CHRIS MONCE

HEWLETT PACKARD

HP D2355B
OpenView
DCT
Manager

HP OpenView DCT Manager User's Guide

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How to Use This Book

This manual explains how to use the HP OpenView DTC Manager (or DTC Manager) to configure and manage the HP Datacommunications and Terminal Controller (DTC).

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- **Installation and Upgrade - Chapter 2**
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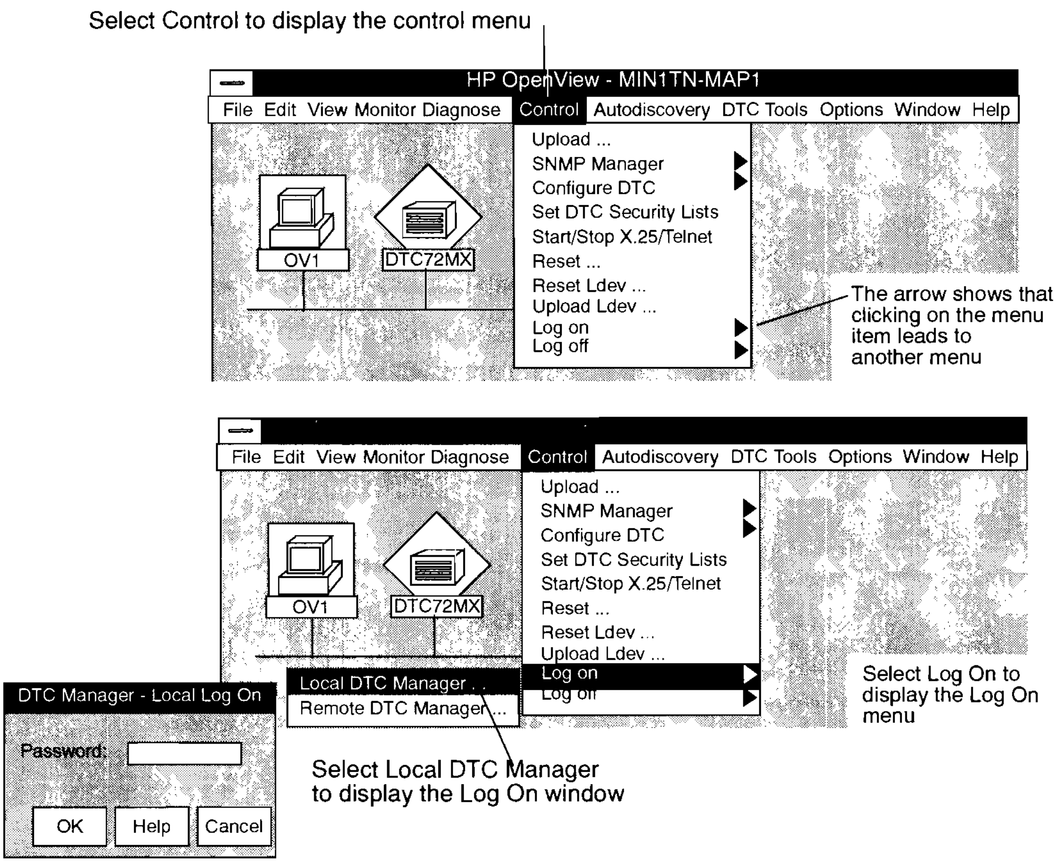
- **The DTC User Interface - Chapter 15**
  This chapter explains how to use the DTC user interface. It is included in this manual for support engineers or system administrators who may have to explain to users how to use the DTC user interface.
- **Bibliography - Chapter 16**
  The bibliography gives a comprehensive list of all the DTC documentation and other documentation that might be useful when installing, configuring and managing DTCs. It provides a brief outline of some of the manuals, and says which manuals are needed for which tasks.
- **About this book**
  This section gives regulatory information concerning the HP OpenView DTC Manager, together with information on previous editions of this guide.

Before you Start!

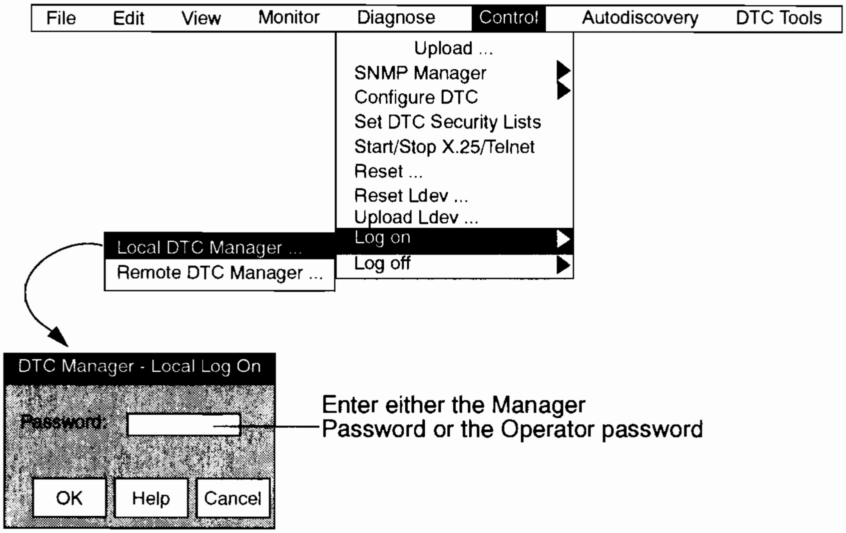
Learning about Windows and Online Help

How Instructions are Shown in this Manual

Choose DTC manager functions from menus, as shown below. This diagram explains how to use the Control menu to logon to DTC Manager.



You will find below the instructions for getting to the Local Log On window:



Always use the same action to close a menu, accept information, display help or exit from a window:

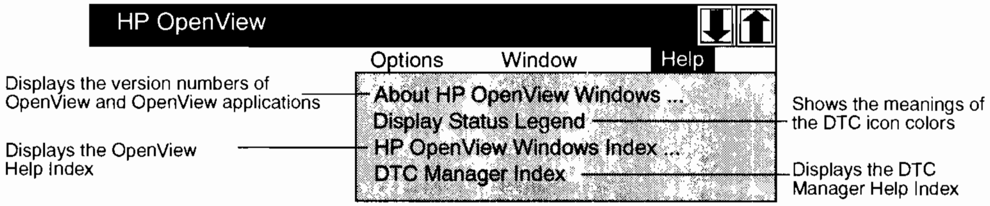
- To close a menu, click anywhere on the map or on another menu in the menu bar.
- To accept whatever you have typed or selected in the window, choose **OK.**
- To display the help information for the window, choose **Help.**
- To exit from a window with no changes accepted, choose **Cancel**.
- To exit from a window, press **Done**.

Online Help

HP OpenView, Microsoft Windows and DTC Manager have extensive online help systems.

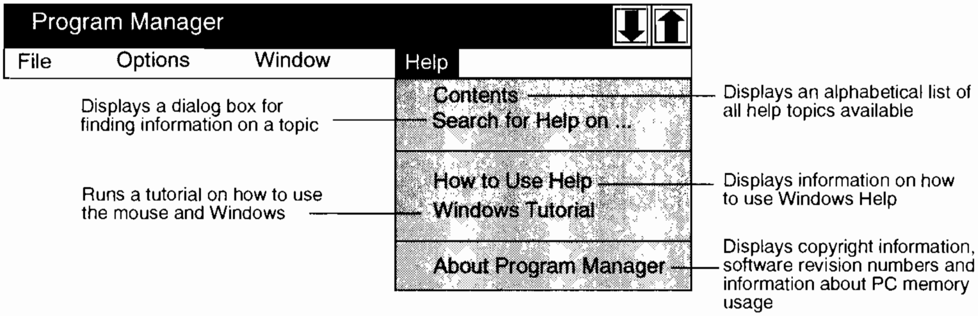
DTC Manager and HP OpenView

Almost all DTC Manager windows include a **Help** button. If you choose this button you will get information about the window you are currently working in. You can also access information from the **Help** menu.



Microsoft Windows

Information on Microsoft Windows, including a tutorial on using Windows, is available from the Microsoft Windows Help menu.



Typographic Conventions

The following typographic conventions are used in this manual.

Bold text — Bold text is used for all on-screen text seen by the user in the HP OpenView Windows environment: menu items, dialog boxes, and so on.

`type text` — Type text is used to represent user input on the screen in the HP 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.

The following conventions are used for commands that must be entered at the DTC user interface.

`[optional]` — Text in square brackets is optional, and need not be typed. For example, in the `c[onnect]` command, you can type `connect` or just `c`.

`<variable>` — Text in chevrons represents a variable that must be entered, for example, the name of a system. You do not type the chevrons.

`either|or` — A pipe is used to separate two items, one of which must be entered. For example, in `<nodename | IP address>` you must enter either a node name or an IP address.

The following example explains this.

```
c[onnect] nodename | IP address
```

In the example, to connect to a system, you must type either `c` or `connect` followed by either a node name or an IP address.

2

Installation and Upgrade

You can find more details about installation and upgrade on the README.TXT file on diskette 1 of the HP OpenView DTC Manager software.

Overview of installation

The installation procedure can be summarized as follows:

- Run HP OpenView DTC Manager setup program:
  - this setup program requires Windows.
- Install or upgrade the supporting software in accordance with the list of necessary actions provided by the setup program:
  - MS-DOS, Windows, Network software, HP OpenView for Windows.
- Install or upgrade HP OpenView DTC Manager

Before upgrading from a previous version of DTC Manager

If you want to upgrade HP OpenView DTC Manager, first verify that the HP OpenView DTC Manager currently installed can be upgraded with the HP OpenView DTC Manager version 14.4 software, as shown in the DTC Support Matrix on page 33.

Ensure that your DTC Manager is at least Version 14.1 and verify that you have the minimum hardware and software requirements, as shown in the table on the next page.

Note — If you have version 14.1, 14.2 or 14.3 you can upgrade to HP OpenView DTC Manager version 14.4.

Backup all the essential information on the PC, including the DTC configuration and MAP files, instructions for which are given in Chapter 12, “Backing up and restoring DTC management files”.

Requirements for installation or upgrade

Hardware requirements

The following Hewlett-Packard hardware has been tested with DTC Manager.

	MS Windows for Workgroups 3.11	Windows 95
CPU	**486**	**Pentium processor**
LAN card	HP ThinLAN (HP 27252A) AM 2100 HP ThickLAN (HP 27252 A) AM 2100 HP EtherTwist (HP 27247 B) Internal EtherTwist or ThinLAN card HP Enhanced PCi	HP ThinLAN (HP 27252A) AM 2100 HP ThickLAN (HP 27252 A) AM 2100 HP EtherTwist (HP 27247 B) internal EtherTwist or ThinLAN card HP Enhanced PCi
Memory	8 Mb RAM	16 Mb RAM
Hard disk	See Disk Space below for more information.	See Disk Space below for more information.

LAN interface card

DTC Manager is supported on ThinLAN, ThickLAN and EtherTwist networks. The LAN interface card must be configured to use I/O address 300 (hex) and interrupt level 5.

The DTC Manager is also supported on HP Enhanced PCi.

Disk space

The DTC Manager can support up to 150 DTCs. The following table gives estimates of the disk space requirements for different numbers of DTCs, though the actual space required will depend greatly on the configurations involved.

Note — These figures are **NOT** definitive, and are given for guidance only.

Number of DTCs	50	100	150
Code	10 Mb	13 Mb	16 Mb
Other Software	38 Mb	38 Mb	38 Mb
Uploads and traces	17 Mb	34 Mb	51 Mb
Total disk space	65 Mb	85 Mb	105 Mb

Note — The shaded columns in the above table relate only to Windows for Workgroups 3.11.

The following assumptions have been made in calculating the figures:

Code = PC code + download + configuration files

Other software = all PC software except DTC Manager software.
Network Software: FTP PC/TCP: 7 Mb.
HP OpenView for Windows: 8 Mb.

Uploads and traces = two 1 Mbyte traces are on the disk and 5% of the installed DTCs have a DTC upload stored on the PC.

Minimum Software requirements

To install DTC Manager 14.4 successfully, you must have the correct version of each software.

The following tables show the minimum software requirements necessary and should be installed in the order in which they appear:

Windows for Workgroups 3.11			**Windows 95**	
MS-DOS	6.22		MS-DOS	-
Windows	3.11		Windows	95
*Network	FTP PC/TCP 2.31 or FTP PC/TCP 4.01 for using RLS (Remote Local Switch)		*Network	Microsoft TCP/IP for Windows 95
OV Windows	7.2C (C.02.14)		OV Windows	7.2C (C.02.14)

Note

*This is only mandatory if you require RLS (Remote Local Switch).

Checking the PC requirements

The HP OpenView DTC Manager setup checks all hardware and software requirements. If one of the mandatory requirements is not met, the installation process cannot be completed.

The result of this check appears on the first setup screen shown by the SETUP installation program.

Note

If at least *one* mandatory item is flagged "Incorrect", the installation process cannot be completed, but the setup will display actions required to solve any problem. Click on "Details" to see these actions.
The Network software is not mandatory if you do not use RLS (Remote Local Switch).

HP OpenView DTC Manager setup

To run the HP OpenView DTC Manager setup, follow the sequence below:

1 Remove the line "`dtcmgr`" from the file AUTOEXEC.BAT (if this exists).

2 Put the HP OpenView DTC Manager 14.4 setup diskette 1 in drive A.

- For Word for Workgroups 3.11, choose **Run** from the file menu on Windows and type:

  `a:\setup.exe`
  then press **Enter.**

- For Windows 95, choose **Start** from the toolbar and then **Run** and type:

  `a:\setup.exe`
  then press **Enter**.

3 Check the status given by the setup PC Checker window (see "Checking the PC requirements" above).

4 If all procedures are correct in the setup PC Checker window, proceed with the installation of the HP OpenView DTC Manager 14.4.

5 Click on **Continue** to proceed.

Note — If there are any discrepancies, that is at least *one* **mandatory** item is flagged "Incorrect", check the requirements and proceed with the software installation.

6 Select "Install HP OpenView DTC Manager".

Note — The other choice, "Install HP OpenView DTC Manager Additional Tools" is for HP support purposes only.

7 Install the four diskettes.

8 You will receive a setup message. Click on **OK** to confirm that the files, AUTOEXEC.BAT etc, have been updated.

Note — For Windows 95 only, after the installation of HP OpenView DTC Manager 14.4, a specific driver must be installed. This installation is described in the section entitled "Installing PCMPRMP protocol under Windows 95" and must be done before restarting your computer.

9 Restart your computer and check for the icons: PC DTC Server and OMP Module.

Upgrading HP OpenView DTC Manager 14.1, 14.2 or 14.3 to 14.4

Upgrading from 14.1 to 14.4 on Windows for Workgroups 3.11

You can upgrade from HP OpenView DTC Manager 14.1 to 14.4 on Windows for Workgroups version 3.11.

Upgrading from 14.1, 14.2 or 14.3 to 14.4 on Windows 95

You can upgrade from any version of HP OpenView DTC Manager 14.1, 14.2, 14.3 to 14.4 on Windows 95.

Note

The following procedure can be carried out if you upgrade from DTC Manager version 14.2 or 14.3 to 14.4 on Windows for Workgroups 3.11 or if you want to transfer your application on to another PC.

1. Backup the DTCs configuration onto diskette using the "DTC Manager/Backup" functionality.
2. Copy the map files on to diskette.
3. Install a new PC with minimum hardware and software requirements for HP OpenView DTC Manager 14.4. (See the minimum hardware and software requirements earlier in this chapter in the section "Requirements for Installation and Upgrade".
4. Start the HP OpenView DTC Manager setup to check requirements.
5. Install HP OpenView DTC Manager 14.4.
6. Copy the map files from diskette onto disk.
7. Restore the DTCs configuration from diskette onto disk using the "DTC Manager/Restore" functionality.
8. Power off, then power on all the DTCs which will be downloaded with the new DTC code, version A.14.40.

Upgrading from 14.2 or 14.3 to 14.4 on Windows for Workgroups 3.11

1. Start HP OpenView DTC Manager setup to check the requirements.
2. Install HP OpenView DTC Manager 14.4.

Installing HP OpenView DTC Manager 14.4 on Windows for Workgroups 3.11

Installing or upgrading to MS-DOS 6.22

To install or upgrade MS-DOS on your PC, follow the instructions provided with the MS-DOS software.

To verify the MS-DOS version, type the command **ver**, then press return.

Note — We recommend that MS-DOS 6.22 is installed in the directory **C:\DOS**.

Installing or upgrading Windows for Workgroups

The DTC Manager requires Microsoft Windows for Workgroups 3.11 or Windows 95.

The installation procedure is as follows:

1 Remove the line "dtcmgr" from the file AUTOEXEC.BAT (if it exists).

2 Put the Windows for Workgroups diskette 1 in drive A.

Type `a:\setup` and press Enter.

3 If you are installing Windows for Workgroups for the first time, enter the name of the directory that is to store the Windows for Workgroups software, when prompted. We recommend that you use the default directory **C:\WINDOWS**.

If you have a previous version of Windows or Windows for Workgroups, we recommend that you choose **Upgrade** and not **Install** in a different directory.

Checking the network adapter on Windows for Workgroups

After installation of Windows for Workgroups 3.11, check your network hardware configuration (network adapter).

1 Click on the Network Setup icon from the Network group and check that your network adapter has been found.

Note: This may be an Advanced Micro Devices AM 2100, any HP LAN adapter or other supported adapter.

2. If the installation program has not discovered the adapter, click on Drivers.
3. Click on **Add Adapter**.
4. Choose the name of your adapter and click **OK**.
5. Click on **Close**, then **OK**.

If the adapter has been discovered, but is incorrectly configured, select the adapter, click on **Drivers**, then **Setup** and modify as necessary.

The base I/O port address should normally be 300 (hex). The interrupt value should normally be 5, but it depends on your internal hardware configuration. If you have no other cards in your PC, use the value 5 and ignore any warning messages.

Installing or upgrading PC/TCP Network Software

This software is only used for the Remote Local Switch (RLS) feature of the HP OpenView DTC Manager.

Before installation

Ensure you have the following information *before* you start installing the network software.

- The PC's IP address, subnet mask, Domain Name and DNS IP address.
- The PC's computer name. This identifies the PC to the network. If you intend to access the PC using nodenames, you must enter a valid, unique value, otherwise you can use the default value.

Ensure that the LAN card is connected to the LAN or to a terminator before installing the network software. If the card is not connected, the network software installation may fail.

Installation

The installation procedure when running Windows for Workgroups 3.11 is described later in this chapter.

Checking PC/TCP installation

To check that PC/TCP has been installed correctly, from the Windows OnNet 2.01 group, execute a **ping** with a known IP address.

Installing or upgrading HP OpenView for Windows

The installation procedure when running Windows for Workgroups 3.11 is described at the end of this chapter.

Installing HP OpenView DTC Manager 14.4

At the time of installation, the PC checker should confirm that everything is OK. The installation process is described in the section “HP OpenView DTC Manager setup”.

Installing HP OpenView DTC Manager 14.4 on Windows 95

The MS-DOS version of your computer will be automatically upgraded by the Windows installer. For installation, see the instructions enclosed with the product.

Note

If you are installing Windows 95 on top of Windows for Workgroups 3.11, choose the installation option which allows you to revert back to Windows for Workgroups 3.11.

Installing Windows 95

The DTC Manager requires Microsoft Windows for Workgroups 3.11 or Windows 95.

The installation procedure is as follows:

1. Insert the CD into your CD-ROM drive and start the setup program for Windows 95.
2. For setup options choose default one:

   default directory: C:\WINDOWS and typical installation with most common components.

   Choosing the option “save system files” is recommended.
3. Copy Windows 95 files on your computer.
4. Restart your computer and finish setup.

Checking the network adapter on Windows 95

After installation of Windows 95, check your network hardware configuration (network adapter).

1. From the control panel icon, select Network.

Note

This may be an Advanced Micro Devices AM 2100, any HP Lan adapter or other supported adapter.

2. If the installation program has not discovered the adapter, click on **Add, Select Adapter** for Network Component, then **Add**.
3. Choose the name of your adapter and click **OK**.

4 In the network window, select the Adapter you have just added and press Properties.

5 Check the values and, if necessary, change them.

For example:

```
HP PC LAN Adapter/8TL (HP 27250); I/O Address Range: 300-30F;
IRQ: 5.
```

6 Then press **OK**.

7 In the network window, press **OK** again and the files are now copied from the CD-ROM.

8 Restart your computer.

If the adapter has been discovered, check its properties.

Installing Microsoft TCP/IP for Windows 95

This software is only used for the Remote Local Switch (RLS) feature of the HP OpenView DTC Manager.

The installation procedure is described at the end of this chapter.

Installing or upgrading HP OpenView for Windows

The installation procedure when running Windows 95 is described at the end of this chapter.

Installing HP OpenView DTC Manager 14.4

The installation procedure is described at the end of this chapter. At the time of installation, the PC checker should confirm that everything is OK. The installation procedure is described in the section “HP OpenView DTC Manager setup”.

Installing the PCMPRMP protocol under Windows 95

On Windows 95, after the installation of HP OpenView DTC Manager 14.4, you should manually add the PCMPRMP protocol, corresponding to the DOS Driver:

PCMPDRV.DOS

The commands for Windows 95 are:

1 From the Control Panel icon, select **Network**, and you will get network information.

   For example:

```
HP PC LAN Adapter/8 (HP 27250) for network adapter,
TCP/IP for network protocol
```

2 Choose **Add** and then from **Select Network Component Type,** select **Protocol.**

3 Press **Have Disk** and enter the path name:

   C:\DTCMGR\EXE

4 Press **OK** twice.

   The system will look for a file with extension "inf" in **the directory C:\DTCMGR\EXE** (it finds the **dtc.inf** file), and add the PCMPRMP protocol.

5 Press **OK.**

6 In order to check that the protocol has been added successfully, look in the Configuration Network window and you will see PCMPRMP listed as an installed network component.

Installing or upgrading network or supporting software

Installing or upgrading FTP PC/TCP version 4.01

1. Remove the line "dtcmgr" from the file AUTOEXEC.BAT (if this exists).
2. Put the FTP PC/TCP setup diskette in drive A.
3. Choose **Run** from the file menu and type `A:\setup.exe` from Windows.
4. Press **Enter**.
5. Choose Express Install, which is the default, then press **Continue**.
6. Choose the default directory C:\PCTCP, then press **Continue**.

Note	Follow step 7 to ***install*** network software for the first time, then proceed to step 9.

Note	Follow step 8 to ***upgrade*** network software, then proceed to step 9.

7. **If you are installing network or supporting software for the first time**: in the Driver Installation window, choose NDIS3/HPISA and DIX for Ethernet.

   In the IP configuration window, fill in the PC's IP address, the subnet mask and routers.

   In the Name Server Configuration window, fill in the host name, domain name and name server address for DNS.

8 **If you are upgrading the network or supporting software:** check the Network Interface summary for information about network details (see example below)

Driver	Frame Type	IP Address	Driver Name
NDIS3	DIX Ethernet	999.999.999.999	HP LANB$

If there is no change, press **Continue** to start copying the files.

9 At the end of diskette 4, you will have the window, "Windows for WorkGroups Configure". As you want to use FTP PC/TCP with Windows for WorkGroups 3.11, click on **Start**.

Note — You will not have to install the fifth (5th) FTP PC/TCP diskette.

10 To setup network (from Windows for WorkGroups 3.11), click on **Drivers** and you will see Add Protocol.

11 To add network protocol, click on **Add Protocol**, select **Unlisted or Updated Protocol** and then click on **OK**. Insert unlisted, updated or vendor provided network driver in drive A:\. (Disk 1 of FTP PC/TCP version 4.01) and then press **OK**.

12 In the Unlisted or Updated Protocol window, choose protocol FTP TCP/IP (VxD), then press **OK**.

13 In Network Drivers, the line FTP TCP/IP (VxD) should now be listed. Click on **close**.

14 In Network Setup, you should see a message that SYSTEM.ini and PROTOCOL.ini have been modified. Click on **OK**.

15 For Windows setup, do not restart the computer now; click on **Continue** and then click on **OK**.

Update the DOS system file AUTOEXEC.BAT.

Click on **OK** after the setup is complete.

16 Restart your computer and check for the messages:

FTP software VxD Loader 4.01
VXDINIT is successfully loaded.

Installing Microsoft TCP/IP for Windows 95

1 From the Control Panel icon, select Network. You will see network information about the adapter and protocol.

2 From Select Network Component Type, choose **Add** and then from **Select Network Component Type,** select **Protocol**.

3 Network Protocols: select **Microsoft** for manufacturers and **TCP/IP** for protocol.

4 To configure TCP/IP, select **TCP/IP** and press **Properties**.

5 Add IP address, subnet mask, gateway and DNS information.

6 Click **OK** to save the configuration.

7 TCP/IP will be listed and configured.

8 Click OK and the files are copied from the CD-ROM.

9 Restart your computer.

Installing or upgrading HP OpenView for Windows

Note

The minimum version of HP OpenView Windows needed to use the DTC Manager 14.4 is version C.02.14.
This version is compatible with Windows for Workgroups 3.11 and also with Windows 95.

With HP OpenView DTC Manager 14.4, you have version D.00.01 of the HP OpenView Windows software.

Proceed as follows:

1 Remove the line “dtcmgr” from the file AUTOEXEC.BAT (if this exists).

2 Put the HP OpenView setup diskette in drive A.

3 Choose **Run** from the File menu and type:

```
A:\setup.exe
```

4 Press **Enter**.

5 Click **OK** to copy the files to drive C and proceed through the six diskettes.

The HP OpenView D.00.01 setup is then started and displays the HP OpenView Professional window.

6 On components, select **HP OpenView Professional** and then **Next.**

Note

You should not need to install any other option or SNMP features for HP OpenView DTC Manager.

If you are upgrading HP OpenView for Windows, the HP OpenView Professional Setup Program notes that a previous HP OpenView program exists in drive C:\OV. Proceed as follows:

1 Click on **Next**.

2 Select **Network Protocols** and ensure that TCP/IP is "ticked", then click on **Next** to start copying the files.

3 You will see "HP OpenView Professional Setup complete"; click on **Finish** ***twice*** to complete the HP OpenView Professional setup.

   Do not restart your computer now.

4 You will see "File copy completed"; click on **exit**.

5 Answer "**Yes**" to erase the temporary directory.

6 Restart your computer before going on to the HP OpenView DTC Manager 14.4 installation.

7 Restart WIN and go to the HP OpenView group where you should see the new D.00.01 icons, for example:

   "Uninstall HP OpenView"

Note

You can run HP OpenView, but you cannot run HP OpenView DTC Manager 14.3.

8 Check that the temporary directory, C:\TMPSETUP no longer exists. If it does, delete this directory.

DTC support matrix

The following table shows the versions of software required for the versions of DTC Manager that are currently supported.

DTC Manager	14.3	14.4	
OpenView	7.2B	7.2C (C.02.14)	
MS Windows	Windows for Workgroups 3.11	Windows for Workgroups 3.11	Windows 95
Network	PC/TCP 2.31 or later	FTP PC/TCP 2.31 or FTP PC/TCP 4.01 for using RLS (Remote Local Switching)	Microsoft TCP/IP for Windows 95
MS-DOS	6.22	6.22	-

The following table shows the versions of software which are no longer supported but which were required for earlier versions of DTC Manager.

DTC Manager	12.0	12.1		14.0		14.1		14.2
OpenView	A.04 A.05	A.04 A.05		B.01.01		B.01.01		7.2
MS Windows	3.0a	3.0a	3.1	3.0a	3.1	3.0a	3.1	Windows for Workgroups 3.11 WIN 3.1
Network	ARPA B.02.00	ARPA B.02.00 ARPA B.03.00	ARPA B.03.00	ARPA B.02.00 ARPA B.03.00 ARPA/ NS 2.5	ARPA B.03.00 ARPA/NS 2.5	ARPA B.02.00 ARPA B.03.00 ARPA/NS 2.5	ARPA B.03.00 ARPA/ NS 2.5	PC/TCP or other Winsock NDIS software
MS-DOS	3.2 3.3 4.01 5.0	3.3 4.01 5.0	5.0	4.01 5.0	5.0	4.01 5.0	4.01 5.0 6.0	5.0 6.0 6.2

3

Starting and Logging on to DTC Manager

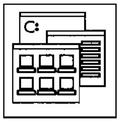
This chapter explains:

- how to start DTC Manager
- how to log on to DTC Manager
- how to create a network map
- how to log off DTC Manager
- how to change the DTC Manager password
- how to stop DTC Manager
- how DTC Manager implements password security

Icons

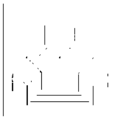
Microsoft Windows, HP OpenView and DTC Manager use icons to represent programs or modules that are currently running. You need to know which programs the icons represent to start and stop DTC Manager.

Program Manager



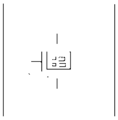
OpenView runs under the Microsoft Windows Program Manager.
Close Program Manager closes all OpenView applications and DTCs can no longer communicate with their DTC Manager.

OpenView



DTC Manager runs under OpenView.
Closing OpenView also closes the Alarm module.
The OMP and PC DTC servers are still active, and DTCs can still communicate with their DTC Manager.

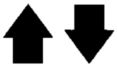
OMP



This module provides the communication between OpenView and the LAN.

OMP cannot be closed (this is only true for Windows for Workgroups 3.11).

Note The OMP icon changes to an upward or downward pointing arrow when a DTC-initiated upload or download occurs and not, for example, when you reset a DTC.



PC DTC Server

This module controls uploads and downloads and manages the DTC Manager database.

PC DTC Server cannot be closed.

Starting DTC Manager

DTC Manager normally starts automatically when you switch on or reset the workstation. This is caused by a command that is added to the AUTOEXEC.BAT file when DTC Manager is being installed.

You can also start DTC Manager from MS-DOS by typing:

`DTCMGR` at the MS-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.

Introduction to Logging On

You must log on to DTC Manager before creating the map and icon and also before you can use the control, monitoring and diagnostic functions of the DTC Manager. Note that you are logging on to the DTC Manager, not to a DTC; DTC Manager is not like the console port on a system.

If you are not logged on, DTC Manager will not be able to use the icons you create to manage DTCs.

Manager and Operator Passwords

There are two types of logon, each with a password. The operator and manager passwords can be the same, but this removes part of the logon security.

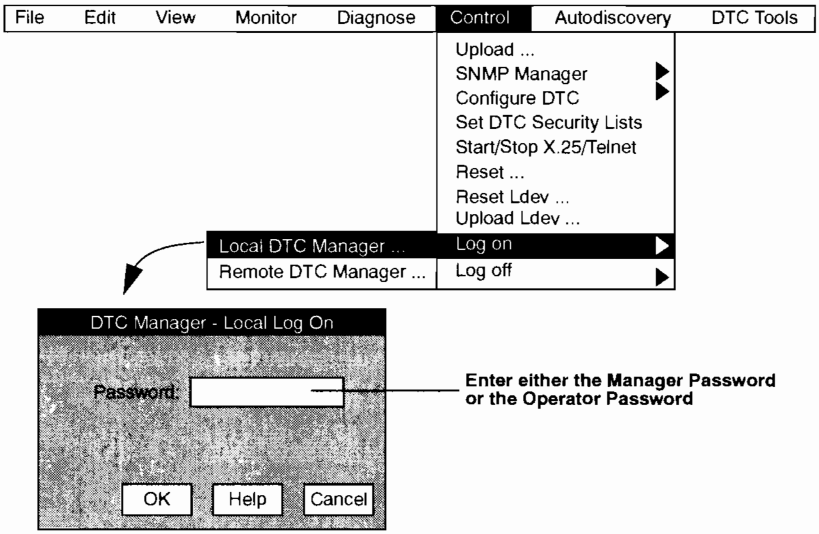
- **Manager** logon gives access to all DTC Manager functionality.
- **Operator** logon gives access only to non-destructive functions (except port reset). For example, the operator cannot reset the DTC.

To find out if you are logged on as manager or not, select a function and see if it is grayed-out or not. For example, **Upload** in the **Control** menu is only available to the manager. If you open the **Control** menu, and **Upload** is available, you are logged on as the manager. If it is grayed-out, you are logged on as the operator.

Inactivity Timer

An inactivity timer runs while you are logged on to the DTC Manager. If there is no activity at the DTC Manager for 20 minutes, you are automatically logged off. If the Event Window is open, the inactivity timer is disabled, and DTC Manager will not be logged off automatically. For security, you should always log out by choosing Log Off in the Control menu.

Logging on to DTC Manager



Choose **Local DTC Manager ...** from **Log on ...** in the control menu and enter the manager password to logon as Manager. The default is **DTC**.

Note	For remote connection, please see Chapter 10.

- Enter the manager or operator password to logon as Operator. The default is **DTC**.

The password is not case-sensitive (**DTC** is the same as **dtc** or **DtC**). The section tells you how to change the passwords.

Note	You *do not* have to select a DTC first, as you did with versions of DTC Manager prior to release 14.0.

Creating a Network Map

You must create a network map, or modify an existing one, before you can add DTC icons.

To create a new map, follow these instructions:

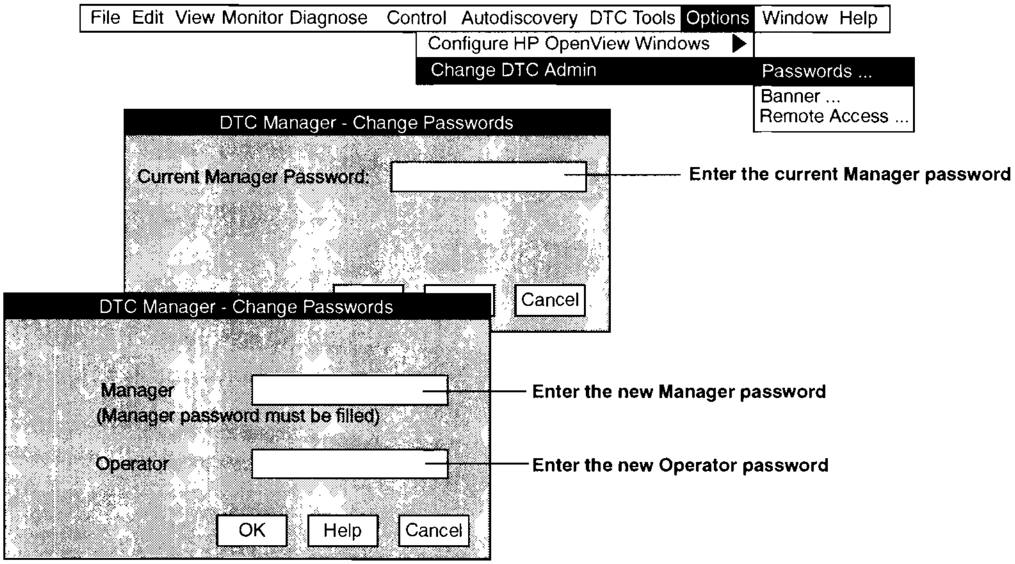
1 Choose **New** from the **File** menu.

A new map called *untitled.untitled* is displayed.

2 Choose **Save as...** from the **File** menu and enter a name for the map.

Changing the DTC Manager Password

You must be *logged off* from DTC Manager to change the passwords.



In the second window, you must enter both the manager password and the operator password. If there is no Operator password, you must press the return key in the field. The passwords are not case-sensitive: **DTC** is the same as **dtc** or **DtC**.

You *must* use a manager password. You cannot leave the manager password field blank.

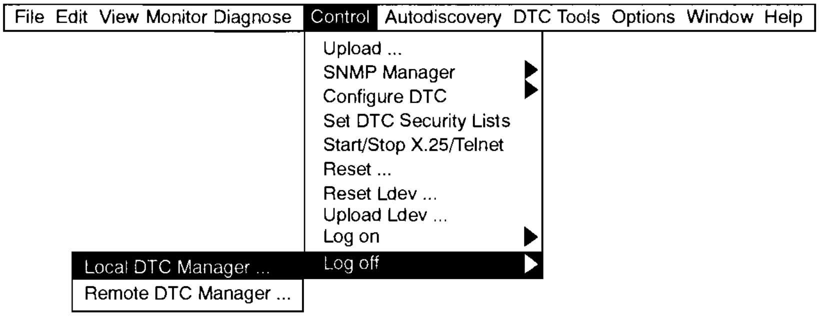
You do not have to have an operator password. If you do not enter a password but instead press the Enter key in the operator password field, then users who log in as operator will not have to enter a password.

If you Forget the Passwords

The manager can create a new operator password using the **Passwords** function.

If you forget the manager password, the default passwords must be re-installed. Contact your HP representative for information on how to re-install the passwords.

Logging off from DTC Manager



For security reasons, we recommend that you log off at the end of a working session.

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 HP OpenView window, you are automatically logged off. You do not have to close the **Show DTC Events** window before logging off from DTC Manager.

Stopping DTC Manager

Logging off from DTC Manager does not stop the DTC Manager software working. DTC Manager will still respond to requests for downloads, take uploads and log event information.

If you choose **Exit** from the HP OpenView **File** menu, but do not exit from Microsoft Windows, any downloads, uploads and DTC events are still processed.

To stop the DTC Manager completely, you must exit from HP OpenView, and then you must also exit from Microsoft Windows. DTC Manager functions, including monitoring of alarms, are stopped.

Caution

If you exit from both HP OpenView and Microsoft Windows, any DTC that generates a catastrophic event while HP OpenView and DTC Manager are not running may hang.

If you try to close Microsoft Windows while HP OpenView is running, you are prompted to close HP OpenView first.

4

Creating or Modifying a DTC

Overview

This chapter explains the principles of configuring a DTC using DTC Manager.

Some of the configuration functions are only available if you are logged on as manager, using the manager password. See the DTC Manager online help for more information.

A DTC needs the following information and software to function correctly:

- **functional software** (DTC code) that enables the DTC to access the LAN, support networking protocols, and manage connections
- **configuration information** about how the DTC and its boards, ports and connections should behave

A DTC contains a limited amount of software in ROM. The configuration information for a DTC is contained in files which are created, modified and stored on the DTC Manager that "owns" the DTC. Both the functional software and the configuration information must be downloaded from the DTC Manager to the DTC.

When a DTC is switched on or reset, it runs a series of self-tests, then multicasts a message on the LAN. The DTC Manager that has the files for the DTC responds by downloading the functional software and the configuration information, and then continues to manage the DTC.

There are three ways of creating or modifying a DTCs configuration information.

- The **Initialize Automatic Configuration** function allows a DTC to be configured and downloaded automatically. A minimum amount of information must be entered manually, and the rest of the information comes from default values stored in the DTC Manager.

  When a DTC boots, it multicasts a message on the LAN requesting a download. The multicast message contains information on the type of DTC and the cards fitted. The DTC Manager receives the multicast, and builds the configuration files for the DTC using default values for each type of card. You only have to supply the DTCs nodename and its LAN address (the IP address is needed for some types of connection, especially TCP/IP connections to UNIX systems).
- **Static (offline) configuration** creates or modifies the DTCs configuration files. The files may be downloaded immediately by resetting the DTC from DTC Manager or by switching the DTC off and then on. Otherwise, the changes do not take effect until the next time the DTC boots or requests a download.
- **Dynamic (online) configuration** allows you to reconfigure most parameters of an active DTC. The changes take place immediately, without affecting existing connections. For example, if you change a port's line speed, it continues running at the old speed until the current connection is broken. You can save dynamic values in the configuration files so that they become the default values for the DTC. If you do not save the changes, then the DTC reverts to the old configuration when it reboots.

