HP D2355A OpenView DTC Manager

Using HP OpenView DTC Manager

HEWLETT PACKARD

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History

The list which follows shows the dates of each edition of the manual, with the corresponding OpenView DTC Manager software release. Note that new software updates may occur between manual releases, so the software you receive with this manual may have a later version number. The version number given below corresponds to the earliest software release for which this manual is valid.

Edition Number	Date	Software version number
Edition 1	October 1989	*from* A.01.05
Edition 2	February 1990	*from* A.03.05
Edition 3	May 1990	*from* A.04.10
Edition 4	October 1990	*from* A.06.06
Controlled release	January 1991	*from* A.10.00
Edition 5	June 1991	*from* A.10.50

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Conventions

Bold text	Bold text is used for all on-screen text seen by the user in the OpenView Windows environment: menu items, dialog boxes, etc.
`type text`	Type text is used to represent user input to screen in the OpenView Windows environment, and all text appearing on terminals operating in text mode.
Italic text	Italic text is used for emphasis and for the titles of documents.

Caution

The caution sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.

Note

A note indicates an important point.

Contents

1

Introduction

Before you Start ...

This manual describes how to use the HP OpenView DTC Manager to manage Datacommunications and Terminal Controllers (DTCs).

You need to be familiar with the HP OpenView Windows environment to use the DTC Manager effectively: if you are not, it is recommended that you complete the tutorial included with the OpenView Windows software package before using the DTC Manager. Full details of the tutorial are in the *OpenView Windows User's Guide* (32048-90001).

You may also find it useful to read the *DTC Network Planning and Configuration Guide* (D2355-90012) for information on potential network topologies, and for an overview of the functions of the DTC.

Naming Conventions

The term "OpenView workstation" is used to refer to the DTC Manager software, its stack of supporting software, and the PC on which it is running.

The HP OpenView DTC Manager is referred to as the "DTC Manager" in this manual.

The types of DTC hardware are referred to by the following names:

HP 2340A	DTC 16
HP 2344A	HP ARPA Telnet Express
HP 2345A	DTC 48 or DTC 48/3000

The names of HP computer systems have been abbreviated as follows:

900 Series HP 3000 Systems	HP 3000/900
HP 9000 Series 300/400/800 Systems	HP 9000

The DTC Manager and DTCs

The DTC is a terminal server which allows consistent, transparent access to HP and non-HP systems from remote or local terminals, using a variety of network configurations, including X.25 PAD, modem and extended LAN. Two LAN protocols are used: the industry standard TCP/IP/Telnet, and the HP optimised protocol AFCP. X.25 is used for WAN communication.

The DTC Manager is an application that integrates into Hewlett-Packard's OpenView Windows network management environment on the HP OpenView Windows workstation. It provides functionality for the monitoring, diagnosis and control of the DTC 16, DTC 48, DTC 48/3000 and HP ARPA Telnet Express. The DTC Manager is one of several network management applications which can run on the OpenView workstation: others include the HP OpenView Switch/PAD Manager and the HP OpenView Bridge Manager.

DTCs are configured on the OpenView workstation through a network map on which each DTC is represented by a labeled symbol consisting of a symbol which represents the type of DTC, and a label which uniquely identifies the DTC. The label is used by the DTC Manager to manage configuration files for the DTC. When a DTC is powered-on or reset, it runs a series of self tests, then multicasts a message on the LAN requesting a code and configuration download. The DTC Manager which has the files for the DTC responds by downloading the files, and the DTC is then under the management of the DTC Manager from which it has received its download. A DTC Manager can manage a maximum of fifty DTCs.

DTCs can also be managed from HP 3000 systems using the NMMGR utility or from HP-UX systems using the HP OpenView Entry-Level Manager/UX, but the functionality is not the same in all cases.

The DTCs

The DTC 16 and DTC 48 are hardware platforms whose functionality is defined by the code configured for them on the OpenView workstation, and downloaded to them via the LAN when they are switched on or reset.

The DTC 48/3000 is a version of the DTC 48 with functionality specific to the MPE XL environment and extended switching connections.

The HP ARPA Telnet Express is a DTC dedicated to providing high performance virtual terminal access to HP MPE XL systems from HP-UX and non-HP systems.

The following manuals contain information on the DTCs:

HP2340A *HP2340A DTC16 Installation and Service Manual* (02340-90001).

HP2345A *HP2345A DTC48 Installation and Service Manual* (02340-90001).

HP2344A *HP2344A ARPA Telnet Express Installation Guide* (02344-90001).

DTC Device Management Features

Using the DTC Manager you can perform the following management functions on DTCs which have received their download from the OpenView workstation you are using:

- Create and modify configuration files offline, and modify configuration parameters online.
- Monitor the status of the DTC's CPU, asynchronous ports, or X.25 boards and connections.
- Monitor connections on asynchronous ports and PAD support LCIs, and on X.25 system-to-system connections.
- Run self-tests on asynchronous ports, X.25 boards, and DTCs.
- Upload data from, and reset, ports, boards, and DTCs.
- Start and stop X.25 boards and Telnet Access cards.
- Run traces on X.25 connections.

All these functions are oriented towards managing individual DTCs, and to use them you first select the DTC on the map, then select the management function from the appropriate menu.

DTC Network Management Features

The DTC Manager also incorporates management functions intended to help you manage a network of DTCs. The DTC Manager includes the following DTC network management features:

- Management of security lists and passwords, restricting access to local systems for remote terminals using DTC PAD support.
- Logging of events signalled by managed DTCs.
- Continuous monitoring of events.
- Management of upload and download requests initiated by managed DTCs.
- Remote connection, allowing you to run the DTC Manager at a distance to manage a remote site.

The DTC 16 (HP 2340A)

The DTC 16 can be configured for the following connections:

- Up to sixteen direct-connect ports.
- Up to twelve modem ports.
- Eight direct-connect and six modem ports.

An X.25 option is available with any of these configurations, and Thick, Thin LAN or EtherTwist connections are available.

Asynchronous Connectivity

The DTC 16 can be configured to provide:

- LAN-based, asynchronous terminal connectivity for HP 3000/900 systems, HP 9000 systems, and other systems with ARPA services.

  Printers and plotters connected to the asynchronous ports can be accessed by any HP 9000 system on the LAN which has the HP DTC Device Access/ARPA software installed.

- Asynchronous (back-to-back) access to MPE V and other systems via extended switching configurations.

X.25 Connectivity

The X.25 connections can provide:

- PAD access to LAN-based HP 3000/900 or telnet compatible systems for remote PAD-connected terminals.
- System-to-system communications across an X.25 network for LAN-based HP 3000/900 systems.

The DTC 48 (HP 2345A)

The DTC 48 can have up to six boards, in any combination of:

- Eight-port asynchronous direct-connect boards.
- Six-port asynchronous modem boards.
- Either of the following:
  - One Telnet Access card
  - Up to three X.25 synchronous network boards.

Thick, Thin LAN and EtherTwist connections are available.

Note DTC 48s with a serial number less than 3110xxxxxx which have not had a memory upgrade will have restricted functionality. See the *DTC Manager Installation and Upgrade Guide* (D2355-90013) for information.

See also page 8 of this manual.

Asynchronous Connectivity

- Terminals connected to the asynchronous ports can communicate with any HP 3000/900 system on the LAN, and any system with ARPA compatible services.
- Printers and plotters connected to the asynchronous ports can be accessed by any HP 3000/900 system on the LAN.
- Printers connected to the asynchronous ports can be accessed by any HP 9000 system on the LAN which has the HP Device Access/ARPA software installed.

X.25 Connectivity

The X.25 connections can provide:

- PAD access to LAN-based HP 3000/900 or telnet compatible systems for remote PAD-connected terminals.
- System-to-system communications across an X.25 network for LAN-based HP 3000/900 systems.

Telnet Access

The Telnet Access card provides telnet virtual terminal access to an HP 3000/900 for LAN-based systems which use the Ethernet and 802.3 protocol. Access is provided by performing protocol conversion from Telnet to the AFCP protocol used by the MPE XL operating system.

DTC 48/3000 and DTC 48/9000

The full functionality of the DTC 48 requires extra memory. DTC 48s with a serial number less than 3110xxxxxx do not have this memory unless they have been upgraded.

All DTC 48/9000s MUST be upgraded to DTC 48s.

DTC 48/3000s may be left without the extra memory, in which case they will be restricted to the HP 3000/900 environment or back-to-back connections (extended switching). If they are upgraded, all the DTC 48 functionality is available.

See the *DTC Manager Installation and Upgrade Guide* (D2355-90013) for more information.

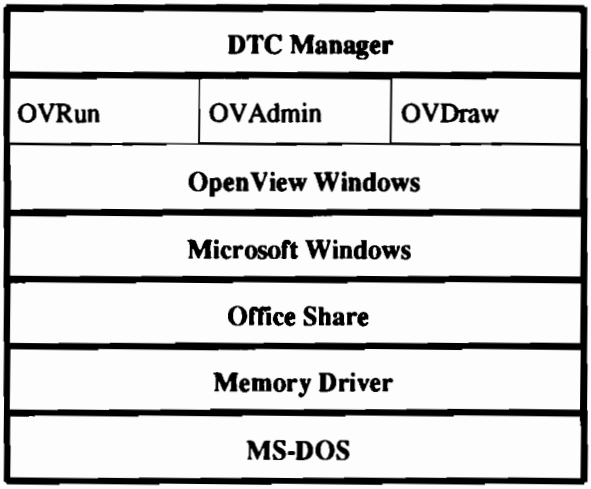
The HP ARPA Telnet Express (HP 2344A)

The HP Telnet Express provides telnet virtual terminal access to an HP 3000/900 for LAN-based systems which use the Ethernet protocol. Access is provided by performing protocol conversion from Telnet to the AFCP protocol used by the MPE XL operating system.

The HP ARPA Telnet Express has better performance than a DTC 48 with an ARPA Telnet Access board and can have more telnet connections, but must be dedicated solely to this function.

Microsoft Windows, OpenView and the DTC Manager

The DTC Manager relies on other software for its operation. It is important to distinguish between HP OpenView Windows, the underlying network management environment, and the HP OpenView DTC Manager, which integrates into the OpenView Windows environment. The following figure shows the full software stack (only some of the items are described in this section):



It is essential that the correct versions of the different software elements are used: see the *DTC Manager Installation and Upgrade Guide* (D2355-90013) for more details.

MS-DOS is the PC's operating system.

Microsoft Windows provides the underlying windowing functionality, and some file and data management functions used by OpenView Windows. Note that other software running under Microsoft Windows at the same time as OpenView Windows may slow the performance of OpenView Windows. So, for example, it is recommended that the File Manager is closed, not just minimised, when you run the DTC Manager.

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

HP OpenView DTC Manager is an application which integrates into the OpenView Windows environment, and provides functionality for configuring, monitoring and diagnosing DTCs. The DTC Manager is selected from the OpenView Windows environment.

OpenView Windows functions are grouped into three executable files which are selected from the Microsoft Windows environment. Only one can be run at a time:

OVRun is the main OpenView Windows program which provides basic network management functionality: applications for specific network management tasks are called by OpenView Windows. The DTC Manager is one of the applications that can be run from OVRun: others include the OpenView Switch/PAD Manager, the OpenView Windows Bridge Manager and the OpenView Windows Data Line Monitor.

OVDraw is used to draw and modify network maps, for example, to add DTCs and modify labels. The map is loaded by OVRun to form the dynamic, graphical shell at the heart of the system. The network map is the starting point for all network operations, and all OpenView Windows applications use it. There may be more than one map, and each map may be sub-divided into pictures. OVDraw is also to used to update maps when the DTC Manager software is updated.

OVAdmin provides administrative functions. For example, changing the DTC Manager password, setting certain defaults associated with remote control of DTC Manager, setting the default map which is automatically loaded each time you start OVRun, and backing up and restoring DTC configuration, upload, trace, and event log files.

The Network Map

Before you can use most of the DTC Manager's functions, you need a network map which incorporates at least one DTC of the type you want to configure. You will find full instructions on using OVDraw to create a network map in the *OpenView Windows User's Guide* (32048-90001).

There are a number of important points to note when you draw a network map for DTC management:

- Every DTC must have a unique label — the eight-character name that you give to the DTC using the OVDraw **Describe** function (this name is not easily changed).

  The symbols which you need to use with DTC Manager are shown on page 12.

- Use the symbols "DTC 16" and "DTC 48" (in the **Components** template) to represent DTCs which will be configured for connections to HP-UX systems, MPE XL systems, and other systems.

- Use the symbol "Telnet Express" to represent a HP ARPA Telnet Express.

- Use the symbol "DTC 48/3000" (in the **Components** template) to represent DTCs which will be configured for connections to HP 3000 (MPE XL and MPE V, extended switching configuration) systems only.

  The DTC 48 and DTC 48/3000 have different hardware: if you use the symbol for DTC 48 but the DTC is actually a DTC 48/3000, you will get an error message at download saying that you need a memory extension board in slot 0.

- Only use the DTC symbols shown below: do not use any other symbols available in OVDraw.

DTC 16

DTC 48

DTC 48/3000

HP ARPA Telnet Express

DTC Label

It is important that every DTC on the network map has a unique label. The label is used by the DTC Manager as the basis for the directory name under which that DTC's configuration files are stored on disk (see the *DTC Network Planning and Configuration Guide* (D2355-90012) for more information about the database structures of the DTC Manager). It is good practice to label a DTC with the `nodename` part of the fully-qualified DTC nodename, entered in the DTC's CPU configuration, or an abbreviation of this node name (see the *DTC Network Planning and Configuration Guide* (D2355-90012) for more information about node names and their significance in the network).

The label can be up to eight characters long, and it may include letters (A to Z), numbers (0 to 9), and underlines and hyphens ("_" , "-").

Note If you change the label on a configured DTC, the DTC Manager will no longer be able to find the corresponding configuration files.

2

Getting Started with the DTC Manager

Before You Start ...

This chapter contains basic information about using the DTC Manager, including:

- Starting the DTC Manager.
- Logging on to and logging off from the DTC Manager.

This chapter assumes:

- that you are familiar with OpenView Windows.

  If you are not, you should do the OpenView Windows tutorial package before you begin. The *HP OpenView Windows User's Guide* (32048-90001) has details of the tutorial.

- that the OpenView workstation has all the appropriate software installed and functional, including OpenView Windows and the DTC Manager.

  See the *DTC Manager Installation and Upgrade Guide* (D2355-90013) for information on installing the DTC Manager.

- that there is a valid network map.

  See the *OpenView Windows User's Guide* (32048-90001) for information on drawing the network map.

Help

The DTC Manager has an extensive online help file. Many windows include a **Help** button, and clicking on this button will give you information about the window you are currently working in. You can also access this information through the **Help** menu, by clicking on **DTC Manager Index...** This displays a list of all of the subject matter covered in the online help system. You can scan through the list using the scroll bar at the side. By clicking on a listed item, you can read all the available information on that topic.

Starting DTC Manager

Normally, the DTC Manager starts automatically when you switch on the workstation. The DTC Manager installation procedure replaces the AUTOEXEC.BAT file on the OpenView workstation so that DTC Manager is run each time the PC is turned on (see the *DTC Manager Installation and Upgrade Guide* (D2355-90013) for more information).

There are three other methods of starting DTC Manager:

- **From DOS**

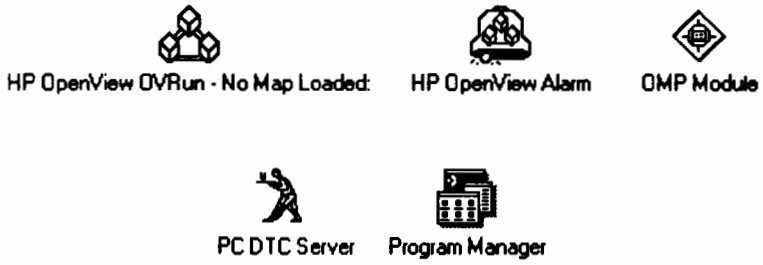
  Type DTCMGR at the DOS prompt.

  This executes a file called DTCMGR.BAT, installed on the disk containing the DTC Manager (usually C:\) as part of the DTC Manager installation procedure. DTCMGR.BAT automatically loads and runs the network software, Microsoft Windows, OpenView Windows, and the DTC Manager.

- **From Microsoft Windows with the OMP and PC DTC Server Module icons displayed**

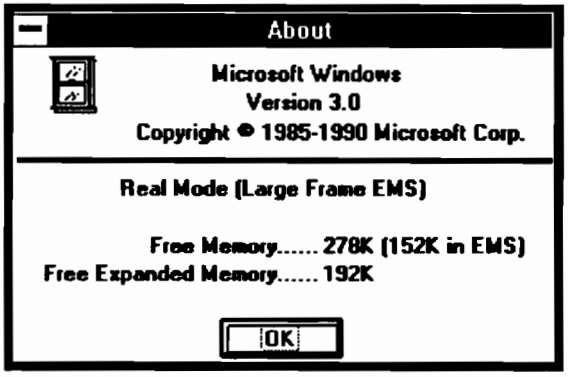
  Use the File Manager to switch to the OpenView directory (\OV, by default), then run OVRun.

  The icons appear as shown below. Note that the OMP icon changes to an up or down pointing arrow when a DTC initiated upload or download occurs.



- **From Microsoft Windows, with the OMP and PC DTC Server Module icons not displayed**

  Select the **Program Manager About...** from the Program Manager **Help** menu to find out if the mode of operation is Real Mode (Large Frame EMS).



  - If this is the case go to the DTCMGR\EXE directory and run DTCRUN.EXE.
  - If this is not the case, close Microsoft Windows and follow the procedure for starting from DOS, described on page 17.

When the complete system is running, the OVRun program will be active with the default network map loaded. From this screen, you can click on a DTC and log on to the DTC Manager.

Logging on and off the DTC Manager

You must log on before you can use the control, monitoring and diagnostic functions of the DTC Manager. This is a security measure to protect the integrity of the network configuration. Logging on here gives you access to the functionality of the DTC Manager, and it is through the DTC Manager that you configure, control and monitor the DTCs on the network.

Note that you are logging on to the OpenView workstation, not the DTC; this is not like the console port on a system.

An inactivity timer runs while you are logged on to the DTC Manager. If the OpenView workstation is inactive for 20 minutes, you are automatically logged-off.

Logging on

1. Select any DTC on the network map.
2. Select **Log On** from the **Control** menu. The logon window will be displayed.
3. Type the DTC Manager password: it will not be displayed. Note that the password is not case sensitive (**SECRET** is interpreted as the same as **secret** or **SeCReT**).
4. Click on **OK**, or hit the Enter key when you have finished.

There is no response to a successful log on, but you are informed if the password is incorrect.

The default password is DTC; the section "Changing the Password" on page 20 tells you how to change it.

Logging off

We recommend that you log off at the end of a working session for security reasons:

1. Click on a DTC on the network map.
2. Select the **Log Off** option from the OVRun **Control** menu.

If you are in the middle of a task, a warning message is displayed, asking you to complete the current task before logging off.

If you close the OVRun window, you are automatically logged off.

Changing the Password

The DTC Manager password can only be changed from within OVAdmin. To change the password:

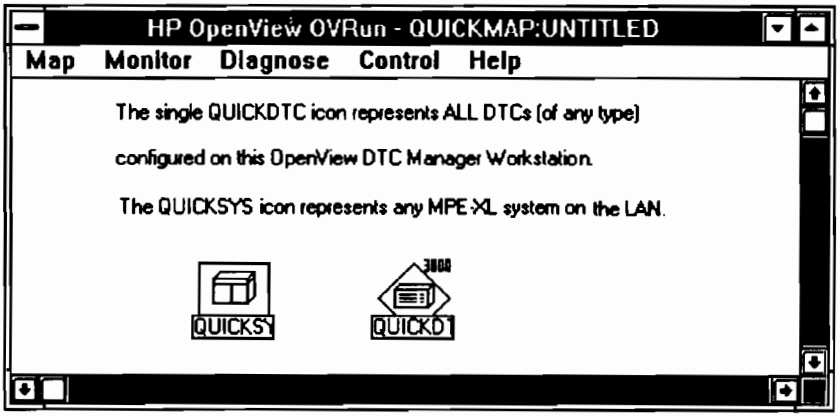
1. Run OVAdmin.
2. Pull down the **DTC Management** menu in OVAdmin, and click on **Change Password.**
3. Enter the current password.
4. Enter the new password. It will not be displayed on-screen. Note that the password checking is not case sensitive.
5. Re-enter the new password, then click on **OK.**

Using Quickmap, QuickDTC, and QuickSys

The Quickmap feature is implemented to provide fast access to all DTCs in the DTC Manager workstation's database, and to all HP 3000/900 systems on the LAN.

Quickmap is a special network map with just one DTC symbol and one Medium Computer 1 symbol on it. The DTC is labeled QUICKDTC, and the computer, QUICKSYS. The single QUICKDTC symbol represents all DTCs of any type configured on the DTC Manager. The QUICKSYS symbol represents all MPE XL systems on the LAN.

If you click on the DTC symbol, then select a DTC Manager menu item (for example, **Reset, Upload, Set Parameters...**) you are given a list of all DTCs configured on the workstation, from which you can select the DTC you want to work with. If you click on QUICKSYS, you can use the **Upload...** and **Reset...** commands from the **Control** menu on any HP 3000/900 system on the LAN, by typing the system nodename in when prompted.



Using Quickmap

1. From the **Map** bar menu, select **Change Map...** and load QUICKMAP from the DTCMGR\EXE directory.

2. Click on the QUICKDTC symbol and log on (if you are not already logged on).

3. Select the operation you want to do from the menu. You will be presented with a list of all the DTCs in the configuration database.

4. Select the DTC you want to work with, and click on **Ok**.

You can now manage the DTC in the same way as if you had selected it from the network map as described throughout this manual.

To upload or reset ldevs on HP 3000/900 systems, click on QUICKSYS and select **Upload...** or **Reset...** You will be prompted for the nodename of the system you want to work with.

3

Configuration Overview

Introduction

This chapter contains an overview of the methods of configuring a DTC, and a description of configuration tasks which are not specific to a particular method of configuration.

Each DTC is configured by a file which is created, modified and stored on the DTC Manager which "owns" the DTC. There are several methods of changing the configuration file and getting the configuration information from the DTC Manager to the DTC:

- **Booting**

  When a DTC boots, its configuration file is downloaded from the OpenView workstation, and the DTC configures itself according to the contents of the file.

- **Resetting**

  Resetting a DTC downloads its configuration file.

- **Offline configuration**

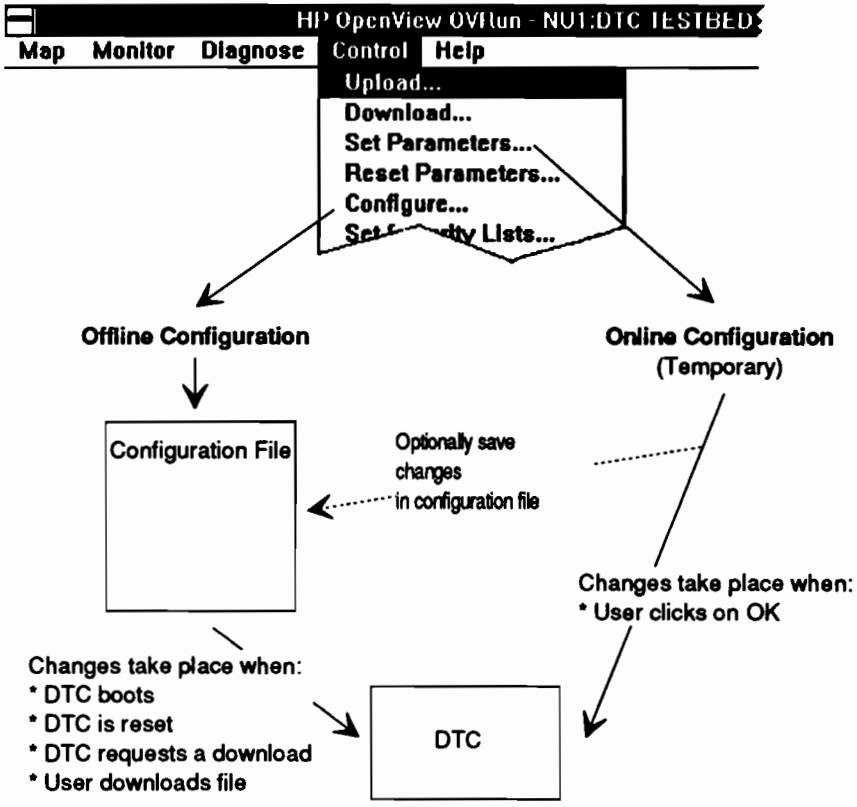
  Offline configuration is used to create or modify a DTC's configuration file. The changes take effect either when the file is downloaded to the DTC by the user or when the DTC next reboots and requests a download.

  Use the **Configure ...** option of the **Control** menu for offline configuration.

- **Online configuration**

  Online configuration is used to reconfigure most parameters of an active DTC. If the changes are not transferred to the configuration file, the DTC will revert to the last configuration saved in the configuration file when it reboots.

  Use the **Set Parameters ...** option of the **Control** menu for online configuration.



