. Verify that the cursor is in the "Type" field under "Enter card types as installed in the DTC." Enter the card type for each card in the DTC. The valid card types are listed on the screen.

Note that DTC 16iX/16MX/16RX does not have cards since its port connectors are built directly onto the DTC backplane.

Refer to Chapter 2, "Introductory Screens," for more information on card types for each DTC.

7. (Optional) Enter a password if you wish to require the users to provide a password when they attempt to establish a communication link to this DTC via a PAD device. The syntax that the user would use is described in PAD Profiles and Access Password in Chapter 4, "Terminal and Printer Profiles,"

Refer to Chapter 4, "Terminal and Printer Profiles," for the syntax that the user will enter at the PAD prompt to supply the password.

8. Press the **[Save Data]** function key.
9. To configure a card in the DTC, enter the number of the card you want to configure in the "To configure a card, enter a card number . . ." field at the bottom of the screen.

Press the **[Config Card]** function key. Proceed to Step 7: Configure DTC Cards.

To configure the ports on a DTC 16iX/16MX/16RX, simply press the **[Config Ports]** function key. Proceed to Step 7: Configure DTC Cards.

10. Repeat steps 1 through 9 above for every newly-added DTC to be managed by the HP 3000 host. If you want to select a DTC that has already been configured, enter the DTC's name in the DTC name field and press the **[Read DTC]** function key.

### Next Key Labels

When the **[Next Key Labels]** key is pressed, another set of key labels are displayed, this allows additional optional information to be configured for the DTC. Refer to *Configuring Systems for Terminals, Printers and Other Serial Devices* manual. These keys provide access to the following configuration screens:

DNS/IP Routing	This key goes to a screen used to configure the DTC to use Domain Name Services for IP address resolution and IP routing configuration. These services are configured when <b>back-to-back</b> connection through routers are used or connections are to be made from DTC ports to HP 9000s or third party ARPA nodes.
Tune DTC	This key goes to a screen to change the AFCP, TCP and management timers for the DTC, if needed.
DTC U I	This key goes to a screen that has information that defines how the DTC user interface behaves. The DTC user interface is used when a DTC port is configured as a switched port.
Config SNMP	You may use the <b>[Config SNMP]</b> key on the DTC Screen to configure the DTC to act as an SNMP agent. This key goes to a screen to configure the DTC to act as an SNMP agent. Refer to the <i>DTC Technical Reference Guide</i> for more information on SNMP.

### Fields

This screen is used to configure a DTC's name and node name, to specify the card types that are installed in the DTC, and to configure logging for X.25 connections, if the DTC contains one or more DTC/X.25 Network Access cards.

DTC name           A name, up to eight alphanumeric characters, beginning with a letter, assigned to the DTC. For convenience, you may want to use the *nodename* portion of the DTC node name as the DTC name. Each DTC configured on the system must have its own unique DTC name.

You can call up (and modify) data for a previously configured DTC by entering an existing DTC name in the DTC name field and pressing the [Read DTC] key.

DTC LAN station address           The local station address of the DTC. This is a twelve character hexadecimal number. Each DTC's LAN station address is printed inside the DTC's front cover on a DTC48, or on the back panel of the DTC72MX or DTC16MX/iX/RX.

DTC node name           The fully qualified node name of the DTC, in the form *nodename.domain.organization*. Each part of the name can be up to 16 characters.

DTC IP Address (Optional)       The internet protocol (IP) address of the DTC being configured. An example of an address is: C 192.191.191 009. The IP address is optional for the DTC, but one must be configured if the DTC is to be able to respond to PING requests.

Enable logging class (Y/N)           These fields, labeled 1 through 6, enable the DTC to log various classes of events. Enter a Y to enable a class, N to disable. Only events falling into classes which you have explicitly enabled will be logged. Class 1 events are the most critical and will always be logged. Note that enabling class 5 will result in a substantial number of events being logged. HP suggests that you enable class 5 only when necessary and only for short periods of time. You should also avoid enabling logging class 5 simultaneously with an X.25 trace.

Type (of card)           The type of card installed in the DTC. Verify that the cursor is in the "Type" field under "Enter card types as installed in DTC." Enter the card type for each card in the DTC. The valid card types are listed on the screen.

PAD access  
password  
(optional) A password, up to eight alphanumeric characters in length, that will be required when users connected to this DTC via a PAD device attempt to establish a communication link.

To configure  
a card, enter  
a card number  
then press  
Config Card This parameter determines the next screen that will appear after you have saved the data configured on the screen. Enter the number of the card you want to configure and press the [Config Card] key.

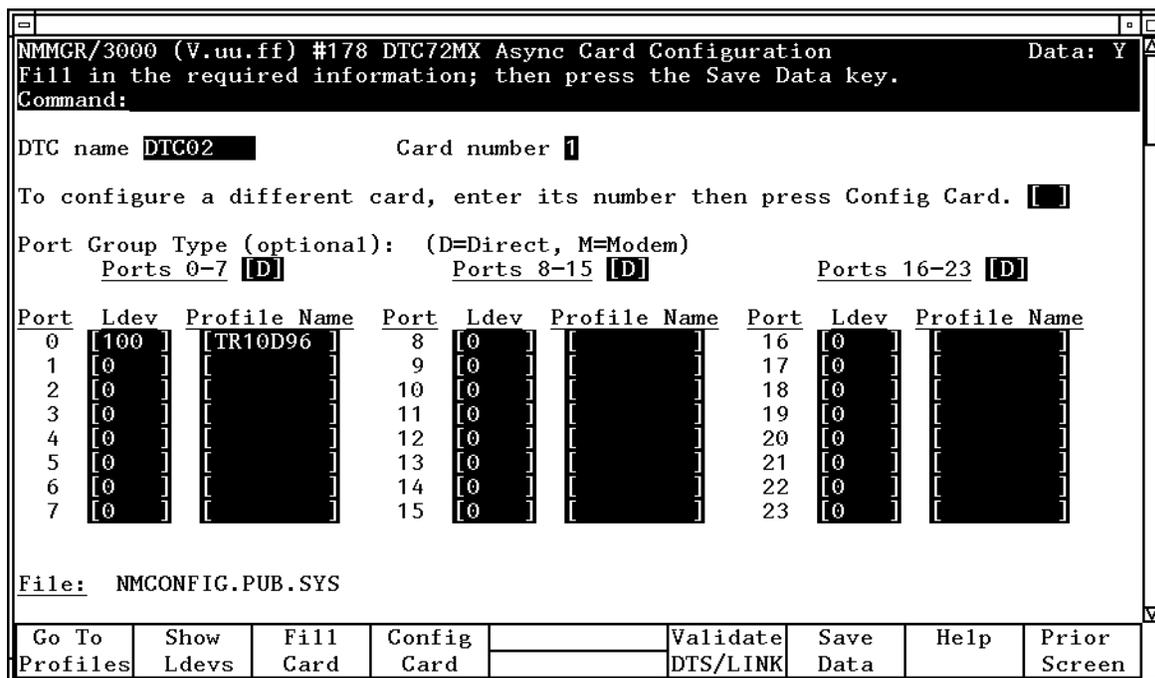
## Step 7: Configure DTC Cards

When you press the [Config Card] key at the DTC Configuration screen, NMMGR will display the corresponding card configuration screen for the specified card in the DTC. Figure 3-6 shows an example of a Card Configuration screen for DTC 72MX for asynchronous connect card. (Screens vary slightly for DTC 16iX/16MX/16RX, DTC 16, and DTC 48).

The corresponding screen for a DTC 16iX/16MX/16RX is called a Port Configuration Screen since DTC 16iX/16MX/16RX has port connectors built directly onto the backplane and does not have connector cards.

Use this screen to configure the ports in the specified card. On this screen, logical device (ldev) numbers and profile names are associated with individual ports on the card.

**Figure 3-6 DTC Card Configuration Screen**



1. Verify that the DTC name and card number displayed are correct.
2. (Optional) Enter the port group type. The valid types are D for direct connect and M for modem connect. The default is D.
3. Press the [Tab] key to move the cursor to the first port on the card. Enter an ldev number for this port in the "Ldev" field.

Ldev numbers used for each port on the DTC must be unique.

For example, you can use ldev number 100 for port 0 of the first card, and increment the ldev number by 1 for each consecutive port.

So a DTC 72MX with 3 asynchronous cards (a total of 72 ports) would be assigned ldev numbers 100 through 123 for the 24 ports on the first card, 124 through 147 for the ports on the second card and 148 through 171 for the ports on the third card.

For the second DTC, you would start with an ldev number greater than 171.

**NOTE**

Pressing the [Show Ldevs] key will display a list of all the ldev numbers configured in NMMGR in addition to the DTC name, card type, and profile name.

4. Enter the profile name for each port in the "Profile Name" field.  
 A profile for the port defines the characteristics of the device to be connected to that port.

For direct terminal ports, the suggested profile to use is TR10D96. For direct printer ports, the suggested profile to use is PR18D96 (or PR22D24 for HP printers with status checking). For a UPS connected to a DTC port, the suggested profile is UP10D12.

See the Tables in Chapter 4, "Terminal and Printer Profiles," to list terminal, printer and UPS profiles supplied by the system. You may also create your own profiles. Refer to Chapter 4, "Terminal and Printer Profiles," for more information on profiles.

5. Repeat above two steps for every port in this card.

---

**NOTE**

To reduce typing ldev numbers and profiles on the screen, you can use the **[Fill Card]** key to automatically assign ldev numbers and profile names. First, enter an ldev number (and profile name if you do not wish to use the default profile name) for port 0, then press **[Fill Card]**; the system will automatically assign incremental ldev numbers to each subsequent port on the screen and copy the specified profile for each port. The system will automatically save the data it has entered.

The **[Clear Display]** key on your keyboard will clear the part of your screen that is below the cursor position. You may use this key and the **[Fill Card]** key to quickly modify a screen.

6. Press the **[Save Data]** function key to save the data on the screen.

---

**CAUTION**

Before you exit this screen, make sure you press **[Save Data]** if you want to keep the data on the screen; otherwise your screen input will be lost. This occurs even if you temporarily exit the screen to read **[Help]** information.

7. To configure another card in the DTC, use the cursor keys to move to the field on the screen: "To configure a different card, enter its number, ...". Enter the card number of the card you want to configure.
8. Press the **[Config Card]** function key. The corresponding screen for the card number entered in the last step will be displayed.
9. If all the cards have been configured, press the **[Prior Screen]** function key to return to the DTC Configuration Selection screen to select another DTC to configure. Otherwise, if every DTC has been configured, press the **[Validate DTS/LINK]** function key to validate the configuration file.

---

**NOTE**

NMMGR allows the configuration of up to 4649 terminal I/O devices. The largest valid ldev number allowed is 4679.

---

**Fields**

This screen is used to permanently associate ldev numbers and profile names with individual ports on the direct connect card.

DTC name      Display only.

Card number **Display only.**

Port Group  
Type  
(Optional)    The valid type are **D** for direct connect and **M** for modem connect. The default is **D**.

Ldev            The logical device (ldev) number to be associated with the port. Each ldev number must be unique; it may not be duplicated by any other device configured on the system.

Profile Name    The terminal or printer profile name to be associated with the port. The features defined by the profile must correspond to the actual operating features of the port and its attached device.

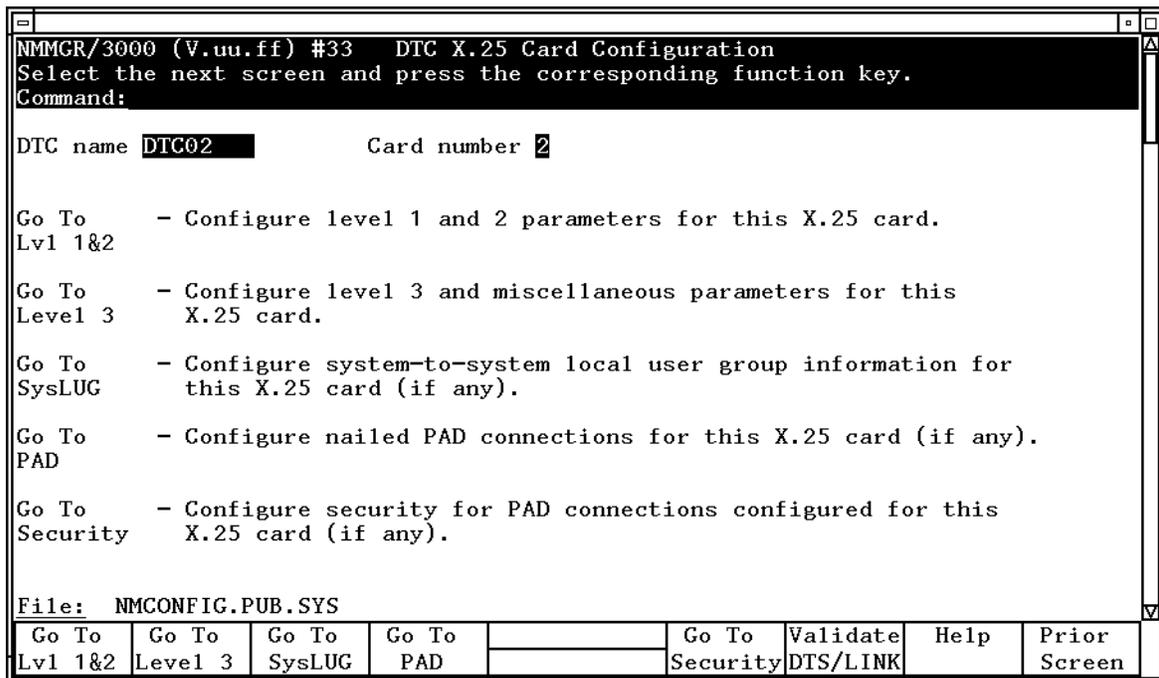
To configure  
a different  
card, enter  
its number;  
then press

Config Card    The card that you want to configure next. Use this parameter in combination with the **[Config Card]** key to select and move to a different card in the same DTC. For example, after card 0 is configured, enter a 1 in this field and press the **[Config Card]** key to move to the configuration screen for card 1.

## Step 8: Configure X.25 Connections

NMMGR displays the DTC X.25 Card Configuration screen (Figure 3-7) if you press the **[Config Card]** key at the DTC Configuration screen (or at a different card configuration screen) with the card number of a DTC/X.25 Network Access card in the Config Card field. From this screen, you move to the screens that let you configure DTC values for X.25 system-to-system and PAD connections.

**Figure 3-7 DTC X.25 Card Configuration Screen**



1. Choose the screen that you want to move to. To create a new card configuration, go to the screen that lets you configure level 1 and 2 parameters first. (If you are modifying an existing card configuration, you may choose to move to one of the other choices listed on the screen.)
2. Press the function key that corresponds to the screen that you want to move to.

**Fields**

This screen is used to select and move to the lower level DTC/X.25 Card Configuration screens. The function keys available for selection and the corresponding lower level screens are shown below:

Go to	
Level 1&2	Takes you to the DTC X.25 Card Configuration — Level 1 and 2 screen. Use this screen to configure level 1 and 2 network parameters. Most of the information you enter on this screen will be on the subscription form for the packet switched network you are connecting to. You must enter level 1 and 2 parameters for all DTC/X.25 Network Access cards whether they support X.25 system-to-system connections, PAD connections, or both.

- Go to  
Level 3 Takes you to the DTC X.25 Card Configuration — Level 3 & Miscellaneous screen. Use this screen to configure level 3 network values and to specify a maximum number of PAD connections (if the card is to support PAD connections). Most of the information you enter on this screen will be on the subscription form for the packet switched network you are connecting to. You must enter level 3 parameters for all DTC/ X.25 Network Access cards whether they support X.25 system-to-system connections, PAD connections, or both.
- Go to SysLUG Takes you to the DTC X.25 Card Configuration — Sys-to-Sys LUGs screen. Use this screen to configure the X.25 link name, the maximum number of switched virtual circuits, and local user group information the DTC will need in order to support X.25 iX System Access (NS system-to-system links). Information entered on this screen must not conflict with information entered during NS link configuration. (Configure information on this screen only if you are configuring X.25 system-to-system connections.)
- Go to PAD Takes you to the DTC X.25 Card Configuration — Nailed PAD Connections screen. Use this screen to configure information the DTC will need in order to support terminals and printers with permanently assigned ldev numbers (nailed devices) over PAD connections. (Configure information on this screen only if you are configuring nailed PAD connections.)
- Go to  
Security Takes you to the DTC X.25 Card Configuration — PAD Security screen. Use this screen to configure security if you want to allow or disallow PAD access from specific X.25 calling addresses. (Configure information on this screen only if you are configuring PAD and want to implement PAD security.)

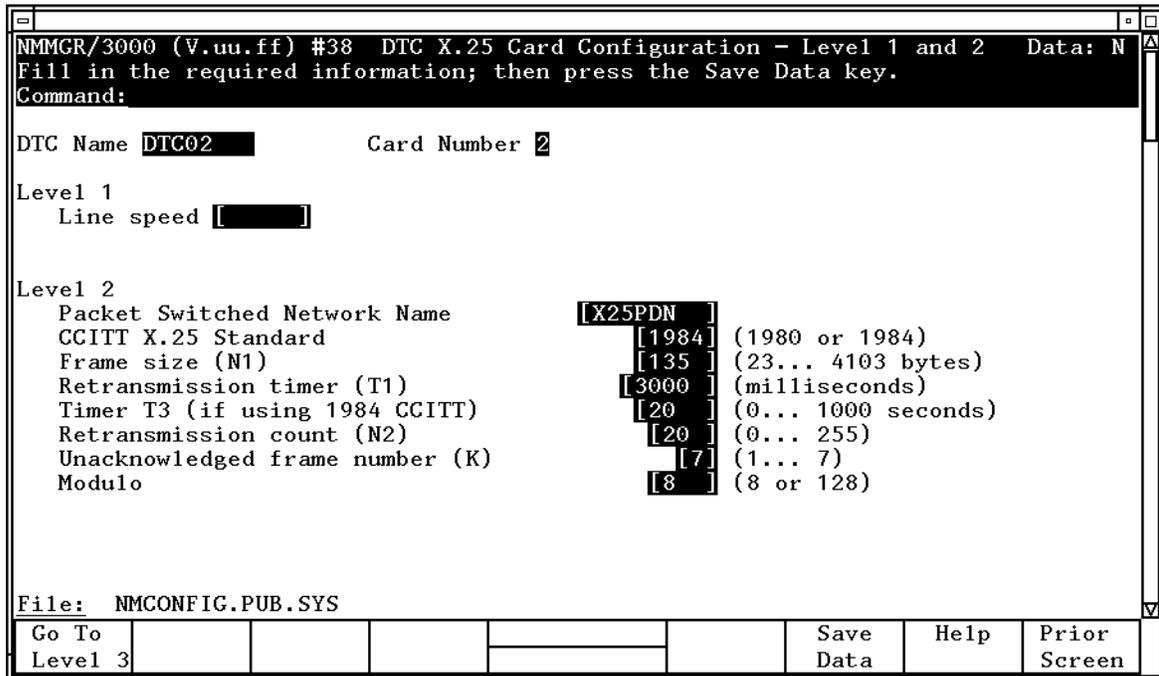
## Step 9: Configure X.25 Level 1 and 2

NMMGR displays the DTC X.25 Card Configuration — Level 1 and 2 screen (Figure 3-8) if you press the [Go To Lvl 1&2] key at the DTC X.25 Card Configuration screen. On this screen, you enter level 1 and 2 values for the X.25 card being configured. You must configure these

values for both system-to-system access and for PAD access. You can also reach this screen by typing the following path at the Command line and pressing the [ENTER] key:

```
@DTS.DTC.SELECT.dtcname.X25CARDn.LEVEL12
```

**Figure 3-8 DTC X.25 Card Configuration — Level 1 and 2 Screen**



1. Verify that the cursor is in the Line speed field. Enter the line speed for the DTC/X.25 Network Access card as specified by your network subscription.
2. Verify that the cursor is in the Packet Switched Network Name field. Enter the name of the network you subscribe to.
3. Verify that the cursor is in the CCITT X.25 Standard field. Enter the X.25 standard you are using.
4. Verify that the cursor is in the Frame size (N1) field. Enter the frame size as specified by your network subscription.
5. Verify that the cursor is in the Retransmission timer (T1) field. Enter the value for the retransmission timer as specified by your network subscription.
6. If you are using the 1984 standard, verify that the cursor is in the Timer T3 field. Enter the value for this timer as specified by your network subscription. If you are using the 1980 standard, skip this field (press [TAB] to move to the next field).

7. Verify that the cursor is in the `Retransmission count (N2)` field. Enter the value for the retransmission count as specified by your network subscription.
8. Verify that the cursor is in the `Unacknowledged frame number (K)` field. Enter the value for the number of frames that can be transferred without acknowledgment as specified by your network subscription.
9. Verify that the cursor is in the `Modulo` field. Enter the modulo value as specified by your network subscription.
10. When you have entered all level 1 and 2 values as specified by your subscription, press the **[Save Data]** key to save the configuration.
11. Press the **[Go To Level 3]** key to move to the DTC X.25 Card Configuration — Level 3 & Miscellaneous screen.

## Fields

You use this screen to configure X.25 level 1 and 2 parameters for the DTC/X.25 Network Access card being configured. You must define these parameters for both X.25 system-to-system and PAD connections. Ranges for configurable values are listed on the screen.

DTC Name      Display only.

Card Number   Display only.

Line speed    The line speed for the connection. Supported speeds for a card installed in a DTC16 are 1200, 2400, 4800, 9600, or 19200 bps. Supported speeds for a card installed in a DTC48 or DTC72 are 1200, 2400, 4800, 9600, 19200, 48000, 56000, or 64000 bps.

Packet  
Switched

Network Name The name of the network you subscribe to. Possible network names include: DATAPAC, PSS, DATEX-P, TRANSPAC, TYMNET, TELENET, DDN, HP PPN, ITAPAC, LUXPAC, DATANET1, DCS, DCE, X25PDN. (The name must be entered exactly as shown here.)

If two X.25 systems are directly connected (for example, if you have a cable connecting one DTC X.25 card directly to another DTC X.25 card) one of the two systems must be configured as DCE and the other as DTE. To configure a card as DCE, enter `DCE` in the `Packet Switched Network Name` field. To configure a card as DTE, enter `X25PDN` in the `Packet Switched Network Name` field. (Entering `DCE` configures the X.25 card as a DCE at levels 2 and 3 of X.25. At level 1 it remains DTE.)

CCITT X.25 Standard	Version of the CCITT X.25 standard you are using, either 1980 or 1984.
Frame size (N1)	The frame size, in bytes, as listed on your subscription. Note that many network subscription forms give this value in bits, not bytes. In such cases, divide the number of bits by 8 to obtain the correct number of bytes to enter in this field.  Range: 23 to 4103 bytes.
Retransmission timer (T1)	Time, in milliseconds, the transmitting node waits before retransmitting an unacknowledged frame. The default of 3000 milliseconds is adequate for most installations.  Range: 1000 to 12000 milliseconds.
Timer (T3)	This value is required only if you are using the 1984 CCITT standard. Specifies the time a link will remain idle before it is automatically reset. The value of T3 must be greater than T1. The default is 20 seconds.  Range: 0 to 1000 seconds.
Retransmission count (N2)	The number of times a frame is retransmitted before an error is indicated. The default is 20 times.  Range: 0 to 255.
Unacknowledged frame number (K)	The maximum number of frames which can be transmitted without acknowledgment from the network.  Range: 1 to 7.
Modulo	The counting cycle for the send frame sequence number.  Range: 8 or 128.

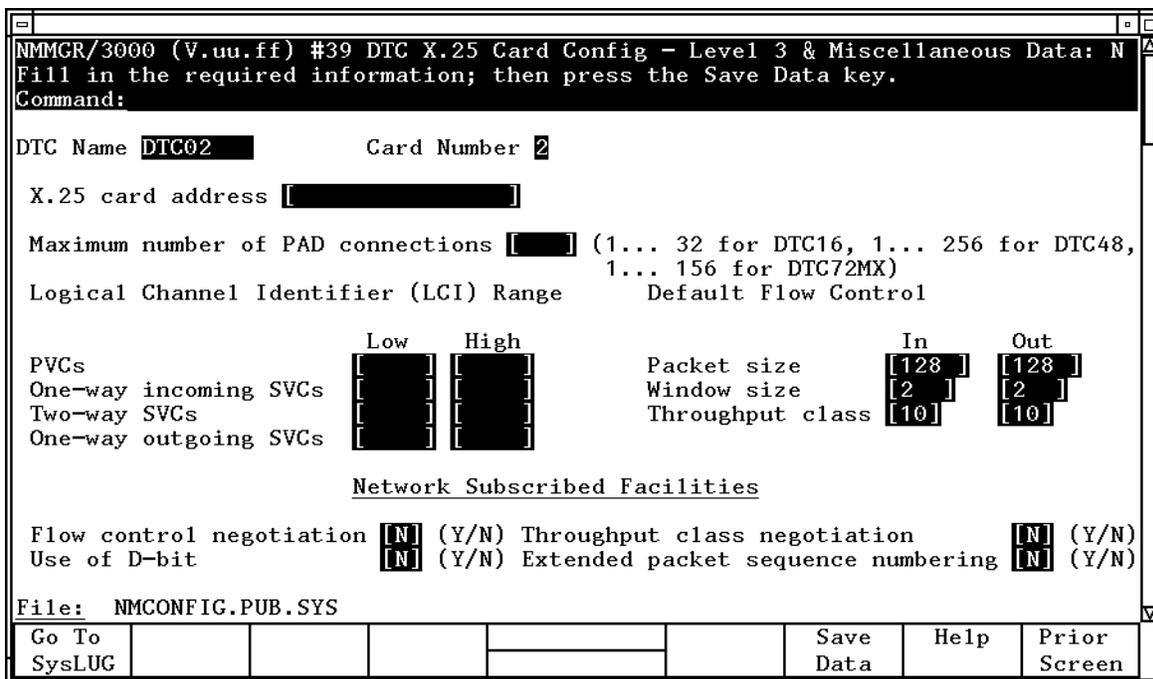
## Step 10: Configure X.25 Level 3 and Miscellaneous

NMMGR displays the DTC X.25 Card Configuration — Level 3 & Miscellaneous screen (Figure 3-9) if you press the [Go To Level 3] key at the DTC X.25 Card Configuration screen or the DTC X.25 Card Configuration — Level 1 and 2 screen. On this screen, you configure level 3 values for this X.25 card. You also configure an X.25 card

address and the maximum number of PAD connections that will be allowed if PAD is supported. You must configure the level 3 values for both system-to-system access and for PAD access. You can also reach this screen by typing the following path at the Command line and pressing the [ENTER] key:

```
@DTS.DTC.SELECT.dtcname.X25CARDn.LEVEL3
```

**Figure 3-9 DTC X.25 Card Configuration — Level 3 & Miscellaneous Screen**



1. Verify that the cursor is in the X.25 card address field. Enter the address that will be appended to outgoing PAD calls. If no address should be sent in call request packets, leave this field blank.
2. Verify that the cursor is in the Maximum number of PAD connections field. Enter the maximum number of PAD connections that will be allowed through this card. Remember that this number must include both nailed and non-nailed PAD connections. If PAD will not be configured, leave this field blank.
3. Use the [TAB] key to move to the Logical Channel Identifier (LCI) Range fields. Enter high and low values for the permanent virtual circuits (PVCs) or switched virtual circuits (SVCs) you are configuring per your network subscription. At least one pair **must be configured**. Leave the fields blank for any PVC or SVC types that are not configured.
4. Use the [TAB] key to move to the Default Flow Control fields. Enter In and Out values according to your network subscription.

5. Use the **[TAB]** key to move to the Flow control negotiation field. Enter **Y** to enable or **N** to disable according to your subscription.
6. Use the **[TAB]** key to move to the Throughput class negotiation field. Enter **Y** to enable or **N** to disable according to your subscription.
7. Use the **[TAB]** key to move to the Use of D-bit field. Enter **Y** to enable or **N** to disable according to your subscription.
8. Use the **[TAB]** key to move to the Extended packet sequence numbering field. Enter **Y** to enable or **N** to disable according to your subscription.
9. When you have entered all level 3 values as required by your subscription, press the **[Save Data]** key.
10. Press the **[Go To SysLUG]** key to move to the DTC X.25 Card Configuration — Sys-to-Sys LUGs screen.

## Fields

You use this screen to configure X.25 level 3 and miscellaneous parameters for the DTC/X.25 Network Access card being configured. You must define the level 3 parameters for both X.25 system-to-system and PAD connections.

DTC Name      Display only.

Card Number    Display only.

X.25 card address      A calling address appended to outgoing calls. Used for programmatic access to PAD devices. Also used for network loopback test. For most network applications, this is the same as the address used for X.25 system-to-system communications.

Note that with certain networks (such as Transpac, in France) the called address is removed from incoming call packets and the calling address is added to outgoing call packets by the network. For these networks, enter only the subaddress in this field, not the full X.25 address.

Maximum number of PAD connections      Number of PAD connections that you will allow at any given time through the card being configured. The maximum number of connections that can be allowed are: For DTC16 the maximum is 32, for DTC48 the maximum is 256 and for DTC72MX the maximum is 156. Note that this number specifies the limit for *all* PAD calls through this card, including both nailed and non-nailed connections.

In determining how many PAD connections to allow, keep in mind that PAD connections use SVCs, out of the pool of available SVCs. The same pool of SVCs is used for system-to-system connections if system-to-system connections are also configured for this card. You will need to balance your PAD support requirements with you system-to-system requirements to find the optimum configuration for your network.

PVCs Low and high values for permanent virtual circuits as listed on your X.25 subscription.

One-way incoming SVCs Low and high values for one-way incoming switched virtual circuits as listed on your X.25 subscription.

Two-way SVCs Low and high values for two-way (incoming and outgoing) switched virtual circuits as listed on your X.25 subscription.

One-way outgoing SVCs Low and high values for one-way outgoing switched virtual circuits as listed on your X.25 subscription.

Packet size Size of packet, in bytes, for incoming and outgoing data as listed on your X.25 subscription. Note that for X.25 cards on which you intend to configure PAD support, the subscribed and configured packet size must be 128, 256, or 512 bytes.

Window size Window size for incoming and outgoing data as listed on your X.25 subscription.

Throughput class Throughput class values for incoming and outgoing data. Values depend upon the speed of the link, as follows:

Throughput class	Line Speed
7	1200
8	2400
9	4800
10	9600
11	19200
12	48000

Flow control negotiation Specifies whether or not flow control negotiation is enabled. When flow control negotiation is enabled, both packet size and window size are negotiable. Enter Y if your subscription allows flow control negotiation and you wish to enable it. Otherwise enter N.

Use of D-bit Specifies whether or not delivery confirmation is enabled. Enter Y if your subscription allows delivery confirmation and you wish to enable it. Otherwise enter N.

Throughput class negotiation Specifies whether or not throughput class negotiation is enabled. Enter Y if your subscription allows throughput class negotiation and you wish to enable it. Otherwise enter N.

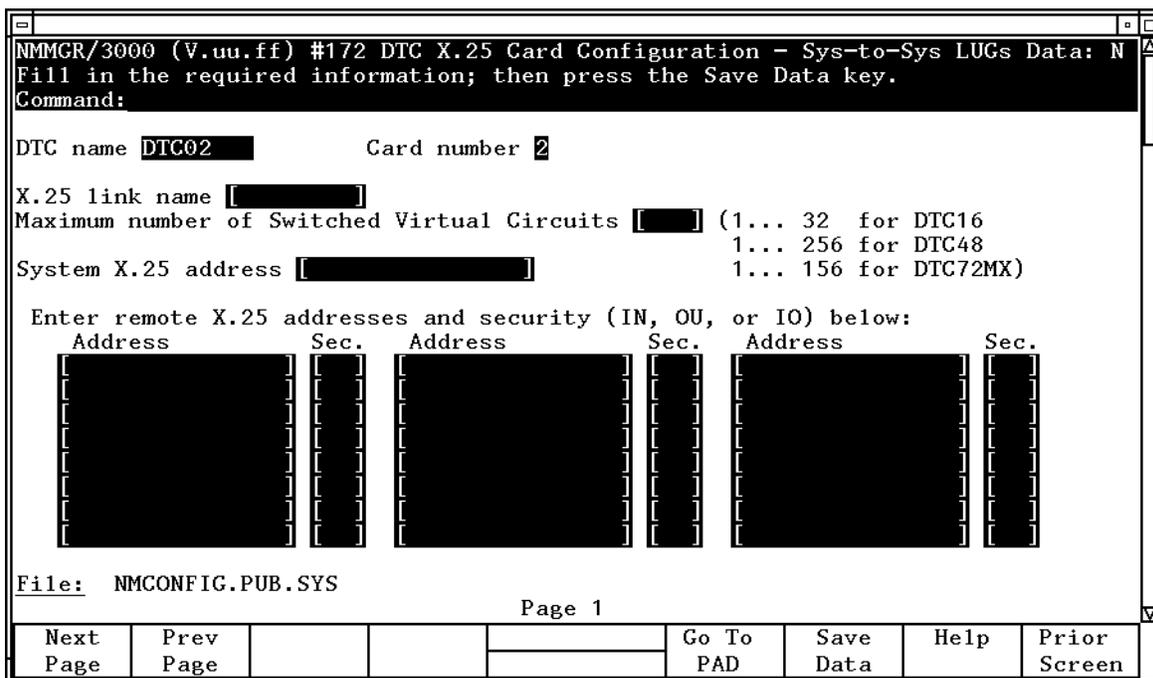
Extended packet sequence numbering Specifies whether or not extended packet sequence numbering is enabled. Enter Y if your subscription allows extended packet sequence numbering and you wish to enable it. Otherwise enter N.

