HEWLETT PACKARD

HP 3000
Series 900
Computers

Troubleshooting Terminal, Printer, and Serial Device Connections

Reader Comment Sheet

HP 3000/iX Networking

Troubleshooting Terminal, Printer, and Serial Device Connections

32022-61002, E1093

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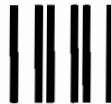
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Printing History

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Edition 2 . . . . October 1991

Edition 3 . . . . October 1992

Edition 4 . . . . October 1993
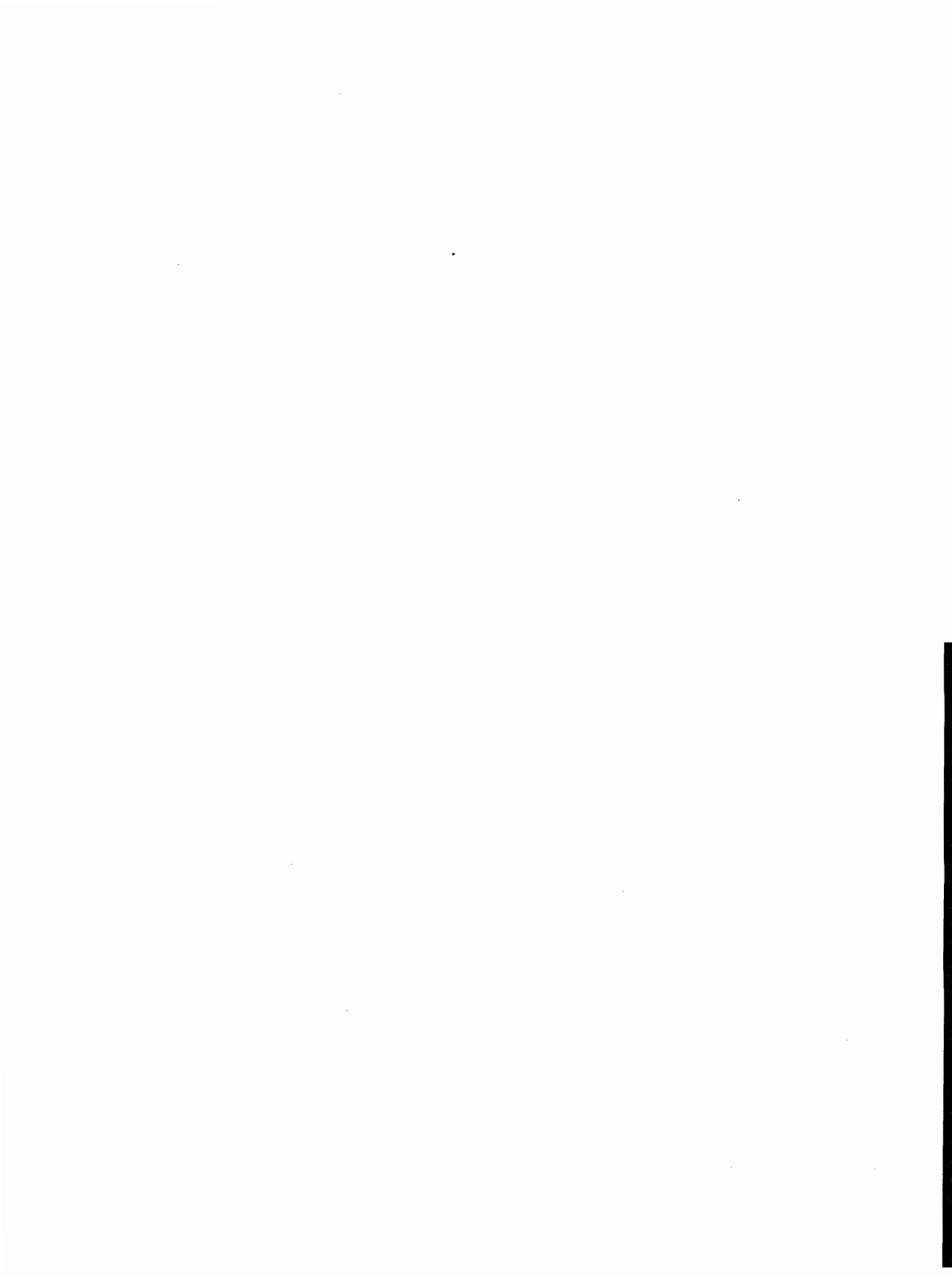
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The List of Effective Pages gives the date of the current edition and of any pages changed in updates to that edition. Within the manual, any page changed since the last edition is indicated by printing the date the changes were made on the bottom of the page. Changes are marked with a vertical bar in the margin. If an update is incorporated when an edition is reprinted, these bars are removed but the dates remain. No information is incorporated into a reprinting unless it appears as a prior update.

Pages   **Effective Date**

All . . . . October 1993

Documentation Map

The following documentation map is intended to be a general guideline to the manuals containing information related to the product described in this manual. You may need information from one or all the manuals listed here.

Hardware Installation

HP 2345A Datacomm and Terminal Controller Installation and Service Manual (02345-90021)	HP 2340A Datacomm and Terminal Controller Installation and Service Manual (02340-90001)	HP DTC 72MX Communication Server Installation Guide (J2070-90001)

HP DTC 16TN and DTC 16IX Installation Guide (5959-4986)	ARPA Telnet Express Installation Manual (02344-90001)

HP 3000 Documentation

Using the Node Management Services (NMS) Utilities (32022-61005)	Configuring Systems for Terminals, Printers, and other Serial Devices (32022-61000)	Troubleshooting Terminal, Printer, and Serial Device Connections (32022-61002)	Configuring and Managing Host-Based X.25 Links (36939-61004)

PC Documentation

DTC Planning Guide (D2355-95017)	HP OpenView DTC Manager Installation and Upgrade Guide (D2355-90013)	Using HP OpenView DTC Manager (D2355-90001)	HP OpenView Windows User's Guide (32048-90001)

Operation/Programming

DTC Technical Reference Guide (D2355-95019)	Asynchronous Communications Programmer's Reference Manual (32022-61001)	Customizing Terminal and Printer Type Files W/ Workstation Configurator (5959-2870)

Preface

This manual documents functionality for the MPE/iX release for HP 3000 Series 900.

This manual is designed to aid the troubleshooting of device connections. Information and strategies for troubleshooting networking environments is provided. TermDSM is a utility program used to troubleshoot:

- Terminal connections.

- Printer connections.

- Other serial device connections.

This manual only covers troubleshooting connections for host-based management (i.e., when the DTCs are managed from an HP 3000 host). For troubleshooting on PC-management (when DTCs are managed by an OpenView Workstation), refer to *Using HP OpenView DTC Manager*.

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.

In HP documentation and in talking with HP 3000 users, you will encounter references to MPE XL, the direct predecessor of MPE/iX. 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).

Finally, you may encounter references to MPE V, which is the 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.*

Skills

Troubleshooting Terminal, Printer, and Serial Device Connections
will be of greatest value to the person responsible for the overall
operation and reliability of an MPE/iX computer. This person is
usually called the system administrator or system manager, and
needs to be able to prepare devices for operation and to configure
the computer to recognize asynchronous devices.

If you want to...	Go to...
Gain information on the networking environment	Chapter 1, "General Information"
Learn about troubleshooting	Chapter 2, "Troubleshooting Procedures"
Learn to use the TermDSM utility program	Chapter 3, "Introduction to TermDSM"
Use TermDSM commands	Chapter 4, "TermDSM Commands"

Guide To This Manual

Troubleshooting Terminal, Printer, and Serial Device Connections is
divided into the following chapters and appendixes:

- **Chapter 1, General Information** presents an overview of the
  troubleshooting environment.

- **Chapter 2, Troubleshooting Procedures** gives information and
  suggests troubleshooting strategies.

- **Chapter 3, Introduction to TermDSM** introduces the
  TermDSM utility program and lists the steps to start it.

- **Chapter 4, TermDSM Commands** gives information and lists
  commands.

- **Appendix A, TermDSM Messages** lists error messages
  returned by TermDSM and suggests causes and actions to take.

Helpful Manuals

The following manuals should be available for reference when using this manual:

- *Configuring Systems for Terminals, Printers, and Other Serial Devices* (32022-61000)

- *Asynchronous Serial Communications Programmer's Reference Manual* (32022-61001)

- *DTC Planning Guide* (D2355-95017)

- *DTC Technical Reference* (5961-9820)

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Syntax Conventions

nonitalics   Words in syntax statements which are not in italics must be entered exactly as shown. Punctuation characters other than brackets, braces, and ellipses must also be entered exactly as shown. For example:

```
EXIT;
```

italics   Words in syntax statements that are in italics denote a parameter that must be replaced by a user-supplied variable. For example:

```
CLOSE filename
```

[ ]   An element inside brackets in a syntax statement is optional. Several elements stacked inside brackets indicates the user may select any one or none of these elements. For example:

```
[A]
[B]   User may select A or B or C or none.
[C]
```

{ }   When several elements are stacked within braces in a syntax statement, the user must select one of those elements. For example:

```
{A}
{B}   User must select A or B or C.
{C}
```

...   A horizontal ellipsis in a syntax statement indicates that a previous element may be repeated. For example:

```
[,itemname]...;
```

In addition, vertical and horizontal ellipses may be used in examples to indicate that portions of the example have been omitted.

| | A shaded delimiter preceding a parameter in a syntax statement indicates that the delimiter must be supplied whenever (a) that parameter is included or (b) that parameter is omitted and any other parameter that follows is included. For example: |

$$itema[\,itemb][\,itemc]$$

means that the following are allowed:

```
itema
itema,itemb
itema,itemb,itemc
itema,,itemc
```

Δ When necessary for clarity, the symbol Δ may be used in a syntax statement to indicate a required blank or an exact number of blanks. For example:

$$SET[modifier] \; \Delta \; (variable)$$

underlining

Brackets, braces, or ellipses appearing in syntax or format statements which must be entered as shown will be underlined. For example:

$$LET \; var[\underline{[}subscript\underline{]}] = value$$

Output and input/output parameters are underlined. A notation in the description of each parameter distinguishes input/output from output parameters. For example:

$$CREATE \; (parm1,\underline{parm2},\underline{flags},\underline{error})$$

For clarity, user input is sometimes underlined in examples.

[Key Cap]

A string in bold font enclosed by brackets may be used to indicate a key on the terminal's keyboard. For example, **[Return]** indicates the carriage return key.

[CTRL]-char

Control characters are indicated by **[CTRL]** followed by the character. For example, **[CTRL]-Y** means the user presses the control key and the Y key simultaneously.

General Information

This manual addresses troubleshooting from a host (and host-based management) perspective. For troubleshooting information related to PC-based management, see the *Using HP OpenView DTC Manager* manual as well as other manuals referenced earlier in this book.

This chapter provides a description of the hardware and software components of the Datacommunications and Terminal Subsystem (DTS). It also describes troubleshooting responsibilities for those most likely to become involved:

- The end user (at the device).

- The system manager.

- HP support representatives.

Datacomm and Terminal Subsystem (DTS)

With the exception of the system console which has its own access port, all asynchronous serial devices can be connected to 900 Series HP 3000 computers through the Datacommunications and Terminal Subsystem (DTS). DTS is made up of all of the Datacommunications and Terminal Controllers connected to the system, a LAN Interface Card, the LAN cable and the host software that controls all the related DTS hardware.

Datacommunication and Terminal Controller

The Datacommunications and Terminal Controller (DTC) provides the connection between asynchronous devices and the 900 Series HP 3000 family of computers. The DTC can house an X.25 Network Access Card to provide connections for nailed PAD-connected terminals and printers. Also, a DTC containing a Telnet Access Card can provide Telnet connections to an HP 9000 or other ARPA machine via Telnet/iX.

The DTC is housed in its own box, outside the system cabinet.
This alleviates system limitations which are based on cabinet space
considerations, and allows flexibility in the layout of terminal
cables. Figure 1-1 represents the location of the DTCs in relation
to the system, the LAN, and the terminals and printers connected
to the system through the DTCs.
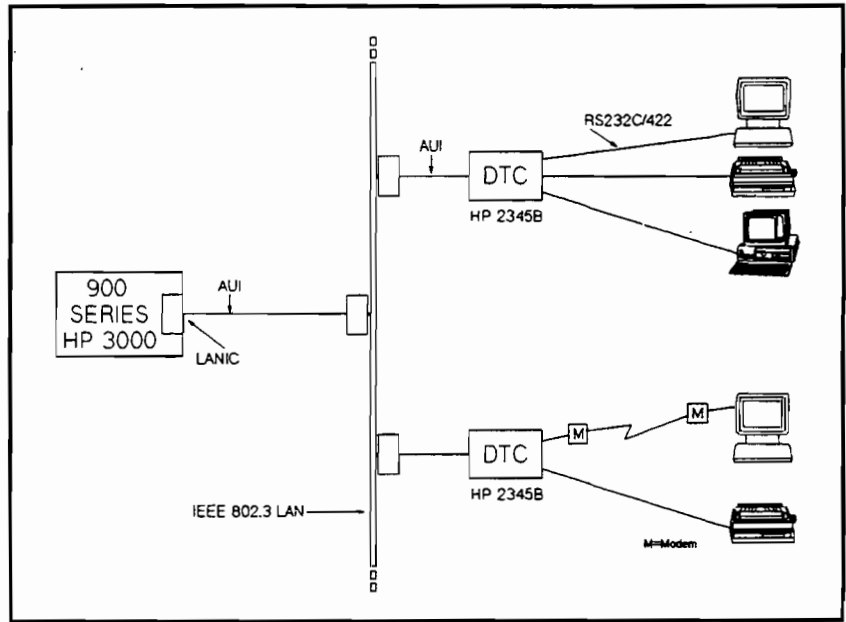
Figure 1-1. Datacommunications and Terminal Controller

Each HP 2345B DTC (DTC 48) can provide connections for up to
48 local devices, 36 remote devices using modems, or a
combination of both. For the DTC 48, up to three of the DTC's
slots can contain a **DTC/X.25 Network Access card.** This card
provides access to X.25 networks, and can be used to connect
asynchronous devices through PAD connections. Alternatively, a
single Telnet Access Card per DTC can be used to access MPE/iX
systems from ARPA systems.

Each DTC 48 provides six slots, each of which can contain one of
the following connector cards:

- Eight 3-pin RS-232-C local connections.

- Eight 5-pin RS-422 local connections.

- Six 25-pin RS-232-C modem connections.

- DTC/X.25 Network Access card (up to three per DTC, slots 1
  through 5 only).

- Telnet Access Card (only 1 per DTC, slots 1 through 5 only).

Each DTC 72MX can provide connections for up to 72 local and remote devices. Local and remote connections can be mixed on the same DTC, since its design is modular. Each DTC 72MX provides four slots, one slot for the LAN card, and three slots each of which can contain one of the following connector cards:

- Asynchronous processor board with three 62-pin connectors, for 24 RS-232 local or modem connections.

- Asynchronous processor board with three 62-pin connectors, for 24 RS-423A local connections.

- DTC/X.25 Network Access card (up to three per DTC).

- Telnet Access Card (only 1 per DTC).

The DTC 16 contains three slots. The first two slots and only the first two slots (card #0 and card #1) can contain direct connect or modem cards. The third slot (card #2) can contain only a DTC/X.25 Network Access Card.

Each DTC 16iX and DTC 16MX can provide RS-232 or RS-423 port connections for up to 16 asynchronous devices. They both have two port connectors built directly into their backplanes, each of which can be connected to a distribution panel which allows either all direct connections or all modem connections. The DTC 16iX does not support ARPA Telnet or X.25 connections. The DTC 16MX provides AFCP connections for the HP 3000 environment and telnet connections for the ARPA environment; it does not support X.25 connections for wide area networking. The DTC 16MX managed by an MPE/iX host is limited to identical functionality as the DTC 16iX.

The DTC is controlled by software that is downloaded by its host system at boot time or by the OpenView Windows Workstation, depending on the type of management used. Systems can use either host-based management or PC-based management. Refer to *Configuring Systems for Terminals, Printers and Other Serial Devices* for more information on host-based management and PC-based management.

The downloaded software includes DTC operating code and configuration information. Once the software is downloaded, the DTC is ready for operation. Devices physically connected to its ports and properly configured can establish communications links with the host computer.

You can troubleshoot connections with TermDSM only on systems that use host-based management. Troubleshooting for PC-based management is covered in *Using HP OpenView DTC Manager.*

LAN Interface Card (LANIC)

Every computer in the 900 Series HP 3000 family has a LAN Interface Card (LANIC) as part of its hardware. This card is located in the System Processing Unit (SPU) and enables the system to communicate with asynchronous devices via the LAN by providing the basic connection between the computer and the LAN.

Datacommunications and Terminal Controllers are connected to the system by a Local Area Network (LAN), over coaxial cable which conforms to the IEEE 802.3 standard. Hewlett-Packard provides two versions of this cable, ThinLAN and ThickLAN, each provides certain specific advantages to the user.

Each DTC has a unique LAN address which is made known to the system during configuration. Also referred to as the node address or the station address, it serves to identify the DTC as a node on the LAN. Keep in mind, however, that while DTCs are treated as nodes for the purpose of configuration, they are not true nodes. DTCs are dedicated communication devices; they are not self-contained, general-purpose computer systems.

ThinLAN Connection

LAN cable is available in two versions. The first, ThinLAN (Type 10 BASE 2), is available in connection lengths of up to 185 meters (555 feet), and provides an economical solution where DTCs are located in close proximity to their computer system.