The figure above shows the basic difference between online and offline configuration. In offline configuration, the changes are written to the DTC's configuration file. The file may be downloaded immediately by resetting the DTC or initiating a download, if not, the changes will not take effect until the next time the DTC boots or requests a download. In online configuration, the changes take place as soon as the user clicks on OK, though some changes, such as X.25 parameters, do not take effect until new connections are made.

The Backplane Window

When you click on a DTC and select **Configure ...** or **Set Parameters ...**, a window with an image of the rear of the DTC is displayed. In this manual, the image is called "the backplane window".

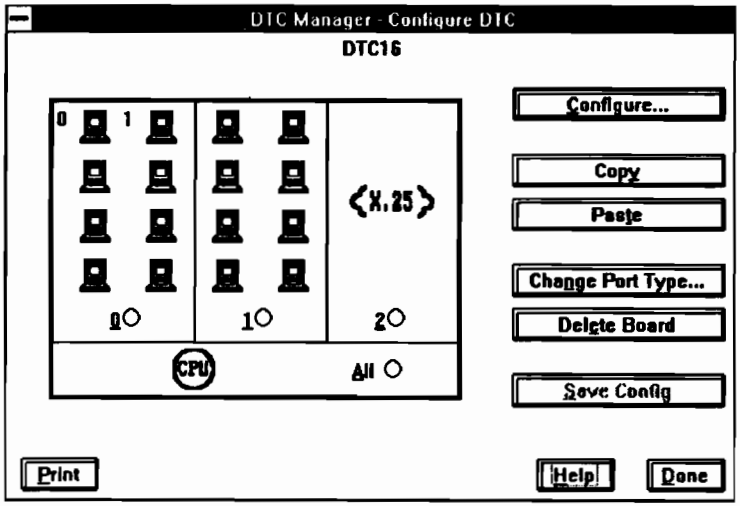
The backplane window is the starting point for all installation and configuration procedures; to configure a board or a port, for example, you select the board or port from the backplane window. The backplane window is also used in controlling, monitoring, and diagnosing the DTC: to reset a port, for example, you select the port from the backplane window, and then reset it.

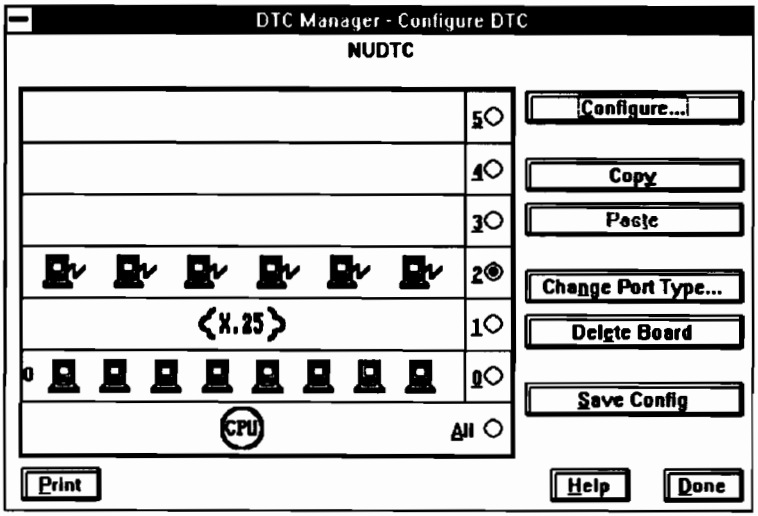
Getting to the Backplane Window

All the other chapters assume you know how to get to the backplane window. The basic procedure is:

1. Display the network map.
2. Click on the DTC to be configured.
3. Pull down the **Control** menu in OVRun, and click on **Log on...**
4. Enter the password (default is DTC)
5. Click on **OK**
6. Pull down the **Control** menu in OVRun, and click on **Configure...** or **Set Parameters ...**

   You will see a picture of the backplane of the DTC, similar to those shown page 25.


DTC Manager - Configure DTC
DTC16
0
1
X.25
0
1
2
CPU
All
Configure...
Copy
Paste
Change Port Type...
Delete Board
Save Config
Print
Help
Done


DTC Manager - Configure DTC
NUDTC
5
4
3
2
X.25
1
0
CPU
All
Configure...
Copy
Paste
Change Port Type...
Delete Board
Save Config
Print
Help
Done

Configuring a New DTC

The following list includes all the steps for the initial configuration of a new DTC, though some steps are only applicable if you have certain types of boards installed. Re-configuring an existing DTC involves a sub-set of these procedures. The DTC's harware must have been installed and be functioning before its configuration file can be configured and downloaded.

You need certain information to successfully configure the DTC, including:

- The DTC's hardware configuration.
- The DTC's node name, and the names of devices to which it is to be connected.
- X.25 information.

1. Select the DTC

The different types of DTC and their symbols are shown on page 12.

2. Configure the DTC's backplane (chapter 3)

"Install" on-screen, in the backplane window of the DTC, the board types which have been installed in the DTC box. Note that if the hardware configuration set up on this screen does not match the hardware installed in the DTC, the configuration will not download.

There are four types of board:

- Boards with eight direct-connect ports.
- Boards with six modem ports.
- X.25 board.
- Telnet Access board.

3. Configure the DTC's CPU (chapter 4)

Define the overall characteristics of the DTC, including:

- Its nodename.
- Its LAN address.
- Its IP address.
- The prompt and logon messages seen by users of the DTC's terminal user interface.
- Transmisson timer profiles.
- Server and routing information.
- Event logging classes.

4. Configure asynchronous ports (chapter 5)

Define each serial port's characteristics, for example:

- The type of device connected.
- Communications parameters.
- Default host system for the port.
- Whether the port is permitted access to the DTC's terminal switching facilities.

5. Configure Telnet/XL connections (chapter 6)

- Define a list of MPE XL system node names and assign their IP address.

  This list is used by the Telnet Access board or HP ARPA Telnet Express to detect calls on the LAN addressed to any IP address for which it has a system node name configured.

6. Configure the X.25 board(s) (chapter 7)

- Configure X.25 levels 1, 2, and 3 parameters.

7. Configure PAD Support (chapter 8)

- Configure PAD security.
- Configure PAD switching information.
- Configure an X.25 board to support communications with remote PAD devices such as terminals and printers. Local, LAN-based systems can have programmatic access to devices attached to remote PADs.

8. Configure the X.25 system-to-system information for HP 3000/900 systems (chapter 9)

- Define system-to-system switching capabilities, allowing local systems to use a DTC X.25 board to access a wide area network.
- Configure a switching table with a list of X.25 addresses matched to local hosts; the DTC uses this switching table to match X.25 communications arriving at the X.25 board to the appropriate host system.
- Configure a security list of remote systems allowed to set up calls with LAN-based systems. Communications to and from these remote systems can be filtered to allow incoming call setup only, outgoing call setup only, or two-way call setup.

Starting Offline Configuration

To start offline configuration:

1. Select the DTC from the network map.
2. Pull down the **Control** menu in OVRun, and click on **Configure ...** to display the DTC's backplane window.
   - If you are configuring a new DTC, you will be asked if you want to create a new configuration, and no boards will be shown installed in the DTC backplane.

     You must add at least one board and configure the CPU before the DTC can be put into operation.
3. See "Configuring the Backplane" (page 33) for information on how to continue.

Note The hardware "installed" in the backplane window must match the hardware configuration of the DTC, otherwise the configuration will not download.

When you change the configuration of a port, a board, or the CPU, the color of the reconfigured object changes to blue when you return to the backplane window (yellow on a black background when the object is highlighted), as a reminder of the objects which have been reconfigured. All changed objects revert to black when you save the configuration.

Putting Offline Changes into Effect

When you exit from offline configuration, the changes are saved in the DTC's configuration files, and are not downloaded until:

- You select **Download ...** to explicitly download the file to the DTC.
- You reset the entire DTC, a port or a board.
- The DTC requests a download, for example, when it boots.

Starting Online Configuration

Introduction

The **Set Parameters** command allows you to change most configuration parameters of the DTC without resetting the DTC to download a new configuration. The procedures for using the available functions in online configuration are identical to those for offline configuration. The changes made during online configuration do not come into effect immediately you make the changes on screen; the conditions under which changes come into effect depend on the functionality being reconfigured.

Procedure

1. Select the DTC from the network map.
2. Pull down the **Control** menu in OVRun, and click on **Set Parameters...**
   - Notice that the **Paste**, **Remove Board**, and **Save Config** buttons are greyed-out; you cannot use these functions in online configuration.
3. See "Configuring the Backplane" (page 33) for information on how to continue. The basic configuration procedures are the same as for offline configuration.

Parameters which can't be Reconfigured

The following parameters cannot be reconfigured using the **Set Parameters** command:

- **CPU Configuration**

  DTC 802.3 Address

  DTC IP Address

  DTC LAN Node Name

  Transmission Timers

- **Telnet**

  None of the Telnet parameters can be reconfigured online.

- **X.25 Configuration**

  Level 1 and 2 parameters

  Level 3 parameters

Putting Online Changes Into Effect

CPU Configuration

Fields that can't be configured online are greyed out. Changes to the other fields are downloaded to the DTC when you click on **OK** when you have finished configuring.

Asynchronous Ports

Changes to the configuration of an asynchronous serial port are downloaded to the DTC as soon as they are made, but do not become effective until any existing connection to the port is closed, or the port is reset. Existing connections are not disturbed.

X.25 Boards

Changes to the system-to-system switching configuration of an X.25 board are downloaded to the DTC as soon as they are made. They will be taken into account for any connections established after the download. Changes to the system-to-system switching configuration do not affect existing connections.

PAD Support

Changes to PAD security configurations take effect immediately; all new connection attempts will be subject to the new security configuration. However, existing connections are not affected by security changes, as security checking only takes place during the connection establishment phase.

Transferring Online Changes to Offline Configuration

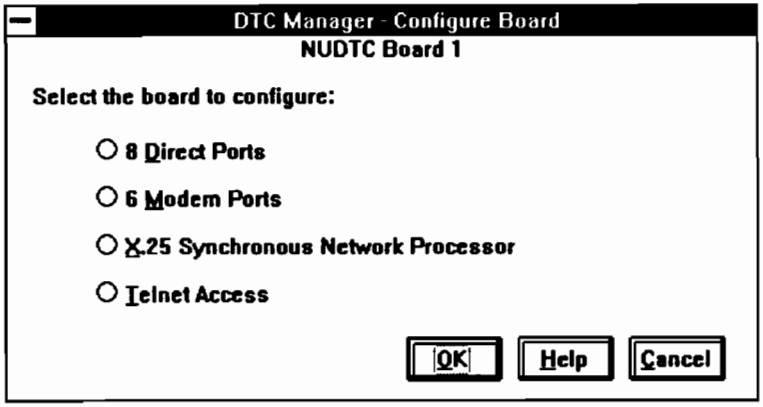
When you exit from **Set Parameters** — and if you have made any changes — a dialog box asks you if you want to transfer the configuration changes to the offline configuration (that is, into the DTC's configuration file, which will be downloaded to the DTC the next time it is rebooted).

Configuring the Backplane

Note The DTC backplane shown on the backplane window must match the hardware configuration of the DTC, otherwise the configuration will not download.

Adding a Board

1. Select the slot for the board and click on **Configure**, the board select window will be displayed.



   - If you clicked on slot 2 of a DTC 16 you will bypass this screen and go straight to the main X.25 configuration screen, because only X.25 boards are permitted in slot 2.

2. Select the type of board you wish to add and then click on **OK**

Note that it is not possible to add a board to an HP ARPA Telnet Express, as its configuration is pre-determined.

Deleting a Board

1. Click on the button beside the slot from which the board is to be deleted.
2. Click on **Delete Board.**
3. Click on **OK** in the dialog box which pops up
   - Click on **Cancel** if you do not want to delete the board.

   You will see the backplane window of the DTC, with an empty slot where you have just deleted the board.

Copying a Port or Board

Where two ports or boards have identical, or nearly identical, configurations, it may be easier to copy the previously configured port or board into the position of the new one. You can then edit the configuration of the new port or board in the normal way.

When you click on **Copy**, you store the configuration of the selected item (board or port) in temporary files. Clicking on **Paste** recalls this information. You can **Paste** the same item as many times as you wish, until you **Copy** a new item.

Procedure

1. Highlight the port to copy by clicking on it, or select the board to be copied by clicking on the button in the corresponding slot.
2. Click on **Copy.**
3. Highlight the destination port by clicking on it, or for a board, select the destination slot by clicking on the appropriate button.
4. Click on **Paste.**

Copying Configurations Between DTCs

You can copy a board configuration, or an entire configuration, from a DTC to another DTC of the same type. That is, you can copy and paste from a DTC 48 to another DTC 48; from a DTC 16 to another DTC 16 etc. You cannot copy-and-paste between different types of DTCs, for example between a DTC 48/3000 and a DTC 16 or DTC 48.

Certain fields in the CPU configuration (DTC Node Name, LAN address and IP address) must be unique for each DTC, therefore they are not copied.

When you click on **Copy**, the information is saved in temporary files. You can load another DTC from the network map into the **Configure** procedure, and **Paste** the board into the new DTC. You can repeat the same **Paste** operation on any number of DTCs, until you **Copy** another item.

Procedure

1. Select the board to be copied, by clicking on the button in the corresponding slot; or click on the **All** button to copy the complete configuration (except the nodename, IP address and 802.3 address).
2. Click on **Copy**.
3. Click on **Done** to return to the network map, and then click on the DTC which you want to copy the configuration to.
4. Pull down the **Control** menu, and click on **Configure...** You will see the main configuration screen of the new DTC.
5. Select a slot to copy a board to, or select **All** when copying the complete configuration.
6. Click on **Paste**.

Saving a Configuration

You can only use **Save Config** if all the necessary parameters for the DTC have been configured.

When you have finished configuring the DTC, save the configuration as follows:

1. Click on the **Save Config** box of the main configuration screen.
2. Click on **Yes** to save the configuration, **No** to quit configuration without saving the new configuration, or **Cancel** to return to the main configuration screen.

Printing a Configuration

If you have a printer configured as part of your DTC Manager workstation you can print out the configuration of a port, a board, or an entire DTC, by selecting the appropriate object and clicking on the **Print** button.

4

Configuring the CPU

Introduction

This chapter describes the configuration of the CPU window. Certain fields in the window have to be filled in for the configuration to be validated: these fields are marked "mandatory" in the description in this chapter. Three other windows are accessible from the CPU window, none of which have fields which must be filled in.

There are two ways of configuring the CPU: offline, from the **Configure ...** menu, or online, from the **Set Parameters ...** menu. All the parameters can be configured using **Configure ...**, but the following cannot be configured using **Set Parameters ...**:

- DTC LAN address
- DTC IP address
- DTC LAN Node Name
- AFCP Timer Profiles
- TCP Timer Profiles
- DNS addresses

See chapter 3 for information on how to transfer changes to the DTC and when changes take effect.

Help

All the fields in the CPU configuration windows are explained in the online Help system. Click on **Help** in the CPU window for information while configuring the CPU.

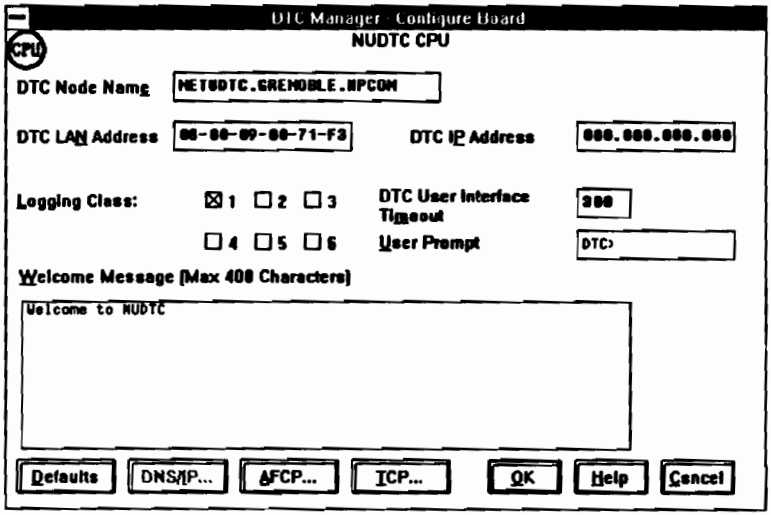
Basic Procedure

1. Display the DTC's backplane window (see chapter 3).
2. Select the CPU symbol.
3. Click on the **Configure** button. The CPU configuration window will be displayed.
4. Configure the CPU values.
5. The following only need to be filled in if you are using the appropriate service:
   - Click on **DNS** ... and configure the DNS names and IP addresses.
   - Click on **AFCP**... and configure the AFCP timer profiles.
   - Click on **TCP**... and configure the TCP timer profiles.
6. Click on the **OK** button when you have finished configuring. You will be returned to the backplane window.
   - Click on **Cancel** to return to the backplane window with no alterations made to the configuration.
   - Click on the **Help** button for online help.

When the configuration of the CPU is changed, the color of the CPU icon changes to blue when you return to the backplane window (yellow on a black background while the object is highlighted), as a reminder of the objects which have been reconfigured. The icons revert to black when the configuration is saved.

CPU Configuration Window

Defaults



When the CPU configuration screen is first displayed, the boxes contain default values. You can restore the default values during configuration by clicking on the **Defaults** box. The defaults are:

DTC Node Name: empty

DTC LAN Address: 08-00-09-00-00-00

DTC IP Address: 000.000.000.000

Logging Class: class 1 enabled, other classes disabled

DTC User Interface Timeout: 300 seconds

User Prompt: DTC

Welcome Message: empty

Configuration Details

DTC Node Name

This field is mandatory.

Each DTC in the network must have a unique node name. We recommend that you use the same name here (for `nodename`) that you used for the DTC on the network map (in OVDraw), but this is not mandatory, the DTC Manager program does not cross-check these names.

The DTC node name consists of three fields, all of which must be filled in. Each field is a maximum of 16 characters, separated by points, of the form:

```
nodename.domain.organisation
```

The DTC node name is used for programatic terminal access to HP 3000/900 systems (MPE XL operating system): `nodename` is used in the NMMGR configuration of nailed devices, and `domain.organisation` is used in extended switching.

For more information about node names and their significance in the overall network configuration, refer to the *NS3000/XL Configuration Planning and Design Guide* (36922-90007) and the *DTC Network Planning and Configuration Guide* (D2355-90012).

DTC LAN Address

This field is mandatory.

Enter the 802.3 address of the DTC being configured. You must use the address allocated to your DTC by Hewlett-Packard. The address is recorded on a label inside the front cover of the DTC 48 and on the backplane of the DTC 16. The allocated address can only be altered by Hewlett-Packard.

The address is also used as the Ethernet address of the DTC. Ethernet and IEEE 802.3 LAN protocols are similar, and can coexist on the same physical LAN, using the same physical address configured in the **DTC LAN Address** field. The DTC 48/3000 uses Ethernet for back-to-back connections.

DTC IP Address

This field is mandatory.

Enter the IP address of the DTC, the DTC Manager will automatically fill with zeroes to give three-digit numbers when you click on **OK** to quit the CPU configuration.

The Internet Protocol is used for communications across the LAN in the following configurations, and so a valid IP address is required:

- Back-to-back DTCs
- A DTC 48 connected to HP 9000 systems
- A DTC 48 used for Telnet access.

When the DTC is communicating only with HP 3000/900 systems on the LAN, use the default entry (`000.000.000.000`).

Logging Class

Click in these boxes to select the classes of events which will be logged to the event logging files. Class 1 events are the most critical events, and are always logged. You must click in each box to log that class of events; only events falling into classes which you have explicitly enabled will be logged. Events from all DTCs managed from the same OpenView workstation are logged in the same file; they include information identifying the DTC which originated the event. Events can be filtered when they are displayed using the **Show DTC Event Log** function (see chapter 11). You can display logged events as they occur by leaving the **Show DTC Event** window open (see chapter 11).

Note that enabling logging class 5 may result in a substantial number of events being logged. For this reason it is recommended that:

- You only enable logging class 5 for one DTC at any time.
- You do not leave logging class 5 enabled for more than 30 minutes.
- You do not enable logging class 5 simultaneously with an X.25 Trace.

Refer to the *DTC Network Planning and Configuration Guide* (D2355-90012) for more information about the classification of events.

DTC User Interface Timeout

Each DTC serial port can have an inactivity timeout for terminal connections to the DTC user interface. The timeout can be enabled or disabled individually for each port: if it is enabled, the timeout value is the time entered here. Once the terminal has established a connection with a system via the DTC, the timeout is disabled until the user returns to the DTC user interface.

On a Telnet Access board, all connections have the timeout enabled. For PAD and X.25 connections, the timeout is permanently enabled. See the chapters on configuring ports for more information.

You can enter any value from 5 to 300 seconds for the timeout period. The default setting is 300s.

User Prompt

The prompt is seen by terminal users (serial port or PAD) when they enter the user interface of the DTC. Only users connected to ports with switching capability will see the prompt, other users are connected directly to a host system and bypass the DTC user interface.

The prompt is one line long, and a maximum of 16 characters. The default is DTC>.

Welcome Message

You can write a message in this box which will be displayed on a terminal when:

- A terminal user opens a connection to an asynchronous port configured for system switching.
- A terminal user connected to the DTC user interface issues the STATUS command.
- A PAD terminal user connects to the DTC user interface, rather than connecting directly to one of the host systems configured for PAD access.

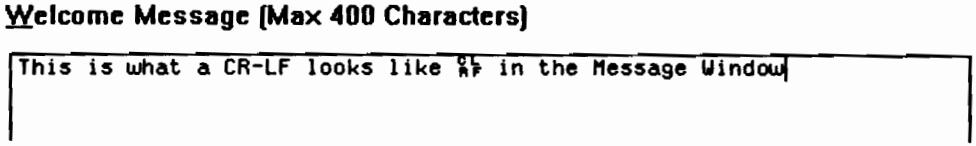
The welcome message is not displayed when a user switches back from a system connection to the DTC user interface.

Note Do not use the keyboard Enter (carriage return) key to create line breaks in messages in the Welcome Message screen. Using the Enter key will terminate CPU configuration. Use the control key sequence explained below to force line breaks in welcome messages.

The message is stored as a single-line string, up to 400 characters long. Apparent breaks in lines in the window are due to the size of the window. You can force a line-break in the output message by embedding the control-key sequence `Ctrl-M Ctrl-J` (interpreted as carriage return, line feed) in the text as you type. You embed a control sequence by holding down the Ctrl key and pressing the appropriate key. For example, typing:

```
This is what a CR-LF looks like Ctrl-M Ctrl-J in
the Message window
```

results in the following text in the Welcome Message window:

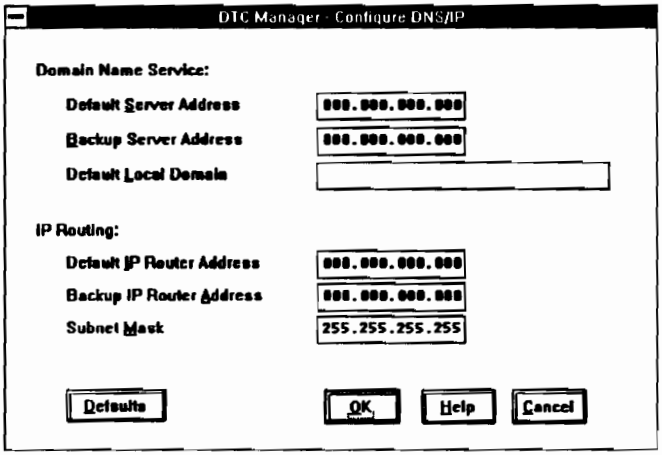


The message text can also incorporate escape-code sequences to control and configure the terminal device making the connection (see also "Initialization String" on page 60). Appendix B contains a list of control sequences.

DNS/IP Configuration Window

Click on the DNS... button to display this window.

Domain Name Service



Default Server Address

This field contains the default DNS IP address, for TIO/Telnet users to enter a Domain node name instead of an IP address in the **connect** command.

Backup Server Address

This is the IP address used by the DTC if the default server is not available. Use the address `000.000.000.000` if there is no backup server.

Default Local Domain

This field must be filled in for terminal access to UNIX systems. The DTC uses the local Domain name in ARPA Domain name qualification as a default to complete the Domain node name given by the terminal user, if it does not contain a period (.).

IP Routing

Default IP Router Address

IP address of default router. The router will be used to route outbound packets for destinations which gave no ARP reply and which are not part of the local subnet.

Backup IP Router Address

IP address of router to be used if the default is not available.

Subnet Mask

Enter the subnet mask in IP address format if you need subnet addressing. The first field must always be `255`. If no subnetting is required, use the default `255.0.0.0`.

The subnet mask is used by IP to check if the datagram should be sent to the destination without routing, or routed to a destination network different to the current network or sub-net.

The mask specifies how much of the address to reserve for subdividing networks into subnetworks. The initial calculation is done in binary, and the result written in this field in decimal: digits identifying the network and sub-network parts are reserved by entering 1s in the mask, digits identifying the host are reserved by entering 0s.