## Step 11: Configure X.25 System-to-System Information

NMMGR displays the DTC X.25 Card Configuration — Sys-to-Sys LUGs screen (Figure 3-10) if you press the **[Go To SysLUG]** key at the DTC X.25 Card Configuration screen or the DTC X.25 Card Configuration — Level 3 & Miscellaneous screen. On this screen, you specify information for X.25 system-to-system connections. You can also reach this screen by typing the following path at the Command line and pressing the **[ENTER]** key:

```
@DTS.DTC.SELECT.dtcname.X25CARDn.SYSLUG
```

**Figure 3-10 DTC X.25 Card Configuration — Sys-to-Sys LUGs Screen**



1. Verify that the cursor is in the X.25 link name field. Enter the link name that will be used for X.25 iX System Access (X.25 system-to-system connections) for this DTC/X.25 Network Access card. **This link name must be the same as the link name configured on the X.25 Configuration screen during NS configuration** (see Chapter 6, "Configuring X.25 Links Step-by-Step.")
2. Move the cursor to the Maximum number of Switched Virtual Circuit field. Enter the maximum number of SVC connections that will be supported for this card.
3. Move the cursor to the System X.25 address field. Enter the same X.25 address as entered in the X.25 card address field on the Level 3 and Miscellaneous screen *unless your network application requires the address used for X.25 system-to-system communications to be different from that used for PAD communications*. If the addresses must be different, enter the X.25 address that the local system will use for system-to-system connections in this field.

Note that with certain networks (such as Transpac, in France) the called address is removed from incoming call packets and the calling address is added to outgoing call packets by the network. For these networks, enter only the subaddress in this field, not the full X.25 address.

4. Move the cursor to the first Address field under Enter remote X.25 addresses and security. Enter the X.25 address of a system that will be able to establish a system-to-system connection with the HP 3000 Series 900 you are configuring.
5. Move the cursor to the Sec. field next to the address you just entered. Enter the security level for connections between the remote X.25 address and the system you are configuring. Possible values are IN (accept calls from the address), OU (send calls to the address), and IO (accept calls from and send calls to the address).
6. Repeat steps 4 and 5 for each remote system that will be able to establish a system-to-system connection with the HP 3000 Series 900 you are configuring. If you need to enter more than eight remote system addresses, press the [Save Data] key to save the data on this screen, then use the [Next Page] key to move to a new data entry screen to configure additional addresses.
7. When you have entered all remote X.25 addresses and associated security, press the [Save Data] key to save the configuration.
8. Press the [Go To PAD] key to move to the DTC X.25 Card Configuration — Nailed PAD Connections screen.

## Fields

This screen lets you configure X.25 system-to-system local user group (LUG) information for the DTC/X.25 Network Access card being configured.

DTC name      Display only.

Card number   Display only.

X.25 link  
name            The name of the link that will be used by the system being configured for X.25 system-to-system connections. Must be the same as the link name entered during NS configuration of X.25 iX System Access using the NS subbranch of NMMGR. The link name can be up to eight alphanumeric characters, beginning with a letter.

Maximum number  
of Switched  
Virtual  
Circuits        The number of switched virtual circuits (SVCs) that will be allowed through this DTC/X.25 Network Access card. Up to 32 SVCs are allowed for cards mounted in a DTC 16, up to 256 SVCs are allowed for cards mounted in a DTC 48 and up to 156 SVCs are allowed for cards mounted in DTC 72MX.

The following factors must be considered in determining how many SVCs to allow:

- The total number of SVCs which an X.25 board can establish depends on the packet size configured in the X.25 level 3 configuration. Upper limits for each DTC48 and DTC72MX card are:
  - 256 for packet sizes of 512 or less.
  - 150 for 1024 byte packets.
  - 100 for 2048 byte packets.
  - 54 for 4096 byte packets.

Note that these limits are not affected by packet size negotiation. That is, if you have configured a packet size of 4096, and a packet size of 128 has been negotiated, you are still limited to the 54 SVCs supported with 4096 byte packets.

- If you are also configuring PAD connections on this card, remember that PAD connections use SVCs out of the pool of available SVCs. You will need to balance your PAD support requirements with your system-to-system requirements to find the optimum configuration for your network.
- The total number of SVCs available may also be limited by your PSN subscription.

**System X.25  
address**

This is the X.25 address of the X.25 card, to be used for system-to-system connections. In most cases, this will be the same as the address entered on the Level 3 & Miscellaneous screen. If, however, your network application requires the address used for X.25 system-to-system communications to be different from the address used for PAD connections, enter a different address here. For most connections to public data networks, this will be the DTC/X.25 Network Access card address plus a unique subaddress for the host system.

Note that with certain networks (such as Transpac, in France) the called address is removed from incoming call packets and the calling address is added to outgoing call packets by the network. For these networks, enter only the subaddress in this field, not the full X.25 address.

Address           The X.25 addresses of the remote systems in your X.25 network

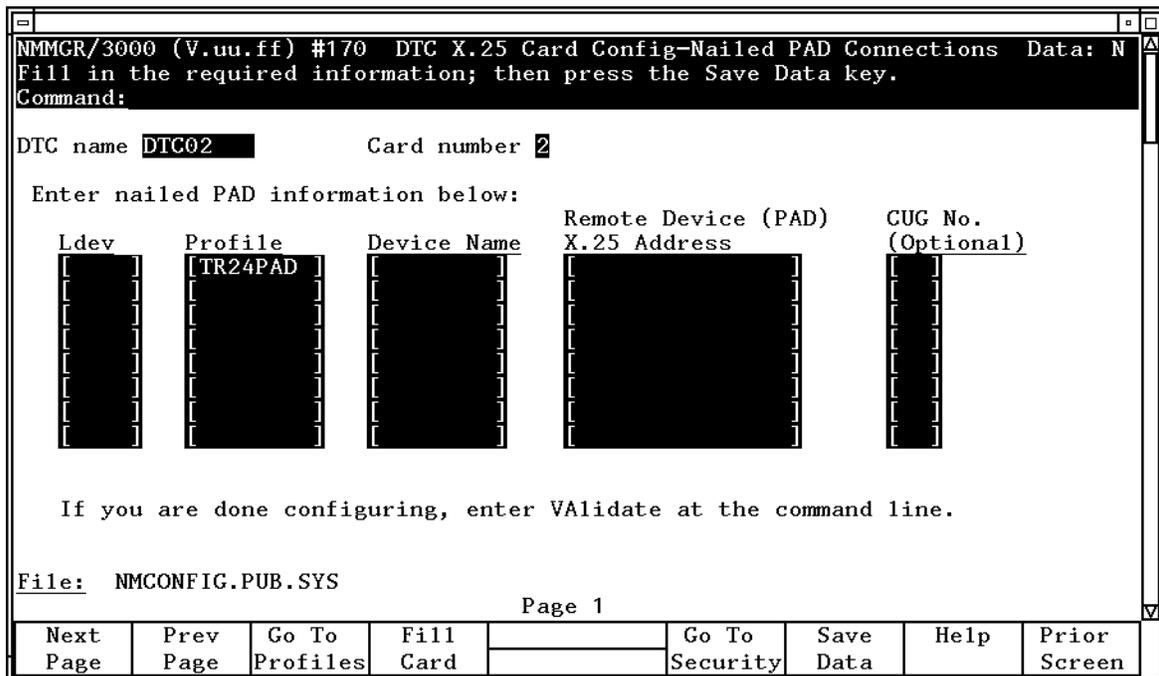
Sec.               The security level associated with each remote X.25 address. To accept only incoming calls for call setup, enter IN in the security field beside the address. To allow only outgoing calls for call setup, enter OU. To allow both incoming and outgoing calls for call setup, enter IO.

### Step 12: Configure Nailed PAD Connections

NMMGR displays the DTC X.25 Card Configuration – Nailed PAD Connections screen (Figure 3-11) if you press the [Go To PAD] key from the DTC X.25 Card Configuration screen or the DTC X.25 Card Configuration — Sys-to-Sys LUGs screen. On this screen, logical device (ldev) numbers, profile names, device names, and remote X.25 addresses are permanently associated with individual PAD connections allowed through the card. Configure the connections as required. You can also reach this screen by typing the following path at the Command line and pressing the [ENTER] key:

```
@DTS.DTC.SELECT.dtcname.CARD012.PADn
or
@DTS.DTC.SELECT.dtcname.CARD345.PADn
```

**Figure 3-11      DTC X.25 Card Configuration — Nailed PAD Connections**



1. Verify that the cursor is in the first field under `Ldev`. Type the `Ldev` number that the nailed connection will use in the `Ldev` field.
2. Move the cursor to the `Profile` field and enter the profile name the connection will use.

---

**NOTE**

---

To see a list of existing profiles, press the **[Go To Profiles]** key. If you need to create a new profile, see Chapter 4, “Terminal and Printer Profiles.”

3. Move the cursor to the `Device Name` field and enter the unique name assigned to the remote device that will be using this nailed connection.
4. Move the cursor to the `Remote Device (PAD) X.25 Address` field and enter the X.25 address of the remote PAD that will be using this nailed connection.
5. If you want to associate a closed user group number with this nailed connection, move the cursor to the `CUG No.` field and enter the CUG number.
6. Repeat the above steps for every device attached to this card. (You can use the **[Fill Cards]** key to fill in `Ldev` and profile information.) If you need to configure more than eight nailed PAD connections for this card, press the **[Save Data]** key to save the data on this screen, then use the **[Next Page]** key to move to a new data entry screen to configure additional nailed connections. You can configure up to 256 nailed PAD connections for each card.
7. When all nailed connections have been configured, press the **[Save Data]** key.
8. Press the **[Go To Security]** key to move to the DTC X.25 Card Configuration — PAD Security screen.

**Fields**

This screen is used to permanently associate `Ldev` numbers and other information with individual connections that can be made through a DTC/X.25 Network Access card; that is, to configure **nailed** PAD connections.

DTC name	Display only.
Card number	Display only.
Ldev	The logical device ( <code>Ldev</code> ) number to be associated with the connection. Each <code>Ldev</code> number must be unique; it may not be duplicated by any other device configured on the system.
Profile	The PAD terminal or PAD printer profile name to be associated with the connection. The features defined by the profile must correspond to the actual operating features of the connection and the device.

Device Name The name associated with the PAD-connected terminal or printer. The device name can be up to eight (8) characters and must be unique for each PAD connection.

Remote Device  
(PAD) X.25

Address The X.25 address of the remote PAD device. Where devices are connected to a multiport PAD, include port subaddresses in this field.

CUG No.

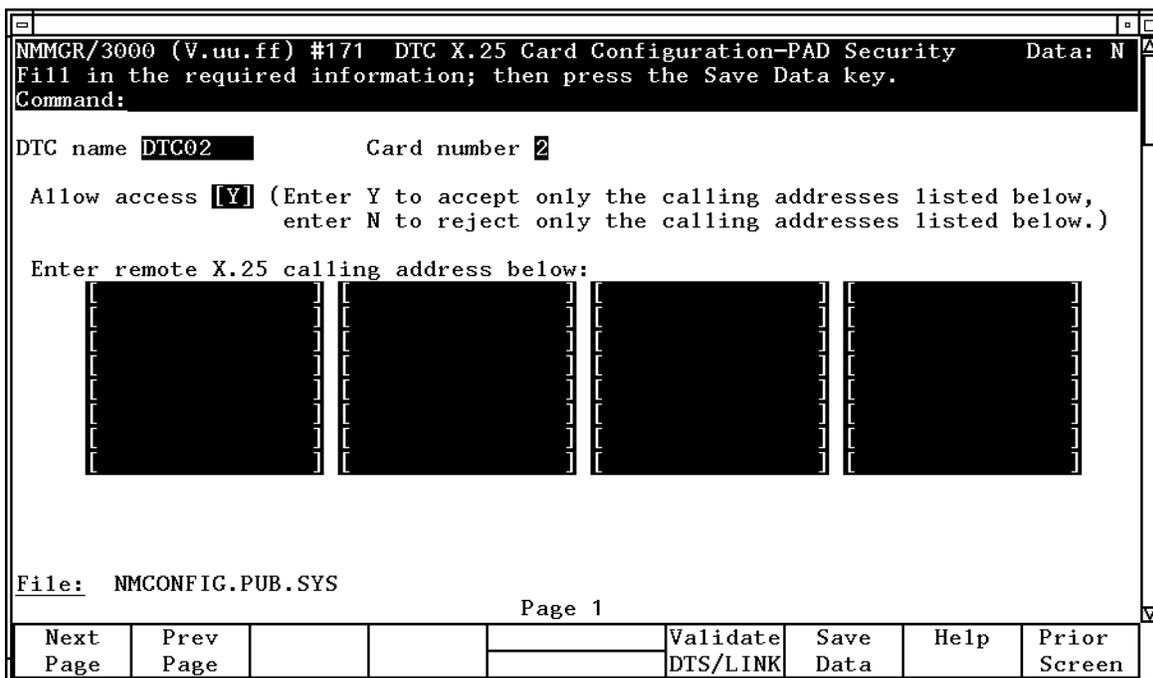
(Optional) The closed user group number (0 to 99), if specified for your network subscription. Leave blank if your subscription does not specify a CUG number.

### Step 13: Configure PAD Security

NMMGR displays the DTC X.25 Card Configuration — PAD Security screen (Figure 3-12) if you press the **[Go To Security]** key from the DTC X.25 Card Configuration screen or the DTC X.25 Card Configuration — Nailed PAD Connections screen. On this screen, you specify either a list of PAD calling addresses that will be accepted or a list of PAD calling addresses that will be rejected for connection through the DTC/X.25 Network Access card being configured. You can also reach this screen by typing the following path at the Command line and pressing the **[ENTER]** key:

```
@DTS.DTC.SELECT.dtcname.X25CARDn.PADSEC
```

**Figure 3-12 DTC X.25 Card Configuration — PAD Security Screen**



1. Verify that the cursor is in the `Allow access` field. If you want to accept calls only from the calling addresses listed below (and reject all other calls), enter a `Y`. If you want to reject calls only from the calling addresses listed below (and accept all other calls), enter an `N`.
2. In the fields under `Enter remote X.25 calling address below:`, enter the X.25 addresses of all remote PAD devices that will be accepted for connection, if `Allow access` is `Y`, or enter the addresses of all remote PAD devices that will be rejected for connection, if `Allow access` is `N`. If you need to configure more addresses than there is room for on this screen, press the **[Save Data]** key, then press the **[Next Page]** key to enter more device addresses. Up to 512 remote X.25 calling addresses can be configured.
3. If you have finished configuring PAD security for this card but still need to configure additional cards or DTCs, press the **[Prior Screen]** key until you return to the DTC Configuration screen so that you can select a different card or DTC to configure.
4. If all DTCs and all cards have been configured, press the **[Validate DTS/LINK]** key to validate the DTC configuration for the system. (See appendix A for validation error messages.)

**Fields**

DTC name      Display only.

Card number   Display only.

`Allow access` Specifies whether connection requests from devices whose addresses are listed will be accepted (Y) or rejected (N).

If you enter Y, calls will only be accepted from devices whose addresses you list on this screen. If you enter Y and do *not* list any addresses, *all* calls will be *rejected*.

If you enter N, calls will only be rejected from devices whose addresses you list on this screen. If you enter N and do *not* list any addresses, *all* calls will be *accepted*.

If you do not update this screen (data flag is N, a default PAD security will be downloaded that allows *all* calls to be *accepted*.

Enter remote  
X.25 calling  
address  
below

Lists the X.25 addresses of all PAD devices that will be accepted for connection if `Allow access` is Y or rejected for connection if `Allow access` is N. Enter up to 32 remote addresses per screen and up to 512 per DTC/X.25 Network Access card.

You can use the letter X as a wildcard character in place of any single digit. All systems with corresponding addresses will have the same access rights. The address check is sensitive to the length of the address. To manage addresses, you may enter pyramids of Xs where the base is the longest expected address and the peak is the shortest expected address.

For example to control access to all PAD addresses of six, seven or eight digits starting with 1234:

1234XX

1234XXX

1234XXXX

To control access to PADs with addresses of seven digits starting with 6789:

6789XXX

## Step 14: Validate/Cross-Validate the Configuration File

Validation ensures that no conflicts exist in the network configuration file (NMCONFIG.PUB.SYS) between the DTCs and other configuration parameters. After NMMGR validates the network configuration file, it will automatically cross-validate the file with the system I/O devices configured through the SYSGEN utility. This will take place only if the file opened at the start of the NMMGR session is NMCONFIG.PUB.SYS and validation is successful. Additionally, you must have System Manager (SM) capability or the cross-validation will not occur. The commands used for SYSGEN cross-validation are in the file NMGRXVAL.PUB.SYS. If this file does not exist, NMMGR will create the file for you before cross-validating. You can edit this file as appropriate for your environment.

Refer to the MPE/iX manual, *System Startup, Configuration, and Shutdown Reference Manual*, for information on SYSGEN.

1. To validate the DTS configuration in the configuration file, press the **[Validate DTS/LINK]** key at the Card Configuration screen. You can also reach the Validate Configuration File screen by typing `validate` at the command line on top of any NMMGR screen and pressing **[Enter]**. (Note that the **[Enter]** key is not the carriage return key.) While at the Validate screen press the **[Validate DTS/LINK]** key to validate the DTS configuration.

The DTS validation procedure starts by displaying the following on the terminal:

```
-> Validation of DTS/LINK started. <-  
-> Validation of DTS/LINK finished. <-
```

If errors were encountered in the configuration file, the validation procedure will print out the total number of errors found. Error messages will also be displayed explaining the problems found. Refer to Appendix A, "Error Messages," for more information about these error messages.

2. After validation of the network configuration file is complete, the following will appear on the screen as the file is cross-validated with the files created with SYSGEN (warning messages may vary):

NMMGR will now cross-validate the NMCONFIG file with SYSGEN.

SYSGEN version E.00.00 : catalog version E.00.00 FRI, FEB 4, 1994, 3:32 PM  
Copyright 1987 Hewlett-Packard Co. All Rights Reserved.

\*\*warning\*\* No NMCONFIG file in the configuration  
\*\*warning\*\* NMCONFIG.PUB.SYS is now the NMCONFIG file

\*\* First level command \*\*

io	log (lo)	misc (mi)	spu (sp)
sysfile (sy)			
basegroup (ba)	keep(ke)	permyes (pe)	show (sh)
tape (ta)			
clear (cl)(c)	exit (ex)(e)	help (he)(h)	oclose (oc)
redo			

sysgen> PERMYES ON {Automatically reply YES}

sysgen> SY {Go to the SYSFILE subsystem}

\*\* SYSFILE configurator commands \*\*

aauto (aa)	aboot (ab)	acmsl (ac)	asprog (as)
cmsl (cm)	dauto (da)	dboot (db)	dcmsl (dc)
dsprog (ds)	lcmsl (lc)	rauto (ra)	rboot (rb)
rcat (rc)	rcmsl (rcm)	rdcc (rd)	ripl (ri)
rnmlib (rn)	rsprog (rs)	show (sh)	

clear (cl)(c) exit (ex)(e) help (he)(h) hold (ho)

sysfile> RDCC {Set configuration file to NMCONFIG.PUB.SYS}

sysfile> {HO} {Remove braces to HOLD RDCC command}

sysfile> EX {EXIT the SYSFILE subsystem

configuration changes are not kept yet!  
still want to exit (yes/no)? Automatic yes

sysgen> BA CONFIG {Set BASE group to CONFIG}

sysgen> KE (KEep the changed configuration data)

keeping to group CONFIG.SYS

Purge old configuration (yes/no)? Automatic yes

\*\* configuration files successfully saved \*\*

sysgen> EX {EXIT SYSGEN}

Cross-validation with SYSGEN was successful.

Copying validated configuration file to backup file, please wait \*\*\*

(Press RETURN when done viewing screen contents)

3. After successful validation and cross-validation, and if the file in use is `NMCONFIG.PUB.SYS`, the following prompt will appear:

```
Do you want DTS changes to become active now (Y/N)?
Y = all changes made take effect now
N = all changes made will take effect up next dynamic
    configuration or system reboot
H = help
>
```

Answer **Y** if you want to invoke `DTCCNTRL` and make DTS changes take effect now, or answer **N** if you don't want DTS changes to take effect now. Note any messages that describe additional actions needed for changes to become active. After you exit `NMMGR` you can review any actions needed by viewing the logs at the end of the file `LOGDCC.PUB.SYS`.

If you answer **N**, the DTS changes will take effect the next time `DTCCNTRL` is invoked, a DTS shutdown/restart is done, or the system is rebooted.

Type **H** if you need more help to answer the question.

4. After viewing the messages describing what actions are required, if any, enter **[RETURN]** when you see the prompt:

(Press **RETURN** when finished view screen contents.)

You will return to the Validation screen. You may make additional configuration changes or exit `NMMGR`.

## Step 15: Ensure DTS Changes Become Active

If you answered **Y** to the question "Do you want DTS changes to become active now (Y/N)?" in Step 14, refer to in Chapter 7, "Managing Networks with `DTCCNTRL`," for a list of configuration tasks and associated actions for changes to become active.

For those tasks indicating "No action; changes take effect dynamically," no additional actions are required for the DTS changes to become active. You will see a message on the screen indicating that no other actions are required.

For other tasks requiring additional actions for changes to become active, you will see messages on the screen indicating what actions must be taken first.

---

**NOTE**

If you answered **N** to the question in Step 14, thus choosing not to call `DTCCNTRL` after `NMMGR` exit, refer to Chapter 7, "Managing Networks with `DTCCNTRL`," for the syntax on how to invoke `DTCCNTRL` outside `NMMGR`.

---

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NOTE

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For host-based X.25 configuration tasks and associated actions for changes to take effect, refer to *Configuring and Managing Host-Based X.25 Links* for more information.

### **Performing a DTC Reset**

First, logoff any sessions. To reset the DTC, turn off the power and then turn on the power again for the DTC.

You may also use TermDSM, an online diagnostic program for host-managed DTCs, to reset the DTC. Refer to *Troubleshooting Terminal, Printer, and Serial Device Connections* for more information.

### **Performing a DTS Shutdown/Restart**

To perform a DTS shutdown and restart, use the DTCCNTRL command. Refer to Chapter 7, “Managing Networks with DTCCNTRL,” for the command syntax of this command. Refer to the Dynamic Configuration chapter of the *Configuring Systems for Terminals, Printers, and Other Serial Devices* manual for additional information on performing a DTS shutdown and restart.



# 4 Terminal and Printer Profiles

This chapter provides an overview of the purpose and usage of terminal and printer profiles. Additional detailed information is provided that is specific for PAD devices. This information describes the PAD profile byte, using the PAD password, and forced data forwarding. This chapter also contains a list of features controlled by the PAD profile byte.

See the *Configuring Systems for Terminals, Printers, and Other Serial Devices* manual for more detailed information on the characteristics set by profiles, descriptions of terminal types, and how to create and modify profiles in NMMGR.

## What is a Profile

A profile is a group of device connection specifications and characteristics that can be associated with devices. Profiles can be associated with terminals, printers, PAD terminals and printers, and UPSs.

The word profile is used in two different contexts in this chapter. When a ldev is configured on the MPE/iX system, a profile name is associated with each ldev. This association is configured on the DTC Card Configuration screens. The information in the profile name describes the characteristics of the ldev on the system and in the DTC. The information configured in the profile name is specified on the profile screens in NMMGR.

When a PAD ldev is configured, there is also a PAD profile number or value that describes certain parameters of the connection between the PAD and the X.25 card in the DTC. These additional PAD parameters are set within the profile name associated with the PAD ldev. The PAD Terminal Profile section describes these PAD parameters. See the Table in this chapter that lists the PAD profile numbers that are available.

The sample configuration file on the HP 3000 Series 900 supplies several terminal and printer profiles. You may create your own profiles, or modify those provided. This chapter contains a table that lists the terminal, printer, and PAD profiles supplied in the sample configuration file.

## Profile Name

Each profile is identified by a profile name. The name can be up to eight characters long and must start with a letter followed by letters and numbers. At any one time, up to 1000 profiles can be configured per system.

The profiles supplied by the HP 3000 configuration file follow a naming convention. For example, TR10D96 denotes a terminal profile (TR) of terminal type 10 (10), for direct connect (D), with line speed of 9600 bps (96). Printer profiles starts with PR, such as PR18D96. The standard UPS profile is UP10D12 where (UP) denotes an HP PowerTrust UPS.

## Terminal Profiles

Terminal profiles define the characteristics of DTC ldevs that are connected to terminals, PCs running terminal emulators, and UPSs. Devices that use these profiles are usually connected directly to the DTC ports or are connected through a modem over a phone line.

## **Printer Profiles**

Printer profiles define the characteristics of ldevs that are connected to printers, or other devices that are intended to only receive data from the DTCs. Devices that use these profiles are usually connected directly to the DTC ports or are connected through a modem over a phone line.

## **PAD Terminal Profiles**

PAD terminal profiles define the characteristics of ldevs that are used by devices that are connected to the HP 3000 through a PAD/X.25 connection. These devices can be terminals or PCs running terminal emulators.

## **PAD Printer Profiles**

PAD printer profiles define the characteristics of ldevs that are used by printers that are connected to the HP 3000 through a PAD/X.25 connection.

## System Supplied Terminal and Printer Profiles

The Host-Based Terminal Profiles as shown in Table 4-1 lists the terminal and printer profiles supplied by the MPE/iX system for host-based and PC-based management. You may choose these profiles for your terminal and printer configuration. You may also create your own profiles.

**Table 4-1** Host-Based Terminal Profile

Profile Name	Characteristics	Suggested Devices
TR10D24	Terminal type 10 Record width of 80 bytes Modem type 0 (no modem) Parity: none Speed/Parity Sensing? N Reset HP Terminals? N Allow :HELLO logon? Y NLIO devices? N No device classes assigned	Supported HP terminals Connected directly Set at 2400 bps
TR10D96	Terminal type 10 Record width of 80 bytes Modem type 0 (no modem) Parity: none Speed/Parity Sensing? N Reset HP Terminals? N Allow :HELLO logon? Y NLIO devices? N No device classes assigned	Supported HP terminals Connected directly Set at 9600 bps
TR10E12	Terminal type 10 Record width of 80 bytes Modem type 2 (European modem) Parity: none Speed/Parity Sensing? N Reset HP Terminals? N Allow :HELLO logon? Y NLIO devices? N No device classes assigned	Supported HP terminals European modem connection Set at 1200 bps

Profile Name	Characteristics	Suggested Devices
TR10U12	Terminal type 10 Record width of 80 bytes Modem type 1 (US modem) Parity: none Speed/Parity Sensing? N Reset HP Terminals? N Allow :HELLO logon? Y NLIO devices? N No device classes assigned	Supported HP terminals US modem connection Set at 1200 bps
TR10U24	Terminal type 10 Record width of 80 bytes Parity: none Speed/Parity Sensing? N Reset HP Terminals? N Allow :HELLO logon? Y NLIO devices? N No device classes assigned	Supported HP terminals Connected to modem port Set at 9600 bps
TR24	Terminal type 24 Record width of 80 bytes Parity: none Speed/Parity Sensing? N Reset HP Terminals? N Allow :HELLO logon? Y NLIO devices? N No device classes assigned	Supported HP terminals Connected to a PAD Set at 9600 bps
TR24PAD	Terminal type 24 Record width of 80 bytes Allow :HELLO logon? Y Reset HP Terminals? N NLIO devices? N PAD test requested? Y Send initial profile? Y X.3 setting requested? Y Data forward parm #3, 4? 10 No device classes assigned	Supported HP terminals Connected to a PAD
UP10D12	Terminal type 10 Record width of 80 bytes Parity: none Speed/Parity Sensing? N Reset HP Terminal? N Allow :HELLO logon? Y NLIO devices? N Device class: HPUPSDEV	Supported HP PowerTrust UPSs Connected directly Set at 1200 bps

The Host-Based Printer Profiles are shown in Table 4-2.

**Table 4-2 Host-Based Printer Profiles**

<b>Profile Name</b>	<b>Characteristics</b>	<b>Suggested Devices</b>
PR18D24	Printer type 18 Record width of 132 bytes Spooled No NLIO devices Parity: none Device class: LP	Printers with no status checking Connected directly Set at 2400 bps
PR18D96	Printer type 18 Record width of 132 bytes Spooled No NLIO devices Parity: none Device class: LP	Printers with no status checking Connected directly Set at 9600 bps
PR18U24	Printer type 18 Record width of 132 bytes Spooled No NLIO devices Parity: none Device class: LP	Printers with no status checking Connected to modem port Set at 2400 bps
PR18U96	Printer type 18 Record width of 132 bytes Spooled No NLIO devices Parity: none Device class: LP	Printers with no status checking Connected to modem port Set at 9600 bps
PR22D12	Printer type 22 Record width of 132 bytes Spooled No NLIO devices Parity: none Device class: LP	Supported HP printers with status checking Connected directly Set at 1200 bps
PR22D24	Printer type 22 Record width of 132 bytes Spooled No NLIO devices Parity: none Device class: LP	Supported HP printers with status checking Connected directly Set at 2400 bps
PR26D24	Printer type 26 Record width of 132 bytes Spooled No NLIO devices Parity: none Device class: LP	Supported HP printers Connected directly Set at 2400 bps

<b>Profile Name</b>	<b>Characteristics</b>	<b>Suggested Devices</b>
PR26D96	Printer type 26 Record width of 132 bytes Spooled No NLIO devices Parity: none Device class: LP	Supported HP printers Connected directly Set at 9600 bps
PR26PAD	Printer type 26 Record width of 132 bytes Spooled No NLIO devices PAD test requested? Y Send initial profile? Y X.3 setting requested? Y Device class: LP	Supported HP printers Connected to a PAD
PR26U24	Printer type 26 Record width of 132 bytes Spooled No NLIO devices Parity: none Device class: LP	Supported HP printers Connected to a modem port Set at 2400 bps
PR26U96	Printer type 26 Record width of 132 bytes Spooled No NLIO devices Parity: none Device class: LP	Supported HP printers Connected to a modem port Set at 9600 bps

## DTC PAD Profile Field

The profile number used by the PAD is the decimal value of the binary number calculated from Table 4-3 as done by the [Compute Byte] function key. An “x” in a box means that the value doesn’t matter: that is, the values of the bits are not dependent on each other. Bit 7 is reserved for future use, and is set to 0. Note that you can only use certain combinations: meaningless or dangerous combinations are blocked and cannot be entered.

```
Terminal with init profile set;           Bit 0 is 1   = 1
Data forwarding 3:127 4:0;              Bit 1 is 1   = 4
X.3 setting allowed;                   Bit 4 is 0   = 0
No PAD test during connection initialization; Bit 5 is 1   = 32
                                           Profile number = 37
```

**Table 4-3 PAD Profile Field**

7	6	5	4	3	2	1	0	Bit Position
(128)	(64)	(32)	(16)	(8)	(4)	(2)	(1)	(Bit Value)
0	x	x	x	x	x	0	0	Printer without init profile set
0	x	x	x	x	x	0	1	Terminal with init profile set
0	x	x	x	x	x	1	0	Printer with init profile set
0	x	x	x	x	x	1	1	Terminal without init profile set
0	x	x	x	0	0	x	x	Data forwarding default
0	x	x	x	0	1	x	x	Data forwarding 3:127 4:0
0	x	x	x	1	0	x	x	Data forwarding 4:1
0	x	x	x	1	1	x	x	Data forwarding 4:2
0	x	x	0	x	x	x	x	X.3 setting
0	x	x	1	x	x	x	x	No X.3 setting
0	x	0	x	x	x	x	x	PAD test during connection initialization
0	x	1	x	x	x	x	x	No PAD test during connection initialization
0	0	x	x	x	x	x	x	No forced data forwarding
0	1	x	x	x	x	x	x	Forced data forwarding

## PAD Profiles and Access Password

When users attempt to establish a connection from a PAD, the PAD selection command may specify a password and/or a profile number. The password will be needed if a password has been configured for the DTC that contains the X.25 card being called. The profile number may be specified to override the PAD profile field configured for the PAD port.

The password is configured on the DTC Configuration screen in Step 6: Specify DTC Configuration. Refer to Chapter 3, “Configuring DTCs Step-by-Step,” for information on configuring the password.