There are three methods of sending the configuration information from the DTC Manager to the DTC.

Switching the DTC on

Switching the DTC on, or switching it off then on again, downloads the DTCs configuration files and functional software from the DTC Manager.

Resetting the DTC

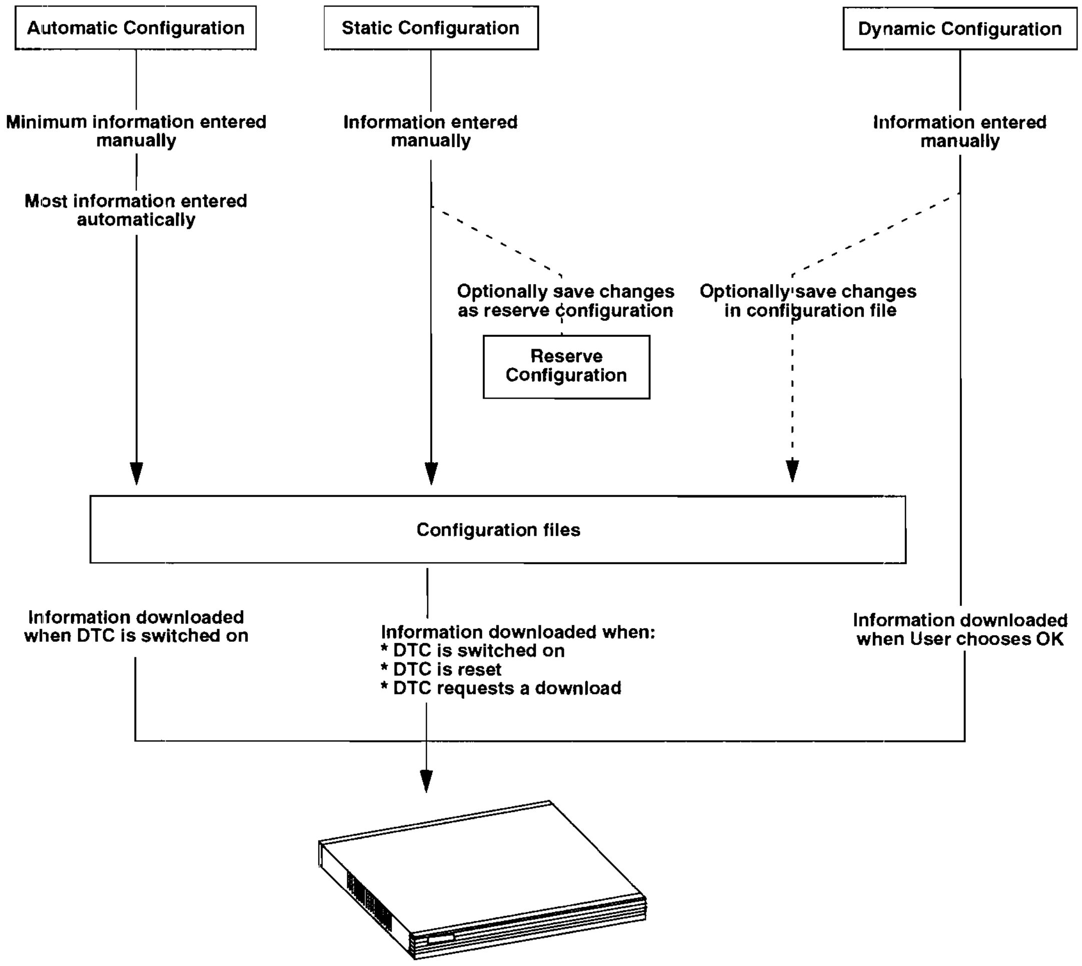
Resetting the DTC, either from the DTC Manager or from the DTC itself, closes all current connections, then downloads the DTCs configuration files and functional software from the DTC Manager.

Dynamic configuration

The changes made during dynamic configuration are downloaded to the DTC when you choose **OK** in the configuration window .

Reserve Configuration

Each DTC can also have a reserve configuration. When you save the DTCs configuration, you have the option of saving it as the permanent configuration or the reserve configuration. Only the permanent configuration can be downloaded. To download the reserve configuration, you must first load it, save it as the permanent configuration, and then download the new permanent configuration. The following diagram outlines the different configuration possibilities.

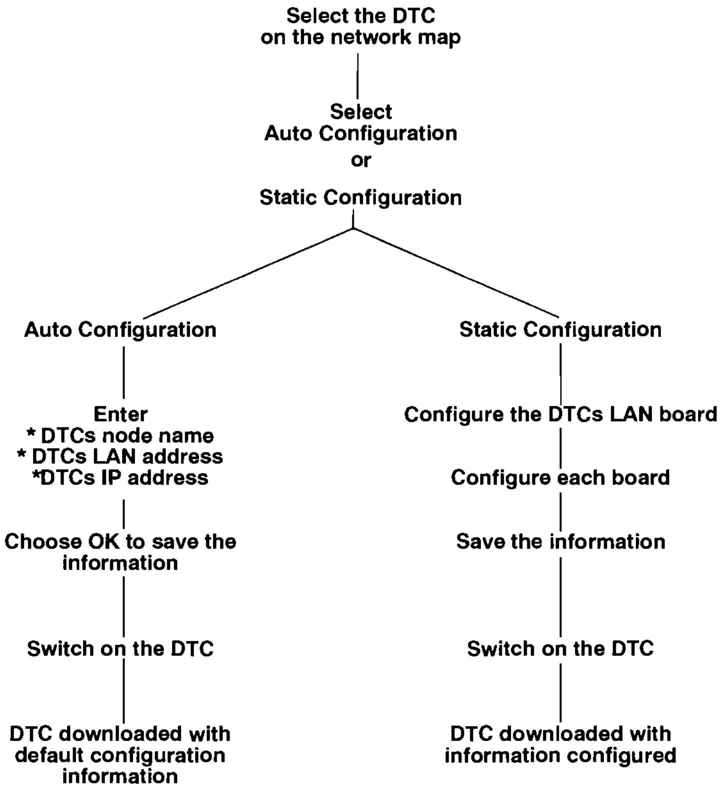


Creating or modifying a new DTC

There are two ways of configuring a newly-acquired DTC.

Automatic Configuration - you enter only the DTCs nodename, LAN address and DTC IP address. The boards and ports are configured using default values.

Static Configuration - you enter all the information for the DTC.



Automatic Configuration of a New DTC

Initialize Automatic downloads to the DTC the default configuration that should work in most situations. If necessary, the DTC can be reconfigured later.

Proceed as follows to configure a new DTC automatically.

1 Log on to the DTC Manager as manager.

2 Create an icon of the right type for the DTC.

   a Add the DTC icon using **Add, Component** from the **Edit** menu.

   See the OpenView online help on the Edit menu for information on adding components.

   b When the Describe window appears, enter the name of the DTC. (If the Describe window does not appear, it means that you forgot to log on.)

   The name must be at least one character, and not more than eight. The restrictions are those for naming MS-DOS files: see the MS-DOS documentation for more information.

3 Select the DTC icon you added to the map.

   a Choose **Initialize Automatic ...** from **Configure DTC** in the **Control** menu.

4 Enter the following information:

   - **DTC nodename** - you must supply a nodename that meets the naming conventions used on your LAN.
   - **DTC LAN address** - the DTCs LAN address is marked on a label on the DTC, see page 58.
   - **DTC IP address** - you must supply a unique IP address for the DTC if you will be using it for connections to internet services or for extended switching connections.
   - for the DTC 16iX only, enter the **Dedicated Host Name.**

5 Choose **OK** to save the information.

6 Switch on the DTC.

The configuration files for the DTC are created according to the default values for the types of boards in the DTC. The configuration files and functional code are downloaded to the DTC.

Static Configuration of a New DTC

Proceed as follows to configure a new DTC using **Static Configuration**.

1. Log on as Manager.
2. Create an icon of the right type for the DTC. (See previous section.)
3. Select the DTC icon.
4. Choose **Static Configuration** from the **Control** menu. The backplane window is displayed.
5. Configure the DTCs backplane by installing on the screen the board types that have been installed in the DTC hardware. If the hardware configuration set up on this screen does not match the hardware installed in the DTC, the configuration will not download and the DTC icon will change to red.

   Also, if you are using modem distribution panels (MDPs) to make modem connections, and they are not connected, the configuration will not download and the DTC icon will change to red.
6. Configure the DTCs LAN board by defining the overall characteristics of the DTC. You must enter:
   - the DTCs nodename
   - the DTCs LAN address
   - the DTCs IP address
   - for the DTC 16iX only, the Dedicated Host Name.
7. Configure the information needed for each board and the connections it will handle. Not all the types of boards listed below may be present in any one DTC.
   - Asynchronous boards
   - Telnet Access boards
   - X.25 boards
8. Save the configuration information.

You can also save the configuration information as the DTCs reserve configuration, which can be used as a backup or for an emergency configuration.

Adding a DTC to the Map

A DTC may be added to the map manually, or with OpenView's Autodiscovery facility. Autodiscovery searches IP and IPX networks, identifies the devices it finds, and assigns a map symbol to each device (see the *HP OpenView Windows User's Guide* for a full description of Autodiscovery).

However, a DTC cannot be "Autodiscovered" until it is configured and functioning; therefore, a new DTC must always be added manually.

Modifying an Existing DTC

There are two ways of changing the configuration of an existing DTC.

Static Configuration

All the parameters of a DTC can be changed by static configuration. After the changes have been made, you must reset or reboot the DTC before the changes take place.

Dynamic Configuration

Using dynamic configuration, you can change nearly all the parameters of a running DTC without having to reset it, and without having to break existing connections. The changes are downloaded when you choose **OK** to accept the changes. Some changes will not take place until new connections are established.

If the changes are not saved in the configuration file, the DTC will revert to the previously saved configuration next time it boots.

The following parameters *cannot* be reconfigured using **Dynamic Configuration**.

- DTC LAN address (hardware address, 802.3 address or MAC address)
- DTC IP address
- DTC nodename
- Routable AFCP front-end enable/disable
- Network timers
- SNMP MIB parameters
- automatic restart
- (for the DTC 16iX and DTC 48/3000) the Dedicated Host Name.

Static Configuration of an Existing DTC

Proceed as follows to reconfigure an existing DTC using Static Configuration.

1. Log on as manager.
2. Select the DTC icon from the network map.
3. Choose **Static Configuration.**
4. Reconfigure the parameters.
5. Choose **Save Configuration** to save the changes in the DTCs configuration files.
6. Switch the DTC off, then on, or reset it to download the changes.

Dynamic Configuration of an Existing DTC

Proceed as follows to reconfigure an existing DTC using Dynamic Configuration.

1. Log on as either operator or manager.

Note: Certain parameters cannot be changed dynamically (see the online help for more information), and certain functions are not available if you are logged on as operator.

2. Select the DTC icon on the map.
3. Choose **Dynamic Configuration**.
4. Reconfigure the parameters.
5. Choose **OK** to download the changes to the DTC. Some of the changes will not take place immediately.

   Optionally, save the changes in the DTCs configuration files by selecting **Yes** when you are asked if you want to make the changes permanent. If you do not save the changes, the DTC will revert to the previous configuration next time it is downloaded.

When do Dynamic Changes Take Place?

LAN Configuration Fields that cannot be configured dynamically are grayed out. Changes to the other fields are downloaded to the DTC when you choose **OK**.

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 until the port is reset. Existing connections are not disturbed.

X.25 Boards

System-to-System Switching configuration

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 are taken into account for any connections established after the download. Changes to the system-to-system switching configuration do not affect existing connections.

PAD Security configuration

Changes to PAD security configurations take effect immediately; all new connection attempts are 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.

Adding a DTC Manually

You should log on to DTC Manager before adding a DTC to the map. If you do not log on to DTC Manager, you can add a DTC icon without a name or label; however, DTC Manager will be unable to manage the DTC.

When you add a new DTC to the map, you must give it a name or label using the **Describe** function. This name or label is used to name the directory containing the DTCs configuration files.

1. Log on as manager
2. Choose **Add** from the **Edit** menu and select **Component** in the Add dialog box. See the OpenView online help on the **Edit** menu for information on adding components.
3. Name the DTC in the Describe window. The name must be at least one character, and not more than eight. The restrictions are those for naming MS-DOS files: see the MS-DOS documentation for more information.

Adding a DTC with Autodiscovery

Ignoring Device Classes

By default, Autodiscovery will find the IP address of every element on the network, and display it on the map.

You will probably find that there are some types of elements that you do not want to see on the map. To exclude these elements, select **Configure**, **Device Classes** from the **Autodiscovery** menu and mark the classes you wish to ignore. You can choose to ignore elements before Autodiscovery, in which case they will not be added to the Autodiscovery database, or after Autodiscovery, in which case they will be added to the database but not displayed on the map.

A DTCs LAN board has an IP address and associated SNMP information, and will normally be added to the map. Each DTC port may also have an IP address, but no SNMP information. A port with an IP address will normally be added to the map, unless you specify that Generic IP Addresses should be ignored.

After Autodiscovery

You can use autolayout to create a new submap. You will be asked whether you wish to overwrite the current map.

> If you have a DNS and have configured it, the Autodiscovered DTCs will have their DTC labels displayed, because the label is used as the DTC name in the DNS. You can click on the DTC icons in the usual way to log on to DTC Manager and use DTC Manager functions (except for DTC Polling and Show Status).
>
> If you do not have a properly configured DNS, the Autodiscovered DTCs will have their IP addresses displayed. In this case, to manage a DTC, you must click on its icon and then on **Describe**, and assign a label to it. You cannot choose the label freely at this point: you must use the label that was assigned to that DTC when it was first added to the map (manually). If you assign a new label, DTC Manager will assume that it is a new DTC, and will complain later when it finds that the new DTC is identical to one already on the map.

If you add a DTC manually and then add the same DTC with Autodiscovery, you will have two icons for the same DTC. If you plan to use Autodiscovery repeatedly, you should check that the Autodiscovered icon is working, and then delete the other icon. If you do not plan to use Autodiscovery again, it may be simpler to delete the Autodiscovered icon.

Adding and Deleting Boards

This chapter explains how to configure the DTCs backplane window to match the hardware installed in the DTC.

When you select a DTC and choose **Static Configuration** or **Dynamic Configuration**, a window with an image of the rear of the DTC appears, which is called the **backplane window** in this manual.

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

Each type of DTC has its own backplane window, depending on the number of card slots it has. The following tasks can be performed at the backplane window:

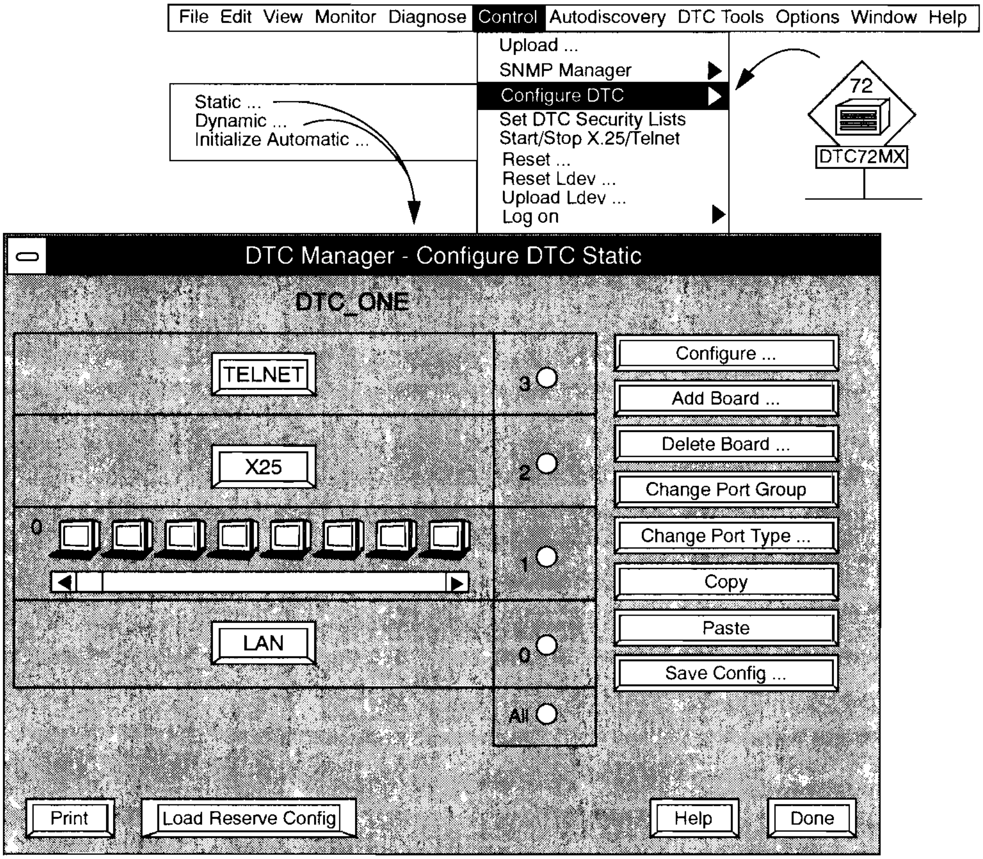
- adding or deleting a board
- copying the configuration of a port or board within a DTC
- copying the configuration of a board, or an entire DTC, to another
- changing the port type or port group type (DTC 72MX, DTC 16TN, DTC 16MX and DTC 16iX only)

Note

The configuration shown on the backplane window must match the hardware configuration of the DTC. If the configurations do not match, the DTC will not download. The DTCs hardware must be installed and it must have passed its self-tests before you try to download the configuration.

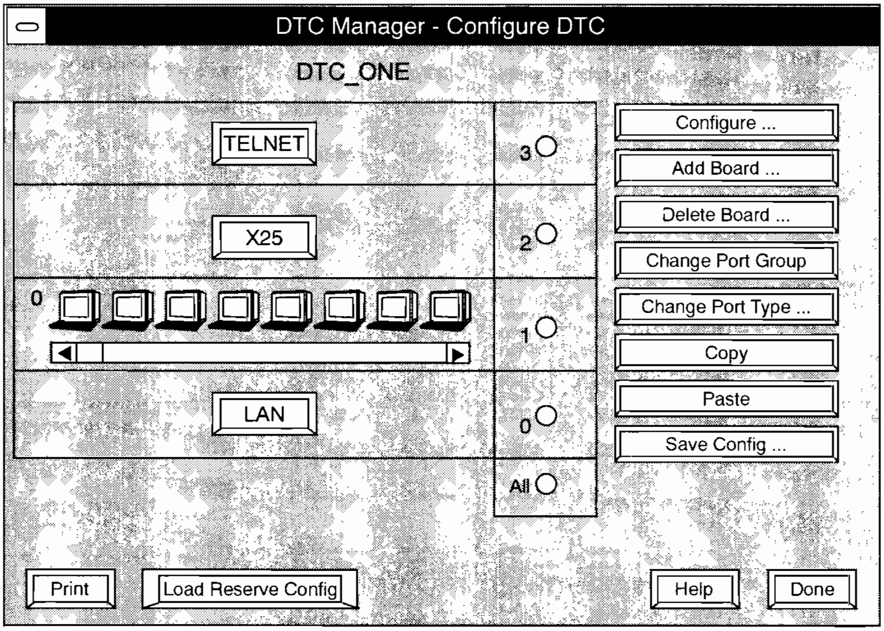
Getting to the Backplane Window

You access the backplane window from either **Static Configuration** or **Dynamic Configuration** (**Configure DTC** option of the Control menu). You must be logged on as manager to access the backplane window from **Static Configuration**. The operator can access the backplane window from **Dynamic Configuration**, and can read the information.



Backplane Window Functions

The following figure shows the backplane of the DTC 72MX. Some functions are not available on some DTCs: for example, only the DTC 72MX, DTC 16TN, DTC 16MX and DTC 16iX have port groups.



A brief explanation of what each "push button" is used for is given on the following page.

Note

You can double-click on a port icon, a board icon or a button instead of selecting it then choosing the **Configure** or **OK** button.

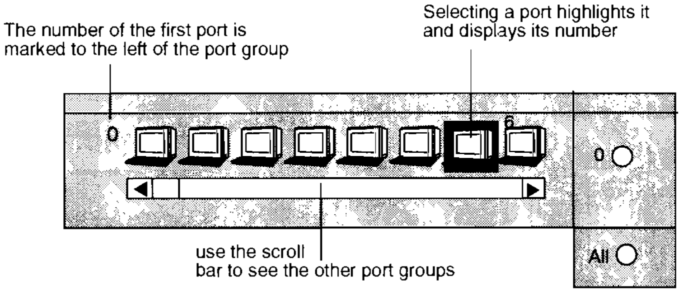
Configure ...	Select a board, then choose **Configure ...** to access the configuration window for the board.
Save Config ...	Choose **Save Config ...** to save the current configuration information to the DTCs configuration file or reserve configuration file.
Load Reserve Config ...	Choose **Load Reserve Config ...** to load the DTCs reserve configuration into the current DTC configuration file.
Add Board ...	Select an empty slot, then choose **Add Board ...** to access the board select window.
Delete Board	Select a board, then choose **Delete Board** to remove the board from the slot.
Change Port Group	***DTC 16TN, DTC 16MX, DTC 16iX and DTC 72MX only.*** Select a port group then choose **Change Port Group**. The port group type will toggle - a modem connect group will become direct connect and a direct connect group will become modem connect.
Change Port Type ...	Select a port then choose **Change Port Type ...** to display the Port Type window. Select Terminal, Printer or Host, then choose **OK** to change the port type.
Copy	Select a board or port, then choose **Copy** to copy the board's configuration to the copy buffer.
Paste	Select a board or port, then choose **Paste** to paste the current contents of the copy buffer into the board or port.
Print	Select **Print** to print the current configuration.

Port Groups and Port Types

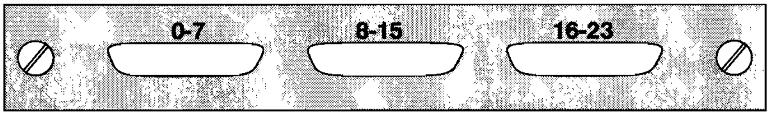
The ports on the DTC 72MX, DTC 16TN, DTC 16iX and DTC 16MX are grouped as sets of eight, called **port groups**. Each port group can be either all direct-connect or all modem-connect ports.

DTC 72MX Port Groups

The DTC 72MX has 24 asynchronous ports per board, grouped as three sets of eight ports. Connections to the DTC 72MX asynchronous ports are made by three connectors on the asynchronous board, each of which handles eight ports. Each port group corresponds to a connector on the asynchronous board.

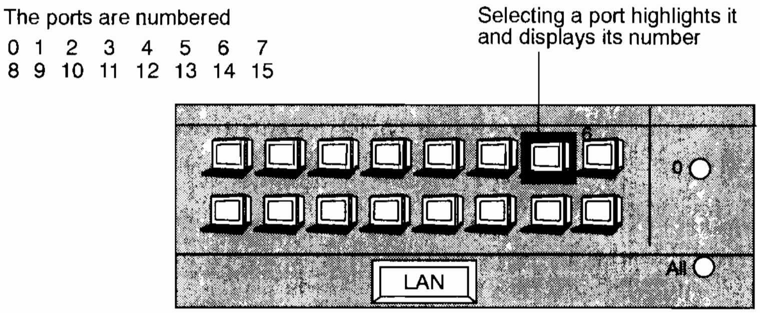


The connectors on the DTC 72MX asynchronous boards are arranged as follows:

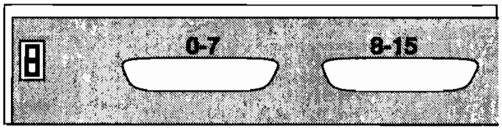


DTC 16xx Port Groups

The DTC 16TN, DTC 16iX and the DTC 16MX each have 16 asynchronous ports, grouped as two sets of eight ports. Connections to these DTCs asynchronous ports are made by two connectors, each of which handles eight ports. Each port group corresponds to a connector on the rear of the DTC.



The connectors on the DTC are arranged as follows:



Adding a Board to a DTC

It is not possible to add a board to an HP Telnet Express, DTC 16RX, DTC 16TN or DTC 16iX as its configuration is predetermined.

If you select slot 2 of a DTC 16, you will bypass the Add Board window and go straight to the main X.25 configuration window, because only X.25 boards are permitted in slot 2.

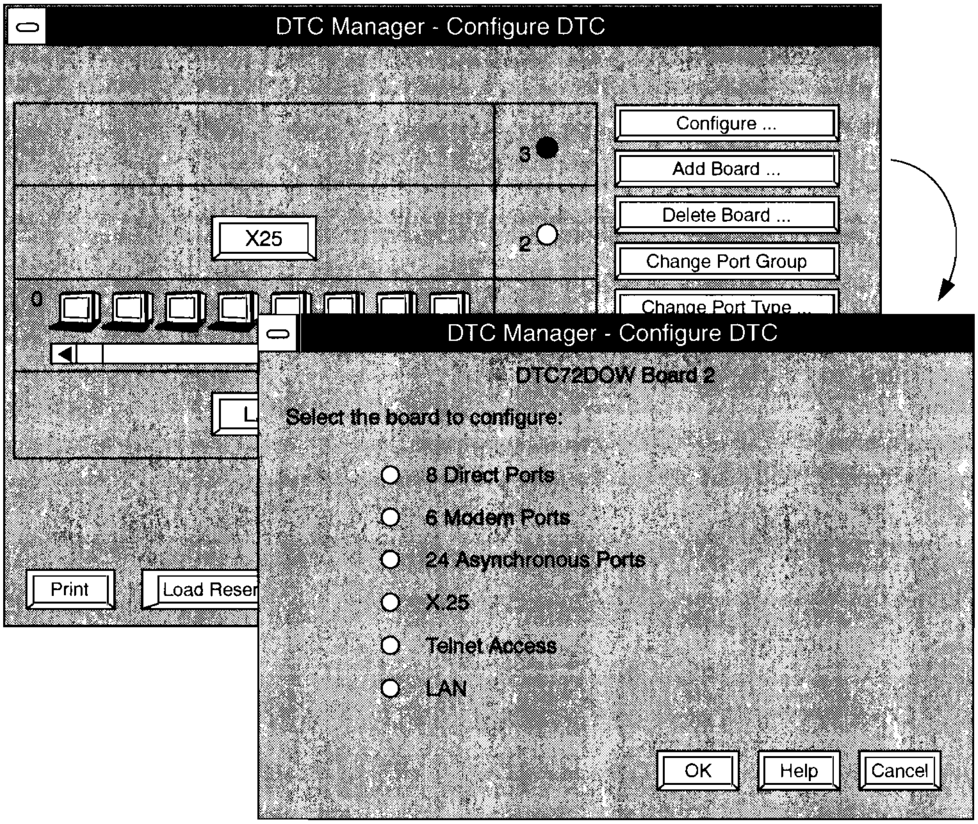
The following table shows which boards can be added to each of the DTCs. See the *DTC Planning Guide* for a list of the permitted combinations of boards that can be fitted in each DTC.

The cards that cannot be added to the DTC are grayed out in the Add Board window.

	Asynchronous Board			X.25	Telnet Access
	8 direct or 6 modem	16 modem or direct	24 modem or direct		
DTC 16	yes			yes	
DTC 16xx		yes			
DTC 48	yes			yes*	yes*
DTC 48/3000	yes			yes	
DTC 72MX			yes	yes	yes
Telnet Express Box					yes
Note: * exclusively					

The following figure shows the **Add Board** window for a DTC 72MX. The type and number of boards that can be added depend on:

- the type of DTC to which you are adding a board
- the boards that are already installed in the DTC
- the slot in which you want to install the board.



Deleting a Board From a DTC

If you remove a board from a DTC, you must also remove the corresponding board from the DTCs backplane window.

It does not matter which you do first, remove a board from the DTC or delete the board from the backplane window, as long as the backplane window matches the hardware when the DTCs configuration file is next downloaded.

1 Select the slot from which the board is to be deleted.

2 Choose **Delete Board**.

3 Choose **OK** in the dialog box that pops up.

The backplane window is displayed showing an empty slot where you have just deleted the board.

Note the following restrictions:

- boards cannot be deleted from an HP Telnet Express
- the LAN board cannot be deleted from the DTC 16, DTC 48, DTC 48/3000, or HP Telnet Express
- boards cannot be deleted from the DTC 16TN, DTC 16MX or DTC 16iX.

Copying a Port or Board Within a DTC

You can copy the configuration of a port or board to another port or board on the same DTC. You can then edit the configuration of the new port or board in the normal way, if it has to be modified.

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

1 Select the port or board to be copied.

2 Choose **Copy**.

3 Select the destination port or board, and choose **Paste**.

Copying Configurations Between DTCs

You can copy a board configuration, or an entire DTC configuration, from one DTC to another DTC of the same type. For example, you can copy and paste from a DTC 48 to another DTC 48; from a DTC 16 to another DTC 16, and so on. 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 LAN configuration (DTC nodename, LAN address and IP address) must be unique for each DTC, therefore they are not copied.

When you choose **Copy**, the configuration information is saved in temporary files. You can then select another DTC from the network map, and **Paste** the information into it. You can repeat the same Paste operation on any number of DTCs, until you **Copy** another item.

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

Saving the Configuration

A DTC has "normal" configuration files and a **reserve configuration**, which can be saved and loaded, but not downloaded. To download the reserve configuration, you must load it, save the configuration as the "normal" configuration, then download it.

The following parameters *must* be entered before you can save the DTCs configuration:

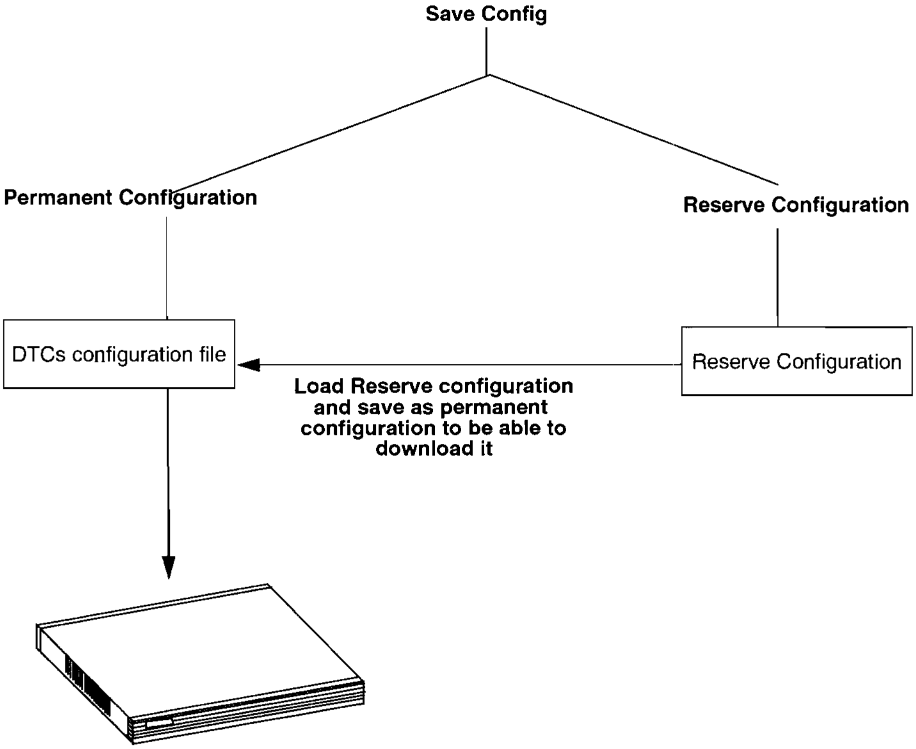
- the DTCs **nodename**, in the format `name.domain.organization`
- the DTCs **LAN address**, which must be different from the default value
- the DTCs **IP address**
- the **Dedicated Host Name** (for a DTC 16iX and DTC 48/3000).

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

1 Choose **Save Config.**

2 Choose Permanent Configuration to save the information as the DTCs permanent configuration files, or choose Reserve Configuration to save the information as the DTCs reserve configuration.

3 Choose Yes to save the configuration.



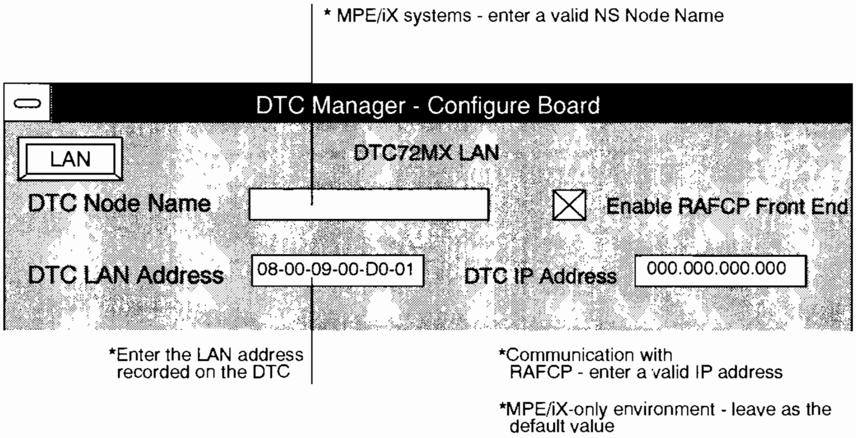
Printing the Configuration

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 choosing **Print**.

Configuring the LAN Board including SNMP

This chapter describes how to configure the LAN configuration window. Some fields in the window are mandatory and must be filled in before DTC Manager will save the configuration information. Some fields are optional and do not have to be filled in. Three other windows are accessible from the LAN Configuration window, none of which have fields that must be filled in.

Mandatory LAN Board Information



DTC Node Name You must enter a valid NS-format nodename as the DTC nodename. The DTC nodename is normally used for communication in the HP 3000/900 environment. However, the DTC Manager uses the nodename as part of its information management system, and so you must enter a valid NS nodename in this field, even if you will only use TCP/IP. The DTC nodename must be a fully qualified AFCP nodename. An AFCP nodename consists of three, 16-character fields separated by points.

We recommend you use the DTCs name or label, followed by the domain and organization, for example:

```
DTC_NAME.DOMAIN.ORGANIZATION
```

The nodename must be unique on the LAN. If you have any HP 3000 Series 900 systems on the same LAN as the DTC you are configuring, you must make sure that the name you give is not already in use.

The DTC nodename is used for:

- **MPE/iX systems**, for establishing AFCP connections to HP 3000 Series 900 systems.
- **Other systems**, for some types of extended switching connections.

Enable RAFCP Front End

If you intend to use the DTC as a Routable AFCP gateway, you must put a cross in this box. You must also go to the DNS/IP window and provide the IP addresses of the Domain Name Servers and routers that you intend to use.

DTC LAN Address

You must enter the LAN address (also known as hardware address, 802.3 address, or MAC address) exactly as recorded on your DTC.

DTC 72MX	on the LAN board
DTC 16TN, 16MX, 16iX	on a label on the rear of the DTC
DTC 48	on a label inside the front cover
DTC 48/3000	on a label inside the front cover
DTC 16	on a label on the rear of the DTC
HP Telnet Express	on a label on the rear of the DTC

DTC IP Address

The DTC requires a valid IP address in the following configurations:

- a DTC used for extended switching connections
- a DTC used for connections to HP 9000 and other systems
- a DTC used for telnet access
- a DTC used for connections to HP 3000 systems via Routable AFCP.

Leave the IP Address field blank if you are not using these configurations.

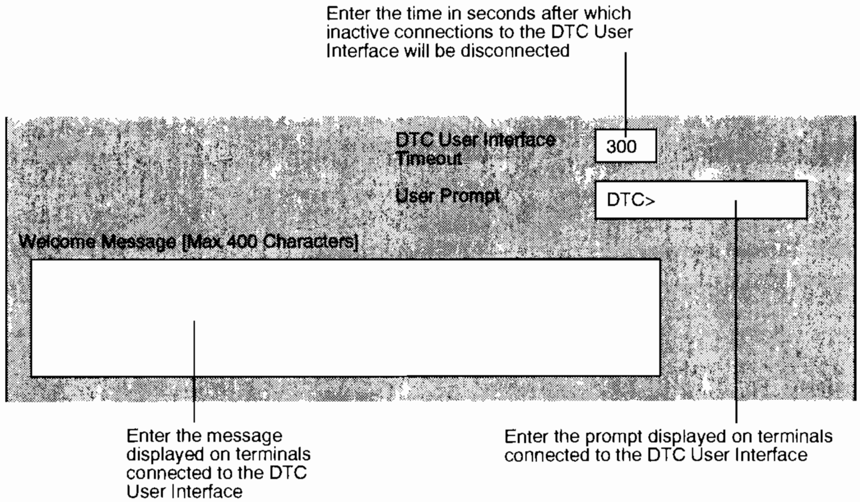
An IP address consists of four, 3-digit fields (between 0 and 255 and separated by points), for example:

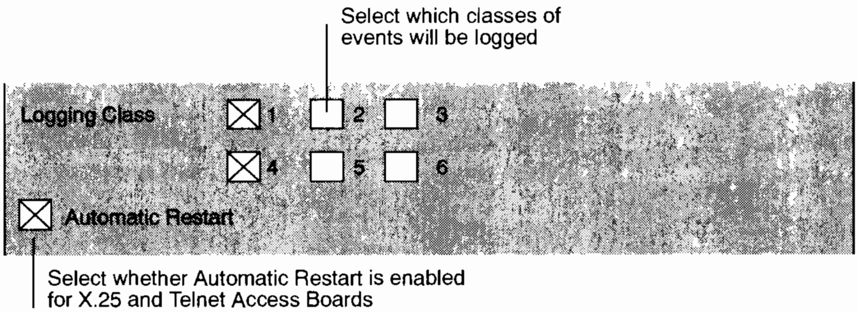
```
128.14.26.101
```

Dedicated Host Name (DTC 16iX or DTC 48/3000 only)

Enter the name of the HP 3000 host system to which the terminals and printers using this DTC will be connected. The Dedicated Host Name must be entered in the format: `name.domain.organization`, for example: `toto.lab.hp`

Optional LAN Board Information





DTC User Interface Timeout

This sets how many seconds of inactivity before the DTC user interface (the interface that is displayed on a terminal connected to a DTC) is automatically disconnected. The timer is inactive when the user is connected to a system. See the online help for more information.

User Prompt

This sets the prompt displayed at DTC user interface. See the online help for more information.

Welcome Message

This sets the message displayed when the DTC user interface is first opened. See the online help for more information.