ThinLAN is a flexible cable which is easy to install, and can be bent around objects to accommodate its use in confined areas. ThinLAN is connected to the computer through a ThinMau (Medium Attachment Unit), with a small BNC T-connector used to connect each DTC to the LAN. You can connect up to three segments of the cable with two repeaters, thus extending the length of the LAN 555 meters. Figure 1-2 shows a configuration using ThinLAN.
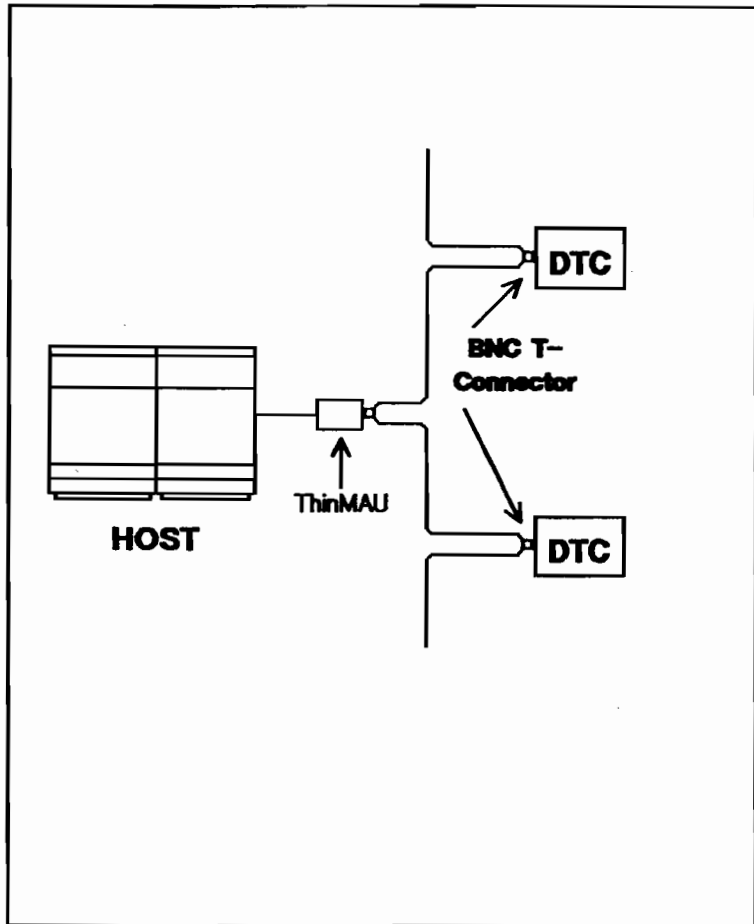
Figure 1-2. ThinLAN Configuration

ThickLAN Connection

The second version of the LAN cable, ThickLAN (Type 10 BASE 5) offers maximum connection lengths of up to 500 meters (1600 feet), and supports up to 100 nodes. Each node on the LAN is connected through a Medium Attachment Unit (MAU). An Attachment Unit Interface (AUI) cable runs between each node and its MAU, as well as between the host computer and its MAU. You can connect up to three segments of ThickLAN cable with two repeaters, thus extending the length of the LAN to 1500 meters. Figure 1-3 shows a ThickLAN configuration.
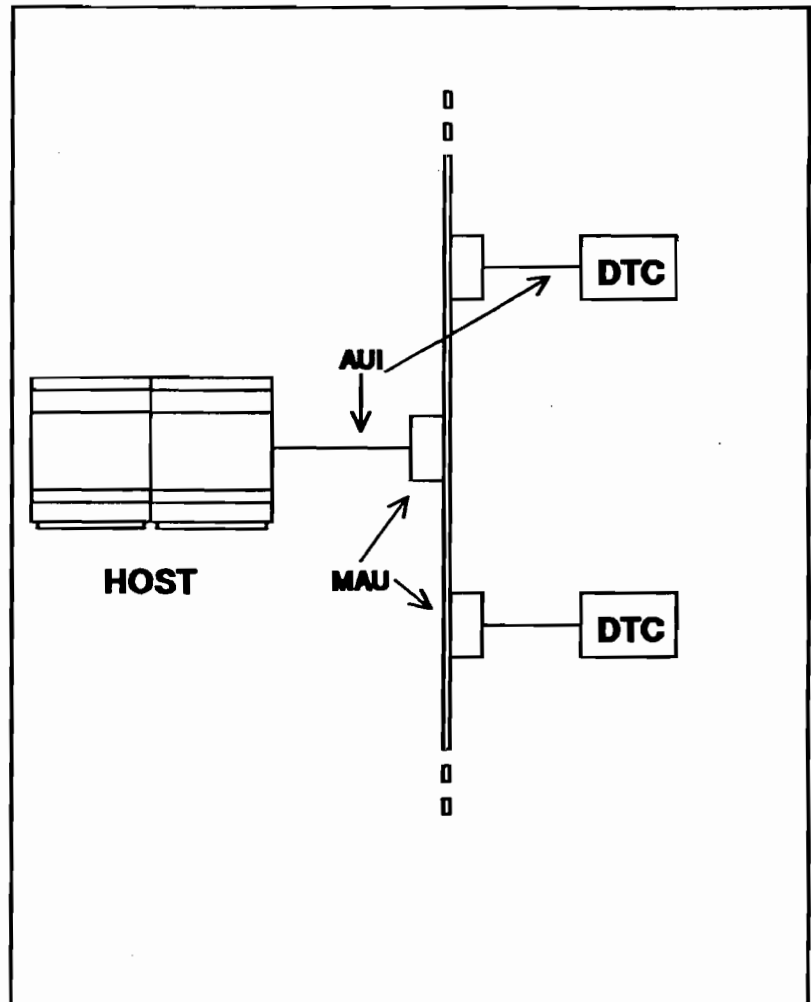
Figure 1-3. ThickLAN Configuration

10 BASE - T

10 BASE - T is a star topology and offers a third way to lay out your Ethernet network. 10 BASE - T offers maximum connection lengths of up to 200 meters of unshielded twisted pair per segment and supports up to 12 workstations per HUB. You can connect multiple HUBs to the LAN with an Ethernet performance of 10 Mbps.

One segment
can be up to
200 meters

HUB

• • • Up to 12 per HUB
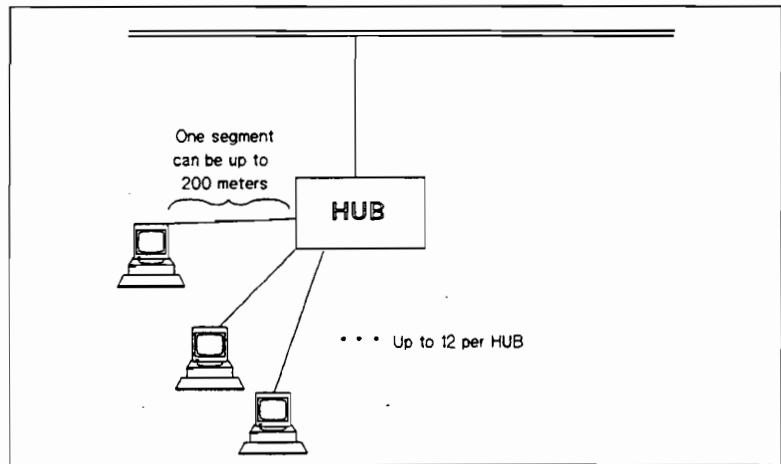
Figure 1-4. 10 BASE - T Configuration

ASC Software

The Asynchronous Serial Communications (ASC) software controls the DTS hardware. It provides the interface between the IEEE 802.3 LAN and the MPE/iX operating system. The software is included with the MPE/iX Fundamental Operating System (FOS).

The MPE/iX system tracks all of the devices connected to it by means of configuration files. The network configuration information necessary to initialize and control the DTS resides in a special configuration file. This file is created through the Node Management Configuration Manager (NMMGR). *Configuring Systems for Terminals, Printers, and Other Serial Devices* provides a detailed discussion of the configuration process.

Powerfail Recovery

DTC powerfail recovery works for direct-connect nailed sessions using character mode. The system also attempts to recover direct-connect sessions using block mode; however, this might not be successful if the powerfail has affected terminal configuration. This is especially true for VPLUS applications.

In the event of a DTC powerfail, some data loss might occur. Data buffered in the DTC at the time of the powerfail is not recoverable.

Upon system powerfail, the DTC retains sessions for approximately 20 minutes. This exceeds the duration of battery back-up on the system (15 minutes). Upon DTC powerfail, the system also retains sessions for about 20 minutes. If power is not restored before this time, sessions are aborted.

The terminal appears "hung" for approximately two minutes after power has been restored to the DTC (the time it takes for the DTC selftest and download to complete). Once the DTC is downloaded, there is a 10 second period for powerfail recovery of active sessions. During this time, the DTC will not respond to user input (pressing carriage return).

After this time, device control is restored. No "powerfail occurred" message is displayed. To confirm that device control has been restored, press **[Return]** until the colon prompt (:) is displayed.

In the event of a DTC powerfail, printer and modem connections as well as connections created via PAD and Telnet/iX are aborted.

Troubleshooting Responsibilities

Many problems encountered with terminals and serial printers can be solved by the end user. Even more can be solved by a system manager. If the system manager cannot solve a problem, they should contact an HP support representative.

Each of the above groups has a specific role to play in the troubleshooting process. Each person needs to fulfill this role for troubleshooting to be completed quickly.

Basic Troubleshooting

Troubleshooting usually begins with recognizing that the device is not working. The device might be "hung" (port not responding), transmission might be "garbled", or the device might not work at all (screen or printer is "dead"). Record the following information to make troubleshooting easier:

- The ldev number of the device.

- The time that the problem began.

- The environment of the device when the problem occurred, including:

    - What application was running on the device.

    - Whether the device was in character or block mode (for terminals only).

    - What specific task was being attempted when the problem began.

- Symptoms of the problem and when each originated.

- Steps already taken to correct the problem.

- Whether the problem has occurred before.

More Troubleshooting

A system manager has many troubleshooting responsibilities. They need to know how to collect information, analyze information, and (maybe most importantly) know when it is time to call an HP support representative. When an HP support representative is contacted, the system manager should have collected as much information as possible so that the HP representative has enough information to solve the problem or consult with other HP personnel.

A system manager should:

- Collect as much information as possible from the user.

- Check each device that is malfunctioning.

- Check configuration values for the malfunctioning devices.

- Perform a modem check (if modems are used).

- Run TermDSM to collect more information. At this point, it is usually possible to return specific devices or the whole subsystem to a state where new sessions can be started and new device opens can occur.

Not all of the above steps are necessary each time. For instance, if many devices go down at once, it is likely that the problem lies in the DTC or the LAN, instead of each individual device.

It is important to note that intermittent problems can become more frequent. This is especially true if a piece of hardware is beginning to fail.

If it is possible to reset the subsystem so that it appears to function normally, there is no reason to contact an HP support representative. However, it is important to keep an accurate log of the problems and to save any data you have accumulated from the problems. It might take data from several different occurrences of the problem to be able to pinpoint the area where the problem lies.

| Caution | The system manager should not perform hardware diagnostics other than the loopback tests and the DTC selftest included in TermDSM. Only HP support representatives should perform other hardware diagnostics. |

Hewlett-Packard Responsibilities

It is ultimately Hewlett-Packard's responsibility to resolve problems that arise with the use of products that HP supports as specified in your customer service contract. The job of Hewlett-Packard personnel who are called to your site can be made more effective by the efforts of the users and the system manager. The more information the HP representative is given, the faster the problem can be solved.

Troubleshooting Procedures

Recall that, in this manual, "serial device" refers to any of the following DTC connected devices:

- Terminals.

- Serial printers.

- PCs (in terminal emulation mode).

- Plotters.

Serial device problems can be caused by the system, by application software, by faults within the device or DTC connections, or by the LAN hardware. Procedures for troubleshooting *all* possible faults are beyond the scope of this manual. Instead, the manual focuses on checking for simple faults at the device and testing the DTC and DTC-terminal connections.

Troubleshooting Pathway

A practiced method for problem resolution is to first identify the problem and then identify alternative causes of that problem. Break the big problem into smaller, more manageable components. By breaking the problem into manageable and testable components, the cause can be easily isolated. A recommended troubleshooting pathway is shown in figure 2-1.
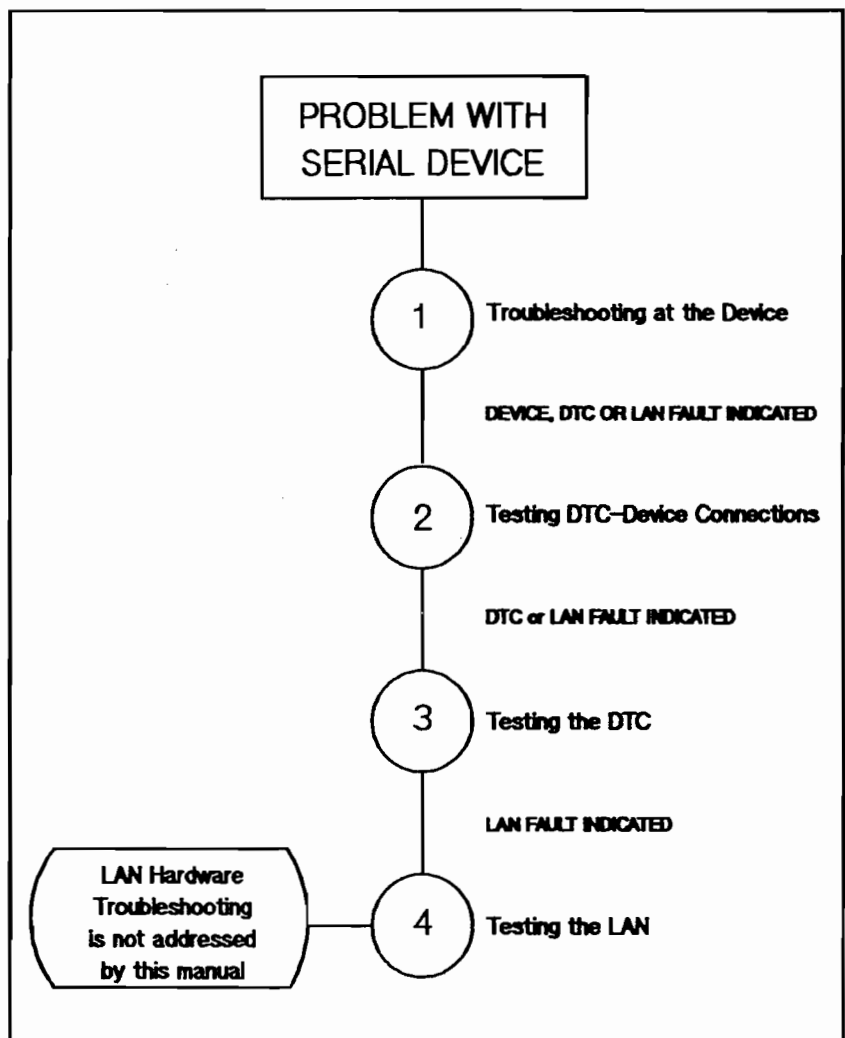
Figure 2-1. Troubleshooting Pathway

Each of the numbered circles is a task used to troubleshoot problems in networking environments. By completing these tasks, isolation of the cause of the problem is likely to occur; this is the most difficult part of troubleshooting. After the cause of the problem has been identified, take an appropriate action to resolve the problem. Each task is described below.

1. Troubleshooting at the Device. First, do some simple verifications at the device. This can rule out causes such as improper device settings and loose connections. Simple observations can also indicate if the problem is system-wide. The verifications require no particular expertise; they are appropriate for general users. After this, it will be clear if more detailed device, DTC, or LAN testing is needed.

2. Testing DTC-Device Connections. If necessary, use TermDSM for more detailed diagnostics. This must be done at another device or the console. Test DTC-device connections first. This can detect faults within the device, the device cable, and parts of the DTC circuitry. If DTC-device connections are not causing the problem, further DTC diagnostics are suggested.

3. Testing the DTC. Using TermDSM, perform a DTC selftest. The selftest can detect faults within specific field replaceable units (FRU) of the DTC. If the DTC passes the selftest, the fault might be in the LAN. Proceed with LAN diagnostics.

4. Testing the LAN. LAN troubleshooting is beyond the scope of this manual. It generally requires special tools and the expertise of an HP support representative.

Procedures to follow for the first three tasks in the troubleshooting pathway for host-based management are summarized in the pages that follow.

Troubleshooting the Device

Most problems can be diagnosed and/or resolved quickly at the device (terminal or serial printer). It's best to do simple verifications before using TermDSM for more involved diagnostics. First, note the following:

- How many devices are affected?

- Which devices are affected?

The number and proximity of devices affected provides a clue to the cause. If all devices are affected, the fault is likely to be with the system. If several devices on a DTC are affected, the DTC is suspect. If all devices on a DTC are down, the DTC or LAN might be at fault.

If only one device is affected, the fault is likely in that device, the device cable, or the DTC components (hardware or software) that serve the device. If only one device is affected, verify that:

- The serial interface is connected.

- The power cord is connected and is powered on.

If the device is "hung" (the port is not responding), do the following:

- Press **[CONTROL]-Q**.

- Check that the device is in remote mode.

- Attempt a soft reset. Press **[SHFT]-Reset**.

- Attempt a hard reset. Press **[CTRL]-Reset**.

If the device is not hung, but transmission or reception is "garbled", check that speed and parity sensing is enabled. Also check that the XON/XOFF protocol is enabled. If the user cannot logon, check that the device is configured correctly.

Testing DTC Device Connections

This section applies if only one device is affected and simple causes have been ruled out. In this case, it is appropriate to use TermDSM for more detailed diagnostics. This must be done from another terminal or the console.

TermDSM is part of the Online Diagnostic Subsystem. The diagnostics in this section require security level 2 (SM, DI, or OP capability). For details on running TermDSM, refer to chapters 3, "Introduction to TermDSM" and 4, "TermDSM Commands."

TermDSM provides four tests to exercise the DTC device data path. In addition, TermDSM provides dump and reset functions for the port serving that device.

A port dump writes data to a disc file from port buffers. The dump file can be analyzed by an HP representative for detailed diagnosis of software faults. A port reset terminates the session at that port and resets the software managers controlling it.

| **Note** | Always dump a port *before* resetting it or performing diagnostic tests. The dump file provides a record of the problem which will be helpful if the problem occurs again. |

Using TermDSM, you can quickly isolate a fault to within the DTC, the device, or the device cable. The four DTC-device connection tests are:

- Internal Port Loopback Test. Tests the DTC serial interface card (SIC) circuitry for the port that serves the affected device. Additional hardware is not required; the affected device can remain connected.

- External Port Loopback Test (for DTC 16s and DTC 48s only). Checks the same circuitry, plus the driver, and the DTC connector for that port. The device is disconnected for this test; a loopback connector is required. Use the loopback connector provided with the DTC for the test.

- Terminal Write/Read Test. Checks the entire DTC device connection. This includes the SIC circuitry, the driver, the DTC connector, the device cable, and part of the device circuitry. TermDSM writes a line of characters to the device, then reads it back, comparing the two. The affected device remains connected. *This test is useful for only supported terminals and PCs.*

- Print-to-Port Test. This test is similar to the Terminal Write/Read Test. However, the character string is transmitted only (not read back by TermDSM). The user must check visually that the string received at the affected device is the same as was sent. The test is available for all devices.

Your choice of test will depend on:

- The type of device you are testing (supported or unsupported; terminal or printer).

- The availability of the appropriate loopback connector.

The tests can be used individually, or they can be used together to systematically isolate the fault. If used together, the following are recommended test sequences. For details on these tests, refer to chapter 3, "Introduction to TermDSM" and chapter 4, "TermDSM Commands."

The test sequence to use for supported devices is as follows:

1. Internal Port Loopback Test.

   - If the test fails, the fault is in the DTC (refer to "Testing the DTC" later in this chapter).

   - If the test passes, do the Terminal Write/Read Test.

2. Terminal Write/Read Test.

   - If the test fails, and a loopback connector is available, do the External Port Loopback Test.

   - If the test fails, but no loopback connector is available, alternate testing is required (fault might be in the DTC, the device, or the device cable).

   - If the test passes, the fault is in the software.

3. External Port Loopback Test.

- If the test fails, the fault is in the DTC (refer to "Testing the DTC" later in this chapter).

- If the test passes, the fault is in the device cable or the device.

The test sequence to use for printers or unsupported devices is as follows:

1. Internal Port Loopback Test.

- If the test fails, the fault is in the DTC (refer to "Testing the DTC" later in this chapter).

- If the test passes, but no loopback connector is available, alternate testing is required (fault might be in the DTC, the device, or the device cable).

- If the test passes, and a loopback connector is available, do the External Port Loopback Test.

2. External Port Loopback Test.

- If the test fails, the fault is in the DTC (refer to "Testing the DTC" later in this chapter).

- If the test passes, do the Print-to-Port Test.

3. Print-to-Port Test.

- If the test fails, the fault is in the device or the device cable.

- If the test passes, the fault is in the inbound data path of the device or in the device cable.

Testing the DTC

If the DTC is suspected as the cause, TermDSM can be used to determine the hardware or software component involved. It also provides DTC dump and reset functions.

| Caution |

TermDSM functions described in this section cause all sessions on the DTC to abort. Data for each session can be lost. Verify that users are logged off before attempting these tests.

Security level 1 (SM or DI capability) is required for the following functions. For details on using TermDSM, refer to chapters 3, "Introduction to TermDSM" and chapter 4, "TermDSM Commands."

The DUMP DTC command writes data to a disc file from the software managers serving all the ports on the DTC. The dump file can be read by an HP support representative for detailed diagnosis of software faults. After the dump, the DTC selftest is run automatically.

The DTC selftest exercises the following: the DTC processor card, the serial interface cards, and the connector cards. The selftest runs for about 2 minutes. After the selftest, the DTC is downloaded and reset automatically. If you are running TermDSM at the console, messages will be displayed informing you of the download.

The selftest isolates faults within Field Replaceable Units (FRU) in the DTC. The faults are indicated by TermDSM messages and by error codes shown on the DTC's LED display. For information on servicing FRUs and reading DTC error codes, refer to the appropriate *DTC Installation and Service Manual* for your type of DTC.

Testing the LAN

If system, device, and DTC faults are ruled out as the cause of the problem, LAN hardware is suspect. LAN hardware troubleshooting is beyond the scope of this manual. Contact your HP support representative.

Introduction to TermDSM

TermDSM (Terminal Online Diagnostic/Support Monitor) is a utility program for host-based management that provides various diagnostic services for terminal and serial printer connections on systems of the 900 Series HP 3000 computer family. It is patterned after the MPE V utility of the same name. Typically, TermDSM is used when a problem is suspected with one or more terminals, printers, or other serial devices; the problem can be related to hardware or software.

The purpose of TermDSM is to gather information on software problems and isolate and correct problems with the hardware. TermDSM can also be used to test hardware connections between devices and the DTC. The primary difference between MPE V TermDSM and MPE/iX TermDSM results from the different hardware used between the two families of HP 3000 computers.

TermDSM Requirements

The following hardware is required when using TermDSM:

- The minimal mainframe configuration of a 900 Series HP 3000 computer.

- The system and each DTC connected and configured as nodes on the LAN.

- At least one pair of serial interface/connector cards installed in each DTC, with at least one port of each connector card connected to an asynchronous device.