The PAD profile number is the number displayed by the [Compute Byte] function key. The section DTC PAD Profiles contains a list of PAD profiles that are available. Entering a profile number in the PAD selection command causes the DTC to use the particular PAD profile when the connection is established.

The syntax to enter a password and/or profile number for the PAD selection command is:

```
@<X.25 address>,d[<password>][/<profile number>]
```

The following example supplies the password “secret” and causes the PAD profile 33 to be used.

```
@ 1234567891234,dsecret/33
```

## Forced Data Forwarding

When a connection is established to a PAD device, two of the characteristics that get set, are the data forwarding parameters. The data forwarding parameters tell the PAD when a packet must be sent to the PDN. The behavior of data forwarding is set with the fields “Data forwarding parm #3 and #4” and “Forced data forwarding” on the PAD Terminal Profile screen. The Forced data forwarding field also affects how the “Data forwarding parm #3 and #4” field behaves. See the PAD Installation manual for further information on the PAD parameters.

On the PAD, Parm #3 selects the set of characters that will signal the PAD to forward data to the PDN. Parm #4 sets the idle timer in 1/20 second increments. The idle timer will signal the PAD to forward data if the time between successive characters from the terminal exceeds the idle timer value.

When “Forced data forwarding” bit is 0, the “Data forwarding parm #3 and #4” behave as described in the *Configuring Systems for Terminals, Printers, and Other Serial Devices* manual. The value specified in the field will be used when the connection to the is in:

VPLUS mode;

Telnet mode;

character mode when EOR and AEOR are not carriage return.

The value in the field is not used during a connection when in character mode and EOR or AEOR is carriage return. In this case the default values will be used: parm #3 is 2 and parm #4 is 0.

When the “Forced data forwarding” bit is 1, the data forwarding parms #3 and #4, that are set at connection time in the PAD, are ALWAYS used.

## DTC PAD Profiles

Table 4-4 shows the usable DTC PAD profiles and their recommended usage. You must *not* use profiles 18, 45 and 50, even though they are available. All other numbers are blocked, and cannot be entered.

**Table 4-4 Terminal PAD Profiles**

Profile	Definition	Usage
1	PAD Test Init profile X.3 setting Data Forward default	<p>Default terminal profile.</p> <p>Does not need to be entered in the CALL User Data.</p> <p>Direct replacement for the “Terminal” device type of releases prior to 12.0.</p> <p>Ensures backward compatibility with DTC 2.0 to 10.5.</p>
5	PAD Test Init profile X.3 setting Data forward 3:127	<p>Used in data transfer.</p> <p>Recommended for more performance of the Telnet path (X.29 SERVER profile compatibility) or for iX character mode applications which need to send each character to the host (for example, HPEDIT).</p> <p>The profile loads the X.25 line with many, small packets each time the application needs a termination character other than CR.</p> <p>The PAD must support 3:127.</p>
9	PAD Test Init profile X.3 setting Data forward 4:1	<p>Used in data transfer.</p> <p>Recommended when you need more performance in iX character mode applications which need to send each character to the host.</p> <p>The profile loads the X.25 line with many, small packets each time the application requires a termination character other than CR.</p>

Profile	Definition	Usage
13	PAD Test Init profile X.3 setting Data forward 4:2	<p>Used in data transfer.</p> <p>Recommended for more performance in iX for VPLUS mode (NS/PAD compatibility) or for character mode applications which need to send few characters to the host.</p> <p>The profile loads the X.25 line with many, small packets each time the application requires a termination character other than CR.</p> <p>The PAD must support 4:2.</p>
17	PAD Test Init profile No X.3 setting Data forward default	<p>Used in data transfer.</p> <p>Recommended if you don't want to change the hardcoded initial profile set by PAD Support when an application controls requires the setting of X.3 parameters other than echo, break or flow control.</p> <p>The user must ensure that the editing characters are &lt;BS&gt; (ASCII 8) for backspace, and Control-X (ASCII24) for the line delete character.</p>
33	No PAD test Init profile X.3 setting Data forward default	<p>Used at connection initialization.</p> <p>Recommended for more performance at the connection initialization, or if the PAD doesn't support the setting of multiple Set and Read, or isn't able to answer during the "PAD Test" sequence in accordance with X.29 recommendations. For example, for a PAD which answers with an X.29 PAD error at a parameter setting instead of setting the "error bit".</p> <p>The PAD must support the X.3 setting needed by the applications.</p>
35	No PAD test No init profile X.3 setting Data forward default	<p>Used at connection establishment.</p> <p>Recommended if the user wants to keep the profile set before connection initialization.</p> <p>The PAD must support the X.3 setting needed by the applications.</p>
37	No PAD test Init profile X.3 setting Data forward 3:127	<p>Used at connection initialization and during data transfer.</p> <p>The PAD must support the X.3 settings required by the applications and the 3:127 data forwarding.</p> <p>The PAD must support the X.3 setting needed by the applications.</p>

<b>Profile</b>	<b>Definition</b>	<b>Usage</b>
39	No PAD test No init profile X.3 setting Data forward 3:127	Used at connection establishment and during data transfer.  Recommended if you want to combine profiles 35 and 5.  The PAD must support the X.3 settings needed by the applications and the 3:127 data forwarding.
41	No PAD test No init profile X.3 setting Data forward 4:1	Used at connection establishment and during data transfer.  Recommended if you want to combine profiles 33 and 9.  The PAD must support the X.3 settings needed by the applications.
43	No PAD test No init profile X.3 setting Data forward 4:1	Used at connection establishment and during data transfer.  Recommended if you want to combine profiles 35 and 9.  The PAD must support the X.3 settings needed by the applications.
45	No PAD test Init profile X.3 setting Data forward 4:2	Used at connection establishment and during data transfer.  The PAD must support the X.3 settings needed by the applications and the 4:2 data forwarding.
47	No PAD test No init profile X.3 setting Data forward 4:2	Used at connection establishment and during data transfer.  The PAD must support the X.3 settings needed by the applications and the 4:2 data forwarding.
49	No PAD test Init profile No X.3 setting Data forward default	Used at connection establishment and during data transfer.  The PAD must support the X.3 setting needed by the applications.
51	No PAD test No init profile No X.3 setting Data forward default	Used at connection establishment and during data transfer. The PAD must support the X.3 settings needed by the applications.
85	PAD test forwarding Init profile No X.3 setting Data forward 3:127 Forced data forwarding	Used at connection initialization and during data transfer.  This profile is advised when you want to force the data forwarding value selected.  The PAD must support the 3:127 data forwarding.
89	PAD test Init profile No X.3 setting Data forward 4:1 Forced data forwarding	Used at connection establishment and during data transfer.  This profile is advised when you want to force the data forwarding value selected.

<b>Profile</b>	<b>Definition</b>	<b>Usage</b>
93	PAD test Init profile No X.3 setting Data forward 4:2 Forced data forwarding	Used at connection establishment and during data transfer.  This profile is advised when you want to force the data forwarding value selected.  The PAD must support the 4:2 data forwarding.
117	No PAD test Init profile No X.3 setting Data forward 3:127 Forced data forwarding	Used at connection establishment and during data transfer.  This profile is advised when you want to force the data forwarding value selected.  The PAD must support the 3:127 data forwarding.
119	No PAD test No init profile No X.3 setting Data forward 3:127 Forced data forwarding	Used at connection establishment and during data transfer.  This profile is advised when you want to force the data forwarding value selected.  The PAD must support the 3:127 data forwarding.
121	No PAD test Init profile No X.3 setting Data forward 4:1 Forced data forwarding	Used at connection establishment and during data transfer.  This profile is advised in character mode applications which need to send each character to the host.
123	No PAD test No init profile No X.3 setting Data forward 4:1 Forced data forwarding	Used at connection establishment and during data transfer.  This profile is advised in character mode applications which need to send each character to the host.
125	No PAD test Init profile No X.3 setting Data forward 4:2 Forced data forwarding	Used at connection initialization and during data transfer.  This profile is advised when you want to force the data forwarding value selected.  The PAD must support the 4:2 data forwarding.
127	No PAD test No init profile No X.3 setting Data forward 4:2 Forced data forwarding	Used at connection establishment and during data transfer.  This profile is advised when you want to force the data forwarding value selected.  The PAD must support the 4:2 data forwarding.

The Printer PAD profiles are shown in Table 4-5.

**Table 4-5 Printer PAD Profiles**

<b>Profile</b>	<b>Definition</b>	<b>Usage</b>
2	PAD test Init profile X.3 setting Data forward default	Default printer profile.  Direct replacement for the “Printer” device type of releases prior to 12.0.  Ensures DTC 2.0 to 10.5 backward compatibility.
18	PAD test Init profile No X.3 setting Data forward default	Used in data transfer.
32	No PAD test No init profile X.3 setting Data forward default	Used at a connection initialization.  Recommended if you want to keep the profile set before connection establishment.  To use this profile with iX, verify that the PAD supports the setting of the idle timer to 1/20 seconds, if you want to use terminal types such as TT22 or TT26.
34	No PAD test Init profile X.3 setting Data forward default	Used at connection initialization.  Recommended for more performance at the connection initialization, or if the PAD doesn’t support the setting of multiple Set and Read, or if the PAD can’t answer during the “test of PAD” sequence in accordance with the X.29 recommendations. For example, a PAD which answers with an X.29 PAD error at a parameter instead of setting the “error bit”.  To use this profile with iX, the PAD must support the setting of the idle timer to 1/20 seconds, if you want to use a terminal type such as TT22 or TT26.
48	No PAD test No init profile No X.3 setting Data forward default	Used at connection initialization and during data transfer.
50	No PAD test Init profile No X.3 setting Data forward default	Used at connection initialization and during data transfer.



# 5 Preparing to Configure X.25 iX System Access

This chapter details the information you will need before you can begin to configure X.25 iX System Access for host-based systems that will include an X.25 system-to-system link. Sample worksheets are included to ease configuration.

Hewlett-Packard recommends that you configure the datacommunications and terminal subsystem (DTS) before configuring the NS X.25 link. If you have not already done so, turn to chapters 2 and 3 in this manual for information on how to configure your system's DTCs.

If you also need to configure a point-to-point link or a LAN link, see the *HP 3000/iX Network Planning and Configuration Guide*.

This chapter describes how to:

- Plan the network configuration for X.25 iX System Access.
- Determine network characteristics for X.25 iX System Access.
- Identify Neighbor Gateways.

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**NOTE**

If you are configuring X.25 iX System Access on a system using PC-based network management (an OpenView workstation is part of the network), you should use the *HP 3000/iX Network Planning and Configuration Guide* instead of this manual to configure the X.25 link.

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## Plan the Network Configuration

Before you begin the process of configuring the X.25 iX System Access link, you must define the physical layout and configuration parameters for the system-to-system network connections that will be required for the system you are configuring. Once you have determined what the configuration should be, you can begin the process of entering the configuration values into NMMGR.

Configuration values that you must determine include a network interface name and type and an address for the system being configured. You must also determine whether any of the nodes on your network are gateway nodes, and identify neighbor gateways.

Table 5-1 shows the configuration values that you will need to enter, along with the screen on which each is entered. The parameters are listed in alphabetical order.

---

**NOTE**

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This manual assumes the use of the guided configuration branch. Only the parameters configured during guided configuration are listed.

**Table 5-1 Configuration Values for X.25 Link**

Parameter/Value	Screen	Comment
Address key	X.25 Virtual Circuit Configuration	In the network directory, the name of each node listed in the remote node name field. HP recommends that you use the node portion of the remote node's node name as the address key.
Card number	X.25 Configuration	Slot number of the DTC/X.25 Network Access card.
DTC node name	X.25 Configuration	Node name of the DTC in the form <i>node.domain.organization</i> . Must agree with node name configured through the DTC configuration on the DTC Configuration screen. The node name must be entered for each DTC/X.25 Network Access card that allows system-to-system connections.
Facility set	X.25 Virtual Circuit Configuration	For SVCs only. In the network directory, a facility set name for a collection of X.25 connection parameters. Use the default (STDSFSET) or enter a different name then go to Facility Sets to define parameters.

<b>Parameter/Value</b>	<b>Screen</b>	<b>Comment</b>
Hops	Neighbor Gateway Reachable Networks	Number of hops (full gateways) needed to get from the system being configured to the reachable network.
IP address	X.25 Configuration	The internet protocol (IP) address of the system (node) being configured.
IP subnet mask	X.25 Configuration	Optional. Identifies which bits of the IP address will be used to define a subnetwork.
Link name	X.25 Configuration	Name of the link used by X.25 iX System Access. Must match the link name configured through the DTC configuration on the DTC X.25 Card Configuration — Sys-to- Sys LUGs screen. A link name must be entered for each DTC/X.25 Network Access card that allows system-to-system connections.
Local domain name	NS Configuration	Optional. Name of the system in ARPANET standard format.
Local HP 3000 node name	Main	Node name of the HP 3000 system you are configuring.
Neighbor gateways	MNeighbor Gateways	The name of any gateway that is on the same network as the node you are configuring. (There may not be any neighbor gateways.)
Neighbor gateway IP internet address	Neighbor Gateway Reachable Networks	IP internet address of the configured gateway(s).
Network interface (NI) name	Guided HP Configuration	Name, up to eight characters long, representing the network interface being configured.
Network interface (NI) type	Guided HP Configuration	Enter 3 to indicate an X.25 NI.
Permanent VC number	X.25 Virtual Circuit Configuration	For PVCs only. In the network directory, the number of the permanent virtual circuit on the remote node.
Reachable network IP network address	Neighbor Gateway Reachable Networks	The IP address of all remote nodes that can be reached through the gateway.
Reachable network IP mask	Neighbor Gateway Reachable Networks	Optional subnet mask for the reachable network.
Remote IP address	X.25 Virtual Circuit Configuration	In the network directory, the IP address of each node listed in the remote node name field.

Preparing to Configure X.25 iX System Access  
Plan the Network Configuration

<b>Parameter/Value</b>	<b>Screen</b>	<b>Comment</b>
Remote node name	X.25 Virtual Circuit Configuration	In the network directory, name of each remote X.25 node on the network.
Remote X.25 address	X.25 Virtual Circuit Configuration	For SVCs only. In the network directory, the X.25 address of the remote host for X.25 public data networks or private networks.
Security class	X.25 Virtual Circuit Configuration	For SVCs only. In the network directory, the security to be applied for connection establishment with the remote node.

## Determine X.25 iX System Access Network Characteristics

You must define the characteristics of the X.25 iX System Access link or links that you will be configuring. You must specify a link name and configuration for each DTC/X.25 Network Access card that will be used for X.25 system-to-system connections.

Several of the parameters that you will configure for X.25 iX System Access through the NS configuration must match the parameters you configured for DTS (chapters 2 and 3). The common parameters are:

- Link name.
- DTC node name.
- Card number of the DTC/X.25 Network Access card in the DTC.
- If you configure user facility set parameters, these parameters should also match the parameters specified in the DTS configuration.

Once you have defined the characteristics of the X.25 network, transfer this information onto the X.25 Configuration Worksheet and the X.25 Virtual Circuit Configuration Worksheet.

## X.25 Configuration Worksheet

Fill out worksheet as shown in Figure 5-1 for the X.25 iX System Access links you are configuring.

**Figure 5-1** X.25 Configuration Worksheet

X.25 Configuration Worksheet		
Node name _____ (Specify local system)		
Network Interface (NI) name _____		
IP address _____ IP subnet mask _____ (optional)		
Link name	DTC Node Name	Card Number
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

## X.25 Virtual Circuit Configuration Worksheet

Fill out worksheet as shown in Figure 5-2 for each X.25 iX System Access link you are configuring.

**Figure 5-2** X.25 Virtual Circuit Configuration Worksheet

X.25 Virtual Circuit Configuration Worksheet	
Network directory name	_____
Remote node name	_____
Remote IP Address	_____
Address key	_____
Network Interface (NI) name	_____
If address type is switched virtual circuit, enter:	
Remote X.25 address	_____
Facility set	_____
Security class	_____ (IN, OU, IO, LK)
If address type is permanent virtual circuit, enter:	
Permanent VC number	_____

## Identify Neighbor Gateways

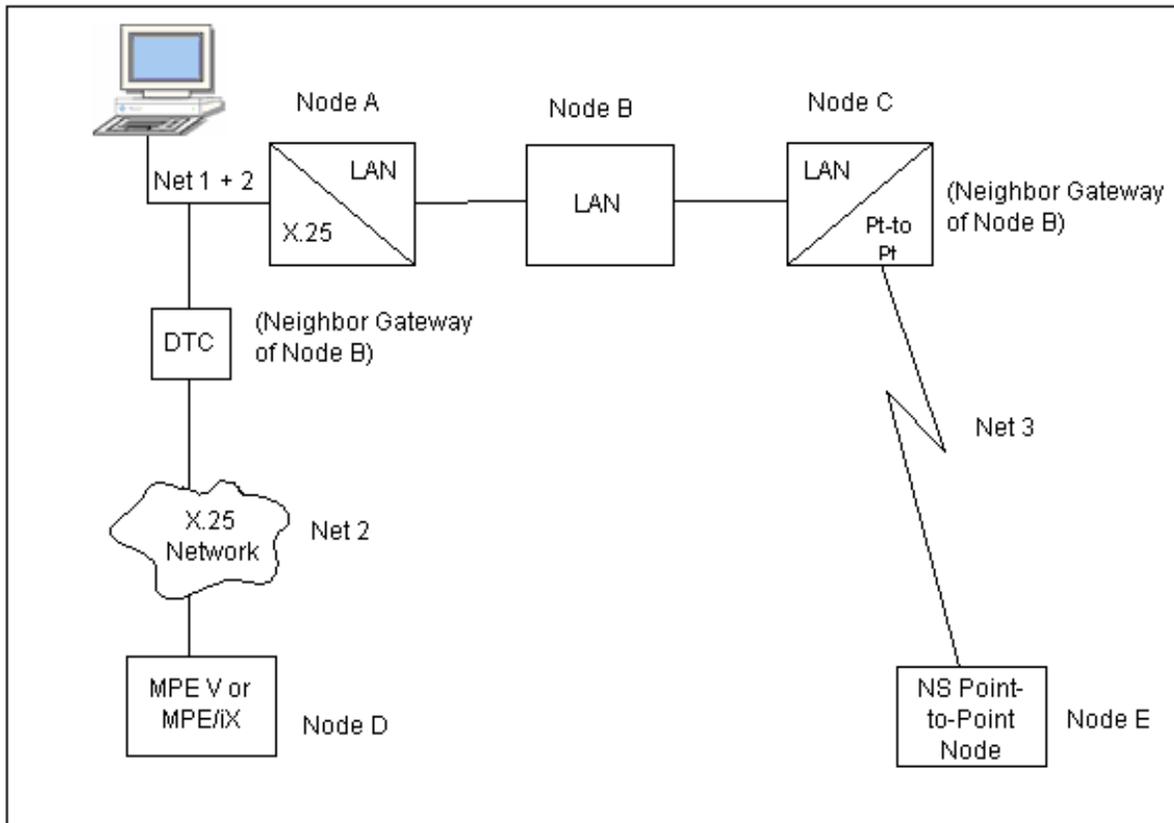
This section only applies if one of the nodes on your network is a gateway. A *neighbor gateway* is a gateway that is on the same network as a given node. A non-gateway node on a network may need to go through a neighbor gateway in order to send messages to an entirely different network. Two nodes are on the same network if the network portion of their IP addresses are the same. All X.25 nodes on the same network need to know the identities of any accessible neighbor gateways. Therefore, when using NMMGR to configure any node, you will be entering the identities of all the *neighbor gateways* into the configuration of the node. Following is an example:

### **Example: Identifying Neighbor Gateways of Node B**

In Figure 5-3, Net 1 is a LAN, Net 2 is an X.25 network, and Net 3 is a point-to-point network. Node A is on both Net 1 and Net 2 and is a full gateway between them. Node A is the Neighbor Gateway for all nodes on Net 1 to reach Net 2. Node C is on Net 1 and Net 3 and is a gateway half. Node C is the Neighbor Gateway for all nodes on Net 1 to reach Net 3.

If you were configuring a node such as Node B in Figure 5-3, you would enter the identities of Nodes A and C as *neighbor gateways* of Node B (at the Neighbor Gateways screen and the Neighbor Gateway Reachable Networks screen). On the Neighbor Gateway Reachable Networks screen, you would also enter the IP address of Network 2 as a Configured Reachable Network reachable through gateway Node A and the IP address of Network 3 as a Configured Reachable Network reachable through gateway Node C.

**Figure 5-3 Identifying Neighbor Gateways of Node B**





# 6

## Configuring X.25 Links Step-by-Step

This chapter provides step-by-step instructions for configuring X.25 iX System Access for systems using host-based network management. This manual assumes that you are using the guided configuration capabilities of NMMGR.

Before using NMMGR to configure a link, you should complete the worksheets provided. See Chapter 5, “Preparing to Configure X.25 iX System Access,” for more information on planning your configuration and filling out the configuration worksheets.

This chapter includes step-by-step instructions to help you perform the following tasks:

- Configure the X.25 iX System Access link.
- Configure X.25 virtual circuits.
- Configure neighbor gateways, if there are any.

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**NOTE**

If you are configuring X.25 iX System Access on a system using PC-based network management (an OpenView workstation is part of the network), you should use the *HP 3000/iX Network Planning and Configuration Guide* instead of this manual to configure the X.25 link.

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## Modify the Network Management Configuration File

The procedures that follow describe how to modify the NMMGR configuration file and network directory file for X.25 iX System Access configuration. These procedures assume that you have already configured the datacommunications and terminal subsystem (DTS) for this system. See Chapter 3, “Configuring DTCs Step-by-Step,” for information on DTS configuration.

### Step 1: Begin the Configuration Process

Run the NMMGR program. Node manager (NM) or network administrator (NA) capabilities are required to run this program. To run NMMGR:

1. Type `NMMGR.PUB.SYS` at the MPE/iX prompt (:).
2. Press **[Return]**.

---

#### NOTE

You cannot modify the X.25 iX transport and link configurations in `NMCONFIG.PUB.SYS` if the Network Services are active. Verify that the Network Services are not running by issuing the `NETCONTROL STATUS` command. You must have NM (Node Manager) capability to issue this command.

If NS is down, you will see the following two messages in response to the `NETCONTROL STATUS` command:

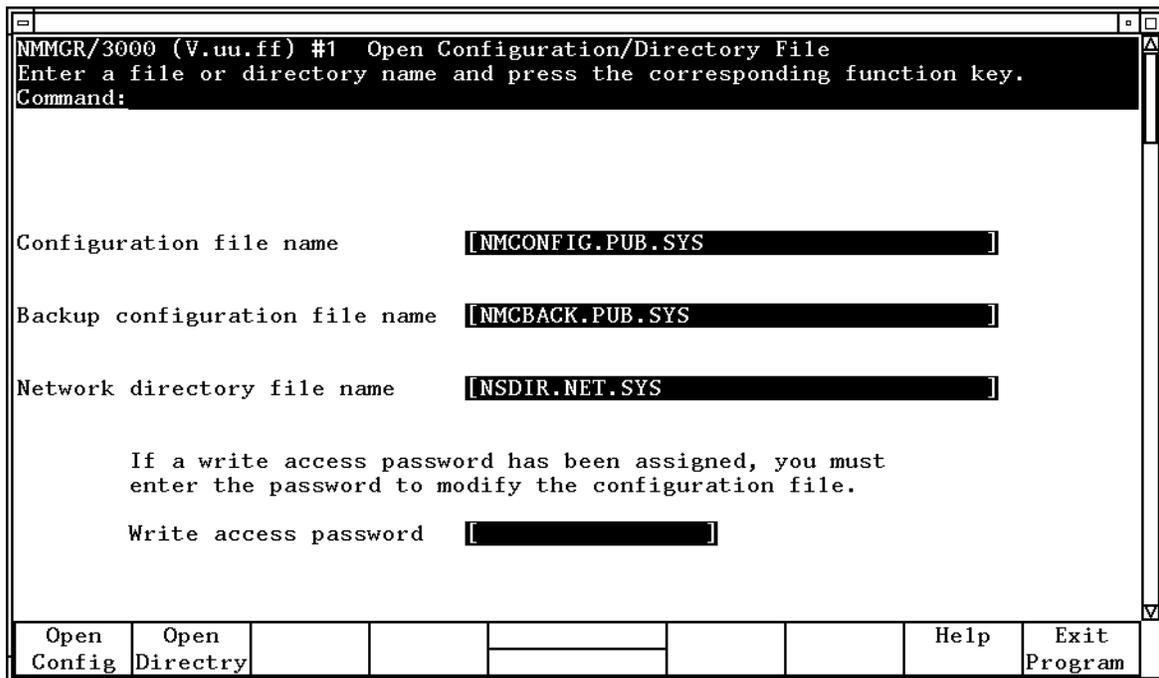
```
TRANSPORT NOT ACTIVE. (NETXPRTWARN  
0001) ENCOUNTERED ONE OR MORE WARNINGS  
WHILE PROCESSING COMMAND. (CIWARN 4437)
```

---

### Step 2: Open the Configuration File

The first screen that NMMGR displays is the Open Configuration/Directory File screen (Figure 6-1). You should already have created the configuration file you are using when you configured DTS. (If you have not already configured DTS, stop here, and go to Chapter 3, “Configuring DTCs Step-by-Step,” for step-by-step instructions.

**Figure 6-1** Open Configuration/Directory File Screen



1. Verify that the correct configuration file name, backup configuration file name, and network directory file name are in the appropriate fields
2. If you have assigned a write access password, enter it in this field. If you are not using the password feature, leave this field blank.
3. Press the [Open Config] key.

#### Fields

Configuration file name The only configuration file name the system recognizes for use by the network subsystem is NMCONFIG.PUB.SYS. You can, however, create or modify a configuration file using a different name and save it as an **offline configuration file**. You can use offline configuration files as a means of creating and storing configurations that you want to use in the future or that you are preparing for use on a different system. When you are ready to use an offline configuration file, rename it as NMCONFIG.PUB.SYS, validate within NMMGR (SYSGEN cross-validation is done automatically within NMMGR). Use DTCCNTRL to shutdown and restart DTS or reboot the system.

Backup  
configuration

file name     A backup file name must be specified whenever a configuration file is opened or created. The default backup configuration file name is `NMCBACK.PUB.SYS`. The backup file will be automatically updated with the contents of the configuration file each time the configuration file is successfully validated.

Network  
directory file  
name

The network directory file must be configured for each new node (unless you will only be accessing the node using direct level 3 access). The network directory contains information that one X.25 node needs in order to communicate with other X.25 nodes. The only network directory file name supported by HP is `NSDIR.NET.SYS`. This file is part of a KSAM pair. A key file is created at the same time as this data file. The key file will automatically be named using the first six letters of the network directory file name, appended with the character K. For example, `NSDIRK.NET.SYS` is the name of the key file associated with the data file `NSDIR.NET.SYS`.

Write access  
password

The password is an optional feature. If a password has been assigned, you must enter it in the password field to update the configuration file. It is still possible to open the file without using an assigned password, but the file will be in read only mode and NMMGR will not accept any changes.

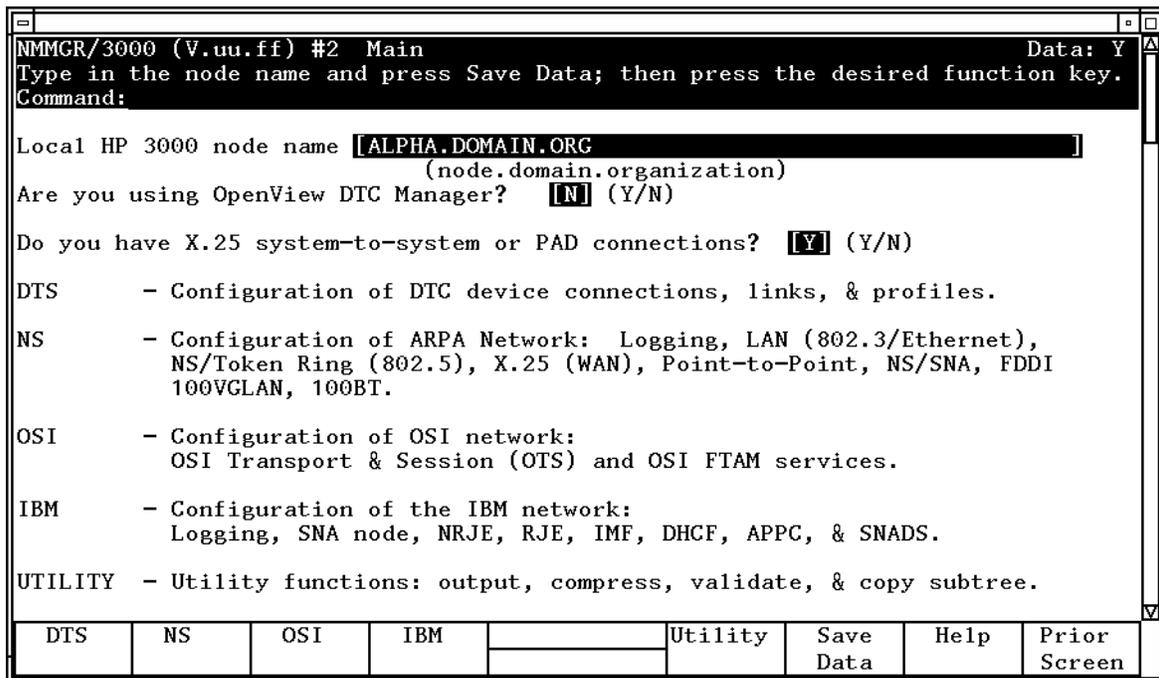
If a password has not been assigned, you should ignore the password field.

If you want to assign a password for the system you are configuring, see *Using the Node Management Services (NMS) Utilities* manual.

### Step 3: Select NS Configuration

NMMGR displays the Main screen (Figure 6-2) after you create or open a configuration file.

**Figure 6-2 Main Screen**



1. You should already have configured a local node name and entered the other information required for this screen. Verify that the information is correct
2. Press the **[NS]** key to select the NS configuration branch.

**Fields**

Local HP 3000

node name The local HP 3000 node name is the name by which the HP 3000 Series 900 computer is known in the network. The format of a node name is *nodename.domain.organization* where the total number of characters is 50 or fewer, and each field contains 16 or fewer characters (alphanumeric, underscore, or hyphens). The first character of each field must be alphabetic.

The *nodename* portion of each node name must be unique within the node's network. The *nodename.domain* portion of each node name must be unique within the internetwork. HP recommends that all nodes on the network be assigned the same domain and organization.

Assign meaningful node names. For example, MKTG.ITG.HP and LAB.ITG.HP are meaningful names for two nodes on the same Local Area Network (LAN) within Hewlett Packard. One node (MKTG.ITG.HP) is

used by the marketing department. The other node (LAB.ITG.HP) is used by the lab. The *domain* field is the same because the nodes belong to the same network. The *organization* field is the same because the nodes belong to the same internetwork.

Are you using  
OpenView DTC  
Manager?

If you answer yes (Y) to this question, NMMGR assumes you are using a PC to manage your system and takes you to the corresponding set of screens. If you answer no (N), NMMGR assumes you are using host-based network management and takes you to the set of screens required for host configuration. If you are using this manual, you should have entered an N in response to this question when you configured your DTCs.

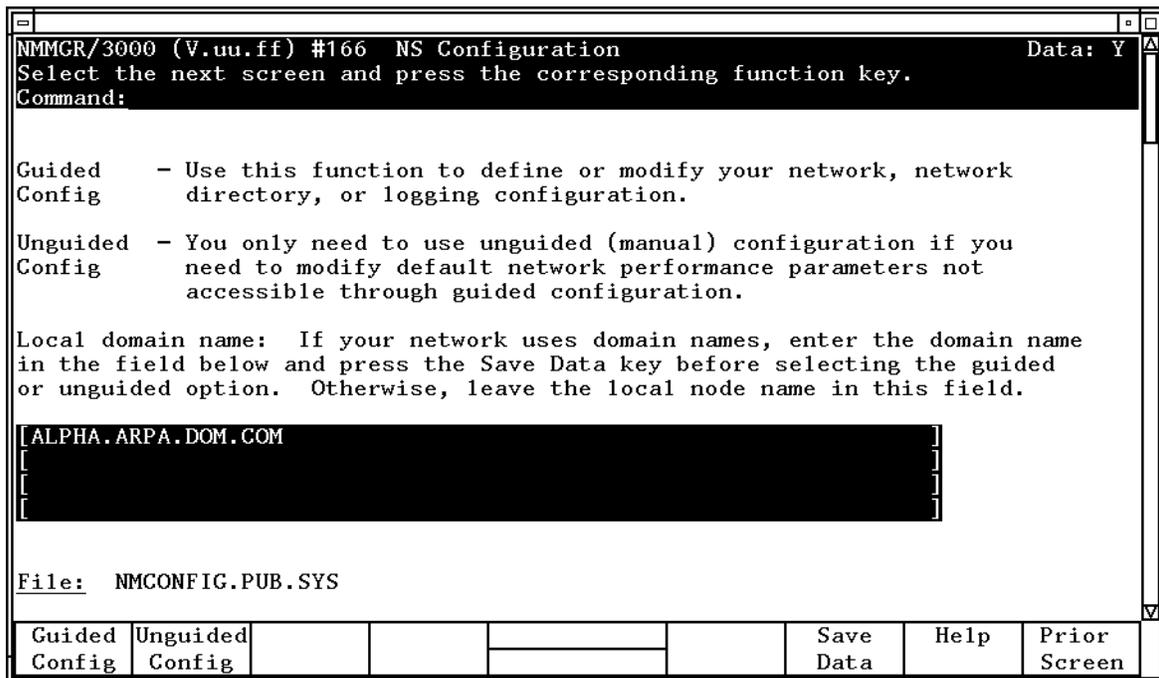
Do you have  
X.25  
system-to-system  
or PAD  
connections?