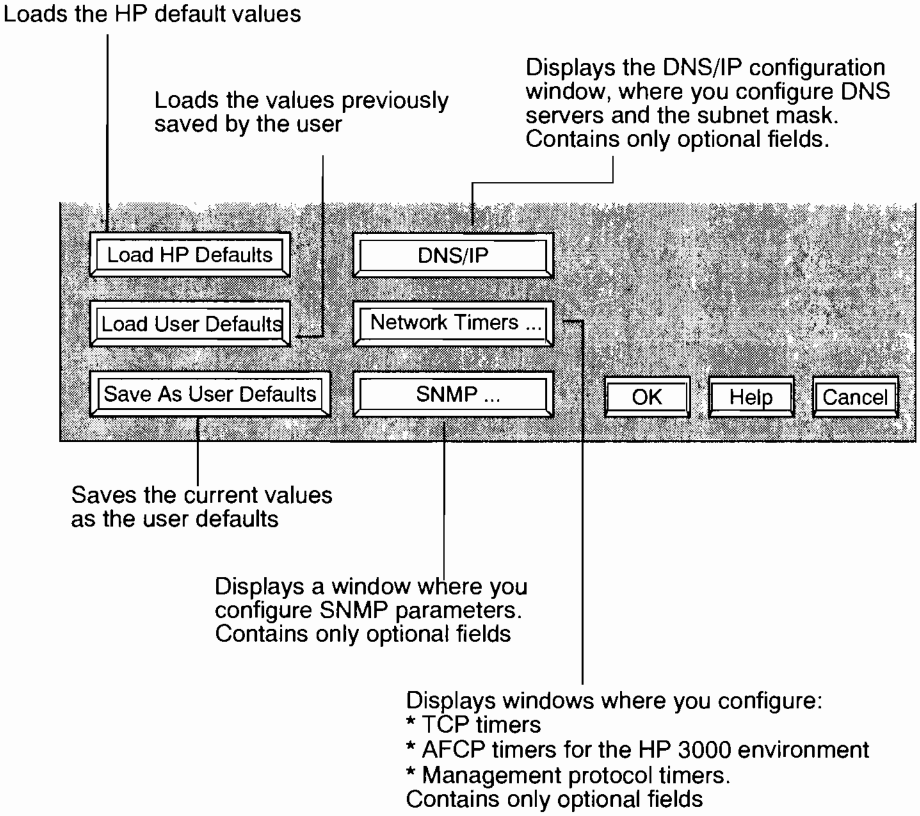
Logging Class

This selects which classes of events will be logged. Class 1 events are always logged. Logging too many classes at once can quickly fill the DTC Manager workstation's hard disk. See the online help for more information.

Automatic Restart

This sets whether or not Telnet Access and X.25 boards can be started automatically. See the online help for more information.

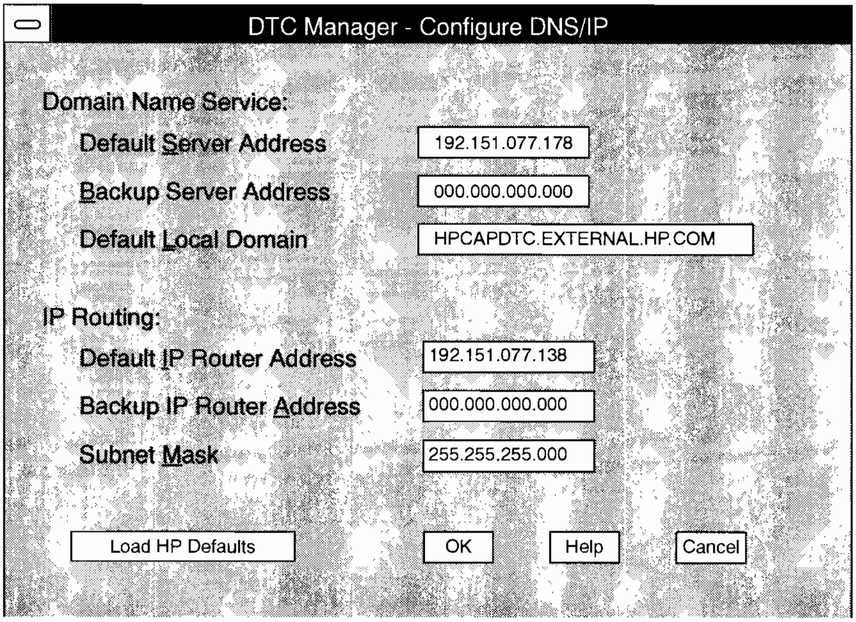
Other LAN Window Functions



DNS/IP Window

The DNS/IP window, shown below, allows you to configure the following:

- IP addresses of Domain Name Services servers (DNS)
- the default local domain
- IP addresses of IP routers
- IP subnet mask



DNS Server

If you are using Domain Name Services for address resolution you must enter the IP address of the DNS server in the DNS/IP window. See the online help for more information.

IP Router

If you are using an IP router you must enter its IP address in the DNS/IP window. See the online help for more information.

Subnet Mask

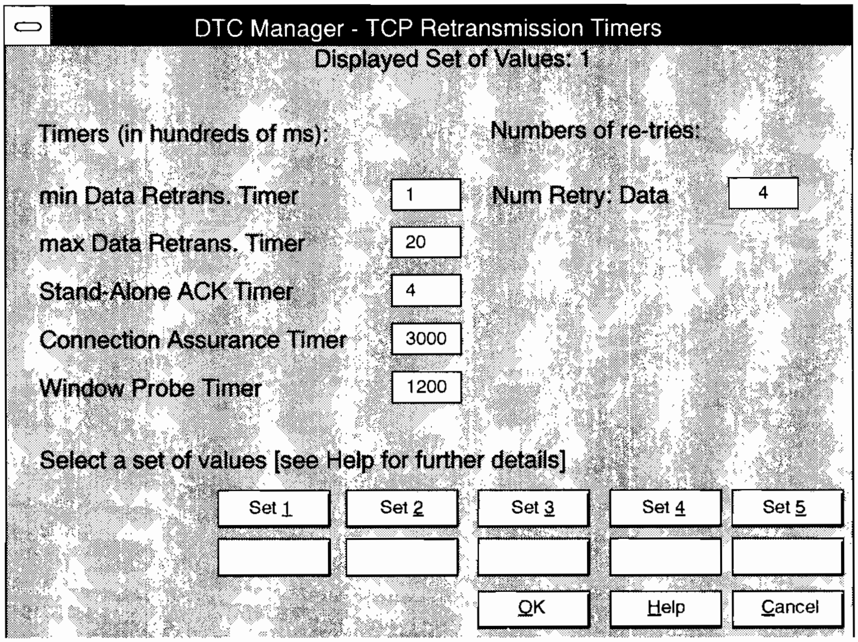
If your network uses subnets, you must enter the subnet mask in the DNS/IP window. See the online help for more information.

Network Timers

Three sets of network timers can be accessed from the LAN configuration window.

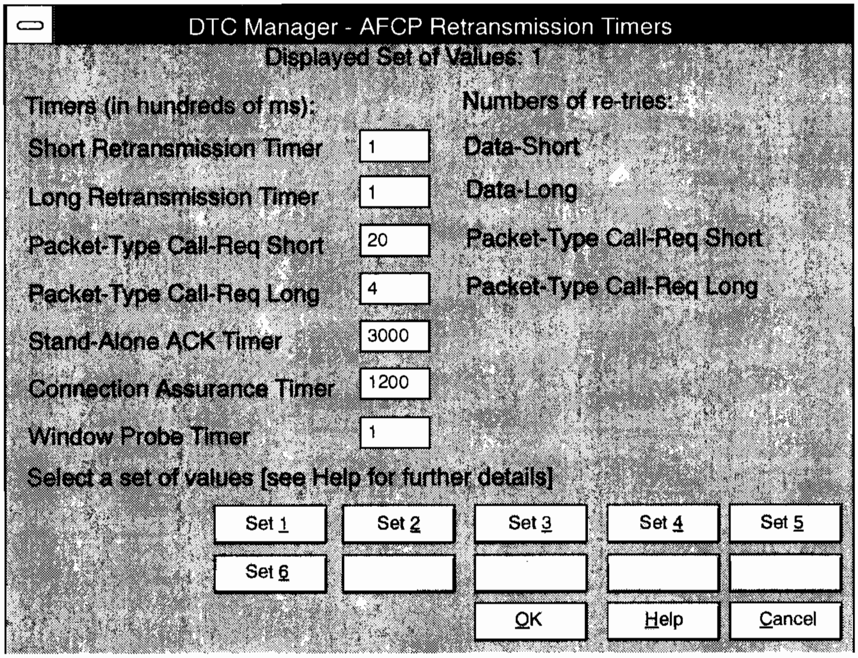
TCP Retransmission Timers Window

You may need to alter the TCP retransmission timers if you have certain LAN configurations or if you are experiencing problems with LAN traffic.



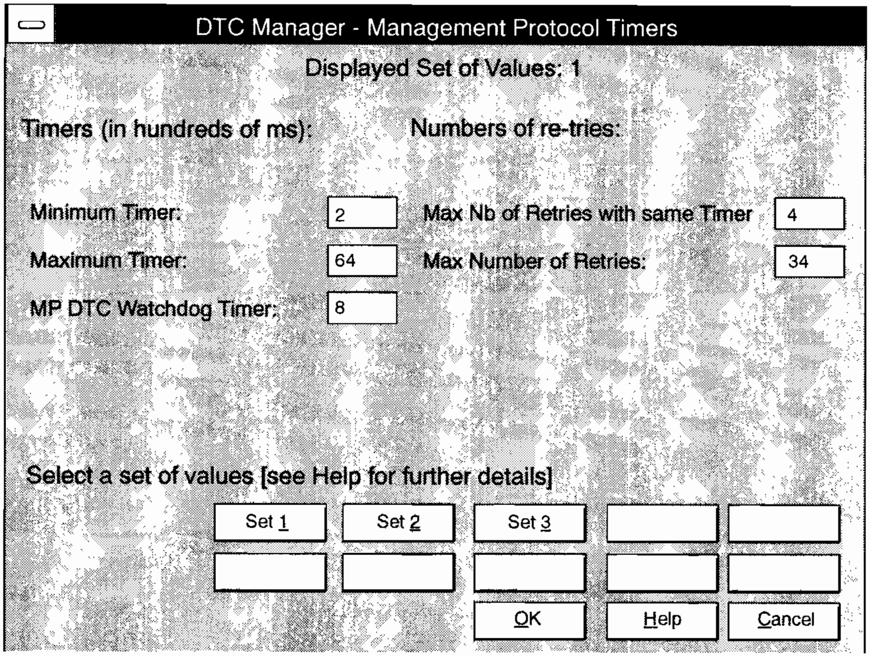
TCP Timers allow you to modify the TCP retransmission timers to suit the LAN conditions.

AFCP Timers Window



AFCP Timers allow you to modify the AFCP timers to suit the LAN conditions

Management Protocol Timers Window



Management Protocol Timers allow you to change the timers used for communications between the DTC Manager and the DTCs it manages.

Configuring SNMP

Simple Network Management Protocol (SNMP) is an open-systems standard that allows a DTC to be interrogated by any authorized SNMP network management workstation, for example, a workstation running HP OpenView Network Node Manager. Security is provided by Authorization Filters, which list the network management workstations that are allowed to access the DTC.

The SNMP information about the DTC is stored in a MIB (Management Information Base). For example, the MIB contains information such as the physical location of the DTC and the number of errors recorded by the DTC. HP OpenView DTC Manager release 14.2 and above, provides two MIBs, MIB-II (the standard SNMP MIB) and HP-MIB (the standard MIB with additional information). You can choose which MIB is available to each network management workstation that is authorized to access the DTC.

A window for configuring SNMP authorization filters, and a window for configuring SNMP MIB parameters can be accessed from the LAN configuration window.

- You must be logged on as manager, and not operator, to configure any SNMP parameters.
- You can configure SNMP authorization filters in both static and dynamic mode.
- You can configure SNMP MIB parameters in static mode only.

Note

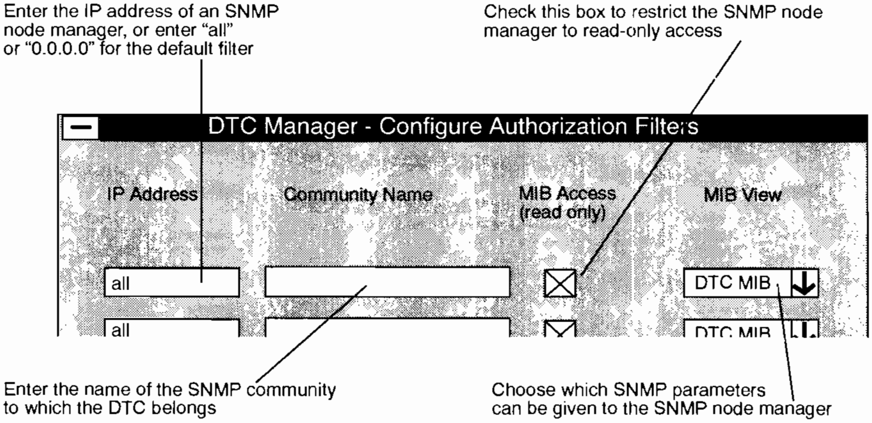
After you have changed information on either the Configure Authorization Filters or the Configure MIB Parameters windows, you must choose OK on the Configure LAN Board window to save the changes.

Configuring SNMP Authorization Filters

To display the Configure Authorization Filters window, choose the **SNMP** button on the **Configure LAN Board** window. When you have finished entering or changing information on the SNMP windows, you must return to the **Configure LAN Board** window and choose **OK** to save the changes.

You can enter filters for up to five SNMP node managers. To represent all IP addresses, enter "any" or "0.0.0.0" as the IP address. If two or more node managers are using the same community name, the MIB Access authorization and the chosen MIB must be the same for each manager. See the online help for descriptions of each field.

When you have entered the filters, choose **OK** to keep the changes you have made to the filter information and to display the **Configuring SNMP MIB Parameters** window. Alternatively, choose **Cancel** to ignore any changes and display the **Configuring SNMP MIB Parameters** window.



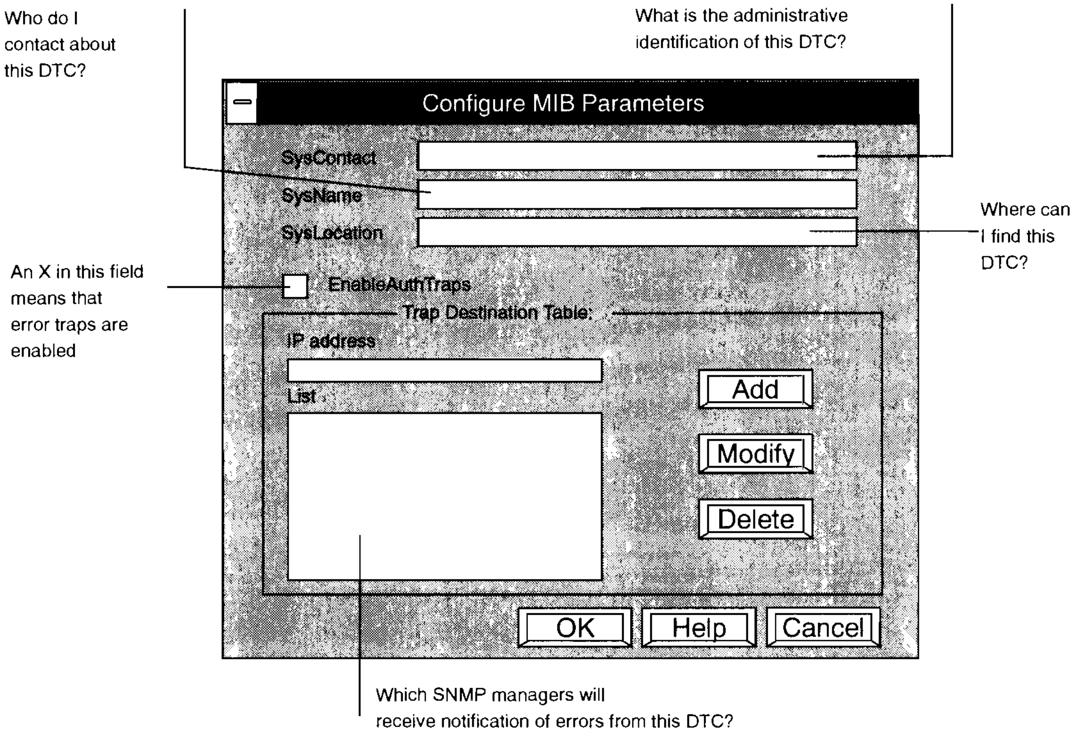
Configuring SNMP MIB parameters

To display the Configure MIB Parameters window, choose **OK** or **Cancel** on the **Configure SNMP Authorization Filters** window.

The SysContact, SysName and SysLocation fields provide optional information about the DTC. The Trap Destination Table lists the SNMP managers that will receive notification of any SNMP errors that are generated by the DTC. If you want to use this error information, you must assign the DTC MIB to the DTC. If you do not want the DTC to send notifications of errors, leave the Trap Destination Table empty.

Note — The information in this window can be obtained from the DTC, and perhaps changed, by those SNMP managers authorized in the SNMP Authorization Filters window.

Choose **OK** or **Cancel** to return to the LAN configuration window. To save the settings for the Authorization filters and MIB parameters, you must then choose **OK**.



7

Port Configuration

This chapter explains the principles of configuring DTC asynchronous ports and gives examples of how to configure certain connections.

An asynchronous port can be set for terminal, printer or host connections, and the exact appearance of the Configure Port window 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 grayed out.

The Configure Port fields that have to be filled in for a terminal, printer or host connection are covered in this chapter.

Configuring an asynchronous port involves two basic tasks:

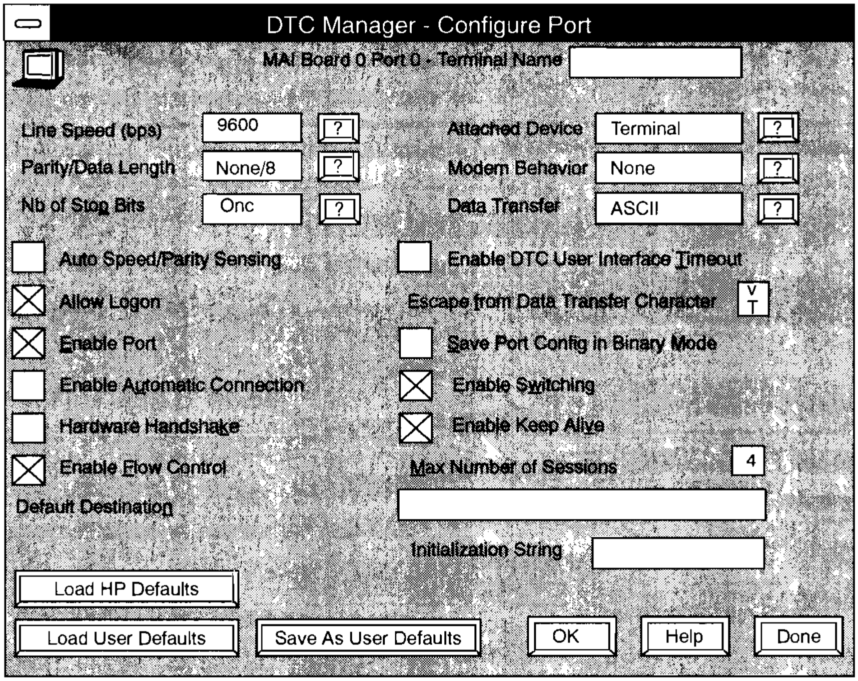
- configuring the port to match the characteristics of the attached device, for example, line speed and modem behavior
- configuring the port's behavior, for example, whether an initialization string is sent to the device and whether the user is restricted to one system or can connect to many.

Changing the Port Type

By default, all ports are configured as terminal ports. When you want to use a DTC port for a printer, you must first change the port type to printer, following these instructions.

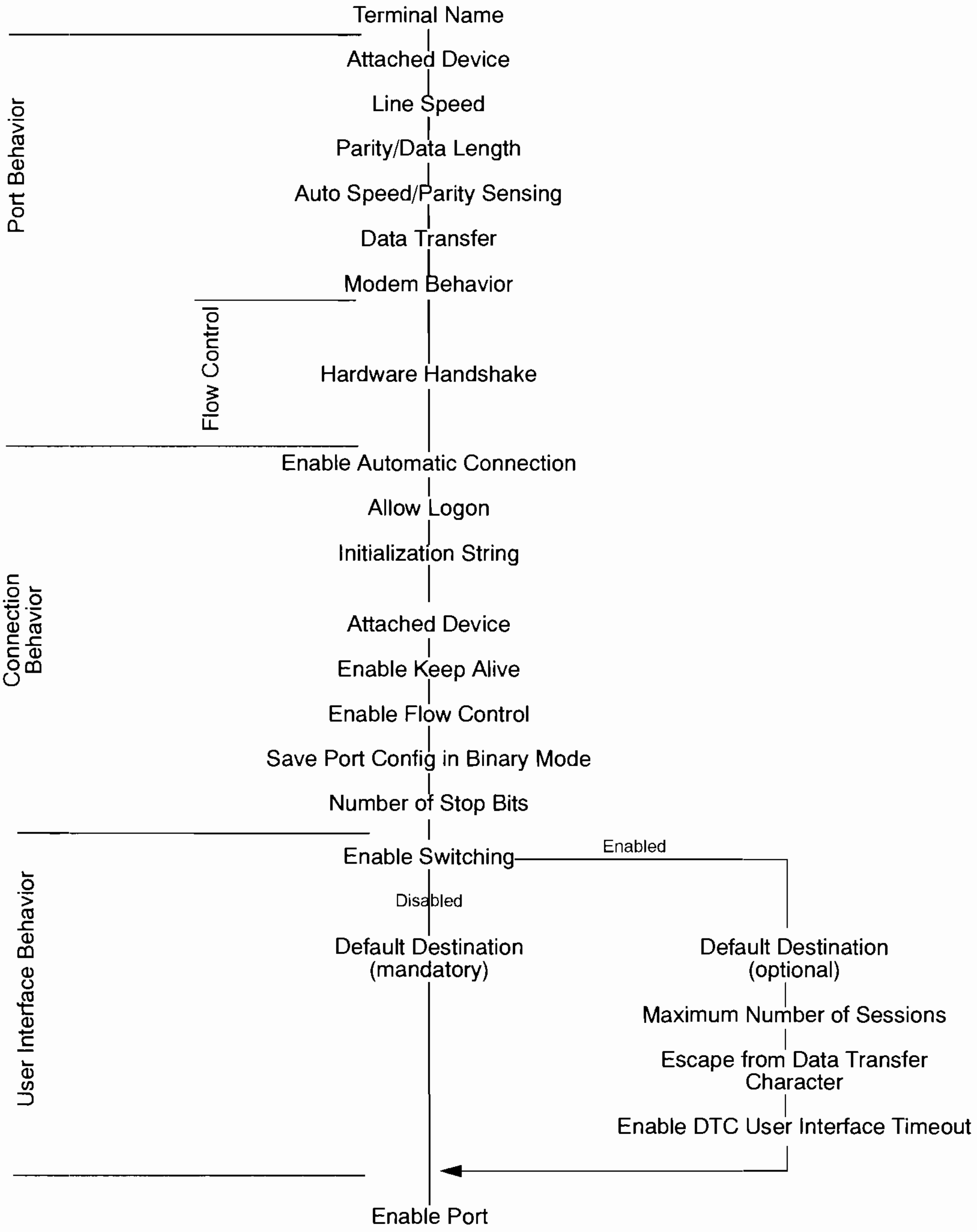
1. Select the DTCs icon, select **Configure DTC** from the **Control** menu, then select **Dynamic**
2. Choose the port to configure, and select **Printer** from the **Change Port Type ...** menu.
3. Leave all the other printer port values as the defaults.
4. **Save** the **configuration**.

Configuring Terminal Ports



All the terminal port fields are shown in the example window above. An "x" in a box means that the option is enabled: if the box is empty, the option is disabled. In practice, some of the fields shown in the window may not be available, depending on the type of DTC, the type of board, and other options that have been selected.

This flow chart shows the suggested order for filling in the fields, especially if you are filling in the screen for the first time.



Overview of the Fields and their Interrelationships

This table contains brief information on each field in the terminal configuration screen. See the online help for more information.

Field	Explanation	Dependencies and Restrictions
Terminal Name	Names the port.	
Attached Device	This is simplified modem behavior. To be able to open outbound DTC modem calls, you must use either: EU Modem In Out or US Modem In Out. Specifies the type of device connected.	With EU Modem or US Modem you can ONLY do inbound DTC modem calls. The attached device field can be set to Five Wires Modem ONLY on DTC16TN/iX/MX and DTC72MX with RS232 port group. Refer to Chapter 4 of the HP DTC Technical Reference Guide
Line Speed	Line speed of connected device.	
Parity/Data Length	Parity of connected device.	
Auto Speed/Parity Sensing	If enabled, the DTC checks the connecting device's line speed and parity, and reconfigures the port if necessary.	Overrides the Line Speed and Parity options if necessary. If the connection is initiated by a host, the values for Line Speed and Parity are used. Only works in combination with Parity = None or Parity = Even.
Data Transfer Mode	Specifies the mode of data transfer in extended switching connections.	Only applies to extended switching connections.
Hardware Handshake	Uses RTS/CTS to control data transfer.	Available on DTC 16TN, DTC 16iX, DTC 16MX and DTC 72MX direct connect ports and modem ports (U.S. behavior) only. Not available if Attached Device = "Data Switch".
Modem Behavior	Sets the port's modem behavior.	Only used if the port is part of a 6-port modem board on a DTC 48 or DTC 16, or if the port is part of a modem-connect group on a DTC 72MX or DTC 16xx.
Enable Automatic Connection	If enabled, the DTC senses the modem signals rise, and automatically connects the device to the value of Default Destination.	Not available if Modem Behavior = None (modem board), or if Allow Logon = enabled (modem or direct board). Default Destination must be configured.

Field	Explanation	Dependencies and Restrictions
Allow Logon	If disabled, the terminal connected to the port does not have logon access to systems, and is therefore always available for programmatic access by systems.	
Initialization String	String that will be sent to the attached device under certain circumstances.	
Enable Keep Alive	When there is no data transfer between the DTC and the system, a “keep-alive” mechanism can be enabled.	
Enable Flow Control	If Enable Flow Control is enabled (selected) the data flow between the DTC port and a connected device is made with Xon and Xoff characters (software handshake).	If Enable Flow Control is disabled (not selected) the DTC does not interpret Xon and Xoff characters received from a connected device.
Save Port Config in Binary Mode	Determines if the defined port configuration parameters are maintained when a binary port mode request is made through, for example, a Telnet negotiation or a user interface command. If enabled (selected), the defined port configuration is used.	If disabled (not selected), when the port enters binary mode, the data length is changed to 8 bits and the parity is set to “none”.
Number of Stop Bits	The number of stop bits to be used for asynchronous characters. You can specify 1 or 2 stop bits.	
Enable Switching	If enabled, the terminal user can connect to more than one system. If disabled, the terminal is automatically connected to the specified Default Destination.	If disabled, the Default Destination field must be configured.
Default Destination	If switching is disabled, enter the system the terminal will connect to. If switching is enabled, enter the default system for the terminal.	Must be configured if switching is disabled.
Maximum Number of Sessions	Number of sessions that can be open at once.	Only available if switching is enabled.
Escape From Data Transfer Character	Sets the character that will return the user to the DTC user interface.	Only available if switching is enabled.

Field	Explanation	Dependencies and Restrictions
Enable DTC User Interface Timeout	If enabled, connection to DTC is shut down if no DTC user interface activity for period exceeding the timeout period.	Timeout period defined in CPU screen. Only available if switching is enabled.
Enable Port	If disabled, no communication can pass through the port.	

Single System or Terminal Switching

There are three connection possibilities; more than one connection can be open at once, though only one can control the terminal at any time.

No System Access

It is possible to disable logon access to a port by using the **Allow Logon** function, so that it is not possible to open a connection from a terminal connected to the port. This feature is intended for ports that must always be available to programmatic access by systems, such as terminals whose connections are opened from the system for security reasons.

Single System Access

It is possible to restrict terminal access via a port to just one system, by disabling terminal switching and entering the name or IP address of the host system the terminal is to connect to in the **Default Destination** field.

When the terminal user types a carriage return, the connection with the host system is established automatically; the user has no access to, and never sees, the DTC user interface.

If the terminal is connected to a modem port and modem signals are used, any activity of the modem signals will establish the connection to the host system.

Terminal Switching

If terminal switching is enabled, users of asynchronously-connected terminals can connect to any system on the LAN, using nodenames or IP addresses.

- You can define a default destination system in the **Default Destination** field, to which the user can connect by typing `c[onnect]`.
- If the terminal uses modem signals, you can configure the terminal port for automatic connection, and it will automatically be connected to the default system when the DTC senses modem activity.
- The terminal user always has the option of returning to the DTC user interface (using the escape-from-data-transfer character) and connecting to another system.
- The DTC implements no form of security checking on connections established by asynchronously-connected terminals.

Multiple, Simultaneous Connections

A port can open more than one session, job or process at once on more than one host, but only one of them actually controls the terminal at a given time.

- All sessions on a port must be either user-initiated or system-initiated, not mixed.
- The maximum number of connections that can be open at once depends on the type of DTC (see the DTC Manager online help for more information).
- When a connection is established on a port that is already busy, the connection is rejected unless the host port has a non-default configuration allowing more than one session. In this case, the connection is queued and the user gets the "Connection established" message. However, there is no indication that the connection is queued, and it can appear that the connection is hung when it is in fact queued.
- The escape-from-data-transfer character is the character that returns the terminal user from a host-system connection to the terminal user interface of the DTC but leaves the session open. The escape-from-data-transfer character is only valid in character mode. Check carefully that the chosen character does not have special significance for any of the protocols or software that will handle the connection.
- The port can be restricted to only one connection at a time by setting the maximum number of sessions to 1.

Multiple, Simultaneous Connections to an MPE/iX System

The following limitations apply to multiple, simultaneous connections to an MPE/iX system.

- If a DTC port is associated with a nailed device on a particular system, the first user-initiated session will get the nailed ldev and subsequent requests to that system will be rejected.
- If a DTC port is associated with a nailed device on a particular system, the first system-initiated session will get the nailed ldev and subsequent requests to that system will, depending on the host port configuration, be either rejected or queued.

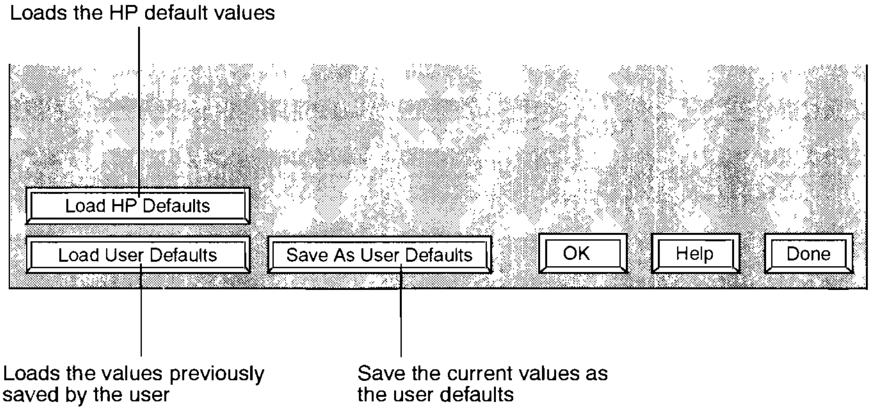
Multiple, Simultaneous Connections via a DTC 48/3000

Ports on a DTC 48/3000 that have switching enabled can only connect to HP 3000 Series 900 or DTC ports in extended switching connections.

Terminal Port Default Values

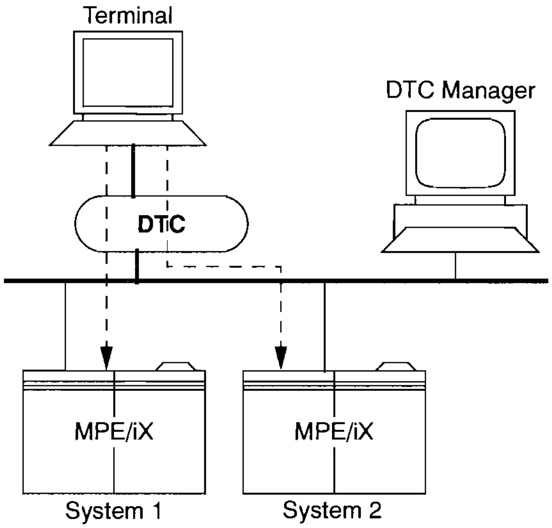
There are two sets of default values for some of the terminal port fields.

- HP default values
- User defaults—if they have previously been saved by the user.



See the DTC Manager online help for the HP default values.

Example: Terminal Connected to HP 3000 Series 900, Switching Allowed



Connection Description

- The terminal is connected to a DTC asynchronous port.
- The terminal is allowed to connect to any HP 3000 Series 900 system on the LAN.
- Either modem connection or direct connection can be used.
- The terminal connects directly to System 1.

DTC Configuration

Configure the Terminal Port configuration window as follows.

Basic Steps

1 Use the default HP terminal port settings, then change the following fields.

2 *Either* set **Line Speed** and **Parity** to suit the terminal,

or select **Auto Speed/Parity Sensing**.

Modem Connections

1 Set **Modem Behavior** to suit the attached modem. The default is to connect to the DTC user interface. To connect automatically to System 1:

2 Select **Enable Automatic Connection**.

3 Enter the nodename of System 1 in **Default Destination**.

When the modem signals rise, the terminal is connected to the System 1. Users type Ctrl-K to go to the DTC user interface if they want to access other systems.

Direct Connections

The default is to connect to the DTC user interface. To connect automatically to System 1, enter the nodename of System 1 in the **Default Destination** field.

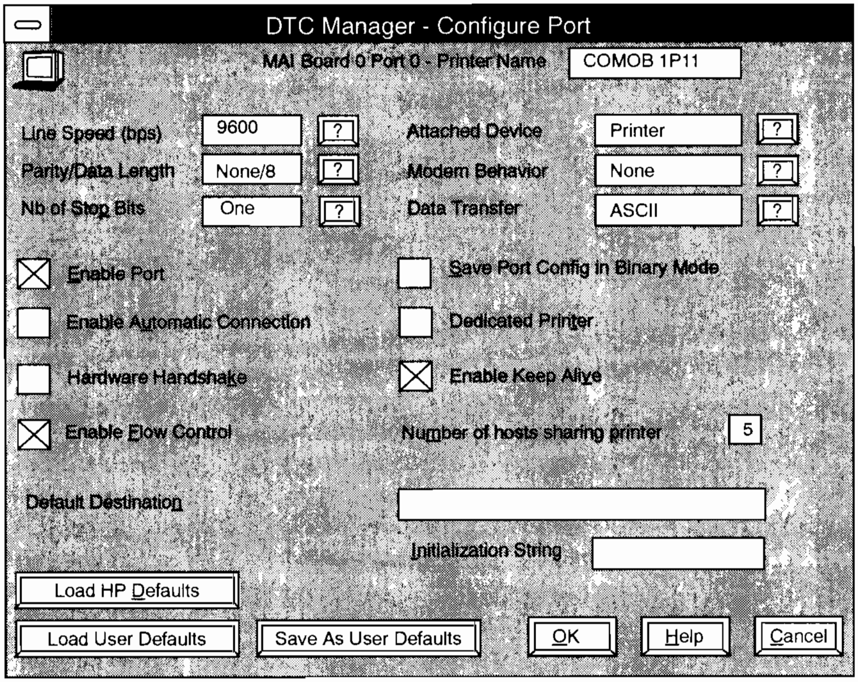
When the user presses Enter, the terminal is connected to System 1. Users then type Ctrl-K to go to the DTC user interface if they want to access other systems.

Alternatively, to connect directly to the DTC user interface, disable **Enable Automatic Connection** and leave **Default Destination** blank.

Configuring Printer Ports

This section explains the principles of configuring a DTC asynchronous port for printer connections, and gives examples of how to configure certain connections. An asynchronous port can be set for terminal, printer or host connections. The exact appearance of the Configure Port window depends on the type of port being configured. For example, some of the fields are only relevant if the port is configured as a terminal. Inapplicable fields are grayed out.

Only the Configure Port fields that have to be filled in for a printer connection are covered in this chapter. See the DTC Manager online help for information on the fields and how they interact.



All the printer port fields are shown in this screen. In practice, some fields may not be available, depending on the type of DTC, the type of board, and other options that have been selected.

The following flow chart shows the suggested order for filling in the fields, especially if you are filling in the screen for the first time.

Printer Name

Port Behavior

Attached Device
Line Speed
Parity/Data Length
Data Transfer
Modem Behavior

Flow Control

Hardware Handshake

Connection Behavior

Enable Automatic Connection
Initialization String
Number of Stop Bits
Enable Flow Control
Save Port Config in Binary Mode
Enable Keep Alive
Dedicated Printer
Default Destination
Number of Hosts Sharing Printer

Enable Port

Overview of the Fields and their Interrelationships

This table lists all the fields available in the Printer Port Configuration window, and gives a brief description of what each is used for.

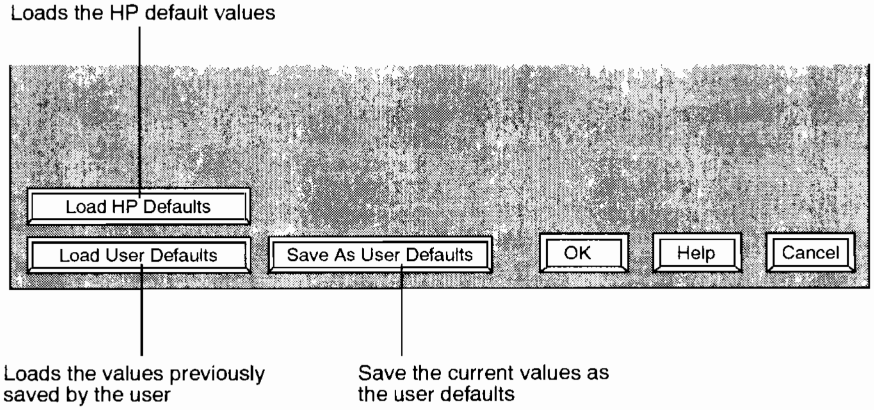
Field	Explanation	Dependencies and Restrictions
Printer Name	Names the port.	Must be a unique name not used for anything else on the network.
Attached Device	This is simplified modem behavior. To be able to open outbound DTC modem calls, you must use either: EU Modem In Out or US Modem In Out. Specifies the type of device physically connected to the port.	With EU Modem or US Modem you can ONLY do inbound DTC modem calls. The attached device field can be set to Five Wires Modem ONLY on DTC16TN/iX/MX and DTC72MX with RS232 port group. Refer to Chapter 4 of the HP DTC Technical Reference Guide
Line Speed	Line speed of the connected device.	
Parity/Data Length	Parity of the connected device.	
Modem Behavior	Sets the port's modem behavior.	Only available on modem-connect boards on DTC 16, DTC 48 and DTC 48/3000, or if the port is part of a modem-connect group on a DTC 72MX or DTC 16xx.
Data Transfer Mode	Specifies the mode of data transfer in extended switching connections.	
Enable Port	If disabled, no communication can pass through the port.	
Default Destination	If **Dedicated Printer** is enabled, enter the name of the host the printer is dedicated to.	Must be filled in if **Dedicated Printer** is enabled.
Initialization String	String that is sent to the attached device under certain circumstances.	
Dedicated Printer	If enabled, the printer can only be accessed by the host specified in the **Default Destination** field.	Must enter a valid host name in **Default Destination** if this field is enabled.
Hardware Handshake	Uses RTS/CTS to control data transfer.	Available on DTC 16TN, DTC 16MX, DTC 16iX and DTC 72MX direct-connect ports and modem ports (U.S. behavior) only. Not available if Attached Device = "Data Switch".