- The following loopback connectors supplied with each DTC (for DTC 16 and DTC 48 only):

  - 25-pin connectors for SNP cards (24400-60216)

  - 25-pin connectors for modem cards (02345-60010)

  - 3-pin connectors for RS-232-C direct-connect cards (30148-60002)

- 5-pin connectors for RS-422 direct-connect cards (30147-60002)

The software required to use TermDSM is included with the MPE/iX operating system. The MPE/iX operating system must be functioning properly for TermDSM to work.

User Capabilities and Security Levels

The functions of TermDSM commands are restricted by three different security levels. Each security level is associated with the capabilities necessary to use commands of that level. The security levels correspond to the Online Diagnostic Subsystem.

Table 3-1 lists the security levels and the corresponding capabilities. When a user issues a command, TermDSM checks the user's capability list to verify that the user is authorized to use commands of that security level. If the capabilities of the user are insufficient, the command is not executed and an error message is displayed on the terminal.

Table 3-1. Security Levels for TermDSM	
Necessary User Capabilities	TermDSM and SYSDIAG Security Levels
SM	0
SM or DI	1
SM or DI or OP	2

| **Note** | Users without any of the above capabilities cannot use TermDSM. |

A Word of Caution

Some TermDSM commands abort sessions and can cause a loss of data. If used incorrectly, the commands can unnecessarily disrupt or abort user sessions.

If more than one user is running TermDSM, it is not advisable for one user of TermDSM to reset another user of TermDSM. (The user's port, ldev, SIC, or DTC should not be reset.)

TermDSM Functionality

TermDSM is a command-based utility program which allows you to monitor and troubleshoot the DTS. It is set up so that you can monitor the condition of a single device or an entire DTC.

TermDSM provides several specific functions. Some commands provide only information, such as a listing of all the DTCs associated with the system or the internal configuration information of any DTC. If problems are suspected, TermDSM can be used to test any DTC and its connections to devices.

If a problem is complex enough that the state of the port and/or the DTC subsystem needs to be looked at by an HP support representative, the subsystem information can be copied to a disc file and sent to Hewlett-Packard.

If it is determined that a device's connection is unusable, TermDSM is capable of aborting the session on the port so that a new session can be started on the device. This is also true if the connections of several devices are unusable or if all of the connections of the devices of a DTC are unusable.

TermDSM Commands

Troubleshooting tasks are accomplished through a set of commands. Each command and its basic functionality is as follows:

- C[OMMENT] is used to type informational comments for reference later. The security level of this command is 2.

- DI[AG] allows several diagnostic functions to be run on a port. It is also used to initiate a DTC selftest. The security level of this command is 1 for the DTC selftest, and 2 for the individual port tests.

- DT[C] lists each DTC associated with the system along with its descriptive name and the IEEE 802.3 station address. The security level of this command is 2.

- DU[MP] allows the data area of a port to be copied to a disc file for troubleshooting use by HP factory personnel. The security level of this command is 2. The data area of an entire asynchronous processor board of a DTC 72MX or an entire DTC can also be copied to a disc file. The security level of this command is 1.

- EE[PROM] DT[C] allows the user to download the new ROM code on the DTC 72MX and DTC 16iX/16MX. The security level of this command is 1.

- EX[IT] allows the user to exit the TermDSM program and return to the DUI prompt. The security level of this command is 2.

- H[ELP] displays information regarding TermDSM and its commands. The security level of this command is 2.

- R[ESET] allows a port, a board, a single DTC, or multiple DTCs to accept new sessions. The security level of resetting ports is 2, and the security level of resetting DTCs is 1.

- S[TATUS] lists the node name of a specific device's DTC, whether the port has a session running on it, and whether the device is connected to an interface card capable of modem connections. The security level of this command is 2.

- T[RACE] enables and disables tracing for a port on an asynchronous processor board of a DTC 72MX or a DTC/X.25 Network Access card. Options allow trace to be activated for level 2, level 3, or a specific VC of the DTC/X.25 card. The security level of this command is 2.

Further explanation for each command is contained in chapter 4, "TermDSM Commands."

Starting TermDSM

To use TermDSM, enter the SYSDIAG command at the MPE/iX prompt (:). The Diagnostic User Interface prompt appears:

DUI>

From this prompt, many diagnostics can be run. Type HELP to see a list. To run TermDSM, enter:

DUI>RUN TERMDSM

The following is an example of the type of information that will appear on the terminal:

```
***********************************************************
******                    TERMDSM                   ******
******                                               ******
******    (C) Copyright Hewlett-Packard Co.          ******
******            1987, 1990, 1993                   ******
******          All Rights Reserved.                 ******
******                                               ******
******            Version C.00.40                    ******
******                                               ******
******   HP shall not be liable for any damages      ******
******   resulting from the use of this program.     ******
******                                               ******
******            Catalog AM.050                      ******
***********************************************************
Welcome, Today is FRI, JUNE 11, 1993 at 11:57 AM
Your system has these Datacommunications and Terminal Controllers:

          DTC      Network
          Number   Address            Name
          ------   --------           ----

             1     08000900180A       BIOLAB
             2     080009001808       MARKETING
             3     080009001234       TIMESHAREROOM
             ^
Use this number as the "DTC number" in Termdsm commands.

Comment   DIag  DTc  DUmp  EEprom  Help  Reset  Status  Trace  EXit?
```

The last line is the TermDSM prompt. Notice that the prompt lists all the possible commands that you can enter. The capital letters listed are the abbreviations for each command. You can stop the looping of a diagnostic function by entering **[CTRL]-Y** (looping is terminated after the current loop is completed).

Stopping TermDSM

To stop using TermDSM, enter the EXIT command at the TermDSM main prompt. The DUI prompt is displayed. Enter EXIT again to return to the MPE/iX prompt.

TermDSM Commands

This chapter provides complete descriptions of the TermDSM commands. Commands are listed in alphabetical order for your convenience. Each command description uses the same format:

1. Command Name.

2. Purpose of Command.

3. Security Level.

4. Syntax of the command's functions. The conventions used within syntax boxes are explained under "Conventions Used in This Manual" at the beginning of this manual.

5. Parameter descriptions (if the command has parameters).

6. Description. This provides an explanation of the command's functions and details not listed in the individual parameter descriptions.

7. Subcommands (if the command has subcommands). Subcommand descriptions are in the same format as command descriptions: the subcommand's purpose, security level, syntax, and parameters are all listed, followed by a discussion.

C[OMMENT]

Allows you to enter a line of information on the terminal screen.

Security level: 2.

Syntax

```
C[OMMENT] commenttext
```

Parameter

commenttext   Any string of alphanumeric characters.

Description

This command is used to make informational comments regarding what you are currently doing in TermDSM. If you are keeping a hardcopy record of everything that you are typing in at your terminal, you will want to type in any information that you feel will be useful to you later.

This command may be entered at any time while you are in TermDSM.

The easiest way to keep a hardcopy record of everything you are typing at your terminal is to type in DUI's HARDCOPY command *before* you enter TermDSM. This command then records everything that appears on your screen. Refer to the *Online Diagnostic Subsystem Manual* (09740-90020) for more information on DUI and the HARDCOPY command.

Another way to do this is to connect a printer to the second port of your terminal and record each line that you type by using the LOG BOTTOM function of your terminal. Refer to your terminal reference manual for more information.

| Note |

Even though COMMENT does not appear in the prompt of the DIAG, DUMP, RESET, and STATUS commands, a comment is acceptable input in these cases as well.

DI[AG]

Determines if the DTC hardware or the connections from a DTC to its devices are functioning properly.

Security level: 1 for DTC selftest; 2 for remaining diagnostic functions.

Syntax

```
DI[AG]
```

Description

After the DIAG command is entered, the following prompt is printed on the terminal:

```
(diagnostics)

SElftest  #       (DTC Selftest)
PRint     #,#,# (Print to specified port)
Internal #,#,# (Internal loopback on specified port)
EXTernal #,#,# (Loopback through hood on specified port)
Terminal #,#,# (Write and read to terminal on that port)
XInternal#,#,   (Internal loopback on specified SNP card)
XExternal#,#    (Loopback through hood on specified SNP card)
XNetwork #,#,# (Loopback on the highest and lowest VC)

(carriage return to exit)   ?
```

These are the subcommands that can then be entered. The following pages describe each of these options.

If you press **[Return]** instead of one of the subcommands, you will be returned to the major prompt and can then enter another TermDSM command.

[CTRL]-Y can be used during execution of any of the above subcommands to stop the diagnostic looping. However, the current loop will always complete before the **[CTRL]-Y** takes effect. In the case of the DTC selftest, this can take several minutes.

DI[AG]
EXT[ERNAL]

Determines if a specific port is functioning properly, including the connector. Sends data out and reads it immediately, verifying that the data received is exactly what was sent. DIAG EXTERNAL is available for DTC 16s and DTC 48s only.

Security level: 2.

Syntax

```
EXT[ERNAL] dtcnum,cardnum,portnum
```

Parameters

dtcnum   The number TermDSM associates with a particular DTC. The DTC command lists each DTC with its assigned number. This list is also printed when you make a mistake while typing in a DTC number.

cardnum   Number of the interface card within the DTC to which the device is connected. The cards are numbered from zero beginning at the bottom of the DTC.

portnum   Number of the port on the interface card. As you face the back of the DTC, the ports are numbered from zero beginning at the left of the board.

Description

When this subcommand is entered, the following question is displayed on the terminal:

Do you want to stop looping if an error is found (yes/no)?

If the answer is yes, the series of loopback tests will stop if an error is encountered. For example, you specified you want the loopback test to run 10 times and an error is encountered in the third test. If you answered yes to the above question, the remaining seven tests will not be run. If you answered no, all 10 loopback tests will be executed regardless of the results of each test. The following is then printed on the terminal:

> Please put a loopback hood on the Port, before
> answering the How many times? question. (TDSM 113)

> How many times do you want to repeat this operation?

At this time, go to the DTC and connect a loopback hood to the
port. Then return and enter how many times you want to run this
diagnostic function. Enter a number between 1 and 65535. The
following is then displayed:

> Type CONTROL_Y to stop the looping.

Any time that you want to stop the diagnostic, press **[CTRL]-Y**.
The diagnostics prompt will be printed and you will be allowed to
enter another subcommand.

If TermDSM knows that this test has failed, an error message will
be printed listing the reason for the failure and how many
milliseconds the test ran before failing.

The diagnostics prompt will be printed and you will be allowed to
enter another subcommand.

DI[AG]
I[NTERNAL]

Determines if a specific port is functioning properly without disconnecting the device from the port.

Security level: 2.

Syntax

```
I[NTERNAL] dtcnum,cardnum,portnum
```

Parameters

dtcnum
: The number TermDSM associates with a particular DTC. The DTC command lists each DTC with its assigned number. This list is also printed when you make a mistake while typing in a DTC number.

cardnum
: Number of the interface card within the DTC to which the device is connected. The cards are numbered from zero beginning at the bottom of the DTC.

portnum
: Number of the port on the interface card. As you face the back of the DTC, the ports are numbered from zero beginning at the left of the board.

Description

This diagnostic cannot test all the functions that are possible with a **hood** (loopback connector), since the DTC connection itself cannot be tested without a hood. However, this diagnostic has the advantage that no cables need to be disconnected from or additional equipment connected to the port.

When the subcommand is entered you will be asked:

Do you want to stop looping if an error is found (yes/no)?

If you answer yes, the series of loopback tests will stop if an error is encountered. For example, you specified you want the test to run 10 times and an error is encountered in the third test. If you answered yes to the above question, the remaining seven loopback

tests will not be run. If you answered no, all 10 loopback tests will be executed regardless of the results of each test. The following question is then printed on the terminal:

How many times so you want to repeat this operation?

You should then enter how many times you want to run this diagnostic function. Enter a number between 1 and 65535. The following is then displayed:

Type CONTROL_Y to stop the looping.

Any time that you want to stop the diagnostic, press **[CTRL]-Y**. The diagnostics prompt will be printed and you will be allowed to enter another subcommand.

If TermDSM knows that this test has failed, an error message will be printed listing the reason for the failure and how many milliseconds the test ran before failing.

The diagnostics prompt will be printed and you will be allowed to enter another subcommand.

DI[AG] PR[INT]

Determines if the connection between a DTC and one of its devices is functioning properly by printing to the device.

Security level: 2.

Syntax

> PR[INT] *dtcnum,cardnum,portnum*

Parameters

dtcnum The number TermDSM associates with a particular DTC. The DTC command lists each DTC with its assigned number. This list is also printed when you make a mistake while typing in a DTC number.

cardnum Number of the interface card within the DTC to which the device is connected. The cards are numbered from zero beginning at the bottom of the DTC.

portnum Number of the port on the interface card. As you face the back of the DTC, the ports are numbered from zero beginning at the left of the board.

| Caution | This subcommand aborts the session at the terminal under test. Data for that session is lost.

Description

This diagnostic is supplied primarily for use with devices that do not support loopback tests, such as serial printers, or unsupported terminals.

When the subcommand is entered you will be asked:

Do you want to stop looping if an error is found
(yes/no)?

If you answer yes, the series of print operations will stop if an error is encountered. For example, you specified you want the test to run 10 times and an error is encountered in the third printing. If you answered yes to this last question, the remaining seven tests will not be run. If you answered no, all 10 print operations will be executed regardless of the results of each test. The following is then printed on the terminal:

```
Please connect and make ready (power on, remote mode,
etc.) a supported printer (or terminal), before
answering the How many times? message.  (TDSM 115)
```

```
How many times do you want to repeat this operation?
```

You should then enter how many times you want to run the print operation. Enter a number between 1 and 65535. Then the following is displayed:

```
Type CONTROL_Y to stop the looping.
```

Any time that you want to stop the diagnostic, press **[CTRL]-Y**. The diagnostics prompt will be printed and you will be allowed to enter another subcommand.

The Print subcommand sends the following string of characters to the device:

```
JKLMNOPQRSTUVWXYZ[\]^_'abcdefghijklmnopqrstuvwxyz
```

If TermDSM knows that this test has failed, an error message will be printed listing the reason for the failure and how many milliseconds the test ran before failing.

| Note | If the test passes according to TermDSM, then it is your responsibility to inspect the output of the test to see if it matches the string of characters listed above. TermDSM cannot know the final outcome of the test; therefore, the only way to be sure that the test was successful is through visual inspection. |

The diagnostics prompt will be printed on the terminal in order to allow you to enter another subcommand.

DI[AG]
SE[LFTEST]

Determines if the hardware of a particular DTC is functioning properly.

Security level: 1.

Syntax

```
SE[LFTEST] dtcnum
```

Parameter

dtcnum   The number TermDSM associates with a particular DTC. The DTC command lists each DTC with its assigned number. This list is also printed when you make a mistake while typing in a DTC number.

| Caution | This subcommand aborts all sessions on the DTC under test. Data for those sessions may be lost. |

Description

After entering the Selftest subcommand, the following is printed on the terminal:

Warning: This will rest all users on that DTC. (TDSM 44) Do you want to continue (yes/no)?

If you answer no to this question, you will be returned to the diagnostics prompt. If you answer yes, the following will be printed on the terminal:

How many times do you want to repeat this operation?

You should then enter how many times you want to run the DTC selftest. Enter a number between 1 and 65535. The following question is then printed on the terminal:

Do you want to stop looping if an error is found (yes/no)?

If you answer yes, the series of selftests will stop if an error is encountered. For example, you specified you want the selftest to run 10 times and an error is encountered in the third selftest. If you answered yes to this last question, the remaining seven selftests will not be run. If you answered no, all 10 selftests will be executed regardless of the results of each test. The following is then printed on the terminal:

Each DTC self test can take several minutes. Enter a control-y to stop the self test loop (the control-y will take effect when the current self test finishes).

Anytime that you want to stop the diagnostic, press **[CTRL]-Y**. After the current loop has executed, the diagnostics prompt will appear and you may enter another subcommand.

The Selftest subcommand causes a complete DTC selftest to be run. This selftest includes the selftests for each of the interface cards within the DTC, and a download of the DTC across the LAN. Any jobs or sessions that are running on devices connected to the DTC are aborted.

| Note |

Each loop of the Selftest subcommand is functionally identical to the RESET DTC subcommand. The inclusion of both commands is for your convenience, and to provide looping capability in the event an intermittent hardware failure is suspected.

As each selftest completes, the results of each SIC selftest will be printed on the terminal. Below is a selftest print out for a DTC 48:

Card	SIC/SNP type	Card test status	Ports (G:good or x:bad)
5	(not installed)		
4	(not installed)		
3	X25 RS-232 Direct	OK	GG
2	TIO RS-232 Direct	OK	GGGG GGGG
1	TIO RS-232 Direct	OK	GGGG GGGG
0	TIO RS-232 Modem	OK	GGGG GG

The test passed   1 times and failed   0 times.

After all selftests complete, the DTC software is downloaded to the DTC so that users can again use devices connected to the DTC. You will receive messages to inform you of each download if you are running TermDSM from the console. You will then be returned to the diagnostics prompt.

DI[AG]
T[ERMINAL]

Determines if the connection between a DTC port and a terminal is functioning properly. TermDSM writes a line of characters to the terminal and orders it to send that line back. TermDSM then compares the characters received with those sent.

Security level: 2.

Syntax

```
T[ERMINAL] dtcnum,cardnum,portnum
```

Parameters

dtcnum   The number TermDSM associates with a particular DTC. The DTC command lists each DTC with its assigned number. This list is also printed when you make a mistake while typing in a DTC number.

cardnum   Number of the interface card within the DTC to which the device is connected. The cards are numbered from zero beginning at the bottom of the DTC.

portnum   Number of the port on the interface card. As you face the back of the DTC, the ports are numbered from zero beginning at the left of the board.

Description

When the subcommand is entered the following question is asked:

Do you want to stop looping if an error is found (yes/no)?

If you answer yes, the series of diagnostics will stop if an error is encountered. For example, you specified you want the write/read operation to run 10 times and an error is encountered in the third test. If you answered yes to the above question, the remaining seven write/read operations will not be run. If you answered no, all 10 write/read operations will be executed regardless of the results of each test. The following is then printed on the terminal:

Please connect and make ready (power on, remote mode,
etc.) a supported terminal, before answering the How
many times? question.   (TDSM 114)

How many times do you want to repeat this operation?

You should prepare the terminal and then enter how many times
you want to run this diagnostic function. Enter a number between
1 and 65535. The following is then displayed:

Type CONTROL_Y to stop the looping.

Any time that you want to stop the diagnostic, press **[CTRL]-Y**.
The diagnostics prompt will be printed and you will be allowed to
enter another subcommand.

This diagnostic function tests the connection between the DTC
port up to and including some terminal functions. (It is not a
thorough terminal test.) It does this by writing a string of
characters to the terminal and ordering the terminal to send those
characters back for comparison. The string of characters sent by
TermDSM is preceded by:

[ESC]-H [ESC]-J

which homes the cursor on the screen and clears the screen. Then
the character string:

ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_'abcdefghijklmnopqr
stuvwxyz

is written to the terminal, followed by:

[ESC]-H [ESC]-D

which homes the cursor and causes the terminal to return the
character string. (Sending **[ESC]-D** to the terminal is the same as
pressing **[Return]**.)

If TermDSM knows that this test has failed, an error message will
be printed listing the reason for the failure and how many
milliseconds the test ran before failing.

The diagnostics prompt will be printed and you will be allowed to
enter another subcommand.

DI[AG]
XI[NTERNAL]

Determines if the SNP hardware is functioning properly. The internal loopback test is executed only if the SNP is not started. No external connections are required.

Security level: 2.

Syntax

```
XI[NTERNAL] dtcnum,cardnum
```

Parameters

dtcnum   The number TermDSM associates with a particular DTC. The DTC command lists each DTC with its assigned number. This list is also printed when you make a mistake while typing in a DTC number.

cardnum   Number of the interface card within the DTC to which the device is connected. The cards are numbered from zero beginning at the bottom of the DTC. (Note that SNP cards may not be mounted in slot 0 or 1 for DTC 16, and slot 0 for DTC 48.)

Description

Determines if the SNP hardware is functioning properly. This internal loopback test is executed only if X.25 is not started on this SNP (X25 Level 1, 2, and 3). No external connections are required.

All loopback tests are disruptive in the sense they will abort any existing VC connections on that SNP. Other SNPs in the DTC will not be effected.