If you answer yes (Y) to this question, NMMGR assumes you are configuring X.25 connections and takes you to the set of screens required to configure DTC X.25 Network Access Cards when you configure DTS. If you answer no (N), NMMGR assumes you have no need to configure X.25 connections and takes you to a different set of screens. If you are using this manual, you should have entered a Y in response to this question when you configured your DTCs.

## Step 4: Select Guided Configuration

NMMGR displays the NS Configuration screen (Figure 6-3) if you press the [NS] key at the Main screen.

**Figure 6-3 NS Configuration Screen**



1. If you are using domain names for network access, replace the node name in the field at the bottom of the screen with this system's domain name and press the **[Save Data]** key. If not using domain names, leave the local HP 3000 node name in this field.
2. Press the **[Guided Config]** key to proceed with guided configuration of X.25 iX System Access.

**Fields**

Local domain name

The name of this system in the ARPANET standard format. This name can be used by other nodes on the network to access this host.

The domain name is composed of labels, with each label separated by a period. Each label must start with a letter or digit, and have as interior characters only letters, digits, hyphens (-), or underbars (\_). A domain name may have any number of labels, but its total length, including periods, is limited to 255 characters.

label[.label][...]

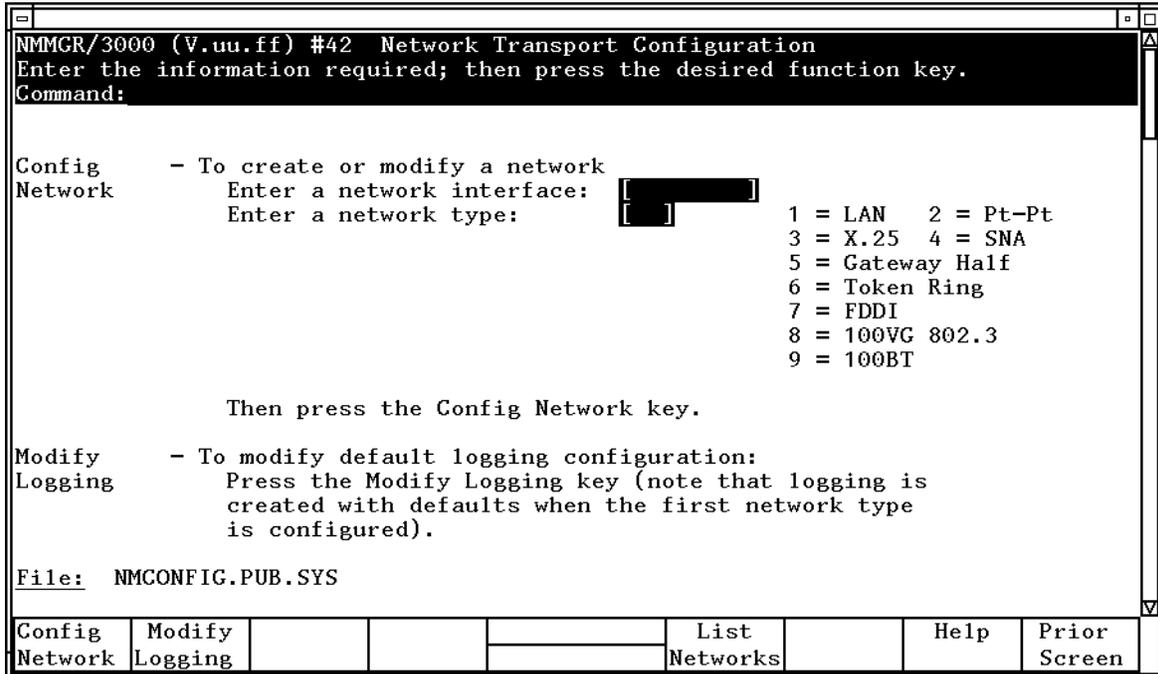
Domain names are not case sensitive.

Use of domain names is optional. If you are not using domain names for network access, leave the local HP 3000 node name in this field.

## Step 5: Perform Guided Network Transport Configuration

NMMGR displays the Network Transport Configuration screen (Figure 6-4) if you press the [Guided Config] key at the NS Configuration screen.

**Figure 6-4** Network Transport configuration Screen



1. Next to the words Enter a network interface:, enter a name for the network interface (for example, X25NI).
2. Next to the words Enter a network type:, enter a 3 to indicate that the NI is an X.25 NI.
3. Press the [Config Network] key. (There may be a short pause before the next screen appears.)

### Fields

Enter a network interface

The network interface name (NI name) is used to easily identify one of the types of network interfaces: X.25, LAN, point-to-point (router), gateway half, SNA, or token ring. The name can be up to eight alphanumeric characters, starting with a letter. The maximum number of NIs that can be configured on a node is 12. One of the 12 allowable NIs is reserved for loopback. (Loopback is configured for you automatically.)

If a node interfaces to more than one network, give each NI on that node a unique name. Although all nodes on the same network do not have to have the same NI

name, it will be easier to remember if you make the NI name the same for all nodes on the same network (for instance, X25net1). You will use the NI name with the **NETCONTROL** command to start the transport and network link.

---

**NOTE** You can have more than one X.25 NIs configured for the same X.25 card on one MPE/iX system, but only one can be running at any one time.

---

Enter a network  
type                      Number that indicates the type of network interface you are configuring. You must enter a network type if you are configuring a new network interface. Network type 3 is the only type used when configuring host-based X.25 links.

---

**NOTE** The only link protocol that can be used as a gateway half is that of the NS Point-to-Point 3000/iX link. X.25 iX System Access cannot be configured as a gateway half. Yet, these two types of software can coexist on the same node. To configure an internetwork gateway half, refer to the *HP 3000/iX Network Planning and Configuration Guide*.

---

## **Step 6: Configure X.25 Network**

NMMGR displays the X.25 Configuration screen (Figure 6-5) when you press the **[Config Network]** key at the Network Transport Configuration screen with an NI type of 3 (X.25).



6. If the network that this node is on contains ANY internetwork gateway (either full or half) press the **[Neighbor Gateways]** key and proceed to the section in this chapter called "Configure Neighbor Gateways."
7. If the network that this node is on contains NO internetwork gateways or if you have already configured gateways for this system, press the **[Config Directry]** key and proceed to the section in this chapter called "Configure X.25 Virtual Circuits."

## Fields

Node name      Display only. This is the Local HP 3000 node name.

Network  
interface (NI)  
name            Display only.

IP address      The IP address is an address of a node on a network. An IP address has two parts: a network portion and a node portion. The network portion must be the *same* for all nodes on an X.25 network; the node portion must be *unique* for all nodes on an X.25 network.

HP assigns the network portion (initial nine digits) of IP addresses from ARPA Class C, though your addresses may also be of Classes A or B. The complete formats are:

Class A:        nnn . xxx . xxx . xxx

Class B:        nnn . nnn . xxx . xxx

Class C:        nnn . nnn . nnn . xxx

Where:        nnn = the network portion of the IP address  
and

              xxx = the node portion of the IP address

Note: A space separates the network and node portions of the IP address.

For Class C, the node portion of the IP address must be between 000 and 255.

If you are adding your NS 3000/iX node to an existing NS 3000/V network, the network portion of each node's IP address should be the same. You will have to find out what this is, and use it in the network portion of the IP address of your NS 3000/iX node. Also, you will need to know the node portions of the IP addresses of each of the nodes (usually they will be numbered sequentially, such as 001, 002, and so on), so that you can specify a unique node portion for the IP address of your node. If you have a network map, it should provide a record of

such items as the node name and IP address of each node. If there is no record, and if you want to find out each node's IP address, you will have to issue the following command (NM capability required) on each of the nodes:

```
NETCONTROL          NET=NIname ; STATUS
```

The last line of output from this command tells you what the complete IP address is for that node; the last three digits are the unique node portion of the address.

IP subnet  
mask

An IP subnet mask is specified in the same format as an IP address. The 32-bit mask is grouped in octets expressed as decimal integers and delimited by either a period (.) or a space. An IP mask is used when configuring subnetworks. The mask identifies which bits of an IP address will be used to define a subnetwork. To determine these bits, you first need to estimate how many subnetworks and nodes per subnetwork you need. For details on deriving an IP subnet mask, refer to the *HP 3000/iX Network Planning and Configuration Guide*.

Link Name

The link name identifies a specific DTC/X.25 Network Access card to be used for X.25 system-to-system connections. This link name must be the same as the link name you entered for this card on the DTC X.25 Card Configuration — Sys-to-Sys LUGs screen when you configured your DTCs, see Chapter 3, "Configuring DTCs Step-by-Step."

DTC Node  
Name

The DTC node name is the fully qualified nodename (*name.domain.organization*) of the DTC that contains the DTC/X.25 Network Access card with the configured link name.

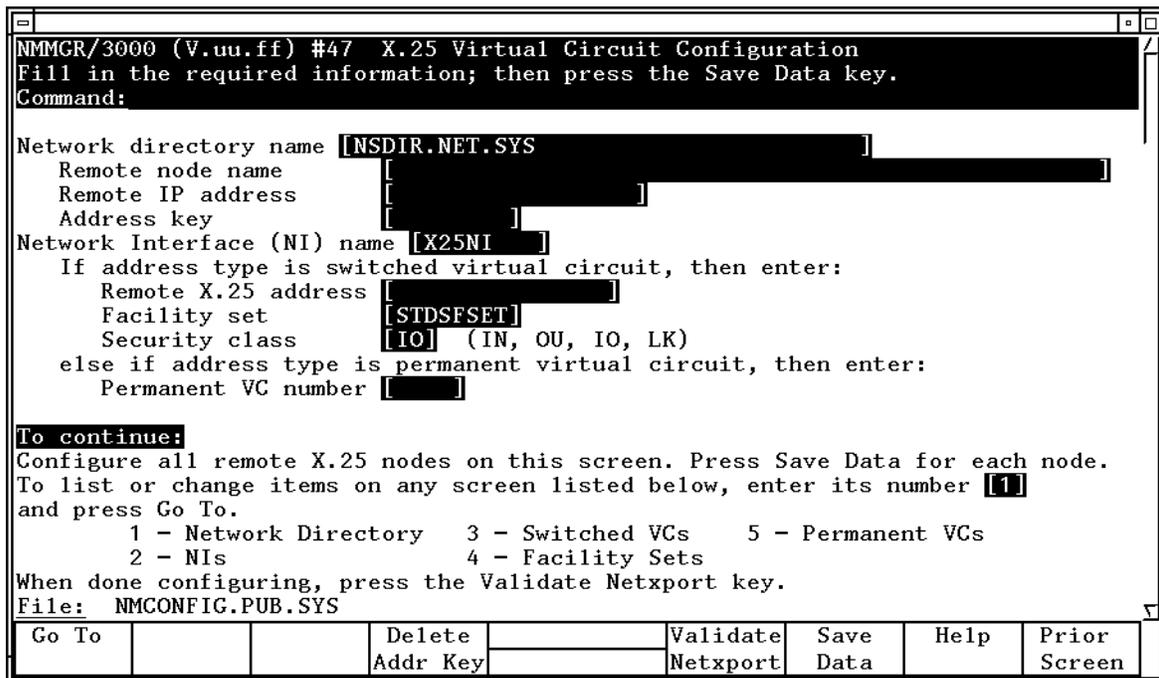
Card Number

The DTC card number is the number of the DTC/X.25 Network Access card in the associated DTC. If the card is contained in a DTC 48, the DTC card number can be any number from 1 to 5. If the card is contained in a DTC 16, the card number must be 2. If the card is contained in a DTC 72, the DTC card number can be any number from 0 to 3.

## Step 7: Configure X.25 Virtual Circuits

NMMGR displays the X.25 Virtual Circuit Configuration screen (Figure 6-6) if you press the [Config Directry] key from the X.25 Configuration screen. This screen lets you configure the network directory.

**Figure 6-6 X.25 Virtual Circuit Configuration Screen**



1. In the Remote node name field, enter, in turn, the nodename of each remote X.25 node on your network in the format *nodename.domain.organization*. Also, if you need to be able to perform a loopback **DSL**INE command to the local node, then enter the *local* HP 3000 node's name here as well.
2. For each remote nodename, type the IP address of the node in the Remote IP address field.
3. To specify that calls can be made *to* a node, enter its address key in the Address key field. Enter the node portion of the remote node's configured nodename.

**NOTE**

An address key called **POOL** is already preconfigured for you though it doesn't show up on the screen. **POOL** allows the node being configured to receive *any* incoming calls even if the remote system's address is not configured on this screen. **POOL** will also allow you to use NetIPC to programmatically provide an X.25 address that is not configured on this screen. If you want to delete the **POOL** address key, in the last line of the X.25 Virtual Circuit Configuration screen enter a 3 (for switched VCs) and press the **[Go To]** key. That brings you to the X.25 SVC Address Key Paths screen where you can then remove the default name **POOL** by typing over it with spaces and then saving the data.

4. If the address type is a switched virtual circuit, complete steps a through c, but if the address type is a permanent virtual circuit, skip to step 5.

- a. In the `Remote X.25 address` field, enter the X.25 address of the remote host for X.25 public data networks or private networks.
  - b. Make sure the name of the facility set you are using is in the `Facility set` field. You may either choose the default facility set (`STDSFSET`) or enter an alternative. If you are configuring a new facility set, enter a new name. (To modify facility set parameters, enter a 5 in the last field on the screen and press the **[Go To]** key.)
  - c. In the `Security class` field, enter the level of logical security you want to have on this particular entry. The possible values are `IN` (accept calls from the address), `IO` (accept calls from and send calls to the address, default), `OU` (send calls to the address, incoming calls are rejected), and `LK` (block calls to or from the address).
5. If the address type is a permanent virtual circuit (PVC), in the `Permanent VC number` field, enter the PVC number of the PVC on the remote node. This value cannot be greater than the number of PVCs for which you are subscribed. It must be within the PVC range you defined during DTC configuration.
  6. After you have finished entering new information for each remote node, press the **[Save Data]** key. (Press the key once for each remote node you are configuring.)
  7. If you have completed configuration of X.25 iX System Access, press the **[Validate Netxport]** key. Otherwise, press the **[Prior Screen]** key to return to the X.25 Configuration screen.

## Fields

### Network

`directory name` The network directory file that will be updated by the information entered through this screen.

### Remote node

`name` You must enter the remote node name of each X.25 node into the network directory. Include entries for all remote nodes and, if you want to be able to perform loopback, the local HP 3000 node as well.

### Remote IP

`address` Also in the network directory, you must enter the IP Address of each node whose identity you have entered into the network directory. For the format of this parameter, see the information in the “Fields” section under “X.25 Configuration.”

`Address key` The X.25 address key is the name of a remote node with which your local node will be communicating. Hewlett-Packard recommends that you make the name be the node portion of the remote node’s name (where

its full name is *node.domain.organization*). You must configure an X.25 address key for each remote node with which your node will be communicating. You have a combined maximum of 1024 X.25 address keys in the SVC and PVC path tables. The X.25 address key name must be eight characters or less and the first character must be alphabetic. A default address key called `POOL` allows any system to access the local system even if the remote system's address is not configured. `POOL` can also be used when level 3 programmatic access (NetIPC) provides an X.25 address.

Network  
interface (NI)  
name           Display only.

SVC or PVC  
Parameters     The parameters for assigning either SVCs or PVCs are described in the following paragraphs.

#### **For SVCs**

Remote X.25  
address        The remote X.25 Address is the remote node's X.25 address. This address is required for SVCs if you have specified an X.25 address key. This address must be 15 digits or less.

Facility set   The facility set name is a name for a set of X.25 connection parameters. The parameters are determined by the type of X.25 network that you are subscribed to. You can configure options in a facility set so that specified options are available for every virtual circuit or negotiated for each virtual circuit on a per-call basis. This facility set will be used when a connection is made from your node to the specified remote node or from the specified remote node to your node. A Facility Set is required for SVCs if you have specified an X.25 Address Key. The facility set name must be eight characters or less, and the first character must be alphabetic. You can configure up to 128 facility sets.

To modify facility set parameters, enter a 5 in the field at the bottom of the screen and press the **[Go To]** key. This will take you to the X.25 User Facility Sets screen. From this screen you can create new or modify existing user facility sets. Refer to the *NS 3000/iX NMMGR Screens Reference* manual for more information.

**Security Class** The security class is the level of logical security you want to have when a connection is made to or from the specified remote node. A Security level is required for SVCs if you have specified an X.25 Address Key. The possible values are as follows:

- IO—Both incoming and outgoing calls are accepted. This is the default value.
- IN—Only incoming calls are accepted from this particular remote address. Outgoing calls will be rejected.
- OU—Only outgoing calls are accepted to this particular remote address. Incoming calls will be rejected.
- LK—Entry is locked. No call is accepted, either inbound or outbound.

#### **For PVCs**

**Permanent VC  
number**

The PVC number identifies a permanent virtual circuit (PVC) on the remote node. If you have entered a name in the X.25 Address Key field and are configuring PVCs, then you also have to enter a value for the PVC number.

## Configure Neighbor Gateways

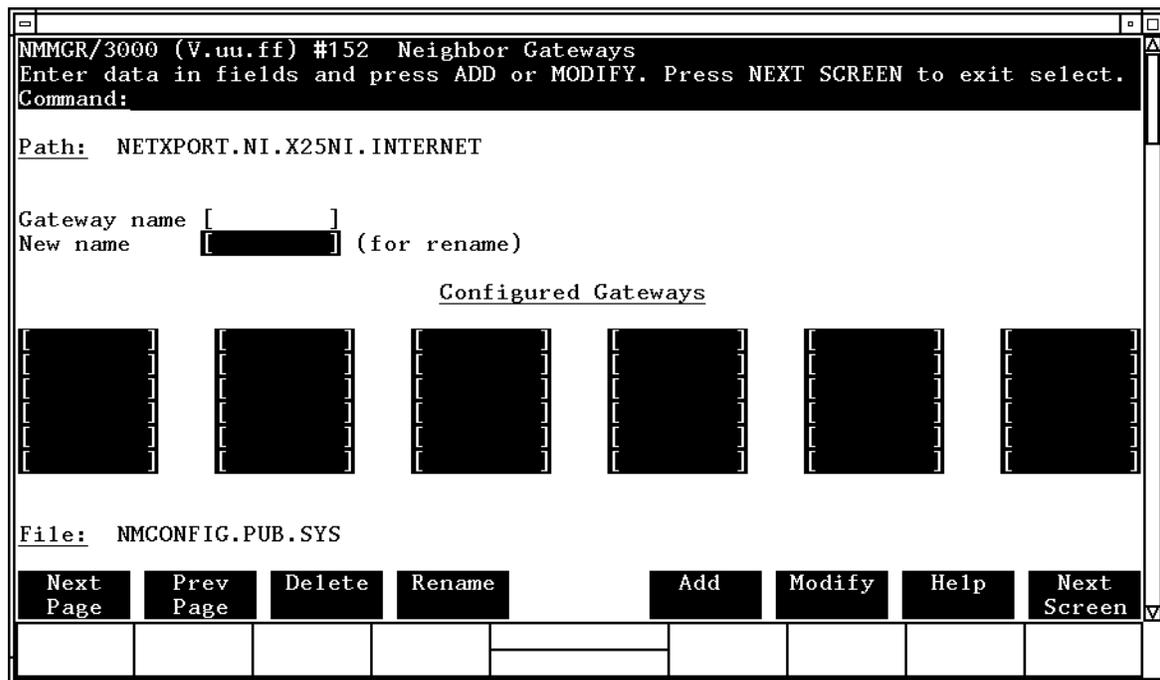
You need to visit the next two screens only if you are configuring a non-gateway node that is on the same network as a gateway. In this case, the non-gateway node needs to know the identity of any *neighbor gateway*. Neighbor gateways can be either full or half gateways. (Go back one level by pressing the [Prior Screen] key, then select [Neighbor Gateways] key).

Gateways that are on the same network are called *neighbor gateways*. A non-gateway node on an X.25 network may need to go through a neighbor gateway in order to send messages to an entirely different network. (Two nodes are on the same network if the *network* portion of their IP addresses are the same.) All X.25 nodes that are on the same network as a neighbor gateway need to know the identity of any neighbor gateways. When you configure an X.25 node, you enter into its configuration the identity of any accessible neighbor gateways that share the same network. The identified gateways may be either full or half gateways.

### Identify Neighbor Gateways (If Any Are Present)

NMMGR displays the Neighbor Gateways screen (Figure 6-7) when you press the [Neighbor Gateways] key at the X.25 Configuration screen.

**Figure 6-7** Neighbor Gateways Screen



1. In the Gateway name field, enter the name of a gateway that is on the *same network* as the node that you are configuring.
2. If you are adding the identified gateway for the first time, press the [Add] key. If you are modifying the configuration of this node, press the [Modify] key. The Neighbor Gateway Reachable Networks screen will be displayed. Proceed to “Identify Neighbor Gateway Reachable Networks.”
3. Repeat steps 1 and 2 for each gateway that is on the same network as the node that you are configuring. When you have finished, press the [Next Screen] key to return to the X.25 Configuration screen.

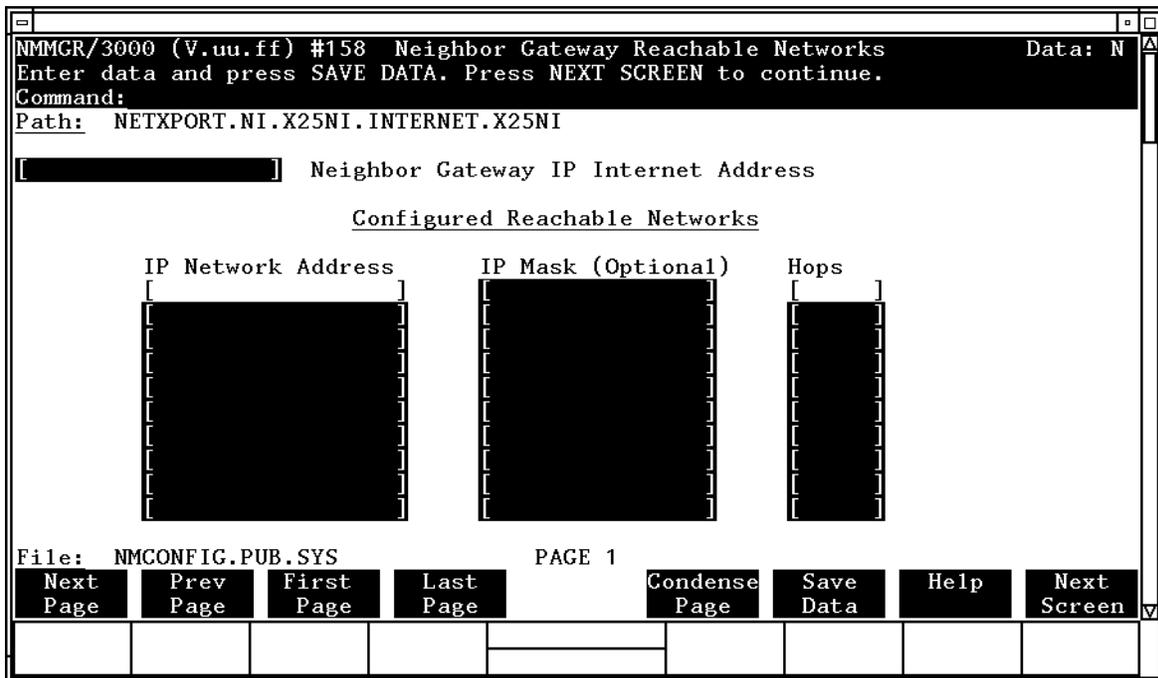
Fields

Gateway name Each gateway name can be as long as eight alphanumeric characters. The first character must be alphabetic.

### Identify Neighbor Gateway Reachable Networks

NMMGR displays the Neighbor Gateway Reachable Networks screen (Figure 6-8) when you press the [Add] key or the [Modify] key for a valid gateway name from the Neighbor Gateways screen.

Figure 6-8 Neighbor Gateways Screen



1. In the Neighbor Gateway IP Internet network Address field, enter the IP address of the gateway specified on the Neighbor Gateways screen. An example is:

C 192.007.007 001

2. In the IP Network Address fields under the title Configured Reachable Networks, enter the IP addresses of all the *remote* networks that can be reached through the gateway whose IP address is configured in the previous field.
3. The IP subnet mask is optional. If entering one, tab to the next field. In the IP subnet mask field, enter the number in the same format as an IP address. For details on deriving an IP subnet mask, refer to the *HP 3000/iX Network Planning and Configuration Guide*.
4. In the field labeled Hops, enter the number of hops (full gateways) needed to get to the target network. Two partner gateway halves count as one hop.
5. Repeat steps 2, 3, and 4 for each remote reachable network. If you need to configure more than 10 networks, press the [Save Data] key then press the [Next Page] key to enter more networks.
6. After you have finished entering the IP addresses of all the reachable networks, press the [Save Data] key. Press the [Next Screen] key to return to the Neighbor Gateways screen.
7. Back at the Neighbor Gateways screen, after you have finished adding all of the neighboring gateways, press the [Next Screen] key to return to the X.25 Configuration screen. Follow instruction 7 in the section in this chapter called “Step 6: Configure X.25 Network.”

#### Fields

If you have identified any neighbor gateways, then you will also be identifying: 1) the *IP Network Addresses* of all of the networks that you can reach through that gateway, and 2) the *number of hops* (corresponding to the number of gateways) that a packet passes through to reach a remote network from the local network. Two gateway halves count as one hop.



## 7

## Managing Networks with DTCCNTRL

This chapter describes the syntax of the `DTCCNTRL` command and how it is used. `DTCCNTRL` is a command file that is used to start, stop, and obtain status about host-based X.25 system-to-system and PAD connections; dynamically implement changes that were made to the DTS subsystem in `NMMGR`; shutdown and restart the DTS subsystem; automatically add a new DTC. Additional information on dynamic configuration, automatic configuration, and DTS shutdown and restart is contained in the *Configuring Systems for Terminals, Printers, and Other Serial Devices* manual.

The capabilities required to use `DTCCNTRL` depends on the operation selected. System Manager (SM) is required to shutdown and restart the DTS subsystem. Network Manager (NM) or System Manager (SM) is required to perform dynamic or automatic configuration. System Operator (OP), Network Administrator (NA) or Network Manager (NM) is required to obtain dynamic configuration or X.25 card status or start and stop X.25 and PAD services.

This chapter includes the following:

- A description of the syntax and parameters of the `DTCCNTRL` command.
- An overview of the Dynamic Configuration capability of the `DTCCNTRL` command.
- An overview of the Automatic Configuration capability of the `DTCCNTRL` command.
- An overview of the DTS shutdown and restart capability of the `DTCCNTRL` command.
- A discussion of the start, stop, and X.25 status capability of the `DTCCNTRL` command.

---

## DTCCNTRL Parameters

Dynamically implements DTS changes made in NMMGR. Initiates automatic configuration of DTCs. Shuts down and restarts the DTS subsystem. Starts, stops, and controls the operation of host-based X.25 connections. See the following sections for further information on each of the following functions. See the *Configuring Systems for Terminals, Printers, and Other Serial Devices* manual for additional information on the functions that are not X.25 or PAD operations.

**Syntax**

```
DTCCNTRL          {          DTC=dtcname ;  
                   FUNC=function ;  
                   CARD=cardnum }  
                   [          ;FORCED=foption]
```

**Parameters**

DTC=dtcname **Required if FUNC is one of STARTX25, STARTPADSUP, STARTBOTH, STOPX25, STOPPADSUP, STOPBOTH, or STATUS.** The DTC node name of the DTC on which the operation is to be performed, in the form:

```
name[.domain][.organization]
```

If the domain or organization are not provided, the domain and organization of the local node will be assumed as the default.

FUNC=function **Optional.** The function to be performed. If this parameter is omitted, DTCCNTRL will display the menu shown below. The desired function can then be selected from the menu.

The available functions are:

DCSTATUS	Displays the result of the last time DTS dynamic configuration was invoked.
DYNCONF	Dynamically implement DTS changes made in NMMGR.
AUTOCONF	Initiate automatic configuration of a new DTC.
SHUTDOWN	Shutdown the DTS subsystem and release all DTS system resources.
RESTART	Startup the DTS subsystem. DTS must be shut down first.
STARTX25	Activates X.25 services on the specified card.

STARTPADSUP	Activates PAD support services on the specified card. X.25 services must already be active.
STARTBOTH	Activates both X.25 and PAD support services on the specified card.
STOPX25	Deactivates X.25 services on the specified card. If PAD support services are active, they must be deactivated prior to entering this command.
STOPPADSUP	Deactivates PAD support services on the specified card. X.25 services remain active.
STOPBOTH	Deactivates both X.25 and PAD support services on the specified card.
STATUS	Displays information about the DTC, including type (16, 48 or 72MX), X.25 cards, and whether X.25 or PAD support is active on the cards.

CARD=cardnum **Required if FUNC is one of STARTX25, STARTPADSUP, STARTBOTH, STOPX25, STOPPADSUP, or STOPBOTH.** Specifies the X.25 card number on which the FUNC operation is to be performed.

FORCED=foption **Optional.** If FUNC is SHUTDOWN specifies whether all active ldevs will be aborted. If FUNC is one of STARTX25, STARTPADSUP, STARTBOTH, STOPX25, STOPPADSUP or STOPBOTH. Specifies whether the operation will be performed even if another user is accessing the DTC Manager.

N **Default.** If FUNC is SHUTDOWN, DTS shutdown is not attempted if there are active ldevs. If FUNC is a PAD or X.25 support service, the function is not performed if another user is accessing the DTC Manager.

Y If FUNC is SHUTDOWN, causes all active ldevs to be aborted on DTS shutdown. For shutdown, this option can only be invoked from the command line. If FUNC is a X.25 or PAD support function forces the X.25 or PAD support function to occur even if another user is accessing the DTC Manager.

## DTCCNTRL Menu

If DTCCNTRL is invoked without the FUNC=function parameter, the following menu will be displayed. Enter the number for the desired function at the prompt. DTCCNTRL will prompt for additional information if needed. If the DTS Shutdown function is selected the FORCED=Y option can not be selected.

```
:DTCCNTRL
0  Exit
1  dynamically implement DTS changes made in NMMGR
2  view status of last DTS dynamic configuration
3  automatically add a new DTC
4  shutdown DTS subsystem
5  restart DTS subsystem
6  manage/dynamically configure host-based X.25
7  help
```

For help on these topics, select 7 at the prompt below.

Select one of the numbers above corresponding to the desired operation.

---

## Dynamic Configuration

Dynamic Configuration enables you to change the configuration of the DTS subsystem by applying the configuration changes made in NMMGR without rebooting the system. Such configuration changes include adding or deleting ldevs, adding or deleting DTCs, modifying most parameters of profiles, or DTCs, changing the number of non-nailed ldevs. See for a complete list of changes that can be made dynamically. (Some changes will require additional action, such as resetting the DTC, before the change is completed.)

NMMGR can keep up to 70 changes. This means that you can change a maximum of 70 different screens before you invoke DTCCNTRL. After the 64th change NMMGR displays a warning that tells you the limit is near. If more than 70 changes are made NMMGR warns that the current change will not take effect using DTCCNTRL. Those changes made after 70 entries will not be kept and can not be made dynamically. After DTCCNTRL is invoked and the changes were successful, NMMGR can again keep up to 70 new changes. Those changes that were not successful will be saved so they can be retried at a later time. When a new DTC is added NMMGR considers this to be one change even if you save data on many screens to configure this DTC.

All operations that delete ldevs are non-destructive. This means that if an ldev to be deleted is in use, then the delete is not performed. You must take the appropriate action to free the device. For example, you must stop the spooler on a spooled serial printer or log off the session on a terminal ldev. If multiple ldevs are deleted, then only free ldevs are deleted. Those ldevs that were not free will be processed again the next time DTCCNTRL is invoked.

Some changes may affect more than one user. Usually this may happen when the change is to a DTC characteristic such as adding a card. This is because the DTC will need to be powered off or reset. Users on other DTCs are not affected.