Field	Explanation	Dependencies and Restrictions
Number of Hosts Sharing Printer	Specifies number of systems that can access the printer.	Only applies to pooled printers.
Enable Automatic Connection	If Modem Behavior and Enable Automatic Connection are both enabled, when the device is turned on, the modem signals rise to indicate to the host named in Default Destination that the device is ready	Only available if Modem Behavior is enabled.
Number of Stop Bits	The number of stop bits to be used for asynchronous characters. You can specify 1 or 2 stop bits.	
Enable Flow Control	If Enable Flow Control is enabled (selected) the data flow between the DTC port and a connected device is made with Xon and Xoff characters (software handshake).	If Enable Flow Control is disabled (not selected) the DTC does not interpret Xon and Xoff characters received from a connected device.
Save Port Config in Binary Mode	Determines if the defined port configuration parameters are maintained when a binary port mode request is made through, for example, a Telnet negotiation or a user interface command. If enabled (selected), the defined port configuration is used.	If disabled (not selected), when the port enters binary mode, the data length is changed to 8 bits and the parity is set to "none".
Enable Keep Alive	Where there is no data transfer between the DTC and the system, a "keep-alive" mechanism can be enabled.	

Printer Port Defaults

There are two sets of default values for each type of port—terminal, printer and host:

- HP defaults



- User defaults—if they have previously been saved by the user.

Using Printers with MPE/iX Systems

Printers and plotters must be configured in NMMGR on the system as nailed devices; you must specify the nodename of the DTC to which the device is attached, and the board number and port number of the connection. You must also create an appropriate Printer-Type file to manage the device. See *MPE/iX: Configuring Systems for Terminals, Printers, and other Serial Devices* for more information.

Using Printers with HP-UX Systems

HP DTC Device File Access Utility

To open connections from HP 9000 Series 700 and 800 systems to DTC-connected printers and plotters, you must have the HP DTC Device File Access (DDFA) software on the system. DDFA uses TCP intrinsics and services to establish connnections across the LAN to remote devices connected to DTC ports. From the system, the connection looks like an ordinary connection via a device file.

The ddfa man pages provide some information on DDFA. See *DTC Device File Access Utilities and Telnet Port Identification* for more information on DDFA.

HP OpenSpool/UX

HP OpenSpool/UX is a network interface program used to communicate with printers connected via modems or other communications hardware. The network interface can be configured differently for different devices. See *HP OpenSpool/UX Spooler Administrator's Guide and Command Reference* for more information.

DDFA and HP OpenSpool/UX must be configured correctly to work together. See the *DTC Device File Access Utilities and Telnet Port Identification* for more information.

Configuring Systems for Printer Sharing

When DTC-connected printers are shared by multiple systems, it is important that you carefully analyze how the printers will be used and by how many systems, to ensure the reliability of your printer connections. The printer port configuration must have more than one session enabled. We recommend that you use HP printers that respond to status requests (check the specifications of your printer to find out whether it supports status requests). If the printer cannot respond to a status request, output may be lost, because the host system may send data to the printer when the printer is not ready to receive.

Even if the printer supports status requests, there are other factors to be managed.

Status requests are only available with the following systems and connections.

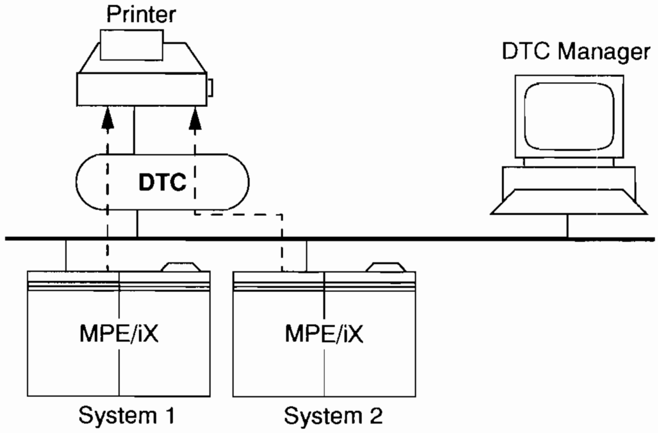
- HP 3000 Series 900 (MPE/iX) systems.
- HP 3000 MPE V systems, in extended switching configurations.
- HP 9000 systems, using the HP DTC Device File Access utility. Status requests are not available for HP 9000 systems in extended switching configurations.

If the printer is busy with one system's job when a second system opens a connection and attempts to queue a job, the printer will be unable to respond to a status request from the new system. When the system receives no response to its status request, it will close the connection. You can get around this problem by configuring status request timers on the host, so that it waits long enough to allow any current job to finish before timing out on a status request. If the port is configured to support more than two jobs in its queue, the timeout on each system must be longer than the potential total (worst-case) time for which the printer will be occupied, taking into account likely job sizes and the length of the queue.

If the printer is busy with one system's job when a second system opens a connection and attempts to queue a job, the second system will wait in the open (FOPEN) intrinsic at the HP 3000 and in the queue on the DTC. Once the printer has finished the current job, the open call will complete, printer status will be requested, and the job will print. It is not necessary to configure a long status request timer on the host for this situation, and in fact the status timer is not active while the second system is queued.

- A shared printer can be accessed by a mixture of systems at the same time: for example, by both MPE/iX and HP-UX.
- If one ldev on a DTC port is reset, all the other ldevs on the port waiting to print are reset.
- Printer sharing does not work via PAD support connections.

Example: Printer Accessed by HP 3000 Series 900 Systems



Configuration Description

- The printer is connected to a DTC asynchronous port.
- Both System 1 and System 2 can access the printer.

DTC Configuration

Configure the Port Configuration window as follows.

Basic Steps

1. Set the port as a printer port.
2. Use the default HP printer port settings.
3. Set the **Line Speed** and **Parity** to suit the printer.
4. Set **Wait Queue Length** to 2 (= the current system printing + one other).

Modem Connections

Set Modem Behavior to suit the attached modem.

To notify System 1 when the printer is turned on

1. Select **Enable Automatic Connection**.
2. Enter the nodename of System 1 in **Default Destination**.

NMMGR Configuration

This section gives an overview of the configuration of the HP 3000/900 to access the printer. The instructions assume that NMMGR has already been run on the system, and hence that certain values have already been configured. If NMMGR is being run for the first time on the system, or if you need more information on configuration, see *Configuring Systems for Terminals, Printers and Other Serial Devices* (32022-61000).

1 Run NMMGR.PUB.SYS

2 Press **Open Config (F3)** to open the Main screen.

3 Answer **Y** to the question "Are you using OpenView DTC Manager?".

4 Press **Save Data (F6)** to save the data.

5 Press **DTS (F1)** to display the Host Configuration screen.

6 Accept the default values for **DTSLINK** and **number of non-nailed terminals**.

7 Check the LANIC path is correct.

8 Press **Save Data (F6)** to save the data.

9 Press **Go to DTC (F1)** to display the DTC Configuration Selection screen.

10 Choose the type of DTC.

The DTC Configuration screen is displayed.

11 Enter the DTCs name and nodename, exactly as you configured them in DTC Manager.

12 Enter the card type for each card in the DTC with nailed devices (printers are accessed using nailed devices). Press **Save Data (F6)** to save the data.

Note: For DTC 16iX and DTC 16MX, press **Config Ports;** do not perform steps 14 and 15, go directly to step 16.

13 Enter the number of the card to configure in the **To configure a card ...** field and choose **Config Card (F4)**.

14 Assign an ldev number and a profile to the nailed device.

15 The ldev can be any number between 0 and 2175 that is not already assigned to a nailed device, or used by the system. The following profiles are suggested.

	suggested profile
Printer without status checking	PR18D96
HP printer with status checking	PR22D96

For example:

ldev	profile
100	PR18D96
101	PR22D96
102	PR22D96

16 Press **Save Data (F6)** to save the data.

17 Press **Validate Link/DTS (F5)** to validate the configuration.

18 Exit NMMGR.

Testing the printer connection

To test the printer connection, you need a file that can be printed. If there is not already one on the system, create one using an editor such as TDP.

Enter the following commands to test the printer:

```
: file prt;dev=lp100
: fcopy from=file_name;to=*prt
```

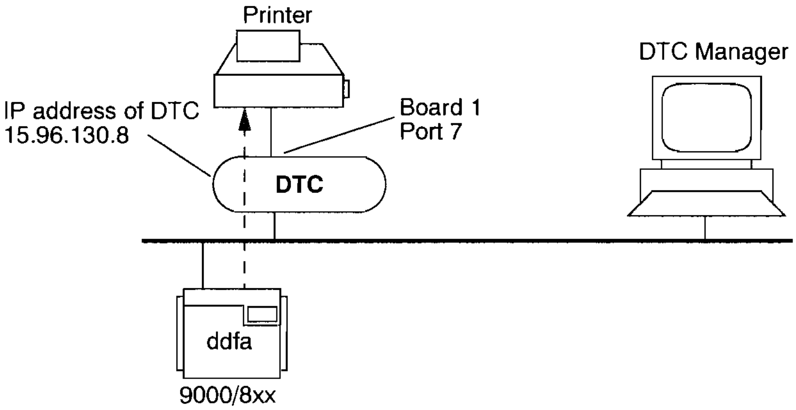
Where *file_name* is the name of the file to print.

Variations

If the printer is only to be accessed by one system, select **Dedicated Printer**, then enter the nodename of the system that can access the printer in **Dedicated Printer**.

To configure a printer pool, configure each printer port identically, giving them all the same name. Print requests sent to the name specified will be printed on the first printer available.

Example: Printer Accessed by an HP 9000 Series 800 System



Software Requirements

The following software must be installed on the HP 9000/800:

- HP-UX 9.0 or later
- Internet Services
- HP DTC Device File Access (DDFA)

DDFA must have been installed according to the instructions that come with it, to ensure that the configuration file templates are in the correct directories for the following instructions. See *DTC Device File Access Utilities* and *Telnet Port Identification* Order Number B1014-90012 for detailed information on DDFA.

Connection Description

- The printer is connected to port 7 of board 1 of the DTC.
- The DTCs IP address is 15.96.130.8.
- The name /dev/dtc1b1p7 has been chosen for the device file used to access the printer.

DTC Configuration

To set the port as a printer port, follow these instructions.

1 Select the DTCs icon, choose **Configure DTC** from the **Control** menu, then choose **Dynamic**

2 Select the port to configure, choose **Printer** from the **Change Port Type ...** menu

3 Leave all the other printer port values as the defaults.

4 Set the **Line Speed** and **Parity** to suit the printer.

5 Set **Wait Queue Length** to **1**.

6 Save the configuration.

Modem Connections

Set **Modem Behavior** to suit the attached modem.

To notify the system when the printer is turned on:

a Select **Enable Automatic Connection**.

b Enter the nodename of the system in **Default Destination**.

DDFA Configuration

The following instructions are not a comprehensive guide to configuring DDFA. If you need further information, refer to the **ddfa** man pages and *DTC Device File Access Utilities and Telnet Port Identification* Order Number B1014-90012.

1 Check to see if the files `/etc/ddfa/dp` and `/etc/ddfa/pcf` are already present on the system. If they already exist, go to step 3. If not, follow step 2 to create them.

2 If the DDFA files `/etc/ddfa/dp` and `/etc/ddfa/pcf` do not exist:

- create the directory /etc/ddfa
- copy the following files

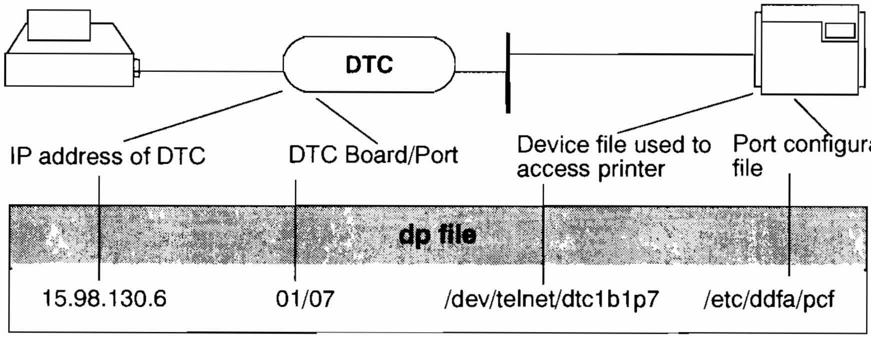
  `/usr/examples/ddfa/dp` and `/usr/examples/ddfa/pcf`

- into the directory `/etc/ddfa`.

Edit the files

Use a text editor such as vi to edit the file `/etc/ddfa/dp`. Follow the template at the top of the file `/etc/ddfa/dp`, and add the following information on a new line in the file.

```
<DTC IP address> <board/port> <device file name> <port config file>
```



- **DTC IP address**: the IP address of the DTC is the first entry in the line.
- **DTC board and port**: enter the numbers of the DTC board and port to which the printer is connected. The format is **board/port**, and the "/" is obligatory. There must be no spaces between **board** and / and between / and **port**. For a DTC 16TN, the board must be **1** or **01**, and ports must be in the range 0 to 15.
- **Device file name**: enter the name of the device file that will be used to access the printer. We recommend that the name contains the DTCs name and the board and port number to make it easy to identify the printer connected. For example, `/dev/telnet/dtc1b1p7`.
- **Port configuration file**: enter the name of the port configuration file used to configure the printer. The default file `/etc/ddfa/pcf` will be correct for most applications and printers. If you need to change the values, see *DTC Device File Access Utilities and Telnet Port Identification.*

3 When you have added the information, save the `dp` file.

Execute the dp parser

Execute the dedicated dp parser (dpp) by entering the following command:

```
/usr/sbin/dpp /etc/ddfa/dp -k
```

This checks to see if the `dp` file is correct and starts the **ocd** daemons.

Printer configuration

This section explains how to configure a printer using SAM. Refer to the HP-UX documentation if you want to configure the printer manually using the **lpadmin** commands.

These steps are for an HP-UX 10.0 system on an HP 9000 Series 800 system. The process may differ depending on the version of HP-UX.

1 Choose **Printers / Plotters** from the SAM main menu.

2 In the **Printer / Plotter Manager** screen, choose **Actions -> Local Printer Plotter.**

If you are using a character mode terminal, the menu bar must be on to use the actions option. The function key **F4** toggles the menu bar on and off.

3 Choose Add Printer/Plotter Requiring Nonstandard Device File.

4 Complete the Add Printer screen as follows:

Printer name	Assign a name to the printer
Printer model/interface	With this field selected, press the Enter key. A list of models is displayed. Choose the printer model corresponding to your printer.
Printer device file name	Enter the printer device file that you entered in the file /etc/ddfa/dp file for the DTC printer port.

5 Complete the other fields as required.

6 Exit from SAM.

Testing the printer

Use the **lp** command to verify that the printer configuration works.

```
lp -d<printer name> /etc/ddfa/dp
```

Using Spoolers with DDFA

DTC Device File Access Utilities and Telnet Port Identification contains information on configuring DDFA for use with the system spoolers. See the *HP-UX System Administration Tasks Manual* for information on the HP-UX printer spooler.

Configuring Asynchronous Host Ports

This section explains the principles of configuring a DTC asynchronous port for host connections.

Host ports are used in extended switching connections, where a system is attached to an asynchronous port on a DTC, and is connected to a device attached to another asynchronous port, either on the same DTC or a different DTC.

An asynchronous port can be set for terminal, printer, or host connections. The exact appearance of the Configure Port window 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 "grayed" out.

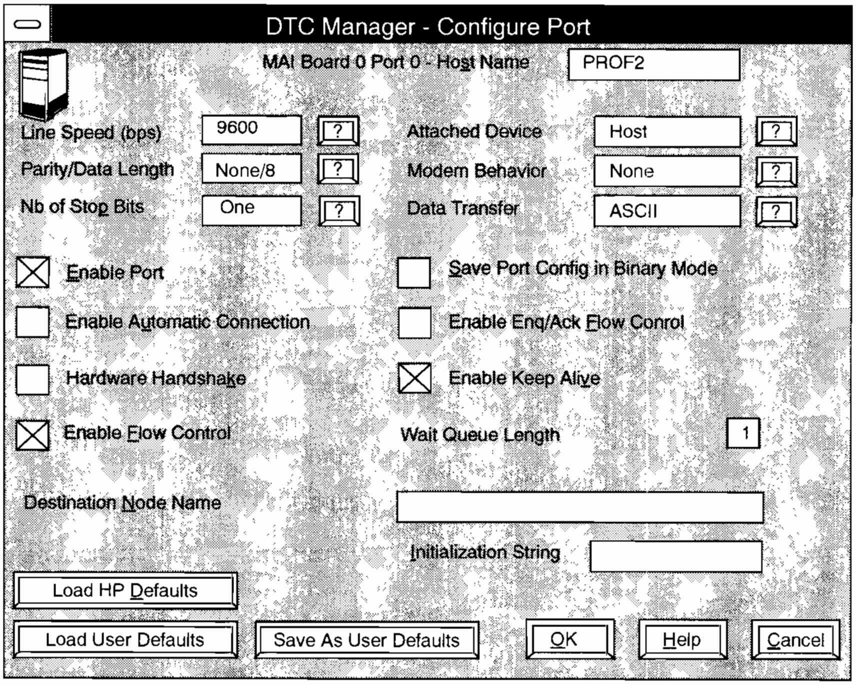
Only the Configure Port fields that have to be filled in for a host connection are covered in this chapter.

Note You cannot configure host ports for the DTC 16iX.

Configuring an asynchronous port for host connections involves two basic tasks:

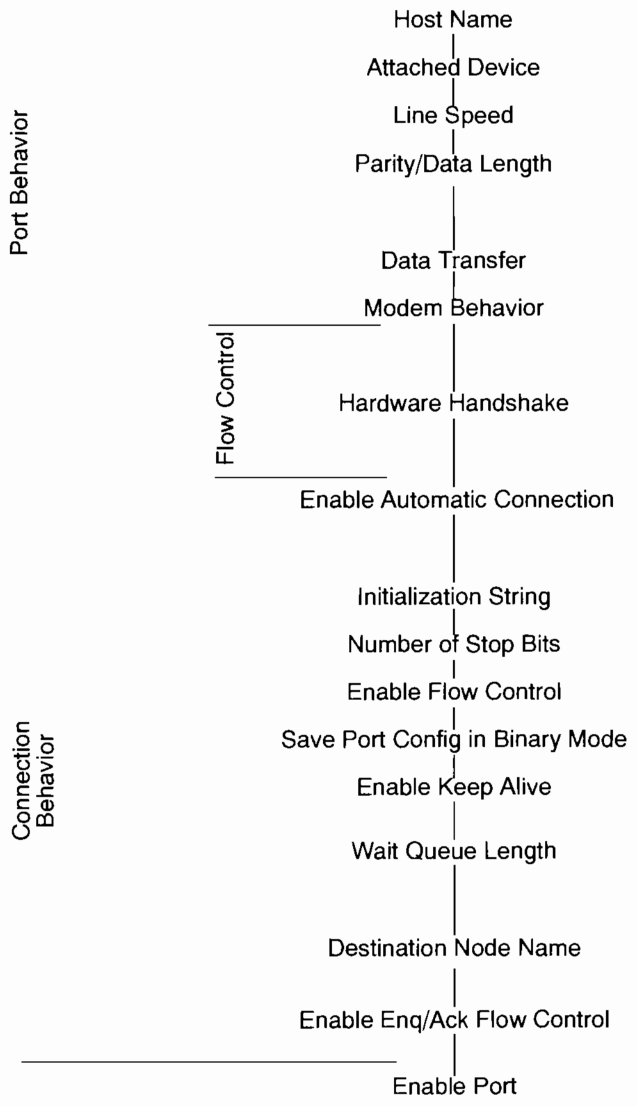
- configuring the port to match the characteristics of the attached device; for example, the line speed and modem behavior
- configuring the port's behavior; for example, whether an initialization string is sent to the device.

Please see the screen on the following page.



All the host port fields are shown in this screen. In practice, some may not be available, depending on the type of DTC, the type of board, and other options that have been selected.

The following flow chart shows the suggested order for filling in the fields, especially if you are filling in the screen for the first time.



Overview of the Fields and their Interactions

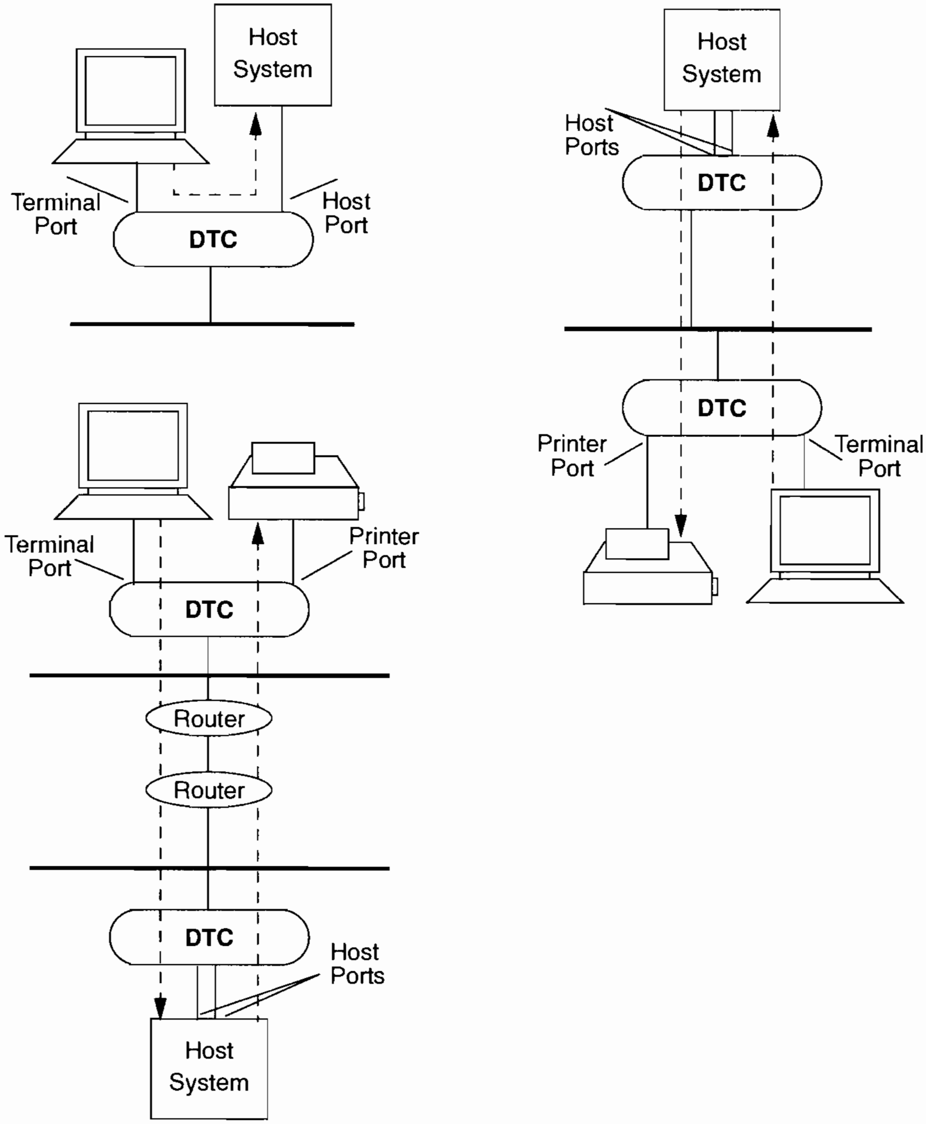
This table gives an overview of the Host Port fields and how they interact with each other. See the DTC Manager online help for detailed information on the fields and their contents.

Field	Explanation	Dependencies and Restrictions
Host Name	Names the port.	Used to define pooled ports.
Attached Device	Specifies the type of device connected.	
Line Speed	Line speed of the connected device.	
Parity/Data Length	Parity of the connected device.	
Modem Behaviour	Sets the port's modem behavior.	Only available on modem-connect boards on DTC 16, DTC 48, and DTC 48/3000, or if the port is part of a modem-connect group on a DTC 72MX or DTC 16xx.
Enable Port	If disabled, no communication can pass through the port.	
Enable Automatic Connection	If enabled, the DTC senses the modem signals rise, and automatically connects the system to the device named in **Destination Node Name**.	Not available if **Modem Behavior** = None, or if Allow Logon = enabled. **Destination Node Name** must be configured.
Data Transfer Mode	Specifies the mode of data transfer in extended switching connections.	
Destination Node Name	Name of device the system is to connect to.	
Enable Enq/Ack Flow Control	Enable for connections to MPE V systems.	Only used for connections to MPE V systems.
Initialization String	String that will be sent to attached device under certain circumstances.	
Enable Keep Alive	The number of stop bits to be used for asynchronous characters. You can specify 1 or 2 stop bits.	
Enable Flow Control	If Enable Flow Control is enabled (selected) the data flow between the DTC port and a connected device is made with Xon and Xoff characters (software handshake).	If Enable Flow Control is disabled (not selected) the DTC does not interpret Xon and Xoff characters received from a connected device.

Field	Explanation	Dependencies and Restrictions
Save Port Config in Binary Mode	Determines if the defined port configuration parameters are maintained when a binary port mode request is made through, for example, a Telnet negotiation or a user interface command. If enabled (selected), the defined port configuration is used.	If disabled (not selected), when the port enters binary mode, the data length is changed to 8 bits and the parity is set to "none".
Number of Stop Bits	Where there is no data transfer between the DTC and the system, a "keep-alive" mechanism can be enabled.	
Hardware Handshake	Uses RTS/CTS to control data transfer.	Available on DTC 16TN, DTC 16iX, DTC 16MX and DTC 72MX direct connect ports and modem ports (U.S. behavior) only. Not available if Attached Device = "Data Switch".
Wait Queue Length	Specifies the number of sessions that can wait for access to the device.	

Which Ports are Host Ports?

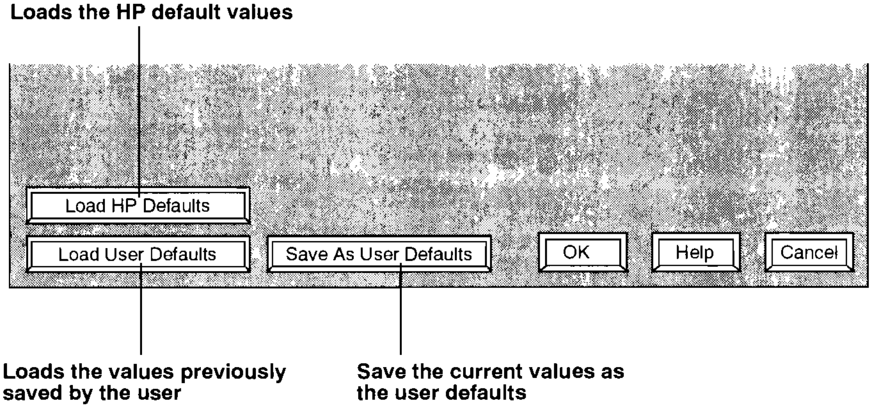
Systems in extended switching configurations are connected to host ports.



Host Port Defaults

There are two sets of default values:

- HP defaults
- User defaults—if they have previously been saved by the user.



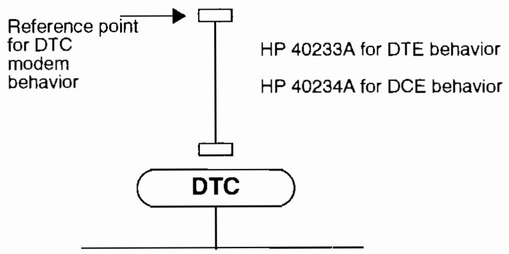
Configuring modem connections

This section explains the DTCs modem behavior.

Refer to the *DTC Cabling and Racking Guide* for information on cables and pinouts for modem connections, and to the *DTC Technical Reference Manual* for more information on the DTCs modem implementation.

The DTCs Modem Connectors

HP provides standard cables to provide standard interfaces. For example, the HP 40233A provides a DTE interface, and the HP 40234A provides a DCE interface.



Modem Behavior

Two fields in the port configuration window control the DTCs modem behavior.

- **Attached Device**
- **Modem Behavior**, which specifies the modem signals monitored and whether the DTC initiates the connection or not.

As far as the DTCs modem behavior is concerned, there are five combinations of the fields **Attached Device** and **Modem Behavior**.

	Attached Device	Modem Behavior		
		DCE	DCE High	DTE
US Modems (CTS not monitored)	Terminal Printer Host US Modem HP 2334	Behavior 1	Behavior 5	Behavior 3
European Modems (CTS monitored)	European Modem Data Switch	Behavior 2	Behavior 6	Behavior 4
The following modem behavior applies only to the DTC 72MX and DTC 16xx				
US Modem In Out **(CTS not monitored)**	Terminal Printer Host US Modem HP 2334	Behavior 7	Behavior 11	Behavior 9
Eu Modem In Out **(CTS monitored)**	European Modem Data Switch	Behavior 8	Behavior 12	Behavior 10
Five Wires Modem	Terminal Printer Host US Modem HP 2334	Behavior 13	Behavior 14	Behavior 15

- Modem behavior 1 to 6 (inclusive) deals ***only*** with incoming DTC modem calls.
- Modem behavior 7 to 12 (inclusive) deals ***either*** with incoming DTC modem calls or outgoing DTC modem calls.
- Modem behavior 13, 14 and 15 are used as “device detection up and running” checks.

Note

DCE High is only available on DTC 72MX and DTC 16xx

<table>
<tr><th>Modem Behavior</th><th>Similar to...</th><th>Except that ...</th></tr>
<tr><td>7 and 8</td><td>1 and 2</td><td rowspan="3">the DTC ignores the DCD signal until the modem link is established, allowing outgoing modem calls from the DTC.</td></tr>
<tr><td>9 and 10</td><td>3 and 4</td></tr>
<tr><td>11 and 12</td><td>5 and 6</td></tr>
<tr><td>13</td><td colspan="2">The signals are:
RTS: DTC Output:
Always up except when the link is disconnected (down for 5 seconds).
CTS: DTC Input

Connection establishment: RTS is asserted after power on self-tests. As soon as CTS increases, the connection is established and the one byte read started with a 2 minute timer. If read is not completed within 2 minutes, RTS goes down for 5 seconds.</td></tr>
<tr><td>14</td><td>same as 13</td><td>WITHOUT the 2 minutes read timer started.</td></tr>
<tr><td>15</td><td colspan="2">The signas are:
RTS: DTC Output
Up if the LAN connection is established; down if the LAN connection is not established.
CTS: DTC Input

Connection establishment: In the case of CTS going down, the connection is no longer established and RTS goes down.</td></tr>
</table>

The difference between US and European modem behavior for the DTC is the signals monitored.

- **US Modem Behavior -** DSR and DCD are monitored (allows hardware handshake).
- **European Modem Behavior -** CTS, DSR and DCD are monitored (does *not* allow hardware handshake).
- **US Modem In Out** - this is similar to “US modem” apart from allowing a port belonging to a modem group to initiate or receive a call. With a modem device attached, this port can work in both directions, for example, In or Out. The “US modem In Out” behavior is compatible with the *“Hayes Modem”* that establishes the link by dialing the number from the data path, thus allowing local communication between the DTC port and device which

are directly attached to it.

- **EU Modem In Out behavior** - this is similar to "EU modem" apart from allowing a port belonging to a modem group to initiate or receive a call. With a modem device attached, this port can work in both directions, for example, In or Out.
  The "EU modem In Out" behavior is compatible with the *"Hayes Modem"* that establishes the link by dialing the number from the data path, thus allowing local communication between the DTC port and devices which are directly attached to it.
- **Five Wires Modem behavior** - This is a simplified modem behavior which handles only two modem signals: RTS and CTS (acting like DTR and DSR respectively).

See the *DTC Technical Reference Manual* for detailed information on modem behavior.

Configuring a Modem Connection

Terminal Modem Ports

- **None**—use for a directly-connected terminal.
- **Standard DCE**—use for a terminal connected to the DTC port via a modem/ multiplexer.
- **DCE High**—use for a terminal connected to the DTC port via a modem/ multiplexer, and where you need an indefinite time-out before pressing Return to connect to the DTC user interface.
- **DTE**—use when the connection to the terminal is initiated by the host.

Printer Modem Ports

None—use for a directly-connected printer.

Standard DCE—use for a modem-connected printer, where the link is made at the device.

DTE—use for a directly-connected modem-connect printer, or for a modem-connect printer connected via a modem/multiplexer.

Host Modem Ports

None—use when connecting to hosts that do not support modem signals.

DTE—use when connecting to hosts that do support modem signals.

X.25 - Configuring PAD and System-to-System Switching

This chapter explains the principles of:

- configuring a DTCs X.25 board
- configuring a DTC for PAD connections
- configuring X.25 system-to-system switching.

Note Because each PTT has different PSN limitations and requirements, it is not possible to list them all in this manual. We recommend that you use the procedures in this section to configure X.25.

Note X.25 levels 1, 2 and 3 must be configured for PAD support to function.

X.25 on the DTC has two main uses:

- connecting terminals, printers and other devices to systems via packet switching networks (PSNs)
- connecting HP 3000 systems to each other (System-to-System connections).

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

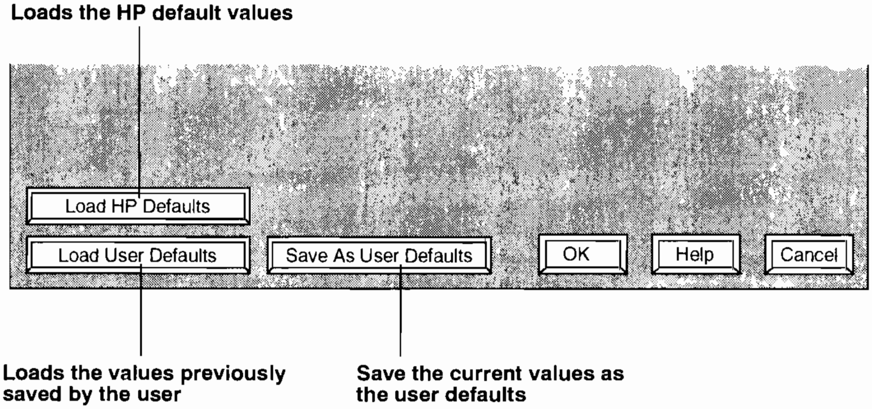
Most of the information that you must enter for X.25 levels 1, 2, and 3 is on the subscription form for the PSN to which you are connecting; you must use the subscribed values when you configure a board.

The *DTC Technical Reference Manual* contains more information on the way X.25 has been implemented in the DTC. However, it deals only with the points where the DTC implementation differs from the CCITT standards. Values that cannot be changed from the DTC Manager are as recommended by the CCITT. Refer to the CCITT recommendations for more information.

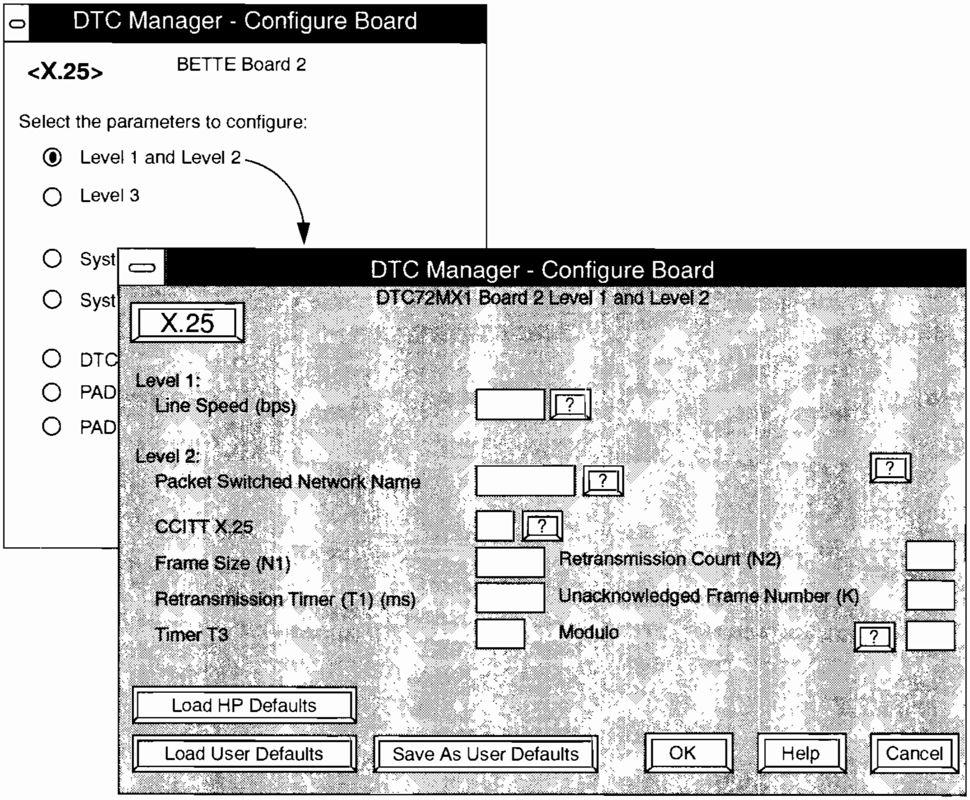
X.25 Configuration Defaults

There are two sets of default values:

- HP defaults
- User defaults—if they have previously been saved by the user.



Configuring X.25 Levels 1 and 2



Procedure for Configuring X.25 Levels 1 and 2

Each PTT has different PSN limitations and requirements. You are recommended to proceed as follows to configure X.25 levels 1 and 2.

1. Load the HP defaults.
2. If a field is specified on your PSN subscription form, change the value in the field to match the value on the PSN form. For private X.25 connections, the values must match those configured at the X.25 switch.
3. Leave other values as the HP default.

This process should result in a working connection, though the performance may not be optimum. This manual is not a guide to X.25, and it is not possible to explain all the fields and their contents, or how to optimize X.25.

Points to Note - Line Speed

If the DTC is operating as a DTE, then the default value will be correct. This is because the synchronous modem that gives access to the PSN sets the line speed according to the subscription value.

Set the correct value if the DTC is operating as a DCE, for example, if two DTCs are directly connected via their X.25 ports.