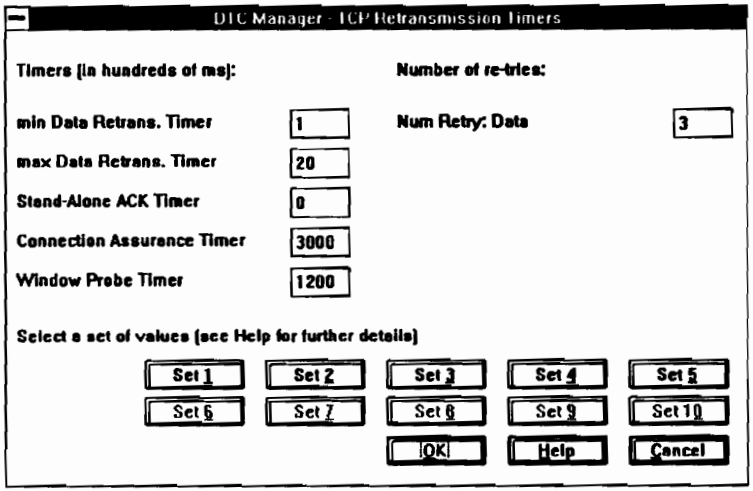
For example, the mask `255.255.248.0` has the 20 most significant bits reserved for the network/subnetwork part, and the 12 least significant bits reserved for the host part. In binary it is:

```
11111111.11111111.11110000.00000000
```

TCP Retransmission Timers Window

Click on the **TCP ...** button to select this window.

Five sets of values are available to cater for specific network scenarios: it is not possible to alter the values of individual timers. The values of the timers are displayed in the TCP Timers window (the values are in hundreds of milliseconds). The timers cannot be configured on-line.



Set 1 Default. For local transaction processing applications and telnet connections on local LAN.

Set 2 The same as set 1, but with bridges. Suitable for LANs with moderate delays.

Set 3 The same as set 1, but with routers or X.25. Suitable for LANs with longer delays.

Set 4 For networks with high data losses.

Set 5

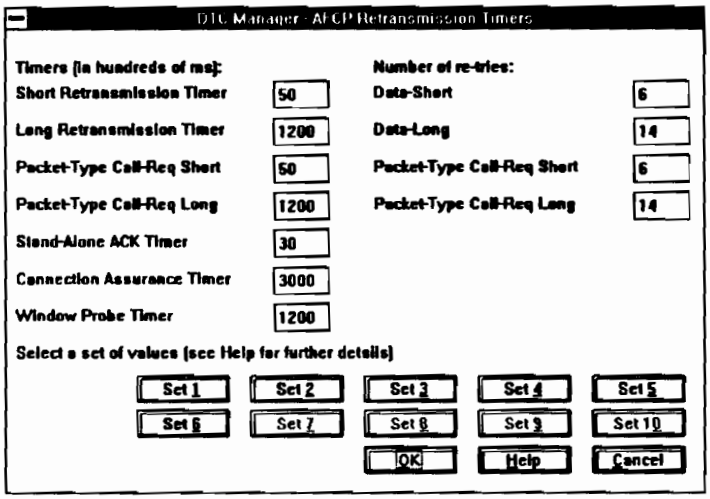
For extended switching applications on local LAN or with bridges, where there is heavy traffic.

Set 5 is optimised for extended switching, and networks using TS8s and pre-DTC 10.5 DTCs.

Use Set 1 if you have only a small number of extended switching connections and local LAN, or if you have a LAN with, for example, only one TS8 but many DTCs.

AFCP Retransmission Timers Window

Six sets of preset values are available to cater for specific network scenarios: it is not possible to alter the values of individual timers. The values of the timers are displayed in the AFCP Timers window. The timers cannot be configured on-line.



Set 1 **Normal Timer Mode**

Default. Suitable for most LAN environments.

Set 2 **Short Retransmission Timer Mode**

For unreliable LANs with more than 1% of packets lost.

The retransmission timer is initially set shorter than in Normal Timer Mode to provide more frequent retries to quickly detect problems. Note that LAN traffic is increased, and the host has to execute more instructions because of the increased number of data or status request packets.

Set 3 **Long Retransmission Timer Mode**

For very reliable LANs.

The retransmission timer is initially set longer than in Normal Timer Mode to reduce LAN traffic and host driver overheads. Note that it may take longer to detect abnormal conditions because of the less frequent retransmissons.

Set 4 **Variable Timer Mode**

This mode is a compromise between long and short modes. It uses the short timer value for unreliable LANs, but limits the number of short timer retransmissions to avoid degrading the LAN and host performance for too long.

Set 5 **1.2 Mode**

The timer and retry values used in MPE XL 2.0 are different from those in MPE XL 1.2. This set should only be used when it is necessary to restore MPE XL 1.2 values to isolate problems.

Set 6 **2.1 Mode**

This is the normal timer mode compatible with MPE XL release 2.1.

Note AFCP timer profiles *must* be consistent with the timer values configured on the MPE XL system using NMMGR.

5

Configuring a Serial Port

Basic Procedure

1. Display the DTC's backplane window (see chapter 3.)
2. Select the port to be configured.
3. Click on the **Configure** button. The Serial Port Configuration window will be displayed.
4. Configure the port.
5. Click on the **OK** button when you have finished configuring. You will be returned to the backplane window.
   - Click on **Cancel** to return to the main configuration screen, with no alterations made to the configuration.
   - Click on the **Help** button for online help.

When the configuration of a port is changed, the color of the port icon changes to blue when you return to the backplane window (yellow on a black background while the object is highlighted) as a reminder of the objects which have been reconfigured. The icons revert to black when the configuration is saved.

Help

All the fields in the Serial Port configuration windows are explained in the on-line Help system. Click on **Help** in the window for information while configuring ports.

Changing the Port Type

Each port on an asynchronous modem or direct connect board can be configured for one of the following types of connection:

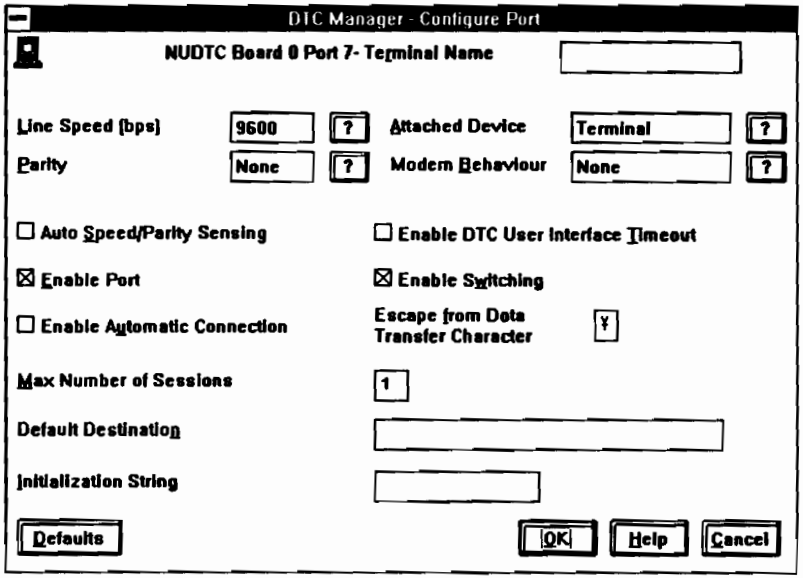
- **Terminal connection** (default for a new board).
- **Printer connection**
- **Host connection**, for connections to HP 3000/900 systems or back-to-back configurations

Procedure

1. Click on the icon of the port you want to change.
2. Click on the **Change Port Type...** button.
3. Select the new port type — **Terminal**, **Printer**, or **Host**.
4. Click on **OK**. This leads you into the configuration screen for the port, described in the section "Configuration Details" (page 53).

Configuration Details

The exact appearance of the serial port configuration screen depends on the type of port being configured: for example, some of the fields are only relevant if the port is configured as a printer. Inapplicable fields are greyed out.



Default Values

The serial port configuration screen contains default values the first time it is displayed for a new configuration. The values displayed depend on the type of port. Click on the **Defaults** box to restore the default values.

Line Speed: 9600

Parity: None

Enable Port: True

Escape from Data Transfer Character: Ctrl-K

Enable Switching: True

Attached Device: Terminal

Initialisation String: blank

Maximum number of sessions: 1

Terminal/Printer/Host Name

The name entered here will be entered by the user as part of the `connect nodename` command at the DTC User Interface. The node name can be up to 16 characters long. The overall length of `nodename.domain.organisation` is 50 characters, except for connections to a TS8 port when the overall length is limited to 20 characters.

The port name is optional for terminals and printers which will be used only by HP 3000/900 systems. Other host systems (HP 3000 systems running the MPE V operating system, for example) use the terminal or printer name to establish programmatic access to devices. Host ports (in back-to-back configurations) must be named; the terminal user uses the host name configured on this screen to establish a connection with the host system.

Note that this field names the port not the device connected to it. If you disconnect the device and reconnect it to another port, and you want to use the same name to refer to the same device, you must reconfigure this screen and download the DTC.

Naming Resolution

When a user types connects connect nodenname at the DTC user interface, the DTC does not know if the nodename should be qualified as an NS nodename or a domain name. The following rules are applied to generate a fully qualified NS nodename, a fully qualified domain name, or both:

- If the name entered contains no points:
  - it is concatenated with the domain.organisation fields of the DTC Nodename to generate a fully qualified NS nodename:
  - it is concatenated with the Default Local Domain to give a fully qualified domain name.

- If the name consists of two fields separated by a point:
  - it is concatenated with the organisation field of the DTC Nodename to generate a fully qualified NS nodename,
  - it is assumed to be a fully qualified domain name.
- If the name consists of three fields seperated by points:
  - it is assumed to be a fully qualified NS nodename,
  - it is assumed to be a fully qualified domain name.
- If the name consists of more than three fields separated by points:
  - it is considered to be a domain name,
  - it is not an NS nodename.

The following table illustrates this:

Entered nodename `connect ...`	DTC Name: `DTC1.DOM.ORG` Fully-qualified NS Nodename	Default Local Domain: `net.city.state` Fully-qualified Domain name
`sys10`	`SYS10.DOM.ORG`	`sys10.net.city.state`
`sys10.dom`	`SYS10.DOM.ORG`	`sys10.dom`
`sys10.lan.site`	`SYS10.LAN.SITE`	`sys10.lan.site`
`sys10.lan.site.state`	not a valid NS nodename	`sys10.lan.site.state`

Note that domain names are case sensitive, and the DTC uses them exactly as entered.

Pooling Ports

Devices may be pooled by giving the same name to several ports. Typically, terminals will have a unique name. Host ports (in extended switching configurations) will typically be pooled. Printers may be pooled. For example, you may configure four printer ports with the name `Printer_Pool`. When a system sends a file to `Printer_Pool`, it will be printed on the first of these four printers which is free. (To use this facility with HP 3000/900 systems, configure a device class with the name you use as the printer pool name.)

Host Name (Extended Connections)

If the connected device is a host system (extended switching), the same name — typically the host system's name — should be given to all the ports connected to the same system. This name is used by the terminal user to connect to the system.

The host ports will be pooled if they all have the same name. When the DTC establishes the connection between a terminal and the system, it will use the first available port in the pool.

Line Speed

Set the line speed to correspond to the line speed of the attached device, by clicking on the ? box and selecting from the list.

Parity

Set the parity to correspond to the parity configuration of the attached device, by clicking on the ? box and selecting from the list which pops up. The default setting is **None**. Note that parity must be set to "none" for eight-bit data transfer; any other choice of parity restricts data to seven bits.

Attached Device

Click on the ? button to select the type of device physically attached to the port; this adapts the port behavior to the device requirements. Modem choices are only available if the port you are configuring is part of a 6-port modem board and you have selected either **Standard DCE** or **DTE** from the modem behaviour menu. If you are connecting an HP 7550A plotter to a port configure it the same as for a printer.

Modem Behavior

Click on the ? button and choose one of the following:

None	if you have a direct connection (no modem) on this port. The DTC doesn't check the device modem signals and doesn't control its own modem signals.
Standard DCE	for all terminals and printers connected to the DTC via modems, except printers configured as Termtype 26 on MPE XL systems. The DTC checks device modem signals and sets up its own modem signals.
DTE	for printers configured on MPE XL systems as Termtype 26, for connections to host-system ports in back-to-back configurations, and for attaching a HP 2335 or a dataswitch. The DTC checks device modem signals and sets up its signals only when a connection is established with a LAN host destination.

The DTC behaves as a DTE not a DCE: DTR and RTS are output signals for the DTC, and DCD, CTS and DSR are input signals.

Auto Speed/Parity Sensing

When a connection is set up by a terminal and this option is selected, the DTC will automatically check the speed and parity, and if necessary reconfigure the port. If the connection is set up by the host (if the host opens a session on a terminal) the line speed and parity settings entered above are used.

Note that only "None" or "Even" parity is recognized; Auto Speed/Parity sensing will not work for any other terminal parity settings.

Enable Port

If there is no cross in the box, the port is disabled, and no communications can pass through. The default setting enables ports.

Enable Automatic Connection

This choice is not available if **Modem Behavior** has been set as **None.**

When **Automatic Connection** is enabled, the port is automatically connected to the destination node specified in **Destination Node Name** as soon as the modem signals rise. This can be used to automatically connect modem-connected terminals to a specified (default) host. In a host-port configuration (back-to-back connections), you might enable automatic connection with, for example, a printer specified as the destination node.

Enable DTC User Interface Timeout

When **DTC User Interface Timeout** is enabled, the terminal user's connection to the DTC will be automatically shut-down if the DTC senses no activity for a predefined period. This is only active while the user is in the DTC user interface, and therefore only applies to users for whom switching is allowed (non-switching users do not see the DTC user interface, they are connected directly to their designated host system). Once a connection to a host system has been established, the DTC no longer monitors for idle devices.

The timeout period is defined in the CPU configuration, see page 42

Enable Switching

Each port can have switching enabled or disabled independently of the other ports on the board.

Switching must be enabled for the terminal to access more than one system. If switching is enabled (there is a cross in the check box), the terminal user can connect to any system on the LAN by typing one of the following at the DTC prompt:

```
connect <system_name>

connect <IP address> (Telnet connections only)
```

If switching is not enabled, the terminal is automatically connected to the host defined in the **Default Destination** field. (Note that for a DTC 48/3000 switching is limited to HP 3000/900 systems only, and to DTC ports for back-to-back connections.)

Modem Behavior

Click on the ? button and choose one of the following:

None	if you have a direct connection (no modem) on this port. The DTC doesn't check the device modem signals and doesn't control its own modem signals.
Standard DCE	for all terminals and printers connected to the DTC via modems, except printers configured as Termtype 26 on MPE XL systems. The DTC checks device modem signals and sets up its own modem signals.
DTE	for printers configured on MPE XL systems as Termtype 26, for connections to host-system ports in back-to-back configurations, and for attaching a HP 2335 or a dataswitch. The DTC checks device modem signals and sets up its signals only when a connection is established with a LAN host destination.

The DTC behaves as a DTE not a DCE: DTR and RTS are output signals for the DTC, and DCD, CTS and DSR are input signals.

Auto Speed/Parity Sensing

When a connection is set up by a terminal and this option is selected, the DTC will automatically check the speed and parity, and if necessary reconfigure the port. If the connection is set up by the host (if the host opens a session on a terminal) the line speed and parity settings entered above are used.

Note that only "None" or "Even" parity is recognized; Auto Speed/Parity sensing will not work for any other terminal parity settings.

Enable Port

If there is no cross in the box, the port is disabled, and no communications can pass through. The default setting enables ports.

Enable Automatic Connection

This choice is not available if **Modem Behavior** has been set as **None.**

When **Automatic Connection** is enabled, the port is automatically connected to the destination node specified in **Destination Node Name** as soon as the modem signals rise. This can be used to automatically connect modem-connected terminals to a specified (default) host. In a host-port configuration (back-to-back connections), you might enable automatic connection with, for example, a printer specified as the destination node.

Enable DTC User Interface Timeout

When **DTC User Interface Timeout** is enabled, the terminal user's connection to the DTC will be automatically shut-down if the DTC senses no activity for a predefined period. This is only active while the user is in the DTC user interface, and therefore only applies to users for whom switching is allowed (non-switching users do not see the DTC user interface, they are connected directly to their designated host system). Once a connection to a host system has been established, the DTC no longer monitors for idle devices.

The timeout period is defined in the CPU configuration, see page 42

Enable Switching

Each port can have switching enabled or disabled independently of the other ports on the board.

Switching must be enabled for the terminal to access more than one system. If switching is enabled (there is a cross in the check box), the terminal user can connect to any system on the LAN by typing one of the following at the DTC prompt:

```
connect <system_name>

connect <IP address>
```
(Telnet connections only)

If switching is not enabled, the terminal is automatically connected to the host defined in the **Default Destination** field. (Note that for a DTC 48/3000 switching is limited to HP 3000/900 systems only, and to DTC ports for back-to-back connections.)

Escape from Data Transfer Character

This facility is only available on ports for which switching is enabled.

Define the character which will return the terminal user from a host-system connection to the terminal user interface of the DTC but leave the session open. The default escape-from-data-transfer character is Ctrl-K. We recommended that you change the escape-from-data-transfer character, as Ctrl-K has significance for Telnet connections (see appendix B for more information on control characters).

Note that typing Ctrl-K results in $^{V}_{T}$ being displayed on the DTC Manager screen.

Dedicated Printer

When there is a cross in the check box, the printer can only be used by the host specified in the **Default Destination** field. If you want a printer to be accessed by several systems, do not put a cross in this box.

Default Destination

Specify here the default destination node for the device connected to the port, if required. The name can be one of the following:

- NS Name
- ARPA Name
- IP Address

If the destination is an HP 3000/900, the IP address can't be used, you must use the fully-qualified NS nodename of the HP 3000/900.

The significance of the destination node depends on the type of device connected to the port.

- **Non-switching terminals:** enter the name of the associated host system. The terminal is connected to the host when the DTC senses a carriage return character from the terminal. For modem connections for which automatic connection is enabled, the DTC establishes the connection to the default host as soon as it senses modem signal activity.

- **Switching terminals**: you may optionally enter a default host name or IP address; the user can connect to this host without needing to specify its name or address, by simply typing `c` or `connect`. For modem connections for which automatic connection is enabled, the DTC establishes the connection to the default host as soon as it senses modem signal activity.
- **Printer ports**: enter the name or address of the host system for printers for which you have selected **Dedicated Printer**:
  - For HP 3000/900 systems, enter the host's NS nodename.
  - For HP 9000 Device Access/ARPA systems, enter the host's IP address.
  - For extended switching connections, enter the host side DTC's IP address.
- Host ports (back-to-back configuration): for modem-connected host ports with automatic connection enabled, you can specify the name of a default device to which this port will connect as soon as the DTC senses modem signal activity.

Initialization String

The string — special characters or escape-code sequences, for example — will be sent to the connected terminal, printer, or host-port as soon under the following circumstances:

- After resetting a port.
- When you close a session on a host and return to the DTC user interface.
- If you are logged into a system and you type CTRL-K.
- After establishing a connection to the DTC user interface for modem connections: the string is sent when all the modem signals are up.

You cannot use the carriage return or escape keys in this field; you must use control-key sequences to substitute for them. Appendix B contains a list of the control sequences.

Maximum Number of Sessions.

This field applies to terminals only.

A DTC 16 can have a maximum of five sessions per port, with an overall maximum of 48 sessions for the DTC. For a DTC 48, one session is always available for each port, and 80 other sessions are available as well: for a DTC 48 with six 8-port boards, this means a total of 128 sessions. The DTC may not be able to allocate the maximum number of sessions to a port if other ports have used the DTC's full allowance. For a DTC 48/3000, only one session is available per port.

The range is 1 to 5 for a DTC 48 or DTC 16, and the default is 3.

Wait Queue Length

Only applicable for pooled printers and hosts. Specifies the number of sessions that can wait for access to the device. Range 1 to 5, default = 3.

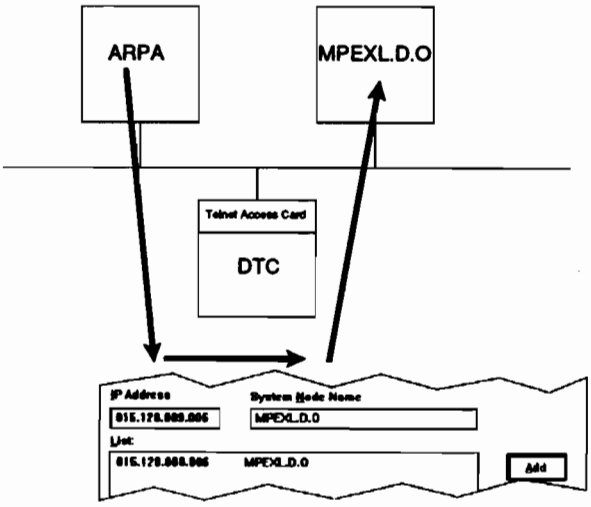
6

Configuring for Telnet Access

Introduction

The Telnet Access board allows virtual terminal access to MPE XL systems from the ARPA environment by translating TCP/IP into HP's optimised protocol AFCP. The following figure shows the basic principle. The user in the ARPA environment enters the IP address of the MPE XL system they want to access, and the DTC uses the Telnet Switching Information table to map the IP address to the MPE XL system node name.

The Telnet Access board must be started using the **Start Telnet** command described in chapter 10.

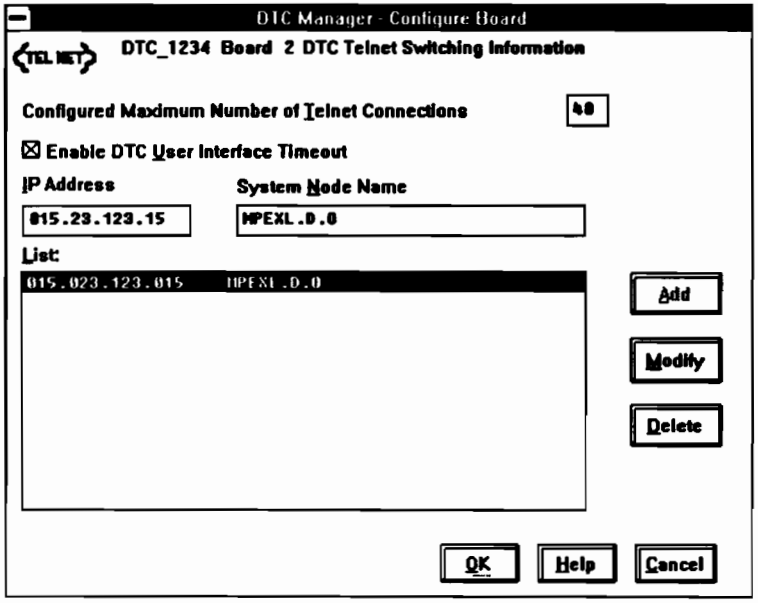


Basic Procedure

1. Display the DTC's backplane window (see chapter 3)
2. Select the button for the card to be configured.
3. Click on the **Configure** button to display the Telnet Access board configuration window.
4. Configure the Telnet information.
5. Click on the **OK** button when you have finished configuring. You will be returned to the backplane window.
   - Click on **Cancel** to return to the main configuration screen, with no alterations made to the configuration.
   - Click on the **Help** button for online help.

When the configuration of the card is changed, the color of the icon changes to blue when you return to the backplane window (yellow on a black background while the object is highlighted), as a reminder of the objects which have been reconfigured. The icons revert to black when the configuration is saved.

Configuration Details



The same screen is used to configure a DTC Telnet Express and a Telnet Access board in a DTC 48, but the path to the screen is slightly different. Each field is also described in the on-line help facility.

Maximum Number of Telnet Connections

The maximum value is 40 for a DTC 48 and 80 for an HP ARPA Telnet Express. The default is 40.

Enable DTC User Interface Timeout

When **DTC User Interface Timeout** is enabled, the terminal user's connection to the DTC will be automatically shut-down if the DTC senses no activity for the period defined in **DTC User Interface Time Out** in the CPU configuration. This is only active while the user is in the DTC user interface, and therefore only applies to users for whom switching is allowed (non-switching users do not see the DTC user interface, they are connected directly to their

designated host system). Once a connection to a host system has been established, the DTC no longer monitors for idle devices.

See page 42 for details of the timeout period.

List

This is a list of IP Addresses mapped to MPE XL system node names. The IP address is used from the ARPA environment to access MPE XL systems. Only one system node name is allowed for each IP address, but there can be more than one IP address for each system node name. The list is limited to ten entries.

IP address

This is the IP address of the MPE XL system.

System Node Name

This is the fully qualified MPE XL system node name. The field is not case sensitive.

7

Configuring for X.25

Introduction

This chapter covers configuring:

- X.25 levels 1 and 2
- X.25 level 3

The following chapters contain other information relevant to X.25:

chapter 8	PAD Access
chapter 9	System to System Switching Information
chapter 10	Starting and stopping X.25
chapter 11	Running X.25 traces

X.25 information must be filled in before PAD or System to System Switching information can be entered.

Help

Each field is described in the online Help facility. Click on **Help** for more information.