Some changes will require additional steps to complete once DTCCNTRL has made the desired changes. These possible additional steps are: logoff any sessions or close any jobs that access the changed devices, stop and restart the spooler if the device is a printer, stop and the start X.25/PADSUP, reboot or reset the DTC. DTCCNTRL will display a message when these steps are necessary and tell you which DTCs are affected.

Refer to Table 7-1 for a list of configuration changes that can be modified dynamically.

**Table 7-1 Dynamically Configurable Tasks**

Task	Action Required for Change to Become Active
<p>Add/configure new terminal/printer Add/delete class name Change DTC event logging class Host-based X.25 configuration changes:</p> <ul style="list-style-type: none"> <li>• maximum number of PAD connections</li> <li>• X.25 link name</li> <li>• remote X.25 addresses and security</li> <li>• X.25 allow access</li> <li>• remote X.25 calling address</li> <li>• PAD password</li> </ul> <p>Change SNMP filter Change NLIO from N to Y in terminal profile Increase number of non-nailed TIO/PAD ports</p>	<p>No action; changes take effect dynamically</p>
<p>Change terminal to printer or vice versa* Change device profile characteristics:</p> <ul style="list-style-type: none"> <li>• change line speed</li> <li>• change term type file name/number</li> <li>• change modem type</li> <li>• change speed/parity</li> <li>• change hardware handshaking</li> <li>• change reset HP terminal</li> <li>• change allow :HELLO logon</li> <li>• change record width</li> </ul> <p>Delete:</p> <ul style="list-style-type: none"> <li>• terminal/printer*</li> <li>• ldev*</li> <li>• DTC*</li> </ul> <p>Decrease number of non-nailed TIO/PAD ports*</p>	<p>Logoff any sessions or close any jobs associated with changed devices. If device is a printer, stop the spooler.</p> <p>* For these changes, the device must not be owned when dynamic configuration is invoked. The terminals must be logged off and the printers must be not spooled.</p>

Task	Action Required for Change to Become Active
Host-based X.25 configuration changes: <ul style="list-style-type: none"> <li>• change PAD access</li> <li>• change level 1, 2, or 3 configuration</li> </ul>	Use DTCCNTRL to: <ol style="list-style-type: none"> <li>1. Stop X.25/PADSUP</li> <li>2. Start X.25/PADSUP</li> </ol> <i>(see Configuring Systems for Terminals, Printers, and Other Serial Devices for more information)</i>
Add/configure new DTC	Reboot or reset DTC or Perform automatic configuration
Add/configure a TIO card Change DTC IP address Change AFCP/management timers Change SNMP MIB data Change SNMP trap destination	<ol style="list-style-type: none"> <li>1. Logoff any sessions that were logged on through the changed DTC</li> <li>2. Reboot DTC</li> </ol> You may also use TermDSM to reset the DTC (see <i>Troubleshooting Terminal, Printer, and Serial Device Connections</i> or more information)
Change from host-based TIO to host-based X.25 Change DTC LAN address Change DTC name Change DTC node name Change from PC-based to host-based or vice versa Change NLIO from Y to N in terminal profile Change initially spooled in printer profile Change HP 3000 characteristics: <ul style="list-style-type: none"> <li>• node name</li> <li>• link name</li> <li>• physical path of LANIC</li> </ul> Add X.25 card to DTC when none previously existed	<ol style="list-style-type: none"> <li>1. Use DTCCNTRL to shutdown/restart DTS</li> <li>2. Reboot DTC</li> </ol> You may also use TermDSM to reset the DTC (see <i>Troubleshooting Terminal, Printer, and Serial Device Connections</i> for more information)

## NMCONFIG and NMCONFIX Files

Dynamic Configuration uses both files `NMCONFIG.PUB.SYS` and `NMCONFIX.PUB.SYS` to manage the devices created by the DTS subsystem. When users wish to make any dynamic change, `NMMGR` will be used to modify the configuration in `NMCONFIG.PUB.SYS`. When `DTCCNTRL` is invoked, either within or from outside of `NMMGR`, `NMCONFIG` will be compared to `NMCONFIX` and the desired changes will be made to the system configuration. When the operation has completed successfully, the changes will be written to `NMCONFIX`. The configuration in `NMCONFIX` will always match the actual configuration of the DTS subsystem.

If any errors are encountered, then information will be saved in the `NMCONFIG` file that will allow `DTCCNTRL` to be re-invoked to complete the changes at a later time. If an operation is partially successful, then those changes that are successful will be written to `NMCONFIX`. For example, if you delete two ldevs and the second ldev can't be deleted because it is in use, then `DTCCNTRL` will save information that will allow the second ldev to be deleted once the device is no longer in use.

---

**CAUTION**

If ANY other configuration file is copied to `NMCONFIG.PUB.SYS` or `NMCONFIX.PUB.SYS` then dynamic configuration will be disabled until a DTS shutdown and restart is done or the system is rebooted. This includes other files from the same system or files copied from other systems.

If there is some operation that fails, and you wish to undo the change, you can use `NMMGR` to change the appropriate screens back to what they were and then invoke `DTCCNTRL`.

Follow the steps below to dynamically configure DTS changes. Refer to chapter 3, for more detailed steps on the DTS configuration process using `NMMGR` for host-based and PC-based DTC management, respectively.

1. Run the `NMMGR` program and make all desired DTS configuration changes. The network management configuration file must be `NMCONFIG.PUB.SYS` for the configuration changes to become active dynamically.

---

**NOTE**

If you are changing profile characteristics, you can see which ldevs and DTCs will be affected by the change by pressing the **[Assoc Ldevs]** function key on the profile screen corresponding to the profile you are changing. After pressing this key, you will see a list of all ldevs using this profile in the DTCs configured in DTS.

---

2. After successful validation and cross-validation, NMMGR will prompt you as to whether you want DTS changes to take effect now. The following prompt will appear:

```
Do you want DTS changes to be become active now (Y/N)?  
Y =    all changes made take effect now  
N =    all changes made will take effect upon next dynamic  
       configuration or system boot  
H =    help  
>
```

If you type Y, dynamic configuration changes will take effect now. NMMGR calls DTCCNTRL which dynamically implements the DTS changes made in NMMGR.

If you type N, dynamic configuration changes will not take effect now. Your changes will take effect the next time dynamic configuration is invoked, a DTS shutdown/restart is performed, or the system is rebooted. Dynamic configuration changes can be implemented later by calling DTCCNTRL from the CI prompt any time thereafter. Or you can run NMMGR again and select validate DTS/Link. See the section “DTCCNTRL After NMMGR Exit,” for steps on how to invoke the DTCCNTRL command at the CI prompt.

If you type H, you will see help text describing the options.

3. If you selected Y in step 2 above and the DTS changes you have made are dynamically configurable, no other action is required and changes will become active automatically. You will see a message on the screen indicating that no other actions are required.

If the DTS changes you have made require additional actions before changes become active, refer to Chapter 5, “Preparing to Configure X.25 iX System Access,” and Chapter 6, “Configuring X.25 Links Step-by-Step,” step 9, for more information. If this is the case, you will see messages on the screen indicating what actions are required before changes become active.

Refer to Table 7-1 for a list of configuration changes that can be modified dynamically.

4. After viewing the messages describing what actions are required, if any, enter [RETURN] when you see the prompt:

(Press RETURN when finished viewing screen contents.)

You will return to the Validation screen. From here you can make further changes or exit NMMGR.

## Automatic Configuration of DTCs

Automatic configuration provides the capability to add, and configure a new host-based managed DTC to the HP 3000 system without the need to specify most of the detailed configuration information. You can initiate automatic configuration using the DTCCNTRL command at the CI prompt, or from within NMMGR. This section describes how to start automatic configuration at the CI prompt.

When the new DTC is configured, all serial cards will be configured with nailed direct connect ldevs using the profile TR10AUTO. You may modify this profile to suit your needs. The profile TR10AUTO that is provided has the same characteristics as TR10D96.

SNP cards will be configured with a default configuration. This configuration is not complete. You must use NMMGR to enter data for the Level 1 and 2 screen and the Level 3 screen. No PAD ldevs are created.

On the Level 1 and 2 screen you must enter the line speed for the connection. On the Level 3 screen you must enter the X.25 card address, Maximum number of PAD connections, and the Low and High values for the PVCs or SVCs. See sections "Step 9: Configure X.25 Level 1 and 2" and "Step 10: Configure X.25 Level 3 and Miscellaneous" in Chapter 3, "Configuring DTCs Step-by-Step," for details on these fields.

Follow these steps to automatically add a DTC to DTS:

1. Turn on the DTCs power.
2. Invoke DTCCNTRL at the CI prompt with the following command:

```
:DTCCNTRL FUNC=autoconf
```

3. The following prompt will appear:

```
****Make sure your DTC is turned on NOW****
```

```
Enter the DTC LAN address in the format of xx-xx-xx-xx-xx-xx or press RETURN to exit:
```

First, make sure that the DTC's power has been turned on. Then, enter the LAN address of the DTC to be configured. The LAN address can be found on a label inside the front cover or on the back panel of the actual DTC box. Note that the LAN address is different from the IP address which is discussed in step 5.

4. DTCCNTRL will create a default DTC node name structured as DTCXXXX.domain.organization, where "XXXX" are the last four digits of the DTC's LAN address and "domain.organization" are taken from the host's node name.

At the prompt "The default DTC node name is DTCXXXX.domain.organization. Press RETURN to continue or enter the DTC node name to overwrite default:" press the [Return] key to continue or enter a different DTC node name to overwrite the default.

5. At the prompt "Enter optional DTC IP address in the format of n.n.n.n or press RETURN to continue:" enter the optional DTC IP address or press the [Return] key to continue. The IP address is used if your HP 3000 is configured as part of a network and you want the DTC to be able to respond to PING/iX requests.

6. The following will appear on the screen indicating successful DTC automatic configuration:

```
DTCXXXX.domain.organization automatic configuration
in progress.....
```

(DTC download messages will appear here if you are at the system console.)

```
DTCXXXX.domain.organization configured and downloaded
successfully.
```

```
All ports configured successfully.
```

```
END OF PROGRAM
```

```
:
```

7. If there are SNP cards installed in the DTC, run NMMGR and modify the configuration for Level 1 and 2 screen and Level 3 screen.
8. Modify any other X.25 card configurations as needed to complete the X.25 and PAD configurations such as PAD ldevs, SYSLUGs and security.
9. Validate the configuration.
10. Invoke DTCCNTRL to apply the modified X.25 configuration. This can be done at the prompt that is displayed after validation is complete or later at the CI prompt as described above for dynamic configuration.

Automatic configuration can also be initiated from within NMMGR. See the *Configuring Systems for Terminals, Printers, and Other Serial Devices* manual for the procedures on how this is done.

---

NOTE

You can only perform automatic configuration of new DTCs if you are operating in a host-based management environment. In a PC-based environment, DTCCNTRL will report an error when the command is invoked.

---

---

## Obtaining Status Using DTCCNTRL

The DTCCNTRL STATUS function displays the current status of each DTC/X.25 Network Access card installed in a specified DTC. The command displays the DTC type (16, 48 or 72MX) and the software module that is currently active on any DTC/X.25 Network Access cards that are installed. (Asynchronous cards installed in the DTC are not displayed.)

Figure 7-1 shows the display resulting from a DTCCNTRL STATUS command issued against a DTC 48 containing DTC/X.25 Network Access cards in slots 3, 4, and 5. Card 3 shows no X.25 network functions active. Card 4 has both X.25 system-to-system and PAD support active. Card 5 has only system-to-system support active.

**Figure 7-1**

### DTCCNTRL Status Display

DTC Type:	DTC48
CARD #	Module
3	none
4	PADSUP+X.25
5	X.25

---

## DTS Shutdown and Restart

The DTS shutdown capability is provided by the `DTCCNTRL` command. It allows you to bring down the entire DTS subsystem and includes the release of all TIO-related system resources. `DTCCNTRL` requires that you have a minimum of System Manager (SM) capability, this operation can only be done from the system console. When combined with the DTS restart capability, you can resolve errors that may arise during Datacomm Configurator (DCC) start-up without rebooting the HP 3000 host. If you see DCC error messages, first fix any problems that caused the DCC startup error and then run `DTCCNTRL` to shut down and restart DTS.

---

### NOTE

Issuing the `DTCCNTRL` command to perform a DTS shutdown will result in the deletion of the entire DTS/TIO subsystem from the system. No TIO users can use the system while it is shut down.

---

### CAUTION

When the “forced” option is invoked, then all sessions logged on to TIO devices will be aborted and all spooled TIO printers will be stopped.

The DTS restart capability is provided by the `DTCCNTRL` command and allows you to restart the DTS subsystem. This command can only be invoked after the DTS subsystem has been shutdown. The DTS subsystem will be restarted in the same way that occurs when the system is rebooted.

## X.25 and PAD Services Control

X.25 and PAD support services may both be started individually, through the `STARTX25` and `STARTPADSUP` functions respectively, or they may be started at the same time, through the `STARTBOTH` command. When they are started through individual commands, the `STARTX25` command must be entered before the `STARTPADSUP` command.

Conversely, X.25 and PAD support services may be stopped individually, through the `STOPX25` and `STOPPADSUP` functions respectively, or they may be stopped at the same time, through the `STOPBOTH` command. When they are stopped individually, the `STOPPADSUP` command must be entered before the `STOPX25` command.

`DTCCNTRL` is used in combination with the `NETCONTROL` and `NSCONTROL` commands to start X.25 iX System Access and NS Services. See the examples that follow.

---

## DTCCNTRL Examples

Following are examples of using the DTCCNTRL command to control the operations of a DTC/X.25 Network Access card. In these examples, the card is mounted in slot 3 of a DTC with the node named DTC1.NET.IND.

### Start X.25 support services:

```
:DTCCNTRL DTC=DTC1.NET.IND;CARD=3;FUNC=STARTX25
```

### Start PAD support services (X.25 must already be started):

```
:DTCCNTRL DTC=DTC1.NET.IND;CARD=3;FUNC=STARTPADSUP
```

### Start both X.25 and PAD support services:

```
:DTCCNTRL DTC=DTC1.NET.IND;CARD=3;FUNC=STARTBOTH
```

OR (execute commands in this order):

```
:DTCCNTRL DTC=DTC1.NET.IND;CARD=3;FUNC=STARTX25  
:DTCCNTRL DTC=DTC1.NET.IND;CARD=3;FUNC=STARTPADSUP
```

### Display status of DTC:

```
:DTCCNTRL DTC=DTC1.NET.IND;FUNC=STATUS
```

### Stop both X.25 and PAD support services:

```
:DTCCNTRL DTC=DTC1.NET.IND;CARD=3;FUNC=STOPBOTH
```

OR (execute commands in this order):

```
:DTCCNTRL DTC=DTC1.NET.IND;CARD=3;FUNC=STOPPADSUP  
:DTCCNTRL DTC=DTC1.NET.IND;CARD=3;FUNC=STOPX25
```

### Start X.25 iX System Access for the network named X25NET (execute commands in this order):

```
:DTCCNTRL DTC=DTC1.NET.IND;CARD=3;FUNC=STARTX25  
:NETCONTROL START;NET=X25NET  
:NSCONTROL START
```

### Stop X.25 iX System Access for the network named X25NET (execute commands in this order):

```
:NSCONTROL STOP  
:NETCONTROL STOP;NET=X25NET  
:DTCCNTRL DTC=DTC1.NET.IND;CARD=3;FUNC=STOPX25
```

### Force operation of a DTCCNTRL command when another user has exclusive access to the DTCCNTRL code module:

```
:DTCCNTRL  
DTC=DTC1.NET.IND;CARD=3;FUNC=STARTX25;FORCED=Y
```



# 8 **Formatting Host-Based X.25 Log Files**

As described in Chapter 1, “Introduction,” you use a special formatting tool, EVLOG, to format host-based X.25 log files. You cannot use the NMDUMP formatter for these files. This chapter describes the event log formatter and provides instructions for its use.

Included in this chapter you will find information on the following:

- A description of the EVLOG formatter, including limitations.
- Instructions for running EVLOG.
- Descriptions of each of the EVLOG options.

## The EVLOG Formatter

The EVLOG formatter provides a user interface that is similar to the NMDUMP interface with options set in the same manner as for NMDUMP. EVLOG also provides some filtering capability, including filtering on host-based time. See the descriptions of formatting options later in this chapter.

---

**NOTE**

---

This formatter is only intended to be used on log files with X.25 and PAD events. Use the NMDUMP formatter to format other types of logging.

## EVLOG Limitations

You should be aware of the following limitations when using the EVLOG formatter:

- EVLOG does not perform error checking when it opens the message catalog (EVCAT).
- EVLOG does not format the PC event time.
- EVCAT messages for events other than X.25 or PAD events may be truncated or unreadable.
- The first 14 characters of EVCAT messages are shown for primary events.
- The first 25 characters of EVCAT messages are shown for secondary events.
- The first six characters of the DTC name are shown; domain/org are not shown.
- The first 25 characters of hostname (events 3604/3605) are shown.
- The first 25 characters of diagnostic text (event 3685) are shown.
- The first 25 characters of PcEvent info text are shown.

## To Use EVLOG

You can run EVLOG using default options or you can run EVLOG interactively to select and modify specific options. Instructions for each run mode follow. The options are described in the remainder of this chapter.

### To Run EVLOG Using Default Options

Follow these steps to format a host-based X.25 log file using the default options.

1. Copy the file that you want to format to a different file name. (Hewlett-Packard recommends that you treat log files as read-only files. Copying to a new file name allows you to format the new file without modifying the original log file.)
2. At the MPE/iX prompt, enter the command:

```
:evlog logfile
```

where *logfile* is the name of the file created in step 1.

These steps will cause the entire log file to be formatted with default options.

### To Run EVLOG Interactively

Follow these steps to format a host-based X.25 log file, to select options:

1. Copy the file that you want to format to a different file name. (Hewlett-Packard recommends that you treat log files as read-only files. Copying to a new file name allows you to format the new file without modifying the original log file.)
2. At the MPE/iX prompt, enter either of the following commands:

```
:evlog
```

or

```
:evlog logfile,n
```

where *logfile* is the name of the file created in step 1 and *n* is any non-zero PARM. For example

```
:evlog myfile,2
```



Enter number of option or <CR> to select current options: 2

First record [1]? 2

Last record [15]? 5

Options:

- 0 - Set all options back to their default values
- 1 - File (logfile1, 15 records)
- 2 - Records (2..5)
- . - . . . . .
- . - . . . . .
- . - . . . . .

**Option 3: Event Tapes.** Use this option to restrict the records displayed to those of a specific event type. In the following example, the user chooses to display only DTC events. Following the selection, the Event types option displays a 3, to signify the selection of event type 3, DTC events. (Note that not all of the event types are meaningful for log files on host-based systems.)

Enter number of option or <CR> to select current options: 3

Event types:

- 0 - ALL
- 1 - PC
- 2 - PC/DTC
- 3 - DTC

Event type [ALL]? 3

Options:

- 0 - Set all options back to their default values
- 1 - File (logfile1, 15 records)
- 2 - Records (2..5)
- 3 - Event types (3)
- . - . . . . .
- . - . . . . .
- . - . . . . .

**Option 4: Subsystems.** Use this option to restrict the records displayed to those of a particular subsystem. In the following example, the user selects the NMP subsystem. Following the selection, the Subsystem option displays a 4, to signify the selection of subsystem 4, NMP. (Note that not all of the subsystem types are meaningful for log files on host-based systems.)

Enter number of option or <CR> to select current options: 4

Subsystem numbers:

- |             |           |         |
|-------------|-----------|---------|
| 0 - All     | 4 - NMP   | 8 - OS  |
| 1 - Windows | 5 - NMLIB | 9 - RLS |
| 2 - TICL    | 6 - IOIF  | 10 - UI |
| 3 - RMP     | 7 - PROBE | 11 - OV |

Subsystem[ALL]? 4

Formatting Host-Based X.25 Log Files  
To Use EVLOG

Options:

```

0 - Set all options back to their default values
1 - File (logfile1, 15 records)
2 - Records (1..0)
3 - Event types (3)
4 - Subsystems (4)
. - . . . . . . . . . . . . . . . .
: - : : : : : : : : : : : : : :
. - . . . . . . . . . . . . . . . .

```

**Option 5: Event Codes.** Use this option to specify a range of event codes to be displayed. To specify the codes, you may enter either the event code numbers or the mnemonics listed in the prompt display. (The Options display will list the event code numbers whether you select by number or by mnemonic.) In the following example, the user chooses X.25 events by entering the mnemonic X25. Notice that the event code numbers are shown in the resulting display.

Enter number of option or <CR> to select current options: 5

Event code mnemonics (use for First event code if desired):

```

COM      (Common events)           =          1 -          511
AOS      (AOS events)              =          512 -         1023
MGR      (MANAGER)                 =         1024 -         1279
LAN      =                          =         1280 -         1525
AFCP     =                          =         1536 -         1791
ADCP     =                          =         1792 -         2303
TNR      =                          =         2304 -         2559
LNK      (LINKMGR)                 =         2560 -         2815
TCP      =                          =         2816 -         3071
IP       =                          =         3072 -         3327
EXT      (MGR_Extension events)    =         3328 -         3583
L3       (X.25 level 3 events)      =         3584 -         4095
L2       (X.25 level 2 events)      =         4096 -         4607
PAD      (X.25 PAD events)          =         4608 -         5119
MON      (Monitor events)           =         5120 -         5631
X25      (L2 + L3 events)           =         3584 -         4607
X25PAD   (X.25 + PAD events)        =         3584 -         5119

```

Event code range: First event code [1]? X25

Options:

```

0 - Set all options back to their default values
1 - File (logfile1, 15 records)
2 - Records (2..5)
3 - Event types (3)
4 - Subsystems (4)
5 - Event codes (3584..4607)
. - . . . . . . . . . . . . . . . .
: - : : : : : : : : : : : : : :
. - . . . . . . . . . . . . . . . .

```

**Option 6: Logical Channel Identifier (LCI).** Use this option to restrict the records displayed to those for a specific Logical Channel Identifier. In the following example, the user presses [RETURN] to accept the default of displaying all records.

Enter number of option or <CR> to select current options: 6

Logical Channel Identifier (LCI) (1-256 0 = ALL) [ALL]?

Options:

```

0 - Set all options back to their default values
1 - File (logfile1, 15 records)
2 - Records (2..5)
3 - Event types (3)
4 - Subsystems (4)
5 - Event codes (3584..4607)
6 - Logical Channel Identifier (LCI) (ALL)
. - . . . . . . . . . . . . . . .
. - . . . . . . . . . . . . . . .
. - . . . . . . . . . . . . . . .

```

**Option 7: Virtual Port Number (VPN).** Use this option to restrict the records displayed to those for a particular virtual port number (VPN). (Some PAD events contain the VPN but not the corresponding LCI; some X.25 events contain the LCI but not the VPN. However, some X.25 events contain both, so usually you can logically tie the two together.) In the following example, the user presses [RETURN] to accept the default of displaying all records.

Enter number of option or <CR> to select current options: 7

Logical Channel Identifier (LCI) (1-255 0 = ALL) [ALL]?

Options:

```

0 - Set all options back to their default values
1 - File (logfile1, 15 records)
2 - Records (2..5)
3 - Event types (3)
4 - Subsystems (4)
5 - Event codes (3584..4607)
6 - Logical Channel Identifier (LCI) (ALL)
7 - Virtual Port Number (VPN) (ALL)
. - . . . . . . . . . . . . . . .
. - . . . . . . . . . . . . . . .
. - . . . . . . . . . . . . . . .

```

**Option 8: Time/Offset Format.** There are four types of timestamps in event log records. They are:

HOST time The time the event was logged on the host (HP 3000). Found in event type 3 (DTC).

PC time The time the event was logged on the OV DTC MGR PC. (This type is not meaningful for log files created on systems using host-based network management.)

DTC CPU time The time the event was sent from the DTC. Found in event type 3 (DTC).

DTC SNP time The time the event occurred on the SNP. Found in event type 3 (DTC)

Use this option to choose whether one of these timestamp types will be displayed under the column labeled “Time/offset” or whether the offset will be from the beginning of the file. In the example that follows, the user chooses to display the time that events were logged on the host.

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To Use EVLOG

Enter number of option or <CR> to select current options: 8

Time formats:

- 1 - HOST
- 2 - PC
- 3 - DTC CPU
- 4 - DTC SNP
- 5 - Record offset

Time format [1]? 1

Options:

- 0 - Set all options back to their default values
- 1 - File (logfile1, 15 records)
- 2 - Records (2..5)
- 3 - Event types (3)
- 4 - Subsystems (4)
- 5 - Event codes (3584..4607)
- 6 - Logical Channel Identifier (LCI) (ALL)
- 7 - Virtual Port Number (VPN) (ALL)
- 8 - Time/offset format (Host time)
- . - . . . . .
- . - . . . . .

**Option 9: Time/Offset.** Use this option to specify a range of time to be displayed. This option is available only for the HOST time. In the following example, the user selects a time range from October 4 through October 5 of 1991 by responding to the series of prompts. Note that, as usual, the current settings are displayed in brackets in the prompts.

Enter number of option or <CR> to select current options: 9

HOST time range:

- |      |       |              |
|------|-------|--------------|
| FROM | year  | [1970]? 1991 |
|      | month | [1]? 10      |
|      | day   | [1]? 4       |
|      | hour  | [0]? 11      |
|      | min   | [0]?         |
|      | sec   | [0]?         |
| TO:  | year  | [2020]? 1991 |
|      | month | [1]? 10      |
|      | day   | [1]? 5       |
|      | hour  | [0]?         |
|      | min   | [0]?         |
|      | sec   | [0]?         |

Options:

- 0 - Set all options back to their default values
- 1 - File (logfile1, 15 records)
- 2 - Records (2..5)
- 3 - Event types (3)
- 4 - Subsystems (4)
- 5 - Event codes (3584..4607)
- 6 - Logical Channel Identifier (LCI) (ALL)
- 7 - Virtual Port Number (VPN) (ALL)
- 8 - Time/offset format (Host time)
- 9 - Time/offset (1970 - 2020) (70-01-01-00-00-00...  
20-01-01-00-00-00)
- ? - Redisplay current options

Enter number of option or <CR> to select current options:

---

## Displaying the Data

After you have set the display options, press [RETURN] to display the formatted logging information. Your display will look similar to the following:

Enter number of option or <CR> to select current options:

```

                                     S
                                     U
                                     T B
Time/Offset      Y S
Evnt             P Y  Evnt          DTC
#  YYMMDDHHMMSS E S  Code Description Name D N Variable Event Data
-              - -
2  911004145508 3  4   3604 Host Conn.   DTC4  1  00
Try Again? (NO) >
```

## Control-Y Handling

If you press [CTRL]Y (subsystem break) while the data is being displayed, EVLOG will display the "Try Again" prompt and allow you to change the option settings and run the formatter again.



# A Error Messages

This Appendix contains validation, datacommunication configurator (DCC), and `DTCNTRL` error messages.

Validation errors indicate problems with the network management configuration file. They are detected during `NMMGR` configuration when you attempt to validate the network management configuration file.

DCC errors indicate problems with the link or the DTS manager. They are detected when the system is rebooted.

`DTCNTRL` errors indicate problems that occurred while you were attempting to use the `DTCNTRL` command to manage the operation of X.25 or PAD support services.

## Validation Error Messages

The network management configuration file must be validated before automatic cross-validation with SYSGEN takes place.

The DTS validation procedure starts by displaying the following:

```
-> Validation of DTS/LINK started. <-
```

Errors are then listed. When the validation procedure is complete, it will print the following:

```
nnn Encountered Errors
```

```
-> Validation of DTS/LINK finished. <-
```

where *nnn* is the total number of errors found during validation.

A numerical list of validation error messages and actions for each follows.

**Path: NMMGRpath — A read error encountered while reading the data record (bad file). (DTSERR=3)**

(DTSERR 3) Cause: Either a hardware problem occurred or the data record is too long.

Action: Try to print the network management configuration file. Rebuild the file from a copy of the sample file NMSAMP1.PUB.SYS. If the problem persists, contact your Hewlett-Packard support representative.

**Path: NMMGRpath — A write error encountered while updating the data record (bad file). (DTSERR=4)**

(DTSERR 4) Cause: Either a hardware problem occurred or the data record file is too small.

Action: If the data record file has been compressed, it is impossible to validate the file. Go to the UTILITY screen and use the compression utility to make the file larger. Try to validate the file. If it still fails, build the file from a copy of the sample file NMSAMP1.PUB.SYS. If the problem persists when verifying the new file, contact your Hewlett-Packard support representative.

**Path: NMMGRpath — The data record is empty (use Update Data function key). (DTSERR=5)**

(DTSERR 5) Cause: The data record was not created for the *NMMGRpath*.

Action: Go back to the screen specified by the *NMMGRpath* and update the screen.

**Path: NMMGRpath — The same physical path is being used at LINK.linkname. (DTSERR=6)**

(DTSERR 6) Cause: The physical path specified for this link is being used.

Action: Go back to the screen specified by the *NMMGRpath* or go to the link screen specified by the *linkname* and modify the physical path.

**Path: NMMGRpath — The same station address is being used at LINK.linkname. (DTSERR=7)**

(DTSERR 7) Cause: The IEEE 802.3 station address is already used. Each station address must be unique.

Action: Go back to the screen specified by the *NMMGRpath* or go to the screen specified by the *linkname* and correct the station address.

**Path: NMMGRpath — LINK.linkname is not defined. (DTSERR=8)**

(DTSERR 8) Cause: The *linkname* specified on the DTS Configuration screen is not defined; therefore, the link data record was not created.

Action: Verify the *linkname* on the Host Configuration screen. If the link data record does not exist, update the DTS Configuration screen.

**Path: NMMGRpath — DTS.PROFPC.profilename is not defined. (DTSERR=9)**

(DTSERR 9) Cause: The *profilename* on the screen specified by the *NMMGRpath* is not defined; therefore, the profile data record does not exist.

Action: Check that the profile name exists on the DTS Profile Selection screen and, if it does, check that the data record for this profile was created.

**Path: NMMGRpath — The same station address or node name is being used at DTS.DTC.SELECT.DTCname. (DTSERR=10)**

(DTSERR 10) Cause: The station address or node name used on the screen specified by the *NMMGRpath* is also used on the screen specified by the path *DTS.DTC.SELECT.DTCname* screen.

Action: Go to the screen specified by the *NMMGRpath* or to the screen specified by the *DTC name* and modify the station address or node name.

**Path: NMMGRpath — The same LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD012. (DTSERR=11)**

(DTSERR 11) Cause: The logical device (ldev) number is being used on the screen specified by the *NMMGRpath* and on the *DTS.DTC.SELECT.DTCname.CARD012* screen.

Action: Go to one of the two screens and change the ldev number. The ldev number must be unique for each port.

**Path: NMMGRpath — The same LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD345. (DTSERR=12)**

(DTSERR 12) Cause: The same logical device (ldev) number is being used on the screen specified by the *NMMGRpath* and on the *DTS.DTC.SELECT.DTCname.CARD345*.

Action: Go to one of the two screens and change the ldev number. The ldev number must be unique for each port.

**Path: NMMGRpath — LDEV #nnn is too big (must be <=4679). (DTSERR=14)**

(DTSERR 14) Cause: The logical device (ldev) number is bigger than the allowed maximum ldev number.

Action: Go to the screen specified by the *NMMGRpath* and modify the ldev number.

**Path: NMMGRpath — Too many LDEVs are being used (must be <=4649). (DTSERR=15)**

(DTSERR 15) Cause: Too many logical device (ldev) numbers are being used.

Action: Review the screens that use ldevs and delete some ldev numbers. The validation procedure allows a total of 4649 ldevs.

**Path: NMMGRpath — Defined LINK.linkname is not being used. (DTSWARN=17)**

(DTSWARN 17) Cause: The defined *linkname* is not used by DTS or the network interface.

Action: This is a warning only. No action is required.

**Path: NMMGRpath — Too many links are being used (max. number allowed = 8). (DTSERR=18)**

(DTSERR 18) Cause: The link specified in the *NMMGRpath* cannot be processed. Too many links are already defined.

Action: Go back to the DTS Configuration screen and delete the link specified in the *NMMGRpath*. Delete all unused links so that eight or less links are being used.

**Path: NMMGRpath — Too many paths are being used (max. number allowed = 8). (DTSERR=19)**

(DTSERR 19) Cause: The link specified in the *NMMGRpath* cannot be processed. Too many physical paths are already defined.

Action: Go back to the DTS Configuration screen and delete the link specified in the *NMMGRpath*. Delete all unused links so that eight or less links are being used.

**Path: NMMGRpath — Too many DTCs are being used (max. number allowed = 120). (DTSERR=20)**

(DTSERR 20) Cause: The DTC specified in the *NMMGRpath* cannot be processed. Too many DTCs are already configured.

Action: Go back to the DTC Configuration screen and delete the DTC specified in the *NMMGRpath*.