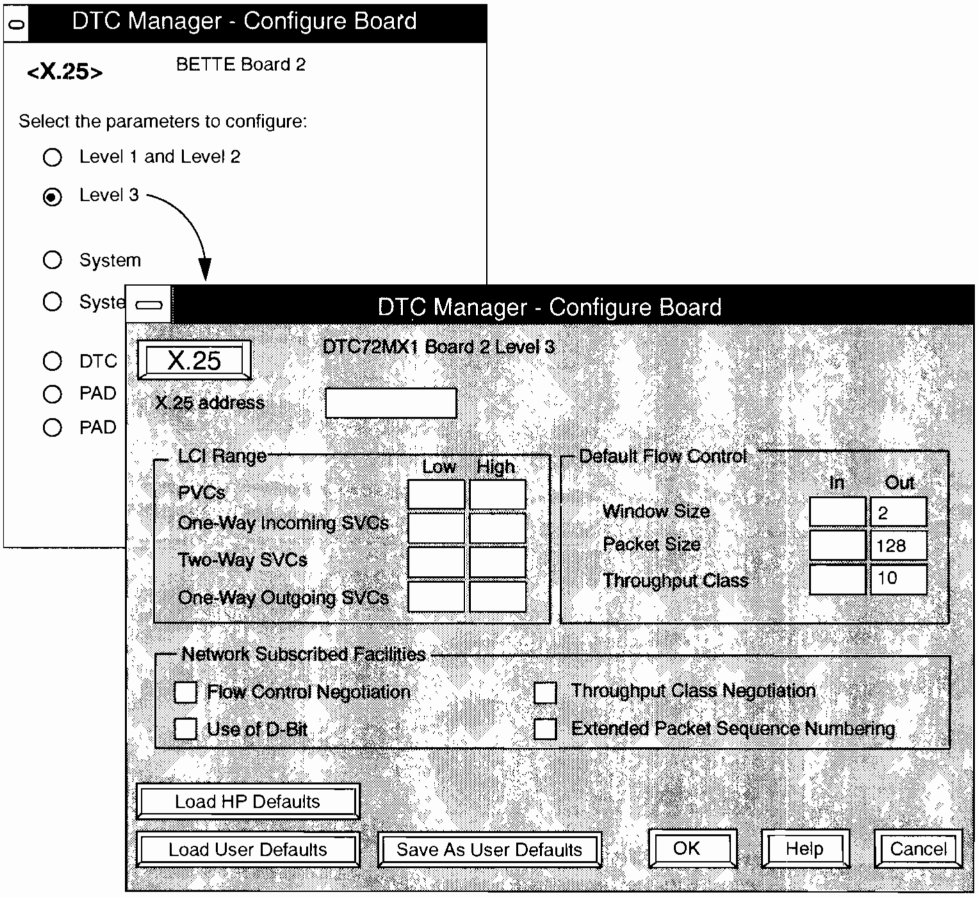
Points to Note - Packet Switched Network Name

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. 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.

X.25 Facilities

See the *DTC Technical Reference Manual* for a list of supported X.25 facilities.

Configuring X.25 Level 3



Procedure for Configuring X.25 Level 3

Each PTT has different PSN limitations and requirements. We recommend that you proceed as follows to configure X.25 level 3.

1. Load the HP defaults.
2. If a field is specified on your PSN subscription form, change the value in the field to the value on the PSN form.
3. Leave other values as the HP default.

This process should result in a working connection, though the performance may not be optimum. This manual is not a guide to X.25, and it is not possible to explain all the fields and their contents, or how to optimize X.25.

Points to Note - X.25 Level 3 and PAD Support

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.

Points to Note - X.25 Level 3 and System-to-System Switching

For system-to-system configurations, all PVCs will be set with the flow control values that you enter at X.25 level 3.

Points to Note - X.25 Address

This field need be filled in only if you are configuring PAD support on the X.25 board, or you wish to run the Network Loopback test. If you configure PAD support on this board, the X.25 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). For X.25 networks that do not require a calling address (such as Transpac or similar networks), leave this field blank.

LCI Range

If the X.25 board is configured as a DCE, all values in this table must precisely match the values in the corresponding DTE.

Network Subscribed Facilities

For MPE/iX environments only: note that **Flow Control Negotiation** sets both the packet size and the window size negotiable. NMMGR must be configured the same way. That is, if **Flow Control Negotiation** is selected, both window and packet size negotiation must be selected in NMMGR.

This behavior does not follow CCITT recommendations. as flow control can only be implemented for the entire DTC, rather than per board.

Configuring PAD Support and PAD Security

This section explains the principles of configuring a DTC for PAD connections, and gives examples of how to configure certain connections.

X.25 levels 1, 2, and 3 must be configured for PAD Support to function. See the beginning of this chapter for information on configuring X.25.

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

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

DTC PAD Switching Information

The DTC PAD switching information table maps X.25 addresses to host names. Remote users who enter a full address at the PAD prompt can be routed directly to the associated host system from the PAD prompt. Other calls are routed to the DTC user interface.

PAD Access

The PAD access table is used:

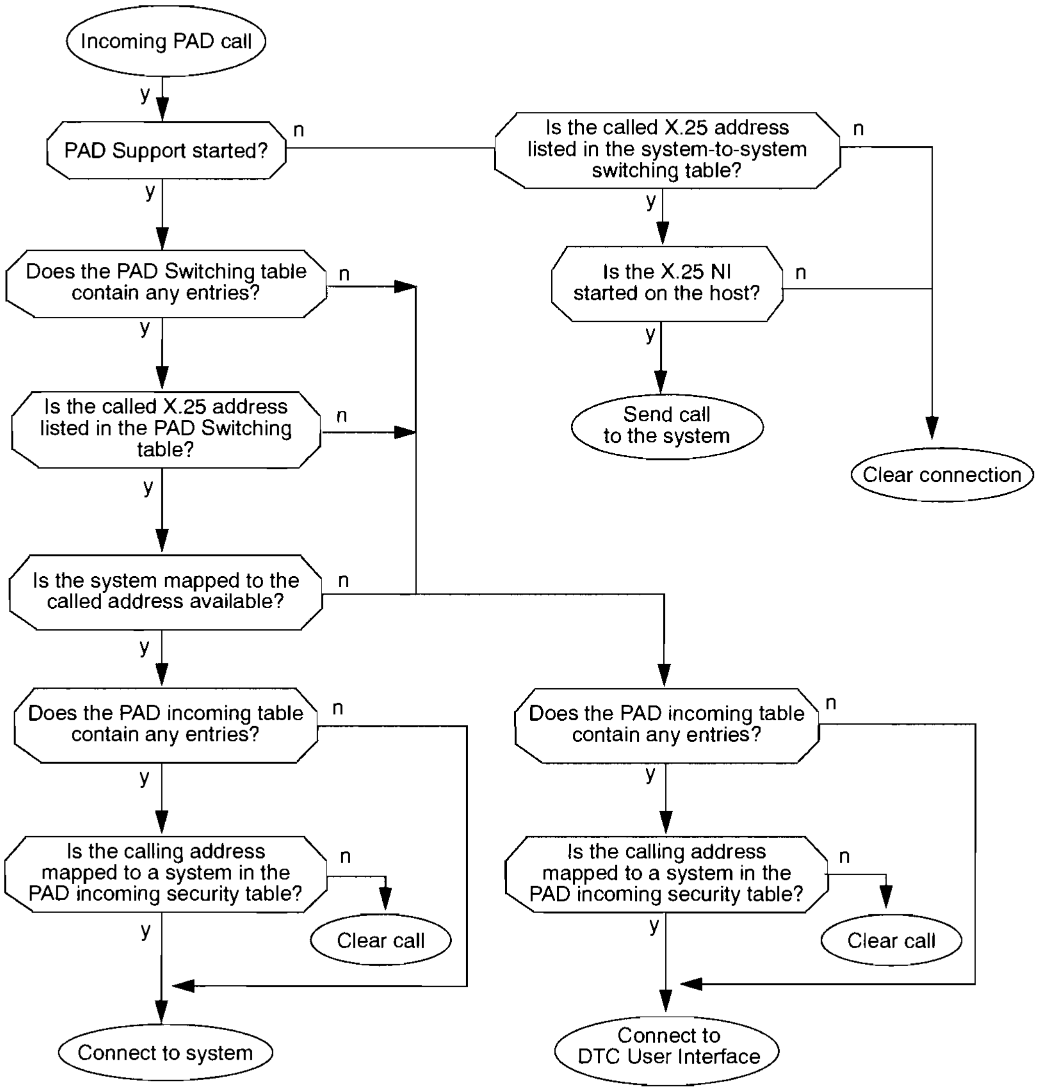
- to map calling PAD addresses to nailed ldevs on MPE/iX systems
- to map PAD device numbers to X.25 addresses for the HP DTC Device File Access utility on HP-UX systems
- for programmatic access to remote PAD devices
- for device profile selection.

PAD Incoming Security

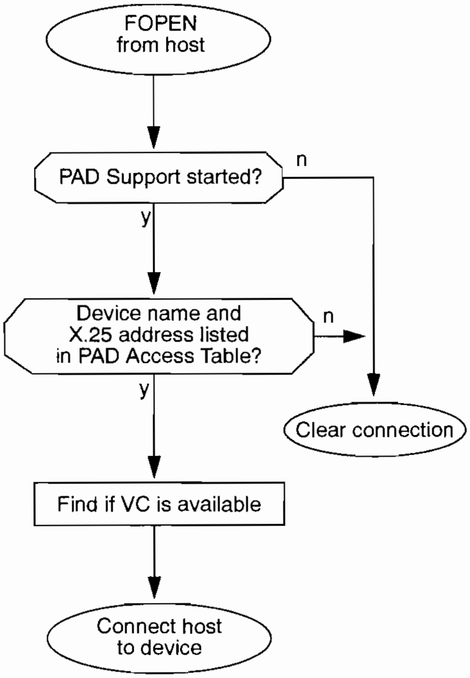
The PAD incoming security table controls establishment of connections from remote PAD-connected devices to local systems.

The following two flowcharts show how incoming and outgoing calls are processed by the PAD tables.

This flowchart shows how incoming PAD calls are processed.



This flowchart shows how outgoing calls are processed by the PAD tables.



Connections via PAD Support

Remote terminal users connecting via the DTCs PAD support use X.25 addresses to establish the connection to the DTC. When you configure PAD support on the DTC, you configure a PAD switching information table, which maps X.25 addresses to local systems. A remote terminal user who enters one of these X.25 addresses is automatically connected to the corresponding system. The PAD incoming security configuration can be used to enforce this restriction.

Users connecting via PAD support can only open one session at a time.

There are two methods of giving PAD-connected terminal users access to multiple systems.

- For each system to which they are to connect, you map an X.25 address to the system nodename in the PAD Switching Table. Users use the appropriate X.25 address to connect to the system. This method ensures that PAD users are restricted to the systems that you explicitly allow them to access. When the user logs off the system, they are returned to the PAD prompt, not to the DTC user interface. Up to 32 systems can be configured in this way.

You can also configure an X.25 address that gives access to the DTC user interface. PAD users connected to the DTC user interface can connect to any system on the LAN in the same way as asynchronously-connected terminal users, using system names or IP addresses. Note, however, that PAD users cannot use the escape-from-data-transfer facility of the DTC to suspend a system session and return to the DTC user interface. They must log off the system to return to the user interface.

DTC PAD Switching Information

Mapping X.25 called addresses to LAN-based host systems allows remote users to access the host system directly from the PAD prompt, by entering the full X.25 address as configured in this table. Alternatively, a remote user can enter the DTCs X.25 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>`.

The system can be named using either an IP address or an MPE nodename.

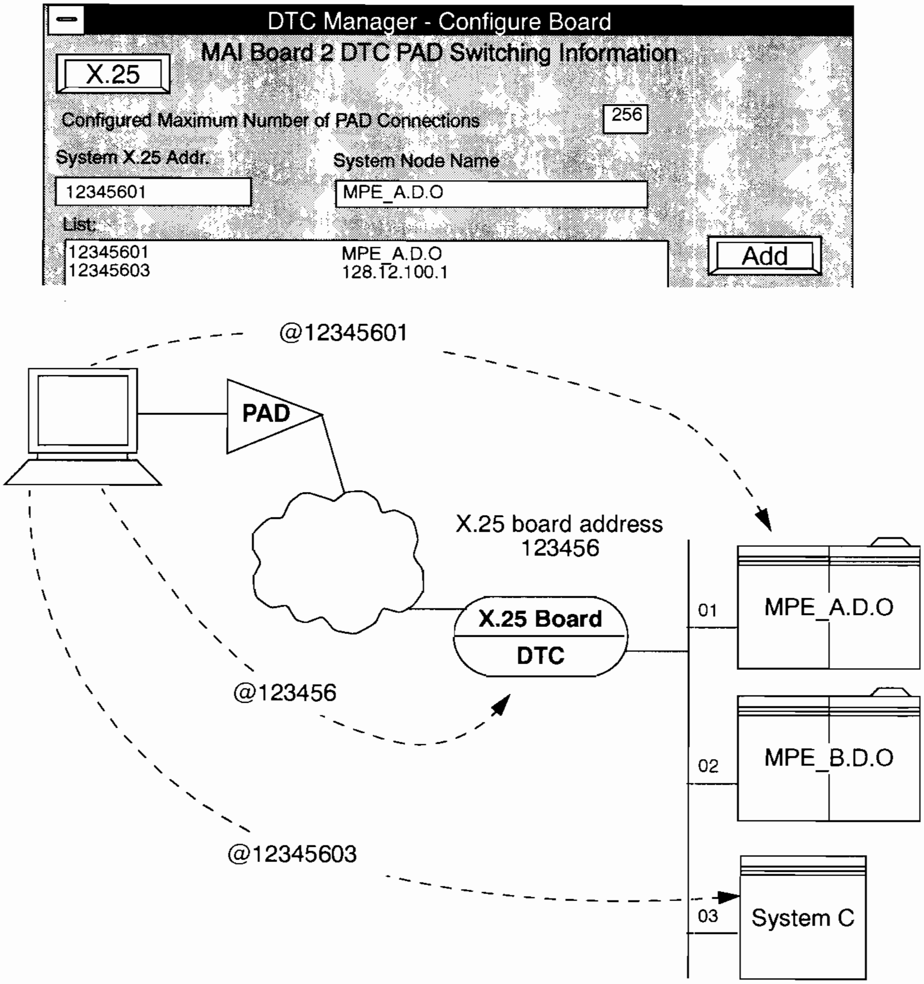
Example of PAD switching

In this example:

- the DTCs X.25 board has the X.25 address 123456
- MPE_A has the X.25 subaddress 01
- MPE_B has the X.25 subaddress 02, but has not been entered in the PAD switching table
- system C has the IP address 128.12.100.1 and the X.25 subaddress 03.

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

User at terminal types ...	Result
`@123456`	The user is connected to the DTC user interface.
`@12345601`	The user is connected directly to MPE_A.
`@12345602`	The X.25 address is not defined in the list, so the call is connected to the DTC user interface, and the user can connect to MPE_A, MPE_B or System C from there.
`@12345603`	The user is connected directly to System C.


DTC Manager - Configure Board
MAI Board 2 DTC PAD Switching Information
X.25
Configured Maximum Number of PAD Connections
256
System X.25 Addr.
System Node Name
12345601
MPE_A.D.O
List:
12345601
12345603
MPE_A.D.O
128.12.100.1
Add
@12345601
PAD
X.25 board address
123456
X.25 Board
DTC
01
MPE_A.D.O
@123456
02
MPE_B.D.O
@12345603
03
System C

PAD Switching Field Explanation

Maximum Number of PAD Connections

The maximum number of connections Switched Virtual Circuits (SVCs) per board are:

DTC Type	Maximum Connections per X.25 board
DTC 16	32
DTC 48	256
DTC 72MX	256

Consider the following points when deciding on the maximum number of SVCs.

- PAD connections use SVCs. The total available number of 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 Series 900 system-to-system switching
- The theoretical maximum of 256 may not be available if you use the maximum speed of the X.25 board.

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 hexadecimal).

System X.25 Address

Enter the X.25 address of the system node in this field, 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).

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.

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

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

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.

System Node Name Enter the system nodename corresponding to the X.25 address. This can be an NS name or an IP address. The field is not case sensitive. The list can contain up to 32 system nodenames, plus the reserved nodename **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 for passing on new routing information.

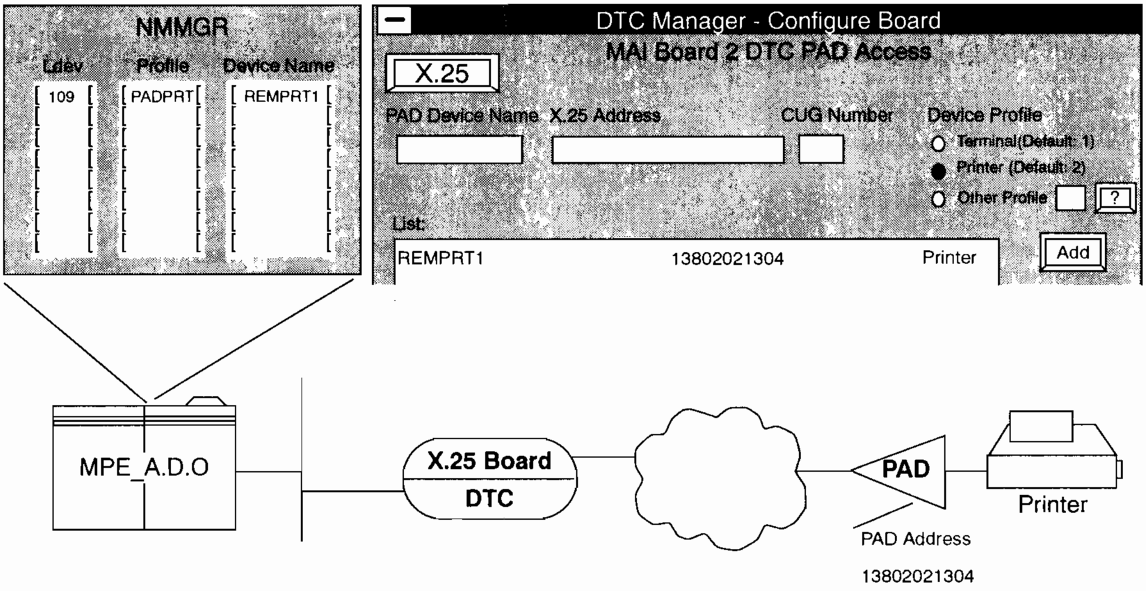
PAD Access

The PAD Access screen lists device names or numbers of remote PAD devices with X.25 addresses, closed user group (CUG) numbers and device profiles. The list enables an incoming call to be tied to a nailed ldev on an MPE/iX system or PAD device access via the HP DTC Device File Access (DDFA) software on an HP-UX system.

Example of PAD Access

In this example:

- LDEV 109 is a nailed device, and the PAD Device Name REMPRT1 has been associated with it in NMMGR on the HP 3000 Series 900
- the address of the remote PAD, 13802021304, is mapped to the PAD Device Name in the PAD Access List.

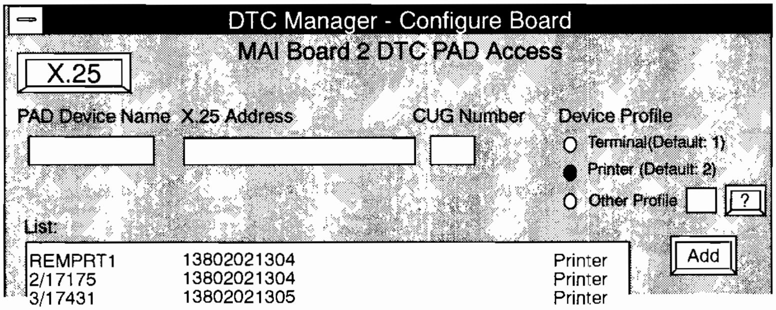


PAD Access Field Explanation

PAD Device Name

Enter the name of the remote PAD device (up to eight characters), or the PAD device number (0 to 31). If a PAD device number is used, the destination TCP port number is automatically calculated and displayed in the list.

- `REMPRT1` is the NMMGR device name.
- `2/17175` is a combination of the PAD device number `2`, and the TCP port address `17175` automatically calculated from it. Both numbers refer to the same X.25 address, so the printer, REMPRT1, is accessible from both a UNIX and an MPE/iX system.
- `Printer` is the DTC PAD Profile that is used to configure the behavior of the DTC PAD Support module during connection establishment.



When using a private PAD that does not use subaddressing, it is not possible for HP 3000 Series 900 systems to have access to a nailed terminal and also to 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 or 40 seconds).

Up to 256 PAD devices, either MPE/iX PAD or Telnet PAD, can be listed in the window. These can be all MPE/iX devices or a mixture that includes up to 32 (0 to 31) Telnet PAD devices. However a maximum of 255 connections, MPE/iX and Telnet, can be open at any one time.

The device name is used for programmatic access by MPE/iX systems, and must be entered on the host system in NMMGR. The TCP port number is used when printing and must be configured on the HP-UX system that has the HP DTC Device File Access software.

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 (CUG) number of the remote PAD, if there is one, 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 Profile

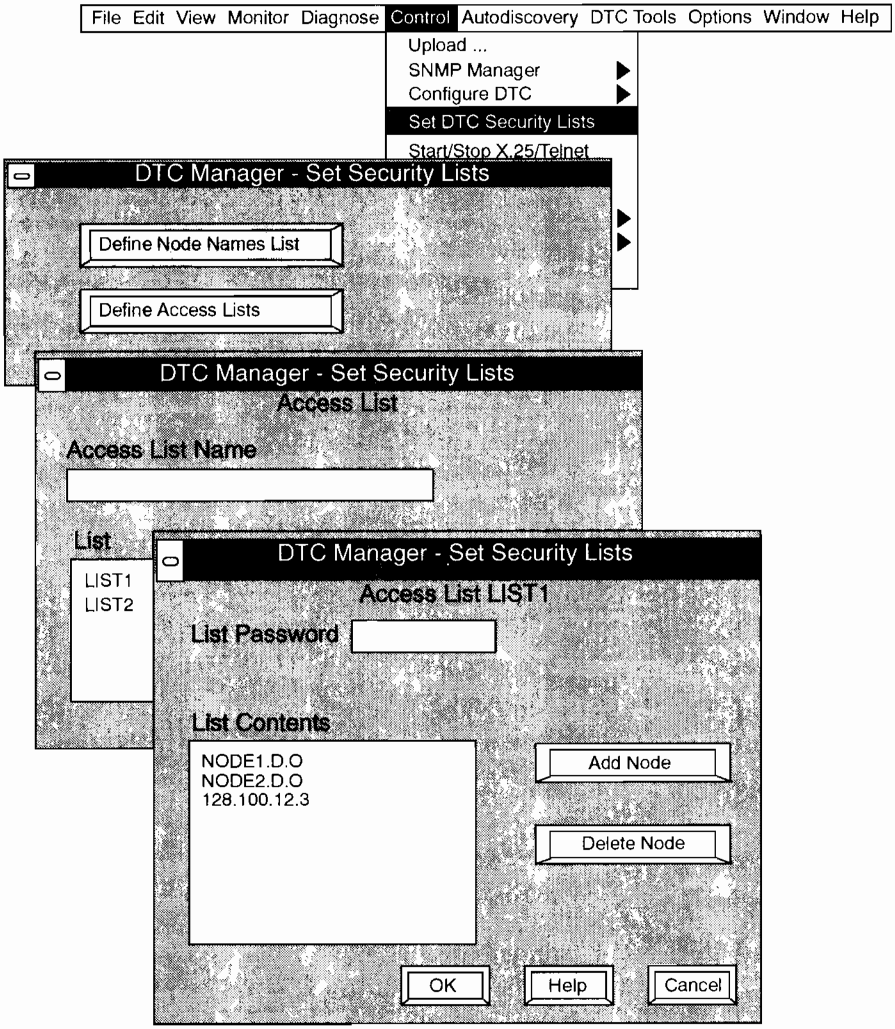
The Device Profile determines the DTCs X.29 behavior. Generally, the default values for terminal and printer connections should work correctly. If you have problems, or you need to change the PAD behavior, see the DTC Technical Reference Manual for detailed information on how to change the settings. The following settings can be changed, but this should only be done by an experienced PAD and X.25 network administrator.

Profile	When to use
Terminal Profiles	
123	Use for any application that does not need to configure the PAD with X.28 commands. Allows any functionality supported by PAD Support, but the performance is not optimal for all applications. Must be used for the application Quick of Cognos.
1	Default value for a terminal. Allows backward compatibility with previous releases of the DTC and DTC Manager. May be used with any V plus applications, and with applications that use the HP 3000 command interpreter such as HPDESK. Should also be used with the application FRENCH.
5	This improves the response time for PAD Support telnet applications.
9	May be used if profile 5 cannot be used, for example, when 3:127 is not supported by the PAD.
33	May be used instead of profile 1 to reduce the connection time.

Profile	When to use
51	We recommend that only users with knowledge of PAD and X.25 use this profile. May be used for any application that requires the setting of X.3 via X.28 commands. Used for applications that need advanced functionalities such as typeahead. May be used for Quick of Cognos.
Printer Profiles	
32	Use for any printer. May be used to reduce the time it takes to establish the connection.
2	Default profile for a printer. Allows backward compatibility with previous releases.

PAD Incoming Security

PAD incoming security is optional; if there are no entries in this window, no calls are checked.



The PAD incoming security window maps X.25 addresses of remote PAD devices to access lists. The access lists list the systems that 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.

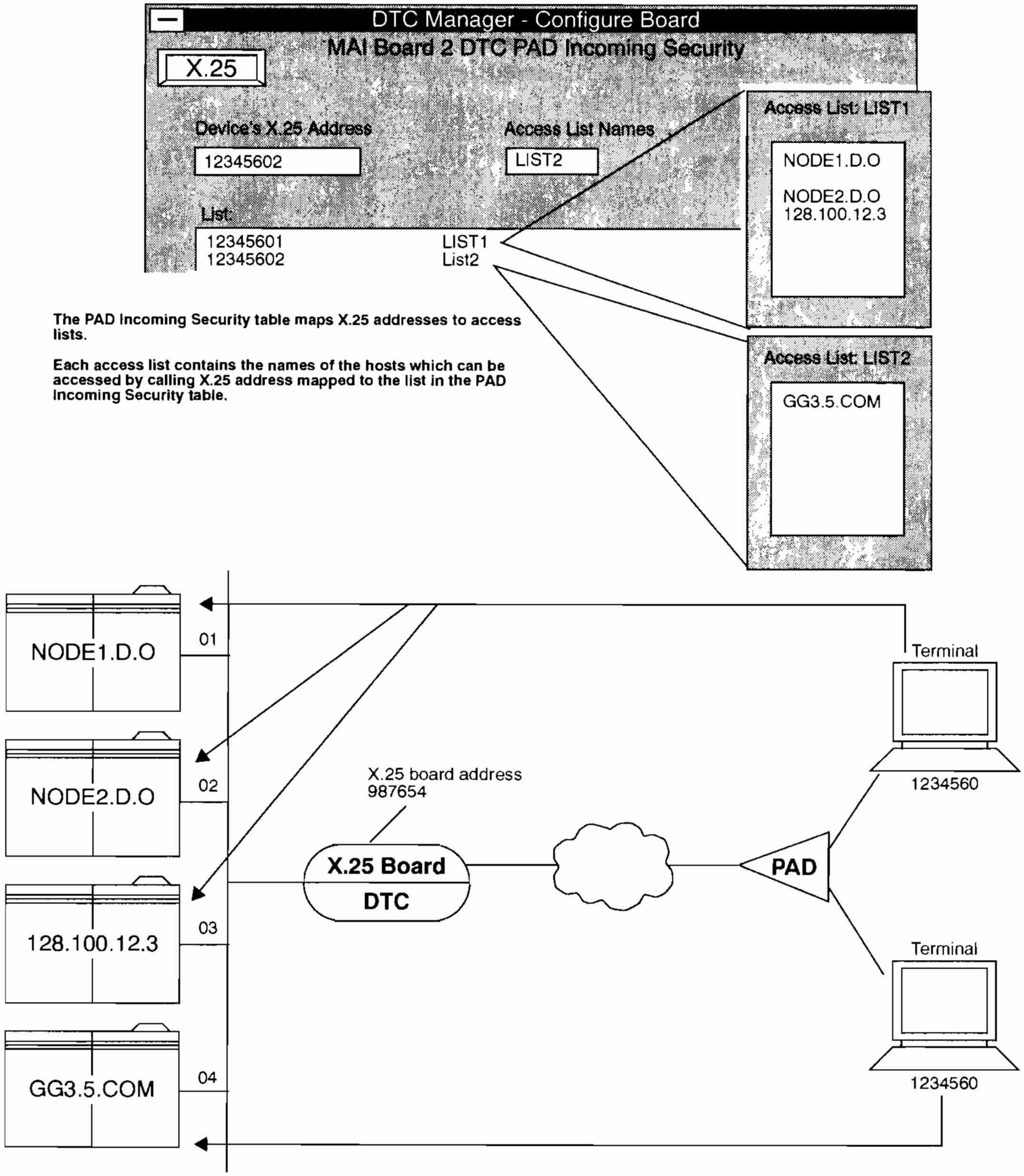
In this example, to connect from terminal 12345601 to GG3.5.COM, the remote user can do one of the following (`@` is the PAD prompt, `DTC>` is the DTC user interface prompt):

`@ 98765404`	connects directly to GG3.5.COM
`@ 987654` `DTC> connect NODE4.D.O`	connects to the DTC user interface this establishes the connection to GG3.5.COM
`@ 12344768401 dsecret`	connects directly to GG3.5.COM, giving the password for PAD access to NODE4.D.O (assuming there is a password). If a password is required but is not present in the call user data received by the DTC, the DTC will prompt the user for the password.

Note

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

Example of Incoming Security



PAD Incoming Security Field Explanation

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 the 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 with 1234, have access:

```
1234XX
1234XXX
1234XXXX
```

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

```
1234XXX
```

Access List Name

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

Setting Security Lists

Security lists need to be configured only 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 nodenames list. The access lists are subsets of the nodenames list, and only nodes that appear in the nodenames list can appear in an access list.

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

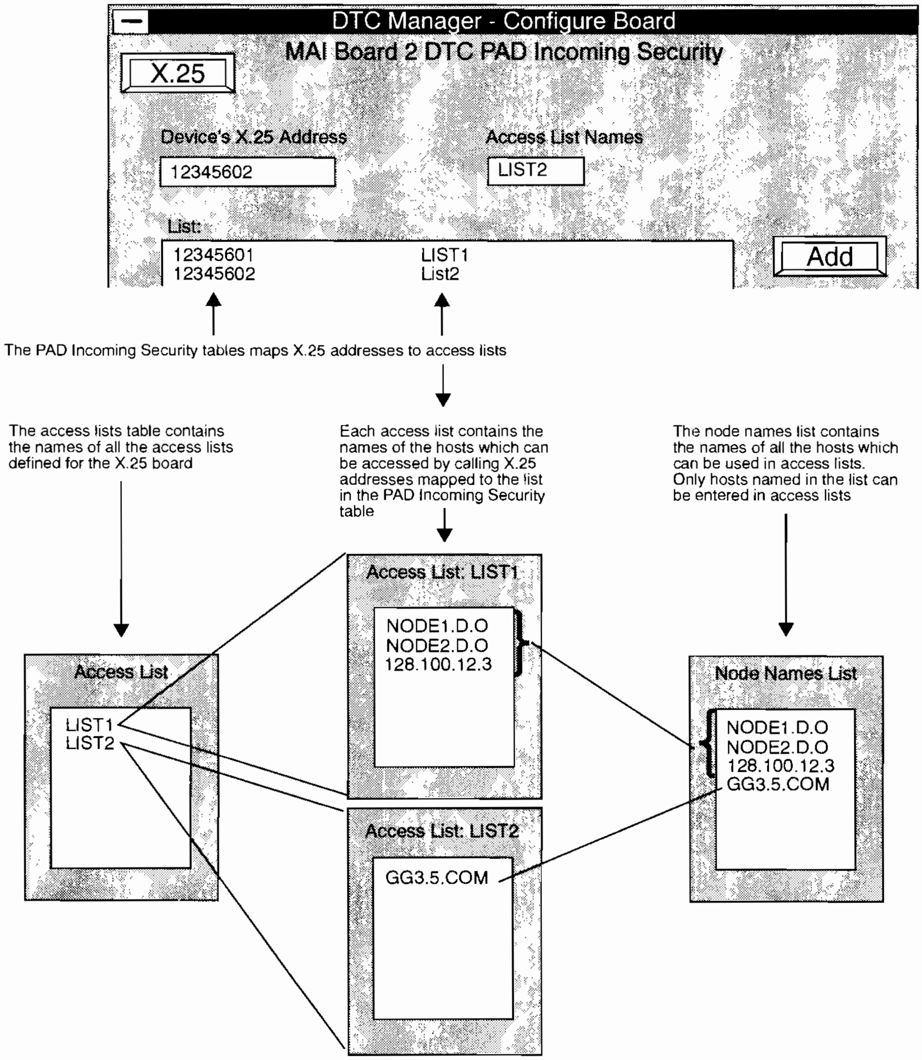
You may also define access lists with no nodenames; any remote PAD terminal mapped to such a list is prevented from establishing PAD connections through the DTC.

You can define up to 10 access lists, each with a maximum of 32 nodenames. The name can be an NS nodename or an IP address. You may have to enter more than one "version" of the same address, for example both the IP address *and* the Internet Services address of the same device, to allow users to enter either, and still gain access.

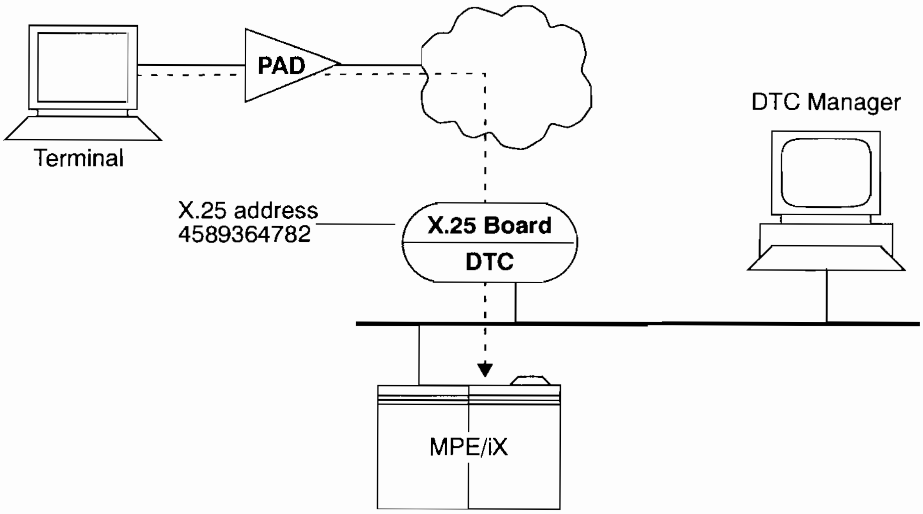
When a remote PAD terminal calls into the DTC to connect to a local system, the DTC looks up the calling address in the PAD Incoming Security table. The call is accepted if the called host system is included in an access list defined for the calling address. A password may optionally be defined for each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

The lists are downloaded to the DTC when it starts up (after being switched on or reset). Whenever you make any changes and choose the **OK** button on the main Set Security Lists window, 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 checked only while a connection is being established.

Example of Setting Security Lists



Example: Terminal Accessing HP 3000 Series 900 via PAD and X.25



Connection Description

- A terminal connected to a PAD is connected via X.25 and a DTC to an HP 3000 Series 900.
- The terminal is connected as a non-nailed device on the HP 3000 Series 900.
- The user at the terminal enters the X.25 address of the DTC and a subaddress, and is connected directly to the HP 3000/900 system.

The PTT may require you to use modems between the DTC and the PSN. This makes no difference to the configuration of the DTC and NMMGR.

NMMGR Configuration

Edit NMCONFIG.PUB.SYS as described below. This section assumes that the DTC is already used for terminal connections, and hence that NMMGR is already configured with the system nodename and link name.

1. Add the LANIC path.
2. Specify PC-based management.
3. Enter the profile name for non-nailed PAD terminals.
4. Enter the maximum number of non-nailed PAD terminals.

5 Enter the DTC nodename.

6 Validate the configuration. After NMMGR has validated the NMCONFIG file, it will automatically cross-validate it with the configuration files created by SYSGEN. If your version of NMMGR does not automatically cross-validate, you must run SYSGEN after exiting from NMMGR.

7 Reboot the system.

DTC Configuration

X.25 Configuration

Configure the X.25 configuration windows as follows.

1 Load the HP default values for X.25 levels 1, 2 and 3.

2 Change levels 1, 2 and 3 to the values on your PSN subscription form.

PAD Switching Information

Configure the PAD Switching Information window by mapping the nodename of the HP 3000 Series 900 to the X.25 address of the DTC and a subaddress.

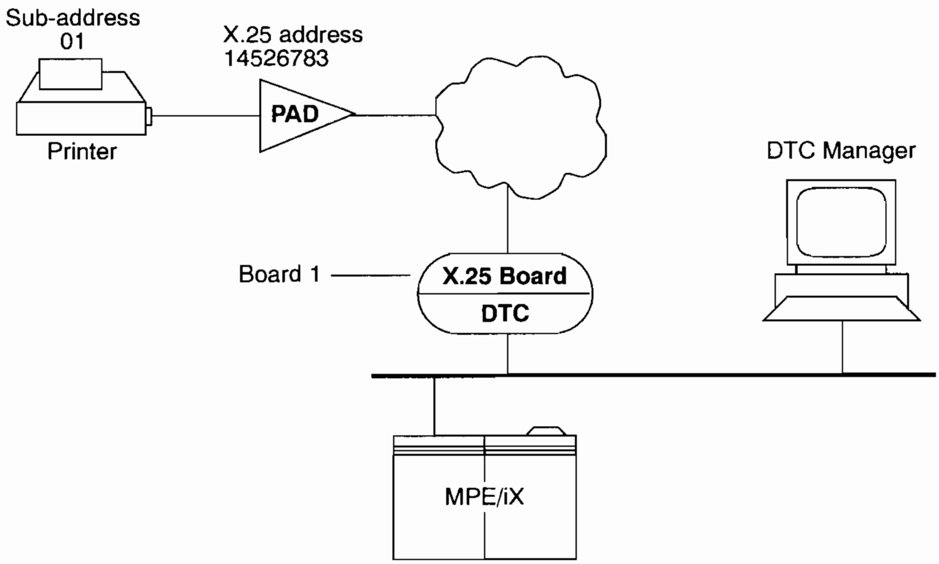
1 Enter the nodename of the HP 3000 Series 900.

2 Enter the X.25 address of the DTCs X.25 board and assign a subaddress.

For example, if the DTCs X.25 board has the address 4589364782, then assign the HP 3000 Series 900 the subaddress 01 by entering the address 458936478201 in the **System X.25 Address** field.

The user enters `@458936478201` at the terminal to connect directly to the HP 3000 Series 900 (`@` is the PAD prompt).

Example: Printer Accessed by HP 3000 Series 900 via PAD and X.25



Connection Description

- A printer connected to a PAD is accessed by an HP 3000 Series 900 via X.25 and a DTC.
- The printer is connected as a nailed device on the HP 3000 Series 900.

The PTT may require you to use modems between the DTC and the PSN. This makes no difference to the configuration of the DTC and NMMGR.

This section assumes that the DTC is already used for terminal or printer connections, and hence that NMMGR is already configured with the system nodename and link name.

NMMGR Configuration

Edit NMCONFIG.PUB.SYS as follows.

1 Add the LANIC path.

2 Specify PC-based management.

3 Declare a nailed device and an ldev number.

4 Associate a device name with the ldev number.

5 Associate a printer profile name with the device (ldev).

6 Enter the DTC nodename.

7 Validate the configuration. After NMMGR has validated the NMCONFIG file, it will automatically cross-validate it with the configuration files created by SYSGEN. If your version of NMMGR does not automatically cross-validate, you must run SYSGEN after exiting from NMMGR.

8 Reboot the system.

DTC Configuration

X.25 Configuration

Configure the X.25 configuration windows as follows.