When the subcommand is entered the following question is asked:

```
Do you want to stop looping if an error is found
(yes/no)?
```

If you answer yes, the loopback tests will stop if an error is encountered. The following is then printed on the terminal:

How many times do you want to repeat this operation?

Enter the number of times you want to run this diagnostic function. Enter a number between 1 and 65535. The following is then printed on the terminal:

Type CONTROL - Y to stop the looping.

You can use subsystem break (normally **[CTRL]-Y** to stop the diagnostic at any time. The diagnostics prompt will be printed and you will be allowed to enter another subcommand.

If TermDSM knows that this test has failed, an error message will be printed listing the reason for the failure and how many milliseconds the test ran before failing. The diagnostics prompt will be printed and you will be allowed to enter another subcommand.

DI[AG]
XE[XTERNAL]

Determines if the SNP hardware and the physical connection is functioning properly. The external loopback test is executed only if the SNP is not started. External connections are required only for the V.35, the V.36, and the RS-422 interface. (External loopback is not available for the DTC 72MX.)

Security level: 2.

Syntax

```
XE[XTERNAL] dtcnum,cardnum
```

Parameters

dtcnum   The number TermDSM associates with a particular DTC. The DTC command lists each DTC with its assigned number. This list is also printed when you make a mistake while typing in a DTC number.

cardnum   Number of the interface card within the DTC to which the device is connected. The cards are numbered from zero beginning at the bottom of the DTC. (Note that SNP cards may not be mounted in slot 0 or 1 for DTC 16, and slot 0 for DTC 48.)

Description

Determines if the SNP hardware is functioning properly. This internal loopback test is executed only if the SNP is not started (X25 Level 1, 2, and 3). External connections are required only for the V.35, the V.36, and the RS-422 interface.

All loopback tests are disruptive in the sense they will abort any existing VC connections on that SNP. Other SNPs in the DTC will not be effected.

When the subcommand is entered the following question is asked:

```
Do you want to stop looping if an error is found
(yes/no)?
```

If you answer yes, the loopback tests will stop if an error is encountered. The following is then printed on the terminal:

> Please put a loopback hood on the port before
> answering the How many times? question. (TDSM 113)

> How many times do you want to repeat this operation?

Enter the number of times you want to run this diagnostic function. Enter a number between 1 and 65535. The following is then printed on the terminal:

> Type CONTROL - Y to stop the looping.

You can use subsystem break (normally **[CTRL]-Y** to stop the diagnostic at any time. The diagnostics prompt will be printed and you will be allowed to enter another subcommand.

If TermDSM knows that this test has failed, an error message will be printed listing the reason for the failure and how many milliseconds the test ran before failing. The diagnostics prompt will be printed and you will be allowed to enter another subcommand.

DI[AG]
XN[ETWORK]

Determines if the connection to the network is functioning properly. This test is executed only if the SNP is not started.

Security level: 2.

Syntax

```
XN[ETWORK] dtcnum,cardnum,
                 destination address
```

Parameters

dtcnum
The number TermDSM associates with a particular DTC. The DTC command lists each DTC with its assigned number. This list is also printed when you make a mistake while typing in a DTC number.

cardnum
Number of the interface card within the DTC to which the device is connected. The cards are numbered from zero beginning at the bottom of the DTC. (Note that SNP cards may not be mounted in slot 0 or 1 for DTC 16, and slot 0 for DTC 48.)

destination address
The X.25 address. This address has a total of 15 digits.

Description

Determines if the network is functioning properly by testing the connection between an SNP and the network. The test tries to send and receive data from the network. To do this, a VC is opened with a destination address on the local side. The correct X.25 address must be configured in the Level 3 Configuration screen in NMMGR. Additionally, this address must be entered as the last parameter of the SNP network loopback command. This test is executed only if X.25 is not started on this SNP (X25 Level 1, 2, and 3).

All loopback tests are disruptive in the sense they will abort any existing VC connections on that SNP. Other SNPs in the DTC will not be effected.

When the subcommand is entered the following question is asked:

Do you want to stop looping if an error is found (yes/no)?

If you answer yes, the loopback tests will stop if an error is encountered. The following is then printed on the terminal:

Please connect and make ready an X.25 network (power on, X.25 line correctly configured, etc.) connection to the SNP card, before answering the How many times? question.

How many times do you want to repeat this operation?

Enter the number of times you want to run this diagnostic function. Enter a number between 1 and 65535. The following is then printed on the terminal:

Type CONTROL - Y to stop the looping.

You can use subsystem break (normally **[CTRL]-Y** to stop the diagnostic at any time. The diagnostics prompt will be printed and you will be allowed to enter another subcommand.

If TermDSM knows that this test has failed, an error message will be printed listing the reason for the failure and how many milliseconds the test ran before failing. The diagnostics prompt will be printed and you will be allowed to enter another subcommand.

DT[C]

Lists each DTC assigned to the system and displays the number that TermDSM has assigned to each DTC.

Security level: 2.

Syntax

```
DT[C]
```

Description

When this command is entered, information similar to the following is displayed on the terminal:

```
Your system has these Datacommunications Terminal
Controllers:

DTC      Network      Name
Number   Address

-----    --------     ----

  1     08000900180A  BIOLAB
  2     080009000808  MARKETING
  3     080009001234  TIMESHAREROOM

  ^

Use this number as the "DTC number" in TermDSM commands
```

The DTC Node Name that was associated with each DTC at configuration time is displayed along with the IEEE 802.3 station address of each DTC. The number in the first column is assigned by TermDSM and these numbers must be used in other TermDSM commands to reference particular DTCs.

After the above display is printed, the major prompt will be printed and you may enter another TermDSM command.

If, during a TermDSM command, you make an error in specifying a DTC number, the above display is automatically printed to the terminal for your convenience.

| Note | The listing of DTCs with an IEEE 802.3 station address and name is not a guarantee that each DTC exists, is installed, is powered on, or is otherwise functional. This information is obtained from the NMCONFIG.PUB.SYS file and is therefore only a reflection of what has been configured (correctly or otherwise). |

DU[MP]

Captures data pertaining to a particular port, asynchronous processor board (mux card of a DTC 72MX), DTC, or logical device number and writes it to a disc file.

Security level: 1 for DTC dump; 2 for remaining dump functions.

Syntax

```
DU[MP]
```

Description

After the Dump command is entered, the following prompt is printed on the terminal:

```
(dump)

Ldev #
POrt #,#,#
SNp #,#
Mux #,#
Vc  #,#,#
DTc #

(carriage return to exit) ?
```

These are the subcommands that can then be entered. The following pages describe each of these options.

If you press **[Return]** instead of one of the subcommands, you will be returned to the major prompt and may then enter another TermDSM command.

There are five different types of dump files:

- Information regarding a particular DTC. This information is written to a disc file in binary form.

- Information regarding a particular asynchronous processor board in a DTC 72MX.

- Information regarding a particular logical device number or physical port.

- Information regarding a particular SNP (X.25) card.

- Information regarding a particular virtual circuit on an X.25 card.

If you need the information in the dump analyzed, send it to your HP representative on magnetic tape.

Information written to a disc file for this type of dump will appear in two forms:

- A hexadecimal listing of all data.

- The ASCII representation of each byte of that data.

The file will also contain:

- The day and time of the dump.

- The type of dump (logical device number or port).

- Headings before each of the major areas of dump information.

If a dump file for an ldev number or port is to be printed, a printer file equation with the CCTL option should be used. In the following example, TRM123AB is the name of the dump file:

```
:FILE LIST;DEV=LP;CCTL
:PRINT TRM123AB.PUB.SYS,*LIST
```

| **Note** | Complete information describing the situation that necessitated the use of DUMP is invaluable in assisting the HP representative's analysis of TermDSM dumps. You may use the COMMENT command to help document the situation. |

DU[MP] DT[C]

Captures data pertaining to a particular DTC and writes it to a disc file.

Security level: 1.

Syntax

```
DT[C] dtcnum
```

Parameter

dtcnum   The number TermDSM associated with a particular DTC. The DTC command lists each DTC with its assigned number. This list is also printed when you make a mistake while typing in a DTC number.

| Caution | This subcommand resets all sessions on the DTC under test.

Description

When this subcommand is entered, the following message will be printed on the terminal:

> Warning: This will reset all users on that DTC.
> (TDSM 44) Do you want to continue (yes or no)?

If you respond no, the DUMP prompt will be repeated for you to enter another DUMP subcommand. If you respond yes, the dump continues after the following message:

> The DTC dump can take as long as 7 minutes . . . . .

After the dump, a selftest is done on the DTC and status on each card is displayed.

The DTC dump information is placed in two files. The first file contains information about the part of the DTS software that resides on the host (the HP 3000). When the dump of this information is complete, the following information will be displayed:

The following two files make up the DTC dump. Please
deliver both to your HP representative: (TDSM 64)

Shhhhhhc.PUB.SYS
TRMddd77.PUB.SYS

where *hhhhhh* is the last six hexadecimal digits of the DTC's LAN address and *c* is a character in the range from A to Z. The *ddd* is the Julian day of the year and *ll* is a two-character string in the range:

AA, AB, AC, ..., BA, BB, BC, ..., ZZ

This numbering system allows you to create many dump files in one day and to later know on what day each dump was created by simply looking at the file name.

If you need to send dump information to HP to have it analyzed, make sure that you send both dump files.

| **Note** | If all 26 (suffix A through Z) DTC dump files already exist, one will be overwritten by the current DTC dump. If you are doing a lot of DTC dumps, you may wish to store off or rename some dump files to preserve them. |

DU[MP] L[DEV]

Captures data pertaining to a specific logical device number and writes it to a disc file.

Security level: 2.

Syntax

```
L[DEV] ldevnum
```

Parameter

ldevnum   The logical device number associated with the device whose data you want to dump.

Description

Information associated with the logical device number is dumped to a disc file. Since the ldev is also associated with a port, information pertaining to the port is also dumped. Therefore, if you have identified a terminal problem and dump information using the ldev subcommand, complete information about the terminal connection is dumped; there is no need to also use the PORT subcommand.

| Note |

Dumping information pertaining to a logical device number does not reset (or otherwise affect) the associated device. If you need to reset the device, use the RESET command.

When the dump is complete, the following information will be displayed:

The dump file is TRMddd11.PUB.SYS

where *ddd* is the Julian day of the year and *ll* is a two-letter string in the range:

AA, AB, AC, ..., BA, BB, BC, ..., ZZ

This numbering system allows you to create many dump files in one day and to later know on what day each dump was created by simply looking at the file name.

The dump prompt is then repeated so that you may enter another dump subcommand.

DU[MP] M[UX]

Captures data pertaining to a particular asynchronous processor board (mux card) of a DTC 72MX to a disc file. This command is supported for DTC 72MX only.

Security level: 2.

Syntax

```
M[UX] dtcnum, boardnum
```

Parameter

dtcnum Number of the DTC to which the board is installed. This is the number TermDSM associates with this DTC.

boardnum Number of the asynchronous processor board (mux card) within the DTC 72MX. The boards are numbered from zero beginning at the bottom of the DTC.

Description

When this subcommand is entered, the following message will be printed on the terminal:

Warning: This will abort all users on that MUX. As many as 24 users will be affected. (TDM 49). Do you want to continue (yes/no)?

If you respond no, the DUMP prompt will be repeated for you to enter another DUMP subcommand. If you respond yes, the dump continues. When the dump is complete, the following information will be displayed:

Please deliver the following MUX dump to your HP representative.

M*nhhhhhc*.PUB.SYS

Where *n* is the board number within the DTC, *hhhhh* is the last five hexadecimal digit of the DTC's LAN address, and *c* is a character in the sequence a, b, ...z to allow multiple dumps.

DU[MP] PO[RT]

Captures data pertaining to a particular port and writes it to a disc file.

Security level: 2.

Syntax

```
PO[RT] dtcnum,cardnum,portnum
```

Parameters

dtcnum   Number of the DTC to which the device is connected. This is the number TermDSM associates with this DTC.

cardnum   Number of the interface card within the DTC to which the device is connected. The cards are numbered from zero beginning at the bottom of the DTC.

portnum   Number of the port on the interface card. As you face the back of the DTC, the ports are numbered from zero beginning at the left of the board.

Description

Information associated with the port is dumped to a disc file. If the port is also associated with an ldev number, information pertaining to the ldev number is dumped. If you have identified a terminal problem and dump information using the PORT subcommand, complete information about the terminal connection is dumped; there is no need to also use the ldev subcommand.

| Note |

Dumping information pertaining to a port does not reset (or otherwise affect) the associated device. If you need to reset the device, use the RESET command.

When the dump is complete, the following information will be displayed:

The dump file is TRM*ddd*ll.PUB.SYS

where *ddd* is the Julian day of the year and *ll* is a two-character string in the range:

AA, AB, AC, ..., BA, BB, BC, ..., ZZ

This numbering system allows you to create many dump files in one day and to later know on what day each dump was created by simply looking at the file name.

DU[MP] SN[P]

Captures data pertaining to a particular X.25 card and writes it to a disc file.

Security level: 2.

Syntax

```
SN[P] dtcnum,cardnum
```

Parameters

dtcnum   Number of the DTC that contains the SNP card (X.25 card). This is the number TermDSM associates with this DTC.

cardnum   Number of the interface card within the DTC. The cards are numbered from zero beginning at the bottom of the DTC. (Note that SNP cards may not be mounted in slots 0 or 1 for DTC 16, and slot 0 for DTC 48.)

Description

Information associated with the X.25 card is dumped to a disc file. Complete SNP RAM will be dumped to the disk file. Because of this, all X.25 connections using the specified SNP card are aborted. The following message is displayed:

Warning: This will reset all users on that SNP. As many as 256 virtual circuit could be affected (TDSM 45). Do you want to continue (yes/no)?

If you respond no, the DUMP prompt will be repeated for you to enter another DUMP subcommand. If you respond yes, the dump continues.

When the dump is complete, the following information will be displayed:

Please deliver the following SNP dump to your HP representative.

Cbxxxxxa.PUB.SYS

where b is the board number in that DTC, *xxxx* is the last 5 characters of the IEEE 802.3 address of that DTC and a is a character in the sequence a, b, ...,z to allow multiple dumps.

DU[MP] V[C]

Captures data pertaining to a particular VC on an X.25 card and writes it to a disc file. (If the VC you are attempting to dump is a PAD VC, you must use the Ldev option instead.)

Security level: 2.

Syntax

```
V[C] dtcnum,cardnum,vcnum
```

Parameters

dtcnum
: Number of the DTC that contains the SNP (X.25) card. This is the number TermDSM associates with this DTC.

cardnum
: Number of the X.25 card within the DTC. The cards are numbered from zero beginning at the bottom of the DTC. (Note that SNP cards may not be mounted in slot 0 or 1 for DTC 16, and slot 0 for DTC 48.)

vcnum
: Number of the VC on the X.25 card. (PAD VCs must be dumped using the Ldev option.)

Description

Information associated with the VC on the X.25 card is dumped to a disc file.

| Note | Dumping information pertaining to a VC does not reset (or otherwise affect) the associated device. If you need to reset the VC, use the RESET command. |

When the dump is complete, the following information will be displayed:

```
Please deliver the following VC dump to your HP
representative.
```

```
Vxxxxxxa.PUB.SYS
```

where *b* is the board number in that DTC, *xxxxx* is the last 5 characters of the IEEE 802.3 address of that DTC and *a* is a character in the sequence a, b, ...,z to allow multiple dumps.

EE[PROM]
DT[C]

Downloads the new ROM code on the DTC 72MX and DTC 16iX/16MX. This feature is not supported on the DTC 48 and the DTC 16.

Security level: 1.

Syntax

```
DT[C] dtcnum
```

Parameter

dtcnum   The number TermDSM associated with a particular DTC. The DTC command lists each DTC with its assigned number. This list is also printed when you make a mistake while typing in a DTC number.

Caution   This subcommand aborts all sessions on the DTC under test. All users on the DTC under test should be logged off prior to running this subcommand.

Warning   Do NOT power off the DTC until the EEPROM reprogramming is complete. Doing so will leave the DTC in an unusable state.

Description

When this subcommand and the correct ROM version (made up of 8 ASCII characters) are entered, the following message will be printed on the terminal:

```
TermDSM will now reprogram EEPROM with version
XXXXXXXX.  (TDSM 637)  Do you want to continue
(yes or no)?
```

If you respond no, you will be returned to the major command. If you respond yes, the following message will be displayed:

```
The EEPROM reprogramming process is executing.
The process takes about 7-10 minutes.
Warning:  Interrupting the process can be fatal
to the DTC.
```

After the EEPROM reprogramming is completed, the following is printed on the terminal:

```
The EEPROM reprogramming was successfully
completed. (TDSM 635)
```

EX[IT]

Exits the TermDSM program and returns you to the DUI prompt.

Security level: 2.

Syntax

```
EX[IT]
```

H[ELP]

Lists information regarding TermDSM and its commands.

Security level: 2.

Syntax

```
H[ELP]
```

R[ESET]

To clear hardware and software associated with a logical device number, physical port, serial interface card, or DTC so that a new session or job can be started on each port.

Security level: 1 for DTC; 2 for remaining functions.

Syntax

```
R[ESET]
```

Description

After the RESET command is entered, the following prompt is printed on the terminal:

```
(reset)

Ldev #
POrt #,#,#
SNp #,#            (X.25 card in DTC)
Vc  #,#,#
SIc #,#            (multiplexer card in DTC)
DTc #

(carriage return to exit) ?
```

These are the subcommands that can then be entered. The following pages describe each of these options.

If you press **[Return]** instead of one of the subcommands, you will be returned to the major prompt and may then enter another TermDSM command.

Some port/ldev problems can not be fixed with ldev or port resets. If a port is still unusable after a reset, consider using RESET SIC. Note that this will affect all users on that card. Finally, if the RESET SIC is also unsuccessful, then the entire DTC should be reset. Note that this will affect all the users on the DTC.

R[ESET] DT[C]

Resets the hardware of a particular DTC or group of DTCs.

Security level: 1.

Syntax

```
DT[C] dtcnums
```

Parameter

dtcnums

The DTC number TermDSM associates with a particular DTC.
The DTC command lists each DTC with its assigned DTC number.

You may also reset multiple DTCs with one RESET DTC command.
The first command below resets DTC 3, 5, and 9. The second
command resets DTCs 4 through 15, inclusive. These two
commands are typed at the RESET subcommand prompt.

```
DTC 3, 5, 9
```

```
DTC 4/15
```

Description

After entering the DTC subcommand, the following is printed on
the terminal:

> Warning: This will reset all users on that DTC.
> (TDSM 44)
> Do you want to continue (yes/no)?

If you answer no to this question, you will be returned to the reset
prompt. If you answer yes, the reset continues and the following
messages are displayed:

> The reset operation can take as long as 7 minutes.

> The reset operation causes a DTC selftest to occur.

The DTC subcommand causes a complete DTC selftest to be run.
This selftest includes the selftests for each of the interface cards

within the DTC. All jobs or sessions that are running on devices connected to the DTC are aborted.

| **Note** | The RESET DTC subcommand for a single DTC is functionally identical to the SELFTEST DTC subcommand of the TermDSM DIAG command. The inclusion of both commands is for your convenience. |

If the selftest completes successfully, the results of each of the card selftests will be displayed. Refer to the SIC subcommand for the explanation of these results.

The DTC software is then downloaded to the DTC so that users may again use devices connected to the DTC. If you are running TermDSM at the system console, you will receive informational messages relating to this download.

You will then be returned to the reset prompt and may enter another RESET subcommand.

R[ESET] L[DEV]

Clears the software associated with a particular logical device number (and its associated port) so that the associated device may be used again.

Security level: 2.

Syntax

```
L[DEV] 1devnum
```

Parameters

1devnum   The logical device number associated with the connection you want to reset.

Description

This subcommand also resets the port associated with this ldev number. Also, any session or job running on the device is aborted.

When it is complete, the reset prompt will be displayed and you can then enter another RESET subcommand.

R[ESET] PO[RT]

Clears the software associated with a particular port so that the associated device can be used again.

Security level: 2.

Syntax

PO[RT] *dtcnum,cardnum,portnum*

Parameters

dtcnum   Number of the DTC to which the device is connected. This is the number TermDSM associates with this DTC.

cardnum   Number of the interface card within the DTC to which the device is connected. The cards are numbered from zero beginning at the bottom of the DTC as you face the back of the DTC.

portnum   Number of the port on the interface card. The ports are numbered from zero beginning at the left of the board as you face the back of the DTC.