X.25 Parameters

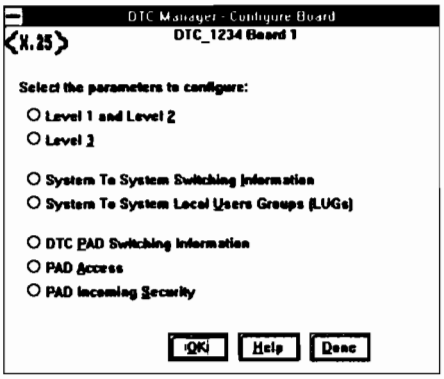
Most of the information which you need to enter for X.25 Levels 1,2 and 3 will be on the subscription form for the PSN which you are connecting to; you must use the subscribed values when you configure a board.

The *DTC Network Planning and Configuration Guide* (D2355-90012) contains more information on the way X.25 has been implemented in the DTC. However, it only deals with the points where the DTC implementation differs from the CCITT standards. Refer to the CCITT Recommendations for more information.

Values which can not be changed from the DTC manager are as recommended by the CCITT.

Basic Procedure

1. Display the DTC's backplane window (see chapter 3)
2. Select the X.25 board to be configured.
3. Click on the **Configure** button.
4. Click on the appropriate buttons to configure:
   - **X.25 Levels 1 and 2**
   - **X.25 Level 3**

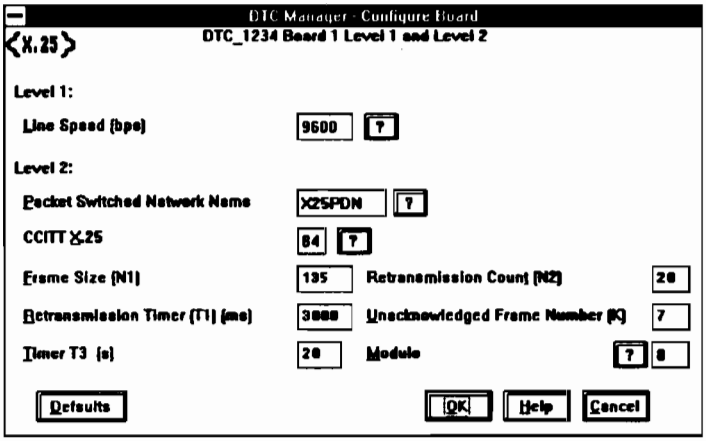


5. Click on the **OK** button when you have finished configuring. You will be returned to the backplane window.
   - Click on **Cancel** to return to the main configuration screen, with no alterations made to the configuration.
   - Click on the **Help** button for online help.

When the configuration of the board is changed, the color of the icon changes to blue when you return to the backplane window (yellow on a black background while the object is highlighted), as a reminder of the objects which have been reconfigured. The icons revert to black when the configuration is saved.

Level 1 and Level 2 Configuration

The Level 1 and Level 2 configuration screen is shown below:



Defaults

Clicking on the Defaults button enters the following default values into the Level 1 and 2 fields:

Line speed: 9600

Packet Switched Network Name: X25PDN

CCITT X.25: 84

Frame Size (N1): 135 bytes

Retransmission Timer (T1): 3000 ms

Timer T3: 20 s

Retransmission Count (N2): 20

Unacknowledged Frame Number (K): 7

Modulo: 8

Configuration Details

Line Speed

Click on ? and select the appropriate value from the menu.

Packet Switched Network Name

Click on ? and select the appropriate value from the menu, according to the information in the subscription form.

If two X.25 boards are directly connected (for instance, if you have a cable connecting one DTC X.25 board directly to another DTC X.25 board) one of the two boards must be configured as DCE and the other as DTE. In the DTC X.25 setup, select **DCE** as the network type for the DCE, and **X25PDN** as the network type for the DTE. Selecting DCE configures the X.25 board as a DCE at levels 2 and 3 of X.25. At Level 1 the DTC remains a DTE; the connector pinouts are unchanged.

CCITT X.25

Click on ? and select the appropriate value from the menu, according to the information in the subscription form.

Frame Size (N1)

Enter the value from the X.25 subscription form: minimum 23, maximum 4103.

Note that many network subscription forms give the value of N1 in bits, not bytes; divide the number of bits by 8 to obtain the correct number of bytes to enter in this field.

Retransmission Timer (T1)

Enter the value from the X.25 subscription form: minimum 1000 ms, maximum 12000 ms.

Timer T3

The timer T3 value only need be entered if you have selected the 1984 X.25 recommendations.

Enter the value from the X.25 subscription form: minimum 0 s, maximum 1000 s.

Retransmission Count (N2)

Enter the value from the X.25 subscription form: minimum 0, maximum 255 s.

Unacknowledged Frame Number (K)

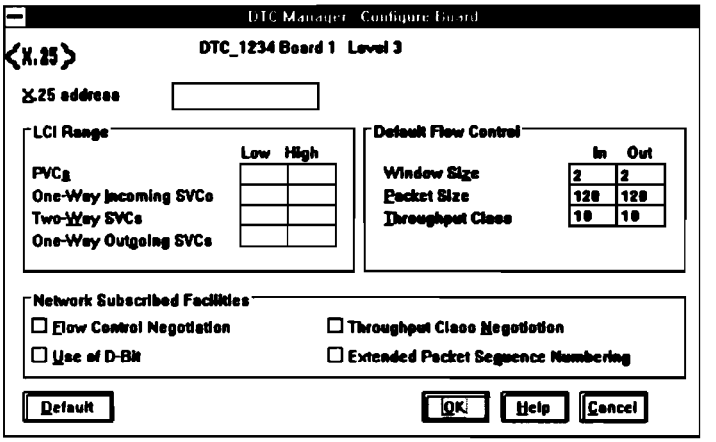
Enter the value from the X.25 subscription form: minimum 1, maximum 7.

Modulo

Click on ? and select the appropriate value from the menu, according to the information in the subscription form.

Level 3 Configuration

The Level 3 configuration screen is shown in below. All the information on this screen must correspond to the values on your network subscription form.



Configuration Details

X.25 Address

Enter the value from the X.25 subscription form.

This field need only be filled in if:

- You are configuring PAD support on the X.25 board.
- You wish to run the Network Loopback test (described in chapter 12).

If you configure PAD support on this board, the address you enter here will be used as the calling address in call request packets for PAD support outgoing calls (programmatic access to PAD devices). If no address is to be set in outgoing calls (for example, for subscribers to Transpac or similar networks), leave this field blank.

LCI Range

Enter the value from the X.25 subscription form.

If the X.25 board is configured as a DCE, all values in this table must precisely match the values in the corresponding DTE. (In this table, "Incoming" means "from DCE to DTE," and "Outgoing" means "from DTE to DCE.")

Default Flow Control

The default values are:

Window Size In and Out: 2

Packet Size In and Out: 128

Throughput Class In and Out: 10

Enter the values from the X.25 subscription form.

Note that for boards on which you intend to configure PAD support, the subscribed and configured packet size must be 128, 256, or 512 bytes. All PVCs will be set with the flow control values which you enter here.

Network Subscribed Facilities

The Network Subscribed Facilities should be set according to the X.25 subscription form.

Note that **Flow Control Negotiation** sets both the packet size and the window size negotiable. NMMGR *must* be configured the same. That is, if **Flow Control Negotiation** is selected, both window and packet size negotiation must be selected in NMMGR.

8

Configuring PAD Support

Introduction

This chapter covers configuring:

- PAD Support
  - DTC PAD Switching Information
  - PAD Access
  - PAD Incoming Security
- Security Lists
  - Node Names List
  - Access Lists

Help

All the fields are described in the online Help facility. Click on **Help** for information on the fields you are configuring.

Downloading Changes

Changes made to the PAD Support configuration only take effect when PAD has been stopped then started.

Overview

The PAD support feature allows terminals connected to remote PADs to access LAN based systems via the DTC. Security lists can be implemented to prevent access by unauthorized PAD devices.

X.25 Levels 1, 2 and 3 must be configured for PAD access to be implemented (see chapter 7).

The DTC PAD support facility only supports packet sizes of 128, 256, or 512 bytes. You must subscribe for, and configure for (X.25 Level 3 configuration screen), one of these packet sizes if you are going to configure PAD support on an X.25 board.

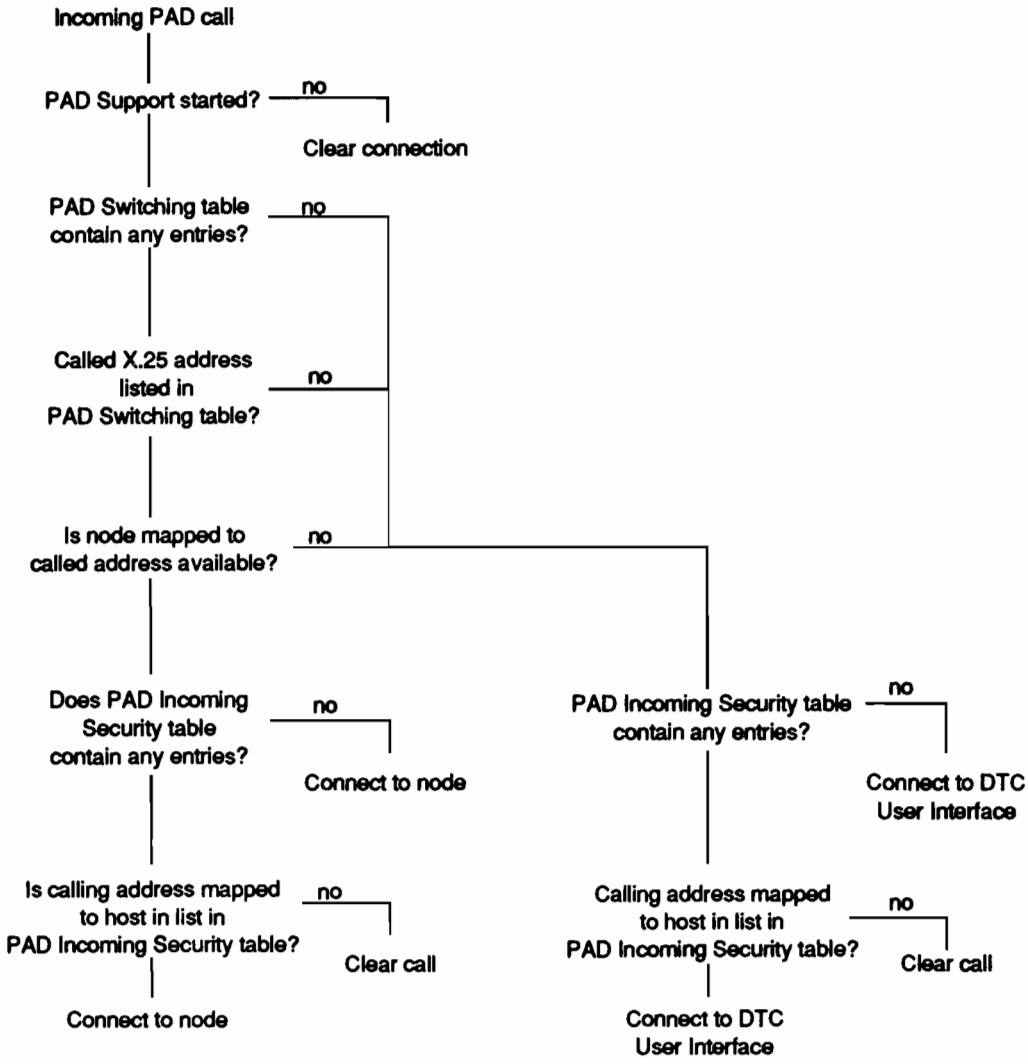
Three tables are used to control access to and from PAD devices:

- **DTC PAD Switching Information**
- The DTC PAD Switching Information table allows remote users who enter a full address configured in the table to be routed directly to the assosciated host system from the PAD prompt. Other calls are routed to the DTC user interface.
- **PAD Access**

  The PAD Access table is used to route calling PAD addresses to nailed LDEVs on MPE XL systems, to map PAD device numbers to TCP port addresses for the Device Access/ARPA Program, and for programmatic access to remote PAD devices.
- **PAD Incoming Security**

  The PAD Incoming Security table controls connection establishment between local systems and remote PAD-connected devices.

The figure on page 76 shows how security checks are run on an incoming call:


Incoming PAD call
PAD Support started?
no
Clear connection
PAD Switching table contain any entries?
no
Called X.25 address listed in PAD Switching table?
no
Is node mapped to called address available?
no
Does PAD Incoming Security table contain any entries?
no
Connect to node
Is calling address mapped to host in list in PAD Incoming Security table?
no
Clear call
Connect to node
PAD Incoming Security table contain any entries?
no
Connect to DTC User Interface
Calling address mapped to host in list in PAD Incoming Security table?
no
Clear call
Connect to DTC User Interface

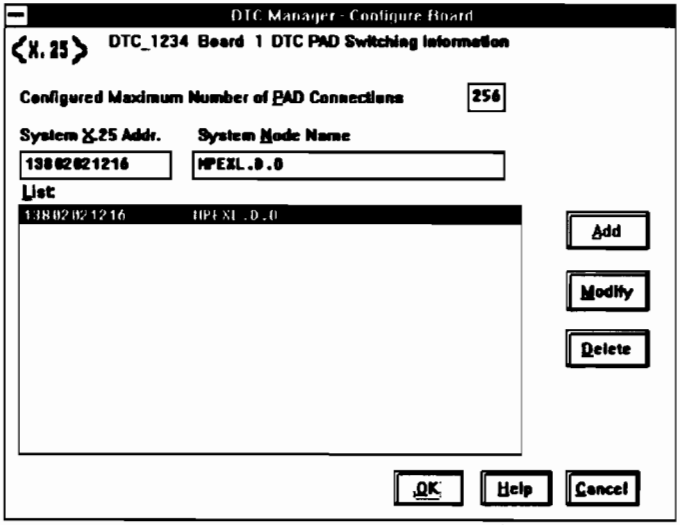
Basic Procedure

1. Display the DTC's backplane window (see chapter3)
2. Select the X.25 board to be configured.
3. Click on the **Configure** button.
4. Click on the appropriate buttons to configure:
   - **DTC PAD Switching Information**
   - **PAD Access**
   - **Pad Incoming Security**
5. Click on the **OK** button when you have finished configuring. You will be returned to the backplane window.
   - Click on **Cancel** to return to the main configuration screen, with no alterations made to the configuration.
   - Click on the **Help** button for online help.

When the configuration of the board is changed, the color of the icon changes to blue when you return to the backplane window (yellow on a black background while the object is highlighted), as a reminder of the objects which have been reconfigured. The icons revert to black when the configuration is saved.

DTC PAD Switching Information

This table is optional. Mapping LAN-based host systems to X.25 called addresses allows remote users to access the host system directly from the PAD prompt, by entering the full address as configured in this table. Otherwise, remote users enter the DTC's address, and then connect to a system through the DTC user interface in the same way as local users, using the command **connect <nodename>** or **connect <IP address>**.



Computer Museum

Configuration Details

Maximum Number of PAD Connections

Enter the maximum number of PAD connections (up to 32 for the DTC 16 and up to 256 for the DTC 48) which you want to support on the board. Consider the following points when deciding on the maximum number:

- PAD connections use SVCs, out of the pool of up to 32 SVCs available on a DTC 16 X.25 board and up to 256 SVCs available on a DTC 48 X.25 board (the actual total available SVCs is limited by the number for which you subscribed with the PSN, and configured in the X.25 Level 3).
- The same pool of SVCs is used for HP 3000/900 system-to-system switching (see chapter 9 for more information).

If you are configuring system-to-system switching and PAD support on the same X.25 board, you may need to balance your PAD support requirements with your system-to-system switching requirements to find the optimum configuration for your network.

If a remote device attempts to set up a connection and no SVCs are available, the call is cleared with the message **CLR DTE 70** (46 in hex).

System X.25 Address

Enter the X.25 address of the system node, up to 15 digits. For connections to most public data networks, this will be the DTC X.25 board's subscription address plus a unique subaddress for each system (the full address must be entered for every system).

For one listed system only, you can enter **NONE** in this field. Incoming calls with no called address will be routed to this system.

With certain networks (such as Transpac, in France) the called address is removed from incoming call packets and the calling address is added to outgoing call packets by the network. For these networks enter only the subaddress (or **NONE**, for one system only) in this field, not the full X.25 address.

All nodes must be entered with their full X.25 addresses; you cannot use `X` as a replacement for address digits in this box. The remote terminal user enters this address at the PAD prompt to connect to the corresponding system.

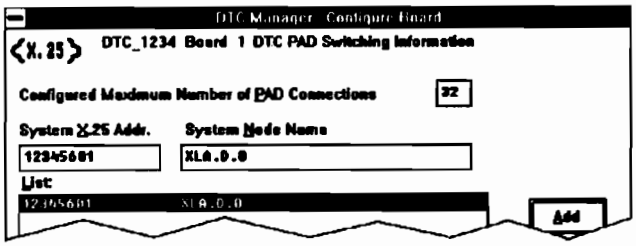
If an incoming call packet has a called address which is not listed, the call is switched to the DTC user interface.

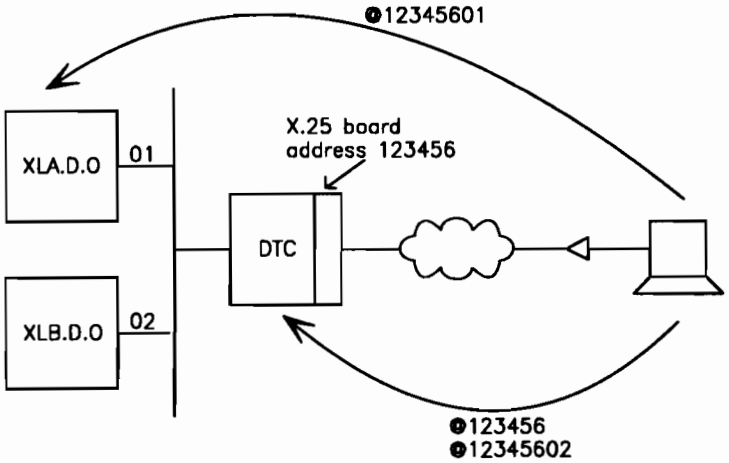
System Node Name

Enter the system node name corresponding to the X.25 address. This can be an NS name, an ARPA name or an IP address: the field is not case sensitive. The list can contain up to 32 system nodes, plus the reserved node name **DTC_USER_IF**. Incoming calls with a called X.25 address corresponding to **DTC_USER_IF** are routed to the DTC user interface. This can be useful if you want to display a message telling users to phone a certain number or passing on new routing information.

Example

- The DTC's X.25 board has the X.25 address 123456.
- XLA.D.O has the X.25 sub-address 01.
- XLB.D.O has the X.25 sub-address 02, but hasn't been entered in the Switching table.





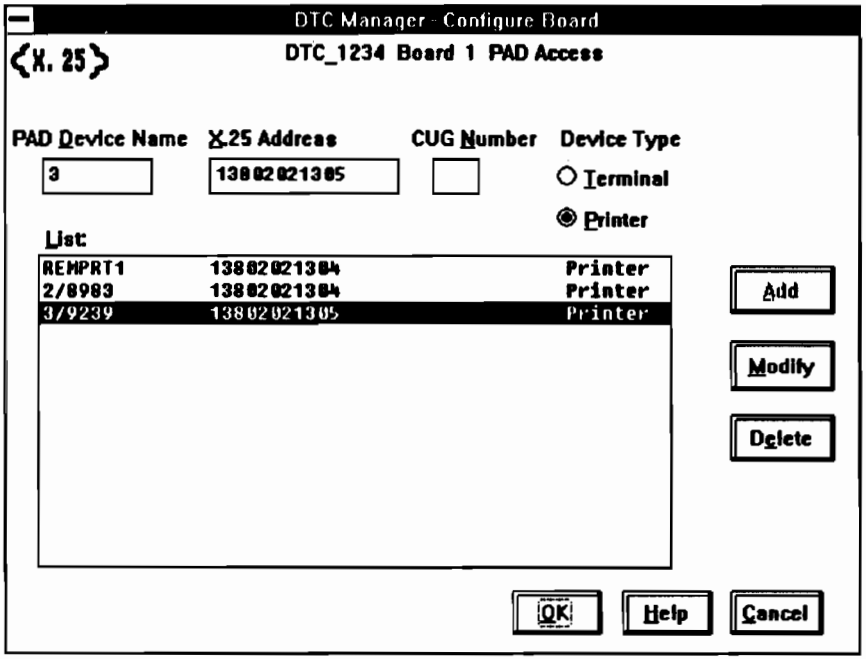
The following list shows what happens depending on the address entered by the user at the terminal connected to the remote PAD:

@123456	The user is connected to the DTC user interface.
@12345601	The user is connected directly to XLA.
@12345602	The X.25 address isn't defined in the list, so the call is connected to the DTC user interface, and the user can connect to XLB from there.

PAD Access

The PAD Access screen maps the device name or number of a remote PAD device onto its X.25 address, closed user group (CUG) number and device type, for programmatic access to remote PAD devices, to tie incoming calls to a nailed ldev, and for use by the Device Access/ARPA Program.

In the figure below, the entry REMPRT is the NMMGR device name. In the entry 2/8983, 2 is the PAD device number, and 8983 the TCP port address calculated from it. Both entries refer to the same X.25 address, so the printer is accessible from UNIX and MPE XL system.



Note that when using a private PAD which does not use sub-addressing it is not possible for HP 3000/900 systems to have access to a nailed terminal and a printer. Under these circumstances you can access either:

- one printer and any number of non-nailed devices, or
- one nailed terminal

When programmatic access fails to establish an X.25 link to a printer, a timer is used to retry the connection at predetermined intervals. (6, 20 and 40 seconds).

Configuration Details

Device Name

Enter the name of the remote PAD device (up to eight characters), or the PAD Device Number (0 to 31). If a device number is used, the TCP destination port number is automatically calculated and displayed. Up to 128 PAD devices can be listed in the screen.

The device name is used for programatic access by systems: the device number is used when printing from ARPA services. You should make a note of the TCP number to include in the file `/etc/services` on the UNIX system which has the Device Access/ARPA Program.

X.25 Address

Enter the X.25 address of the remote PAD device, maximum 15 characters. Where devices are connected to a multiport PAD (such as the HP 2335A), include port subaddresses in this field.

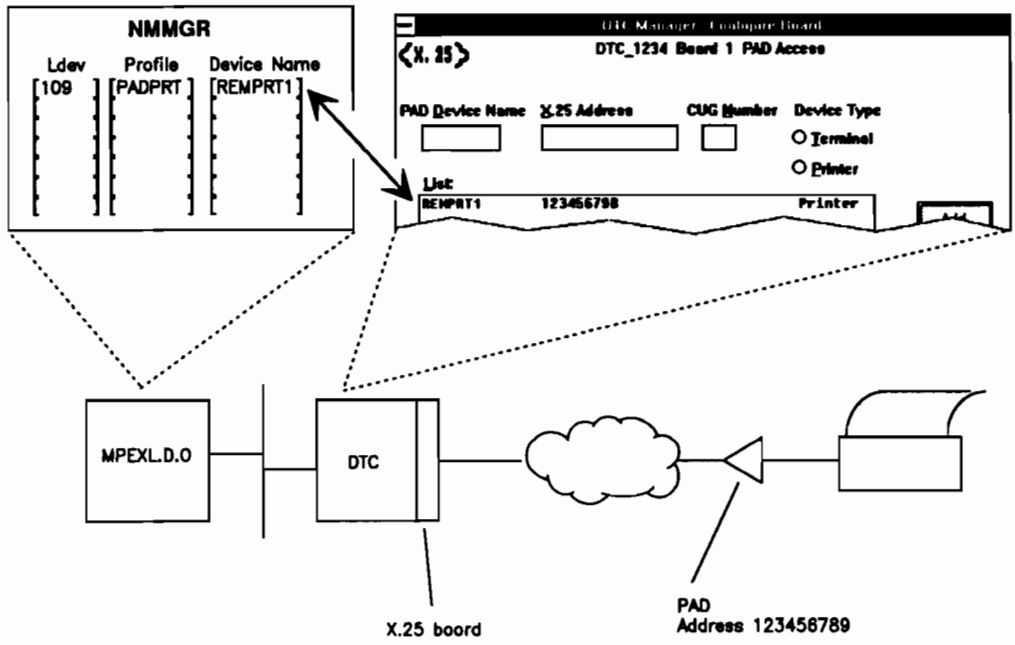
CUG Number

Enter the closed user group number, if there is one, of the remote PAD, or leave the field blank. Refer to the network subscription form for the CUG number. If the CUG number entered here does not correspond to your network subscription, calls will be cleared by the network with the message `CLR DTE 70`. Note that CUG is a PSN service, and is not configurable from the DTC Manager.

Device Type

Select **Terminal** or **Printer**. This must match the device type configured on the host.