1 Load the HP default values for X.25 levels 1, 2 and 3.

2 Change levels 1, 2 and 3 to the values on your PSN subscription form.

PAD Access Configuration

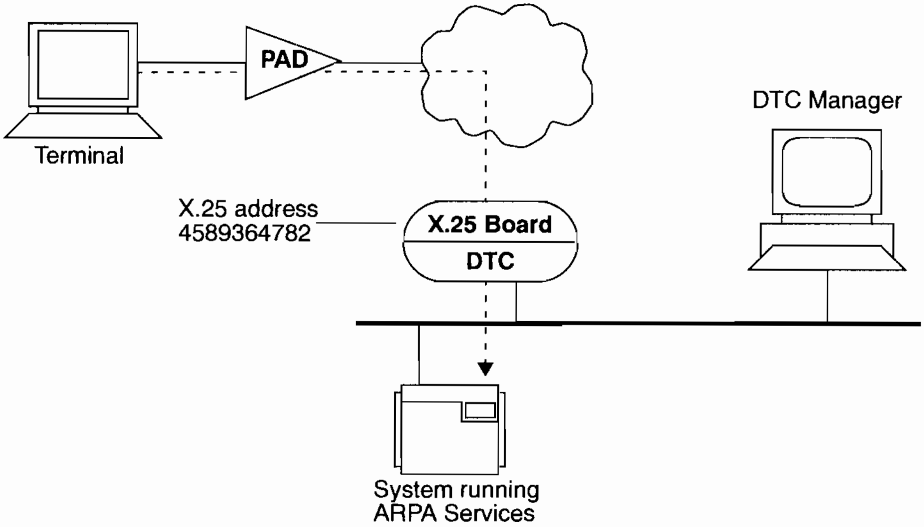
Configure the PAD Access window as follows.

1 Enter the X.25 address of the DTCs X.25 board and its subaddress.

2 Enter the device name entered in NMMGR for the ldev the printer will connect to.

3 Select a PAD profile.

Example: Terminal Accessing System via PAD and X.25



Connection Description

- A terminal connected to a PAD is connected via X.25 and a DTC to a system running ARPA Services.
- The user at the terminal enters the X.25 address of the DTC plus a subaddress, and is connected directly to the system.

The PTT may require you to use modems between the DTC and the PSN. This makes no difference to the configuration of the DTC.

DTC Configuration

X.25 Configuration Configure the X.25 configuration windows as follows.

1. Load the HP default values for X.25 levels 1, 2 and 3.
2. Change levels 1, 2 and 3 to the values on your PSN subscription form.

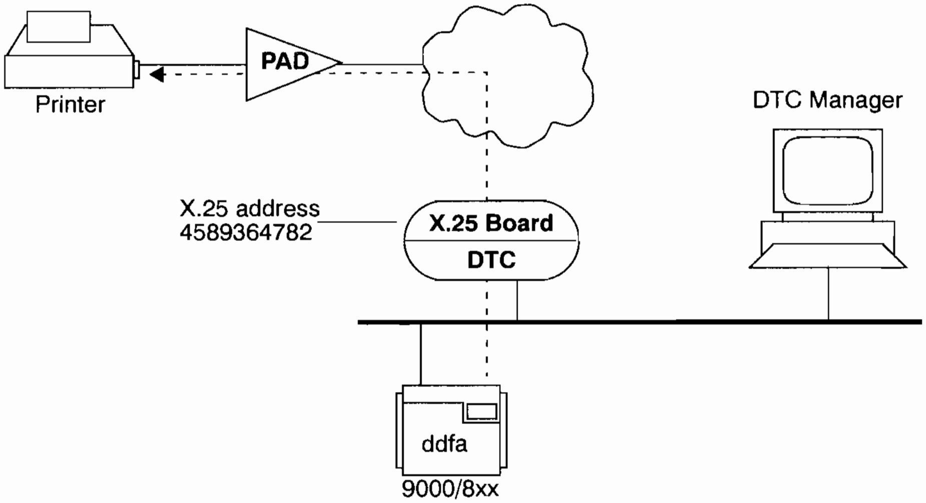
PAD Switching Information Configure the PAD Switching Information window by mapping the nodename of the HP 3000 Series 900 to the X.25 address of the DTC plus a subaddress.

1. Enter the IP address of the system. If a DNS server is available on the LAN, you can use a DNS name instead of an IP address.
2. Enter the X.25 address of the DTCs X.25 board and assign a subaddress.

3 For example, if the DTCs X.25 board has the address 4589364782, then assign the ARPA system the subaddress 01 by entering the address 458936478201 in the **System X.25 Address** field.

4 The user enters `@458936478201` at the terminal to connect directly to the ARPA system (`@` is the PAD prompt).

Example: Printer Accessed by HP 9000 Series 800 via PAD and X.25



Connection Description

- A printer connected to a PAD is accessed by an HP 9000 Series 800 via X.25 and a DTC.
- The following software is already installed on the HP 900 Series 8xx.

  HP-UX 9.0 or later

  ARPA Services

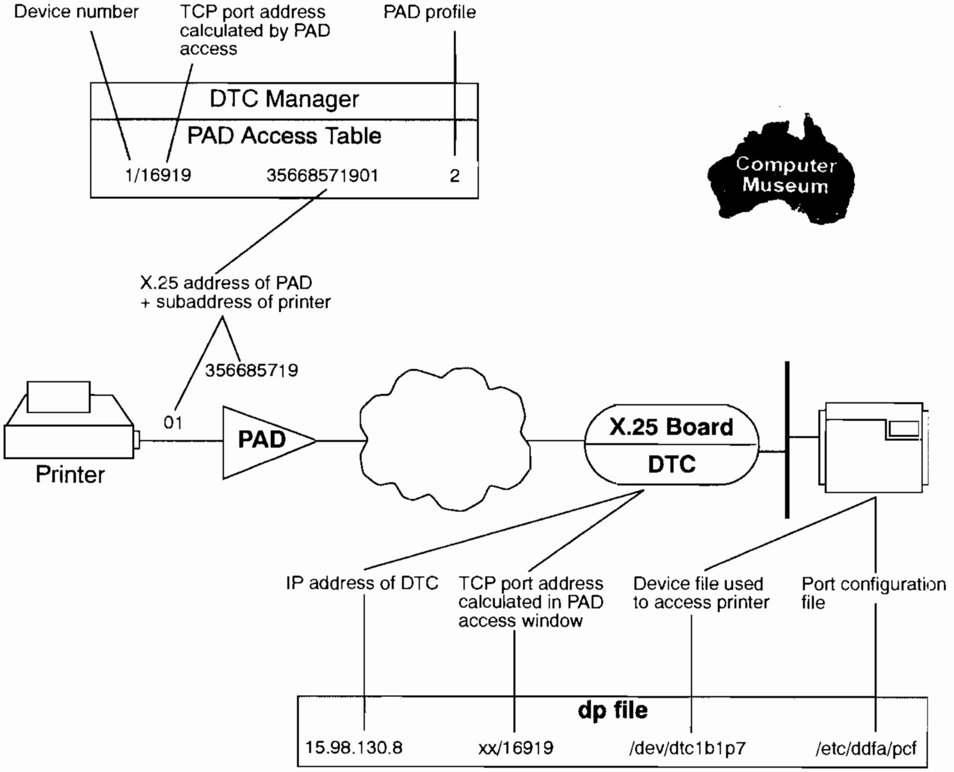
  HP DTC Device File Access (DDFA)

- The device file `/dev/dtclx251` is used to access the printer.

The PTT may require you to use modems between the DTC and the PSN. This makes no difference to the configuration of the DTC and DDFA.

Configuration Overview

The following diagram gives an overview of the information that has to be entered in DTC Manager and in DDFA to configure the connection.



DTC Configuration

X.25 Configuration

Configure the X.25 configuration windows as follows.

1 Load the HP default values for X.25 levels 1, 2 and 3.

2 Change levels 1, 2 and 3 to the values on your PSN subscription form.

PAD Access Configuration

Configure the PAD Access window as follows.

1 Enter the X.25 address of the PAD, including the subaddress of the terminal.

2 Enter a device number (in the range 0 to 31 inclusive) in the PAD device field. DTC Manager will use this number to calculate a TCP port address, and will display the value as device number/TCP port address, for example, if you enter 1, the PAD Access table will display 1/16919.

   Make a note of the TCP port address, as you will need to enter it in the dp file when you configure DDFA on the HP 9000 Series 800

3 Use the default printer PAD profile. If you need to modify the DTCs PAD behavior, see the *DTC Technical Reference Manual* for more information.

DDFA Configuration

These instructions are not a comprehensive guide to configuring DDFA. They assume that you followed the installation instructions when installing DDFA. If you need further information, refer to the **ddfa** man pages and *DTC Device File Access Utilities and Telnet Port Identification*.

1 Check to see if the files `/etc/ddfa/dp` and `/etc/ddfa/pcf` are already present on the system. If they already exist, go to step 3. If not, follow step 2 to create them.

2 If the DDFA files `/etc/ddfa/dp` and `/etc/ddfa/pcf` do not exist:

   - create the directory `/etc/ddfa`
   - copy the files `/etc/newconfig/ddfa/dp` and `/etc/newconfig/ddfa/pcf` into the directory `/etc/ddfa`.

3 Edit the file `/etc/ddfa/dp`.

Use a text editor such as vi to edit the file `/etc/ddfa/dp`. Follow the template at the top of the file and add the following information on a new line.

```
<DTC IP address> <board/port> <device file name> <port config file>
```

- **DTC IP address** of the DTC is the first entry in the line.
- **DTC board and port** - in the format **xx/<TCP port address>. xx** tells DDFA that the number after the / is a TCP port address. The TCP port address is the value calculated by the PAD Access table from the device number you entered. The / is obligatory, and there must be no spaces between **xx** and / and between / and the TCP port address.
- **Device file name** - the name of the device file that will be used to access the printer. We recommend that the name contains the DTCs name and the board and port number to make it easy to identify the printer connected. For example, **/dev/dtc1x251**.
- **Port configuration file** - enter the name of the port configuration file used to configure the printer. The default file **/etc/ddfa/pcf** will be correct for most applications and printers. If you need to change the values, see *DTC Device File Access Utilities and Telnet Port Identification*.

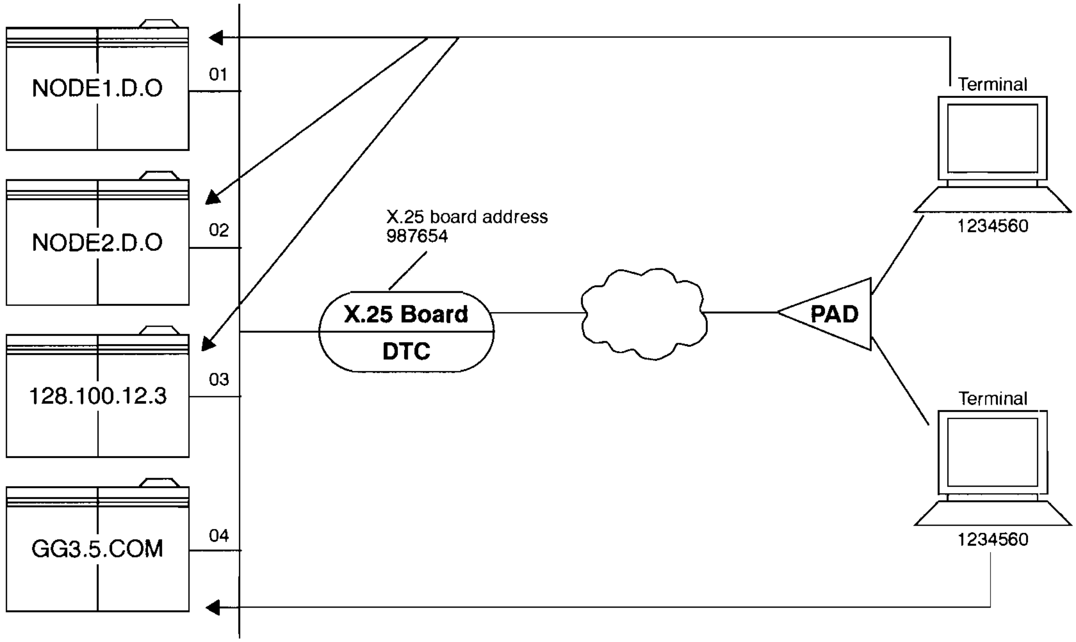
4. Save the dp file.
5. To check that the dp file is correct, and start the **ocd** daemons, execute the dedicated port parser (**dpp**) by entering the following command.

```
# /etc/dpp /etc/ddfa/dp -k
```

Using Spoolers with DDFA

DTC Device File Access Utilities and Telnet Port Identification contains information on configuring DDFA for use with the system spoolers. See the *HP-UX System Administration Tasks Manual* for information on the HP-UX printer spooler.

Example: Configuring Access Lists



Connection Description

In this example:

- four systems are available on the LAN

  NODE1.D.O

  NODE2.D.O

  128.100.12.3

  GG3.5.COM

- two terminals are connected to a PAD

  terminal 1 can access NODE1.D.O, NODE2.D.O and 128.100.12.3

  terminal 2 can only access GG3.5.COM.

DTC Configuration

Nodenames List The first step is to add the names of *all* the systems to the Nodes Names List. Only systems listed here can be entered in access lists.

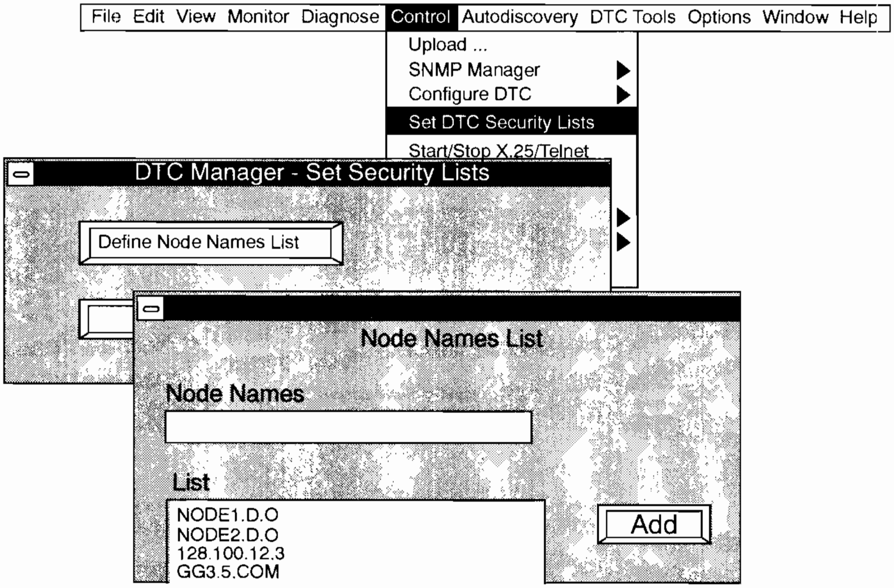
Enter the name of every system that is to be accessed into the nodenames list. You can enter a nodename or an IP address. For example:

NODE1.D.O

NODE2.D.O

128.100.12.3

GG3.5.COM



Access Lists

You must create an access list for each terminal that is allowed to access systems via the DTC.

1. Create an access list by typing a name for the list (up to eight characters) in the **Access List Name** field. The example shows LIST1.
2. Open the list, then take the following steps to enter the names of the systems that can be accessed.
3. Highlight the access list name.
4. Choose **View/Modify List.**
5. Choose **Add Node.** You see a list of the nodenames configured in the nodenames list.
6. Select the nodename or address to add to the access list. If you want to add several nodes simultaneously, hold down the shift key on the keyboard and

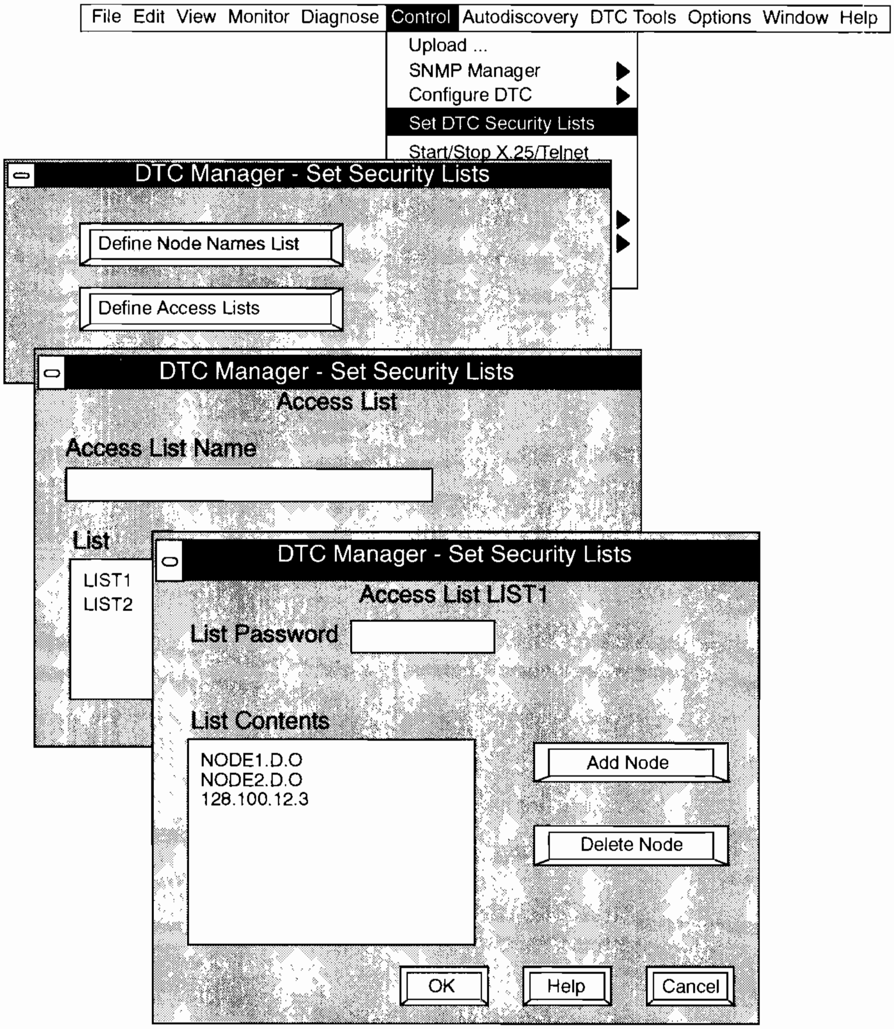
select all the nodenames you want to add.

7 Choose **Add** to add the nodes.

8 Choose **OK** to save the list.

Access List Passwords

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.


File Edit View Monitor Diagnose Control Autodiscovery DTC Tools Options Window Help
Upload ...
SNMP Manager
Configure DTC
Set DTC Security Lists
Start/Stop X.25/Telnet
DTC Manager - Set Security Lists
Define Node Names List
Define Access Lists
DTC Manager - Set Security Lists
Access List
Access List Name
List
LIST1
LIST2
DTC Manager - Set Security Lists
Access List LIST1
List Password
List Contents
NODE1.D.O
NODE2.D.O
128.100.12.3
Add Node
Delete Node
OK
Help
Cancel

Configuring X.25 System-to-System Switching

Note **X.25 system-to-system switching only applies to MPE/iX systems.**

This section explains the principles of configuring X.25 connections between MPE/iX systems (system-to-system switching), and configuring System-to-System Local Users Groups (LUGs).

The System-to-System Switching table allows MPE/iX systems to access each other and other systems 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.

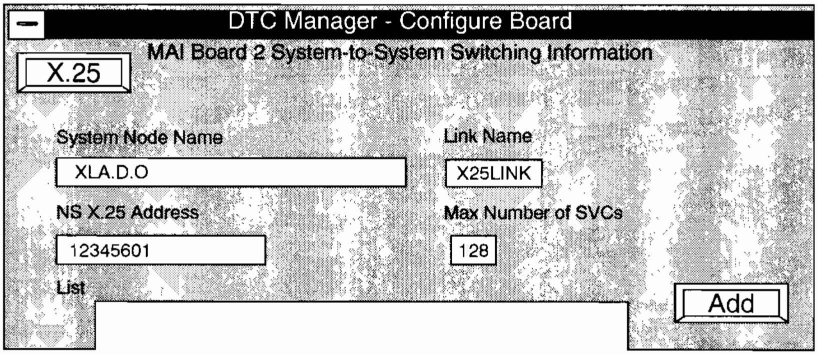
When the DTC receives an incoming call, it looks up the called address in this table, and routes the call to the appropriate host and network interface using the nodename and link name mapped to the called address. For outgoing calls from this node and link, the calling address will be the address listed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

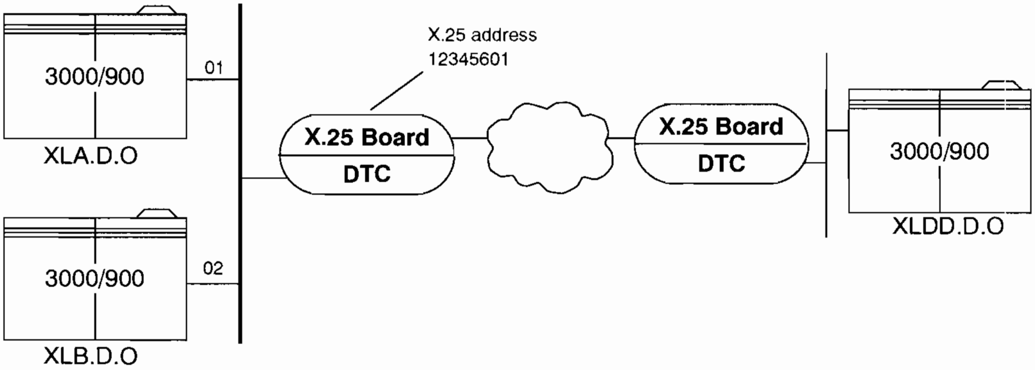
A System-to-System Local Users Group (LUG) filters incoming and outgoing calls between remote systems and local LAN-based systems. Only remote systems that are listed can access local LAN-based systems. If there are no items in the LUG list, there is no control on incoming and outgoing calls on the DTCs X.25 board.

System-to-System Switching Information

The System-to-System Switching table maps the nodenames of LAN-based host systems to X.25 addresses. Typically the X.25 address will be the X.25 address of the DTC followed by a unique subaddress.

Example of System-to-System Switching





- XLDD.D.O will be connected to XLA.D.O using X25LINK if the packet has the called address 12345601.
- 12345602 cannot be accessed by other MPE/iX systems.
- If XLA.D.O tries to call XLDDD.O, the X.25 address 12345601 will be used as the calling address.

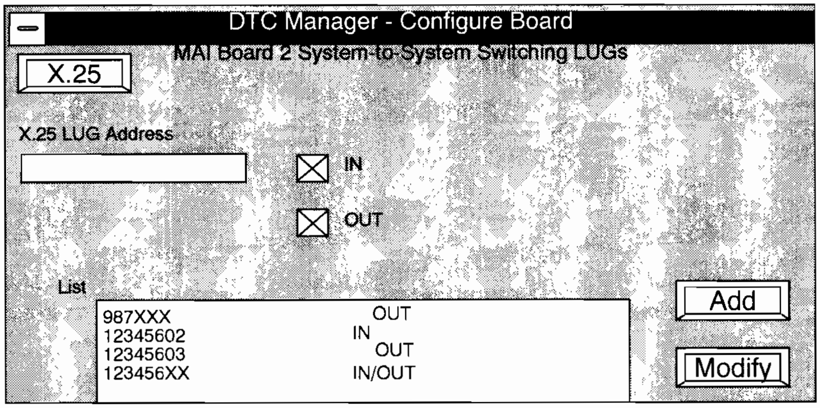
X.25 System-to-System Local Users Groups

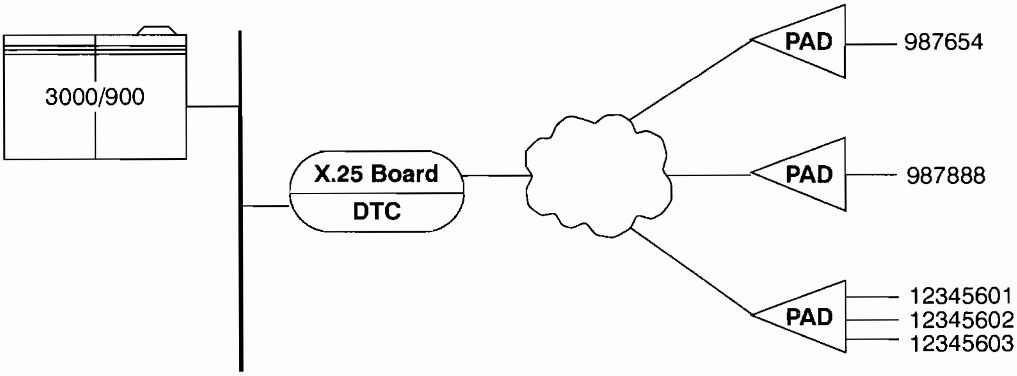
A System-to-System Local Users Group filters calls between remote systems and local LAN-based systems. If the list exists, only those remote systems that are listed can have access to local LAN-based systems. If there are no items in the LUG list, there is no control on incoming and outgoing calls on the DTCs 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 referred to only 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.

The LUG can screen for incoming calls only, outgoing calls only, or both. If you list any systems as **IN**, be sure that you list all. The same applies to systems listed as **OUT** or **IN/OUT**.

Example of a Local User Group





- 12345601 has IN/OUT access, because the 123456xx 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.

Configuration Details

X.25 LUG Address

The X.25 address of the remote device can be 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 IN/OUT access to all six, seven and eight digit X.25 addresses that start 1234, you would enter the following values:

```
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 addresses corresponding to 1234XX are listed as having both IN and OUT access.