Description

This subcommand resets the ldev number that is currently associated with the port. It also aborts any session or job that is running on the port.

When it is complete, the reset prompt will be displayed and you can then enter another RESET subcommand.

R[ESET] SI[C]

Resets all ports of a specific Serial Interface Card in a specific DTC.

Security level: 2.

Syntax

```
SI[C] dtcnum,cardnum
```

Parameters

dtcnum
: Number of the DTC to which the device is connected. This is the number TermDSM associates with this DTC.

cardnum
: Number of the interface card within the DTC to which the device is connected. The cards are numbered from zero beginning at the bottom of the DTC.

Description

When the subcommand is entered, all ports of the card are reset. When the reset completes, the status of each port of the card will be displayed.

The reset prompt will then be displayed and you can enter another RESET subcommand.

This subcommand should also be used when resets of a particular port on an SIC have been unsuccessful. If the reset of the card is also unsuccessful, consider using the DTC subcommand to reset the entire DTC.

R[ESET] SN[P]

Resets the specific X.25 card in a specific DTC.

Security level: 2.

Syntax

```
SN[P] dtcnum,cardnum
```

Parameters

dtcnum   Number of the DTC that contains the X.25 (SNP) card. This is
            the number TermDSM associates with this DTC.

cardnum   Number of the interface card within the DTC. The cards are
            numbered from zero beginning at the bottom of the DTC. (Note
            that SNP cards may not be mounted in slot 0 or 1 for DTC 16, and
            slot 0 for DTC 48.)

Description

When the subcommand is entered, the specified X.25 card is reset.
All VCs on the X.25 card are reset (up to 256 VCs for DTC 48 and
DTC 72MX, and up to 32 VCs for DTC 16).

After entering the DTC subcommand, the following is printed on
the terminal:

```
Warning: This will abort all users on this SNP. As
many as 256 virtual circuit users could be affected.
(TDSM 45) Do you want to continue (yes/no)?
```

If you answer no to this question, you will be returned to the reset
prompt. If you answer yes, the reset continues.

R[ESET] V[C]

Resets the specific VC on an X.25 card in a specific DTC. (If the VC you are attempting to dump is a PAD VC, you must use the Ldev option instead.)

Security level: 2.

Syntax

V[C] dtcnum,cardnum,vcnum

Parameters

dtcnum   Number of the DTC that contains the X.25 card (SNP). This is the number TermDSM associates with this DTC.

cardnum   Number of the X.25 card within the DTC. The cards are numbered from zero beginning at the bottom of the DTC. (Note that SNP cards may not be mounted in slot 0 or 1 for DTC 16, and slot 0 for DTC 48.)

vcnum   Number of the VC on the X.25 card within the DTC. On a DTC 48 or DTC 72MX, up the 256 VCs are supported. On a DTC 16, up to 32 VCs are supported. (PAD VCs must be reset using the Ldev option.)

Description

When the subcommand is entered, the specified VC on an X.25 card is reset. Any job or session running on the VC will be aborted.

S[TATUS]

Obtains information about DTC or port configuration and the state of the DTC or port.

Security level: 2.

Syntax

> S[TATUS]

Description

After the STATUS command is entered, the following prompt is printed on the terminal:

```
(status)

DTc #
POrt #,#,#
SNp #,#,#    (X.25 options - 1:Global, 2:level2,
                          3:level3, 4:PAD)
Vc  #,#,#

(carriage return to exit) ?
```

These are the subcommands that can then be entered. The following pages describe these two options. Neither of the STATUS subcommands affect the operation of the system, DTCs, or ports.

If you press **[Return]** instead of one of the subcommands, you will be returned to the major prompt and then may enter another TermDSM command.

S[TATUS] DT[C]

Obtains configuration and status information about a particular DTC.

Security level: 2.

Syntax

```
DT[C] dtcnum
```

Parameter

dtcnum This is the number TermDSM associates with a particular DTC. The DTC command lists each DTC with its assigned number. This is also printed when you make a mistake while typing in a DTC number.

Description

When this subcommand is entered, a large amount of information related to the DTC is printed on the terminal.

The following is a brief explanation of key fields printed on the terminal:

- Machine Type. The HP product number of the DTC.

- DTC Node Name. The user-assigned node name of the DTC.

- NOVRAM Value. A code that indicates location of Nodal address and Boot Multicast address within DTC RAM.

- Nodal address. 802.3 station address of the DTC.

- Boot Multicast address. 802.3 multicast address which DTC uses when requesting its code file.

- Host Node Address. 802.3 address of MPE/iX system that downloaded the DTC.

- DTC Lan Multicast Addresses. These fields will be used by DTC diagnostics in future releases.

- Selftest Status Readout. Provides results of most recent DTC selftest. The first two columns list and identify SIC cards. The next two columns show status of the SICs. For details on the

DTC selftest readout, refer to the description of the DIAG
Selftest DTC subcommand.

■ Version Numbers. The version numbers of hardware and
software modules on the DTC.

The remaining fields provide a detailed record of DTC events.
They tell what events are being logged (by MPE/iX) and list event
frequencies. This information can be used by HP support
representatives for detailed diagnosis of DTC problems. Further
explanation of these fields is beyond the scope of this manual.

S[TATUS]
PO[RT]

Obtains status information about a particular port.

Security level: 2.

Syntax

PO[RT] *dtcnum,cardnum,portnum*

Parameters

dtcnum   The number TermDSM associates with a particular DTC. The DTC command lists each DTC with its assigned number. This list is also printed when you make a mistake while typing in a DTC number.

cardnum   Number of the interface card within the DTC to which the device is connected. The cards are numbered from zero beginning at the bottom of the DTC.

portnum   Number of the port on the interface card. As you face the back of the DTC, the ports are numbered from zero beginning at the left of the board.

Description

When this subcommand is entered, a large amount of information related to the port is printed on the terminal.

The following is a brief explanation of key fields displayed on the terminal:

■ Revision Number. Provides version number of SIC hardware and software.

■ Current Host Name. If a connection is active, and it was initiated by the terminal, then this is the name of the host to which the port is connected. Otherwise, this field is blank.

■ Port Type. The type of DTC connector card attached to the port.

■ Connection State. The status of the connection between the port and the MPE/iX system. Possible values are:

- Disconnected. Port is not in use; no MPE/iX session is active on this port.

- Connect from AFCP Pending. MPE/iX has requested and is awaiting a connection to this port.

- Connect from DIODAM Pending. Device has requested and is awaiting a connection to the MPE/iX.

- Connected. The port is connected to an MPE/iX system.

- Disconnect from AFCP Pending. MPE/iX has requested and is awaiting disconnection from the port.

- Disconnect from DIODAM Pending. Device has requested and is awaiting disconnection from MPE/iX.

- Bad. The port has failed its selftest, or this is a non-existent port on the SIC.

The remaining fields contain detailed diagnostics information for use by HP support representatives. Further explanation of these fields is beyond the scope of this manual.

S[TATUS] SN[P]

Obtains status information about a particular X.25 card.

Security level: 2.

Syntax

> SN[P] *dtcnum,cardnum,optionnum*

Parameters

dtcnum   Number of the DTC that contains the X.25 (SNP) card. This is
              the number TermDSM associates with this DTC.

cardnum   Number of the X.25 card within the DTC. The cards are
              numbered from zero beginning at the bottom of the DTC. (Note
              that SNP cards may not be mounted in slot 0 or 1 for DTC 16, and
              slot 0 for DTC 48.)

optionnum   Number of the option. One of the following four options must be
              specified:

              1 for global
              2 for level 2
              3 for level 3
              4 for PAD status.

Description

When this subcommand is entered, a large amount of information
related to the X.25 card is printed on the terminal.

S[TATUS] V[C]

Obtains status information about a particular VC on an X.25 card.

Security level: 2.

Syntax

```
V[C]  dtcnum,cardnum,vcnum
```

Parameters

dtcnum   Number of the DTC that contains the X.25 (SNP) card. This is the number TermDSM associates with this DTC.

cardnum   Number of the X.25 card within the DTC. The cards are numbered from zero beginning at the bottom of the DTC. (Note that SNP cards may not be mounted in slot 0 or 1 for DTC 16, and slot 0 for DTC 48.)

vcnum   Number of the VC. There can be up to 256 VCs on a DTC48 or DTC 72MX and up to 32 VCs on a DTC16.

Description

When this subcommand is entered, a large amount of information related to the VC on an X.25 card is printed on the terminal.

T[RACE]

Turns on a trace for a specific port on an asynchronous processor board of a DTC 72MX or a specific VC, level 2, or level 3 on an X.25 card (for a DTC 16, DTC 48, or DTC 72MX).

Security level: 2.

Syntax

```
T[RACE]
```

Description

After the command is entered, the following prompt is printed on the terminal:

(TIO or X25)

TIo
X25

(carriage return to exit) ?

TIO specifies tracing on a selected port of an asynchronous processor board (mux card) of a DTC 72MX.

X25 specifies tracing on an X.25 card on a DTC 16, DTC 48, or DTC 72MX.

T[RACE] TI[O]

Specifies tracing on a selected asynchronous port of a DTC 72MX.
TRACE TIO is not supported for ports on DTC 16s or DTC 48s.

Security level: 2

Syntax

```
T[RACE] TI[O]
```

Description

After the command is entered, the following prompt is printed on
the terminal:

```
(tio trace)

TRACEON #, #, #
TRACEOFf #, #
TRACEShow #

(carriage return to exit) ?
```

These are the subcommands that can then be entered. The
following pages describes these options.

If you press **[Return]** instead of one of these subcommands, you
will be returned to the TRACE main prompt and then may specify
TRACE TIO or TRACE X25.

T[RACE] TI[O]
TRACEON

Starts extended tracing on a selected port of an asynchronous processor board in a DTC 72MX.

Security level: 2

Syntax

TRACEON *dtcnum, boardnum, portnum*

Parameters

dtcnum   The number TermDSM associates with a particular DTC. The DTC command lists each DTC with its assigned number. This list is also printed when you make a mistake while typing in a DTC number.

boardnum   Number of the asynchronous processor board within a DTC 72MX which contains the port to be traced.

portnum   Number of the port on which tracing is to be done. As you face the back of the DTC, the ports are numbered from zero beginning at the left of the board.

Description

TRACE TIO is used to specify extended tracing on a selected port of an asynchronous processor board (mux card) on a DTC 72MX.

Normally traced data is kept in a circular buffer for each port. When extended tracing on a selected port is specified, the size of the buffer for the port is extended, while the size of the trace area for the other ports on the same board is reduced.

Only one port per board may have extended tracing active at one time. TRACEON starts extended tracing. No trace file is created with the trace. You need to perform a DUMP PORT to store the trace data into a disc file.

Use TRACEOFF to stop tracing.

| **Note** | Tracing a port and dumping information pertaining to a port does not reset (or otherwise affect) the associated device. If you need to reset the device, use the RESET command. |

T[RACE] TI[O]
TRACEOF[F]

Turns off extended tracing of an asynchronous port on a DTC 72MX.

Security level : 2.

Syntax

TRACEOF[F] *dtcnum, boardnum*

Parameter

dtcnum   Number of the DTC that contains the asynchronous board with a port that is being traced. This is the number TermDSM associates with this DTC.

boardnum   Number of the asynchronous board that contains the port being traced.

Description

TRACEOFF turns off extended trace on a port. You must turn off tracing on a port before starting extended tracing on another port on the same board.

After TRACEOFF is issued, the trace information will be overwritten. In order to keep the trace information, do a DUMP PORT before the TRACEOFF subcommand.

T[RACE] TI[O]
TRACES[HOW]

Lists all the ports on the specified DTC 72MX that currently have extended tracing on.

Security level: 2.

Syntax

```
TRACES[HOW] dtcnum
```

Parameter

dtcnum   Number of the DTC 72MX that has extended tracing on for one or more of its asynchronous processor boards. This is the number TermDSM associates with this DTC.

T[RACE] X2[5]

Specifies tracing for a particular VC on an X.25 card on a DTC 16, DTC 48, or DTC 72MX.

Security level: 2.

Syntax

```
T[RACE] X2[5]
```

Description

After the command is entered, the following prompt is printed on the terminal:

```
(X25 trace)

TRACEON #, #, #
TRACEOFf

(carriage return to exit) ?
```

TRACEON and TRACEOFF are subcommands that can be entered with the TRACE X25 command. The following pages describes these options.

When you specify tracing on an X.25 card, you will also be prompted to enter a file name for the trace file. You can specify the name of the file that will contain the trace information by entering a valid MPE file name. If you want to use the default trace file (X25TRACE.PUB.SYS), press return without specifying a file name.

T[RACE] X2[5]
TRACEON

Turns on a trace for a particular VC on an X.25 card.

Security level: 2.

Syntax

```
TRACEON dtcnum,cardnum,traceoption
```

Parameters

dtcnum   Number of the DTC that contains the DTC/X.25 Network Access card (SNP). This is the number TermDSM associates with this DTC.

cardnum   Number of the SNP card within the DTC. The cards are numbered from zero beginning at the bottom of the DTC. (Note that SNP cards may not be mounted in slot 0 or 1 for DTC 16, and slot 0 for DTC 48.)

traceoption   The trace option allows you to specify the type of information that you want included in the trace. The options are 1, to trace VC information; 2, to trace level 2 information; or 3, to trace level 3 information. The trace options are described separately on the following pages. Only one trace can be active at a time.

Trace Option 1

Use trace option 1 to trace information about a specific VC. When this trace option is entered, the following prompt is printed on the terminal:

(VC number)

vc #

(carriage return to exit) ?

Enter the number of the virtual circuit for which you want the trace recorded. There can be up to 256 VCs on a DTC48 or DTC 72MX and up to 32 VCs on a DTC16.

You will then see the following prompt at the terminal:

```
(filter)

HDr        (Header only)
FUll       (Full Packet)

(carriage return to exit) ?
```

Enter HDr if you want only header information (including TCP/IP headers) included in the trace.

Enter FUll if you want full packet information included in the trace.

You will then be prompted to enter a trace file name, as follows:

```
(Filename)

Please enter a filename for the X.25 trace or press
carriage return to use the default (TRACE.PUB.SYS).
Trace file will be kept in PUB.SYS.

(carriage return to accept default) ?
```

Trace Option 2   Use trace option 2 to trace level 2 information for the specified
SNP card. When this trace option is entered, the following prompt
is printed on the terminal:

```
(filter)

HDr         (Header only)
FUll        (Full Packet)

(carriage return to exit) ?
```

Enter HDr if you want only header information (including TCP/IP
headers) included in the trace.

Enter FUll if you want full packet information included in the
trace.

You will then be prompted to enter a trace file name, as follows:

```
(Filename)

Please enter a filename for the X.25 trace or press
carriage return to use the default (TRACE.PUB.SYS).
Trace file will be kept in PUB.SYS.

(carriage return to accept default) ?
```

Trace Option 3

Use trace option 3 to trace level 3 information for the specified SNP card. When this trace option is entered, the following prompt is printed on the terminal:

```
(VC type for level 3)

PAd        (PAD VCs)
SYs        (System-to-System VCs)
All        (PAD and System-to-System VCs)

(carriage return to exit) ?
```

Enter PAd to trace PAD VCs only, enter SYs to trace system-to-system VCs only, enter All to trace both PAD and system-to-system VCs.

You will then be asked to enter the link name, as follows:

```
(linkname)

Please enter the linkname for level 3 trace

(carriage return to exit) ?
```

Enter the link name of the X.25 link as configured in NMMGR. The link name may be up to eight (8) ASCII characters.

You will then see the following prompt at the terminal:

```
(filter)

HDr        (Header only)
FUll       (Full Packet)

(carriage return to exit) ?
```

Enter HDr if you want only header information (including TCP/IP headers) included in the trace.

Enter FUll if you want full packet information included in the trace.

You will then be prompted to enter a trace file name, as follows:

```
(Filename)
```

Please enter a filename for the X.25 trace or press
carriage return to use the default (TRACE.PUB.SYS).
Trace file will be kept in PUB.SYS.

(carriage return to accept default) ?

T[RACE] X2[5]
TRACEOF[F]

Turns off a trace for a VC, level 2, or level 3 on an X.25 card.

Security level: 2.

Syntax

```
TRACEOF[F]
```

Description

Turns off the trace activated through a previous TRACEON command. Since only one trace can be active at a time, this command does not require any parameters.

TermDSM Messages

15	MESSAGE	You have entered an unknown or incorrect command. Please try again. (TDSM 15)
	CAUSE	You have entered something that is not a TermDSM command or a command that is not valid in this context.
	ACTION	Commands that are valid at this time are listed in the prompt. Please try again. Type HELP or refer to chapter 4 for more information.

16	MESSAGE	TermDSM has compiled without $partial eval$ in effect. It cannot continue. This problem must be fixed at the factory. (TDSM 16)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

17	MESSAGE	Your security level (3) is too low to use TermDSM. Please log on with level 0, 1, or 2 security. (TDSM 17) For level 0, you need SM capability. For level 1, you need SM or DI capability. For level 2, you need SM or DI or OP capability.
	CAUSE	You do not have the correct user capabilities to use TermDSM.
	ACTION	Logon as a user with the correct capabilities for the TermDSM functions you wish to use. Refer to chapter 4 for the security levels of each command and subcommand.

18	MESSAGE	You have entered a bad port number. Port numbers range from 0 to 23. (TDSM 18)
	CAUSE	You have entered an invalid port number. Port numbers range from 0 to 7 for DTC 16 and DTC 48, from 0 to 15 for DTC 16iX/16MX, and from 0 to 23 for DTC 72MX.
	ACTION	Check the port number on the back of the DTC and enter a valid port number.

19	MESSAGE	The port number is missing or invalid. Port numbers range from 0 to 23. (TDSM 19)
	CAUSE	The port number was not entered or is unrecognizable.
	ACTION	Enter a valid port number. Refer to the prompt or chapter 4 for syntax.
20	MESSAGE	You have entered a bad ldev number. Ldev numbers are positive integers. (TDSM 20)
	CAUSE	The value that you entered as a logical device number is not a number greater than zero.
	ACTION	Enter a valid ldev number. Note that you can also use the POrt subcommand.
21	MESSAGE	The ldev number is missing or invalid. Ldev numbers are positive integers. (TDSM 21)
	CAUSE	The logical device number was not entered or is unrecognizable.
	ACTION	Enter a valid ldev number. Note that you can also use the POrt subcommand.
22	MESSAGE	You have entered an invalid SIC card number. SIC card numbers range from 0 to 5. (TDSM 22)
	CAUSE	The card number that you entered is not in the range from zero to five. Card number range from 0 to 1 for DTC 16, 1 for DTC 16iX/16MX, from 0 to 5 for DTC 48, and from 0 to 3 for DTC 72MX.
	ACTION	Double check the card numbers by looking at the back of the DTC. Enter the card number again.
23	MESSAGE	The SIC card number is missing or invalid. SIC card numbers range from 0 to 5. (TDSM 23)
	CAUSE	The card number was not entered or is unrecognizable.
	ACTION	Enter the card number again. Refer to the prompt or chapter 4 for syntax.

24	MESSAGE	You have entered an incorrect DTC number. Please choose a DTC number from this list. (TDSM 24)
	CAUSE	The value entered does not correspond with any DTC on the system.
	ACTION	The DTCs on the system are listed with their numbers. Enter one of the numbers displayed.
25	MESSAGE	The DTC number is missing or invalid. Please choose a DTC number from this list. (TDSM 25)
	CAUSE	The DTC number was not entered or is unrecognizable.
	ACTION	The DTCs on the system are listed with their numbers. Enter one of the numbers displayed.
27	MESSAGE	TermDSM cannot do the dump because there are already too many dump files. Please purge some. Dump files are of the form TRMnnnaa.PUB.SYS. where nnn is a 3 digit number and aa is 2 alphabetic characters. (TDSM 27)
	CAUSE	The dump files TRMdddAA through TRMdddZZ already exist. (The sequence ddd is the current Julian date.)
	ACTION	Delete some files beginning with the file called TRMdddAA since this is the oldest file. Note that if all files for this Julian date already exist, there are over 600 dump files for today. You can delete most of these files.
32	MESSAGE	Your security level (3) is too low to take dumps. Please log on with level 2 security to dump ports, or level 1 security to dump ports and DTCs. (TDSM 32) For level 1, you need SM or DI capability. For level 2, you need SM or DI or OP capability.
	CAUSE	You do not have the correct user capabilities to use this function.
	ACTION	Log on with level 0, 1, or 2 security. Refer to chapter 4 for the security levels of each command and subcommand.