Example



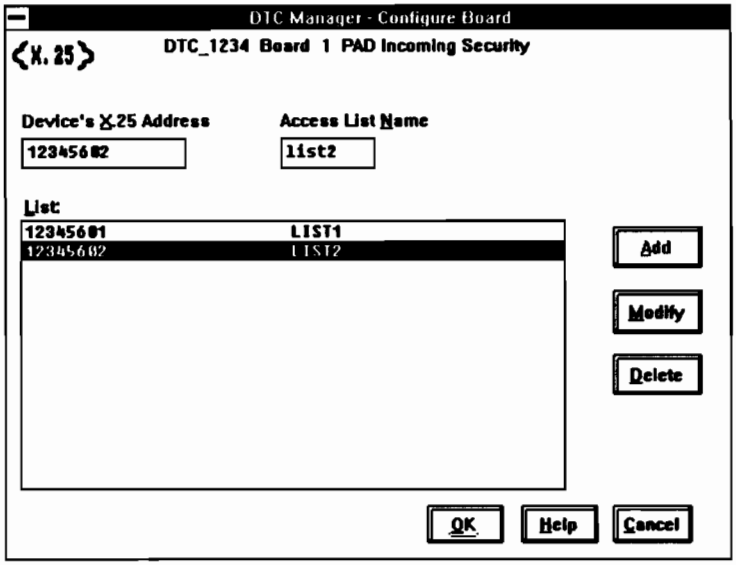
- LDEV 109 is a nailed device, and the PAD Device Name REMPRT1 has been associated with it in NMMGR on the HP 3000/900.
- The address of the remote PAD, 123456879, is mapped to the PAD Device Name in the PAD Access list.

PAD Incoming Security

PAD Incoming Security is optional; if there are no entries on this screen, no calls are checked.

The PAD Incoming Security screen maps X.25 addresses of remote PAD devices to Access Lists. The Access Lists, defined under **Set Security Lists...** (see page 89) list the systems which the remote device is permitted to access. An Access List may optionally have a password.

If the access list corresponding to the calling address is not defined under **Set Security Lists...**, or if it is empty, the incoming call is cleared with **CLR DTE 70**. By listing X.25 addresses against non-existent access lists, you can prevent the corresponding remote devices from accessing any local system nodes.



Configuration Details

Device's X.25 Address

Enter the address of the remote PAD device. You can use the letter "X" as a wildcard character in place of any single digit; all systems with corresponding addresses will then have the same capabilities. Note that "X" represents one digit only, and the address checking is sensitive to the length of the address. To manage addresses, you must enter pyramids of Xs where the base is longest expected address and the peak the shortest expected address.

In the following example, all PADs with addresses of six, seven or eight digits starting 1234, have access:

1234XX
1234XXX
1234XXXX

But in the following example, only PADs with addresses of seven digits starting 1234, have access:

1234XXX

Access List Name

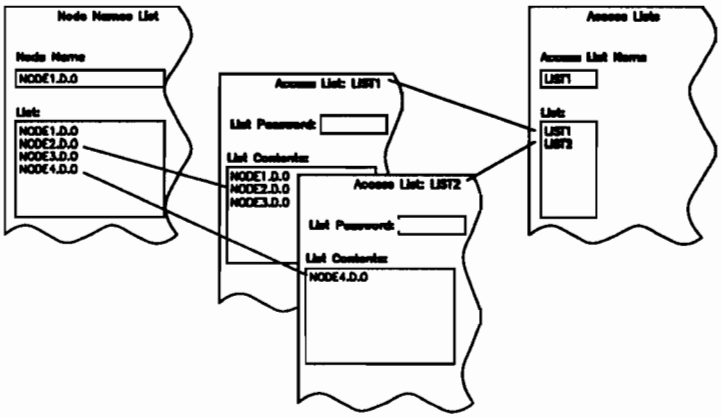
Enter the name of the corresponding access list, created using **Set Security Lists...** in the **Control** menu (see page 89). The reserved list name **ALL_DEST** can be used to allow the corresponding PAD device(s) access to all nodes in the Node Names List (note that no password can be assigned to **ALL_DEST**).

Example

- The Node Names List contains NODE1.D.O to NODE4.D.O.
- Two access lists have been set up, LIST1 and LIST2.

  LIST1 contains NODE1.D.O, NODE2.D.O and NODE3.D.O.

  LIST2 contains NODE4.D.O.



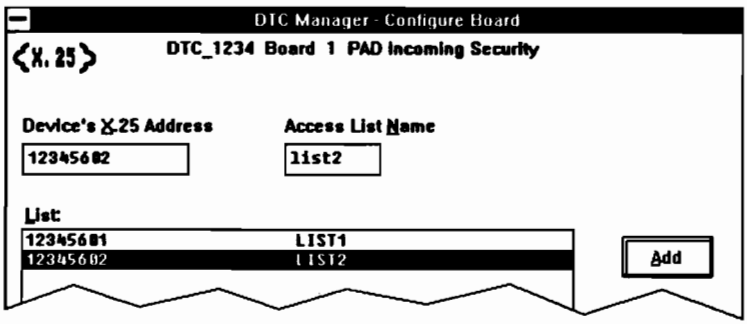
- The DTC X.25 board has the address 987654

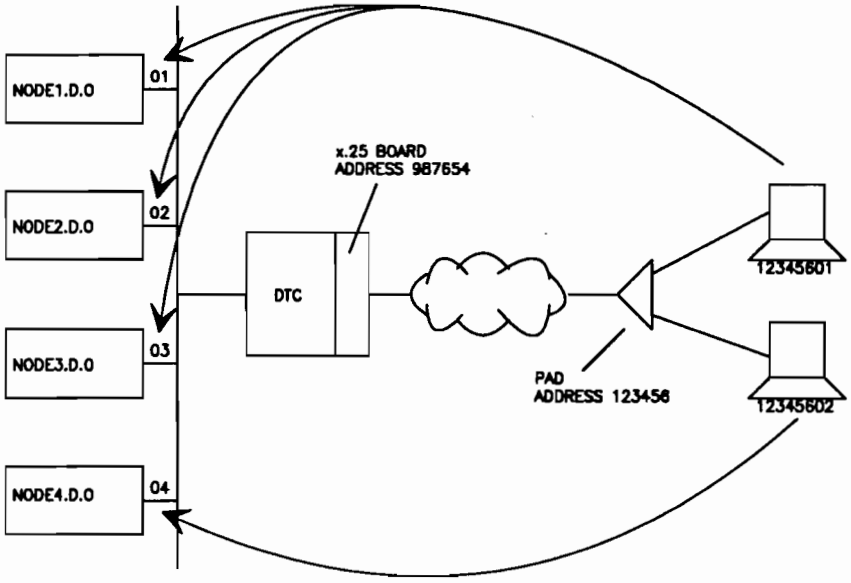
  NODE1.D.O has the address 98765401 ... NODE4.D.O has the address 98765404.

- The PAD Incoming Security table has been set up as follows:

  Remote PAD terminal 12345601 can access systems listed in LIST1.

  Remote PAD terminal 12345602 can access systems listed in LIST2.





To connect from PAD 12345602 to NODE4.D.O, the remote user can do one of the following (@ is the PAD prompt):

`@ 98765404`	connects directly to NODE4.D.O
`@ 987654` `DTC> connect NODE4.D.O`	connects to the DTC user interface this establishes the connection to NODE4.D.O

If LIST1 requires the password "secret", the terminal user can reach the system as follows:

`@ 13244768401, d secret`	connects directly to NODE4.D.O

The DTC will prompt for the password, if it is required but isn't present in the call user data received by the DTC.

Note that PAD users cannot use the escape-from-data-transfer, or interrupt character, available to asynchronously-connected terminal users. A PAD terminal user must log-off the host system to get to the DTC terminal user interface.

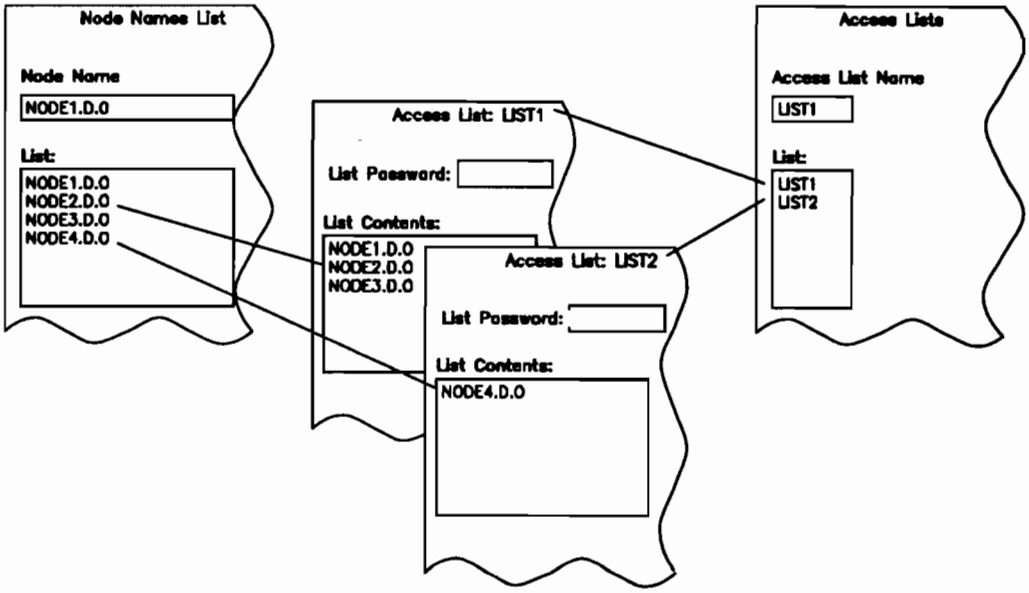
Set Security Lists

Introduction

Security lists only need to be configured if you are going to configure PAD Incoming Security. They are used with PAD Support configurations to restrict remote access (via PAD Support) to local systems.

The names of *all* the nodes to be accessed must first be entered into the Node Names List. The access lists are subsets of the Node Names List, and only nodes which appear in the Node Names List can appear in an access list.

PAD terminals are mapped to access lists in the PAD Incoming Security configuration (see page 85) to define the LAN-based systems to which they have access.



You may also define access lists with no node names; any remote PAD terminal mapped to such a list is prevented from establishing PAD connections through the DTC.

You can define up to 10 access lists, each with a maximum of 32 node names.

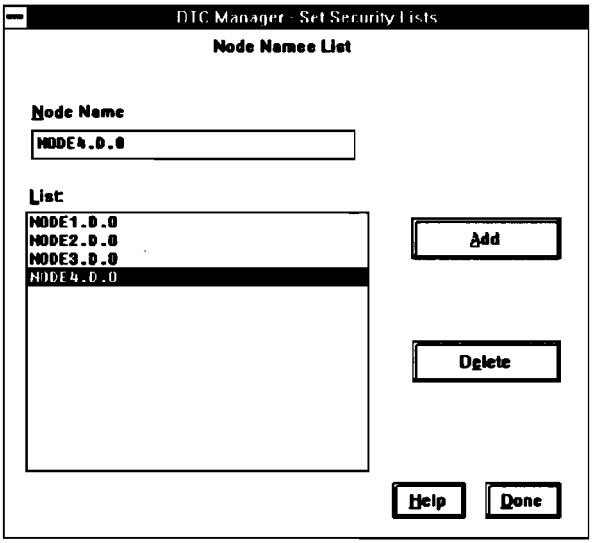
The name can be an NS nodename, ARPA address an IP address. You may have to enter more than one "version" of the same address, for example both the IP address *and* the ARPA address of the same device, to allow users to enter either and gain access.

When a remote PAD terminal calls into the DTC to connect to a local system, the DTC looks up the calling address in the PAD Incoming Security table. The call is accepted if the called host system is included in an access list defined for the calling address. A password may optionally be defined for each access list, in which case the PAD terminal user must also enter the password before the DTC will establish a connection with the requested host.

The lists are downloaded to the DTC when it starts up (after power-on or reset). Whenever you make any changes and click on the **OK** button on the main Set Security Lists screen, the updated list is downloaded to all the DTCs for which the workstation has configuration files. Note, however, that any changes you make to PAD security have no effect on established connections; lists are only checked while a connection is being established.

Node Names List

To get to the Node Names List screen, click on **Define Node Names List** in the Set Security Lists screen.



Adding a Node Name

1. Click in the **Node Name** entry field
2. Type in the node name, IP address or ARPA address.
3. Click on **Add**.

Deleting a Node Name

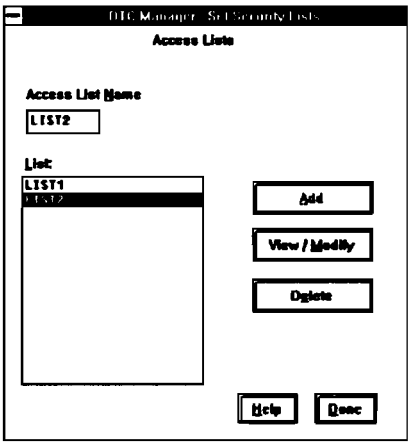
4. Highlight the name in the list by clicking on it
5. Click on **Delete**.

Access Lists

To create an access list, you must first enter a name for the list into the Access Lists screen, then use the **View/Modify List** function to enter node names into the list.

Creating an Access List

1. Cick on **Define Access Lists** on the Set Security Lists screen.



2. Click in the **Access List Name** field
3. Type in a name for the list (up to eight characters), and click on **Add.**

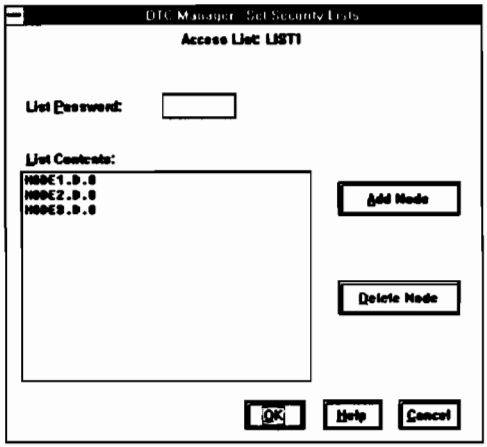
Adding Node Names to an Access List

Proceed as follows, when you have added the list:

1. Cick on **Define Access Lists** on the Set Security Lists screen.

   You will see the screen shown below.

2. Highlight the access list name.
3. Click on **View/Modify List.** You will see a screen similar to the Node Names List.



4. Click on **Add Node**. You will see a list of the node names configured in the Node Names list.

5. Select the node name or address to add to the Access List by clicking on it.

   If you want to add several nodes simultaneously, hold down the shift key on the keyboard and click the mouse on all the node names you want to add.

6. Click on **Add**.

Deleting Node Names from an Access List

Proceed as follows:

1. Highlight the list name.
2. Click on **View/Modify List**.
3. Click on the node name which you want to delete, so that it is highlighted.
4. Click on **Delete**.

Deleting an Access List

Proceed as follows:

1. Click on the list name
2. Click on **Delete.**

Access List Passwords

When you choose **View/Modify List** — to add or delete node names from a selected list — you will see that the View/Modify List screen includes a field for an Access List Password. You can enter a password of up to eight alphanumeric characters in this field. This password must be entered by PAD terminal users to establish a connection to a listed node.

9

Configuring System to System Switching

Introduction

This chapter covers the following topics:

- System to System Switching Information
- System to System Local Users Groups

Overview

System to System Switching is only applicable to MPE XL systems.

System to System Switching Information

The System to System Switching table allows MPE systems to access each other via X.25. The table maps nodenames configured in NMMGR on a host system to X.25 addresses. If there are no entries in the list, system to system switching is not allowed.

When the DTC receives an incoming call, it looks up the called address in this table, and routes the call to the appropriate host and network interface using the node name and link name mapped to the called address. For outgoing calls from this node and link, the calling address will be the address listed in the X.25 Address field.

System to System Local Users Group

A System to System Local Users Group (LUG) filters incoming and outgoing calls from remote systems to local LAN based systems. Only remote systems which are listed can have access to local LAN based systems. If there are no items in the LUG list, there is no control on incoming and outgoing calls on the DTC's X.25 board.

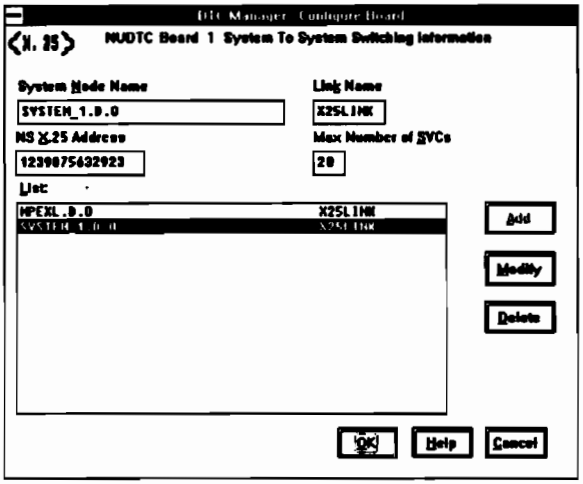
Basic Procedure

1. Display the DTC's backplane window (see chapter 3)
2. Click on the button of the X.25 board to be configured.
3. Click on either:
   - the **System to System Switching Information** button.
   - the **System to System Local Users Group** button.
4. Configure the items.
5. Click on the **OK** button when you have finished configuring. You will be returned to the backplane window.
   - Click on **Cancel** to return to the main configuration screen, with no alterations made to the configuration.
   - Click on the **Help** button for online help.

When the configuration of the board is changed, the color of the icon changes to blue when you return to the backplane window (yellow on a black background while the object is highlighted), as a reminder of the objects which have been reconfigured. The icons revert to black when the configuration is saved.

System to System Switching Information

The System to System Switching table maps up to 32 LAN-based host systems, using the nodenames configured in NMMGR on each host system, to X.25 addresses. Typically the X.25 address will be the X.25 address of the DTC plus a unique subaddress. If you are connected to certain public data networks, it may be necessary to enter only a subaddress for each system node — see "NS X.25 Address", page 98 . When the DTC is connected to a private X.25 switch which supports multiple addresses on a single physical link, it is possible to allocate a fully unique address to each host system.



Configuration Details

System Node Name

Enter the node name of the LAN-based host system for which you are configuring, using the form:

```
nodename.domain.organisation
```

This name must correspond precisely with the name used in configuring NMMGR on the host system.

Link Name

Enter the name of the link defined in NMMGR for a given network interface (NI) in the X.25/XL System Access product.

NS X.25 Address

Enter the X.25 address for the local host system, up to 15 digits. For most connections to public data networks, this will be the DTC X.25 board's subscription address plus a unique subaddress for each system (the full address must be entered for every system).

With certain networks (such as Transpac, in France) the called address is removed from incoming call packets and the calling address is added to outgoing call packets by the network. For these networks enter only the subaddress (or NONE, for one of the systems only) in this field, not the full X.25 address.

For one of the listed systems, you can enter NONE as the NS X.25 Address. Incoming calls arriving at the DTC which have no called address will be routed to this system. Outgoing calls from this system will not include a calling address.

Max Number of SVCs

Enter the maximum number of switched virtual circuits you will allow to go to the host system you are configuring. In deciding how many SVCs to permit to each system, bear in mind the following:

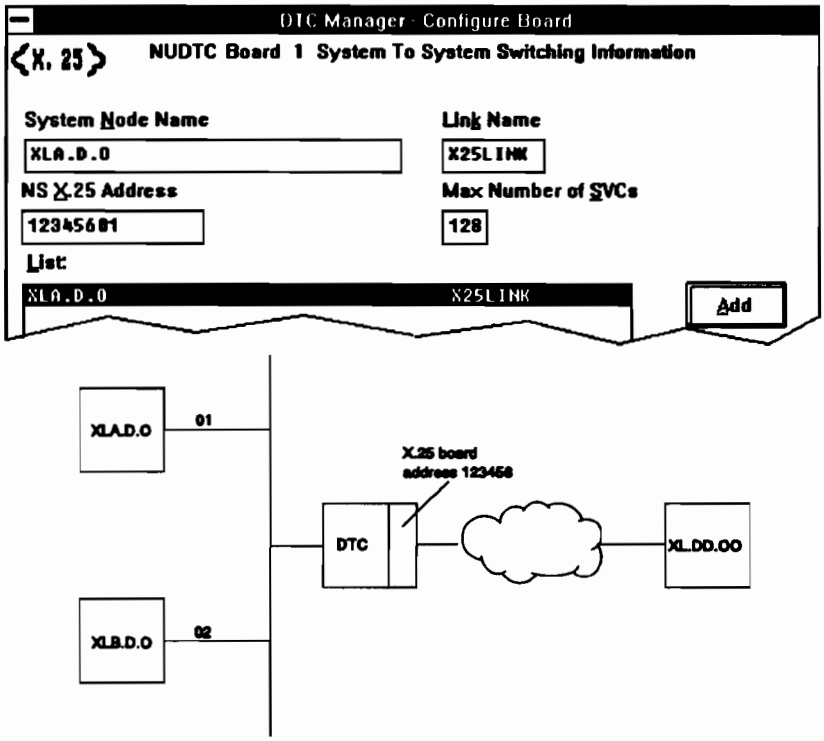
- The total number of SVCs which an X.25 board can establish depends on the packet size which you have configured in the X.25 Level 3 configuration. Each DTC 48 X.25 board can support a maximum of:
  - 256 SVCs, for packet sizes of 512 bytes or less;
  - 150 SVCs with 1024-byte packets;
  - 100 SVCs with 2048-byte packets;
  - 54 SVCs with 4096-byte packets.

  Note that the maximum number of SVCs which a DTC 16 X.25 board can establish is 32.

Note that the maximum number of SVCs depends on the packet size for which you have *configured*, and is not affected by packet size negotiation. That is, if you have configured for a packet size of 4096, and a packet size of 128 has been negotiated, you are still limited to the 54 SVCs supported with 4096-byte packets.

- The total number of SVCs available may also be limited by your PSN subscription, and is defined by the X.25 Level 3 configuration (see page 73).
- The total SVCs for all systems in the list may exceed the limits given above. For example, three systems may each be permitted 256 SVCs. However, if one system has established 256 SVCs, the two other systems will be unable to establish any SVCs.
- PAD support also uses these SVCs. If you are configuring PAD support on the same board, PAD support requirements must be balanced against system to system switching requirements for SVCs.

Example



- In the example, XL.DD.OO will be connected to XLA.D.O using X25LINK if the packet has the called address 12345601.
- 12345602 can't be accessed by other MPE systems.
- If XLA.D.O tries to call XL.DD.OO, the X.25 address 12345601 will be used as the calling address.

System-to-System Local Users Groups

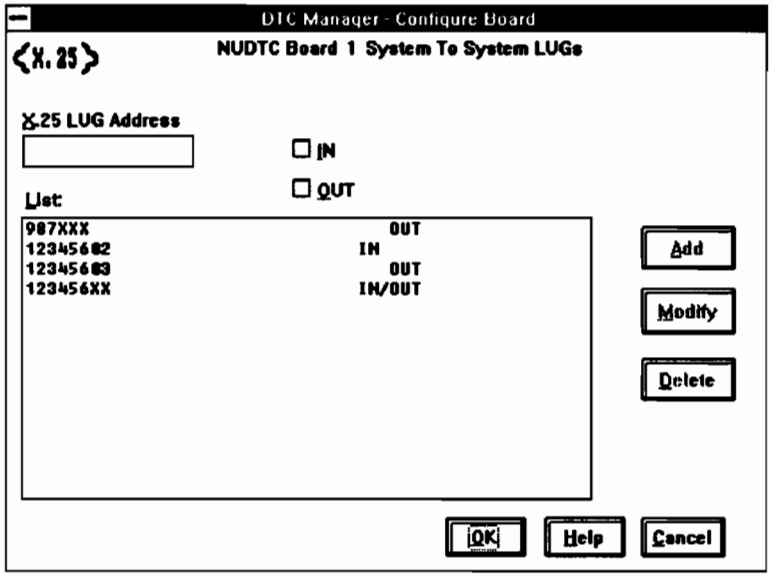
A System-to-System Local Users Group can be configured in order to filter calls to and from remote systems to local LAN based systems. If the list exists, only those remote systems which are listed can have access to local LAN based systems. If there are no items in the LUG list, there is no control on incoming and outgoing calls on the DTC's X.25 board.

Remote systems can be allowed incoming call setup only, outgoing call setup only, or two-way call setup. Note that this list is only referred to for call setup; once a call is set up, data can be exchanged in both directions. If all systems are to be permitted both incoming and outgoing calls, you do not need to create an LUG list.

Note

The LUG can screen for incoming calls only, outgoing calls only, or both. If there are *any* entries specified as **IN**, you must ensure that *all* systems which need to call in are listed. Similarly, if there are any **OUT** entries in the list, all remote systems which your local systems require to call out to must be listed. If you specify a system as **IN/OUT**, all systems which are going to use X.25 must be listed.

Configuration Details



X.25 LUG Address

To enter the X.25 address of the remote device, click in the box and type the X.25 address of the remote system, up to 15 digits.

You can use the letter "X" as a wildcard character in place of any single digit. Note that "X" represents one digit only, and the address checking is sensitive to the length of the address. Thus, for example, X = 0 to 9; XX = 00 to 99, but *not* 0 to 9. To manage addresses, you must construct pyramids, where the base is the maximum expected address length, and the peak is the minimum expected address length.