- Path: NMMGRpath — Too many nodes are being used (max. number allowed = 129). (DTSERR=21)**
- (DTSERR 21) Cause: The DTC specified in the *NMMGRpath* cannot be processed. Too many nodes are being used.
- Action: Go back to the DTC Configuration screen and delete the DTC specified in the *NMMGRpath*.
- Path: NMMGRpath — Too many classes are being used (max. number allowed = 1000). (DTSERR=22)**
- (DTSERR 22) Cause: The total number of classes exceeds the maximum allowed number.
- Action: Delete class names so that no more than 1000 different class names are associated with asynchronous devices.
- Path: NMMGRpath — Too many profiles are being used (max. number allowed = 1024). (DTSERR=23)**
- (DTSERR 23) Cause: The total number of defined profiles exceeds the maximum allowed.
- Action: Delete profiles so that no more than 1024 are specified.
- No link is defined. (DTSWARN=24)**
- (DTSWARN 24) Cause: A link is not configured.
- Action: Without a configured link, the network management configuration file is useless. Return to the configuration screens and add a link, making sure that all necessary data records are created.
- No DTC is defined. (DTSWARN=25)**
- (DTSWARN 25) Cause: A DTC is not configured.
- Action: An action is not required if neither terminals, printers, nor both are needed. If terminals and printers are required, return to the configuration screens and add a DTC, making sure that all necessary data records are created.
- Path: NMMGRpath — LINK.linkname is shared with network interface. (DTSWARN=26)**
- (DTSWARN 26) Cause: The same link is shared between the DTS and NS subsystem. A separate link must exist for each of the two subsystems.
- Action: Decide which of the two subsystems should use the existing link and configure an additional link for the remaining subsystem.
- Path: NMMGRpath — Modem type not supported. (DTSERR=30)**
- (DTSERR 30) Cause: The modem type specified on the DTS Terminal Profile screen is not 0, 1, or 2. A problem occurred while adding the ldev to a device class. This could be caused because the class is used by a different type of device such as a HPIB printer.

**Action:** Remove the class name from the profile for the ldev and delete and re- add the ldev. Cross-validate the NMCONFIG.PUB.SYS file with SYSGEN. Correct any problems found then restart DTS.

**Path: NMMGRpath — Must supply a Physical Path. (DTSERR=32)**

(DTSERR 32) **Cause:** A physical path was not specified in the Physical Path of LANIC field.

**Action:** Go to the DTS Configuration screen and enter the appropriate physical path.

**Path: NMMGRpath — Duplicate profile class name profilename used. (DTSWARN=34)**

(DTSWARN 34) **Cause:** The same class name is used in several terminal profiles or the same class name is used in several printer profiles.

**Action:** No action is required. Informational message only.

**Path: NMMGRpath — Class name duplicated between printer and terminal profiles. (DTSERR=35)**

(DTSERR 35) **Cause:** The same class name is used for both a terminal profile and a printer profile.

**Action:** Remove the duplicate class name from the terminal profile or the printer profile.

**Path: NMMGRpath — Profile profilename specified for non-nailed terminals is of PRINTER type. (DTSERR=36)**

(DTSERR 36) **Cause:** A printer profile is specified where only a terminal profile is allowed.

**Action:** Change the printer profile to be a terminal profile.

**Path: NMMGRpath — Profile profilename specified for non-nailed PAD terminals is of PRINTER type. (DTSERR=37)**

(DTSERR 37) **Cause:** A printer profile is specified where only a terminal profile is allowed.

**Action:** Change the printer profile to be a terminal profile.

**Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD012.PAD0. (DTSERR=38)**

(DTSERR 38) **Cause:** A PAD name is used more than once.

**Action:** Remove all of the duplicate references to the PAD name.

**Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD012.PAD1. (DTSERR=39)**

(DTSERR 39) **Cause:** A PAD name is used more than once.

**Action:** Remove all of the duplicate references to the PAD name.

- Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD012.PAD2. (DTSERR=40)**
- (DTSERR 40) Cause: A PAD name is used more than once.  
Action: Remove all of the duplicate references to the PAD name.
- Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD345.PAD3. (DTSERR=41)**
- (DTSERR 41) Cause: A PAD name is used more than once.  
Action: Remove all of the duplicate references to the PAD name.
- Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD345.PAD4. (DTSERR=42)**
- (DTSERR 42) Cause: A PAD name is used more than once.  
Action: Remove all of the duplicate references to the PAD name.
- Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD345.PAD5. (DTSERR=43)**
- (DTSERR 43) Cause: A PAD name is used more than once.  
Action: Remove all of the duplicate references to the PAD name.
- Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD012.PAD0. (DTSERR=44)**
- (DTSERR 44) Cause: The same logical device (ldev) number is used more than once.  
Action: Remove the duplicate ldev number.
- Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD012.PAD1. (DTSERR=45)**
- (DTSERR 45) Cause: The same logical device (ldev) number is used more than once.  
Action: Remove the duplicate ldev number.
- Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD012.PAD2. (DTSERR=46)**
- (DTSERR 46) Cause: The same logical device (ldev) number is used more than once.  
Action: Remove the duplicate ldev number.
- Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD345.PAD3. (DTSERR=47)**
- (DTSERR 47) Cause: The same logical device (ldev) number is used more than once.  
Action: Remove the duplicate ldev number.
- Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD345.PAD4. (DTSERR=48)**
- (DTSERR 48) Cause: The same logical device (ldev) number is used more than once.

- Action:** Remove the duplicate ldev number.
- Path:** NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD345.PAD5. (DTSERR=49)
- (DTSERR 49) **Cause:** The same logical device (ldev) number is used more than once.
- Action:** Remove the duplicate ldev number.
- Path:** NMMGRpath — The same LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD012. (DTSERR=50)
- (DTSERR 50) **Cause:** The logical device (ldev) number is used more than once in the CARD012 configuration.
- Action:** Remove any duplicate references to the ldev number.
- Path:** NMMGRpath — The same LDEV #nnn is being used at DTS.DTCPC.SELECT.DTCname.CARD345. (DTSERR=51)
- (DTSERR 51) **Cause:** The logical device (ldev) number is used more than once in the CARD345 configuration.
- Action:** Remove any duplicate references to the ldev number.
- Path:** NMMGRpath — The same node name is being used at linkname. (DTSERR=52)
- (DTSERR 52) **Cause:** The same node name is used more than once.
- Action:** Remove the duplicate reference to the node name.
- Path:** NMMGRpath — Blank NODENAME. (DTSERR=53)
- (DTSERR 53) **Cause:** A host node name is not specified on the screen specified in the path.
- Action:** Enter a host node name on the screen specified in the path.
- Path:** NMMGRpath — The profile for LDEV #nnn, profilename, is not defined. (DTSERR=54)
- (DTSERR 54) **Cause:** An incorrect profile name was used for the logical device (ldev).
- Action:** Verify the profile name for the logical device in the DTS Profile Selection screen.
- Path:** NMMGRpath — Profile profilename specified for non-nailed PAD terminals is of PRINTER or PADPRINT type. (DTSERR=57)
- (DTSERR 57) **Cause:** A printer or PAD printer profile is specified where only a terminal or pad terminal profile is allowed.
- Action:** Change the printer profile to be a terminal profile.
- Path:** NMMGRpath — The profile for LDEV #nnn, profilename, is of PADTERM or PADPRINT type. (DTSERR=58)
- (DTSERR 58) **Cause:** A PAD terminal or PAD printer profile is specified where only a terminal or printer profile is allowed.

**Action:** Change the PAD terminal or PAD printer profile to be a terminal or printer profile.

**Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD012.PAD0. (DTSERR=59)**

(DTSERR 59) **Cause:** The same PAD device name is used more than once in the configuration.

**Action:** Remove any duplicate references to the PAD device name.

**Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD012.PAD1. (DTSERR=60)**

(DTSERR 60) **Cause:** The same PAD device name is used more than once in the configuration.

**Action:** Remove any duplicate references to the PAD device name.

**Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD012.PAD2. (DTSERR=61)**

(DTSERR 61) **Cause:** The same PAD device name is used more than once in the configuration.

**Action:** Remove any duplicate references to the PAD device name.

**Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD345.PAD3. (DTSERR=62)**

(DTSERR 62) **Cause:** The same PAD device name is used more than once in the configuration.

**Action:** Remove any duplicate references to the PAD device name.

**Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD345.PAD4. (DTSERR=63)**

(DTSERR 63) **Cause:** The same PAD device name is used more than once in the configuration.

**Action:** Remove any duplicate references to the PAD device name.

**Path: NMMGRpath — PAD device name for LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD345.PAD5. (DTSERR=64)**

(DTSERR 64) **Cause:** The same PAD device name is used more than once in the configuration.

**Action:** Remove any duplicate references to the PAD device name.

**Path: NMMGRpath — The same LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD012.PAD0. (DTSERR=65)**

(DTSERR 65) **Cause:** The logical device (ldev) number is used more than once in the configuration.

**Action:** Remove any duplicate references to the ldev number.

- Path: NMMGRpath — The same LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD012.PAD1. (DTSERR=66)**
- (DTSERR 66) **Cause:** The logical device (ldev) number is used more than once in the configuration.
- Action:** Remove any duplicate references to the ldev number.
- Path: NMMGRpath — The same LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD012.PAD2. (DTSERR=67)**
- (DTSERR 67) **Cause:** The logical device (ldev) number is used more than once in the configuration.
- Action:** Remove any duplicate references to the ldev number.
- Path: NMMGRpath — The same LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD345.PAD3. (DTSERR=68)**
- (DTSERR 68) **Cause:** The logical device (ldev) number is used more than once in the configuration.
- Action:** Remove any duplicate references to the ldev number.
- Path: NMMGRpath — The same LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD345.PAD4. (DTSERR=69)**
- (DTSERR 69) **Cause:** The logical device (ldev) number is used more than once in the configuration.
- Action:** Remove any duplicate references to the ldev number.
- Path: NMMGRpath — The same LDEV #nnn is being used at DTS.DTC.SELECT.DTCname.CARD345.PAD5. (DTSERR=70)**
- (DTSERR 70) **Cause:** The logical device (ldev) number is used more than once in the configuration.
- Action:** Remove any duplicate references to the ldev number.
- Path: NMMGRpath — Modem behavior DCE high for LDEV #nnn, defined in Profile profilename, is not supported on DTC16 and DTC48. (DTSERR=71)**
- (DTSERR 71) **Cause:** DCE high modem behavior is not supported for devices on a DTC 16 or DTC 48. DCE high is being specified for LDEV #nnn, which is on a DTC 16 or DTC 48.
- Action:** Modify the modem behavior to one that is supported for the DTC, or make sure you have specified the right DTC type (not a DTC 16 or DTC 48) for the device with LDEV #nnn.
- Path: NMMGRpath — Hardware handshaking for LDEV #nnn, defined in Profile profilename, is not supported on DTC16 and DTC48. (DTSERR=72)**

- (DTSERR 72) Cause: Hardware handshaking is not supported for devices on a DTC 16 or DTC 48. Hardware handshaking is being specified for LDEV #*nnn*, which is on a DTC 16 or DTC 48.
- Action: Make sure you have specified the right DTC type (not a DTC 16 or DTC 48), or if you are configuring ports on a DTC 16 or DTC 48, do not use a profile that specifies hardware handshaking.
- Path: NMMGRpath — Modem behavior is not supported. (DTSERR=73)**
- (DTSERR 73) Cause: An invalid modem behavior has been specified. Valid modem behavior values are: 0, 1, 2, or 3. The configuration file may be corrupt.
- Action: Modify the modem behavior specified on the Terminal Profile or Printer Profile screens to a valid value.
- Path: NMMGRpath — Invalid AFCP timer selection. (DTSERR=74)**
- (DTSERR 74) Cause: You have specified an invalid AFCP timer selection.
- Action: Go to the Tune DTC — Timer Selection Screen and choose a value from 1 to 6 for an AFCP timer selection.
- Path: NMMGRpath — Invalid Management timer selection. (DTSERR=75)**
- (DTSERR 75) Cause: You have specified an invalid management timer selection.
- Action: Go to the Tune DTC — Timer Selection Screen and choose a value of 1 or 2 for a management timer selection.
- Path: NMMGRpath — Baud rate 38400 for LDEV #*nnn*, defined in Profile *profilename*, is not supported on DTC16 and DTC48. (DTSERR=76)**
- (DTSERR 76) Cause: You have used a profile that specified a baud rate of 38400 for a device that is connected to a DTC 16 or DTC 48.
- Action: Make sure you specified the right DTC type (not a DTC 16 or DTC 48), or do not use this profile for the port with LDEV #*nnn*.
- Internal error. Failed to get memory. (DTSERR=77)**
- (DTSERR 77) Cause: The operating system was unable to allocate the memory needed to store data used during validation.
- Action: Build a new file from the sample file NMSAMP1.PUB.SYS. Try to validate the file. If the same error message appears when verifying the new file, contact your Hewlett-Packard support representative.
- Path: NMMGRpath — Back-to-Back, currently configured on LDEV #*nnn*, must use LDEV # -1. (DTSERR=78)**
- (DTSERR 78) Cause: A profile of type HOST has been configured on a DTC port and the ldev specified is not -1.

**Action:** Ports using `HOST` profiles are for back-to-back and must have an `ldev` of `-1`. Go to the screen specified in `NMMGRpath` and change the `ldev` to `-1` or use a different profile that is not of type `HOST`.

**Path: NMMGRpath — X.25 card is not allowed in slot s. (DTSERR=79)**

(DTSERR 79) **Cause:** An X.25 card has been configured in a slot that is not allowed for the DTC type.

**Action:** Go to the DTC specified in the `NMMGRpath` and delete the X.25 card from the slot number `s`.

**Path: NMMGRpath — Too many X.25 cards are configured. Maximum is 3. (DTSERR=80)**

(DTSERR 80) **Cause:** Too many X.25 cards have been configured in the DTC specified in `NMMGRpath`.

**Action:** Go to the DTC specified in the `NMMGRpath` and delete one or more X.25 cards.

**Path: NMMGRpath — LAN cardtype is not allowed on DTC16 or DTC48. (DTSERR=81)**

(DTSERR 81) **Cause:** The configuration for the DTC specified in `NMMGRpath` has a cardtype of "L" configured. This is not allowed for DTC16 or DTC48.

**Action:** Go to the DTC Configuration screen specified in `NMMGRpath` and enter the correct cardtypes.

**Path: NMMGRpath — Too many LAN cards configured. Only one is allowed. (DTSERR=82)**

(DTSERR 82) **Cause:** The configuration for the DTC specified in `NMMGRpath` has more than one LAN card specified in the cardtypes.

**Action:** Go to the DTC Configuration screen specified in `NMMGRpath` and change the extra "L" cardtypes to another valid type.

**Path: NMMGRpath — Unknown cardtype specified for card c. (DTSERR=83)**

(DTSERR 83) **Cause:** The configuration for the DTC specified in `NMMGRpath` has been corrupted.

**Action:** Delete the DTC specified in `NMMGRpath` and re-enter the data for this DTC.

**Path: NMMGRpath — Cardtype for card c does not match DTC card configuration. (DTSERR=84)**

(DTSERR 84) **Cause:** The configuration for the DTC specified in `NMMGRpath` has been corrupted.

**Action:** Delete the DTC specified in `NMMGRpath` and re-enter the data for this DTC.

- Path: NMMGRpath — Cardtype configured on card c not allowed on dtctype. (DTSERR=85)**
- (DTSERR 85) Cause: The configuration for the DTC specified in *NMMGRpath* has been corrupted.
- Action: Delete the DTC specified in *NMMGRpath* and re-enter the data for this DTC.
- Path: NMMGRpath — Ldev #nnn> is not valid (must be >= -l and <=4679). (DTSERR=86)**
- (DTSERR 86) Cause: The logical device (ldev) number is outside the allowed range.
- Action: Go to the screen specified in *NMMGRpath* and modify the ldev number.
- Path: NMMGRpath — Ldev of -l is not allowed with printer or terminal profile. (DTSERR=87)**
- (DTSERR 87) Cause: An ldev number of -l has been specified on a port that has a profile configured that is of type terminal or printer.
- Action: Go to the screen specified in *NMMGRpath* and change the ldev or specify a profile that is a type HOST.
- Path: NMMGRpath — Profile for ldev #nnn, <profname>, is of HOST type. (DTSERR=88)**
- (DTSERR 88) Cause: Profile <profname> is of type HOST and has been configured on a DTC port where ldev specified is not -l.
- Action: Ports using HOST profiles are for back-to-back and must have an ldev of -l. Go to the screen specified in *NMMGRpath* and change the ldev to -l or use a different profile that is not of type HOST.
- Path: NMMGRpath — Too few non-nailed ldevs available above TIO start ldev. (DTSERR=89)**
- (DTSERR 89) Cause: There are not enough ldevs available above the TIO start ldev number to configure the number of ldev specified.
- Action: Lower the number of TIO non-nailed ldevs or delete all TIO non-nailed ldevs and specify a lower starting ldev number. Then add the desired number of ldevs.
- Path: NMMGRpath — Too few non-nailed ldevs available above PAD start ldev. (DTSERR=90)**
- (DTSERR 90) Cause: There are not enough ldevs available above the PAD start ldev number to configure the number of ldev specified.
- Action: Lower the number of PAD non-nailed ldevs or delete all PAD non-nailed ldevs and specify a lower starting ldev number. Then add the desired number of ldevs.

## DCC Error Messages

As system start-up nears completion, the Datacomm Configurator (DCC) creates the LINK and DTS managers. If the procedure is successful, the following message will be displayed on the console:

```
DCC STARTUP OK!
```

If the procedure is not successful, the message above is replaced by one or more error messages.

When looking up an error message, note that the following strings of characters are used to represent information that is inserted when the message is generated.

- P-L — is replaced by a DCC procedure number and a DCC location number; used for detailed diagnostics by Hewlett-Packard support representative.
- SSSSSSSS — is replaced by an eight-digit hexadecimal value; also used for detailed diagnostics.
- MMM and LLL — are replaced by decimal values; used for detailed diagnostics.
- PATH — is replaced by an NMCONF path or LLIO physical path

### **DCC ERROR P-L, (LLIO status SSSSSSSS). (DCCERR=1)**

(DCCERR 1)

**Cause:** A problem exists with the low-level I/O services.

**Action:** Contact your Hewlett-Packard support representative.

### **DCC ERROR P-L, (reply status SSSSSSSS, msg descriptors MMM). (DCCERR=2)**

(DCCERR 2)

**Cause:** A problem exists with interprocess communication.

**Action:** Contact your Hewlett-Packard support representative.

### **DCC ERROR P-L, Configuration file open error SSSSSSSS. (DCCERR=3)**

(DCCERR 3)

**Cause:** The configuration file does not exist or it is locked.

**Action:** Check to see if NMCONFIG.PUB.SYS exists. If it exists, verify that it is the proper file type and that it is not locked.

### **DCC ERROR P-L, (NMCONF record error SSSSSSSS). NM Path: NMMGRpath (DCCERR=4)**

(DCCERR 4)

**Cause:** The DCC surrogate cannot read a record in NMCONFIG.PUB.SYS, or data in the file was not validated or the data is corrupt.

Action: Validate the NMCONFIG.PUB.SYS file and restart DTS. If the error persists, replace the file, validate it, and restart DTS.

**DCC ERROR P-L, configuration record data was invalid. NM Path: NMMGRpath (DCCERR=5)**

(DCCERR 5) Cause: Data in the NMCONFIG.PUB.SYS file was not validated or the data is corrupt.

Action: Validate the NMCONFIG.PUB.SYS file and restart DTS.

**DCC ERROR P-L, (HLIO status SSSSSSSS, ldev LLL). (DCCERR=6)**

(DCCERR 6) Cause: A problem exists with the high-level I/O services.

Action: Contact your Hewlett-Packard support representative.

**DCC ERROR P-L, (Buffer manager status SSSSSSSS). (DCCERR=7)**

(DCCERR 7) Cause: A problem exists with the datacomm buffers.

Action: Contact your Hewlett-Packard support representative.

**DCC ERROR P-L, (External procedure not found, status SSSSSSSS). (DCCERR=8)**

(DCCERR 8) Cause: A problem exists with DCC execution.

Action: Contact your Hewlett-Packard support representative.

**DCC ERROR P-L, (Memory management error status SSSSSSSS). (DCCERR=9)**

(DCCERR 9) Cause: A problem with the system occurred; the DCC cannot obtain memory.

Action: Contact your Hewlett-Packard support representative.

**DCC ERROR P-L, (Ports status SSSSSSSS). (DCCERR=10)**

(DCCERR 10) Cause: A problem with the DCC or the port's subsystem occurred.

Action: Contact your Hewlett-Packard support representative.

**DCC ERROR P-L, time out on reply msg, descriptors MMM. (DCCERR=11)**

(DCCERR 11) Cause: The DCC did not receive a reply message within the allotted time.

Action: Contact your Hewlett-Packard support representative.

**DCC ERROR P-L, too many DTCs configured. (DCCERR=12)**

(DCCERR 12) Cause: The NMCONFIG.PUB.SYS file contains more than the supported number of DTCs.

Action: Delete the excess DTCs from the NMCONFIG.PUB.SYS file and restart DTS.

- DCC ERROR P-L, link name specified for the DTS does not exist. (DCCERR=13)**
- (DCCERR 13) **Cause:** The link name configured in NMMGR on the DTS Configuration screen does not exist.
- Action:** Go to the DTS Configuration screen and enter the link name, then restart DTS.
- DCC ERROR P-L, link name specified for the DTS is not available (link status SSSSSSSS). (DCCERR=14)**
- (DCCERR 14) **Cause:** A problem occurred with the link hardware; the LANIC might be in the wrong slot or it might not be connected to the LAN.
- Action:** Check the hardware configuration and connections, then restart DTS.
- DCC ERROR P-L, too many links configured. (DCCERR=15)**
- (DCCERR 15) **Cause:** More than eight links are configured.
- Action:** Delete all unused links so that eight or less links are used, then restart DTS.
- DCC ERROR P-L, message received on wrong subque. (DCCERR=16)**
- (DCCERR 16) **Cause:** A problem exists with the interprocess communication.
- Action:** Contact your Hewlett-Packard support representative.
- DCC ERROR P-L, unrecognized message received. (DCCERR=17)**
- (DCCERR 17) **Cause:** A problem exists with the interprocess communication.
- Action:** Contact your Hewlett-Packard support representative.
- DCC ERROR P-L, internal DCC logic error. (DCCERR=18)**
- (DCCERR 18) **Cause:** A problem internal to the DCC exists.
- Action:** Contact your Hewlett-Packard support representative.
- DCC ERROR P-L, Link error status SSSSSSSS. LLIO path: NMMGRpath (DCCERR=19)**
- (DCCERR 19) **Cause:** A problem occurred while configuring the link manager.
- Action:** Contact your Hewlett-Packard support representative.
- DCC ERROR P-L, Add LDEV to class failure (HLIO status SSSSSSSS, ldev LLL). (DCCERR=20)**
- (DCCERR 20) **Cause:** A class contains more than 255 devices, or a conflict in class names exists, or NMCONFIG.PUB.SYS was not cross-validated with files created with SYSGEN.
- Action:** Run SYSGEN to verify the conflict.

- DCC WARNING P-L, Configuration file close error SSSSSSSS.  
(DCCWARN=21)**
- (DCCERR 21) Cause: A problem occurred while closing the NMCONFIG.PUB.SYS file or the NMCONFIG.PUB.SYS file.
- Action: Check that the files exist, and that adequate disk space is available for them. If the files exist and the disk space is large enough, check for file system or hardware problems.
- NLIO status SSSSSSSS, ldev LLL) (DCCERR=22)**
- (DCCERR 22) Cause: A problem exists in the NLIO services.
- Action: Contact your Hewlett-Packard support representative.
- DCC ERROR P-L, Blank NODENAME. (DCCERR=23)**
- (DCCERR 23) Cause: A host node name was not configured.
- Action: Configure a host node name.
- DCC ERROR P-L, Configuration file not validated, status SSSSSSSS.  
(DCCERR=24)**
- (DCCERR 24) Cause: Either modifications were made to the network management configuration file and the file was not validated, or the file was validated but the errors listed to the console were not corrected.
- Action: Either validate the network management configuration file, or correct the errors listed to the console when the file was first validated and then revalidate the file.
- DCC ERROR P-L, X.25 Level 1&2 not configured in NMMGR, status SSSSSSSS. (DCCERR=25)**
- (DCCERR 25) Cause: Level 1&2 of the X.25 network management structure have not been configured in NMMGR.
- Action: Supply the required information in the X.25 Level 1&2 screen in NMMGR.
- DCC ERROR P-L, X.25 Level 3 not configured in NMMGR, status SSSSSSSS (DCCERR=26)**
- (DCCERR 26) Cause: Level 3 of the X.25 network management structure have not been configured in NMMGR.
- Action: Supply the required information in the X.25 Level 3 screen in NMMGR.
- DCC ERROR P-L, Invalid card number specified, (DCC status SSSSSSSS, card number = cardnumber). (DCCERR=27)**
- (DCCERR 27) Cause: You have specified an invalid card number for the DTC type.

**Action:** For DTC 72MX, the valid range for card number is 0 to 3. For DTC 48, the valid range for card number is 0 to 5. For DTC 16, you may use card 0 and 1 for connector cards and card 2 for X.25 card.

**DCC ERROR P-L, Invalid DTC type specified, (DCC status SSSSSSSS. (DCCERR=28)**

(DCCERR 28) **Cause:** The NMCONFIG.PUB.SYS file may be corrupt.

**Action:** Use a backup configuration file, verify and update your configuration, validate and cross-validate with SYSGEN, and restart DTS. Keep the corrupt configuration file and report this condition to your HP representative.

**DCC ERROR P-L, DTC is not configured, NM path: NMMGRpath (DCCERR=29)**

(DCCERR 29) **Cause:** A dynamic configuration change was attempted on a DTC that DCC has not yet created.

**Action:** Delete the DTC from the NMCONFIG file and run DTCCNTRL. Then add the DTC back to the NMCONFIG.PUB.SYS file.

**DCC ERROR P-L, Ldev is already configured, (ldev: LLL). (DCCERR=30)**

(DCCERR 30) **Cause:** The ldev #LLL is already configured on the system.

**Action:** Validate the NMCONFIG.PUB.SYS file and then cross-validate with SYSTEM and then restart DTS.

**DCC ERROR P-L, Duplicate node address or DTC node name. NM path: NMMGRpath (DCCERR=31)**

(DCCERR 31) **Cause:** The node address or DTC nodename of a DTC that was added dynamically or automatically is already configured on an existing DTC.

**Action:** Verify the node address and nodename of the new DTC and retry the operation. If the error occurs again, check the configurations of the other DTCs that are in the NMCONFIG.PUB.SYS file. If the duplicate entry is not found then restart DTS.

**DCC ERROR P-L, DTC name is already configured. NM PATH: NMMGRpath (DCCERR=32)**

(DCCERR 32) **Cause:** The DTC name of a DTC that was added dynamically or automatically is already configured.

**Action:** Verify that the DTC name doesn't already exist in the NMCONFIG file. If the DTC name doesn't exist in the NMCONFIG file then restart DTS or pick a different name for the DTC.

**DCC WARNING P-L, Ldev not added to class. (HLIO status SSSSSSSS, ldev LLL). (DCCWARN=33)**

- (DCCWARN 33) Cause: A class contains more than 255 devices, a conflict in class names exists, or NMCONFIG.PUB.SYS was not cross-validated with files created with SYSGEN.  
Action: The ldev is still usable but will not be in the class. Validate the NMCONFIG.PUB.SYS file and run SYSGEN to verify conflict.  
**DCC ERROR P-L, Delete Ldev from class failure. (HLIO status SSSSSSSS, ldev LLL). (DCCERR=34)**
- (DCCERR 34) Cause: The DTC name of a DTC that was added dynamically or automatically is already configured.  
Action: A problem occurred while deleting the ldev from a class.  
**DCC WARNING P-L, Ldev not deleted from class. (HLIO status SSSSSSSS, ldev LLL). (DCCWARN=35)**
- (DCCWARN 35) Cause: The ldev has already been deleted from the class or the class no longer exists on the system.  
Action: This is a warning. If it persists, make sure no other system utilities are being used to delete classes or remove devices from classes.  
**DCC ERROR P-L, Failed to delete ldev LLL. Ldev still in use. (DCCERR=36)**
- (DCCERR 36) Cause: An attempt was made to delete an ldev that is logged on or is SPOOLED.  
Action: Logoff the session using the device or stop the spooler on the device and retry the operation.  
**DCC ERROR P-L, Failed to delete ldev LLL. (HLIO status SSSSSSSS). (DCCERR=38)**
- (DCCERR 38) Cause: An internal error occurred while deleting an ldev. The ldev is probably unusable.  
Action: Do a DTS shutdown and restart. If the problem persists, then reboot the system.  
**DCC ERROR P-L, Unable to stop spooler on ldev LLL. (Status SSSSSSSS). (DCCERR=39)**
- (DCCERR 39) Cause: An internal error occurred while stopping the spooler during a DTS shutdown with forced=y.  
Action: Do a DTS restart and check the device. If the device is not operating then shutdown and restart DTS.  
**DCC ERROR P-L, nn dev(s) are owned, shutdown not done. (DCCERR=40)**
- (DCCERR 40) Cause: While attempting a DTS shutdown, nn ldevs were found to be still logged on or spooled. The shutdown operation was aborted.

Action: Logoff or stop the spooler on the devices that are still in use.  
Retry the DTS shutdown.

**DCC ERROR P-L, LLIO error (Status: SSSSSSSS, path: NMMGRpath)  
(DCCERR=41)**

(DCCERR 41) Cause: A problem exists with the low-level I/O services.

Action: Contact your Hewlett-Packard support representative.

**DCC ERROR P-L, Too few non-nailed ldevs found. (DCCERR=42)**

(DCCERR 42) Cause: While deleting non-nailed ldevs, there were fewer unused non-nailed ldevs found to delete than requested.

Action: Logoff sessions that are using non-nailed ldevs and retry the operation.

**DCC ERROR P-L, Unexpected procedure label status. (Status SSSSSSSS) (DCCWARN=43)**

(DCCWARN 43) Cause: A internal problem exists with process management.

Action: Contact your Hewlett-Packard support representative.

**DCC ERROR P-L, Can't update data in NMCONFIG file. (Status SSSSSSSS) NM Path: NMMGRpath. (DCCERR=44)**

(DCCERR 44) Cause: While performing Automatic configuration of a DTC, DCC was not able to add the configuration to the NMCONFIG.PUB.SYS file.

Action: Make sure the NMCONFIG file is not in use by another session. Check that the file is not full. Compress the file to free unused space.

**DCC ERROR P-L, Not enough room in NMCONFIG file. (Status SSSSSSSS) (DCCERR=45)**

(DCCERR 45) Cause: There is not enough room left in the NMCONFIG.PUB.SYS file to successfully add a new DTC automatically.

Action: Compress the NMCONFIG.PUB.SYS file to free unused space and optionally expand the size with NMMGR. Retry the operation.

**DCC ERROR P-L, Time out waiting for DTC boot request. (DCCERR=47)**

(DCCERR 47) Cause: While automatically adding a new DTC no boot request was received within the allowed time. The DTC is either powered off or the LAN address specified is not correct.

Action: Make sure the DTC is powered on and the correct LAN address is specified.

**DCC WARNING P-L, (LLIO status SSSSSSSS) (DCCWARN=48)**

(DCCWARN 48) Cause: An internal problem has occurred with low-level I/O.

**Action:** This is a warning. If it persists contact your Hewlett-Packard support representative.

**DCC WARNING P-L, Ldev LLL is unusable until next DTS restart.  
(DCCWARN=49)**

(DCCWARN 49) **Cause:** The ldev was being accessed programmatically when a DTS Shutdown was performed and the forced=y option was specified.

**Action:** Logoff the session or job that was accessing the device and restart DTS. Perform another DTS shutdown and restart.

**DCC WARNING P-L, Waiting 30 sec for ldevs to become free.  
(DCCWARN=50)**

(DCCWARN 50) **Cause:** One or more ldevs were in use when DTS shutdown with the forced=y option specified. DCC is waiting for the reset and/or STOPSPool to complete.

**Action:** No action needed. DCC will proceed automatically.

**DCC WARNING P-L, Dynamic configuration is disabled.  
(DCCWARN=51)**

(DCCWARN 51) **Cause:** DCC could not find the Dynamic ID in the config file.

**Action:** Perform a DTS shutdown and restart. If the warning persists, contact your Hewlett-Packard support representative.

**WARNING: I/O config from last START NORECOVERY will be used.  
(DCCWARN=100)**

(DCCWARN 100) **Cause:** A routine message; this indicates that a start recovery is being attempted.

**Action:** No action is required.

**DCC WARNING P-L, (Startup) can not open NMCONFIG, status  
SSSSSSSS. (DCCWARN=101)**

(DCCWARN 101) **Cause:** Cannot open the NMCONFIG.PUB.SYS file.

**Action:** Check that the file exists and that it is not locked. If the file exists and is not locked, check for file system or hardware problems.