33	MESSAGE	Your security level is too low to reprogram EEPROM. Please log on with level 1 security to reprogram EEPROM. (TDSM 33) For level 1, you need SM or DI capability.
	CAUSE	You do not have the correct user capabilities to use this function.
	ACTION	Log on with level 1 security. Refer to chapter 4 for the security levels of each command and subcommand.
34	MESSAGE	That ldev does not exist. Please check the ldev number, or dump the associated port instead. (TDSM 34)
	CAUSE	Although you entered a number in a range that could be an ldev number, that ldev number is not configured on the system.
	ACTION	Verify the ldev number by entering the SHOWJOB command. You can also dump information associated with the device by using the POrt subcommand (which uses the physical address instead of the ldev number).
35	MESSAGE	Someone else is using TermDSM to troubleshoot that DTC. Find that person and have them exit TermDSM. If you cannot locate that user, you may override them. (TDSM 35)
	CAUSE	More than one person is using TermDSM and directing operations to the same DTC at the same time.
	ACTION	It is permissible for two or more users to run TermDSM simultaneously as long as the users do not reference the same DTC. In this case, message 35 will not appear. If one TermDSM user chooses to override another by continuing, it is likely that the overridden TermDSM will produce error messages. The override facility is provided for the case where a terminal running TermDSM is hung and therefore cannot exit the program. Note that if one TermDSM user resets the port of another TermDSM user, this can cause the system to go down.

36	MESSAGE	**No ldevs seem to be configured on your system. (TDSM 36)**
	CAUSE	Necessary configuration information does not exist on the system.
	ACTION	Make sure the file NMCONFIG.PUB.SYS exists. Bring the system down and back up again, making sure that the proper SYSGEN files are used. (The SYSGEN files used are determined by the boot path. The file NMCONFIG.PUB.SYS is used automatically.) If the problem persists, contact your HP support representative.

37	MESSAGE	**The dump process can't find out the length of the data area. (TDSM 37)**
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

38	MESSAGE	**The data area is longer than TermDSM's dump buffer. (TDSM 38)**
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

39	MESSAGE	**TermDSM never received a reply to its dump data area request. (TDSM 39)**
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

42	MESSAGE	**You must have high (1) security to perform this function. (TDSM 42)** **For level 1, you need SM or DI capability.**
	CAUSE	You do not have the correct user capabilities to use this function.
	ACTION	Logon as a user with the correct capabilities for the TermDSM functions you wish to use. Refer to chapter 4 for the security levels of each command and subcommand.

43	MESSAGE	You can't do this from your own DTC. Please run TermDSM from another DTC or from the console. (TDSM 43)
	CAUSE	If you were permitted to selftest, dump, or reset the DTC to which you are logged on, your session would be aborted and you would be unable to get the test results.
	ACTION	Move to a terminal on another DTC or the system console to run TermDSM.
44	MESSAGE	Warning: This will reset all users on that DTC. (TDSM 44)
	CAUSE	If you continue, all user sessions on this DTC will be aborted.
	ACTION	If you want to continue, you should alert all the users that their sessions will be aborted.
45	MESSAGE	Warning: This will reset all users on that SNP. As many as 256 virtual circuits could be affected. (TDSM 45)
	CAUSE	If you continue, all user sessions on this SNP will be aborted.
	ACTION	If you want to continue, you should alert all the users that their sessions will be aborted.
49	MESSAGE	Warning: This will abort all users on that MUX. As many as 24 users could be affected. (TDSM 49)
	CAUSE	If you continue, all user sessions on this asynchronous processor board (mux card) on the DTC 72MX will be aborted.
	ACTION	If you want to continue, you should alert all the users that their sessions will be aborted.
50	MESSAGE	Warning: There will be no file created to keep the trace data. To get the trace data, please perform a port dump BEFORE stopping the trace. (TDSM 50)
	CAUSE	Extended tracing on a port on an asynchronous processor board will not be stored into a disc file.
	ACTION	Before terminating an extended tracing on a port with TRACEOFF, do a port dump to keep the trace data into a disc file.

51	MESSAGE	**Warning: The trace data will be overwritten by this command. To get the trace data, please perform a port dump first. (TDSM 51)**
	CAUSE	This warning is issued when you enter the TRACEOFF subcommand.
	ACTION	To save the trace data on an asynchronous port, do a port dump before issuing the TRACEOFF subcommand to terminate extended tracing.

53	MESSAGE	**Each DTC selftest can take as long as 7 minutes. Enter a Control-Y to stop the selftest loop (the Control-Y will take effect when the current selftest finishes). (TDSM 53)**
	CAUSE	This warning is issued when you issue a SELFTEST subcommand to initiate DTC selftest.
	ACTION	Continue with the DTC selftest if you want. You can terminate selftest anytime by pressing **[CTRL]-Y**.

56	MESSAGE	**Your answer must be at least 1 and no more than 65535. (TDSM 56)**
	CAUSE	The value entered is not in the range 1 to 65535.
	ACTION	Enter a value in the range. Diagnostic loop counts are limited to this range.

63	MESSAGE	**Please deliver the following SNP dump to your HP representative. (TDSM 63)**
	CAUSE	Informational message.
	ACTION	Document the problem (the reason you took the dump), and deliver it to your HP support representative along with the dump file, preferably on magnetic tape.

64	MESSAGE	**The following two files make up the DTC dump. Please deliver both to your HP representative. (TDSM 64)**
	CAUSE	Informational message.
	ACTION	Document the problem (the reason you took a dump), and deliver it to your HP support representative along with the dump files, preferably on magnetic tape.

65	MESSAGE	Please deliver the following VC dump to your HP representative. (TDSM 65)
	CAUSE	Informational message.
	ACTION	Document the problem (the reason you took a dump), and deliver it to your HP support representative along with the dump files, preferably on magnetic tape.
70	MESSAGE	There are no DTCs configured on your system. (TDSM 70)
	CAUSE	Necessary configuration information does not exist on the system.
	ACTION	Check the NMCONFIG.PUB.SYS file for proper DTC configuration (using :NMMGR). Bring the system down and back up again. If the problem persists, contact your HP support representative.
71	MESSAGE	There are more DTCs on your system than TermDSM can reference. Here are the ones TermDSM can reference. (TDSM 71)
	CAUSE	You are using more than 120 DTCs on the system. You will not be able to perform any TermDSM functions on any DTCs that are not listed in this message.
	ACTION	Contact your HP support representative.
80	MESSAGE	You can't reset your own port or ldev. Please run TermDSM from a different port or ldev to do this. (TDSM 80)
	CAUSE	Verify the ldev numbers entered. If you want to reset a port, you cannot be logged on to that port; the operation will abort your session.
	ACTION	If you want to reset the port you are using, move to another port or the system console to run TermDSM.
81	MESSAGE	That ldev is unknown (not configured). Please check the ldev number, or use reset port. (TDSM 81)
	CAUSE	Although a number was entered in a range that could be an ldev number, that number is not configured on the system.
	ACTION	Verify the ldev number by entering the SHOWJOB command. You can also reset ports by using the POrt subcommand (which uses the physical address instead of the ldev number).

82	MESSAGE	You must have high (1) or medium (2) security to do resets, and high (1) security to reset DTCs. (TDSM 82)
		For level 1, you need SM or DI capability.
		For level 2, you need SM or DI or OP capability.
	CAUSE	You do not have the correct user capabilities to do this function.
	ACTION	Logon as a user with the correct capabilities for the functions you wish to use. Refer to chapter 4 for the security level of each command and subcommand.

86	MESSAGE	You must have high (1) or medium (2) security to test ports, and high (1) security to selftest DTCs. (TDSM 86)
		For level 1, you need SM or DI capability.
		For level 2, you need SM or DI or OP capability.
	CAUSE	You do not have the correct user capabilities to do this function.
	ACTION	Logon as a user with the correct capabilities for the TermDSM functions you wish to use. Refer to chapter 4 for the security level of each command and subcommand.

93	MESSAGE	TermDSM could not open the DTC manager, so the DTC dump could not be obtained. (TDSM 93)
	CAUSE	Internal error, unless another TermDSM was being run against that same DTC and you chose not to override the other user. There is no error in this case.
	ACTION	Contact your HP support representative (if it is an internal error).

110	MESSAGE	You can't test your own port. Please run TermDSM from another port. (TDSM 110)
	CAUSE	Double check the numbers entered. If you wish to test a port, you cannot be logged on to that port; the operation will abort your session and you will be unable to obtain the results of the test.
	ACTION	If you want to test the port to which you are logged on, move to another port or the system console to run TermDSM.

113	MESSAGE	Please put a loopback hood on the port, before answering the 'How may times?' question. (TDSM 113)
	CAUSE	A loopback hood must be in place before the diagnostic is run.
	ACTION	Place loopback hood on the port and continue.
114	MESSAGE	Please connect and make ready (power on, remote mode, etc.) a supported terminal, before answering the 'How many times?' question. (TDSM 114)
	CAUSE	The hardware must be present before the diagnostic is run.
	ACTION	Make a supported terminal ready and continue.
115	MESSAGE	Please connect and make ready (power on, remote mode, etc.) a supported printer (or terminal), before answering the 'How many times?' message. (TDSM 115)
	CAUSE	The hardware must be present before the diagnostic is run.
	ACTION	Make a supported printer (or terminal) ready and continue.
118	MESSAGE	You can't reprogram EEPROM on your own DTC. Please run TermDSM from another DTC or from the console. (TDSM 118)
	CAUSE	Your own session is on this DTC. If you wish to reprogram EEPROM, you can't be logged onto that DTC; the operation will abort your session and you will be unable to obtain the results.
	ACTION	Move to a port on a different DTC or to the system console to run TermDSM.
121	MESSAGE	Warning: The LDM dump is suspect. Consecutive dumps did not match. (TDSM 121)
	CAUSE	This message is written to dump files and never appears as an error message to a user. There was activity during the dump process, so part of the dump relating to the Logical Device Manager might be inconsistent with the rest of the dump.
	ACTION	Submit the dump to your HP support representative.

122	MESSAGE	**You can't reset your own SIC. Please run TermDSM from another SIC or DTC, or from the console. (TDSM 122)**
	CAUSE	Your own session is on this SIC (serial interface card). If you wish to reset a SIC, you cannot be logged onto that card; the operation will abort your session and you will be unable to obtain the results.
	ACTION	Move to a port on a different DTC or SIC, or to the system console, to run TermDSM.
123	MESSAGE	**You can't reset your own SNP. Please run TermDSM from another PAD or SIC or DTC, or from the console.**
	CAUSE	Your own session is on this SNP (DTC/X.25 XL Network Access card). If you wish to reset an SNP you cannot be logged onto that card.
	ACTION	Move to a port on a different PAD, DTC, or SNP, or to the system console, to run TermDSM.
124	MESSAGE	**You can't dump your own SNP. Please run TermDSM from another PAD or SIC or DTC, or from the console.**
	CAUSE	Your own session is on this SNP (DTC/X.25 XL Network Access card). If you wish to dump an SNP you cannot be logged onto that card.
	ACTION	Move to a port on a different PAD, DTC, or SNP, or to the system console, to run TermDSM.
125	MESSAGE	**You can't dump your own MUX board. Please run TermDSM from another MUX board or DTC, or from the console. (TDSM 125)**
	CAUSE	Your own session is on this asynchronous processor board (mux board). If you wish to dump an asynchronous processor board, you cannot be logged onto that board.
	ACTION	Log on to a port on a different asynchronous processor board, DTC, or to the system console; then run TermDSM and perform a dump on the original asynchronous processor board.

180	MESSAGE	The Distributed Terminal Subsystem software does not exist. Please verify that the NMCONFIG.PUB.SYS file is correct and validated, and the system has booted up without errors. This situation prevents TermDSM from continuing. (TDSM 180)
	CAUSE	The NMCONFIG.PUB.SYS file does not exist, or has no DTCs configured.
	ACTION	Check the NMCONFIG.PUB.SYS file for proper DTC/terminal configurations and validate (using NMMGR), then shutdown and restart the system.
218	MESSAGE	End of Record received. Time = xx msec. (TDSM 218)
	CAUSE	Probable hardware failure.
	ACTION	Contact you HP support representative. You can obtain additional information by running the card selftest (through the SIc subcommand of the TermDSM Reset command), the DTC selftest, and the DTC offline diagnostics.
219	MESSAGE	Too many characters came back. Time = xx msec. (TDSM 219)
	CAUSE	More characters were returned than were sent. Someone might have pressed a key on the terminal under test, if this was a terminal loopback. Probable hardware failure.
	ACTION	Contact you HP support representative. You can obtain additional information by running the card selftest (through the SIc subcommand of the TermDSM Reset command), the DTC selftest, and the DTC offline diagnostics.
220	MESSAGE	Parity error. Time = xx msec. (TDSM 220)
	CAUSE	Probable hardware failure.
	ACTION	Contact you HP support representative. You can obtain additional information by running the card selftest (through the SIC subcommand of the TermDSM RESET command), the DTC selftest, and the DTC offline diagnostics.

221	MESSAGE	Hardware receive overrun. Time = xx msec. (TDSM 221)
	CAUSE	Probable hardware failure.
	ACTION	Contact you HP support representative. You can obtain additional information by running the card selftest (through the Sic subcommand of the TermDSM Reset command), the DTC selftest, and the DTC offline diagnostics.

222	MESSAGE	Framing error. Time = xx msec. (TDSM 222)
	CAUSE	Probable hardware failure.
	ACTION	Contact you HP support representative. You can obtain additional information by running the card selftest (through the Sic subcommand of the TermDSM Reset command), the DTC selftest, and the DTC offline diagnostics.

223	MESSAGE	SIC Buffer overflow. Time = xx msec. (TDSM 223)
	CAUSE	Internal error.
	ACTION	Contact you HP support representative.

226	MESSAGE	No record separator in Vplus. Time = xx msec. (TDSM 226)
	CAUSE	Probable hardware failure.
	ACTION	Contact you HP support representative. You can obtain additional information by running the card selftest (through the Sic subcommand of the TermDSM Reset command), the DTC selftest, and the DTC offline diagnostics.

229	MESSAGE	**Read timeout (no data came back). Time = xx msec. If external loopback, check loopback hood. If terminal loopback, check connections, terminal configuration, etc. (TDSM 229)**
	CAUSE	No or too few characters came back from the loopback.
	ACTION	If this is an internal loopback, this indicates a hardware problem. Contact your HP support representative. You can obtain additional information by running the card selftest (through the Sic subcommand of the TermDSM Reset command), the DTC selftest, and the DTC offline diagnostics.
		If this is an external loopback, check the loopback hood to verify that it is securely connected and on the correct port.
		If this is a terminal loopback, verify that a supported, powered on terminal is securely connected to the proper port. Check baud rate, parity, etc. Note that the terminal configuration must match the configuration file, not the state the terminal was in when it was last used. If this does not help, run internal, then external loopback to discriminate between a DTC problem and a terminal/cabling problem.
230	MESSAGE	**Alternate end-of-record received. Time = xx msec. (TDSM 230)**
	CAUSE	Probable hardware failure.
	ACTION	Contact your HP support representative. You can obtain additional information by running the card selftest (through the Sic subcommand of the TermDSM Reset command), the DTC selftest, and the DTC offline diagnostics.
231	MESSAGE	**Subsystem break. Time = xx msec. (TDSM 231)**
	CAUSE	Probable hardware failure.
	ACTION	Contact you HP support representative. You can obtain additional information by running the card selftest (through the Sic subcommand of the TermDSM Reset command), the DTC selftest, and the DTC offline diagnostics.

232	MESSAGE	No modem was connected during the operation. Time = xx msec. (TDSM 232)
	CAUSE	During the test, the modem on that port was disconnected.
	ACTION	Reconnect the modem and try the test again. If the failure continues, or if there was no modem in use on that port, there is a probable hardware failure.
		Contact your HP support representative. You can obtain additional information by running the card selftest (through the Sic subcommand of the TermDSM Reset command), the DTC selftest, and the DTC offline diagnostics.

234	MESSAGE	Console attention. Time = xx msec. (TDSM 234)
	CAUSE	Probable hardware failure.
	ACTION	Contact your HP support representative. You can obtain additional information by running the card selftest (through the Sic subcommand of the TermDSM Reset command), the DTC selftest, and the DTC offline diagnostics.

235	MESSAGE	Operation aborted. (TDSM 235)
	CAUSE	The operation was aborted by the DTC. Possibly, the download file is invalid.
	ACTION	Verify the version and integrity of the download file. Contact your HP support representative. You can obtain additional information by running the DTC selftest DTC selftest or the DTC offline diagnostic.

240	MESSAGE	During a DTC reset/dump request from the mainframe. (TDSM 240)
	CAUSE	Informational message which can be printed after an error message. It describes in which phase of an operation the error occurred.
	ACTION	Refer to the cause and action descriptions for the actual error message preceding message 240.

241	MESSAGE	**During the DTC download operation. (TDSM 241)**
	CAUSE	Informational message which may be printed after an error message. It describes in which phase of an operation the error occurred.
	ACTION	Refer to the cause and action descriptions for the actual error message preceding message 241.
242	MESSAGE	**During a DTC upload (dump) operation. (TDSM 242)**
	CAUSE	Informational message which may be printed after an error message. It describes in which phase of an operation the error occurred.
	ACTION	Refer to the cause and action descriptions for the actual error message preceding message 242.
243	MESSAGE	**Bad parameter from TermDSM. (TDSM 243)**
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

244	MESSAGE	Timeout waiting for the DTC to respond. The DTC may be powered off, malfunctioning, or misconfigured. (TDSM 244)
	CAUSE	The TermDSM command resulted in an instruction being sent to a DTC, and the DTC did not respond.
	ACTION	Note that the DTC list printed by TermDSM is only a list of the DTCs configured, not a list of installed, powered on, and working DTCs.

If the DTC in question was working, and no changes were made to the configuration file, ensure that the DTC is powered on. If so, this error indicates a probable hardware error. Contact your HP support representative.

If this is a new installation or DTC, which has never been run before, the above comments can still apply. However, if the configuration is incorrect, a functional DTC might still not respond. Check the configuration file, power to the DTC, connections, etc. If problems persist, contact your HP support representative.

This error can also be the result of a LAN problem. If other DTC(s) are working on the same LAN, the problem is probably related to the DTC or its configuration. If there is only one DTC, or other DTCs on the same LAN are unresponsive, then the LAN hardware or software might be at fault. The LAN diagnostic LANDAD can be run to investigate LAN problems.

245	MESSAGE	Write to IEEE 802.3 DAM failed. (TDSM 245)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

246	MESSAGE	This DTC is owned by another TermDSM. Possibly, your TermDSM was overridden by that TermDSM.
	CAUSE	Only one TermDSM session may be active at one time on a DTC. Possibly, another TermDSM session was started on the DTC and has overwritten your original TermDSM session.
	ACTION	Find out who else is running TermDSM on the DTC. Coordinate your effort with the other user to avoid TermDSM session conflict.

247	MESSAGE	**Bad NMP packet received from DTC. (TDSM 247)**
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

248	MESSAGE	**The DTC requested to be downloaded during the operation. (TDSM 248)**
	CAUSE	The DTC was trying to power up at the same time you were trying to access it.
	ACTION	Wait for the download, or upload/download, to complete (as shown by the console messages). Verify then that the DTC is operational. If not, contact your HP support representative.

249	MESSAGE	**The DTC requested that it be dumped during the operation. (TDSM 249)**
	CAUSE	The DTC detected an internal error at the same time you were trying to access it through TermDSM.
	ACTION	Wait for the download, or upload/download, to complete (as shown by the console messages). Then verify if the DTC is operational. If not, contact your HP support representative.

250	MESSAGE	**DTC and host RMP versions are incompatible. (TDSM 250)**
	CAUSE	Incompatibilities were found between subsystem software on the HP 3000 and subsystem software on the DTC.
	ACTION	Contact your HP support representative.

251	MESSAGE	**Bad RMP packet received from DTC. (TDSM 251)**
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

252	MESSAGE	Could not open the download or dump file. (TDSM 252)
	CAUSE	Files pertaining to this operation cannot be accessed.
	CAUSE	If this is a dump, verify that sufficient disc space exists to create the dump file. Approximately 2200 sectors of disc space is required. If enough disc space is available (or if you were not trying to perform a dump operation), contact your HP support representative.