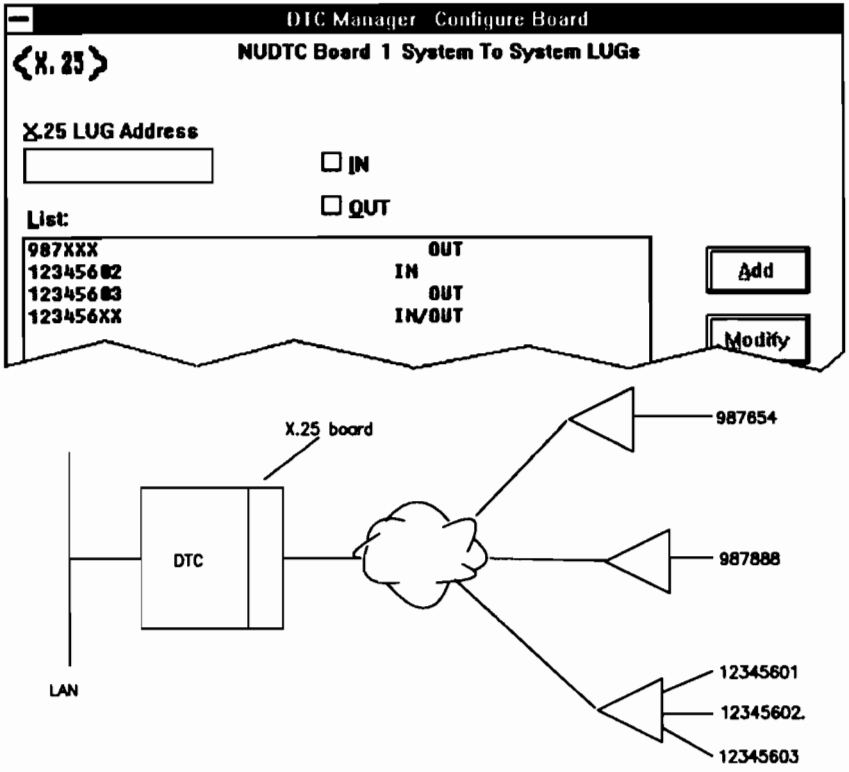
For example, to allow all six, seven and eight digit X.25 addresses which start 1234 IN/OUT access, you would enter:

1234XX	IN	OUT
1234XXX	IN	OUT
1234XXXX	IN	OUT

Addresses without wildcards take precedence over addresses with wildcards. So, in the following example, 123401 can only call in, even though all address corresponding to 1234XX are listed as having both IN and OUT access:

1234XX	IN	OUT
123401	IN	

Example



- 12345601 has IN/OUT access.
- 12345602 has IN only and 12345603 has OUT only, as addresses without wildcards take precedence over addresses with wildcards.
- 987654 and 987888 both have OUT permission only.

10

Controlling the DTC

Introduction

This chapter describes the following DTC Manager functions which are available from OpenView's **Control** menu:

- **Upload**

  Copies information from the DTC to the DTC Manager. Used mainly by HP staff for troubleshooting.

- **Start/Stop X.25**

  Start and stop X.25 and PAD support.

- **Start/Stop Telnet**

  Start and stop Telnet.

- **Reset**

  Stops the selected card or port and downloads its code.

Upload

The upload function copies information from a DTC's memory to the DTC Manager. There are two upload commands:

Upload uploads a memory dump of one of the following:

- the entire DTC.
- a single asynchronous port.
- an X.25 board.
- a Telnet Access board.
- a logical channel identifier (LCI).

Upload ldev uploads an ldev (HP 3000/900 MPE XL systems only).

Uploads are used by Hewlett-Packard support centers in diagnosing serious problems in the functioning of the DTC. Generally, you should only use the **Upload** command when asked to do so by HP support staff.

Note

Use the **Upload** function with care. Uploading data from the CPU will disrupt all data communications through the DTC. Connections will be closed and data may be lost.

An upload contains a large amount of information and may fill the disc, causing operating problems.

DTC-Initiated Upload

DTCs automatically upload information to their DTC Manager if there is a catastrophic event.

DTC Manager Icon

While DTC Manager is running (and even if the OVRun window is closed), the management icon remains visible at the bottom of your workstation's screen. If DTC Manager receives a download request from a DTC, this icon turns into a downward-pointing arrow for the duration of the download. Similarly, this icon turns into an upward-pointing arrow whenever DTC Manager is uploading data from a DTC. These icons are only displayed when the download or upload is initiated automatically, if the download is initiated from the DTC Manager workstation they will not be displayed.

Uploading a DTC

1. Click on the DTC on the network map.
2. Pull down the **Control** menu, and click on **Upload...** to display the backplane window.
3. Click on the CPU icon.

When the upload is successfully completed, you will see a screen giving you the name of the file in which the uploaded data is stored on the OpenView workstation. See the section "Upload File Names" (page 111) for an explanation of the filenames.

Uploading an Asynchronous Port

1. Click on the DTC on the network map.
2. Pull down the **Control** menu, and click on **Upload...** to display the backplane window.
3. Click on the port you want to upload.

When the upload is successfully completed, you will see a screen giving you the name of the file in which the uploaded data is stored on the OpenView workstation. See the section "Upload File Names" (page 111) for an explanation of the filenames.

Uploading an X.25 Board

1. Click on the DTC on the network map.
2. Pull down the **Control** menu, and click on **Upload...** to display the backplane window.
3. Click on the board which you want to upload. The backplane window is displayed.
4. You are asked whether you want to upload an X.25 board or an LCI.

   Select **X.25 Board** .

When the upload is successfully completed, you will see a screen giving you the name of the file in which the uploaded data is stored on the OpenView workstation. See the section "Upload File Names" (page 111) for an explanation of the filenames.

Uploading a Telnet Access Card

1. Click on the DTC on the network map.
2. Pull down the **Control** menu, and click on **Upload...** to display the backplane window.
3. Click on the board you want to upload.

When the upload is successfully completed, you will see a screen giving you the name of the file in which the uploaded data is stored on the OpenView workstation. See the section "Upload File Names" (page 111) for an explanation of the filenames.

Uploading an LCI

You need to know a logical channel's identifier (LCI) to be able to upload the logical channel. Chapter 11 contains information on using **Show Connections** and **X.25 Site Management** to identify LCIs.

1. Determine the LCI.
   - Use **Show Connections** in the **Monitor** menu to identify LCIs for a PAD support connection.
   - Use **X.25 Site Management** in the **Monitor** menu to identify LCIs for a system to system logical circuit.
2. Click on the DTC on the network map.
3. Pull down the control menu, and click on **Upload...** to display the backplane window.
4. Click on the board which you want to upload. You are asked if you want to upload an X.25 board or an LCI.
5. Select **LCI** and type in the number of the LCI to upload a logical channel.

When the upload is successfully completed, you will see a screen giving you the name of the file in which the uploaded data is stored on the OpenView workstation. See the section "Upload File Names" (page 111) for an explanation of the filenames.

Uploading an Idev (HP 3000/900 Systems Only)

Note that you click on the *host icon* on the map, not the DTC, to upload an Idev. The icon's node name must have been entered in *upper case* in the describe box of OVDraw for the upload to work.

1. Identify the Idev using **Show Connections** (see chapter 11), or the **Show Sessions** command on the relevant host.
2. Click on the appropriate host icon on the map, and select **Upload Idev...** from the **Control** menu.
3. Enter the Idev number and click on **OK**.

The screen displays the name of the file where the upload is stored; see the section "Upload File Names" ([age 111) for an explanation of the filenames.

Upload File Names

Uploaded data is stored in files in the directory `\DTCMGR\UPLOAD`, on the disk on which DTC Manager is installed. The file name is either the first eight characters of the DTC's nodename, or the host system nodename (for ldev uploads). The three-letter extension indicates the type of upload. The name of a typical upload file (with DTC Manager installed on the `C:` drive) has the form:

```
C:\DTCMGR\UPLOAD\nodename.ext
```

Note that DTCs upload automatically to their DTC Manager when there is a catastrophic event.

Filename Extensions

The filename extensions are:

- **.Bx**, for a CPU upload. `x` cycles from 1 through 3, then back to 1, for each new upload.
- **.PRT**, for a port upload. As this is never modified, each port upload overwrites the previous one. To retain port uploads, you must copy or rename these files with new filenames using Microsoft Windows' **Copy** or **Rename** function, or the MS-DOS `copy` or `rename` commands.
- **.Syx**, for an X.25 board upload. `y` is the number of the slot the X.25 board is installed in. `x` cycles from 1 through 3, then back to 1, for each new upload.
- **.LCI**, for a logical channel upload. As for port uploads, each upload overwrites the previous one, and you must copy or rename the files with new filenames if want to retain the upload data.
- **.LDV**, for ldev uploads. Again, you need to make copies of these files, or rename them, if you wish to retain the data.
- **.Txy**, for a Telnet Access board upload. `x` varies from 1 to 3, and is incremented for each new upload file. `y` is the slot number, 1 to 5.

Start/Stop X.25

The **Start/Stop X.25** command is used to control the status of the X.25 board and PAD support. When the DTC is powered up and receives its download, the X.25 code enters an idle state. Issuing the **Start X.25** command from the OpenView workstation enables it to provide the X.25 or PAD support services, (a NETCONTROL START command must be sent to the MPE XL host on the LAN). If the **Start X.25** command is being issued after a **Stop X.25** command a NETCONTROL ADDLINK command must be sent to the host XL system.

Procedure

1. Click on the DTC on the network map.
2. Pull down the **Control** menu and click on **Start/Stop X.25**.
3. Select the X.25 board from the backplane of the DTC 48 and click on **OK** to display the backplane window.

   For the DTC 16 or a DTC 48 with only one X.25 board installed in it, the X.25 or PAD screen will appear directly when you click on the DTC on the map.
4. Choose the service that you want to start or stop: X.25, PAD support, or both (you can start or stop them simultaneously).
5. Click on **Start** or **Stop**.

X.25 must be started either before or at the same time as PAD support services. Similarly, PAD support services must be stopped before X.25 can be stopped, or both PAD support and X.25 must be stopped simultaneously.

Note The message **X.25 start successful** indicates that the DTC has responded to the **Start X.25** command; it does not indicate that the DTC has successfully established communication with the network (X.25 level 3). To check that level 3 communications have been established, use the **Level 3 Status** command of **Show Status ...** in the **Diagnose** menu (chapter 12).

Start/Stop Telnet

The **Start/Stop Telnet...** command is used to control the status of the Telnet Access board. When the DTC is powered up and receives its download, the code on the installed SNP boards enters an idle state. Issuing the **Start Telnet** command from the OpenView workstation transfers the configuration to the Telnet Access board.

Procedure

1. Click on the DTC on the map.
2. Pull down the **Control** menu and click on **Start/Stop X.25/Telnet**, to display the backplane window.
3. Click on either **Stop** or **Start.**

Reset

Reset Resets any board in the DTC (asynchronous interface boards, Telnet Access boards, or X.25 boards), a single asynchronous port, a single logical channel, or the entire DTC.

Reset Idev Resets Idevs on an HP 3000/900 MPE XL systems.

Caution

Resets are disruptive to the object which is reset.

Port and logical channel resets interrupt data flow, and data may be lost as a result of the reset.

DTC resets disrupt *all* DTC communications.

Resets disrupt all activity on the reset item until its code is re-downloaded after the reset; Telnet, X.25 and PAD support must be explicitly re-started using **Start/Stop X.25/Telnet** if the respective boards are reset, and must always be re-started after a DTC reset.

DTC Reset

Resetting an entire DTC disrupts all connections to it, and the DTC's configuration is deleted from its memory. After the reset, the DTC requests a new download of its configuration file: all DTC activity is halted during the download.

All terminal I/O connections are closed by a reset. Telnet and X.25 boards are also stopped if installed and enabled. To re-establish Telnet access, X.25 and PAD support connections after a reset, you must first restart Telnet, X.25 and PAD support on the DTC using the **Start/Stop X.25/Telnet** command (page 112).

To reset an entire DTC

1. Select the DTC on the network map, and select **Reset** from the **Control** menu.

   You will see a warning about the data loss which results from doing a reset; click on **OK** to continue, the backplane window will be displayed.

2. Click on the CPU icon on the DTC-Manager Reset screen.

3. Click on **Yes** to reset the DTC, or **No** to cancel the reset request.

Asynchronous Board Reset

To reset an 8- or 6-port asynchronous board:

1. Select the DTC on the network map, and select **Reset** from the **Control** menu.

   You will see a warning about the data loss which results from doing a reset; click on **OK** to continue, the backplane window will be displayed.

2. Select the board which you want to reset, and click on **OK**.

3. Click on **Yes** to reset the board, or **No** to cancel the reset request.

When the reset cycle has been completed, the board's configuration is downloaded. All terminal I/O connections on the reset board will be closed by the reset; the effect on each port is the same as that of a port reset (see below). Any online changes that you may have made (using **Set Parameters**) are lost, unless you chose to save them to the configuration file. Other boards are not affected by the reset. ldevs on the host side of connections have to be reset, they are not reset automatically.

Asynchronous Port Reset

To reset an asynchronous port:

1. Select the DTC on the map, and select **Reset** from the **Control** menu.

   You will see a warning about the data loss which results from doing a reset; click on **OK** to continue, the backplane window will be displayed.

2. Select the port which you want to reset, and click on **OK**.

3. Select **Yes** to reset the port, or **No** to cancel the reset request.

A port reset interrupts data transfer on the port concerned, and data may be lost during the reset. Other ports are not affected. Note that for connections to HP 3000/900 systems, a port reset also resets the host ldev associated with that port.

Resetting Back-to-back Connections

In back-to-back connections with another DTC, a port reset on one DTC also resets the corresponding port on the second DTC. Ports on the host in back-to-back connections are not reset; however, if modem connections are used on the host connection (as recommended), the host will detect the modem signals going down as a result of the DTC port reset, and will abort the session. In back-to-back connections with a TS8, the corresponding port on the TS8 is not reset, but the connection (if any) is closed.

Resetting Connections to ARPA Systems

When you reset an active port on a DTC configured for connections to ARPA systems, the session on the host will not be aborted. On the DTC Manager workstation, you will see the error message `DTC port reset successful – Remote reset not possible (DM706)`. This is because, when doing a port reset, the HP OpenView DTC Manager also attempts to reset the host side connection (the ldev on HP 3000/900 systems), but is unable to do this on an ARPA system. When you see this message, you can click the **OK** button and safely continue with other tasks.

Resetting Multiple-Session Connections

When a port running multiple sessions is reset, all the sessions are reset, and all ldevs on the host are reset.

Telnet Reset

1. Select the DTC on the network map, and select **Reset** from the **Control** menu.

   You will see a warning about the data loss which results from doing a reset; click on **OK** to continue, or **Cancel** to cancel the reset.

2. Select the Telnet board, and click on **OK**.

   You will see the screen message which warns that a reset is disruptive, clicking on **Yes** here will initiate the reset.

3. When the reset has completed a message will be displayed on screen, click on **OK** to return to the DTC Manager Reset screen.

X.25 Board Reset

The reset procedure for an X.25 board allows you to reset the entire board, or a selected logical channel.

To reset a logical channel, you have to enter the logical channel identifier (LCI). For logical channels associated with PAD support connections, you can use the **Show Connections** command to obtain the LCI. For a system-to-system logical channel, use the **X.25 Site Management** command in the **Monitor** menu to obtain the LCI.

To reset an X.25 board

1. Click on the DTC on the map, and select **Reset** from the **Control** menu.

   You will see a warning about the data loss which results from doing a reset; click on **OK** to continue, or **Cancel** to cancel the reset.

2. Select the X.25 board, and click on **OK** to display the backplane window.

3. You are asked whether you want to reset an X.25 board or an LCI.

   Click on the **X.25** button, then click on **OK**

4. Click on **Yes** to reset the X.25 board, or **No** to cancel the reset request.

To reset a logical channel

Procede as follows:

1. Select the DTC on the network map, and select **Reset** from the **Control** menu.

   You will see a warning about the data loss which results from doing a reset; click on **OK** to continue, or **Cancel** to cancel the reset.

2. Select the X.25 board, and click on **OK** to display the backplane window.
3. You are asked if you want to reset an X.25 board or an LCI. Click on the **LCI** button.
4. Click in the **LCI** field, and type in the logical channel identifier and click on **OK**.
5. Click on **Yes** to reset the logical channel, or **No** to cancel the reset request.

After a logical channel reset, the corresponding X.25 connection must be re-established for PAD support and/or X.25 level 3 programmatic access connections.

Ldev Reset (MPE XL Systems)

Caution If a DTC asynchronous port is associated with the reset ldev, the port is also reset by this command.

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1. Identify the ldev using the **Show Connections** command (see Chapter 11), or using **Show Sessions** command on the relevant host system.
2. Click on the host on the map, and select **Reset ldev...** from the **Control** menu. You will see a warning about the data loss which results from a reset; click on **OK** to continue, or **Cancel** to cancel the reset.
3. Enter the ldev number and click on **OK**.

11

Monitoring the DTC

Introduction

The monitoring commands provide information about the DTC and its connections: they do not provide any way to directly affect the functioning of the DTC. You can monitor only those DTCs which receive their download code from the workstation at which you are working.

The following functions are described in this chapter:

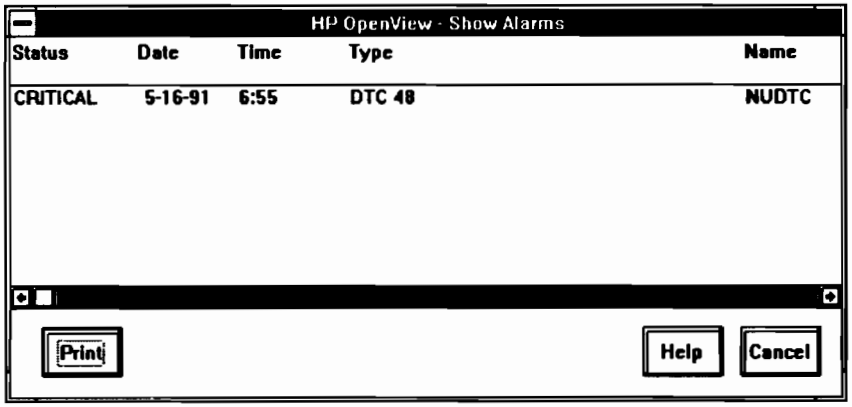
- Describe...
- Show Alarms...
- Show DTC Event Log...
- Start X.25 Trace...
- Stop X.25 Trace...
- Show Connections...
- Show Trace Log...
- Show DTC Events
- X.25 Site Management...
- Reset Alarm...

Describe

Clicking on a DTC then on **Describe** brings up a window showing the DTC's label, and any information added to the **Describe** box under OVDraw. To change any of this information, you must use OVDraw (refer to the *HP OpenView Windows User's Guide*, 32048-90001).

Show Alarms

Clicking on **Show Alarms** brings up a window which shows a list of DTCs whose status is flagged as "Critical" or "Warning." Devices are only listed as long as they remain in the critical or warning state.



Reset Alarms

A DTC's icon changes color to red when it sends a critical event status to the DTC Manager.

Check the error, then click on the DTC then on **Reset Alarm** to clear the visual warning and change the DTC's color to normal. The OpenView Alarm icon at the bottom of the screen will still be red. Click on it twice and select **Delete All** to clear it.

Show DTC Event Log

The **Show DTC Event Log** command allows you to copy the DTC event log into permanent log files on the OpenView workstation, and to read them. The event log itself is three 512 kbyte files used (and overwritten) in rotation to log events from all DTCs controlled by the workstation. When you use **Show DTC Event Log**, you can select one of these three files, copy it, and read the copy; or you can read a file you have copied earlier.

Events are filtered for each DTC according to the logging classes enabled in the CPU configuration (described in chapter 4.) For more information about events, refer to the *DTC Network Planning and Configuration Guide* (D2355-90012).

You can filter the event log to view only the information you are interested in: for example, events specific to one DTC or one card of a DTC, only events of a specified class, or only events within a certain time range.

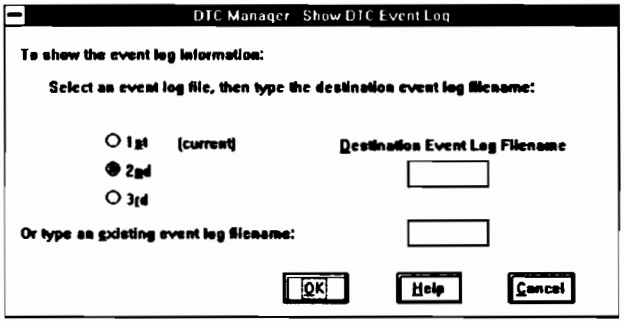
Note

If you see the message **System Error - See OpenView Log File**, the event which has just occurred is logged into a log file maintained by OpenView Windows, not by DTC Manager. Refer to *HP OpenView Windows User's Guide* for more information in this case.

Reading an Event Log

1. Select **Show DTC Event Log...** from the **Monitor** menu.

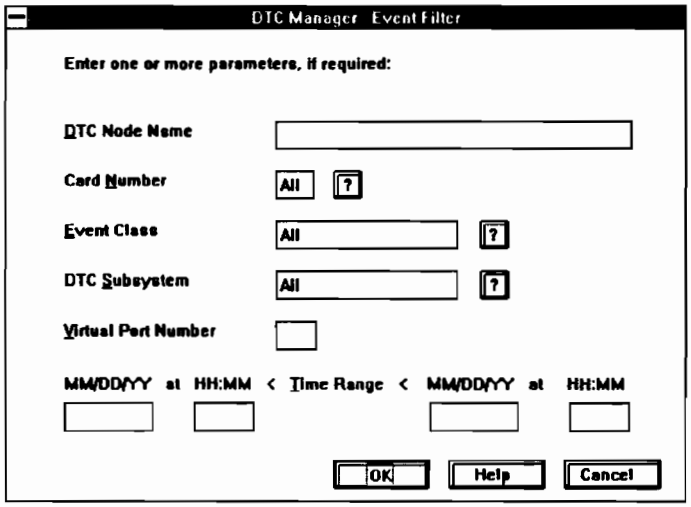
   The three log files are labeled 1st, 2nd and 3rd, and the event log currently being written to is marked **(current)**.



2. Select the log you want to read:

   - To read one of the three logs, click on the appropriate button, and type a name for the copy file in the **Destination Event Log Filename** field.
   - To read an event log saved earlier through this procedure, type its name in the **existing event log filename** field.

   The event log filter screen is displayed.



3. Select the filtering for the event log.

   Note that the filter alters the information displayed, but does not alter the contents of the file in any way.

   Clicking on **Done** without entering any information will display the entire contents of the file.

Printing an Event Log

Each event is numbered, and you can print the entire event log or a range of events specified by their numbers.

1. Click on **Print** to display the Print window.
2. Choose **All Events** or a specified **Range of Events.**

   If you have selected **Range of Events**, enter the first and last event numbers in the appropriate fields.

Copying and Deleting Event Log Files

The three files used to log events are used in rotation, so the maximum space used by DTC Manager for logging events is 1.5 Mbytes (3 x 512 kbytes). However, every time you read an event log, you make a copy of the file. As a normal part of system maintenance on the OpenView Workstation, these copies must be removed from the hard disk: take care not to delete the originals.

The copied log files are in the directory `\DTCMGR\MONITOR`; they will have the name that you gave them in the **Show Event Log** window (no filename extension is used). You can use the MS-DOS **copy** and **delete** commands from the MS-DOS Executive window to copy the files to a floppy disk and to delete them from the workstation's hard disk. Alternatively, you can use the **Backup** feature of OVAdmin for copying the files(see page 163).

Read the section "Copying and Deleting Trace Files" on page 167 before deletingany files.

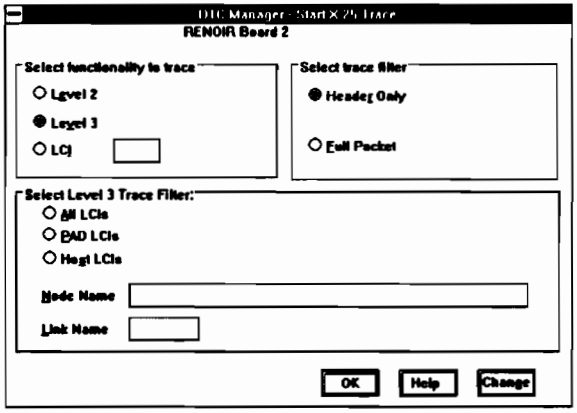
Start X.25 Trace

The **Start X.25 Trace** command starts an X.25 trace on an X.25 board. X.25 must be started (using the **Start X.25** command) before you start a trace. You can only have one trace running at a time.

An X.25 trace continues until you stop it using the **Stop X.25 Trace** command. Trace data is written into a trace file which has a maximum size of 1 Mbyte. When this limit is reached, new data overwrites the oldest data in the file.

Starting an X.25 trace

1. Click on the DTC, and select **Start X.25 Trace** from the **Monitor** menu.
2. If you have a DTC 48 with more than one X.25 card installed, select an X.25 board from the DTC backplane display, and click on **OK**.
3. Select the functionality to trace and click on **OK**.
   - To run a trace at X.25 level 2 or 3, click on the appropriate button.
   - To run a trace on a specific logical channel, click on the **LCI** button, then click in the LCI entry field and type in the logical channel identifier.
   - Click on **Header Only** or **Full Packet**, to set the trace filter.



Selecting Level 3 Trace Filters

If you have chosen level 3 tracing, you can select to trace PAD LCIs only, or PAD and System-to-system LCIs, by clicking on the appropriate button; or you can enter the node name and link name for a specific host, to trace LCIs associated with that host.