**DCC WARNING P-L, (Startup) can not purge NMCONFIG, status  
SSSSSSSS. (DCCWARN=102)**

(DCCWARN 102) **Cause:** The NMCONFIG.PUB.SYS file cannot be purged.

**Action:** Check that the file exists. If the file exists, check for file system or hardware problems.

**DCC WARNING P-L, (Startup) can not open NMCONFIG, status  
SSSSSSSS. (DCCWARN=103)**

(DCCWARN 103) **Cause:** The NMCONFIG.PUB.SYS file exists but it cannot be opened.

Action: Check that the file is not locked. If the file is not locked, check for file system or hardware problems.

**DCC WARNING P-L, (Startup) can not create NMCONFIG, status SSSSSSSS. (DCCWARN=104)**

(DCCWARN 104) Cause: A disk space problem, a file system problem, or a hardware problem exists.

Action: Verify that enough disk space is available. If enough disk space is available, verify that no file system problems exist. Then, verify that no hardware problems exist.

**DCC WARNING P-L, (Startup) can not copy record from NMCONFIG, status SSSSSSSS. (DCCWARN=105)**

(DCCWARN 105) Cause: The NMCONFIG.PUB.SYS does not exist, or a file system or hardware problem exists.

Action: Check that the NMCONFIG.PUB.SYS file exists. If it does not, restore it. If the file exists, check for file system or hardware problems.

**DCC WARNING P-L, (Startup) can not copy record to NMCONFIG, status SSSSSSSS. (DCCWARN=106)**

(DCCWARN 106) Cause: The NMCONFIG.PUB.SYS file does not exist, or a file system or hardware problem exists.

Action: If the file does not exist, create it. If the file exists, check for file system or hardware problems.

**DCC WARNING P-L, (Startup) can not close NMCONFIG, status SSSSSSSS. (DCCWARN=107)**

(DCCWARN 107) Cause: The NMCONFIG.PUB.SYS file does not exist, or a disk space, a file system, or hardware problem exists.

Action: Check that the NMCONFIG.PUB.SYS file exists. If it does not exist, restore it. If the file exists, check for a disk space problem, a file system problem, or a hardware problem.

**DCC WARNING P-L, (Startup) can not close NMCONFIG, status SSSSSSSS. (DCCWARN=108)**

(DCCWARN 108) Cause: The NMCONFIG.PUB.SYS file does not exist, or a disk space, file system, or hardware problem exists.

Action: Check that the NMCONFIG.PUB.SYS exists. If it does not exist, restore it. If the file exists, check for a file system problem or a hardware problem.

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## DTCCNTRL Error Messages

Two types of error messages can occur when a DTCCNTRL command is issued.

The first type of error message is generated by the command interpreter (CI) process when a DTCCNTRL command is issued incorrectly. CI errors are listed first below.

The second type of DTCCNTRL error message is generated when a DTCCNTRL operation fails (CTLERR messages) or when a warning is generated (CTLWARN messages). These messages are listed below following the CI errors.

### **PARAM VALUE MUST BE BETWEEN -32768 AND 32767. (CIERR 615)**

CIERR 615 Cause: The CARD parameter is not an integer. For example, the command was entered as:

```
DTCCNTRL DTC=DTC.ITG.HP;CARD=A;FUNC=STOPBOTH
```

Action: Reenter the command with a valid DTC card number. For a DTC 16, the card number must be 2. For a DTC 48, the card number must be between 1 and 5.

### **THIS IS NOT A VALID KEYWORD FOR THIS COMMAND. (CIERR 10007) PARAMETERS DO NOT MATCH USER COMMAND DEFINITION. (CIERR 2039)**

CIERR 10007 Cause: An undefined parameter was entered. For example, the command was entered as:

```
DTCCNTRL BTC=DTC.ITG.HP;CARD=4;FUNC=STOPBOTH
```

Action: Reenter the command using valid DTCCNTRL parameters.

### **THE DTC PARAMETER IS REQUIRED. (CIERR 10015) PARAMETERS DO NOT MATCH USER COMMAND DEFINITION. (CIERR 2039)**

CIERR 10015 Cause: The DTC parameter was missing when the DTCCNTRL command was entered. For example, the command was entered as:

```
DTCCNTRL CARD=4;FUNC=STARTX25
```

Action: Reenter the command specifying a valid, configured DTC name in the DTC parameter. For example:

```
DTCCNTRL DTC=DTC.ITG.HP;CARD=4;FUNC=STARTX25.
```

### **THE FUNC PARAMETER IS REQUIRED. (CIERR 10015) PARAMETERS DO NOT MATCH USER COMMAND DEFINITION. (CIERR 2039)**

CIERR 10015 Cause: The FUNC parameter was missing when the DTCCNTRL command was entered. For example, the command was entered as:

```
DTCCNTRL DTC=DTC.ITG.HP;CARD=4
```

**Action:** Reenter the command specifying a valid function in the FUNC parameter. For example:

```
DTCCNTRL DTC=DTC.ITG.HP;CARD=4;FUNC=STARTX25
```

**Valid functions** are STARTX25, STARTPADSUP, STARTBOTH, RC, STOPX25, STOPPADSUP, STOPBOTH, and STATUS.

**ENCOUNTERED AN UNEXPECTED END-OF-LINE. (CIERR 10051)  
PARAMETERS DO NOT MATCH USER COMMAND DEFINITION.  
(CIERR 2039)**

CIERR 10051 **Cause:** More parameters were entered than are defined by the DTCCNTRL command. For example, the command was entered as:

```
DTCCNTRL  
DTC=DTC.ITG.HP;CARD=4;FUNC=RC;FORCED=Y;RECONF=ALL;A=4
```

**Action:** Reenter the command without the invalid parameter. For example:

```
DTCCNTRL  
DTC=DTC.ITG.HP;CARD=4;FUNC=RC;FORCED=Y;RECONF=ALL
```

**Failed to open the catalog file DTCCAT.PUB.SYS. (CTLERR 01)**

CTLERR 01 **Cause:** The catalog file does not exist or could not be opened at the time the command was executed.

**Action:** If the catalog file is missing or has been corrupted, try to restore DTCCAT.PUB.SYS from the system backup. If this is not successful, contact your Hewlett-Packard support representative.

**Operator capability required to issue this command. (CTLERR 02))**

CTLERR 02 **Cause:** A user without the proper capabilities attempted to issue a DTCCNTRL command. OP capability is required.

**Action:** Obtain the required capabilities and reissue the command.

**Invalid function specified in FUNC. (CTLERR 03)**

CTLERR 03 **Cause:** The FUNC parameter was not a valid DTCCNTRL function.

**Action:** Reenter the command specifying a valid function in the FUNC parameter. For example:

```
DTCCNTRL DTC=DTC.ITG.HP;CARD=4;FUNC=STARTX25
```

**Valid functions** are STARTX25, STARTPADSUP, STARTBOTH, RC, STOPX25, STOPPADSUP, STOPBOTH, and STATUS.

**System is not Host-Based X.25. (CTLERR 04)**

CTLERR 04 **Cause:** The DTCCNTRL command was issued on a system that is not configured as a host-based X.25 system (either the system is PC-based or it is host-based but is not configured for X.25 connections).

Action: None. If attempting to control X.25 operation on a PC-based system, refer to the documentation for PC-based networks.

**Missing parameter: CARD not specified. (CTLERR 05)**

CTLERR 05 Cause: The DTCNTRL command was issued with a FUNC parameter that requires a card number, but no CARD parameter was specified. The STARTX25, STARTPADSUP, STARTBOTH, RC, STOPX25, STOPPADSUP, and STOPBOTH functions all require the CARD parameter. CARD is optional only for the STATUS function.

Action: Reissue the command with the correct card number specified in the CARD parameter.

**This DTC doesn't contain X25 cards. (CTLERR 06)**

CTLERR 06 Cause: A DTCNTRL command was issued specifying the DTC name of a DTC that does not contain any X.25 iX Network Access cards.

Action: Obtain the correct DTC name for the DTC containing the X.25 iX Network Access card and reenter the command using the correct DTC specification.

**DTC not accessible. Use FORCED option. (CTLERR 07)**

CTLERR 07 Cause: The DTCNTRL command was issued at a time when another user had exclusive access to the DTC (for example, TermDSM was running).

Action: Either reissue the DTCNTRL command using the FORCED option to force access to the DTC or wait until the DTC is no longer being exclusively accessed.

**Non-existing DTC. (CTLERR 08)**

CTLERR 08 Cause: A DTCNTRL command was issued for a DTC that is not configured for the host system.

Action: Reissue the command with a correct DTC name specified in the DTC parameter.

**Invalid card number. (CTLERR 09))**

CTLERR 09 Cause: A DTCNTRL command was issued with an out-of-range card number specified in the CARD parameter.

Action: Reenter the command with a valid DTC card number. For a DTC 16, the card number must be 2. For a DTC 48, the card number must be between 1 and 5.

**Stop PAD first. (CTLERR 10)**

CTLERR 10 Cause: An attempt was made to stop X.25 services prior to PAD services being stopped. PAD services must be stopped first.

Action: Issue a DTCNTRL command with a function of STOPBOTH to stop both X.25 and PAD services.

Or

Issue a **DTCCNTRL** command with a function of **STOPPADSUP**, followed by a second **DTCCNTRL** command with a function of **STOPX25**.

**PAD switching list download failed. (CTLERR 11)**

**CTLERR 11** Cause: An attempt was made to reconfigure PAD switching list values using the **RC** function of **DTCCNTRL**. A problem occurred with the DTC while the PAD support values were being downloaded.

Action: Check the DTC. Correct any problems then reenter the **DTCCNTRL** command with **FUNC=RC** to download the reconfigured PAD switching list values.

**PAD incoming security download failed. (CTLERR 12)**

**CTLERR 12** Cause: An attempt was made to reconfigure incoming PAD security values for the DTC using the **RC** function of **DTCCNTRL**. A problem occurred with the DTC while the new configuration values were being downloaded.

Action: Check the DTC. Correct any problems then reenter the **DTCCNTRL** command with **FUNC=RC** to download the reconfigured incoming PAD security values.

**PAD access download failed. (CTLERR 13)**

**CTLERR 13** Cause: An attempt was made to reconfigure PAD access using the **RC** function of **DTCCNTRL**. A problem occurred with the DTC while PAD access values were being downloaded.

Action: Check the DTC. Correct any problems then reenter the **DTCCNTRL** command with **FUNC=RC** to download the reconfigured PAD access values.

**DTC Global Data configuration download failed. (CTLERR 14)**

**CTLERR 14** Cause: An attempt was made to reconfigure global data values for the DTC using the **RC** function of **DTCCNTRL**. A problem occurred with the DTC while the new configuration values were being downloaded.

Action: Check the DTC. Correct any problems then reenter the **DTCCNTRL** command with **FUNC=RC** to download the reconfigured global data values.

**Global physical security download failed. (CTLERR 15)**

**CTLERR 15** Cause: An attempt was made to reconfigure the PAD access password for the DTC using the **RC** function of **DTCCNTRL**. A problem occurred with the DTC while the new configuration values were being downloaded.

Action: Check the DTC. Correct any problems then reenter the **DTCCNTRL** command with **FUNC=RC** to download the reconfigured PAD access password.

- SYS-TO-SYS switching download failed. (CTLERR 16)**
- CTLERR 16      Cause: An attempt was made to reconfigure the system-to-system switching information (X.25 link name or number of switched virtual circuits) for the DTC using the RC function of DTCCNTRL. A problem occurred with the DTC while the new configuration values were being downloaded.
- Action: Check the DTC. Correct any problems then reenter the DTCCNTRL command with FUNC=RC to download the reconfigured system-to-system switching information.
- LUG download failed. (CTLERR 17)**
- CTLERR 17      Cause: An attempt was made to reconfigure local user group (LUG) information (remote X.25 address or security level) for the DTC using the RC function of DTCCNTRL. A problem occurred with the DTC while the new configuration values were being downloaded.
- Action: Check the DTC. Correct any problems then reenter the DTCCNTRL command with FUNC=RC to download the reconfigured local user group information.
- Start X25 first. (CTLERR 18)**
- CTLERR 18      Cause: An attempt was made to start PAD support or to download card-specific X.25 configuration values but X.25 support is not active.
- Action: Start X.25 support using the STARTX25 function of DTCCNTRL then retry the operation. (To start both X.25 and PAD support, use the STARTBOTH function.)
- X25 download failed. (CTLERR 19)**
- CTLERR 19      Cause: An attempt was made to start X.25 support. A problem occurred with the DTC while the X.25 support values were being downloaded.
- Action: Check the DTC. Correct any problems then redownload. Reenter the command to start X.25 support.
- The specified card is not an X.25 card. (CTLERR 20)**
- CTLERR 20      Cause: The card specified in the DTCCNTRL command is not an X.25 iX Network Access card.
- Action: Obtain the correct card number for the X.25 iX Network Access card and reenter the command using the correct card number specification.
- Invalid RECONF specification. Must be All, X25, Card, Pass, or Logcl. (CTLERR 21)**
- CTLERR 21      Cause: A DTCCNTRL command was entered using the RC function but an invalid option was specified in the RECONF parameter.

Action: Reenter the command with a valid RECONF specification.  
Valid values are ALL, X25, CARD, PASS, and LOGCL.

**Invalid specification for FORCED parameter. Must be y or n.  
(CTLERR 22)**

CTLERR 22 Cause: A DTCCNTRL command was entered using the FORCED option but an invalid value was specified in the FORCED parameter.

Action: Reenter the command with a valid FORCED specification.  
Valid values are Y for "yes" and N for "no".

**PAD download failed. (CTLERR 23)**

CTLERR 23 Cause: An attempt was made to start PAD support. A problem occurred with the DTC while the PAD support values were being downloaded.

Action: Check the DTC. Correct any problems then redownload.  
Reenter the command to start PAD support.

**X25 could not be stopped. (CTLERR 24)**

CTLERR 24 Cause: The DTC failed while X.25 support was being deactivated.

Action: Correct any problems with the DTC or its system connection then reenter the command to stop X.25 support.

**PAD could not be stopped. (CTLERR 25)**

CTLERR 25 Cause: The DTC failed while PAD support was being deactivated.

Action: Correct any problems with the DTC or its system connection then reenter the command to stop PAD support.

**Start PAD first. (CTLERR 26)**

CTLERR 26 Cause: An attempt was made to download card-specific PAD configuration values but PAD support is not active.

Action: Start PAD support using the STARTPAD function of DTCCNTRL then retry the operation.

**Start X25 and PAD first. (CTLERR 27)**

CTLERR 27 Cause: An attempt was made to download card-specific configuration values but X.25 and PAD support were not active.

Action: Start X.25 and PAD support using the STARTBOTH function of DTCCNTRL then retry the operation.

**System error : failed to create a port for DTCPROG, info = !,  
subsys = !. (CTLERR 100)**

CTLERR 100 Cause: Internal error.

Action: Contact your Hewlett-Packard support representative.

	<b>System error : NDM nm_find_port error, err_num = !, proc_num = !. (CTLERR 101)</b>
CTLERR 101	Cause: Internal error. Action: Contact your Hewlett-Packard support representative. <b>System error : NDM get_sysbase error, err_num = !, proc_num = !. (CTLERR 102)</b>
CTLERR 102	Cause: Internal error. Action: Contact your Hewlett-Packard support representative. <b>System error : bad status received from io_info_list, err_num = !, proc_num = !. (CTLERR 103)</b>
CTLERR 103	Cause: Internal error. Action: Contact your Hewlett-Packard support representative. <b>System error : bad NDM port number returned. (CTLERR 104)</b>
CTLERR 104	Cause: Internal error. Action: Contact your Hewlett-Packard support representative. <b>System error : bad Send_msg status received, info = !, subsys = !. (CTLERR 105)</b>
CTLERR 105	Cause: Internal error. Action: Contact your Hewlett-Packard support representative. <b>System error : bad Extend_receive status received, info = !, subsys = !. (CTLERR 106)</b>
CTLERR 106	Cause: Internal error. Action: Contact your Hewlett-Packard support representative. <b>System error : bad reply received. (CTLERR 107)</b>
CTLERR 107	Cause: Internal error. Action: Contact your Hewlett-Packard support representative. <b>System error : bad error number returned by DTCM. (CTLERR 108)</b>
CTLERR 108	Cause: Internal error. Action: Contact your Hewlett-Packard support representative. <b>PAD already stopped. (CTLWARN 01)</b>
CTLWARN 01	Cause: A DTCCNTRL command was entered to stop PAD support but PAD support was not active. Action: No action required. This message is for information only.

**PAD already started. (CTLWARN 02)**

CTLWARN 02 Cause: A DTCCNTRL command was entered to stop PAD support but PAD support was already active.

Action: No action required. This message is for information only.

**X25 already started. (CTLWARN 03)**

CTLWARN 03 Cause: A DTCCNTRL command was entered to start X.25 support but X.25 support was already active.

Action: No action required. This message is for information only.

**X25 already stopped. (CTLWARN 04)**

CTLWARN 04 Cause: A DTCCNTRL command was entered to stop X.25 support but X.25 support was not active.

Action: No action required. This message is for information only.

**FUNC specification is not RC, no configuration will be done. (CTLWARN 05)**

CTLWARN 05 Cause: A DTCCNTRL command was issued with the RECONF option specified but the function was not RC.

Action: To cause reconfigured values to be downloaded, issue a DTCCNTRL command using the RC function. If no reconfigured values are to be downloaded, no action is required.

### Glossary

**access port** A special interface card in the system cabinet through which the system console is connected.

**address** A numerical identifier defined and used by a particular protocol and associated software to distinguish one node from another.

**address key** *See X.25 address key.*

**address resolution** In NS networks, the mapping of node names to IP addresses and the mapping of IP addresses to subnet addresses.

#### **address resolution protocol**

ARP. A protocol used by LAN links with Ethernet enabled that provides a means of exchanging addressing information between Ethernet nodes.

**adjacent** A node on a point-to-point network that is connected to another node by a single link with no intervening nodes.

**ARPA** Advanced Research Projects Agency. It is the former name of the Defense Advanced Research Project Agency (DARPA). The Internet suite of protocols was developed under ARPA guidance.

**ARPA Telnet Access** An HP product which is a board that can be installed in a DTC 48 and DTC 72MX. The Telnet Access board performs protocol translation. Calls to the IP address of an MPE/iX system are detected by the Telnet Access board and are retransmitted on the LAN using AFCP, allowing connections from terminals on ARPA systems to HP 3000s.

**APRA Telnet Express** An HP product which is a standalone hardware platform dedicated to performing protocol translation. Calls to the IP address of an MPE/iX system are detected by the Telnet Express and are retransmitted on the LAN using AFCP, allowing connections from terminals on ARPA systems to HP 3000s.

**ARPANET** The (Advanced Research Projects Agency) computer network.

**ASCII** American National Standard Code for Information Interchange. A character set using 7-bit code used for information interchange among data processing and data communications systems. The American implementation of International Alphabet No. 5.

**asynchronous** Term used to describe a device's mode of operation whereby a sequence of operations are executed irrespective of time coincidence with any event. Devices that are

directly accessible by people (for example, terminal keyboards) operate in this manner.

**asynchronous processor board** The new 24-port mux board for the DTC 72MX. Allows up to 24 direct and modem connections per board. A DTC 72MX can have up to 3 asynchronous processor boards (for a total of 72 connections).

**attachment unit interface** The cable that runs between each node (host, DTC, or other device) and the Medium Attachment Unit (MAU) that connects it to the LAN in a ThickLAN configuration.

**AUI** See **attachment unit interface**.

**autodial** A dial link in which the remote node's telephone number is automatically dialed by a modem or other device with this capability.

**automatic configuration** The addition and configuration of a host-based managed DTC to the HP 3000 system without needing to specify detailed configuration information such as DTC cards/boards and ldevs.

**backbone LAN** A thick LAN cable conforming to the IEEE 802.3 Type 10 BASE 5 standard.

**back-to-back configuration** A DTC configuration whereby MPE users connected to one DTC can

communicate with a non-MPE/iX system connected to another DTC via the LAN. (See also **Local Switching**)

**backup configuration file** A file that contains a copy of the information contained in the configuration file. The backup file, called `NMCBACK.group.account` by default, is updated each time the configuration file is successfully validated.

**banner** A welcome message displayed on your screen. On the local OpenView workstation a banner appears when a remote connection is established with the OpenView DTC Manager. A banner also can appear when you log on to MPE.

**baud** Measure of the speed at which information travels between devices, most commonly used in reference to terminal speed settings. Baud represents signal events per second. When one bit represents each signal change, baud is the same as "bits per second".

**binary mode** Data transfer scheme in which no special character processing is performed. All characters are considered to be data and are passed through with no control actions being taken.

**bit** Binary digit. A unit of information that designates one of two possible states, which are represented by either 1 or 0.

**block mode** Terminal processing mode in which groups, or “blocks,” of data are transmitted all at once.

**BNC T-Connector** Connector used to connect a computer or a component such as a DTC to the LAN in a ThinLAN configuration.

**boundary** *See network boundary.*

**bps** Bits per second. The number of bits passing a point per second.

**broadcast** Communication method of sending a message to all devices on a link simultaneously.

**byte** A sequence of eight consecutive bits operated on as a unit.

**call** In X.25, a call is an attempt to set up communication between two DTEs using a virtual circuit. Also known as a virtual call.

**call collision** A conflict that occurs at a DTE/DCE interface when there is a simultaneous attempt by the DTE and DCE to set up a call using the same logical channel identifier.

**called address** When a node sends out a call request packet, the packet contains the address of the destination node. The address of the destination node is the called address.

**calling address** When a node receives an incoming call packet, the packet contains the address of the sending node. The address of the sending node is the calling address.

**carrier** A continuous wave that is modulated by an information bearing signal.

**catenet** *See internetwork.*

**CCITT** Consultative Committee for International Telephony and Telegraphy. An international organization of communication carriers, especially government telephone monopolies, responsible for developing telecommunication standards by making recommendations. No carrier is *required* to adhere to a CCITT recommendation, although most do so in their own interest.

**CIB** The channel input/output bus in the backplane of an HP 3000.

**circuit-switching network** A type of data communications network wherein a physical and exclusive link is maintained between two communicating devices for the call duration. An all-digital, circuit-switching network is often referred to as an X.21 network.

**closed user group** An X.25 user facility that allows communication to and from a pre-specified group of users and no one else.

**compatibility mode** Processing mode on HP 3000 Series 900 computers that allows applications written for MPE V/E-based systems to be ported and run without changes or recompilation.

**computer network** A group of computer systems connected in such a way that they can exchange information and share resources.

**configuration** 1) The way in which computer equipment is physically interconnected and set up to operate as a system.

2) The layout of the computer system, including the MPE table, memory, and buffer sizes, that tells which peripheral devices are (or can be) connected to the computer and how they can be accessed.

3) The process of defining the characteristics of a network in software. For MPE/iX-based computers, the operating systems are configured through use of the SYSGEN utility. Next, the datacommunications and terminal subsystem (DTS) link is configured by using NMMGR (running on the host) and may, in addition, be configured using the OpenView DTC Manager software (running on the OpenView Windows Workstation) depending on the type of network management you use. If any of the NS link products are installed on the system, network

configuration is accomplished through use of NMMGR and, if PC-based X.25 connections are required, through the OpenView DTC Manager.

**configuration file** The configuration file, which you create and update using the NMMGR utility, contains:

1) the information that the network needs in order to operate.

2) Information necessary for link-level and NetIPC logging.

3) Information required to connect terminals and printers to the system through one or more DTC.

The only file name that the system recognizes as the configuration file is  
NMCONFIG.PUB.SYS.

**control-X echo** Three exclamation marks (!!!) output to the terminal screen when the cancel character (normally [CTRL]-X) is entered.

**control-Y trap** User-written procedure to which control is passed when the subsystem break character (normally [CTRL]-Y) is entered during execution of a program with subsystem break enabled.

**cross-validate** The process of assuring that information contained in two locations is consistent where it is imperative

that it be consistent. For example, an automatic cross-validation occurs when you enter SYSGEN to assure that information contained in `NMCONFIG.PUB.SYS` agrees with system configuration data.

**CSMA/CD** Carrier Sense Multiple Access with Collision Detect, transmission access method used by the IEEE 802.3 LAN standard.

**CSN** *See* **circuit-switching network**.

**CTB** The cache transfer bus in the backplane of an HP 3000.

**CUG** *See* **closed user group**.

**data** Basic elements of information that can be processed or produced by a computer.

**Datacommunications and Terminal Controller** *See* **DTC**.

**data overrun** Transmitted data that is sent faster than the equipment on the receiving end is capable of receiving it. The resulting overflow data is lost. *See also* **flow control**.

**Datapac** The national public PSN of Canada.

**Datex-P** The national public PSN of West Germany.

**D bit** Delivery confirmation bit. Used in the X.25 protocol, the setting of the D bit in DATA packets indicates whether

delivery acknowledgment of the packet is required from the local DCE or from the remote DTE. It therefore allows the choice between local and end-to-end acknowledgment.

**DCE** Data circuit-terminating equipment. The interfacing equipment required in order to interface to data terminal equipment (DTE) and its transmission circuit. Synonyms: data communications equipment, dataset.

**DDX** The national public PSN of Japan.

**dedicated printer** A printer that can be used by only one host on the LAN; the one specified in the Destination Node Name in that printer's configuration screen.

**default gateway** One (and only one) gateway accessible by a system may be designated as a default gateway. The network will then send any transmitted messages for which it is unable to locate a destination through normal means to the default gateway in a final effort to determine a transmission route.

**demodulation** The process by which the information-bearing signal is retrieved from a modulated carrier wave. The inverse of modulation.

**destination node name** In DTS configuration, it is either 1) the name of a host that a user can be connected to by default (if switching is not enabled for that user, or if automatic modem connection is enabled), or 2) the name of the only host that can access a dedicated printer.

**device class** A collection of devices that have some user-defined relation. Device classes are assigned through use of the NMMGR configuration utility.

**device-dependent characteristic** A file specification for which modifications are restricted because of the type of device on which the file is opened. For example, data directed to terminals must have a blocking factor of one.

**device driver** Software module that controls a specific type of input/output device including NS 3000/iX links.

**device file** A file being input to or output from any peripheral device except a disk. MPE allows operations to be performed on the device itself as if it were a file.

**device independence** A characteristic of the operating system that allows users to selectively redirect input/output from a program, session, or job without regard to the nature of the device.

**device name** *See* **PAD name**.

**Dial ID protocol** A proprietary Hewlett-Packard protocol that provides security checking and address exchange for dial links.

**dial link** A connection made through public telephone lines.

**direct-connect device**

Asynchronous device that is connected directly to a DTC through an RS-232-C or RS-422 cable, with no intervening communications equipment. Also referred to as a "local connection."

**direct connection** A leased line, private line, or other non-switched link in a network.

**direct dial** A dial link through which only one remote node can be reached.

**direct-path branching** The process of directly accessing any screen in NMMGR by entering path names in the `Command:` field. The path name must be preceded by an at sign (@).

**domain name** A name designated for a system in ARPANET standard format. This name can be used by other nodes on the network to access the host for which it is configured.

**download** The process of loading operating code and configuration files into the DTC's memory. The DTC is downloaded by the host computer for LANs using

host-based network management, and by the PC for DTCs managed by the OpenView DTC Manager.

**driver** *See device driver.*

**DTC** Datacommunications and Terminal Controller. The DTC is a hardware device, configured as a node on a LAN, that enables asynchronous devices to access HP 3000 Series 900 computers. Terminals can either be directly connected to the DTC, or they can be remotely connected through a Packet Assembler Disassembler (PAD). The DTC can be configured with DTC/X.25 Network Access cards and DTC/X.25 Network Access software. A DTC/X.25 iX Network Link consists of two software modules: the X.25 iX System Access software (running on the host) and the DTC/X.25 Network Access software (running on the DTC).

**DTCNTRL** A command file you can use to manage DTS configurations. Using `DTCNTRL`, you can dynamically implement DTS changes, automatically add a new DTC, shutdown/restart DTS, and manage/dynamically configure host-based X.25 connections.

**DTC 16** HP 2340A product. A DTC that provides 2 slots for asynchronous connections with each slot allowing up to 8 direct connections or 6 modem connections, plus an optional X.25

link supporting up to 32 virtual circuits at speeds of up to 19.2 Kbps.

**DTC 16iX** HP J2062A product. A DTC terminal server for HP 3000 systems. It allows up to 16 asynchronous (direct and modem) LAN connections to HP 3000 systems.

**DTC 16MX** HP J2063A product. A DTC terminal server for HP 3000 and Telnet systems. It allows up to 16 asynchronous (direct and modem) LAN connections for the HP 3000 environment and for computer systems running ARPA, such as HP 9000s and third party systems. When managed by the HP 3000, the DTC 16MX is configured and functions exactly like a DTC 16iX. The full functionality of the DTC 16MX is only available when it is managed by the OpenView DTC Manager.

**DTC 16RX** HP J2064A product. A routable communications server that enables up to 16 asynchronous connections for the HP 3000 environment and computer systems running ARPA, such as HP 9000s and third party systems.

**DTC 16RX Manager** An application program that resides on the HP 9000 host system and enables you to configure and diagnose the HP DTC 16RX Routable Communications Server.

**DTC 16TN** HP J2060A product. A DTC terminal server for Telnet systems. It allows up to 16 asynchronous connections to computer systems running ARPA, such as HP 9000s and third party systems.

**DTC 48** HP 2345B product. A DTC that provides 6 slots for asynchronous connections, X.25 links, or Telnet Access. Each slot allows up to 8 direct connections or 6 modem connections. A DTC 48 may have up to 3 slots used for X.25 links, each supporting up to 256 virtual circuits at speeds of up to 64 Kbps or one Telnet Access card with 40 Telnet connections to HP 3000 Series 900 connections.

**DTC 72MX** HP J2070A product. A DTC that provides 3 slots allowing up to 72 asynchronous connections. Each slot accommodates up to 24 direct or modem connections. A DTC 72MX may have up to 3 slots used for X.25 links, each supporting up to 256 virtual circuits at speeds of up to 64 Kbps. It may also use one slot for Telnet Access card with 40 Telnet connections to HP 3000 Series 900 computers.

**DTC identifier** An identifier used only within NMMGR to define the branch of the configuration file containing information about a particular DTC. The identifier must begin with a letter and can be up to eight characters long.

**DTC Manager** *See OpenView DTC Manager.*

**DTC node name** Unique name used to identify a DTC on the LAN. Node name format is *nodename.domain.organization*, with each of the three parts having up to 16 characters and beginning with either a letter or a digit.

**DTC station address (802.3 address)** 12-digit hexadecimal number used to identify the DTC as a node belonging to the network configuration. Also called the LAN address.

**DTC switching** A facility enabling terminal users to select any host system that they want to connect to. DTC switching is available only when the OpenView DTC Manager is used for network management.

**DTC/X.25 Network Access** The X.25 software that resides on the Datacommunications and Terminal Controller (DTC). To configure access to an X.25 network, you must configure two software components: the X.25 iX System Access (residing on the HP 3000 host), and the DTC/X.25 Network Access. DTC/X.25 Network Access is configured through use of the OpenView DTC Manager software for systems using PC-based network management or through NMMGR for systems using host-based network management.

**DTC/X.25 Network Access card** This is the hardware card and channel adapter that provides X.25 Network Access. It resides in the Datacommunications and Terminal Controller (DTC).

**DTC/X.25 iX Network Link** Software and hardware that provides access to private and public X.25 networks. The X.25 iX System Access software resides on an HP 3000 host and is configured through use of NMMGR.

**DTE** Data Terminal Equipment. Equipment that converts user information into data-transmission signals or reconverts received data signals into user information. Data terminal equipment operates in conjunction with data circuit-terminating equipment.

**DTS** Datacommunications and Terminal Subsystem. This consists of all the Datacommunications and Terminal Controllers (DTCs) on a LAN, their LANIC cards (attached to the host), the LAN cable, and the host and DTC software that controls all related DTS hardware.

**DTS restart** The startup of the DTS subsystem, including the release of all TIO-related resources, using the `DTCCTRL` command file.

**DTS shutdown** The shutdown of the DTS subsystem, including the release of all TIO-related resources, using the `DTCCTRL` command file.

**duplex** Transmission method that allows two-way communication. If both ends of the transmission link can transmit simultaneously, it is called full duplex. If only one end can transmit at a time, it is half-duplex transmission.

**dynamic configuration** The ability to make DTS configuration changes using NMMGR without rebooting the HP 3000 system.

**entry priority** The ranking that identifies the most desirable route used to reach a given remote node from a given local node in a point-to-point network.

**environment** A session that is established on a remote node.

**escape from data transfer character** A character that allows a user who is connected to a host system through the DTC to break that connection and return to the DTC switching user interface. The default is `[CTRL]-K`. This character is used only on networks managed by the OpenView Windows Workstation.

**escape sequence** A sequence of characters beginning with the escape character and followed by

one or more other characters, used to convey control directives to printers, plotters, or terminals.

**Ethernet** A Local Area Network system that uses baseband transmission at 10 Mbps over coaxial cable. Ethernet is a trademark of Xerox Corporation.