253	MESSAGE	Unable to get a system timer. (TDSM 253)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

255	MESSAGE	Dump overflow: DTC sent more data than expected. (TDSM 255)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

259	MESSAGE	DTC not opened by this TermDSM. Possibly your TermDSM was overridden by another TermDSM. (TDSM 259)
	CAUSE	Another user of TermDSM has explicitly overridden your use of TermDSM.
	ACTION	Locate and coordinate users of TermDSM.
		This means two users of TermDSM were directing TermDSM commands to the same DTC at the same time, and the other TermDSM user answered 'yes' to the override question (see TermDSM message 35). Other error messages are likely to be printed. These error messages should be ignored.
		There is nothing wrong with multiple users of TermDSM running at the same time, as long as they do not try to direct commands to the same DTC at the same time. The message and interlock system of message 35 was designed to prevent this conflict.

260	MESSAGE	Bad NMP error code received. (TDSM 260)
	CAUSE	Unknown error reported by the Distributed Terminal Subsystem to TermDSM.
	ACTION	Contact your HP support representative.

261	MESSAGE	**Bad RMP return code received. (TDSM 261)**
	CAUSE	Unknown error reported by the Distributed Terminal Subsystem to TermDSM.
	ACTION	Contact your HP support representative.
262	MESSAGE	**The DTC subsystem has reported that an error was detected. Here is the specific message: (TDSM 262)**
	CAUSE	This is the standard message that precedes specific error messages.
	ACTION	Follow the instructions for the error message that follows this message.
263	MESSAGE	**An error of unknown type was reported by the DTS subsystem. (TDSM 263)**
	CAUSE	An error unknown to TermDSM was reported by the Distributed Terminal Subsystem.
	ACTION	Contact your HP support representative.
264	MESSAGE	**The DTC reported an unknown status as a result of the loopback. Time taken=xx. (TDSM 264)**
	CAUSE	An error unknown to TermDSM was reported by the Distributed Terminal Subsystem.
	ACTION	Contact your HP support representative. You can obtain additional information by running the card selftest (through the S i c subcommand of the TermDSM Reset command), the DTC selftest, and the DTC offline diagnostics.
266	MESSAGE	**Please perform a DTC reset instead of board reset. (TDSM 266)**
	CAUSE	The DTC 16iX/16MX has only one board; resetting a board is the same as resetting a DTC.
	ACTION	Do a DTC reset instead of a board reset.

267	MESSAGE	Please perform a DTC upload instead of board upload. (TDSM 267)
	CAUSE	The DTC 16iX/16MX has only one board; uploading a board is the same as uploading a DTC.
	ACTION	Do a DTC upload instead of a board upload.

268	MESSAGE	You have entered an incorrect ROM code version.
	CAUSE	Incorrect ROM code version was entered for EEPROM reprogramming.
	ACTION	Re-enter the correct ROM code version.

270	MESSAGE	The port is malfunctioning, or not present on that SIC. Modem SICs have ports zero to five, and all other SICs have ports zero to seven. (TDSM 270)
	CAUSE	The DTC has reported that the port in question is bad or does not exist.
	ACTION	Note the range of ports in the error message. If you are specified a port that does not exist, verify the information to determine the correct port. For reset and dump, you can specify an ldev number instead of the port to do the operation.
		If the port does exist, a hardware failure has probably occurred. Contact you HP support representative. You can obtain additional information by running the card selftest (through the Sic subcommand of the TermDSM Reset command), the DTC selftest, and the DTC offline diagnostics.

271	MESSAGE	That SIC is malfunctioning, or not installed. TermDSM can not always tell the difference between 'not installed' and a serious malfunction. (TDSM 271)
	CAUSE	Possible hardware problem or no card is installed in that slot.
	ACTION	Double check that the SIC number you specified is correct. If it is, it is likely that the SIC is defective. Contact you HP support representative. You can obtain additional information by running the card selftest (through the Sic subcommand of the TermDSM Reset command), the DTC selftest, and the DTC offline diagnostics.

275	MESSAGE	**The loopback is too long. (TDSM 275)**
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.
280	MESSAGE	**Dump failed. Open of DTCM failed, or DTC owned and not overridden (TDSM 280)**
	CAUSE	This message is written to dump files, and never appears as an error message to a user terminal.
		If the user was informed the DTC was in use by another TermDSM (see message 35), and the second user chose *NOT* to override, then this message is normal and is not cause for alarm. Otherwise, it is indicative of an internal error.
	ACTION	If the problem persists, take another dump. If you are sure another user was not involved, contact your HP support representative.
281	MESSAGE	**Dump failed: Send or Receive of dump request failed. (TDSM 281)**
	CAUSE	An internal error. This message is written to dump files and never appears as an error message to a user.
	ACTION	Contact your HP support representative.
282	MESSAGE	**Dump failed: Bad function in internal error reply to dump request.(TDSM 282)**
	CAUSE	An internal error. This message is written to dump files and never appears as an error message to a user.
	ACTION	Contact your HP support representative.
283	MESSAGE	**Dump failed. Bad reply (llio) status from DTCM. (TDSM 283)**
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

290	MESSAGE	**Sorry, TermDSM does not provide services for the console. (TDSM 290)**
	CAUSE	The user entered the ldev number of the physical console for a reset or dump. TermDSM cannot act upon the physical console port because it is not on the DTC. TermDSM can only operate on ldev numbers and ports that are on the DTC.
		Note: The discussion here is for the physical console, not a terminal which has taken control of the logical console via the CONSOLE command.
	ACTION	Contact your HP support representative.
303	MESSAGE	**Unknown download file requested in RMP packet. (TDSM 303)**
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.
307	MESSAGE	**Boot (download) complete message received before expected. (TDSM 307)**
	CAUSE	It has finished the download of its operating firmware before the DTCM expected it.
	ACTION	Look on the console for a "boot complete" message. Otherwise, enter the command again. If the problem persists, contact your HP support representative.
308	MESSAGE	**Unable to get an LLIO message frame. (TDSM 308)**
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.
309	MESSAGE	**DTCM produced an unknown action code. (TDSM 309)**
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

317	MESSAGE	Unable to get an outbound packet buffer. (TDSM 317)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

318	MESSAGE	Unable to write to an outbound packet buffer. (TDSM 318)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

319	MESSAGE	Unable to send an LLIO message. (TDSM 319)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

320	MESSAGE	DTCM encountered an unspecified error. (TDSM 320)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

321	MESSAGE	DTCM captured an unknown escapecode. (TDSM 321)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

322	MESSAGE	DTC configuration file too large for buffer. (TDSM 322)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

323	MESSAGE	Please reset or dump the specific PAD VC from ldev option. (TDSM 323)
	CAUSE	The user attempted to reset or dump a PAD VC using the Vc subcommand. PAD connections can only be dumped or reset from the Ldev subcommand.
	ACTION	Determine the ldev number that is associated with the PAD connection and retry the reset or dump operation using the Ldev subcommand.

324	MESSAGE	The system is a HOST BASED X25. However the specified DTC has no SNP card. (TDSM 324)
	CAUSE	There is no DTC/X.25 XL Network Access (SNP) card mounted in the DTC that you specified in the TermDSM command.
	ACTION	Verify the number that TermDSM associated with the DTC containing the DTC/X.25 XL Network Access card. Reenter the command with the correct DTC number specified.
325	MESSAGE	Some other DTC is already tracing. (TDSM 325)
	CAUSE	Only one DTC can be tracing at a time.
	ACTION	Turn off tracing on the other DTC and try again.
326	MESSAGE	This requested DTC is already tracing. (TDSM 326)
	CAUSE	Tracing has already been turned on for the specified DTC.
	ACTION	None required.
327	MESSAGE	This DTC is not tracing. (TDSM 327)
	CAUSE	Tracing is turned off on the specified DTC.
	ACTION	Turn on tracing for the specified DTC.
328	MESSAGE	Invalid board number - out of range. (TDSM 328)
	CAUSE	The specified board number does not exist.
	ACTION	Check the board installed in the DTC and re-specify the correct board number.
329	MESSAGE	Indicated board is absent or is not an SNP card. (TDSM 329)
	CAUSE	The board specified does not exist in the DTC or is not an SNP card.
	ACTION	Verify that the required board is in the DTC. If you are trying to configure an SNP board, verify that the board you specified is an SNP board.

330	MESSAGE	Trace file could not be opened. (TDSM 330)
	CAUSE	The file where tracing messages are logged could not be opened.
	ACTION	Contact your HP support representative.

331	MESSAGE	X.25 is not configured for indicated SNP card. (TDSM 331)
	CAUSE	The indicated SNP card does not have X.25 configured for it.
	ACTION	Configure X.25 for the specified board or specify a board that has been configured for X.25.

332	MESSAGE	X.25 has not been started on indicated SNP card. (TDSM 332)
	CAUSE	The specified SNP card has not had X.25 started up on it.
	ACTION	Start up X.25 on the specified card and try again or specify a card that has X.25 started.

333	MESSAGE	X.25 or X.25/PADSUP not stopped. (TDSM 333)
	CAUSE	The operation you attempted required that X.25 or X.25/PADSUP be stopped and it was still running.
	ACTION	Stop X.25 or X.25/PADSUP operation.

334	MESSAGE	DTCM reports unexpected SIC UPLOAD request. (TDSM 334)
	CAUSE	Internal error.
	ACTION	Contact your HP representative.

335	MESSAGE	This port is already under extended trace. (TDSM 335)
	CAUSE	Informational message.
	ACTION	Issue the TRACESHOW command to see which ports on the DTC are currently under extended trace.

336	MESSAGE	**Another port on this MUX is already under extended trace. (TDSM 336)**
	CAUSE	Only one port on an asynchronous processor board (mux card) can have extended trace at one time.
	ACTION	Turn off extended tracing on a traced port before activating extended tracing on another port on the same asynchronous processor board.

337	MESSAGE	**No port on this MUX is under extended trace. (TDSM 337)**
	CAUSE	Informational message.
	ACTION	You may issue the TRACEON command to activate extended tracing on any port on this asynchronous processor board (mux card).

338	MESSAGE	**DTCM reports that DTC reset is not complete yet. (TDSM 338)**
	CAUSE	A TermDSM command has been issued against a DTC that is currently undergoing selftest.
	ACTION	A DTC selftest may take up to seven minutes. Wait for this duration before issuing a TermDSM command against the DTC.

339	MESSAGE	**This is not a DTC 72MX, DTC 16iX, or DTC 16MX. (TDSM 339)**
	CAUSE	A TermDSM command that is only valid for DTC 72MX/16iX/16MX is issued against a DTC 16 or DTC 48.
	ACTION	Do not use this TermDSM command on a DTC 16 or DTC 48.

340	MESSAGE	**This is not a MUX board. (TDSM 340)**
	CAUSE	A TermDSM command that is only valid for asynchronous processor boards (MUX board) on DTC 72MX is issued against a wrong type of card.
	ACTION	Verify that you have specified the right DTC number and board number on the DTC. Only asynchronous processor boards on DTC 72MX can accept this TermDSM command.

341	MESSAGE	The DTC is not up during showtrace on a MUX board. (TDSM 341)
	CAUSE	A TRACESHOW command has been issued against a DTC that is not up.
	ACTION	Verify that you have specified that right DTC number. The DTC must be up in order for a TRACESHOW to list ports with extended tracing.
342	MESSAGE	You cannot reset a LAN board. (TDSM 342)
	CAUSE	A RESET MUX command was issued against a LAN board on a DTC 72MX.
	ACTION	Verify the board number in the RESET MUX command. You cannot reset a LAN board on a DTC 72MX. You can only reset asynchronous processor boards (mux cards on a DTC 72MX).
343	MESSAGE	Hardware loopback is not supported on a DTC 72MX, DTC 16iX, or DTC 16MX. (TDSM 343)
	CAUSE	A hardware loopback was issued against a DTC 72MX, DTC 16iX, or DTC 16MX. Hardware loopback is only supported on DTC 16 and DTC 48.
	ACTION	Verify the DTC number on the TermDSM command. Make sure the DTC is a not a DTC 72MX, DTC 16iX, or DTC 16MX.
400	MESSAGE	The DTC returned an NMP error code of !. (TDSM 400)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.
401	MESSAGE	The DTC reported an NMP version mismatch. (TDSM 401)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.
402	MESSAGE	The DTC reported an NMP token error or unknown VC number during DUMP. (TDSM 402)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

403	MESSAGE	The DTC reported an NMP bad port. (TDSM 403)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

404	MESSAGE	The DTC reported an NMP loopback aborted. (TDSM 404)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

405	MESSAGE	The DTC reported an NMP loopback modem error. (TDSM 405)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

406	MESSAGE	The DTC reported an NMP loopback time out. (TDSM 406)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

407	MESSAGE	The DTC reported an UNKNOWN VC number. (TDSM 407)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

450	MESSAGE	The DTC returned an RMP error code of !. (TDSM 450)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

451	MESSAGE	The DTC reported an RMP version mismatch. (TDSM 451)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

452	MESSAGE	The DTC reported an RMP token error. (TDSM 452)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

500	MESSAGE	**The DTC reported a SIC board not up. (TDSM 500)**
	CAUSE	The serial interface card (SIC) in the DTC is not working.
	ACTION	Contact your HP support representative.

590	MESSAGE	**The 11io error occurred when TERMDSM tried to get SYSBASE. (TDSM 590)**
	CAUSE	Internal Error.
	ACTION	Contact your HP support representative.

591	MESSAGE	**The system is PC BASED. TERMDSM doesn't support PC BASED. (TDSM 591)**
	CAUSE	The user attempted to run TermDSM on a system managed by the OpenView DTC Manager. Such systems are said to be "PC-based," and TermDSM is not supported on PC-based systems.
	ACTION	See the manual titled *Using HP OpenView DTC Manager* for information on obtaining diagnostic information for terminal and printer connections on PC-based systems.

592	MESSAGE	**The system is HOST BASED TIO. TERMDSM only supports X25 functions on HOST BASED X25. (TDSM 592)**
	CAUSE	The user entered an X.25 diagnostic command while running TermDSM on a host-based system that is not configured to support X.25 connections. X.25 commands are not available on systems that support terminal (TIO) I/O only.
	ACTION	None. (Consult this manual to determine which TermDSM commands are supported on host-based systems configured for TIO only.)

604	MESSAGE	You have entered an invalid SNP card number. SNP card numbers range from 0 to 5. (TDSM 604)
	CAUSE	The user entered an invalid number when asked to specify the card number of the DTC/X.25 Network Access card (SNP card).
	ACTION	Enter the number of the DTC slot that contains the SNP card on which you want the TermDSM command to operate. SNP cards are allowed in slots 0 through 3 for DTC 72MX, slots 1 through 5 for DTC 48, and 2 for DTC 16; therefore, the valid range for the SNP card number is 0 through 5. For example, to execute a DUmp command for an SNP card contained in slot 3 of the DTC designated as DTC #1, you would enter the following subcommand at the DUmp subcommand prompt: SN 1,3
605	MESSAGE	The SNP card number is missing or invalid. SNP card numbers range from 0 to 5. (TDSM 605)
	CAUSE	The user entered a TermDSM subcommand specifying the SNp option but did not specify a valid DTC/X.25 Network Access card (SNP) number.
	ACTION	Reenter the subcommand specifying a valid card number for the SNP card. The SNP card number corresponds to the slot number in the DTC where the card is contained. The valid range of SNP card numbers is 0 to 3 for DTC 72MX, 1 through 5 for DTC 48, and 2 for DTC 16. For example, to execute a DUmp command for an SNP card contained in slot 3 of the DTC designated as DTC #1, you would enter the following subcommand at the DUmp subcommand prompt: SN 1,3
606	MESSAGE	You have entered a bad VC number. VC numbers range from 0 to 4095. (TDSM 606)
	CAUSE	The user entered an invalid number when asked to specify the VC number associated with the virtual circuit on which the TermDSM function is to be performed.
	ACTION	Enter the number that corresponds to the VC on which the TermDSM function is to be performed. Valid numbers range from 0 to 4095.

607	MESSAGE	**The VC number is missing or invalid. VC numbers range from 0 to 4095. (TDSM 607)**
	CAUSE	The user entered a TermDSM subcommand specifying the Vc option but did not specify a valid VC (virtual circuit) number.
	ACTION	Reenter the subcommand specifying a valid VC number. Virtual circuits may be numbered from 0 through 4095.

For example, to execute a DUmp command for VC #15 active on an SNP card in slot 3 of DTC #1, you would enter the following subcommand at the DUmp subcommand prompt:

V 1,3,15

608	MESSAGE	**You have entered an invalid X25 address. The X25 address may be up to 15 digits from 0 to 9. (TDSM 608)**
	CAUSE	The user entered an invalid X.25 address during execution of the XNetwork subcommand of the DIag function of TermDSM.
	ACTION	Determine the correct X.25 destination address as configured on the Level 3 Configuration screen in NMMGR. Reenter the XNetwork subcommand using the correct X.25 address.

For example, to perform a loopback for an SNP card contained in slot 3 of the DTC designated as DTC #1, with a destination address configured as 345678, you would enter the following subcommand at the DIag subcommand prompt:

XN 1,3,345678

609	MESSAGE	**The X25 address is missing or invalid. The X25 address may be up to 15 digits from 0 to 9. (TDSM 609)**
	CAUSE	The user failed to enter a valid X.25 address during execution of the XNetwork subcommand of the DIag function of TermDSM.
	ACTION	Determine the correct X.25 destination address as configured on the Level 3 Configuration screen in NMMGR. Reenter the XNetwork subcommand using the correct X.25 address.

For example, to perform a loopback for an SNP card contained in slot 3 of the DTC designated as DTC #1, with a destination address configured as 345678, you would enter the following subcommand at the DIag subcommand prompt:

XN 1,3,345678

610	MESSAGE	**You have entered a bad X25 status option. X25 status options range from 1 to 4. (TDSM 610)**
	CAUSE	The user entered an invalid status option for the SNp subcommand of the TermDSM STatus function.
	ACTION	Reenter the subcommand using one of the valid status options, as follows:

1 = Global
2 = Level 2
3 = Level 3
4 = PAD

For example, to obtain information about the status of PAD support on an SNP card contained in slot 3 of the DTC designated as DTC #1, you would enter the following subcommand at the status subcommand prompt:

SN 1,3,4

611	MESSAGE	The X25 status option is missing or invalid. X.25 status options range from 1 to 4. (TDSM 611)
	CAUSE	The user failed to enter a valid status option for the SNp subcommand of the TermDSM STatus function.
	ACTION	Reenter the subcommand using one of the valid status options, as follows:

1 = Global
2 = Level 2
3 = Level 3
4 = PAD

For example, to obtain information about the status of PAD support on an SNP card contained in slot 3 of the DTC designated as DTC #1, you would enter the following subcommand at the status subcommand prompt:

SN 1,3,4

612	MESSAGE	You have entered a bad X25 trace option. X25 trace options range from 1 to 3. (TDSM 612)
	CAUSE	The user entered an invalid trace option for the TermDSM TRACEON function.
	ACTION	Reenter the command using one of the valid trace options, as follows:

1 = VC
2 = Level 2
3 = Level 3

For example, to turn on a level 2 trace for an SNP card contained in slot 3 of the DTC designated as DTC #1, you would enter the following:

TRACEON 1,3,2

613	MESSAGE	**The X25 trace option is missing or invalid. X25 trace options range from 1 to 3. (TDSM 613)**
	CAUSE	The user failed to enter a valid trace option for the TermDSM TRACEON function.
	ACTION	Reenter the command using one of the valid trace options, as follows:

1 = VC
2 = Level 2
3 = Level 3

For example, to turn on a level 2 trace for an SNP card contained in slot 3 of the DTC designated as DTC #1, you would enter the following:

TRACEON 1,3,2

614	MESSAGE	**You have entered a bad linkname. X25 linkname may be up to 8 ASCII characters. (TDSM 614)**
	CAUSE	During execution of the TRACEON function, the user entered an invalid linkname.
	ACTION	Enter a valid linkname for the trace file. This is the linkname as configured in NMMGR and can be up to 8 ASCII characters.

615	MESSAGE	**The X25 linkname is missing or invalid. X25 linkname may be up to 8 ASCII characters. (TDSM 615)**
	CAUSE	During execution of the TRACEON function, the user failed to enter a valid X.25 linkname.
	ACTION	Enter a valid linkname for the trace file. This is the linkname as configured in NMMGR and can be up to 8 ASCII characters.