Stop X.25 Trace

Clicking on **Stop X.25 Trace** stops the trace started by **Start X.25 Trace**, described above. X.25 has to stopped before you can use **Show Trace Log**.

Note that you have to stop a trace before you can use **Show Trace Log ....**

Show Connections

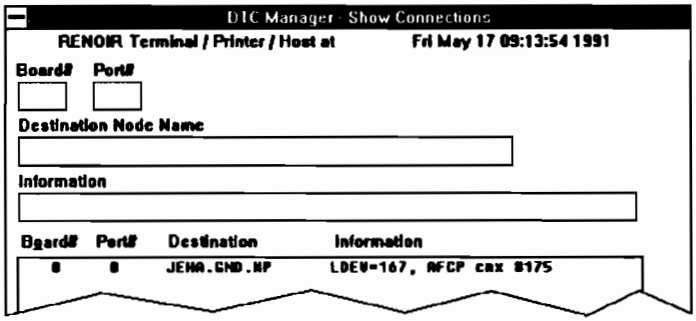
Show Connections displays information about asynchronous serial connections and PAD support connections currently going through the DTC. For information on X.25 connections refer to the section "X.25 Site Management" on page131.

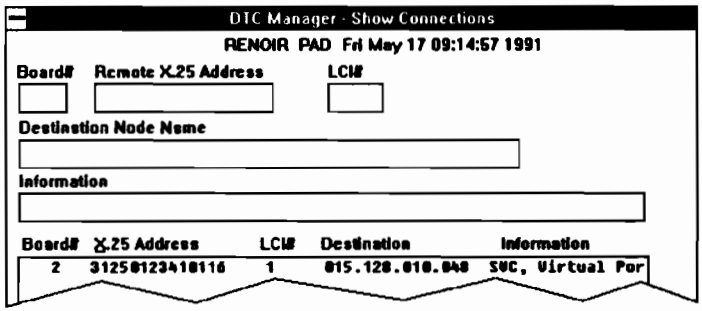
Procedure

1. Click on the DTC and select **Show Connections** from the **Monitor** menu. You will see the backplane of the DTC.

2. Select the board and click on **OK**. The screen displayed depends on the board selected: the figures show the displays for asynchronous and X.25 boards.

   If you selected a 6- or 8-port asynchronous board the screen will show the asynchronous (terminal, printer, or host) connections on that board.





3. Click on any line in the list to display complete information about that entry in the fields in the upper part of the window.
   - The connection window is not updated dynamically; to view new connections, exit from the window (with **Done**) and start **Show Connections** again.
   - For back-to-back connections with a TS8, the **Destination** and **Information** fields for the connections will show **Not available**.
4. Select **Done** when you have finished viewing the connection information.

Show Trace Log

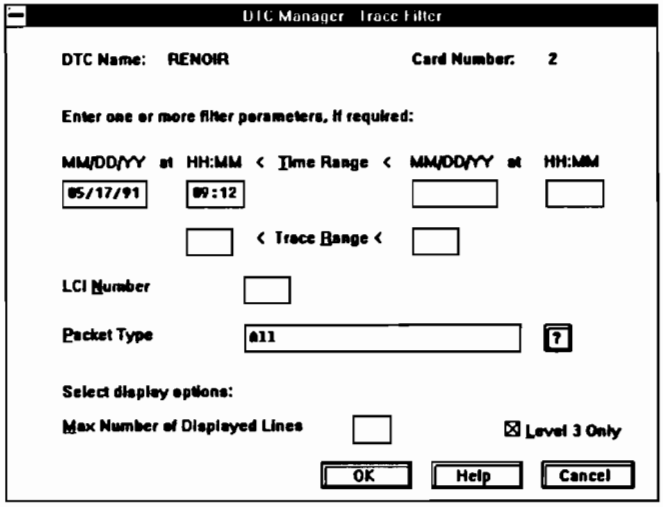
Show Trace Log allows you to display the X.25 traces stored in a log file, and print part or all of the file. Note that showing and printing large trace files may require a substantial amount of time. The procedure for gathering the traces is described under **Start X.25 Trace** on page 124.

Procedure

1. Select **Show Trace Log** from the **Monitor** menu.

2. Enter the filename of the trace log file you want to view in the window that appears. The default filename is "TRACE." You can rename this, so that it is not overwritten by a subsequent trace. You can also view previously saved trace files by entering the appropriate name here.

   The trace log filter screen is displayed.

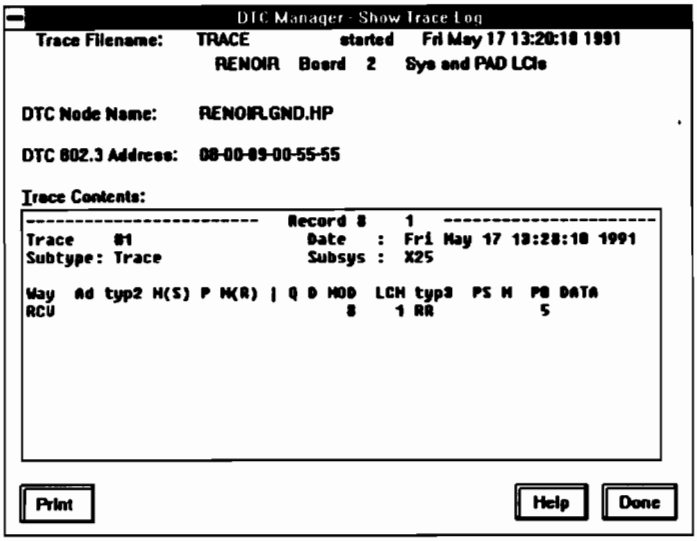


3. Select the filtering:

   You can filter by time range, record number range, LCI number or packet type.

   You can display either level 3 information only, or specify a maximum number of lines to display.

4. The trace log is displayed.



5. If you select **Print**, a window appears asking you to specify how much of the trace log file you want printed. Note that printing an entire 1 Mbyte trace file may take many hours.

Copying and Deleting Trace Files

An X.25 trace file may contain up to 1 MByte of data. As a normal part of system maintenance on the OpenView workstation, these files must be removed from the hard disk. You will find the copied log files in the directory \DTCMGR\MONITOR; they will have the name that you gave them in the **Show Trace Log** window (no filename extension is used). You can use the MS-DOS **copy** and **delete** commands from the MS-DOS Executive window to copy the files to a floppy disk and to delete them from the OpenView workstation's hard disk. Alternatively, for copying the files, you can use the **Backup** feature of OVAdmin (see page 163).

If you want to delete the trace and log files, check first with the advice in chapter 14, under "The DTC Manager Filing System".

Show DTC Events

The **Show DTC Events** command opens a window in which events are displayed as they are logged. Filters can be set to restrict the information displayed. Each DTC only logs events for which the logging class is enabled in its CPU configuration. For more detailed information about events, refer to the *DTC Network Planning and Configuration Guide* (D2355-90012).

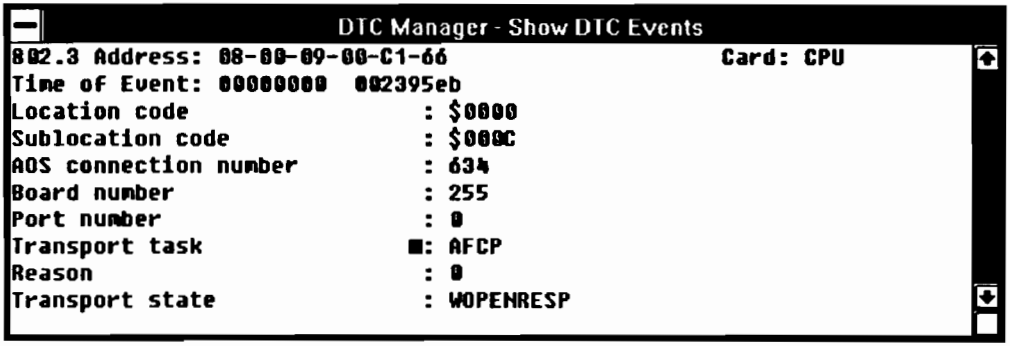
The DTCs only log events to the workstation from which they receive their download code; if you have several workstations monitoring many DTCs on the same LAN, you must make sure you are at the correct workstation to monitor the DTCs you are interested in.

Procedure

1. Select **Show DTC Events** from the **Monitor** menu and select the filter values: you can filter by DTC node name and card number.

   The window that appears shows up to 50 of the most recently reported events in a scrollable list.

2. To view earlier events (beyond the limits of the list) use **Show Event Log**, described near the beginning of this chapter.



The **Show DTC Events** window is dynamically updated and as new events are logged, it will automatically scroll up to display the most recent event. To "freeze" the window on a particular event, click on the menu bar in the corner of the window, and de-activate **View Last** (so that it does not have a check-mark) in the menu.

X.25 Site Management

This command allows you to monitor X.25 connections on a given DTC or host.

1. Select the DTC whose X.25 connections you are interested in
2. Select **Site Management** from the **Monitor** menu.

   The window displayed shows a list of all systems which have issued a NETCONTROL START command. The **Board #** is the number of the DTC's X.25 board which the system has connections with.

Show Connectivity

To display more details about the connections for any of the nodes on the list:

1. Select the node and click on **Show Connectivity**.
2. To see the current status of any of these connections, select the one you want from the list and click on **Show Connectivity**.

   The window which you then see displays details of the remote node, followed by a scrollable list giving full information about the X.25 parameters for that connection.
3. When you have finished viewing the information, click on **Done** to exit.

Note None of the screens displayed by the **X.25 Site Management** command are updated automatically; to see recently opened/closed connections, exit from the command and reselect it; otherwise some of the information displayed may be inconsistent.

12

Diagnosing the DTC

Introduction

The diagnostic commands provide ways of determining the status of a DTC and whether it is functioning correctly. Note that some of the test are disruptive, and effect the operation of the DTC.

This chapter describes the following commands of the OVRun **Diagnose** menu:

- **Self Tests...**
- **Show Status...**
- **Extended PING...**

Self Tests

This command runs diagnostic tests on:

- the CPU board
- asynchronous ports
- Telnet boards
- X.25 boards.

Self tests are disruptive: the object being tested is unavailable while a self test is running. CPU self-tests block the whole DTC, and can take a substantial amount of time: the time to complete the number of cycles requested, plus the time to download the DTC configuration.

CPU Self Test

All communications via the DTC is halted by a CPU self test. When the self test is completed, the DTC issues a download request and only becomes functional again when it has been downloaded.

1. Select the DTC you want to test on the network map, .
2. Pull down the **Diagnose** menu and click on **Self Tests...** You will see the backplane of the DTC displayed.
3. Click on the CPU icon.
4. Enter the number of self-test loops you want the DTC to carry out, and click on **OK** to start the self tests. You can use **Cancel** before you click on **OK** if you decide you do not want to run the tests.
5. To stop the self-tests, click on **Cancel** on this screen. The test loop currently under way will be completed, then self-testing will stop.
6. Restart X.25 and Telnet if necessary, using the **Start/Stop X.25/Telnet** command in the **Monitor** menu (page 112).

Port Self Test

Port self tests allow you to test individual asynchronous ports without disrupting other users of the DTC, only the terminal connected to the port under test is disrupted. The self test terminates the connection on the port tested.

1. Select the DTC you want to test on the network map, .
2. Pull down the **Diagnose** menu and click on **Self Tests...** You will see the backplane of the DTC displayed.
3. Click on the icon of the port you want to test, and select one of the four tests:
   - **Internal Loop Back**: tests the data path through the DTC to the serial port connector. On the DTC 48, the line drivers for the serial port are not tested by the Internal Loop Back; you must run the Hood Loop Back test. On the DTC 16, the line drivers for the serial port are tested by the Internal Loop Back, and the Hood Loop Back is not necessary.
   - **Hood Loop Back**: (DTC 48 only) tests the data path through the DTC 48 to the serial port, and through the serial port connector. This test requires that a loopback hood be connected to the port. On the DTC 16, the line drivers for the serial port are tested by the Internal Loop Back, and the Hood Loop Back is not necessary.
   - **Terminal Loop Back**: tests the data path through the DTC right up to the connected terminal. This test requires that the terminal be able to receive and retransmit data. The DTC sends data to the terminal, then sends an escape sequence telling the terminal to transmit the data back to the DTC. The returned data is then checked for consistency with the data originally transmitted.
   - **Print**: tests the data path through the DTC to the attached device, in the same way as the terminal loopback test. This test, however, is intended for write-only devices such as printers, and simply writes a standard test string to the connected device.
4. Enter the number of self-test loops you want the DTC to carry out, and click on **OK** to start the self tests. You can use **Cancel** before you click on **OK** if you decide you do not want to run the tests.
5. To stop the self-tests, click on **Cancel** on this screen. The test loop currently under way will be completed, then self-testing will stop.

Telnet Access Board Self Test

Testing a Telnet Access board is disruptive. On successful completion of the tests, the board is reset. To restart communications, you must restart the Telnet Access board using the **Start/Stop X.25/Telnet** function in the **Monitor** menu, see page 112.

1. Select the DTC you want to test on the network map, .
2. Pull down the **Diagnose** menu and click on **Self Tests...** to displa the backplane window.
3. Click on the icon of the Telnet Access board you want to test.
4. Enter the number of self-test loops you want the DTC to carry out, and click on **OK** to start the self tests. You can use **Cancel** before you click on **OK** if you decide you do not want to run the tests.

   The number of completed self-test loops is displayed in a window which remains open as long as the tests are running.

5. To stop the self-tests, click on **Cancel** on this screen. The test loop currently under way will be completed, then self-testing will stop.
6. Restart Telnet if necessary.

X.25 Board Self Test

Testing an X.25 board is disruptive. PAD support and X.25 levels 1, 2 and 3 will be stopped on the board under test. On successful completion of the tests, the board is reset. To restart communications, you must restart X.25 and PAD support using the **Start/Stop X.25** function in the **Monitor** menu, see page 112.

1. Stop X.25 if you intend to run the Network Loopback test.
2. Select the DTC you want to test on the network map.
3. Pull down the **Diagnose** menu and click on **Self Tests...** You will see the backplane of the DTC displayed.
4. Select the X.25 board you want to test.
5. Select the type of test to run:
   - **X.25 Board Selftest**: tests the hardware of the X.25 board.
   - **Internal Loop Back**: tests the hardware data path through the X.25 board to the port connectors.
   - **Hood Loop Back**: for use with X.25 multi-standard boards only (V.35/V.36/ RS-422), with cable connected; tests the X.25 board hardware. Requires the appropriate external loopback hood to be connected to the end of the cable.
   - **Network Loop Back**: tests the DTC's ability to establish a virtual circuit with the network. See "Network Loop Back Test" (page 138) for a more detailed explanation of the Network Loop Back test.
6. Enter the number of self-test loops you want the DTC to carry out, and click on **OK** to start the self tests. You can use **Cancel** before you click on **OK** if you decide you do not want to run the tests.

   The number of completed self-test loops is displayed in a window which remains open as long as the tests are running.
7. To stop the self-tests at any time, click on **Cancel** on this screen. The test loop currently under way will be completed, then self-testing will stop.
8. Restart X.25 and PAD if necessary.

Network Loop Back Test

In order to run a Network Loop Back test, the X.25 levels 1, 2 and 3 parameters must have been correctly defined for the X.25 network interface under test (see chapter 6). Network loop back only works if X.25 is in the idle state; before running a network loop back test, you may need to issue the **X.25 Stop** command (page 112).

The correct X.25 address *must* be configured on the X.25 Level 3 configuration screen (see chapter 6). A **Loop back X.25 Address** is requested by the Network Loop Back test procedure; this must be the value in the X.25 subscription. For Transpac (France) and similar networks, do not enter the full subscription address on these screens.

The Loopback X.25 address is the same as configured in the X.25 level 3 configuration screen, escept for Transpac and similar networks, which add the calling address to the outgoing packet, and for which the level 3 configuration screen must be left blank.

The Network Loop Back test may result in one of three error messages, if the test fails:

- "1" indicates a timeout (no response from the network). Verify the physical connection to the network, and ensure that the X.25 address is correctly configured.
- "2" indicates that the call has been accepted by another node on the network. Verify the correct configuration of the X.25 address.
- "3" indicates that the call has been refused by the network. Verify the address configuration, and the number of virtual circuits configured.

Show Status

The **Show Status** command returns detailed information about the status and configuration of any of the following items:

- The CPU.
- An asynchronous port.
- A Telnet Access board
- An X.25 board.
- X.25 Level 2 for a selected X.25 board.
- X.25 Level 3 for a selected X.25 board.
- A specified logical channel (LCI).
- PAD support on an X.25 board.

If you select to show the status of a port which has multiple sessions running, the session numbers and the fully qualified names and IP addresses of all destinations reached by all the sessions on the port are displayed.

Note that the AFCP connection number displayed when you show the LCI status may be invalid if there has been an AFCP disconnection during the function, and the number has been re-issued.

Procedure

1. Click on the DTC you are interested in.
2. Click on **Show Status** in the **Diagnose** menu. You will see the backplane of the DTC.
3. Click on the appropriate item.
   - If you select the CPU, an asynchronous port, or a Telnet Access board, the status is displayed.
   - If you select an X.25 board, another dialog box will ask you to select from:
     - X.25 Global.
     - Level 2.
     - Level 3.
     - LCI.
     - PAD.
   - For logical channels, you must supply the logical channel identifier (LCI). You can identify LCIs through the **Show Connections** command (chapter 11).
4. Select **Print** to print the report.

Extended PING

The Extended PING function verifies the presence and uniqueness of an IP address on the network in one of two ways:

- The first step checks if the entered IP address has been configured in the selected DTC. The address is checked against the address of the DTC user interface and those addresses entered in the Telnet Switching Information table. If a match is not found the test described below in 2) is performed. If a matching address has been configured in the DTC, its uniqueness on the network is tested. The results of the test are displayed on the screen and the test is terminated.
- If the selected DTC does not contain a matching address, the DTC then broadcasts a PING request onto the LAN to check if a remote node has been configured with the IP address. The PING request function makes use of the Data Size and Exchange Number parameters which were entered on the Extended PING screen. The results of the test are displayed on the screen and the test is terminated.

PING takes ((number of exchanges) + 20 seconds). The maximum number of exchanges is 100, and PING times out after three minutes.

Note that PING runs from the DTC to the selected address, not from the PC to the selected address.

Procedure

1. Select a DTC on the network map.
2. Select **Extended PING** from the **Diagnose** menu. The Extended PING screen is displayed.
3. Enter the following information:
   - the IP address that you wish to test.
   - the number of bytes to be sent in a data packet, the default size is 64 bytes.
   - the number of times the test is to be executed, the default is 5.
4. Click on **OK**.

Note PING test for the presence and uniqueness of an IP address. If the address is configured in a Telnet Access board or an ARPA Telnet Express, the DTC will respond OK without checking to see if the address is accessible.

The DTC will respond OK even if the Telnet Access board is not running.

Results

The results of the test are displayed on the screen and state one of the following conditions:

- The DTC recognises the IP address and its uniqueness on the network is verified.
- The DTC recognises the IP address but it is not unique on the network.
- The DTC did not recognise the IP address, the PING requester was executed. The PING requester was successful and the results are displayed on screen.
- The DTC did not recognise the IP address, the PING requester was executed. The PING requester was unsuccessful and a failure message is displayed on screen.

  Note that the failure could be due to LAN conditions making it impossible for PING to access the address: a failure doesn't mean that the address is not accessible.

13

Remote Connection and MVS

Naming Conventions

Local workstation means the OpenView workstation on the same LAN as the DTCs being managed.

Remote workstation means the OpenView workstation connecting to the local workstation via a modem or X.25 link.

The remote workstation is the one you are working at, the local workstation is the one you connect to via modem or X.25 link.

How Remote Connection Works

Remote connection allows you to sit at one DTC Manager (the remote workstation) and log on to a DTC Manager on a different LAN (the local workstation). All the functionality of the local workstation is available at the remote site: you can reconfigure on- or offline, monitor events and traces, reset DTCs, and upload data to the local workstation (the data is not uploaded to the remote workstation). The remote connection is made via either a modem link or an X.25 link. All that has to be done at the local workstation is to draw the map of the local DTC network. DTC Manager must be installed on both workstations.

The DTC Manager software has only one logical communications channel between the user interface and the functional code. By implementing a logical switch in this channel, the functional code of the DTC Manager running on the local workstation can be controlled from a remote workstation running the DTC Manager user interface. Only user interface commands are exchanged between the two workstations: graphical information for the screen display is not transferred (although you may choose to transfer a network map), neither are configuration files for DTCs, upload/download files, nor other large data files. These all remain on the local workstation. Also, you cannot backup, restore or alter the local map.

Making the Remote Connection

Remember: **local workstation** means the OpenView workstation connected to the LAN with the DTCs being managed; **remote workstation** means the OpenView workstation dialing in to the local workstation via a modem or X.25 link.

Before attempting to establish a remote connection, ensure that:

- The modems or HP 2335A PADs are connected and correctly configured.
- Both the local and the remote workstations are running the same versions of the DTC Manager software. If not then see the *DTC Manager Network Planning and Configuration Guide* (D2355-90012).
- The communications parameters have been correctly configured on both workstations (as described later in this chapter).
- Nobody is logged on to DTC Manager at the local workstation.

To log on from a remote workstation

1. Run **OVRun**.
2. If no map is shown, load **QuickMap** from the DTCMGR\EXE directory. (See chapter 3 for more information about Quickmap.)
3. Click on a DTC.
4. Pull down the **Control** menu and click on **Remote Connect.**
5. Enter the password of the DTC Manager running on the local workstation — not the password for the DTC Manager at which you are sitting.

   Remember, you are logging on to the DTC Manager on the local workstation, not the DTC Manager on the remote workstation at which you are sitting.

6. Enter the telephone number or X.25 information, as described below.

For a Modem Link ...

Enter the telephone number of the local workstation.

- *If the telephone uses pulse dialing* (as opposed to tone dialing), enter a "p" before the number.
- *If you need to include a pause* (see example 2, page 147), enter one comma in the dialing string for each two second pause.
- *If you are using a manual (dial-up) modem:*

  i. On screen, enter an "m" in the telephone number field.

  ii. Dial the number on the telephone connected to the same line as your modem.

  iii. When you hear the tone indicating that you are connected to the local modem, connect your modem to the line.

  iv. When the two modems have made a connection, click on **OK** on the screen.

For an X.25 link ...

- If you are using an X.25 link via two HP 2335As, enter "x" followed by the X.25 address of the local (LAN-based) OpenView workstation.

  Remember that the X.25 address is the address of the the local HP 2335A plus the number of the port connected to the local OpenView workstation.

- You can use a symbolic remote address (SRA) instead of the X.25 address: enter "x#" followed by the SRA.

  For an explanation of SRAs, see chapter 3 of *HP 2335A X.25/84 Multiplexer Reference Manual* (part number 02335-90021).

You *cannot* use the HP 2335A's automatic dial (ADL) facility for a DTC Manager remote connection.

Examples

1. To make a call from a remote workstation on a site in the US to a local workstation on a site in France. Your site exchange in the US uses tone dialing, and requires you to dial "9" to obtain an outside line; and you need a two-second pause to obtain the external connection:

   Telephone Number: `9,01103376621478`

2. To make a call from a remote workstation on a site in France to a local workstation on a site in England. The site exchange in France uses pulse dialing, and requires you to dial "0" to obtain an outside line; and you need to pause the dialing for four seconds after reaching the French international exchange, to ensure that the connection to England is established:

   Telephone Number: `p019,,4415376261`

3. To make a call from a remote workstation to a local workstation across an X.25 link, where the local X.25 address of the HP 2335A connected to the local workstation is 122332123900, and the local workstation is connected to port 02 of the HP 2335A:

   Telephone Number: `x122332123902`

Changing Versions of DTC Manager

The user interface software and the input/output software are different modules, and it is possible to run a different version of the DTC Manager user interface while keeping the same version of the input/output software. Throughout this section, when we refer to "a version of DTC Manager" we mean the DTC Manager *user interface*, and not the input/output software.

When making a remote connection, the version of the DTC Manager user interface software running on the remote workstation *must be the same* as the version of the DTC Manager input/output software running on the local workstation. Note that the version of the input/output software running on each OpenView workstation remains unchanged, and DTCs managed by either OpenView workstation can continue to be monitored while the remote connection is taking place.

The ability to change versions means that a central remote OpenView workstation can connect successfully to different local sites which may be running different versions of the the DTC Manager input/output software.

The utility which lets you run another version of the DTC Manager user interface software is called Multiple Versions Support (MVS). If your current version of DTC Manager is your only one, there is no need for you to use MVS.

The user interface software is in an executable file called `DTCMGRUI.EXE`. The old version of this file is copied to the `MULTIVER` directory, and given the name of the software revision. It is possible to have all previous versions of the user interface software available in this way. MVS allows you to select one of the previous versions and run it.

To Make Previous Versions of DTC Manager Available

Basic Procedure

1. Copy the old `DTCMGRUI.EXE` file to the `MULTIVER` directory of the DTC Manager workstation.
2. Rename the file `version.EXE`.
3. Run MVS.
4. Select and run the version you want.