**event log** One of three circular files stored on the OpenView workstation containing lists of all significant events reported by the DTCs for which it is the owner; that is, whose operating software/configuration it has downloaded.

**extended packet sequence numbering** One of the optional network subscribed facilities that provides packet sequence numbering using modulo 128. If not subscribed, modulo 8 is used.

**facility** An optional service offered by a packet switching network's administration and requested by the user either at the time of subscription for network access or at the time a call is made. Also known as user facility.

**facility set** A facility set defines the various X.25 connection parameters and X.25 facilities that can be negotiated for each virtual circuit on a per-call basis.

**fast select** An optional packet-switching network facility by which user data may be

transmitted as part of the control packets that establish and clear a virtual connection.

**FCS** Frame Check Sequence. A sequence of bits generated by X.25 at level 2 that forms part of the frame and guarantees the integrity of its frame's content. The FCS is also used by the IEEE 802.3 protocol to check the validity of frames.

**file equation** Assignment statement used to associate a file with a specific device or type of device during execution of a program.

**file number** Unique number associated with a file when the file is opened. The file number is returned in the FOPEN or HPFOPEN call used to open the file. It can be used to access that file until the file is closed.

**file specification** The name and location of a file. The full specification for a file includes the file name, group, and account.

**file system** The part of the operating system that handles access to input/output devices (including those connected through the DTC), data blocking, buffering, data transfers, and deblocking.

**flow control** A means of regulating the rate at which data transfer takes place between devices to protect against data overruns.

**flow control negotiation** One of the network subscribed facilities, selected at subscription time. This facility allows the flow control parameter to be negotiated at call set-up time, as opposed to having a predefined value.

**formal file designator** Name that can be used programmatically or in a file equation to refer to a file.

**FOS** Fundamental Operating System. The programs, utilities, and subsystems supplied on the master installation tape that form the basic core of the operating system.

**full gateway** A full gateway is a node that belongs to more than one network and has one IP address for each network. It uses store and forward to transfer packets between each network that it belongs to.

**gateway** A node that connects two dissimilar network architectures. A gateway can be either a single node (full gateway) or two gateway halves.

**gateway half** A node that works in conjunction with another node on another network to form an internetwork. The only protocol used by gateway halves is the NS Point-to-Point 3000/iX Link. *See also full gateway.*

**gateway-half link** A link between the two nodes of a gateway-half pair. Each of the two nodes of a gateway-half pair has a configured link (hardware interface card) that is used for the gateway half network interface. The NS Point-to-Point 3000/iX Link is the only link that can be used as a gateway-half link.

**gateway-half pair** A set of two nodes that are joined by a gateway-half link. Each node in the pair must have a gateway-half network interface configured, using the link.

**guided configuration** A method of configuring a node in which a subset of the complete NMMGR interface is presented and defaults of configurable values are used automatically.

**handshaking** A communications protocol between devices or between a device and the CPU. Provides a method of determining that each end of a communications link is ready to transmit or receive data and that transmission has occurred without error.

**hardware handshake** Uses modem signals CTS and RTS to pace the data transfer from the DTC to the attached device. (For DTC 16iX/MX/RX and DTC 72MX only.)

**hop count** *See internet hop count and intranet hop count*

**host-based network management** Method of managing asynchronous communications for HP 3000 Series 900 computers. All of the control software is configured on a single host and is downloaded to the DTCs that are managed by that host. With host-based management, there is a permanent relationship between each DTC and the host, and terminal users can access only the single system that owns the DTC their terminal is connected to.

**host-based X.25** The management of X.25 network connections from a host computer. Host-based X.25 network connections are made through a DTC Network Access card installed in a DTC managed by the host. All configuration is accomplished using the NMMGR utility. It is not necessary for a PC to be part of the LAN when you are using host-based X.25.

**host computer** The primary or controlling computer on a network. The computer on which the network control software resides. For HP purposes, it may also be used to distinguish the HP 3000 Series 900 system (host) from the DTC.

**HP ARPA Telnet Express** A DTC dedicated to providing protocol conversion between Telnet on TCP/IP and AFCP to

allow incoming calls from the ARPA environment to HP 3000 systems.

**HP block mode** Block mode transmission method employed by HP computers where the system controls the block mode handshake. When HP block mode is used, the user program need not concern itself with data transfer protocol.

**HP PPN** Hewlett-Packard Private Packet Network. Hewlett-Packard's own packet-switching X.25 network, which gives users full control over the administration and security of their data communications.

**HP TS8** A terminal server that can support up to eight asynchronous serial connections. When used in back-to-back configuration, users can access HP 3000 MPE/V systems on it via a DTC.

**idle device timeout** Timeout defined by the Configure: CPU command. When the timer lapses, a device connected to the DTC user interface that is still inactive will be disconnected.

**IEEE 802.3** A standard for a broadcast local area network published by the Institute for Electrical and Electronics Engineers (IEEE). This standard is used for both the ThinLAN and ThickLAN implementations of the LAN.

**IEEE 802.3 multicast address**

A hexadecimal number that identifies a set of nodes. This address is used for multicast delivery.

**IEEE 802.3 nodal address** A unique hexadecimal number that identifies a node on an IEEE 802.3 LAN.

**IEEE 802.5** A standard for a token ring network published by the Institute for Electrical and Electronics Engineers (IEEE). This standard is used for the Token Ring 3000/iX Network Link.

**initialization string** A sequence of control characters used to initialize a terminal, printer, or plotter when a connection is established from a host on the network.

**interactive communications**

Processing that allows users to enter commands and data at the terminal and receive an immediate response.

**internet communication**

Communication that occurs between networks.

**internet hop count** The number of full gateways plus the number of gateway-half links that a packet must pass through in moving from source node to destination.

**Internet Protocol** A protocol used to provide routing between different local networks in an internetwork, as well as among nodes in the same local network. The Internet Protocol corresponds to layer 3, the network layer, of the OSI model. *See also IP address.*

**internet routing** Internet routing involves all the processes required to route a packet from a node on one network to a destination node on another network.

**internetwork** Two or more networks joined by gateways, bridges, or routers.

**intranet communication**

Communication that occurs between nodes in a single network.

**intranet hop count** The number of intermediate nodes that lie between a source and destination node on the same point-to-point network.

**intranet routing** Intranet routing involves all the processes required to route a packet from one node in a network to another node in the same network.

**intrinsic** System routine accessible by user programs which provides an interface to operating system resources and functions. Intrinsic perform common tasks such as file access and device control.

**IP** *See* **Internet Protocol**.

**IP address** Internet Protocol address. An address used by the Internet Protocol to perform internet routing. A complete IP address comprises a network portion and a node portion. The network portion of the IP address identifies a network, and the node portion identifies a node within the network.

**IP subnet mask** *See* **subnet mask**.

**ISO** International Standards Organization. An international federation of national standards organizations involved in developing international standards, including communication standards.

**LAN** Local Area Network. A collection of data communication systems sharing a common cable whereby each system can communicate directly with another.

**LAN address** *See* **station address**.

**LANIC** *See* **Local Area Network Interface Controller**.

**LANIC physical path** The physical location (slot number) of the LANIC within the SPU.

**LANIC self-test** A ROM-based program on a LANIC card that tests and reports the status of the LANIC hardware.

**LAP** Link Access Protocol. The data link protocol specified by older versions (prior to 1980) of X.25 at level 2 but still permitted and therefore usable. All new implementations of X.25 must use LAP-B, and all old implementations must migrate to LAP-B at a future date.

**LAP-B** Link Access Protocol – Balanced. The data link protocol specified by the 1980 version of X.25 at level 2 that determines the frame exchange procedures. LAP-B must also be used over direct-connect NS Point-to-Point 3000/iX Links.

**LCI** Logical Channel Identifier. Local value on a network node which identifies the channel used to establish a virtual circuit (SVC or PVC) through an X.25 network.

**ldev** *See* **logical device number**.

**leased line** Data-grade telephone line leased directly to a subscriber and allocated specifically for the subscriber's needs.

**line speed** Speed at which data is transferred over a specific physical link (usually measured in bits or kilobits per second).

**link name** The name that represents a hardware interface card. The link name can contain as many as eight characters. All

characters except the first can be alphanumeric; the first character must be alphabetic.

**Local Area Network Interface Controller (LANIC) A**

hardware card that fits into the backplane of the HP 3000 Series 900 computer and provides a physical layer interface for local area networks.

**local connection** *See* **direct connection**.

**local node** The computer that you are configuring or that you are logged on to.

**local switching** Feature of the DTC which permits back-to-back configuration (for connections to an HP 3000 MPE/V host), using two ports of the same DTC.

**local user group** A list defined for a particular DTC and card that specifies which *remote* nodes this DTC can send data to and also which *remote* nodes this DTC can receive data from. (*See also* **Closed User Group**).

**logging** The process of recording the usage of network resources. Events can be logged to both the OpenView workstation and to the MPE host.

**logging class** A number defining the severity of any given event logged. An operator uses the logging classes to specify which events are to be logged. Class 1 (catastrophic event) is always logged.

**logical device number (ldev)**

A value by which the operating system recognizes a specific device. All DTC devices that are configured as nailed devices through the NMMGR configuration have ldev numbers permanently assigned. The DTC devices can then be accessed programmatically through use of their ldev number. Non-nailed devices have ldev numbers that are assigned from a pool of available ldev numbers for the life of their connection to a system. You cannot access non-nailed devices programmatically.

**log off** The termination of a job or session.

**log on** The process of initiating a job or session.

**logon device** *See* **session-accepting device**.

**loopback** The routing of messages from a node back to itself.

**LUG** *See* **local user group**.

**maintenance mode** An NMMGR character mode interface used to manage both network directory and configuration files. It can be used interactively, from within the screen mode interface, or as a set of commands entered via a batch job.

**map, network** A drawing that shows the topology of the network. For networks managed by the OpenView DTC Manager, a network map must be created through use of the OVDRAW capability provided with the management software. A network map is also a hardcopy drawing used when planning a network. It shows network topology, node and network names, addresses, network boundaries (for an internetwork map), and link types.

**mapping** A set of characteristics that describe a route taken by messages to reach a destination node. This set of characteristics is configured with NMMGR at every node on a point-to-point network. One mapping is configured at each node for every other node on the network to which messages will be sent.

**MAU** *See* **medium attachment unit**.

**M bit** More data bit. Setting this bit in a DATA packet indicates that at least one more DATA packet is required to complete a message of contiguous data.

**medium attachment unit** A device attached to a ThickLAN coaxial cable that provides the physical and electrical connection from the AUI cable to the coaxial cable.

**MIB** Management Information Base. A database of information about a network node used by SNMP.

**MIT** Master Installation Tape. Magnetic tape containing the fundamental operating system for a HP 3000 Series 900 computer.

**modem** Modulator/demodulator. A device that modulates and demodulates signals. Primarily used for modulating digital signals onto carriers for transmission and for performing the inverse function at the receiving end. Modems are essential for transmitting and receiving digital signals over telephone lines.

**modulo** Value used as the counting cycle for determining the send sequence number (N(S)) of frames sent across an X.25 network.

**modulation** Process in which certain characteristics of a carrier signal are altered in accordance with the changes of an information-bearing signal.

**MPE/iX** MultiProgramming Executive/ integrated POSIX. The operating system of HP 3000 Series 900 computers. The NS 3000/iX network services operate in conjunction with the MPE/iX operating system.

**multiplexer** A device that allows multiple communication links to use a single channel.

**nailed device** A device with a permanently associated ldev that was assigned through the NMMGR configuration of the host system on which the association is established. Nailed devices can be accessed programmatically through their ldev number. In contrast, non-nailed devices have ldev numbers that are assigned from a pool of available ldev numbers for the life of their connection to a system.

**native mode** The run-time environment of MPE/iX. In Native Mode, source code has been compiled into the native instruction set of the HP 3000 Series 900 computer.

**neighbor gateway** A gateway that is in the same network as a given node.

**NetIPC** Network Interprocess Communication. Software that enables programs to access network transport protocols

**network** A group of computers connected so that they can exchange information and share resources.

**network address** This can be either 1) the network portion of an IP address as opposed to the node portion, or 2) when referring to X.25 networks, it is a node's X.25 address.

**network boundary** The logical division between networks in an internetwork.

**network directory** A file containing information required for one node to communicate with other nodes in 1) an internetwork, 2) an X.25 network, or 3) a network that contains non-HP nodes. The active network directory on a node must be named `NSDIR.NET.SYS`.

**network interface** NI. The collective software that enables data communication between a system and a network. A node possesses one or more network interfaces for each of the networks to which it belongs. Network interface types are LAN, point-to-point (router), X.25, token ring, SNA, loopback, and gateway half. The maximum number of supported NIs is 12, one of which is reserved for loopback.

**network management** The collective tasks required to design, install, configure, maintain, and if necessary, change a network.

**network map** A drawing that shows the topology of the network. For networks managed by the OpenView DTC Manager, a network map must be created using the OVDRAW capability provided with the management software. A network map is also a hardcopy drawing used when planning a network. It shows network topology, node and network names, addresses,

network boundaries (for an internetwork map), and link types.

**Network Services NS.** Software application products that can be used to access data, initiate processes, and exchange information among nodes in the network. The NS 3000/iX Network Services include RPM, VT, RFA, RDBA, and NFT.

**network subscribed facilities**

A set of parameters that the user chooses when he subscribes to the X.25 network; they include flow control negotiation, use of D-bit, throughput class negotiation and extended packet sequence numbering.

**network transport** Software that corresponds to layers 4 and 3 of the OSI network architecture model. The function of this software is to send data out over the appropriate communications link, to receive incoming data, and to route incoming or outgoing data to the appropriate destination node.

**NFT** Network File Transfer. The network service that transfers disk files between nodes on a network.

**NI** See **network interface**.

**NMCBACK.PUB.SYS** The default file name for the file that contains a copy of the information contained in the configuration file (NMCONFIG.PUB.SYS). The

backup file is updated each time the configuration file is successfully validated.

**NMCONFIG.PUB.SYS** A file that contains all the network configuration data for the HP 3000 Series 900 computer on which it resides. It includes information about the DTCs that can access the system as well as information about any Network Services (NS) products running on the system. This is the only file name allowed.

**NMDUMP** Node management services trace/log file analyzer. A utility used to format log and trace files.

**NMMAINT** Node management services maintenance utility. A utility that lists the software module version numbers for all HP AdvanceNet products, including NS 3000/iX. It detects missing or invalid software modules.

**NMMGR** Node management services configuration manager. A software subsystem that enables you to configure DTC connectivity and network access parameters for a HP 3000 Series 900 computer.

**NMMGRVER** Node management services conversion utility. A conversion program that converts configuration files created with NMMGR from an earlier version to the latest format.

**NMSAMP1.PUB.SYS** Sample configuration file supplied with FOS that can be used as a template for DTS configuration.

**node** A computer that is part of a network. The DTC is also considered to be a node and has its own address.

**node address** The node portion of an IP address, which consists of a node portion and a network portion.

**Node Management Services Configuration Manager** *See* NMMGR.

**node name** A character string that uniquely identifies each system in a network or internetwork. Each node name in a network or internetwork must be unique; however, a single node can be identified by more than one node name.

**node names list** List defined on the OpenView workstation and subsequently downloaded to all DTCs for which it is the "owner." The list specifies all the HP 3000 Series 900 hosts on the LAN that are accessible from the DTCs.

**non-adjacent** Describes a node on an NS Point-to-Point 3000/iX network that is separated from a given node by intervening or intermediate node.

**non-nailed device** A session accepting device that is not permanently associated with an ldev number at configuration

time. When the user at such a device logs on to a HP 3000 Series 900, an ldev is assigned from a pool of ldevs set aside for this purpose at configuration time. The association between a non-nailed device and this temporarily assigned ldev exists only for the duration of the session. One advantage of the use of non-nailed device connections is that configuration is simplified, since it is not required that each non-nailed device be individually configured.

**NS 3000/iX** A Hewlett-Packard data communication product that provides minicomputers. NS 3000/iX consists of one or more links and network services.

**NS 3000/iX Link** Software and hardware that provides the connection between nodes on a network. Some of the NS 3000/iX links available are the ThinLAN 3000/iX Link and its ThickLAN 3000/iX Link and its ThickLAN 3000/iX Link option, the DTC/X.25 iX Network Link, the NS Point-to-Point 3000/iX Link, and the Token Ring 3000/iX Network Link.

**NS 3000/iX Network Services**

Software applications that can be used to access data, initiate processes, and exchange information among nodes in a network. The services are RPM, VT, RFA, RDBA, and NFT.

**NS Point-to-Point 3000/iX Link** Hardware and software necessary to create networks in which data is transmitted from

node to node over a defined route until it reaches its destination. This technique is referred to as store and forward. Systems in a point-to-point network are connected by means of leased or dial-up telephone lines. HP 3000 systems attach to the point-to-point network via HP 3000 Programmable Serial Interface (PSI) cards that fit into the back of each system's SPU.

**NSDIR.NET.SYS** Name of the active network directory file. *See also network directory.*

**octet** An eight-bit byte operated upon as an entity.

**OpenView Admin** An OpenView Windows program that enables you to configure how your OpenView Windows applications will function. For example, it enables you to set a default map for the OpenView DTC Manager.

**OpenView Draw** An OpenView Windows program that enables you to draw the network map, and to label the components on it.

### **OpenView DTC Manager**

OpenView Windows application that enables you to configure, control, monitor, and troubleshoot the operation of the Datacommunications and Terminal Subsystems on the LAN.

**OpenView Run** An OpenView Windows program that covers most of the control features used

by the DTC Manager, including monitoring and diagnostic functions.

**OpenView Windows** The set of three programs: OV Admin, OV Draw and OV Run, running on the OpenView workstation under MS Windows, that acts as the platform for all OpenView applications, such as DTC Manager.

**OpenView Windows Workstation** The personal computer that provides software downloads to enable operation of the Datacommunications and Terminal Controller (DTC). The configuration software that runs on this workstation is called the OpenView DTC Manager software.

**OSI model** Open Systems Interconnection model. A model of network architecture devised by the International Standards Organization (ISO). The OSI model defines seven layers of a network architecture, with each layer performing specified functions.

**packet** A block of data whose maximum length is fixed. The unit of information exchanged by X.25 at level 3. There are DATA packets and various control packets. A packet type is identified by the encoding of its header.

### **Packet Exchange Protocol**

PXP. A transport layer protocol used in NS 3000/iX links to initially establish communication between nodes when NetIPC socket registry is used.

### **packet-switched network**

**name** The name of a data communication network adhering to the CCITT X.25 recommendation. This can be a PDN or a private network, such as the HP PPN.

### **PAD (Packet Assembler/Disassembler)**

A device that converts asynchronous character streams into packets that can be transmitted over a packet switching network (PSN).

**PAD name** A name of up to eight characters that is associated with a configured PAD device. The PAD name is known to both the DTC and the host systems that the device can access.

**PAD profile** Terminal or printer profile that specifies the configuration characteristics for PAD-connected devices.

**PAD support** A software module which can be downloaded to an X.25 board in a DTC. The software is used to manage connections with remote PAD devices.

**partner gateway half** When gateway halves are used, two gateway halves are required in

order to provide communication between two networks. Each is the partner of the other.

**path name** When configuring with NMMGR, you can type a string in the **COMMAND:** field on display screens to branch to another screen. Each screen has a unique path name that corresponds to its location in the hierarchy of configuration screens presented by NMMGR.

**PDN** Public Data Network. A data communication network whose services are available to any user willing to pay for them. Most PDNs use packet switching techniques.

**Point-to-Point** A link that connects either two nodes in an NS Point-to-Point 3000/iX network or two gateway halves.

**port** An outlet through which a device can be connected to a computer, consisting of a physical connection point and controlling hardware, controlling software, and configurable port characteristics. Ports can be thought of as data paths through which a device communicates with the computer.

**Precision Architecture** The hardware design structure for the HP 3000 Series 900 computer family.

**printer name** Character string of up to 16 characters specified in the DTC Manager configuration

(for networks using OpenView Network Management) to define a printer by name. Can be shared by several printers (port pool).

**printer profile** A set of configuration characteristics that can be associated with one or more printers through the NMMGR configuration. Printer profile specifications include the printer type, line speed, device class assignment, and other values relevant to printers connected through a DTC.

**printer type** A collection of characteristics that cause a printer connected to a HP 3000 Series 900 system to act and react in a specified manner. You can configure a printer to use one of the system-supplied printer types or you can create custom printer types using workstation configurator.

**privileged mode** A capability assigned to accounts, groups, or users allowing unrestricted memory access, access to privileged CPU instructions, and the ability to call privileged procedures.

**probe protocol** An HP protocol used by NS 3000/iX IEEE 802.3 networks to obtain information about other nodes on the network.

**probe proxy server** A node on an IEEE 802.3 network that possesses a network directory. A probe proxy server can provide a

node with information about other nodes on the same or other networks of an internetwork.

**profile** A method of grouping device connection specifications and characteristics so that the set of characteristics can be easily associated with groups of like devices. *See also* **printer profile**, **terminal profile**.

**program captive device** *See* **programmatic device**.

**Programmable Serial Interface** PSI. A hardware card that fits into the backplane of the HP 3000 Series 900 computer. It provides a physical layer interface for NS Point-to-Point 3000/iX Links.

**programmatic device** A device operating under control of a program running on a computer. Programmatic devices can be used for input, output, or both, depending on the device and how it is opened by the controlling program.

**protocol** A set of rules that enables two or more data processing entities to exchange information. In networks, protocols are the rules and conventions that govern each layer of network architecture. They define what functions are to be performed and how messages are to be exchanged.

**PSN** Packet-Switching Network. Any data communication network using packet-switching techniques wherein data is disassembled into packets at a source interface and reassembled into a data stream at a destination interface. A public PSN offers the service to any paying customer.

**PSS** Packet-Switching System. The national public PSN of the United Kingdom.

**PVC** Permanent Virtual Circuit. A permanent logical association between two physically separate DTEs that does not require call set-up or clearing procedures.

**PXP** *See* **Packet Exchange Protocol**.

**Q bit** Qualified bit. When set in DATA packets the Q bit signifies that the packet's user data is a control signal for the remote device, not a message for its user.

**QuickVal** A software program that tests whether Network Services are operating correctly between nodes.

**RDBS** Remote Data Base Access. A network service that allows users to access data bases on remote nodes.

**reachable network** A network that can be accessed (with additional internet hops possibly required) by a particular gateway.

**remote connect device**

Asynchronous device that is connected to a DTC indirectly, using a modem and telephone hook-up, or a PAD.

**remote node** A node on an internetwork other than the node you are currently using or referring to.

**retransmission count (N2)** The maximum number of times a frame will be retransmitted following the expiration of the retransmission timer, T1.

**retransmission timer (T1)**

Length of time the transmitter will wait for an acknowledgment from the destination address before attempting to retransmit the frame. When choosing this value, factors like the line speed and maximum frame size should be taken into account.

**RFA** Remote File Access. A network service that allows users to access files and devices on remote nodes.

**router network** *See* **Point-to-Point**.

**routing** The path that packets, or fragments of a message, take through a network to reach a destination node.

**RPM** Remote Process Management. A network service that allows a process to programmatically initiate and

terminate other processes throughout a network from any node on the network.

**RS-232-C** Electronic Industries Association (EIA) level 1 protocol specification that defines electrical circuit functions for 25 connector pins. HP provides two implementations of this standard: a 3-pin version for direct connections up to a distance of 15 meters (50 feet), and a version which makes use of additional circuits and can be used for either modem or direct connections.

**RS-422** Electronic Industries Association (EIA) level 1 protocol specification implemented by HP in a 5-pin version which can be used for direct device connection up to a distance of 1500 meters (4000 feet).

**security string** An alphanumeric character string that functions as a password for dial links. The security string is used by the dial IP protocol.

**serial device** Any device that is attached to and communicates with a computer by means of a serial transmission interface. Terminals, printers, and plotters are among the devices that communicate serially with HP 3000 Series 900 computers.

**serial transmission** Method of transferring data in which characters are transmitted one bit at a time and received one bit at a time in the order of

transmission. This transmission scheme is employed by devices connected to the system via the DTC.

**session-accepting device** A terminal or personal computer running in terminal-emulation mode that is able to establish an interactive (conversational) session with an HP 3000 computer. Also referred to as a logon device.

**shared dial** A dial link that provides connection to more than one remote system, although to only one at a time.

**shared-line access** Feature that allows two or more HP 3000 Series 900 hosts to use the same DTC/X.25 Network Access card on a DTC to access an X.25 network.

**SIC** Serial Interface Card. Card installed in the front of the DTC that acts as an interface between a corresponding connector card (CC) and the DTC's processor.

**slaved device** A device that shares the same DTC port as another device and is connected to the other device, referred to as its master, by a cable. The actions of the slaved device are controlled by the master device.

**SNMP** Simple Network Management Protocol. An industry standard for managing networked computers in a multi-vendor environment.

**SNMP agent** A network node, such as a DTC, that is able to respond to SNMP requests.

**SNP** Synchronous Network Processor card; an alternative name for an X.25 board.

**spooled device** A printer that is accessed through the spooling facility. The spooling facility allows a nonsharable device to be shared among several users by temporarily storing output data on disk and managing the selection of output spool files destined for the spooled device.

**start bit** Data bit used to signal the start of a character being transmitted in an asynchronous communication mode.

**station address** A 12-digit hexadecimal link-level address used by the IEEE 802.3 protocol. Every node on an IEEE 802.3 network has its own station address.

**stop bit** Data bit used to signal the end of a character being transmitted in an asynchronous communication mode.

**store and forward** A technique in which messages are passed from one node to another in a network to reach their destination. Point-to-point networks use the store and forward technique to transmit messages.

**subnet** Another name for a network, especially if the network is part of an internetwork. The word subnet is also a synonym for intranet.

**subnet mask** Grouping of bits that determines which bits of the IP address will be used to define a subnetwork. The subnet mask is configured using the NMMGR utility and specified in the same format as an IP address.

**SVC** Switched Virtual Circuit. Path through an X.25 network that is established at call set-up time.

**switching** *See* **DTC switching**.

**Switching user interface** User interface available when DTC switching is enabled that allows terminal users to choose the HP 3000 Series 900 computer with which they want to establish a communication link.

**synchronous** A mode of operation or transmission whereby a continuous data stream is generated without intervals between characters. The data stream is synchronized by clock signals at the receiver and transmitter. As a result, fast transmission speeds (above 9600 bps) are attainable.

**SYSGEN** The software program that allows you to configure the operating system on HP 3000 Series 900 computers.

**system configuration** The way you tell the operating system what peripheral I/O devices are attached and what parameters are required for system operation.

**TCP** *See* **Transmission Control Protocol**.

**telenet** A proprietary public data network in the USA.

**Telnet Access Card (TAC)** A card that resides in the DTC 48 and provides protocol conversion between Telnet and AFTP.

**Telnet Express** *See* **HP ARPA Telnet Express**.

**TermDSM** Terminal online diagnostic support manager. A utility that provides diagnostic services for DTC connections by means of a series of commands accessible through the SYSDIAG utility. TermDSM is used only when DTCs are managed by a host system.

**terminal name** Character string of up to 16 characters specified in the OpenView DTC Manager configuration (for networks using OpenView Network Management) to define a terminal by name. May be shared by several terminals (pool port).

**terminal profile** A set of configuration characteristics that can be associated with one or more terminals through the NMMGR configuration. Terminal profile specifications include the terminal type, line speed, device

class assignment, and other values relevant to terminals connected through a DTC.

**terminal type** A collection of characteristics that cause a terminal connected to an MPE system to act and react in a specified manner. You may configure a terminal to use one of the system-supplied terminal types, or you may create custom terminal types using the workstation configurator.

**ThinLAN** A LAN media that conforms to the IEEE 802.3 Type 10 BASE 2 standard LAN.

### **ThinLAN 3000/iX Link**

Hardware and software necessary to create a broadcast network, which uses the IEEE 802.3 LAN cable to transmit messages to all the nodes on the network. The messages are then accepted only by the node or nodes to which they are addressed. Also includes the ThickLAN and StarLAN 10 options.

**throughput class** A value assigned to a given virtual circuit that defines how many network resources should be assigned to a given call. It is determined by the access line speed, packet and window sizes, and the local network's internal mechanisms.

**throughput class negotiation**

One of the network subscribed facilities defined at subscription time. This allows the user to negotiate the throughput class at call set-up time.

**timer (T3)** Length of time that a link can remain in an idle state. After the expiration of the timer, the link is considered to be in a non-active, non-operational state and is automatically reset. The value should be chosen carefully. In particular, it must be sufficiently greater than the retransmission timer (T1) so that no doubt exists about the link's state.

**token ring** A collection of data communication systems sharing a common cable and communicating by means of the IEEE 802.5 protocol. In a token ring network, access is controlled by the passing of a token from node to node. Outgoing messages are attached to the token and passed with the token until they arrive at the node to which they are addressed.

**Token Ring 3000/iX Network Link** Hardware and software required to connect a HP 3000 Series 900 system to a token ring network.

**topology** The physical arrangement of nodes in a network. Some common topologies are bus, star, and ring.

**Transmission Control Protocol**

TCP. A network protocol that establishes and maintains connections between nodes. TCP regulates the flow of data, breaks messages into smaller fragments if necessary (and reassembles the fragments at the destination), detects errors, and retransmits messages if errors have been detected.

**Transpac** The national public PSN of France.

**transparent mode** Data transfer scheme in which only a limited number of special characters retain their meaning and are acted on by the system. All other characters are considered to be data and are passed through with no control actions being taken.

**transport, network** Software that corresponds to layers 3 and 4 of the OSI network architecture model. The function of this software is to send data out over the appropriate communications link, to receive incoming data, and to route incoming or outgoing data to the appropriate destination node.

**TTUTIL** Also known as the Workstation Configurator. A program, TTUTIL.PUB.SYS, on the HP 3000 that is used to create and modify terminal and printer type files.

**Tymnet** A proprietary public data network in the USA.

**typeahead** A facility that allows terminal users to enter data before a read is actually posted to the terminal.

**UPS** *See* **uninterruptible power supply**.

**unacknowledged frame number (K)** The number of frames that can be transmitted without receiving an acknowledgment from the destination address. When this number (K) frame is reached, the same K frames are retransmitted.

**unedited mode** *See* **transparent mode**.

**uninterruptible power supply** A hardware device that protects equipment from power failures and contains an internal storage battery to supply reserve power.

**V.24** The CCITT recommendation that defines the function of the interchange circuits between a DTE and a DCE.

**validation** The process of ascertaining whether the network transport configuration file has been correctly configured. In guided NMMGR, you do this by pressing the Validate Netxport key.

**VAN** Value-Added Network. A data communication network that uses and pays for facilities belonging to another carrier. The value-added package is then sold to a user.

**VC** *See* **virtual circuit**.

**virtual circuit** A logical association between two physically separate DTEs.

**Virtual Terminal** A network service that allows a user to establish interactive sessions on a node.

**VPLUS** Software used to generate screens such as those displayed by NMMGR.

**V-Series (V.##) CCITT** A set of CCITT recommendations related to data communication over a voice-grade telephone network.

**VT** *See* **Virtual Terminal**.

**Workstation Configurator** A utility (TTUTIL) that allows users to create customized terminal and printer types by entering data through a series of VPLUS screens.

**X.3** Defines the user facilities that should be internationally available from the packet assembler/disassembler (PAD) facility when this is offered by a public data network.

**X.21** Defines the physical interface between a DTE and a DCE of a public data network where the access to the network is made over synchronous digital lines.

**X.25** Defines the interface between a DTE and a DCE for packet mode operation on a public data network (PDN).

**X.25 address** The X.25 address provided by the network administration if you are connected to a public data network (PDN).

**X.25 address key** An X.25 address key is a label that maps a node's IP address to its X.25 address and its associated X.25 parameters. You have a combined maximum of 1024 X.25 address keys in the SVC and PVC path tables.

**X.25 LUG address** X.25 address of a node belonging to a local user group (LUG).

**X.25 iX System Access** The software that works in conjunction with the DTC/X.25 Network Access software to provide access to X.25. The software resides on an HP 3000 host and is configured through use of NMMGR. To configure access to an X.25 network, you must configure two software components: the X.25 iX System Access (residing on the HP 3000 host), and the DTC/X.25 Network Access. DTC/X.25 Network Access is configured through use of the OpenView DTC Manager software for systems using PC-based network management or through NMMGR for systems using host-based network management.

**X.29** Defines the interface for data exchange between a packet-mode DTE and a remote Packet Assembly/Disassembly (PAD) facility over a packet switching network.

**XON/XOFF protocol** Flow control used by MPE/iX systems to protect against data overruns. XON/XOFF protocol is controlled by the data recipient who sends an XOFF character (ASCII DC3) to the sender if it is unable to continue to receive data. The sender suspends transmission until it receives an XON character (ASCII DC1).

**X.Series (X.##) CCITT recommendations** A set of recommendations for data communication networks governing their services, facilities, and the operation of terminal equipment and interfaces.



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