616	MESSAGE	**You have entered a bad X25 trace filename. An X25 trace filename may be up to 8 alphanumeric characters starting with an alphabetic character. (TDSM 616)**
	CAUSE	During execution of the TRACEON function, the user entered an invalid file name when prompted for a trace file name.
	ACTION	Enter a valid file name for the trace file. The file name can be up to 8 alphanumeric characters and must start with a letter.

617	MESSAGE	**TRACE will be used as X25 trace filename by default. (TDSM 617)**
	CAUSE	During execution of the TRACEON function, the user pressed the carriage return when prompted for a trace file name.
	ACTION	None. This message is for information only.

618	MESSAGE	**There is no TRACE in progress. (TDSM 618)**
	CAUSE	The user entered a TRACEOFF command to stop a trace but there was no trace active.
	ACTION	None. This message is for information only.

630	MESSAGE	**You have entered an invalid ROM version. The ROM version is made up of 8 ASCII characters. (TDSM 630)**
	CAUSE	During execution of the reprogramming EEPROM process, the user entered an invalid ROM version.
	ACTION	Enter a valid ROM version for the reprogramming EEPROM process.

631	MESSAGE	**The ROM version is missing or invalid. The ROM version is made up of 8 ASCII characters. (TDSM 631)**
	CAUSE	During execution of the reprogramming EEPROM process, the user failed to enter a ROM version or entered an invalid ROM version.
	ACTION	Enter a valid ROM version for the reprogramming EEPROM process.

634	MESSAGE	**TermDSM did not set the DTC to IDLE during EEPROM reprogramming. (TDSM 634)**
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.

635	MESSAGE	**The EEPROM reprogramming was successfully completed. (TDSM 635)**
	CAUSE	This message is for information only.
	ACTION	None. This message is for information only.

636	MESSAGE	The EEPROM reprogramming process is executing. The process takes about 7-10 minutes. Warning: Interrupting the process can be fatal to the DTC. (TDSM 636)
	CAUSE	Warning message.
	ACTION	None. This message is for information only.
637	MESSAGE	TermDSM will now reprogram EEPROM with version XXX. (TDSM 637)
	CAUSE	If you continue, all user sessions on this DTC will be aborted.
	ACTION	If you want to continue, you should alert all the users that their sessions will be aborted.
638	MESSAGE	Fatal error occurred during EEPROM reprogramming process. Please contact HP representative to recover the DTC. (TDSM 638)
	CAUSE	Internal error.
	ACTION	Contact your HP support representative.
680	MESSAGE	You have entered an invalid MUX board number. MUX board numbers range from 0 to 3. (TDSM680)
	CAUSE	The MUX board number you have entered is not in the range from 0 to 3.
	ACTION	Double check the MUX board number by looking at the back of the DTC 72MX. Enter the board number again. This TermDSM command is only supported for asynchronous processor boards on DTC 72MX.
681	MESSAGE	The MUX board is missing or invalid. MUX board numbers range from 0 to 3. (TDSM 681)
	CAUSE	The MUX board number was not entered or is unrecognizable.
	ACTION	Enter the MUX board number again. Refer to the prompt or Chapter 4 for syntax. This command is only supported for asynchronous processor boards on DTC 72MX.

682	MESSAGE	You have entered a bad port number. Port numbers range from 0 to 23. (TDSM 682)
	CAUSE	The port number that you entered is not in the range from zero to 23.
	ACTION	Double check the port number by looking at the device connection on the DTC. Enter the port number again. This command is only supported for ports on DTC 72MX.
683	MESSAGE	The port number is missing or invalid. Port numbers range from 0 to 23. (TDSM 683)
	CAUSE	The port number was not entered or is unrecognizable.
	ACTION	Enter the port number again. Refer to the prompt or chapter 4 for syntax. This command is only supported for ports on DTC 72MX.
700	MESSAGE	Please put a loopback hood on the SNP card before answering the 'How many times?' question. (TDSM 700)
	CAUSE	A loopback hood must be in place before the diagnostic is run.
	ACTION	Place loopback hood on the SNP card and continue.
701	MESSAGE	Please set up the environment for the network loopback test on the SNP card before answering the 'How may times?' question. (TDSM 701)
	CAUSE	Supported hardware must be present and ready before the diagnostic is run.
	ACTION	Make the appropriate hardware ready and continue.
720	MESSAGE	Termdsm could not open the DTC manager, so the SNP dump could not be obtained. (TDSM 720)
	CAUSE	Internal error, unless another TermDSM was being run against that same DTC and you chose not to override the other user. There is no error in this case.
	ACTION	Contact you HP support representative (if it is an internal error).
721	MESSAGE	Dump fail: Send or Receive of dump request failed. (TDSM 721)
	CAUSE	Internal error.
	ACTION	Contact you HP support representative.

722	MESSAGE	Dump failed: Bad function in reply to dump request. (TDSM 722)
	CAUSE	Internal error.
	ACTION	Contact you HP support representative.

723	MESSAGE	Dump failed: Bad reply (11io) status from DTCM. (TDSM 723)
	CAUSE	Internal error.
	ACTION	Contact you HP support representative.

800	MESSAGE	Timeout (no response from the network). Verify the physical connection to the network, and ensure that the X25 address is correctly configured. (TDSM 800)
	CAUSE	A timeout occurred before TermDSM received a response from the network.
	ACTION	Make sure all physical network connections are in place. If physical connections are OK, run NMMGR to verify that the X.25 address is correctly configured. If the problem persists, contact you HP support representative.

801	MESSAGE	The call has been accepted by another node on the network. Verify the correct configuration of the X25 address. (TDSM 801)
	CAUSE	The user was attempting to perform a loopback test, but the connection was accepted by a different node on the network. This could happen if the X.25 address configured for loopback belongs to a different system instead of the local system.
	ACTION	Run NMMGR and correct the X.25 address configured for loopback on the level 3 configuration screen.

802	MESSAGE	The call has been refused by the network. Verify the address configuration and the number of VCs configured. (TDSM 802)
	CAUSE	The user was attempting to perform a loopback test on an SNP card but the network would not accept the call.
	ACTION	Run NMMGR to correct any problems with the DTC/X.25 Network Access card (SNP card) configuration.

803	MESSAGE	**Bad card. (TDSM 803)**
	CAUSE	The DTC/X.25 Network Access card (SNP) being tested is bad.
	ACTION	Contact your HP support representative.

804	MESSAGE	**All ports are bad. (TDSM 804)**
	CAUSE	All ports on the DTC/X.25 Network Access card (SNP) being tested are bad.
	ACTION	Contact your HP support representative.

805	MESSAGE	**Some ports are bad. (TDSM 805)**
	CAUSE	Some ports on the DTC/X.25 Network Access card (SNP) being tested are bad.
	ACTION	Contact your HP support representative.

806	MESSAGE	**Unknown Cable. (TDSM 806)**
	CAUSE	TermDSM does not recognize the cable interfacing the DTC/X.25 Network Access card (SNP card) to the network.
	ACTION	Replace cable with a supported network interface cable.

Glossary

access port   A special interface card in the system cabinet through which the MPE/iX system console is connected.

ADCP   Avesta Device Control Protocol. An HP proprietary protocol which provides device control features. ADCP is optimized for communications between a DTC and MPE/iX systems.

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 to convert an IP address to a low level hardware address. ARP can be used only over a single physical network and is limited to networks that support hardware broadcast.

adjacent   A node on a point-to-point network that is connected to another node by a single link with no intervening nodes.

ADP   Active Distribution Panel. *See* **MDP**.

AFCP   Avesta Flow Control Protocol. An HP proprietary protocol which provides data flow control features. AFCP is optimized for communications between nodes, including DTCs, in an MPE/iX environment.

ARP   *See* **address resolution protocol**.

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.

ARPA 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.

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   A device's mode of operation in which 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   AUI. 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.

autodial   A dial link in which the remote node's telephone number is automatically dialed by a modem or other device with this capability.

B

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**.

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 The 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 A 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 A terminal processing mode in which groups, or "blocks," of data are transmitted all at once.

BNC T-Connector A 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.

bridge A device that is used to connect LAN segments.

broadcast Communication method of sending a message to all devices on a link simultaneously.

buffer A logical grouping of a system's memory resources used by NS3000/iX.

byte A sequence of eight consecutive bits operated on as a unit.

C

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. The emphasis is on "recommendations"; no carrier is required to adhere to a CCITT recommendation, although most do so in their own interests.

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   A 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 Distributed Terminal Subsystem (DTS) link is configured by using NMMGR (running on the host) and can, 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.

A system that is to run network services (NS3000/iX) is configured through use of NMMGR.

Access to X.25 is configured in two parts. The X.25 MPE/iX System Access software is configured on the host through use of NMMGR. The DTC/X.25 Network Access software residing on the DTC is configured at the OpenView Windows Workstation through use of the OpenView DTC Manager.

configuration file   The configuration file contains the information that the network needs in order to operate. This file also contains information necessary for link-level and NetIPC logging. The only file name that the system recognizes 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   A 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.**

D

data   Basic elements of information that can be processed or produced by a computer.

Datacommunications and Terminal Controller   *See* DTC.

datagram   A self-contained packet that is independent of other packets. It does not require an acknowledgement and it carries information which is sufficient to route it from one DTE to another DTE without relying on earlier exchange between the DTEs.

data overrun   Transmitted data that is sent faster than the receiving equipment can receive it. The resultant 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 acknowledgement 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 acknowledgement.

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. A modem is an example of a DCE.

DDX   The national public PSN of Japan.

DDFA   DTC Device File Access Utilities. A set of HP-UX utilities which is used by systems and user written applications to programmatically access devices attached to DTC ports.

DDP   Direct Distribution Panel; a distribution panel that serves as the electrical and physical interface between a DTC 72MX mux board (asynchronous processor board) and up to eight asynchronous devices for direct connections. See **MDP** for modem connections.

dedicated printer   A printer that can be used only by one host on the LAN—the one specified in the Destination Node Name in that printer's configuration screen.

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 program.

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   A software module that controls a specific type of input/output device.

devicefile   A file being input to or output from any peripheral device except a disc. MPE/iX 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   An 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 a path name in the Command: field. The path name must be preceded by an at sign (@).

download   The process of loading operating code and configuration files into the DTC's memory. The DTC is downloaded by the MPE/iX host for LANs using host-based network management, and by the PC for DTCs managed by the OpenView DTC Manager.

driver   Software that controls input/output devices including NS3000/iX links.

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).

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 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 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 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 Kpbs 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 Kpbs. 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   A unique name used to identify a DTC on a LAN. The node name format is *nodename.domain.organization*, with each of the three parts having up to 16 characters. The name begins with either a letter or a digit.

DTC station address (802.3 address)   A 12-digit hexadecimal number used to identify the DTC as a node belonging to the network configuration. Also called the LAN address or node 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 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 configured through use of NMMGR software), and DTC/X.25 Network Access (configured on the OpenView Windows Workstation through use of the OpenView DTC Manager software for PC-based management, and through NMMGR for host-based management).

DTC/X25 Network Access card   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 MPE/iX 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. The DTC/X.25 Network Access software resides on the Datacommunications and Terminal Controller and is configured at the OpenView Windows Workstation for PC-based management and through NMMGR for host-based management.

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   Distributed Terminal Subsystem. This consists of all of 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.

duplex   A 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.

E

EEPROM   Electrically Erasable Programmable Read-Only Memory. EEPROM reprogramming is used to replace a current DTC's ROM code that resides on the LAN board. The process is also referred to as Flash EEPROM reprogramming.

entry priority   In a point-to-point network, it is a ranking that identifies the most desirable route for data to travel from a given local node to a remote node.

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 and unshielded twisted pair. Ethernet is a trademark of Xerox Corporation.

event log   One of three circular files stored on the OpenView windows workstation. It contains lists of events that are reported by the DTCs for which it is responsible.

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.

F

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 can 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 contents. The FCS is also used by the IEEE802.3 protocol to check the validity of frames.

file equation   An assignment statement used to associate a file with a specific device or type of device during execution of a program.

file number   A 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.

Flash EEPROM   *See* **EEPROM**

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   A 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 MPE/iX 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.

G

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.

H

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 72MX only.)

hop count   *See* **internet hop count and intranet hop count**

host-based network management A method of managing asynchronous communications for HP 3000 Series 900 computers. All of the control software is configured on a single MPE/iX host and is downloaded to the DTCs that are managed by that host. With host-based management, a permanent relationship exists between each DTC and the host. Terminal users can access only the single MPE/iX system that owns the DTC their terminal is connected to.

host computer The primary or controlling computer on a network. The computer on which the network control software resides. For HP purposes, it can also be used to distinguish the MPE/iX system (host) from the DTC.

HP block mode A 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 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 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 communication.

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 through a DTC.

I

idle device timeout A 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.

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.

INP Intelligent Network Processor. The card residing in the back of an MPE V-based node that provides a point-to-point or X.25 interface.

interactive communications Processing that allows users to enter commands and data at the terminal and receive an immediate response. Interactive processing occurs in session mode on MPE/iX systems.

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.

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   A system routine accessible by user programs. It provides an interface to operating system resources and functions. Intrinsics 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 consists of 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 router   A node in an IP network that connects two or more networks and provides address mapping between them. The router selects messages from incoming buffers and places them into the appropriate outgoing message queues.

ISO   International Organization of Standards. An international federation of national standards organizations involved in developing international standards, including communication standards.

L

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* **DTC 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 A data-grade telephone line leased directly to a subscriber and allocated specifically for the subscriber's needs.

line speed The speed at which data is transferred over a specific physical link (usually measured in bits or kilobits per second).

link name A 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 IEEE 802.3 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 A 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.

logging The process of recording the usage of network resources. Events can be logged to both the OpenView workstation and to the MPE/iX 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 MPE/iX 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. Each nailed port configured in NMMGR must have a unique ldev number.

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   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**.

M

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   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.

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.

MDP   Modem Distribution Panel; a distribution panel that serves as the electrical and physical interface between a DTC 72MX mux board (asynchronous processor board) and up to eight asynchronous devices for direct or modem connections. Also called **ADP**.

MIT   Master Installation Tape. A magnetic tape containing the Fundamental Operating System for an 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   The 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 iX   The operating system of the HP 3000 Series 900 computers. The NS3000/iX network services operate in conjunction with the MPE/iX operating system.

multiplexer   MUX. A device that allows multiple communication links to use a single channel.

N

nailed device   A device with a permanently assigned ldev. The assignment is established through the system configuration of the MPE/iX host system. Nailed devices can be accessed programmatically through their ldev number. Nailed devices can also be assigned to more than one host.

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 LAN802.3, router (point-to-point), X.25, 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.

Network Services NS. Software application products that can be used to access data, initiate processes, and exchange information among nodes in the network. The HP 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.

NFT Network File Transfer. The network service that transfers disc files between nodes on a network.

NI *See* **network interface.**

NLP Name Lookup Protocol. A protocol used when setting up links between DTCs, as happens when DTCs are used in a back-to-back configuration.

NMCONFIG.PUB.SYS The file that contains all of 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 Service (NS) products running on the system. This is the only file name allowed at run-time.

NMDUMP A utility used to format log and trace files.

NMMAINT A utility that lists the software module version numbers for all HP AdvanceNet products, including NS3000/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 an HP 3000 Series 900 computer.

NMMGRVER A conversion program called NMMGRVER.PUB.SYS. It converts configuration files created with NMMGR from an earlier version to the latest format.

NMSAMP1.PUB.SYS A 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. The IP address 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 A list defined on the OpenView windows workstation and subsequently downloaded to all DTCs for which it is the "owner." The list specifies all of 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 an MPE/iX system, 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 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.

NS3000/iX A Hewlett-Packard data communication product that provides networking capabilities for MPE/iX based HP 3000 minicomputers. NS3000/iX consists of a link and network services.

NS3000/iX Link Software and hardware that provides the connection between nodes on a network. Some of the NS3000/iX links available are the ThinLAN 3000/iX Link and its ThickLAN option, the DTC/X.25 iX Network Link, the NS Point-to-Point 3000/iX Link, and the StarLAN 10 3000/iX link.

NS3000/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.

NSDIR.NET.SYS Name of the active network directory file. *See also* **network directory**.

O

octet An eight-bit byte operated upon as an entity.

OpenView HP OpenView Windows is HP's network management environment. It provides the basic services for accessing and managing networks used by the DTC Manager, and

other applications, such as Switch/PAD Manager, Hub Manager, etc.

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 is used to draw the network map and to label the components on it.

OpenView DTC Manager   An OpenView Windows application that enables you to configure, control, monitor, and troubleshoot the operation of the Distributed 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.

P

packet   A block of data whose maximum length is fixed. The unit of information exchanged by X.25 at Level 3. The types of packets 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 NS3000/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 (defined by the DTC Manager) and the MPE/iX systems (defined by NMMGR) that the device can access.

PAD profile A 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 a screen 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 a 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   A 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 an MPE/iX 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 NS3000/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 that govern each layer of network architecture. They define which functions are to be performed and how messages are to be exchanged.

PSN Packet-Switching Network. Any data communication network in which 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

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.

R

RDBA 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 An asynchronous device that is indirectly connected to a DTC through a modem and telephone hook-up or through a PAD.

remote node Any network node that is physically separate from 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)   The length of time that a transmitter will wait for an acknowledgment from a destination address before attempting to retransmit a 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 file and devices on remote nodes.

routing   The path that packets or fragments of a message take through a network to reach a destination node.

RMP   Remote Maintenance Protocol. HP proprietary protocol used in DTC management.

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   The 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   The 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).

S

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 MPE/iX computers.

serial transmission   A 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 MPE/iX systems 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   The 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. A 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.

SNP   Synchronous Network Processor card; an alternative name for an X.25 board.

spooled device   A printer that is accessed through the MPE/iX spooling facility. The spooling facility allows a nonsharable device to be shared among several users by temporarily storing output data on disc and managing the selection of output spool files destined for the spooled device.

start bit   A data bit used to signal the start of a character being transmitted in an asynchronous communication mode.

station address   A link-level address used by the IEEE 802.3 protocol that is assigned to every node on an IEEE 802.3 network.

stop bit   A 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.

SVC   Switched Virtual Circuit. The path through an X.25 network that is established at call set-up time.

switching   *See* **DTC switching**.

Switching User Interface   The user interface available when DTC switching is enabled that allows terminal users to choose the MPE/iX computer with which they want to establish a communication link.

synchronous   A mode of operation or transmission in which 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 method for telling MPE/iX which peripheral I/O devices are attached to the DTC and which parameters are required for system operation.

T

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 AFCP.

Telnet Express   *See* **HP ARPA Telnet Express**.

TermDSM   Terminal Online Diagnostic System 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 an MPE/iX host system.

terminal name   A 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. It can 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/iX system to act and react in a specified manner. You can configure a terminal to use one of the system-supplied terminal types, or you can create custom terminal types using the Workstation Configurator.

ThinLAN 3000/iX   A LAN that conforms to the IEEE 802.3 Type 10 BASE 2 standard LAN.

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)   The 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.

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 A 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. It sends data out over the communications link, receives incoming data, and routes incoming or outgoing data to the appropriate destination node.

TS8 *See* **HP TS8.**

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.

U

unacknowledged frame number (K) The number of frames that can be transmitted without receiving an acknowledgement from the destination address. When this number (K) frame is reached, the same K frames are retransmitted.

unedited mode *See* **transparent mode.**

V

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. This is accomplished by using the NMMGR Validate Configuration File screen.

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.**

W

WAN   Wide Area Network. A data communications network of unlimited size, used for connecting localities, cities, and countries.

Workstation Configurator   A utility available on MPE/iX systems, TTUTIL.PUB.SYS, that allows users to create customized terminal and printer types by entering data through a series of VPLUS screens.

X

X.3   The protocol that defines which user facilities should be internationally available from a packet assembler/disassembler (PAD) when this is offered by a public data network.

X.21   The protocol that 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   The protocol that 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 LUG.

X.25 iX System Access   The software that works in conjunction with the DTC/X.25 Network Access software to provide MPE/iX 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 and the DTC/X.25 Network Access (residing on the Datacommunications and Terminal Controller and configured at the OpenView Windows Workstation). Together, these two components provide a network connection on HP 3000 systems to private and public X.25 packet-switched networks (PSNs).

X.29   The protocol that 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   The 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 terminal equipment operation and interfaces.

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**Customer Order No.
32022-61002**

32022-90030