Detailed Procedure

This section assumes that:

- the DTC Manager software has been updated, for example from revision A.06.06 to G.10.50.
- the floppy discs with the previous revision are available.

Note We recommend that you undertake this procedure *only if you are familiar with the relevant DOS or Windows routines.*

---

1. Copy the file:

   `A:\APP\DTCMGR\EXE\DTCMGRUI.EXE`

   from Disk 1 of your previous DTC Manager master disks into the directory

   `C:\DTCMGR\EXE\MULTIVER`

   Where C: is the drive on which you have installed DTC Manager and `\DTCMGR` is the directory path under which you have installed it.

2. Rename the file `Axxyy.EXE`

   Where Axxyy is its revision number (e.g. G1050 for revision G10.50).

To Run MVS for the First Time

If you are currently in DTC Manager:

1. Log off.
2. Click on the OpenView **System** menu, and select **Close.**
3. You will be warned that this will end your HP OpenView session. Click on **OK.**
4. Open the File Manager.
5. Change directory to `\DTCMGR\EXE\MULTIVER`.
6. Double-click on `MULTIPLE.EXE`.
7. Close the file manager (to release memory)

If you are currently in Windows:

1. Change directory to `\DTCMGR\EXE\MULTIVER`.
2. Double-click on `MULTIPLE.EXE`.
3. Close the file manager (to release memory).

If you are currently in DOS:

1. If DTC Manager is installed under `\DTCMGR` (this is the default installation), then at the DOS prompt, enter:

   ```
   CD\DTCMGR\EXE\MULTIVER
   ```

   If DTC Manager is installed under another directory, for example `\MYDIR\DTCMGR`, then at the DOS prompt enter:

```
CD\MYDIR\DTCMGR\EXE\MULTIVER
```

2. If DTC Manager is installed under \DTCMGR (this is the default installation), then enter:

   ```
   MULTIVER
   ```

   If DTC Manager is installed under another directory, for example \MYDIR\DTCMGR, then enter:

   ```
   MULTIVER MYDIR
   ```

3. If the message "Network already loaded" appears, press F8.

In all cases:

1. A window will appear listing the versions available.

   The numbers listed are all the software version numbers which you have made available using the routine explained on page 149. Choose the one you want and click on **Select**.

2. You are then taken directly into DTC Manager. Remember that in the version you have just started, all the facilities explained in this manual may not be available: for example, **Logon** will be greyed out, and **Remote logon** will be available.

To Run MVS Again

Once you have run MVS for the first time, then, unless you have subsequently re-booted the OpenView workstation, the tool will be automatically available.

1. If you are logged on to DTC Manager, log off.
2. Click on the OpenView **Systems** menu, and select **Close.**
3. Where warned that this will end your HP OpenView session, click on **OK.**
4. This takes you back to the MVS window, explained above.

To Go Back to Your Normal Version

To go back to your normal version of DTC Manager:

1. If you are logged on to DTC Manager, log off.
2. Click on the OpenView **Systems** menu, and select **Close.**
3. Where warned that this will end your HP OpenView session, click on **OK.**
4. This takes you back to the MVS window. Click on **Exit.**
5. Open the File Manager.
6. Change directory to `\OV`. (This is the default directory for OpenView; if you did your own OpenView installation and chose another directory, then change to that directory.)
7. Double-click on `OVRUN.EXE`.
8. Close the file manager (to release memory)

Running Your Normal Version Via MVS

You can include your normal version of DTC Manager in the versions available via MVS, by copying the file `\DTCMGR\EXE\DTCMGRUI.EXE` into the `DTCMGR\EXE\MULTIVER` directory, and rename it as explained on page 149 for previous versions. To go back to your normal version you could skip steps 5 through 9 above, and instead simply choose your normal version number from the MVS window.

Recovering From a Powerfail ("Version Incompatibility" Error)

When the OpenView workstation re-boots, it automatically starts your normal version of DTC Manager (unless you have manually edited your AUTOEXEC.BAT file). If, before the re-boot, you were using MVS and did not exit "neatly", then the error message `Version Incompatibility` will appear when you try to start DTC Manager. The most likely circumstance for this is after a powerfail.

To get back cleanly to MVS:

1. In the error message, click on **Cancel**.
2. Click on the OpenView **System** menu, and select **Close**.
3. Where warned that this will end your HP OpenView session, click on **OK**.
4. Open the File Manager.
5. Change the directory to `\DTCMGR\EXE\MULTIVER`.
6. Double-click on `MULTIPLE.EXE`.
7. Close the file manager (to release memory)

To get back cleanly to your normal version of DTC Manager:

1. In the error message, click on **Cancel**.
2. Double-click on `MULTIPLE.EXE`.
3. Now follow the instructions "To Get Back to Your Normal Version" above, from Step 5.

Hardware Requirements

Note (1) DTC Manager Software Versions

In a remote connection, the version number of the DTC Manager interface on the remote workstation must be the same as the version number of the DTC Manager input/output software on the local workstation. If you need to change the version of the DTC Manager interface which you are running on the remote workstation, see " Changing Versions of DTC Manager" on page 148.

In order to use an X.25 link for the DTC Manager remote connection, you must be running DTC Manager software version A.06.06 (or later) on both the workstations.

Note (2) Remote Connection and AdvanceLink

If you want to use *both* the remote connection facility *and* the AdvanceLink for Windows software, then you will need *two* serial ports on your OpenView workstation - one for the remote connection (as explained in this chapter) and one for the AdvanceLink connection.

See the *DTC Manager Installation and Upgrade Guide* (D2355-90013) for more information on using AdvanceLink with the DTC Manager.

Requirements for a Modem Link

The following modems have been successfully tested with the DTC remote connection facility:

- HP 92205A/B
- Hayes Smartmodem (1200/2400)
- Multitech 224
- Siemens 2425B DX

The modem connection must:

- have XON/XOFF and ENQ/ACK disabled
- be set in automatic answer mode
- have non-permanent DTR/CTS
- have DSR high until disconnection

To connect the OpenView workstation to the modem (at each site), use an HP 24542M 3 meter HP Vectra PC-to-modem cable.

Requirements for an X.25 Link

For an X.25 link, you need an HP 2335A PAD at each site.

Note Where we refer to an HP 2335A, any of the following PADs would be suitable: HP 2334A Plus, HP 2335A, HP 2335A X.25/84.

For information on cables for use with an HP 2335A, and for an explanation of how to configure an HP 2335A, see *HP 2335A X.25/84 Multiplexer Reference Manual* (part number 02335-90021), chapter 3 covers configuration and chapter 8 covers cables.

The HP 2335A connection must:

- have modem signals enabled.
- have XON/XOFF and ENQ/ACK disabled.
- be in full duplex binary transfer mode.

Configuring the Local HP 2335A

1. Configure the HP 2335A as a CAS/PAD.
2. Create a user-defined profile based on profile 73, but with X.3 parameter 11 set for the baud rate of your line speed.
3. Assign this profile to the port connected to the local DTC Manager OpenView workstation.

Configuring the Remote HP 2335A

1. Configure the HP 2335A as a PAD.
2. Create a user-defined profile based on profile 1, but with X.3 parameter 11 set for the baud rate of your line speed.
3. Assign this profile to the port connected to the remote DTC Manager OpenView workstation.

Configuring DTC Manager for Remote Connection

Before using the remote connection, communications parameters must be configured on both OpenView workstations. You may also define, on the remote workstation, a message (or banner) which will be displayed on the local workstation when a remote connection is established.

Both of these functions are part of OVAdmin, where you will find them listed as **Configure Comm. Port** and **Edit Banner** in the **DTC Manager** menu.

Procedure

To configure the communications port:

1. Run OVAdmin.
2. Pull down the DTC Manager menu and click on **Configure Comm. Port**.

Port

Select the serial port which you are using for the link. Normally this will be COM1. COM2, COM3, and COM4 will be available *only if* you have reconfigured the COM port assignments on the interface card in the OpenView Workstation, or if you have added a second serial interface to the OpenView workstation. It is possible that COM3 and COM4 may not be available due to the configuration. Contact your local HP office if you have problems.

Baud

Select the baud rate appropriate to the modem or PAD you are using.

Device

Select the device you are using:

Hayes modem means either a Hayes modem or a fully Hayes-compatible modem.

Any other means any other suitable modem or an HP 2335A PAD.

Dialing Timeout

Enter the delay, in seconds (1-99), after which you want an attempted dial to be aborted if there is no response from the called device. In the case of an X.25 link, this should be greater than the time taken by the network to establish a connection.

Edit Banner

The **Edit Banner** function allows you to define a message (an alphanumeric string) at the remote workstation which will be displayed on the local workstation when you establish a remote connection. This can be used to inform local operators that a remote connection has been established. You can choose to temporarily modify the banner — for example, to display on the local workstation information explicit to the current remote session. Any modifications you make at the time of connection are only effective for the duration of the connection. When you start a subsequent connection, the banner will be as defined using **Edit Banner**.

To edit the banner:

1. Run OVAdmin.
2. Pull down the DTC Manager menu and click on **Edit Banner**.
3. Edit the banner.

14

Managing the OpenView Workstation

Passing Control of a DTC to another Workstation

Because there is no permanently-configured link between a DTC Manager and the DTCs it manages, it is a simple task to pass control of a DTC from one OpenView workstation to another. You may wish to do this in large networks, to rationalize network management; or it may be necessary if an OpenView workstation needs maintenance work carried out on it. You can only pass control of DTCs between OpenView workstations running the same version of DTC Manager.

Procedure

1. Stop any traces running on the DTC Manager.
2. Back-up the configuration files of the DTCs to be transferred, using the **Backup** procedure described on page 163.
3. Either
   - Switch-off the OpenView workstation from which you are transferring the files, or
   - Delete the DTC's configuration from the old OpenView workstation using the OVRun Map menu.

   This ensures that the DTCs being transferred are no longer managed by the old workstation.
4. Restore the files on the new workstation, using the **Restore** procedure, described on page 166.

5. Shut-down OpenView Windows and Microsoft Windows, then restart DTC Manager from the DOS prompt by typing DTCMGR. This is necessary to register the new configuration files with DTC Manager on the new workstation.

6. To ensure that the DTCs which you have transferred now send management information to the new OpenView workstation:

   a. Select the DTC on the network map.

   b. Select **Set Parameters...** in the **Control** menu.

   c. Select the CPU and click on **Configure.**

   d. Select **OK.**

   e. Select **Done** from the backplane window.

   f. Select **No.**

Repeat this procedure for each DTC. This downloads the address of the new OpenView workstation to the DTC, without altering any other parameters, and without disrupting the DTCs or any connections.

Caution **Restoring configuration files from earlier releases of DTC Manager.**

Configuration files saved under releases earlier than 10.5 **MUST** be updated before they can be used with release 10.5.

Refer to the *DTC Manager Installation and Upgrade Guide* (D2355-90013) for information on restoring maps and configuration from earlier releases of DTC Manager.

The DTC Manager Filing System

The DTC Manager software is always in the directory \DTCMGR: the directory structure within \DTCMGR is shown below:

Files and Subdirectories		Use
ACCLIST		File containing access lists (see chapter 9).
MAP802		File which maps DTC names to 802.3 addresses.
\CODE		Subdirectory containing the code commmon to all DTCs.
\COPY		Subdirectory used by Copy/Paste function.
\DEFAULT	\DC \MODEM \X25	Subdirectory structure for default DTC configuration files.
\EXE		Subdirectory for the DTC executable code and resource files.
	\MULTIVER	Subdirectory containing the MVS utility.
\lbl.DTC		Subdirectory created for each DTC configured on the workstation (lbl is the DTC's label on the network map.
	\$CONF$	Contains the DTC's permanent configuration files, which are copied to \$DWLD$ after a successful download.
	\$DWLD$	Contains the DTC's current configuration, created when the DTC is successfully downloaded, then updated whith changes made by the **Set Parameters ...** function.
\MONITOR		Subdirectory for trace and event log files.
\UPLOAD		Subdirectory for upload files.

Deleting Files

The \DTCMGR\MONITOR and \DTCMGR\UPLOAD directories are used to store files generated as part of normal DTC management activities. The files can be very large: up to 512 kbytes for log files, 1 Mbyte for for trace files, and an X.25 board may upload up to 1.6 Mbytes. To avoid filling the hard disk, these directories should be periodically cleaned up, as part of normal maintenance of the workstation.

You can delete these files using the File Manager of Microsoft Windows, or by using the DOS command line. See "Backing up and Restoring DTC Manager Files" on page 163 if you want to make backups.

The log files LOGCUR, LOG1, LOG2, and LOG3, contain events data. You may delete them:

- only when the DTC Manager is not running.
- only if you no longer need the events data.
- only via DOS (not via Microsoft Windows).

You may delete the trace files TRACE and TRACINFO:

- only when no trace is in progress.

Backing Up and Restoring DTC Management Files

It is good practise to keep backups of your DTC management files on floppy disks. The **Backup** and **Restore** functions implemented in OVAdmin allow you to back up and restore configuration files, event log files, trace files, and upload files, but not the network map or DTC code files (see "Backing Up the Network Map" on page 166).

There are three important points to note about using the **Backup...** and **Restore...** functions:

- Before starting OVAdmin, you must first close down OVRun. The **Backup** and **Restore** functions will not work if OVRun is still active (even as an icon).
- While the disk read/write operations which are part of the backup/restore operation are taking place, the DTC Manager cannot perform any other tasks. For example, the OpenView workstation cannot upload data from, or download data to, one of its DTCs, or log events, while it is backing up files to a floppy disk.
- The systemMUST be in the same state when you backup and restore. If the Telnet Access boards or X.25 boards are started when you make the backup, they MUST be started when you restore. This is particularly important when transferring control of a DTC from one DTC Manager to another.

It may be quicker to backup from the DOS prompt using a backup utility (note that the DOS Backup utility may cause problems), and it may be useful to write a DOS batch file to manage the backup procedure.

Backing Up Files

To back up files to a floppy disk, you will need one or more formatted floppy disks. The amount of disk space depends on the size of the files you are going to back up. For an indication of some typical disk-space requirements see the *DTC Manager Installation and Upgrade Guide* (D2355-90013). The precise size of the files will depend on factors such as the configuration of the DTC (for configuration files and upload files), or on the amount of data collected (logging files and trace files).

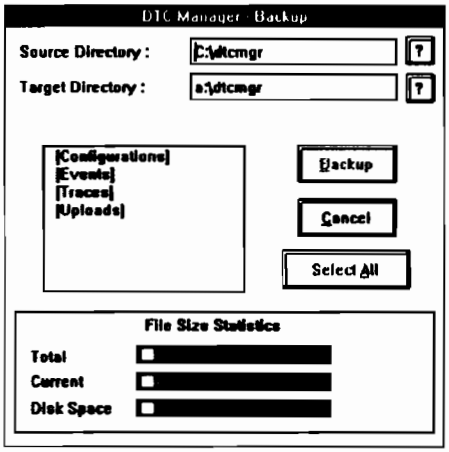
To back up files:

1. Close down OVRun and start up OVAdmin.

2. Pull down the DTC Manager menu and click on **Backup...**

   You will not normally need to change the Source Directory field; by default, this is set to the directory in which DTC Manager is installed, and files you want to back up will be found here unless you have copied them into another directory. If you do want to change the source directory, click on the **?** box, and select the correct directory.

   The target directory is set by default to `A:\DTCMGR`; you can also change this by clicking on the **?** box.



3. In the list box in the middle of the **Backup** window, select the type of file which you wish to back up. You will then see a list of the files.

4. Highlight the files you wish to backup by clicking on them. To select several files, hold down the Shift key on the keyboard while you point and click with the mouse.

5. Click on **Backup** to start copying the selected files to the backup disk. If there is no disk in the target drive, you will be prompted to insert one.

As the backup proceeds, data about the files being copied to the backup disk is displayed in the Backup window; the data which is displayed and updated during the backup is:

- In the line above the file selection box, the full path and name of the file currently being copied.
- At the bottom of the Backup window, the following statistics:
  - Proportion of total backup completed, and the total number of bytes of data being backed-up.
  - Proportion of current file copied, and the total number of bytes in the file.
  - Remaining disk space as a proportion of total disk space, and the number of bytes remaining on the disk.

Backing Up and Restoring the Network Map

To back up the network maps you will need to copy the map files from the \OV subdirectory, these files have the extensions OVD, OVI, OVM. In order to copy these files we suggest that you use the following command at the DOS command line:

```
COPY  C:\OV\*.OV?  A:\*.* /V
```

assuming that the DTC Manager software was installed in the default directories and you wish to back up to a floppy disk in drive A. Generally, the size of the files for each map are quite small, typically only a few kbytes each.

To restore the network map, insert the floppy disk which contains the map file into the **A:** drive and use the following command at the DOS command line:

```
COPY  A:\*.OV?  C:\OV\*.* /V
```

Restoring DTC File Back ups

DTC files which have been backed up to a floppy disk can be restored to the hard disk using a procedure which is virtually identical to the backup procedure described in the preceding section. Place the floppy disk containing the backup files in the A: drive, then, in step 2 of the procedure, select **Restore...** from the **DTC Manager** menu of OVAdmin (instead of **Backup...**).

Note that this **Restore...** procedure can only be used to restore files backed up using the **Backup...** procedure described above. Note also that if you restore configuration files backed up from an earlier version of DTC Manager, you must run the configuration update utility described in the *DTC Manager Installation and Upgrade Guide* (D2355-90013) to ensure that the restored files are compatible with the current version of DTC Manager.

Copying and Deleting Trace Files

An X.25 trace file may contain up to 1MByte of data. As a normal part of system maintenance on the OpenView workstation, these files must be removed from the hard disk. You will find the copied log files in the directory `\DTCMGR\MONITOR`; they will have the name that you gave them in the **Show Trace Log** window (no filename extension is used). You can use the MS-DOS **copy** and **delete** commands from the MS-DOS Executive window to copy the files to a floppy disk and to delete them from the workstation's hard disk. Alternatively, for copying the files, you can use the Backup feature of OVAdmin (see page 163).

If you want to delete the trace and log files, check first with the advice in "The DTC Manager Filing System" on page_161.

Deleting a DTC

When a DTC is removed from the network, it should be removed from your network map and its configuration deleted from the DTC Manager workstation. It is important that you follow the procedure given here to delete a DTC. Do not, for example, attempt to delete DTC configuration files using DOS or Windows delete functions.

To delete a DTC configuration:

1. Click on a DTC, and log on to DTC Manager (if you are not already logged on).
2. Select **Delete DTC Configuration** in the **Map** menu.
3. Select the DTC to delete from the list of DTCs which is presented, and click on **Delete.**
4. Confirm that you want to delete the DTC configuration by clicking on OK.

The DTC configuration files have now been deleted, but the symbol representing that DTC is still part of the map. To remove the symbol, you must use OVDraw and modify the map. Refer to the *HP OpenView Windows User's Guide* for information on how to do this.

A

Troubleshooting

Troubleshooting DTC Manager

If you encounter a problem while using DTC Manager, an explanatory error message will be displayed on the workstation or logged in the DTC Event Log files (see "Show DTC Events" on page 121). In many cases a **Help** button will be available to display further information about the error condition, and the required action to solve it.

However there are three types of error for which there is no simple solution. The table below summarizes the general procedures to be performed in these cases.

ERROR MESSAGE	ACTION
OV DTC Internal Error	This type of error can only be solved by contacting HP Support. Note the error number and what was done just prior to the message being displayed. Print the event log file, and save it under a new name (to prevent it being accidentally overwritten).
Not enough memory to continue	Close other applications that are running, if any. If this doesn't work, close OpenView Windows and then re-start DTC Manager.
MS-DOS File System Error or PC File system Error or OV DTC MGR File System Error	Close Openview Windows and return to the DOS environment. Run a disk-checking utility (such as CHKDSK) on the workstation hard-disk drive which contains the DTC Manager directories. Verify that there is some free disk space. Then re-boot the OpenView workstation and re-start DTC Manager. Re-try the operation that generated the error.

Help

The DTC Manager has an extensive online help file. Many windows include a **Help** button, and clicking on this button will give you information about the window you are currently working in. You can also access this information through the **Help** menu, by clicking on **DTC Manager Index...** This displays a list of all of the subject matter covered in the online help system. You can scan through the list using the scroll bar at the side. By clicking on a listed item, you can read all the available information on that topic.

Vectra ES/12 Reboot Problem

Caution

HP Vectra ES/12 Users

Unless you are certain that you have version A.02.01 of the memory driver HPEMMGR.SYS then *do not* use the `Ctrl-Alt-Del` key combination to re-boot an HP Vectra ES/12 PC running Microsoft Windows. Doing so might corrupt the PC configuration information.

If you press `Ctrl-Alt-Del` by mistake, then an experienced MS-DOS and PC user can recover by resetting the memory available on the PC. To do this, first run CHKDSK to check the "bytes total memory". If this is not 651264 bytes, run SETUP (which may be available on the PC hard disk or one its floppy disks). In SETUP, in the System Configuration screen, change the "System Base Memory" to 640 KB.

B

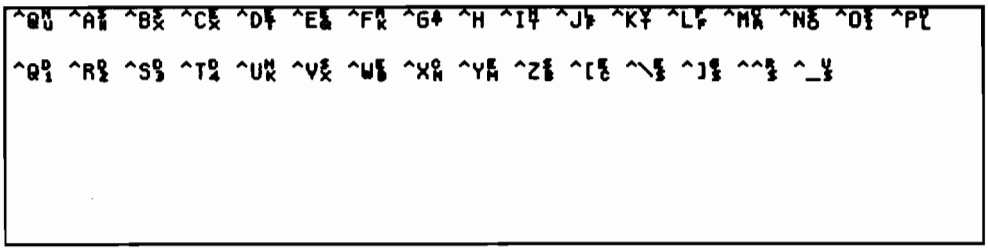
Control Characters

This appendix lists the control characters which can be used in message windows and in the **escape from data transfer** window.

The following table lists all the available characters and their resulting control sequences. The caret symbol (^) represents the control key: ^A means hold down the control key and press A at the same time. The figure on the following page shows each character and its control sequence, as displayed in the message window.

^A	SOH	^L	FF	^W	ETB
^B	STX	^M	CR	^X	CAN
^C	ETX	^N	SO	^Y	EM
^D	EOT	^O	SI	^Z	SUB
^E	ENQ	^P	DLE	^@	NUL
^F	ACK	^Q	DC1	^[	ESC
^G	BEL	^R	DC2	^\	FS
^H	BS	^S	DC3	^]	GS
^I	HT	^T	DC4	^^	RS
^J	LF	^U	NAK	^_	US
^K	VT	^V	SYN		

Welcome Message (Max 400 Characters)



C

Bibliography

This bibliography lists related manuals, and manuals which may be of use to users of the DTC Manager. If topics have been listed, it is only to indicate the sort of information contained in the manual: it is not a full list of topics in a manual.

DTC and DTC Manager

HP OpenView Windows User's Guide (32048-90001)

- Information on using OpenView Windows.
- Details of the tutorial included with the OpenView Windows software.
- Information on using OpenView Draw to create a network map
- Information on using the OVDraw Describe function to add or modify a DTC's label.

HP2340A DTC16 Installation and Service Manual (02340-90001)

HP2345A DTC48 Installation and Service Manual (02340-90001)

HP2344A ARPA Telnet Express Installation and Service Manual (02344-90001)

DTC Network Planning and Configuration Guide (D2355-90012)

- Information on node names and their significance in a network.
- Information on event logging and the significance of events.

DTC Installation and Upgrade Manual (D2355-90013)

- Installing the DTC Manager software on a PC.
- Upgrading to version 10.5 of DTC Mangager from earlier versions.

Quick Reference Guide for Terminal Users (D2355-90002)

- Overview of commands available from a terminal with switching capabilities connected to the DTC User Interface.

Networks

HP 2335A X.25/84 Multiplexer Reference Manual (02335-90021)

- Configuring an HP 2335A PAD.
- Cables for HP 2335A PADs.
- Information on symbolic remote addresses (SRA).

The PSN Connection (5958-3402) (No longer in print)

- Excellent introduction to X.25, X.29, X.3 etc.
- Manages to include detailed information and remain readable.

HP 3000 Series 900 Systems

NS3000/XL Configuration, Planning and Design Guide (36922-90007)

- Information on node names and their significance in a network.

Using the Node Management Services (NMS) Utilities (5959-2805)

- Using NMMGR.
- NMS error messages.

Configuring Systems for Terminal, Printers and Other Serial Devices (32022-90004)

- How to prepare devices for operation and configure the system to include asynchronous device connections.

Troubleshooting Terminal, Printer and Serial Device Connections (32022-61002)

- How to use TermDSM to diagnose a problem with asynchronous devices connected to a DTC managed by host-based network management.

Asynchronous Serial Communications Programmer's Reference Manual (32022-90002)

- Introduction to Asynchronous Serial Communications, the Distributed Terminal Subsystem (DTS) and basic datacommunications concepts.
- Using file system intrinsics to control asynchronous devices programatically.
- Comparison of serial device connection to MPE V and MPE XL systems.

Customizing Terminal and Printer Type Files Using the Workstation Configurator (5959-2866)

- How to create terminal type or printer type files which differ from those supplied by HP.

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