```
1234XX          IN    OUT
123401          IN
```

Correlating the DTC Configuration with the HP 3000 Series 900 Configuration

Configuring X.25 MPE/iX System Access on the HP 3000 Series 900 requires you to use the NMMGR utility to update `NMCONFIG.PUB.SYS`, then cross-validate it with the system configuration files using `SYSGEN`. On the DTC Manager workstation, you must configure the X.25 levels 1, 2, and 3 parameters for each X.25 board, and also the system-to-system switching information to identify which HP 3000 Series 900 systems will be using that X.25 board. The following list gives the parameters that must be correlated between an HP 3000 Series 900 system and a DTCs X.25 board configuration.

- **Local Node Name**: The system's nodename must be configured as the `NODENAME` in `NMCONFIG.PUB.SYS`. The format of the nodename is `nodename.domain.organization`. The same nodename must also be configured on the DTC Manager workstation in the **System Node Name** field of the **System to System Switching Information** window.
- **Link Name**: The link name, configured in the `LINK` screen of `NMMGR`, identifies a specific hardware interface card; if your system uses more than one DTC X.25 interface (more than one board in the same DTC, or in different DTCs), you must assign a unique name to each link. The link name must also be entered on the DTC Manager workstation, in the **Link Name** field of the **System to System Switching Information** window.
- **DTC Node Name**: The nodename of the DTC containing the X.25 board, configured in the **LAN Configuration** window on the DTC Manager workstation, must also be entered in the `LINK.linkname` screen of NMMGR, so that the HP 3000/900 system knows which DTC it is using.
- **DTC Board Number**: The host system also needs to know in which slot of the DTC the X.25 board is installed (still in the `LINK.linkname screen`). In a DTC 16 this will always be slot 3; for a DTC 48, check the rear of the DTC to see where the board is installed, or look at the initial configuration window on the DTC Manager workstation (if the X.25 board is already configured).
- **Facility Set Name**: Facility sets are configured in the `NETXPORT.NI.NIname. PROTOCOL.X25.FACSET.fsetname` screen of NMMGR (a Facility Set, in NS X.25, is a set of X.25 connection parameters). If you have configured for `Flow Control Negotiation` in the **X.25 Level 3** configuration window in DTC Manager, you *must* have Packet Size Negotiation and Window Size Negotiation selected (by setting `Y`) in the facility set configured in NS X.25.

9

Configuring for HP 3000 Telnet Access

This chapter gives an overview of configuring a DTC to allow connections to be made to HP 3000 Series 900 systems. You can make connections in one direction only.

The DTCs Telnet Access functionality allows virtual terminal access to MPE/iX systems by converting TCP/IP to AFCP, HP's optimized flow control protocol used on the HP 3000 Series 900.

Two hardware products are available for making a Telnet Access connection:

- the **Telnet Access card**, which can be fitted in the DTC 48 or DTC 72MX (there is a different version of the board for each)
- the **HP Telnet Express Box**, a DTC dedicated to providing telnet access connections.

Note

There is no Telnet Access security. The only way to prevent people getting access to HP 3000 Series 900 systems via Telnet Access is either to prevent them obtaining the IP address of the DTC or system, or to stop the Telnet Access board.

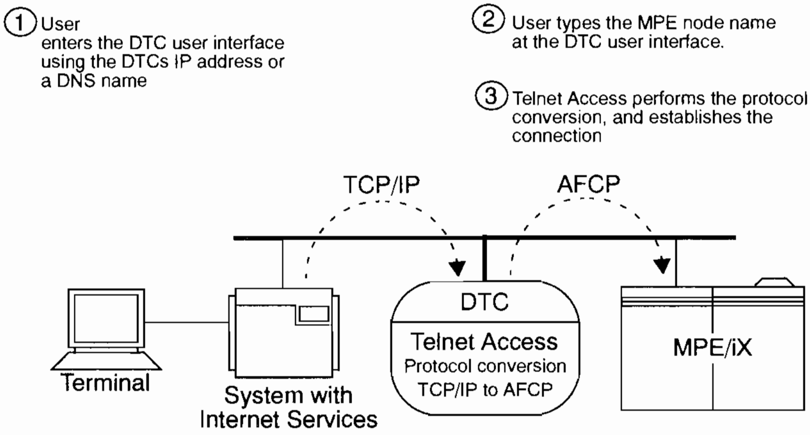
Connections via Telnet Access to HP 3000/900 Systems

There are two ways to make the connection.

- The user enters the DTC user interface, and types `C[ONNECT] <NODE_NAME>` The DTC establishes the connection to the HP 3000 Series 900 via AFCP, while maintaining the Internet-to-DTC side of the connection via TCP/IP.
- The user enters the IP address assigned to the HP 3000 Series 900. The nodename of the HP 3000 Series 900 is mapped to an IP address in the Telnet Switching Information table, and the DTC uses this mapping to establish the connection. This IP address is used to connect directly to the system and must be different from those IP addresses configured for other purposes such as FTP or X.25.

Connections via the DTC User Interface

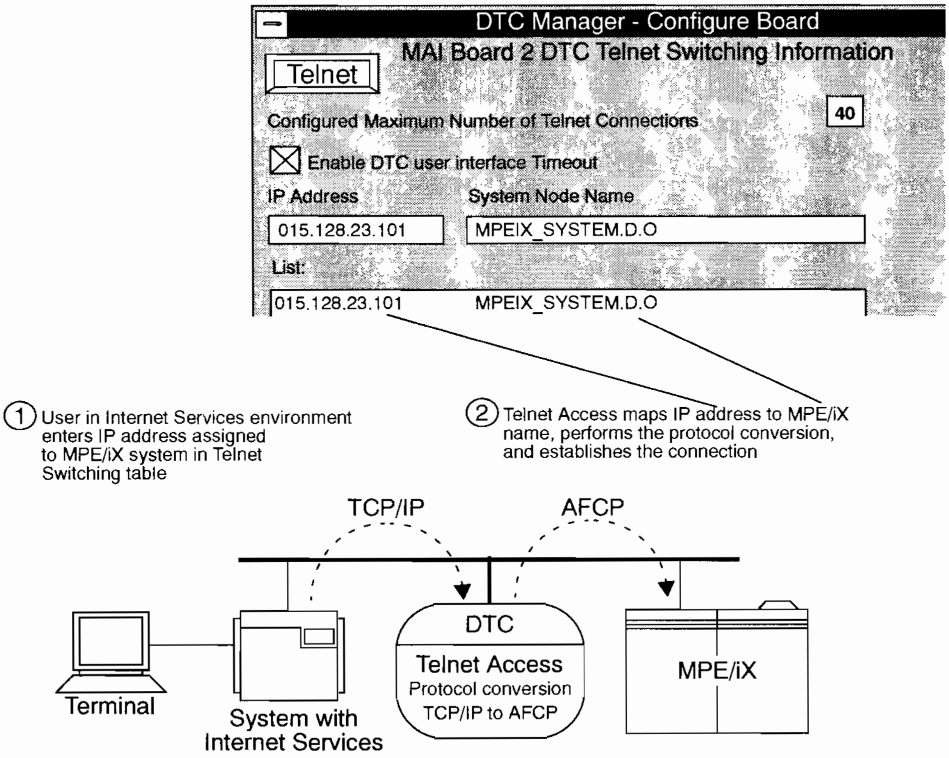
In this situation, the user has access to the DTC user interface via the IP address of the DTC itself (configured in the LAN Configuration screen). Telnet access users connected to the DTC user interface can then use the system name for connections to MPE/iX systems or systems connected in extended switching configurations.



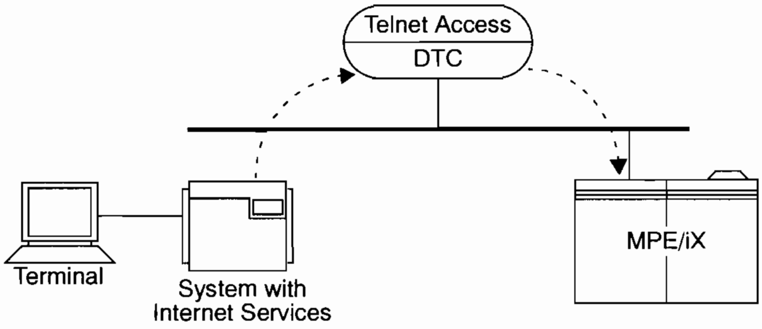
Direct Connections from Internet Systems to MPE/iX systems

In this situation, you map an IP address to the system nodename for each system to which terminal users are to connect directly from the terminal. Up to 10 systems can be configured in this way on each Telnet Access board or Telnet Express. Users then use the appropriate IP address to connect to the system.

You may also have a name server or other name resolution system configured on your network, so that users can use the system name, which is then resolved by the name server to the IP address configured in the Telnet Switching Information Table. When the user logs off the system, the complete connection path is closed down—users are not returned to the DTC user interface.



Example: Telnet Access from Internet Services to HP 3000 Series 900 Systems



Connection Description - Direct Connections

In this example:

- the terminal is connected to a system running Internet Services
- the user enters an IP address and connects directly to HP 3000 Series 900 system
- there is a Telnet Access board in the DTC, which must be either a DTC 48 or DTC 72MX.

DTC Configuration

Configure the Telnet Access window as follows.

1. Enter the fully-qualified nodename of the HP 3000 Series 900 system in the **System Node Name** field.
2. Enter an IP address in the **IP Address** field. The IP address must be unique on the LAN.
3. The user uses the IP address to connect directly to the system.

Note

NMMGR Configuration: non-nailed ldevs for HP 3000 Telnet Access connections *must* be configured for modem behavior in NMMGR on the HP 3000.

Configuring Extended Switching Connections (Back-to-Back)

This chapter explains the principles of configuring extended switching connections. Extended switching connections are also sometimes referred to as *back-to-back* connections.

Extended switching uses the DTC switching capabilities to extend connectivity to include the following configurations:

- asynchronous connections to systems other than HP 3000 Series 900.
- DTC solution for PAD emulation: DTC asynchronous ports can be connected to the asynchronous ports of the HP 2334A and HP 2335A PADs, providing a solution for PAD emulation for terminals connected to the DTC: terminals connected to the same DTC or to another DTC on the LAN can open connections to the PAD, as can telnet workstations.
- routable connections (not on DTC 48/3000s).

  Each port on a DTC can be assigned an IP address, which can be used for extended switching connections across level 3 routers.

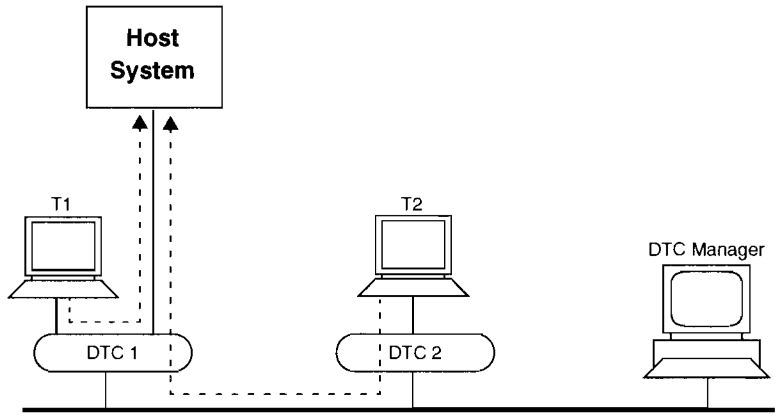
For terminal users, connections are established in the usual way, by the terminal user typing one of the following:

- `connect <IP address>`
- `connect <system_name>`
- `connect <domain name>`

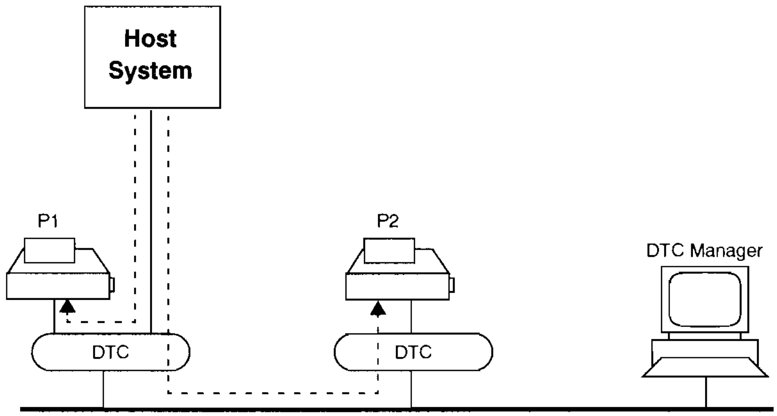
The nodename in these configurations is no longer defined on the destination host, however; it is the nodename configured for the destination DTC port: the DTC port that is connected to the host system or to the PAD.

Basic Extended Switching Configurations

The DTCs asynchronous ports can be connected to asynchronous serial ports on a host system. This provides access to that host for terminals connected to the same DTC or to another DTC, and allows the host access to printers connected to the same or another DTC.



Similar connections are possible to allow programmatic access from the host to printers.



Host-System Configuration

The connection to the host system requires asynchronous serial ports on the host, which have been configured with the same line speed and parity setting as the DTC ports to which they are connected. We recommend that you always use modem connections on both sides, and that you ensure that support for modem connections is configured for both the DTC ports and the host ports. Usually, a system that supports modem connections can sense a failed connection if modem signals are used, and will automatically close a session if the connection fails. This is the case with:

- HP 3000 MPE V systems using ATP/M multiplexers
- HP-UX systems, when CCITT mode is configured on the host-system ports
- DEC system access via DMF-32 multiplexers or the DECserver 200.

DTC Configuration

DTC LAN Configuration

If more than one DTC is used, a valid IP address is required in each DTCs LAN configuration, as DTC-to-DTC connections use TCP/IP across the LAN. However, in the case of a DTC 48/3000, a non-routable implementation of TCP/IP is used for extended switching.

Configuring Host-port Connections on the DTC

The first step in configuring a DTC port is to configure it for a terminal, printer, or host connection. DTC ports connected to the host system must be configured as host ports. The line speed and parity must match those configured on the corresponding port on the host. If modem signals are used, the DTC port is usually a DTE. However, this choice depends on the characteristics of the port on the host, and on the cable used to connect the host port to the DTC port.

If the system for which you are configuring the host connection uses the ENQ/ACK flow control protocol, for example an MPE V system, ensure that the protocol is enabled on the port configuration screen.

DTC Host-port Naming

The name you give to the port (the **Host Name** field on the port configuration screen) will be used by terminal users to open connections to the attached host (the terminal "`connect <system_name>`" command). Ideally, you should use the name you give to the host system for the port. You can give the same name to several ports, so that all ports connected to the same host have the same name. When terminal users attempt to open a connection, they will use the first one of these ports that is free.

You can also assign an IP address to a port, to allow back-to-back connections to be established across level 3 routers.

Multiple Host-side DTCs

You can spread host-port connections over several DTCs, using the same name for the host ports on the different DTCs. When a terminal user attempts to open a connection, the terminal-side DTC will establish the connection with the first of the host-side DTCs to respond to the connection request. Typically, the least-loaded host-side DTC will respond first. To terminal users, the connection establishment will be invisible: they will not know via which DTC the connection to the host is established. Note that you cannot have the same IP address for ports on more than one DTC, but ports on the same DTC can have the same IP address.

Configuring Terminal Connections on the DTC

Generally, extended switching configurations impose no special requirements on terminal port configurations. However, if the extended switching configuration uses an HP TS8 Terminal Server on the host side, and an IP address has not been assigned to it, you must ensure that the fully qualified nodename (`nodename.domain.organisation`)of terminal ports does not exceed 20 characters, as the HP TS8 cannot resolve names of more than 20 characters. If the node name has been configured in a domain name server, its length can exceed the maximum of 20 characters. In this case, connection to the HP TS8 port will be made using its IP address.

Automatic connection, terminal switching, and default destination nodes are supported in extended switching. Users of terminals with switching capability can switch between connections to LAN-based systems and connections to asynchronously-connected host systems in extended switching configuration. The system name used to establish a connection using the "`connect <system_name>`" command is the name configured for the DTC port connected to the host system.

Multiple Sessions

The default number of connections on a printer and terminal ports is three, but this can be increased to five.

On a host port the default number of sessions is one; in this state, second and subsequent call requests will be rejected. If more than one session is configured, the call will be queued and the user gets the "Connection established" prompt. However, there is no indication that the connection is queued, and it can appear that the connection is hung when it is in fact queued.

Configuring Printer Connections on the DTC

Generally, extended switching configurations impose no special requirements on printer port configurations. However, if the extended switching configuration uses an HP TS8 Terminal Server on the host side, and an IP address has not been assigned to it, you must ensure that the fully qualified nodename (`nodename.domain.organisation`)of terminal ports does not exceed 20 characters, as the HP TS8 cannot resolve names of more than 20 characters. If the node name has been configured in a domain name server, its length can exceed the maximum of 20 characters. In this case, connection to the HP TS8 port will be made using its IP address.

Modems and Auto Connect

When automatic connection is enabled, the port is automatically connected to the destination node specified in the 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 you might enable automatic connection with, for example, a printer specified as the destination node (printer name = destination nodename).

Extended Switching with HP 3000 MPE/V Systems

Using Modems for Access Security

Although direct connections between the DTC and HP 3000 systems running the MPE V operating system are supported, modem links are highly recommended to ensure access security. Modem signals are required to support both automatic closing of connections when you log off from the system and automatic logging off when the connection between two ports is closed. ATP modems should be used on the system side.

If a printer must be accessed by an MPE V system, a modem interface is required on the host side of the DTC. In this case, the connection between DTCs is established when the ATP port modem-signals rise, by using the automatic establishment feature on the DTC and a default destination name. The connection will be closed when the ATP modem signals fall. This programmatic access feature runs in ASCII and binary mode.

ASCII and Binary Connections

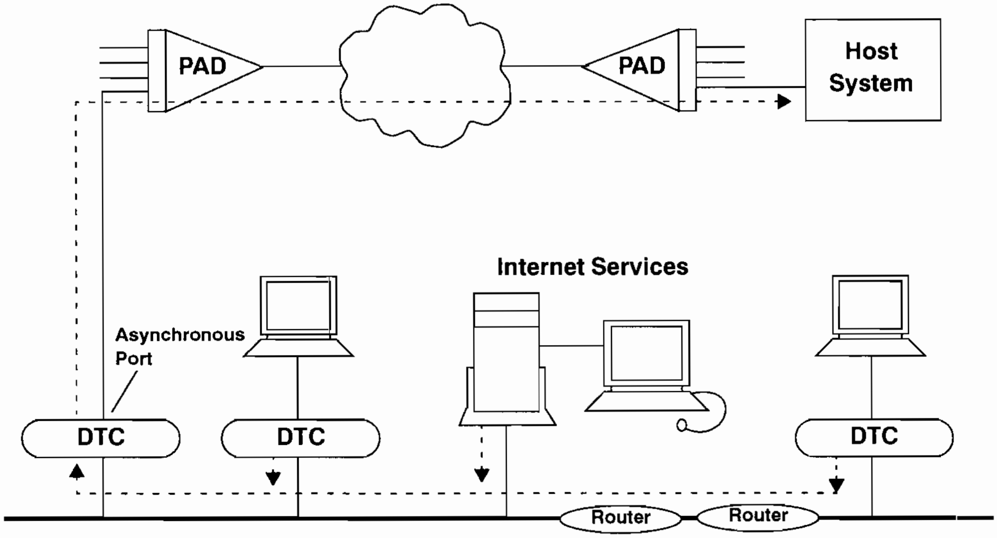
The DTC in extended switching configurations supports all the MPE V applications using ASCII transfer but provides limited support of applications using binary transfer. The block size of the binary transfer should not exceed 128 bytes. AdvanceLink, HP Word and HP Message can be run in extended switching configurations.

The DTC does not transparently support binary transfer for terminal connections in extended switching configurations. The terminal user must use the DTC user interface commands `set_ascii` and `set_binary` to switch between ASCII and binary data-transfer modes. Note that this means that switching must be enabled for these terminals, otherwise the user has no access to the user interface.

Printing is supported in extended switching configurations.

DTC Solution for PAD Emulation

The DTCs asynchronous ports can be connected to the asynchronous serial ports of an HP 2334A Plus or HP 2335A X.25 Multiplexer, providing PAD facilities for terminals connected to the same DTC or another DTC.

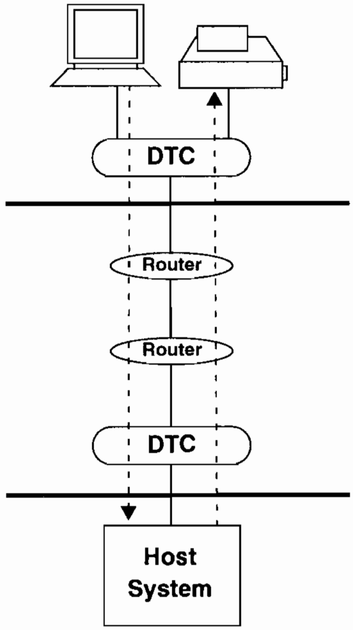


From the DTCs point of view, this configuration is basically the same as the configuration already described for asynchronous access to host systems. First, configure the DTC ports for connection to HP 2334As or HP 2335As as host ports.

On the port configuration screen, specify HP 2334 for the **Attached Device**, and **DTE** for **Modem Behavior**. The user of a terminal establishes a connection to the PAD by using the port name configured on the DTC.

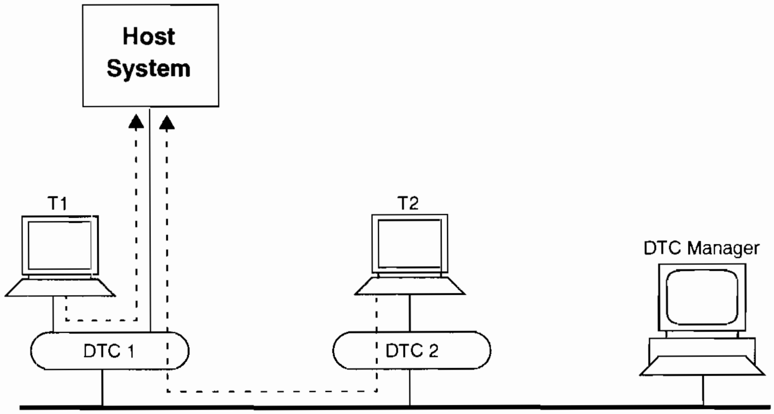
Routable Back-to-Back Configurations

Each port on a DTC (except for a DTC 48/3000) can be assigned an IP address which can be used to address the device connected to the port via level 3 routers. The basic principle is shown in the following figure.



The connection will work in either direction: either to the host port's IP address, or to the printer port's IP address. The ports' IP addresses are configured in the Host Name field of the host port configuration screen.

Example: Terminal Connected to System via Extended Switching



Connection Description

In this example:

- a system, for example MPE V, is connected to a DTC asynchronous port
- a terminal (T1) connected to an asynchronous port of the same DTC can access the system
- a terminal (T2) connected to an asynchronous port of a different DTC on the same LAN can access the system.

DTC Configuration

Host Port

We recommend that modems are used for security.

Configure the DTC port the system is connected to as follows.

1 Configure the port as a Host Port.

2 Use the default Host Port settings and change the following parameters.

3 Either set **Line Speed** and **Parity** to suit the attached device,

or enable **Auto Speed/Parity Sensing**.

4 Set **Modem Behavior** to suit the attached device.

5 Give the port a valid NS nodename. This is the name the terminal user will enter to access the system.

Terminal Port

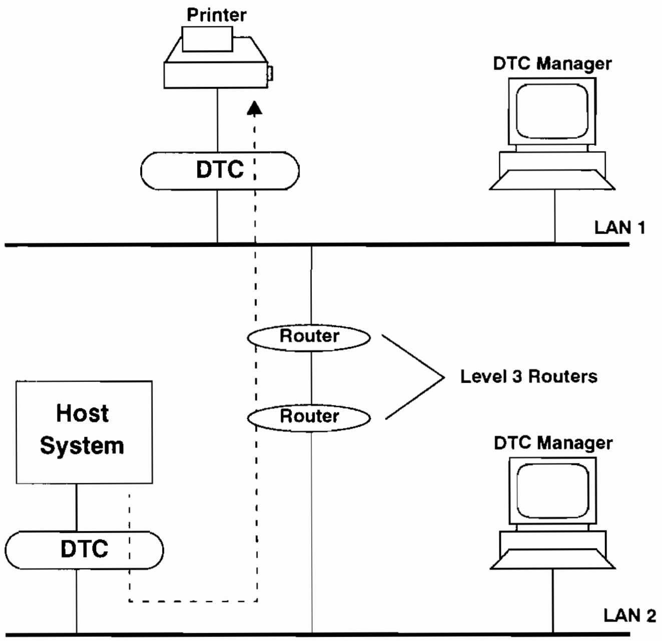
Configure both terminal ports as follows.

1 Configure the port as a Terminal Port.

2 Use the default Terminal Port settings.

The user enters `c[onnect]` followed by the nodename entered in the host port configuration.

Example: Printer Accessed by System via Routed Extended Switching



Connection Description

In this example:

- a system, for example MPE/V, is connected to a DTC asynchronous port
- a printer connected to an asynchronous port of a DTC on a different LAN can be accessed by the system via level 3 routers.

DTC Configuration

Host Port

Modems are necessary for automatic connection. However, we recommend that modems are used for security even if you do not need automatic connection.

Configure the DTC port the system is connected to as follows.

1 Configure the port as a Host Port.

2 Use the default Host Port settings and change the following parameters.

3 *Either* set **Line Speed** and **Parity** to suit the attached device,

or enable **Auto Speed/Parity Sensing**.

4 Set **Modem Behavior** to suit the attached device.

5 Enable **Enable Automatic Connection**.

6 Enter the printer name, as entered in the printer port configuration, in **Destination Node Name**.

Printer Port

Configure the printer port as follows.

7 Configure the port as a printer port.

8 Use the default printer port settings.

9 Enter a valid IP address in **Printer Name**.

Remote Connections to HP 3000 Series 900 Systems

This chapter describes the configuration of a front-end DTC to provide a two-way connection between DTC ports and an HP 3000 Series 900 routable connections system across a routed IP network. This kind of connection is known as Routable AFCP.

Routable AFCP requires at least MPE/iX 5.0 General Release version C.50.00 and OpenView DTC Manager 14.2.

Before using Routable AFCP, a DTC will check that the two ends of the connection are on different LANs. If they are on the same LAN, Routable AFCP is not needed and will not be used.

Front-end DTC Configuration

The front-end DTC provides a gateway service, converting AFCP packets to IP packets and vice versa. It may consist of a DTC 72MX, DTC 16MX, or Telnet Express. It does not have to be dedicated to providing the gateway service: it may also perform all other DTC functions (of course, performing multiple functions simultaneously may affect performance).

A front-end DTC 72MX, DTC 16MX, or Telnet Express must be managed by OpenView DTC Manager. The front-end DTC, the DTC Manager system, and the HP 3000 system must be on the same LAN.

A check box is provided in the LAN board's configuration screen to enable front-end functionality. In addition, the following information must be provided:

- the front-end DTCs IP address and NS name
- the DNS's IP address
- the IP address of an IP router
- the subnet mask.

The same release of the DTC Manager software must be running on both the front-end and the remote DTCs.

DNS Configuration

A Domain Name Server converts network names into IP addresses. The list of network names and corresponding IP addresses used by the Domain Name Server is stored in a text file which must be maintained by the system administrator.

Each line of the file may be in one of several different formats:

- The A (Address) format associates an IP address with an ARPA name.
- The WKS (Well Known Service) format adds secondary information to the IP address.
- The TXT (TeXT) format associates any text string with an ARPA name.

For Routable AFCP to work, all three of these formats must be used.

The A format associates the IP address of a remote DTC with the NS nodename of that DTC (attached to the ARPA extension of a front-end DTC).

The WKS format associates the IP address of a front-end DTC with the ARPA name of the HP 3000 host system, and also defines the transport protocol to be used.

The TXT format supplies the NS name of the host, so that the front-end DTC can find the host's LAN address using the Probe protocol.

Two points should be noted:

- A DTCs NS name should not contain underscores, if it is to be used for Routable AFCP. A host's NS name may contain underscores; but its ARPA name or alias in the WKS record should not contain underscores.
- If the DNS has been configured for a certain front-end DTC, but the front-end functionality of that DTC is not enabled, remote DTCs may try to use the DTC as a front-end, in which case the connection will fail.

Examples

Here is an example of DNS configuration for Routable AFCP, showing the lines entered in the text file.

```
RDTCName.DTCArpaDomain    A     RDTC_IP@
hostName.DTCArpaDomain    WKS   FEDTC_IP@ 17
hostName.DTCArpaDomain    TXT   "RAFCP_HOST=hostNSName"
```

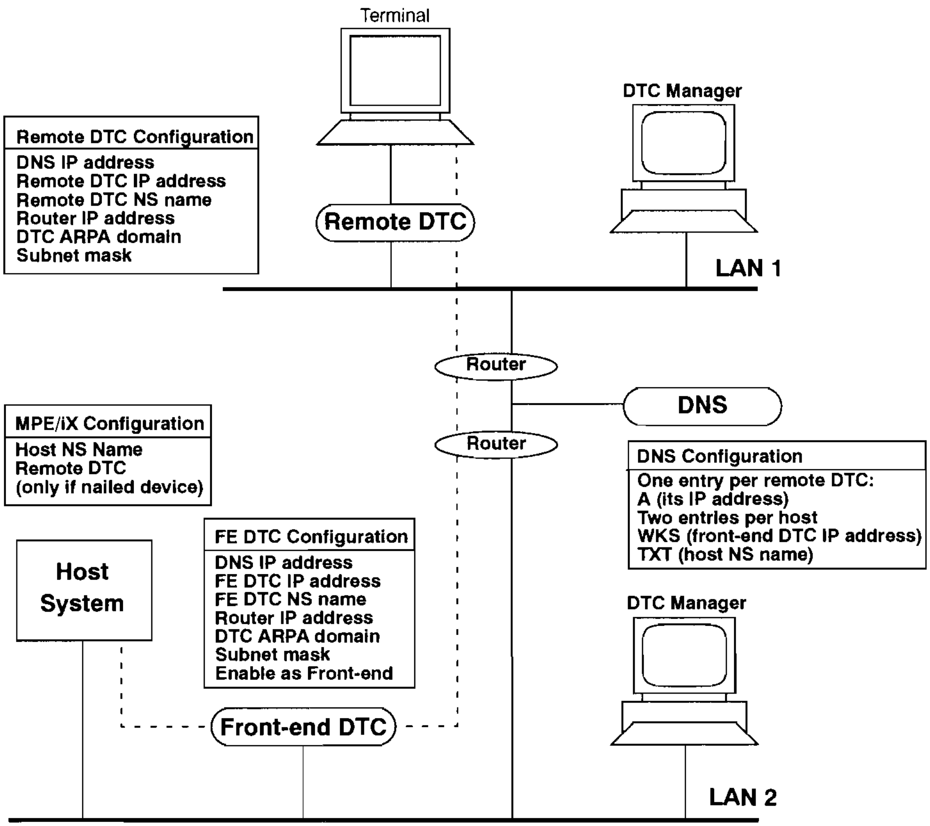
where:

- RDTCName is the NS nodename of the remote DTC
- hostName is the ARPA nodename of the host
- DTCArpaDomain is the ARPA domain of the front-end DTC and the remote DTC
- RDTC_IP@ is the IP address of the remote DTC
- FEDTC_IP@ is the IP address of the front-end DTC
- 17 is the protocol number of UDP
- RAFCP_HOST is a keyword that should always be entered exactly as written here (in upper or lower case)
- hostNSName is the full NS name of the host, in the format HOST.DOMAIN.ORG (in upper or lower case)

Spaces and tabs should not be included in the TXT string.

Logon Access

Logon access occurs when a DTC terminal user initiates a connection with an HP 3000 system. Addresses are resolved using the Domain Name Server.



Example

To connect to the host, the terminal user types:

```
C MPEiX
```

where MPEiX is the nodename of the host. If the default local domain configured in the DNS/IP window for the remote DTC is:

```
DTCArpaDomain
```

then the WKS line in the DNS should be:

```
MPEiX.DTCArpaDomain    WKS   FE_IP@   17
```

where FE_IP@ is the IP address of the front-end DTC.

If the NS name of the remote DTC is given to NMMGR, or configured in the remote DTC, as:

```
RDTC.NSDomain
```

and the default local domain configured in the DNS/IP window for the front-end DTC is:

```
DTCArpaDomain
```

then the A line in the DNS should be:

```
RDTC.DTCArpaDomain    A    R_IP@
```

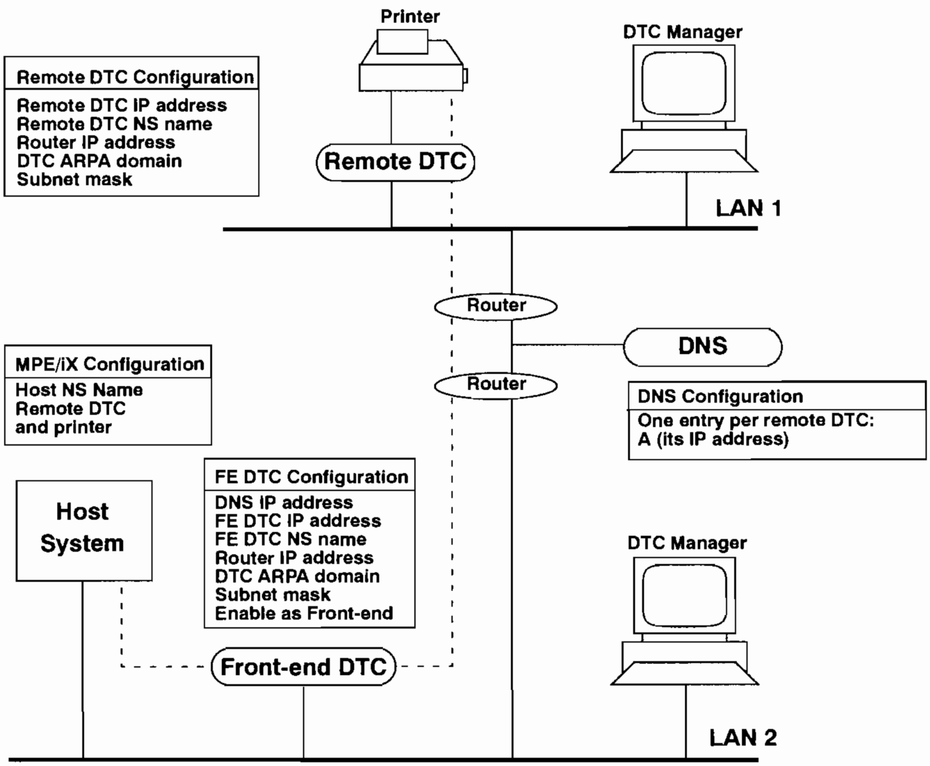
where R_IP@ is the IP address of the remote DTC.

Logon Access via PAD

A terminal connected to a PAD can be connected to a remote DTC (with an X.25 card) across an X.25 network, and from there reach an HP 3000 host using Routable AFCP. If direct access is required from terminal to host, without going through the user interface of the remote DTC, you should configure the PAD switching table of the remote DTC to assign an X.25 address to the host. Note that the host name in the PAD switching table must be given in the form of an ARPA name (configured in DNS) and not an NS name.

Programmatic Access

Programmatic access occurs when an HP 3000 system initiates a connection with a remote DTC port.



The printer must have a logical device number (ldev), which is assigned by NMMGR in exactly the same way as for a local printer. NMMGR does not need to know that the printer is not local.

However, the IP address and NS name of the remote DTC, and the ARPA domain of the front-end DTC, must be associated in the DNS.

Example

If the NS name of the remote DTC is given to NMMGR as:

```
RDTC.NSDomain
```

and the default local domain configured in the DNS/IP window for the front-end DTC is:

```
DTCArpaDomain
```

then the A line in the DNS should be:

```
RDTC.DTCArpaDomain    A    R_IP@
```

where R_IP@ is the IP address of the remote DTC.

Telnet/iX Access vs remote connection to HP 3000 Series 900

A Telnet Access card user may obtain Telnet/iX access from any remote DTC. The Telnet switching table, and possibly the DNS server, should be configured as usual.

For example, the Telnet switching table may contain a line such as:

```
hostNName   IP@5
```

and the DNS configuration file a line such as:

```
hostAName.arpaRemote   A   IP@5
```

If the same host name may be reached by either Routable AFCP or Telnet Access paths, according to the DNS database, then the Routable AFCP path will always be chosen by the remote DTC. However, a non-DTC terminal server may choose the Telnet Access entry, which does not contain the WKS information.

Remote Connection

This chapter explains how to use the DTC Manager Remote Connection function to access other DTC Managers.

Naming Conventions

The **local** workstation is the OpenView workstation at which you are sitting. It connects to the remote workstation via a modem, X.25 link or TCP/IP.

The **remote** workstation is the OpenView workstation to which you have connected, and which is on the same LAN as the DTCs being managed.

Remote DTC Configuration

The remote DTC is configured in the same way as a DTC connecting to a local MPE host, except that it also needs the IP address of a Domain Name Server. It may be a DTC 72MX, DTC 16MX, DTC 16, or DTC 48 with memory extension.

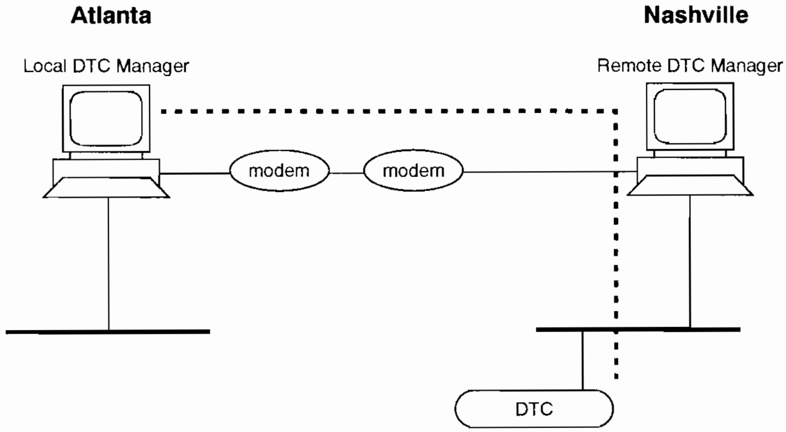
The following table shows the interoperability of the different versions of HP OpenView DTC Manager:

PC Local - 14.4	**PC Remote - 14.2, 14.3, 14.4**	**Available**
W95 - MS TCP/IP - 14.4	W95 - MS TCP/IP - 14.4	Yes
W95 - MS TCP/IP - 14.4	WfW 3.11 - PC/TCP 4.01 - 14.4	Yes
W95 - MS TCP/IP - 14.4	WfW 3.11 - PC/TCP 2.31 - 14.3	No
W95 - MS TCP/IP - 14.4	WfW 3.11 - PC/TCP 3.31 - 14.2	No
WfW 3.11 - PC/TCP 4.01 - 14.4	W95 - MS TCP/IP - 14.4	Yes
WfW 3.11 - PC/TCP 4.01 - 14.4	WfW 3.11 - PC/TCP 4.01 - 14.4	Yes
WfW 3.11 - PC/TCP 4.01 - 14.4	WfW 3.11 - PC/TCP 2.31 - 14.3	Yes
WfW 3.11 - PC/TCP 4.01 - 14.4	WfW 3.11 - PC/TCP 2.31 - 14.2	Yes
PC Local - 14.3	**PC Remote - 14.4**	**Available**
WfW 3.11 - PC/TCP 2.31 - 14.3	W95 - MS TCP/IP - 14.4	No
WfW 3.11 - PC/TCP 2.31 - 14.3	WfW 3.11 - PC/TCP 4.01 - 14.4	Yes

How Remote Connection Works

The following example concerns an HP Response Centre in Atlanta (local), and a customer site in Nashville (remote). DTC Manager must be installed on both workstations. The remote connection can be made by modem, X.25 or TCP/IP (modems are shown in the drawings).

All the functionality of the Nashville workstation is available on the Atlanta workstation. The engineer can configure static and dynamic, monitor events and traces, reset DTCs, and upload data from the Atlanta workstation. The data are not uploaded to the Atlanta workstation. All that has to be done at the Atlanta workstation is to draw the map of the remote DTC network, or transfer it from the Nashville workstation.



The DTC Manager user interface software and input/output software are different modules. By implementing a logical switch between the two modules, the user interface on one DTC Manager can be connected to the input/output module of a different DTC Manager. 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), nor are configuration files for DTCs, upload/download files, or other large data files. These all remain on the Nashville workstation. Also, you cannot back up, restore or alter the DTC network map on the Nashville workstation.

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 are 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.* 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.

Using Multiple Version Support (MVS)

Note

To connect to a PC running DTC Manager Version 14.3, it is not necessary to use the Multiversion Support Tool. Remote connection is sufficient for Remote PC with Version 14.3 or 14.4 and Local PC with Version 14.4.

Remote logon with MVS to version 14.2 of DTC Manager

To be able to connect a PC remotely which is running another version of DTC Manager, i.e. 14.2, a Multi Version Support tool is provided.

To connect to a PC running version 14.2 of DTC Manager, do the following:

1. In DTC Manager 14.4, select **Control/Log Off,**
2. Then select **Options/Change DTC Admin/Remote Access...** and check that the Remote Access is properly configured

Note

The remote PC must also be in a Log Off state and its Remote Access configuration must be in the same state.

3. Click on the **File** menu and select **Exit**
4. A warning will appear that your OVWin session will end; Click on **OK**
5. Open File Manager
6. Change the directory to:

   `..\DTCMGR\EXE\MULTIVER`

7. Execute `MVS.EXE`
8. Select `A1420.EXE`
9. Choose **Select** button

Hardware Requirements for Remote Connection

Requirements for a Modem Link

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.

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) that will be displayed on the local workstation when a remote connection is established.

To configure the communications port:

1. Log off from DTC Manager.
2. Select **Remote Access** from the **Change DTC Admin** option of the **Options** menu.
3. Fill in the fields according to the explanations below.

Device

Select the device you are using:

- **Hayes modem** means either a Hayes modem or a fully Hayes-compatible modem.
- **TCP/IP** means remote connection through TCP/IP network.
- **Other modem** means any other modems or PADs.
- **None** means no remote connection available, and also that no incoming connection is possible.

Port

Select the serial port that 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 board 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.

Calling Timeout

The calling timeout represents the time in seconds between pressing the Return key and the PC returning control to the user, independent of the time taken to establish the connection. 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 local workstation that will be displayed on the remote workstation when you establish a remote connection. This can be used to inform remote operators that a remote connection has been established. You can choose to temporarily modify the banner — for example, to display on the remote 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. Select **Banner** from the **Change DTC Admin** option of the **Options** menu.
2. Edit the banner.

Check Internet Services Configuration

For TCP/IP remote connections it may be necessary to check the Internet services configuration in the following areas.

- Subnet mask and default gateway.
- Number of socket sessions: to equal 4 or more.

See the PC/TCP **Installation and Configuration Guide**.

Making the Remote Connection

The remote connection can be made using modems, X.25 or TCP/IP.

Before attempting to establish a remote connection, ensure that:

- The modems or PADs are connected and correctly configured.
- In a remote connection, the version number of the DTC Manager user interface on the local workstation must be the same as the version number of the input/output software on the remote workstation.

To use an X.25 PAD link for the remote connection, you must be running DTC Manager software version 14.2 or later, on both the workstations.

For TCP/IP connections, both the remote and local workstations must be running DTC Manager software version 14.2 or later.

- The communications parameters have been correctly configured on both workstations.
- Nobody is logged on to the DTC Manager at the remote workstation.

To log on from a local workstation

1 If no map is shown, load **Quickmap** from the `DTCMGR\EXE` directory.

2 Select a DTC.

3 Pull down the **Control** menu and choose **Remote Connect** from the **Logon** option.

4 Enter the password of the DTC Manager running on the remote workstation — not the password for the DTC Manager at which you are sitting.

5 Enter the telephone number, X.25 information or IP Address, as described below.

For a Modem Link ...

Enter the telephone number of the remote workstation.

1 *If the telephone uses pulse dialing* (as opposed to tone dialing), enter a "p" before the number.

2 *If you need to include a pause*, enter one comma in the dialing string for each two second pause.

3 *If you are using a manual (dial-up) modem*:

a on screen, enter an "m" in the telephone number field

b dial the number on the telephone connected to the same line as your modem

c when you hear the tone indicating that you are connected to the local modem, connect your modem to the line

d when the two modems have made a connection, choose **OK**.

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 followed by 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.*

Note

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

For a TCP/IP Link ...

You can enter either an IP address, or alternatively, if a remote PC name (an alias) has been configured in the Internet Services hosts file, you can enter this name here instead.

Note

You must enter a unique IP Address for TCP/IP remote connections. If an IP Address is duplicated, DTC Manager will not be able to find a connection, and will occupy the PC completely until a time out occurs (there is no screen message to this effect).

Examples of Making a Remote Connection

1 To make a call from a local workstation on a site in the US to a remote workstation in France. The 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, for example:

Telephone Number: `9,011033476621478`

2 To make a call from a local workstation on a site in France to a remote 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, for example:

Telephone Number: `p00,,4415376261`

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

Telephone Number: `x122332123902`

4 To make the call from a local workstation across an IP router, when the remote IP address is 15.128.8.100.

Remote ID: `15.128.8.100`

Managing with HP OpenView DTC Manager

This chapter comprises six sections; at the beginning of each section there is a list of the functions available for managing a DTC, the connections running through it, followed by detailed information on managing specific types of connection, including diagnosing problems:

Managing the HP OpenView Workstation

- Page 269
  - Passing control of a DTC to another workstation
  - DTC Manager file system
  - Deleting DTC management files
  - Backing up and restoring DTC management files
  - Deleting a DTC

Classes of Function

There are four classes of function, each of which is selected from a specific menu.

Monitor menu

The monitoring commands provide information about the DTC and its connections. They do not provide any means of directly affecting the functioning of the DTC. You can monitor only those DTCs that receive their download code from the workstation at which you are working.

Diagnose menu

The diagnostic functions provide ways of determining the status of a DTC and whether it is functioning correctly. Note that some of the tests are disruptive and affect the operation of the DTC.

Control menu

The control functions are used to start or stop individual boards, or to upload or reset a DTC.

DTC Tools

The DTC tools provide miscellaneous functions for managing DTCs.

The tables below show the DTC functions available in each menu.

Monitor	Diagnose	Control
Describe	Self Test	Upload
Alarm Log	Show Status	Configure DTC
Show Events	Extended PING	Static
Show Event Log		Dynamic
DTC X.25		Initialize Automatic
Start Trace		Set DTC Security Lists
Stop Trace		Start/Stop X.25/Telnet
Show Trace		Reset
X.25 Site Management		Reset ldev
Enable/Disable Extended Trace		Upload ldev
Show Connections		Log On
Start/Stop DTC Polling		Local DTC Manager
Poll DTC		Remote DTC Manager
		Log Off
		Local DTC Manager
		Remote DTC Manager
		SNMP Manager

DTC Tools
Find Port
Manage Multiple DTCs
Download ROM

Alphabetic List of Commands

This table gives an alphabetical list of the commands available for managing a DTC, and says what they are used for and their limitations.

Command	Function	Comments
Alarm Log	Displays a list of devices that are in a critical condition.	Gives no information on the nature of problem.
Board Status	Displays status of DTCs boards.	Says if a board is working or not: gives no detailed information.
Describe	Used to label the DTCs icon.	There is also an OpenView Describe command, which must *not* be used for labelling DTCs.
Download ROM	Downloads new code to a DTCs EEPROMs.	
Enable/Disable Extended Trace	Specifies the way port information on DTC 72MX is saved before being uploaded.	A binary dump: gives information that can only be analyzed by HP engineers.
Extended PING	Checks for uniqueness of IP address.	This is not a standard PING, so results must be interpreted carefully.
Find Port	Searches all the DTCs it manages for a port with the specified characteristics.	
Manage Multiple DTCs	Performs certain tasks on more than one DTC.	
Reset **Reset Idev**	Reset DTC, board, port or Idev.	Destructive commands which close all connections.
Self Test	Tests specified board or port.	Says if the DTC is working or not. Some information is written to the event log, but it is generally only useful to HP engineers.
Show Connections	Displays information about connections running through the DTC	
Show Events **Show Event Log**	Displays information generated by the DTC about how it is functioning.	Gives some basic information, but much of it can only be interpreted by HP engineers.
Show Status	Displays information on selected board.	Gives some basic information. Most information is only useful to HP engineers or people with expert knowledge of protocols.

Command	Function	Comments
Start/Stop DTC Polling **Poll DTC**	Sends request to specified DTCs asking if they are working correctly.	Says if a DTC is working or not: gives no detailed information.
Start/Stop X.25 Telnet	Starts or stops the protocols on X.25 and Telnet boards.	
Start X.25 Trace **Stop X.25 Trace** **Show X.25 Trace**	Traces an X.25 connection and displays the results.	Gives information that is only useful to HP engineers or people with expert knowledge of X.25.
Upload **Upload Idev**	Copies the DTCs current memory and configuration to the DTC Manager.	A binary dump, which gives information that can only be analyzed by HP engineers.
X.25 Site Management	Displays information about X.25 connections between HP 3000 Series 900 systems.	

How to find out if a DTC is working

All these commands give approximately the same level of information. Note that the information given is limited, and usually only indicates whether something is working or not.

Events, Alarms, Polling and PING

How to use Alarms, Events, Polling and Extended PING to find the status of a DTC.

- **Events** are information generated by the DTC and DTC Manager as they run.
- **Alarms** are triggered by certain types of events.
- **Polling** actively interrogates specified DTCs to find out if they are running or not.
- **Extended PING** lets you verify the uniqueness of an IP address on the LAN.

Events

The DTC Manager software and the DTC software both generate events as they run. An event is anything thought worth noting, ranging from the information that a software module was started, through to detailed information on the reasons an operation failed. Events are classed according to their severity:_

Class 1 — Catastrophic events

Class 2 — Critical events

Class 3 — Non-critical events

Class 4 — Not used

Class 5 — Informative events

Class 6 — Statistical events.

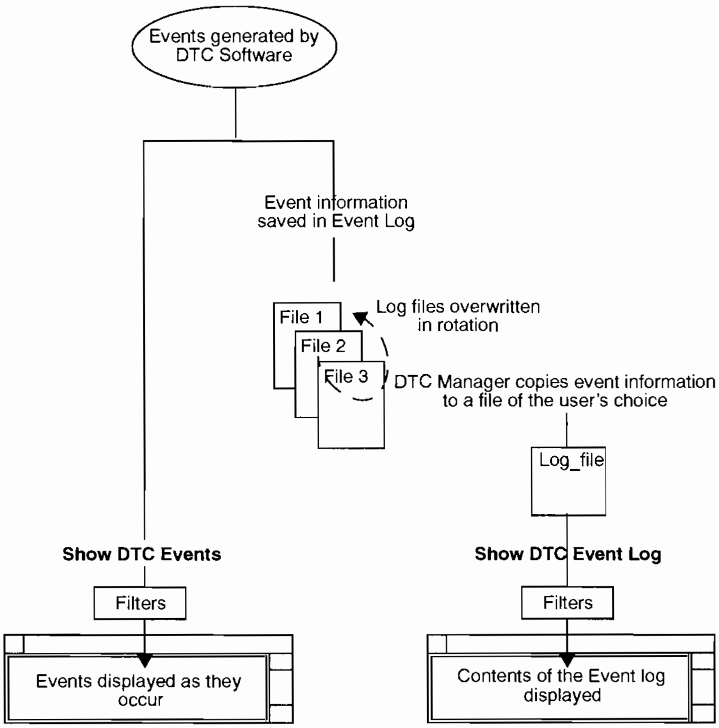
Fields in the LAN Configuration window allow you to select which classes of events you want to be recorded in the **event log**, a permanent record of events logged to the DTC Manager. Class 1 events are the most important and are always logged, and a class 1 event always causes the current contents of the DTCs memory to be uploaded to the DTC Manager.

A DTC logs events only to the workstation from which it received its 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 DTC in which you are interested.

There are two ways of viewing event information:

- Use **Show Events** to display events in the event window as they occur.
- Use **Show Event Log** to read the event log, which contains all the logged events from all the DTCs managed by the DTC Manager. The event log consists of three 512 KB files used and overwritten in rotation.

You must choose a filename for the event information: DTC Manager copies the information from the master files into this file.



The event log and the event window can be filtered to limit the information displayed.

If you see the message **System Error - See OpenView Log File**, the event that has just occurred is logged into a log file maintained by OpenView Windows, not by DTC Manager. Refer to the *HP OpenView Windows User's Guide* for information on where to find the file. The contents of the file can only be interpreted by DTC Manager support staff.

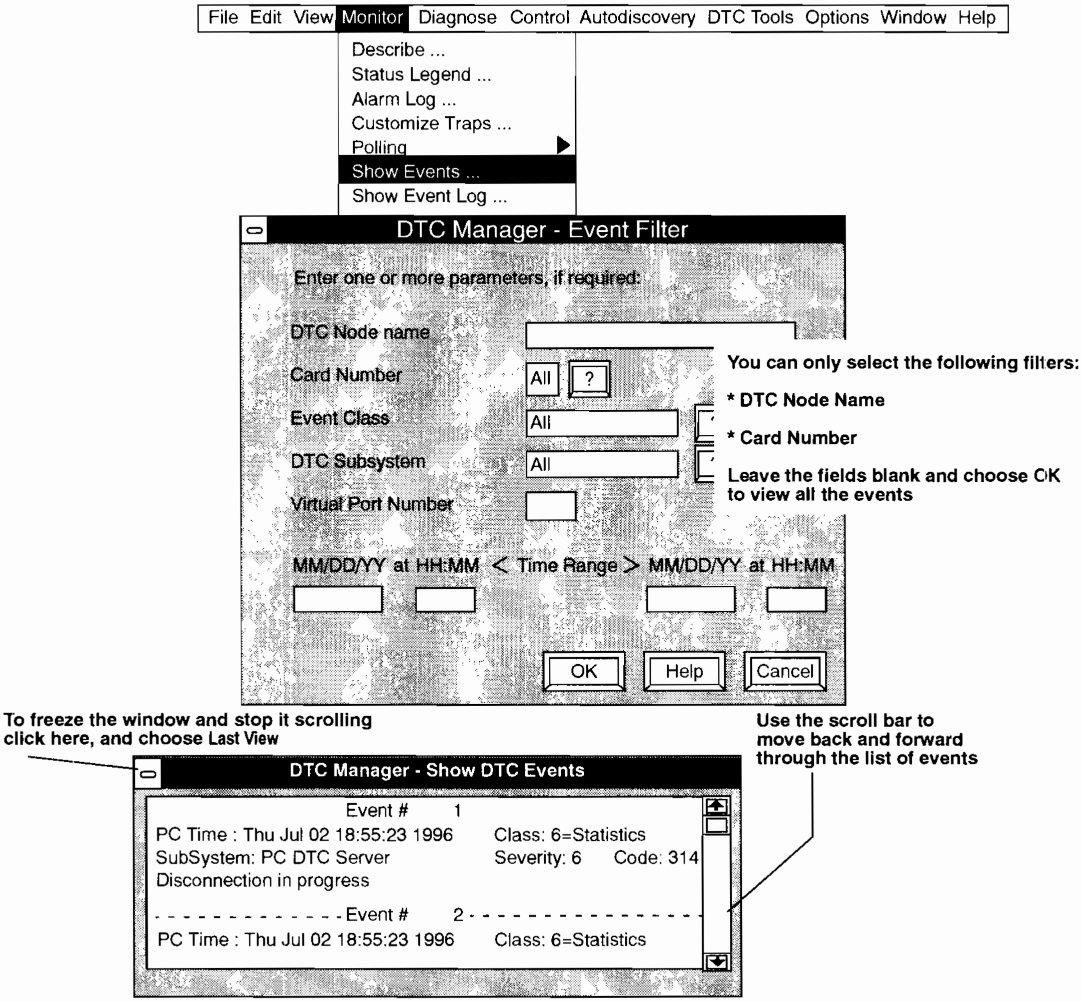
Catastrophic and critical events also trigger the alarm system. The DTCs icon will turn red to show that it has problems, and information on the type of event and when it occurred will be recorded in the Alarm Log window.

Show DTC Events

The **Show Events** menu option displays events as they occur in a scrollable window called the **Show DTC Events** window. This events window can be filtered to restrict the information displayed to a specific DTC or a specific card of a specific DTC. More sophisticated filtering is available for viewing the DTC event log.

A maximum of 50 events can be displayed in the event window. Earlier events can be viewed by using the **Show Event Log** menu option to view the event log in the **Show DTC Event Log** window.

Normally, a timer runs while the DTC Manager is active. If there is no activity for more than 20 minutes, you are automatically logged off from the DTC Manager. "Activity" means doing something with the keyboard or mouse. However, if the event window is open, the inactivity timer is not started, and you will not be automatically logged off after 20 minutes.


File Edit View Monitor Diagnose Control Autodiscovery DTC Tools Options Window Help
Describe ...
Status Legend ...
Alarm Log ...
Customize Traps ...
Polling
Show Events ...
Show Event Log ...
DTC Manager - Event Filter
Enter one or more parameters, if required:
DTC Node name
Card Number
All
?
Event Class
All
DTC Subsystem
All
Virtual Port Number
MM/DD/YY at HH:MM < Time Range > MM/DD/YY at HH:MM
OK
Help
Cancel
You can only select the following filters:
* DTC Node Name
* Card Number
Leave the fields blank and choose OK to view all the events
To freeze the window and stop it scrolling click here, and choose Last View
Use the scroll bar to move back and forward through the list of events
DTC Manager - Show DTC Events
Event # 1
PC Time : Thu Jul 02 18:55:23 1996
Class: 6=Statistics
SubSystem: PC DTC Server
Severity: 6
Code: 314
Disconnection in progress
- - - - - - - - - - - - - Event # 2 - - - - - - - - - - - - - - -
PC Time : Thu Jul 02 18:55:23 1996
Class: 6=Statistics

Show DTC Event Log

Events are written to the event log as they occur. The event log consists of three files, which are over-written in rotation. When the first file is full, the event information is written to the second file. When the second file is full, the event information is written to the third file. When the third file is full, the event information is written over the information in the first file, thereby erasing the original information in the first file. Each file is 512 kbytes long.

You cannot read the master log files (to prevent damage), so DTC Manager first makes a copy of the log file you want to read. You have to name the file in the **Show DTC Event Log** window. You can also view a log file you saved previously by entering its name in the **Show DTC Event Log** window.

Copying and Deleting Event Log Files

The event information is stored in three files which are overwritten in turn.

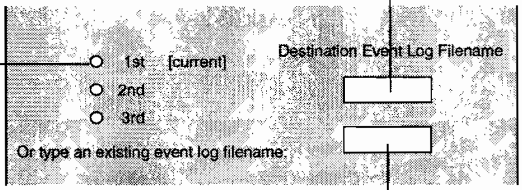
Select the file whose contents you wish to see.

The file currently being written is marked Current

You cannot view the master copy of the event log in case of damage.

The log file you want to view must be copied to the file which will actually be viewed.

Enter the name of the file the event log is to be copied to.

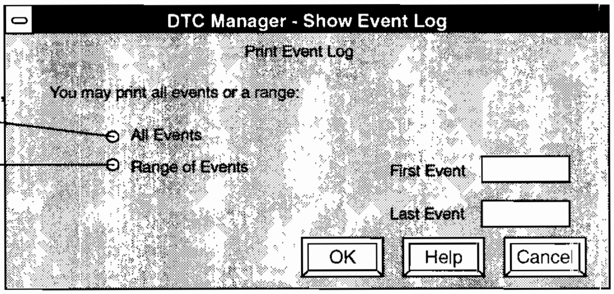


If you want to see a file you saved earlier, enter its name here

To print the information in the Event Log window, choose Print

* To print all the displayed events, select All Events

* To print a range of events, select Range of Events and enter the numbers of the first and last events



Every time you read an event log, DTC Manager makes a copy of the file. As a normal part of system maintenance on the DTC Manager workstation, these copies must be removed from the hard disk. Take care not to delete the originals. Read the section "Copying and Deleting Trace Files" before deleting any files.

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 file name extension is used). You can use the Microsoft Windows File Manager **Copy** and **Delete** commands from the Microsoft Windows **File** menu to copy the files to a diskette or to delete them from the workstation's hard disk. You can also use DTC Manager's **Backup** feature to copy the files.

Alarms

When DTC Manager notifies you of a critical or catastrophic event, it changes the color of the DTC icon on the map to red, and the Alarm icon on the toolbar changes to red. The Poll DTC and Polling features may also change the color of the DTC icon.

Four colors are used for the DTC icons to show the status of the DTCs:

- **Blue** shows that the DTCs status is unknown.
- **Green** shows that the DTC is functioning correctly.
- **Yellow** shows that at least one board in the DTC reports a problem, but the rest of the DTC is still functional.
- **Red** shows that the DTC is not operational.

The Alarm Log window displays the status of each OpenView device whose status has been flagged as “Critical” or “Warning”, including those for devices other than DTCs. Devices are listed as long as they remain in the critical or warning state, or until the alarm is acknowledged or deleted.

There are two ways of displaying the Alarm Log window:

- Select the Alarm icon on the toolbar.
- Choose **Alarm Log** from the **Monitor** menu.

Acknowledging Alarms

Four colors are used for the DTC icons to show the status of the DTCs:

Blue shows that the DTCs status is unknown.

Green shows that the DTC is functioning correctly.

Yellow shows that at least one board in the DTC reports a problem, but the rest of the DTC is still functional.

Red shows that the DTC is not operational.

The colors can be changed by two functions:

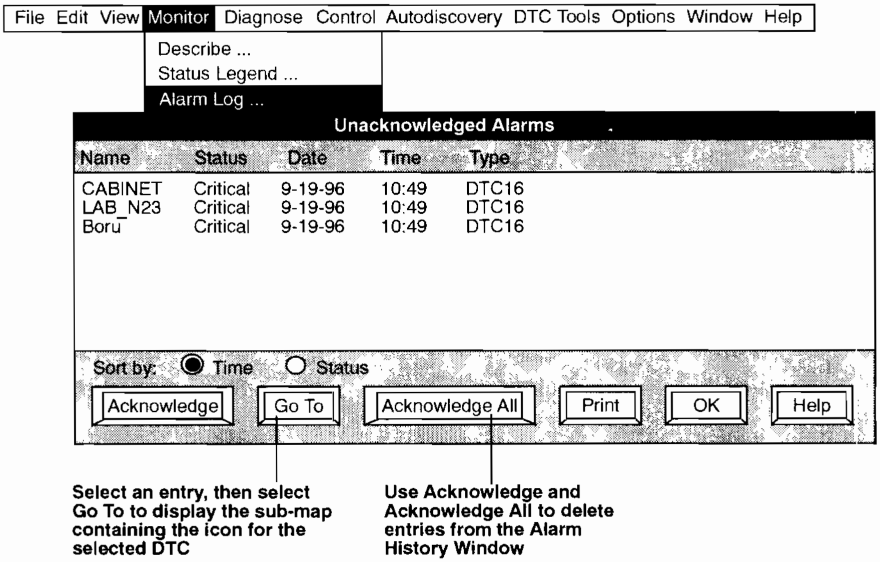
- **Alarms**, which are triggered by the classes of events sent by the DTC.
- **Polling**, which actively requests the status of DTCs.

When DTC Manager notifies you of a critical or catastrophic event, it changes the color of the DTC icon on the map to red, and the Alarm icon on the toolbar changes to red.

The Alarm Log window displays the status of each OpenView device whose status has been flagged as "Critical" or "Warning", including those for devices other than DTCs. Devices are listed as long as they remain in the critical or warning state, or until the alarm is acknowledged or deleted.

There are two ways of displaying the Alarm Log window:

- Select the Alarm icon on the toolbar.
- Choose **Alarm Log** from the **Monitor** menu.



Note

The Alarm Window may say "Delete" or "Acknowledge" depending on how it was selected, but there is no difference between the two functions.

Acknowledging or deleting an alarm only removes the entry from the list: the DTC icon remains red.

Start/Stop DTC Polling and Poll DTC

DTC Polling sends a message to a DTC requesting its status. The status information is used to change the color of the DTC icon on the map.

There are two methods of polling:

- Continuously polling all DTCs, or specified DTCs, at set intervals.

  The DTC Manager will poll the DTCs when it is not performing other tasks.
- Polling a specified DTC once.

Four colors are used for the DTC icons to show the status of the DTCs:

Blue — shows that the DTCs status is unknown.

Green — shows that the DTC is functioning correctly.

Yellow — shows that at least one board in the DTC reports a problem, but the rest of the DTC is still functional.

Red — shows that the DTC is not operational.

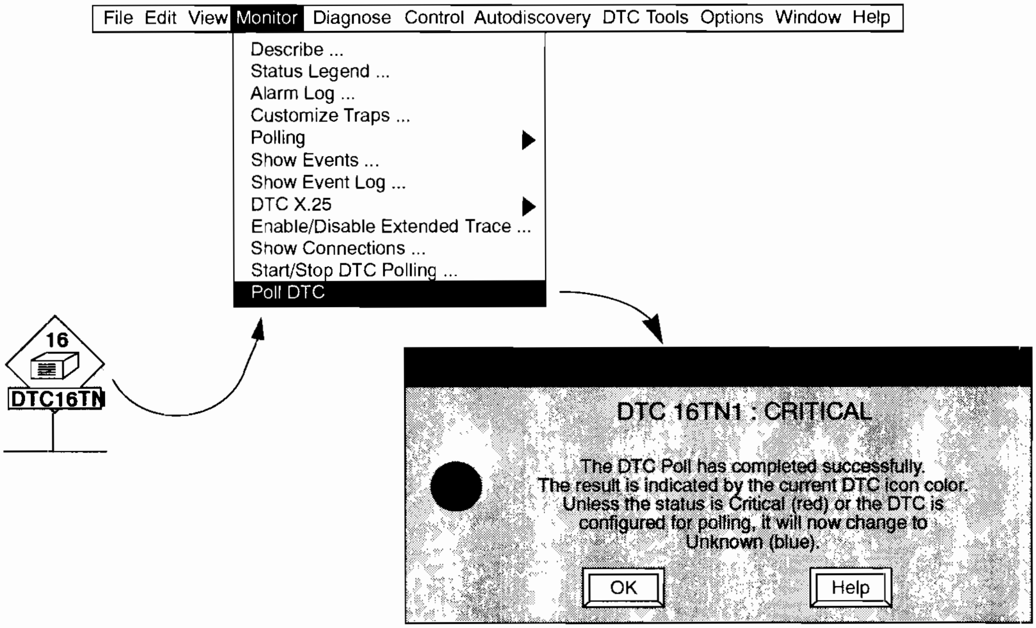
If there is a problem, you can find out which DTC board is not working correctly by using the **Board Status** function of **Show Status ...**

OpenView Polling

OpenView's standard polling facility may also be used to poll DTCs (and any SNMP devices). The advantage of this is that it will work over an IP network; but note that it can turn a DTC icon green or red only.

You should avoid using DTC polling and OpenView polling at the same time, as this will put an unnecessary double load on the network.

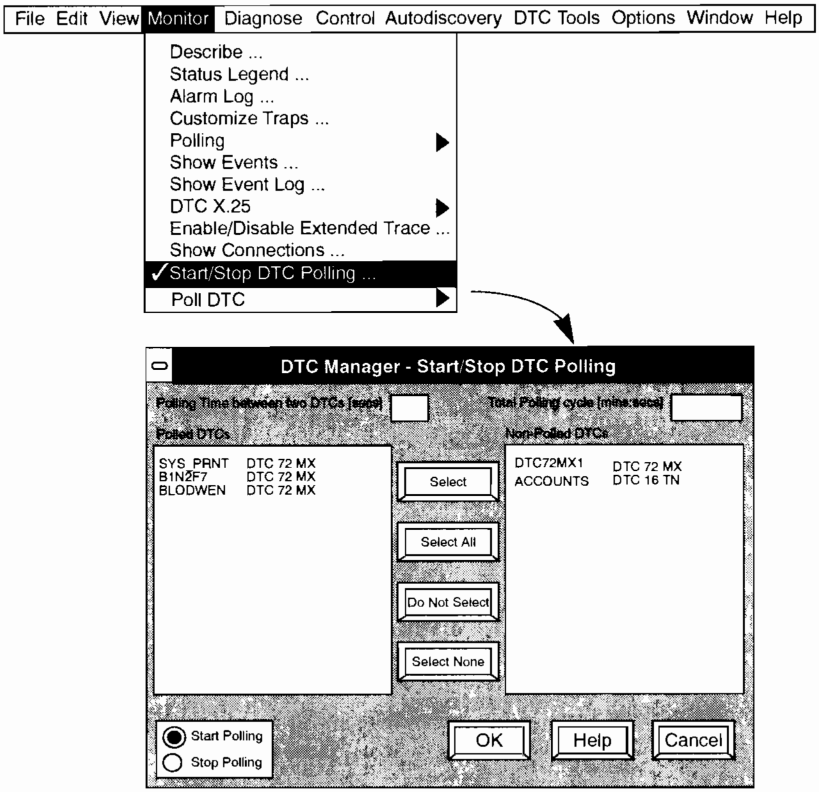
Polling one DTC



The color of the DTC icon shows its *current* status, not a previous status. When you poll a single DTC using **Poll DTC**, it first changes to blue (unknown) then changes to the appropriate color for its status.

The message window tells you the DTCs status, but when you choose **OK** to exit the window, the DTCs icon changes back to blue (unknown) unless the status is critical, in which case, the DTCs icon remains red. To refresh the color of the icon, either choose **Poll DTC** again, or choose **Start/Stop DTC Polling**, select the DTC in the list of polled DTCs then choose Start Polling.

Polling more than one DTC



- To move a DTC from one list to the other, select the DTC and choose **Select** or **Do Not Select** as appropriate.
- Select **Start Polling** to poll the DTCs in the list at the interval set in the timer window. The **Start/Stop DTC Polling** line in the Monitor menu is checked (ticked) to show that polling is active.
- Set the time interval between the polling of DTCs in the field **Polling Time between two DTCs**. For example, if the value is four seconds, the DTC will wait four seconds before it polls the next DTC in the list.

  The field **Total Polling Cycle** shows the time between two polls of the same DTC. This is the time it will take to poll all the DTCs in the list (number of DTCs multiplied by **Polling Time betwen two DTCs**).

Extended PING

The Extended PING function verifies the presence and uniqueness of an IP address on the network, including those configured for DTCs, DTC ports, and Telnet Access, in one of two steps.

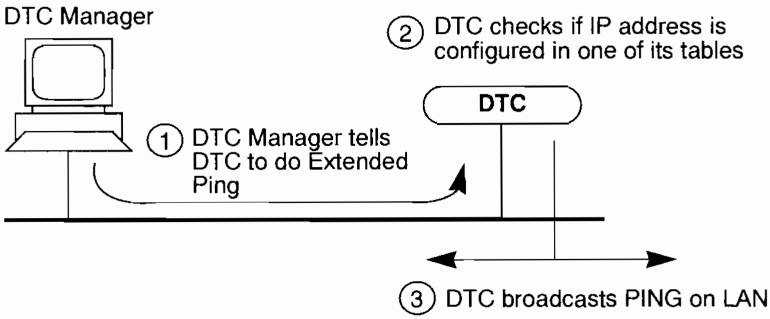
The first step checks if the entered IP address has been configured in the selected DTC. The address is checked against the address of the DTC user interface and those addresses entered in the Telnet Switching Information table. If a match is not found, the second step of the test is performed. If a 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.

The second step of the test is when the DTC 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

PING runs from the DTC to the selected address, not from the OpenView workstation to the selected address.



Procedure for Running an Extended PING

1. Select a DTC on the network map.
2. Choose **Extended PING** from the Diagnose menu. The Extended PING screen is displayed.
3. Enter the following information:
   - the IP address that you want 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. Choose **OK**.

PING tests for the presence and uniqueness of an IP address. If the address is configured in a Telnet Access board or an Telnet Express box, the DTC will respond OK without checking to see if the corresponding host system is available. The DTC will respond OK even if the Telnet Access board is not running.

Results of an Extended PING

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

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

Note

The failure could be due to LAN conditions making it impossible for PING to access the address: a failure does not mean that the address is not accessible.

Investigating Problems

Some commands produce results that are only useful to HP engineers or protocol experts, but you may be asked to use these commands by HP support staff to provide information for diagnosing problems.

- **Self-test** tests the hardware of a specified board, and reports if it is functioning or not.
- **Board Status** checks if any of the DTCs boards currently report any problems. It does not actively test the boards.
- **Show Status** displays information on the software, protocols and connections of a specified board or the entire DTC. Most of the information is only useful to HP engineers or protocol experts.

Self-Tests

All classes of events must be turned on in the LAN Configuration window before running the tests to record all the events (see the online help for more information). The self-test tests the hardware of the selected board. Basic information on whether the board is functioning or not is written to the screen. More detailed results are written to the event log, but this information may only be useful to HP engineers.

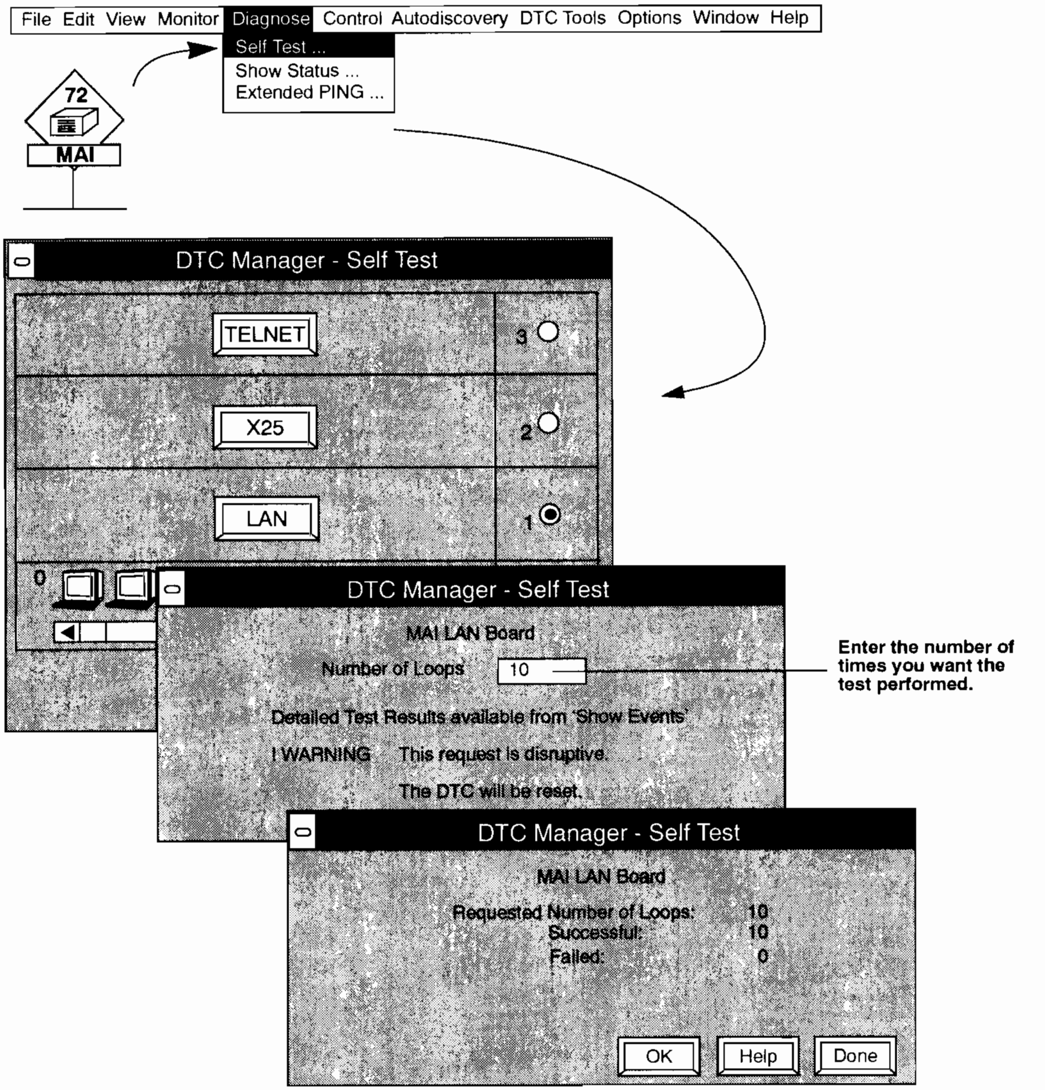
The events can be viewed as they occur using **Show Event Log**. The event log can be viewed using **Show DTC Events**. See the *DTC Technical Reference Manual* for information on the contents of the event log.

Caution

Self-tests are disruptive. All communications passing through the board are halted. LAN self-tests halt all communications passing through the DTC. X.25 and Telnet Access boards are stopped, and must be restarted after the tests.

Basic Procedure for Running a Self-test

The following figure shows the procedure for a LAN board self-test. The principle is the same for other self-tests.



LAN Board Self-test

Note

All communications via the DTC are halted by a LAN board self-test. A LAN board self-test can take a substantial amount of time. The time taken is equal to the time needed to complete the number of cycles requested, plus the time to download the DTC configuration.

Once the tests have finished, you must restart X.25 and Telnet if necessary, using the **Start/Stop X.25/Telnet** command in the **Monitor** menu.

Asynchronous Port Self-test

Asynchronous port self-tests test individual ports without disrupting other ports on the board. However, note that:

- The current connection(s) to the port are terminated.
- The port is not available while it is under test.
- The port is reset when the test is finished, if no problems are detected.

Four tests are available for asynchronous ports.

- **Internal Loopback**, to test the data path through the DTC to the serial port connector (except DTC 48).
- **Hood Loopback** (DTC 48 only), to test the data path through the DTC 48 to the serial port, and through the serial port connector. You must connect a loopback hood before starting the test. This test is not needed on other DTCs.
- **Terminal Loopback**, to test the data path through the DTC to the connected terminal. The terminal must be able to send and receive data for this test. 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 are compared with the original.
- **Print**, to test the data path through the DTC to the attached device by writing a standard test string to the device. This test is intended for devices such as printers.

Telnet Access Board Self-test

Note that testing a Telnet Access board disrupts all communications passing through the board. 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.

X.25 Self-tests

Testing an X.25 board disrupts all communications passing through the board, and PAD support and X.25 levels 1, 2 and 3 are 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/Telnet** function in the **Monitor** menu.

Four tests are available for X.25 boards.

- **X.25 Board Self-test**, to test the hardware of the X.25 board.
- **Internal Loopback**, to test the hardware data path through the X.25 board to the port connectors.
- **Hood Loopback**, for use with X.25 multi-standard boards only (V.35/V.36/ RS-422), with cable connected; tests the X.25 board hardware. This test requires the appropriate external loopback hood to be connected to the end of the cable.
- **Network Loopback**, to test the DTCs ability to establish a virtual circuit with the network.

Note

X.25 must be stopped before you run the network loopback test.

To run a Network Loopback test, the X.25 levels 1, 2 and 3 parameters must have been correctly defined for the X.25 network interface under test. Network loopback works only if X.25 is in the idle state; before running a network loopback test, you may need to issue the **Stop X.25** command.

The correct X.25 address must be configured on the X.25 level 3 configuration screen. A **Loopback X.25 Address** is requested by the network loopback test procedure; this must be the value on the X.25 subscription form and is the same as configured in the X.25 level 3 configuration screen.

Some X.25 networks, such as Transpac, add the calling address to the outgoing packet. Check with your network supplier to see if you are connected to such a network. If you are, then you must leave the level 3 configuration screen blank.

If the test fails, it will result in one of three error messages.

- "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.

Board Status

Board Status checks the status of a DTCs boards, and changes the color of the boards in the backplane window according to the status. Note that **Board Status** is not connected to **Polling** or **Alarms**, so there may be no correlation between the color of a DTCs icon and the results of a board status, particularly if the DTC is not being polled. If **Board Status** finds a DTC in a critical state, it does not notify the alarm system.

Board Status is available in the following windows.

- Enable/Disable Extended Trace
- Start Trace
- Self-test
- Show Status
- Upload
- Start/Stop X.25/Telnet
- Reset.

Select the **Board Status** button in any of these windows to obtain the status of the DTCs boards. The following table shows which colors are used to show the status of boards.

	Green	Magenta	Red	Black
Asynchronous Board	OK		Not working	
Asynchronous Port	OK	Under Extended Trace	Not working	
X.25 Board	OK	Code downloaded but not started	Not working	
Telnet Access Board	OK	Code downloaded but not started	Not working	
LAN Board	OK			
Entire Backplane				DTC did not respond

Show Status

The Show Status command returns detailed information about the status and configuration of any of the following.

- LAN board
- Asynchronous board
- Telnet Access board
- X.25 board
- X.25 board global status, or any of the following:
    - X.25 level 2
    - X.25 level 3
    - X.25 LCI
    - PAD.

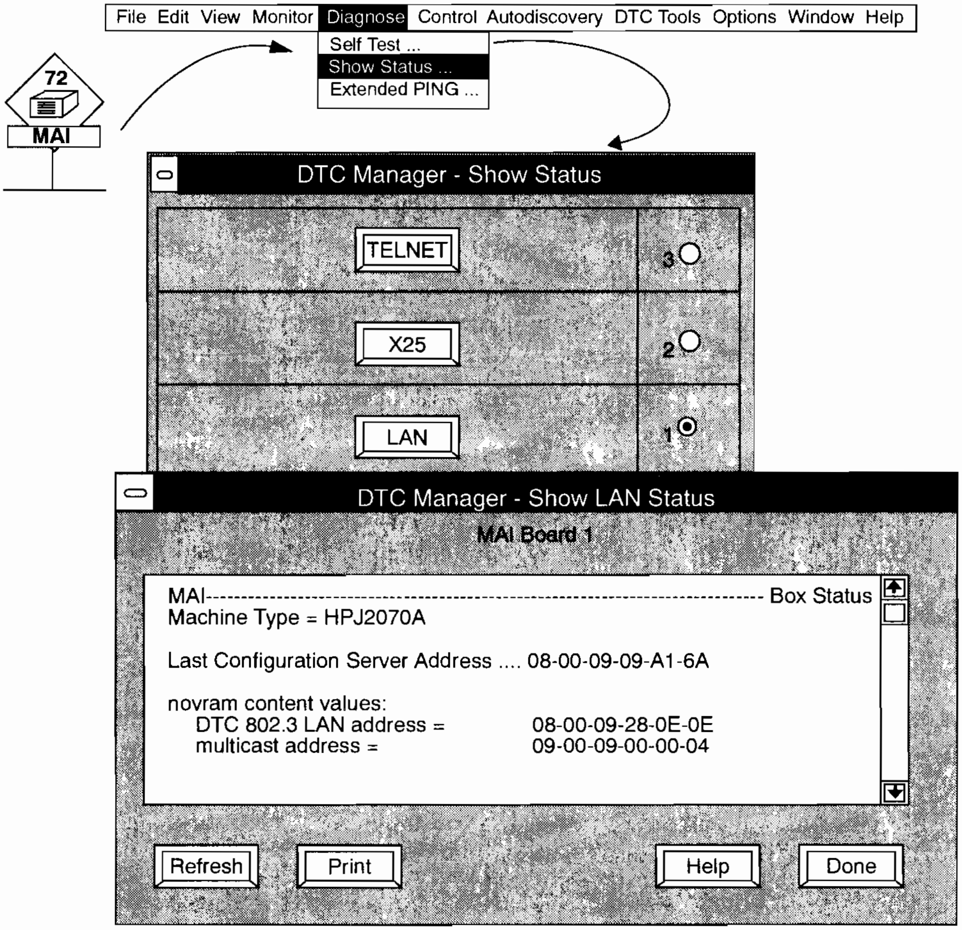
You can identify LCIs through the **Show Connections** command.

The results of a show status can be split into three categories.

- Information on software revisions, ROM revisions and part numbers.
- Basic information on the status of the object.
- Detailed information on the status of the object's software and protocols. Most of this information is only useful to someone with a good understanding of the functioning of the DTC Manager's software or detailed knowledge of the protocols involved.

Procedure for Running Show Status

The basic procedure is the same for all objects. The following diagram shows how to run Show Status on the LAN board.



Show Status Results

The following tables list the information that is useful to people who do not have a detailed knowledge of the DTC software or the protocols used.

LAN Board Status Results

The LAN board status report gives some information on the entire DTC as well as information on the LAN board itself.

Label	Information
Machine type	DTC model
NOVRAM values	LAN address of the DTC, its DTC Manager and the multicast address
Selt-test results	Results of self-tests on the boards in the DTC.
DTC Software Global Version Number	Version of DTC software
ROM Version Numbers	Version contained in DTC ROMs

Port Status Results

The Port Status gives information about the board as well as details of the state of the connections and protocols. The following information may be useful: the fields are, in general, self-explanatory.

- Card State
- Port State
- User Interface Port Information
- Card Type
- Driver State:
    - maximum read length
    - write length
- SIC State
    - revision number
    - card state
    - port type
    - modem behavior

   - last special character received by SIC
- Connection Information
   - transport connection number
   - user connection number
   - connection state
   - host name

     user-specified destination host name
     NS host name

   - protocol stack.

How to Find Information on Connections

Three commands are used:

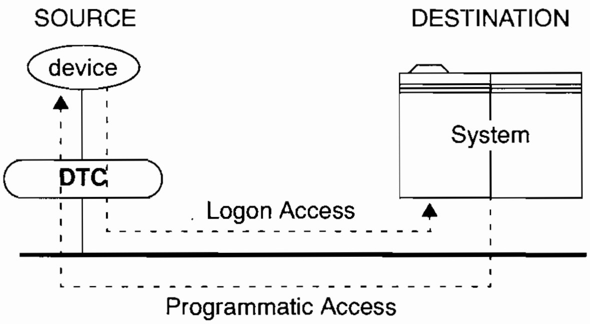
- **Show Connections**, which provides information on asynchronous, Telnet Access and PAD connections.
- **X.25 Site Management**, which provides information on X.25 System-to-System connections running through the DTC.
- **X.25 Trace**, this records all the data and protocol information passing through the selected X.25 board. Most of the information is only useful to HP engineers or X.25 experts.

Show Connections

Show Connections displays information about the connections currently active on a specified DTC board. The information displayed is formatted according to the type of connection and the type of board. The examples in this chapter show the information displayed for the most common types of connections.

Interpreting the Information

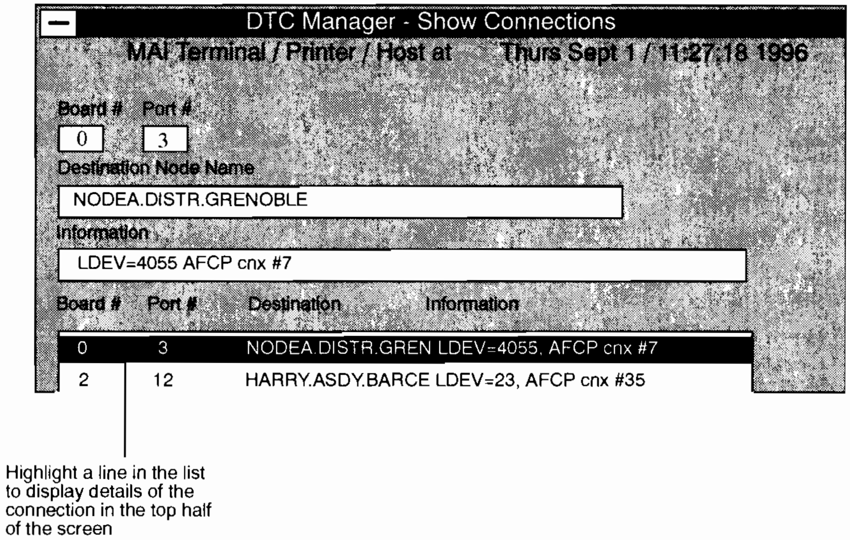
Connections are always assumed to run from a device, via a DTC, to a destination, even for programmatic access of a device by a system. The following figure explains this.



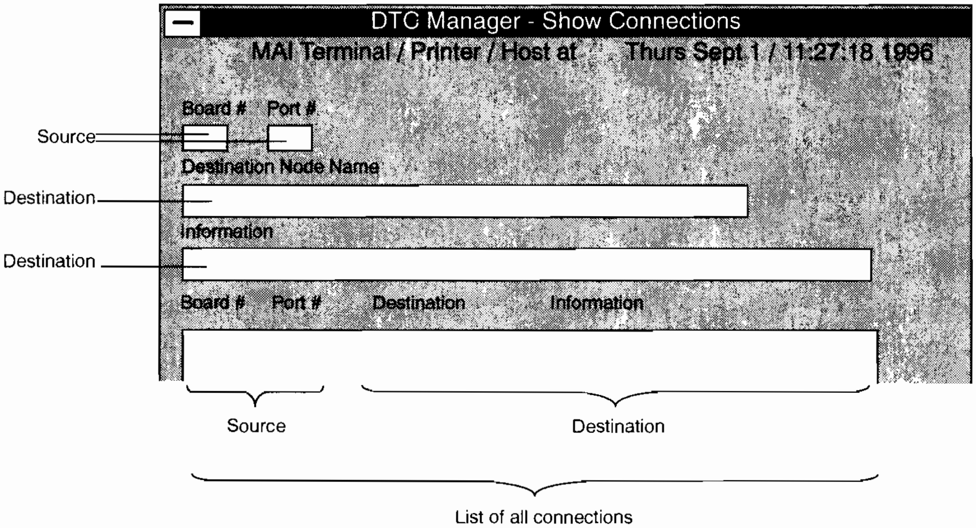
Three basic types of information are given.

- Information on the source. For example, the DTC board and port the device is connected to, or the X.25 address of the device initiating the connection.
- Information on the destination. For example, the destination nodename, or the DTC board and port the destination is connected to.
- Information on the connection. For example, the virtual circuit number or the AFCP connection number.

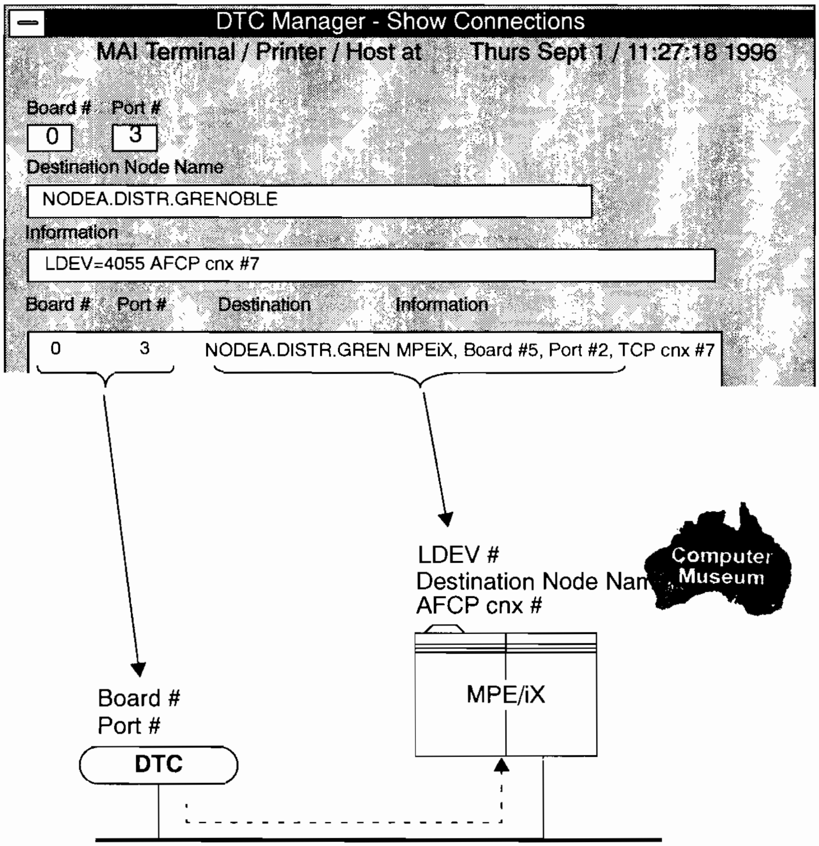
The following diagram shows the basic principle of the way information is displayed. The details depend on the connection type. For example, the Information field may contain information on the nature of the connection, or information on the destination DTC in extended switching connections.



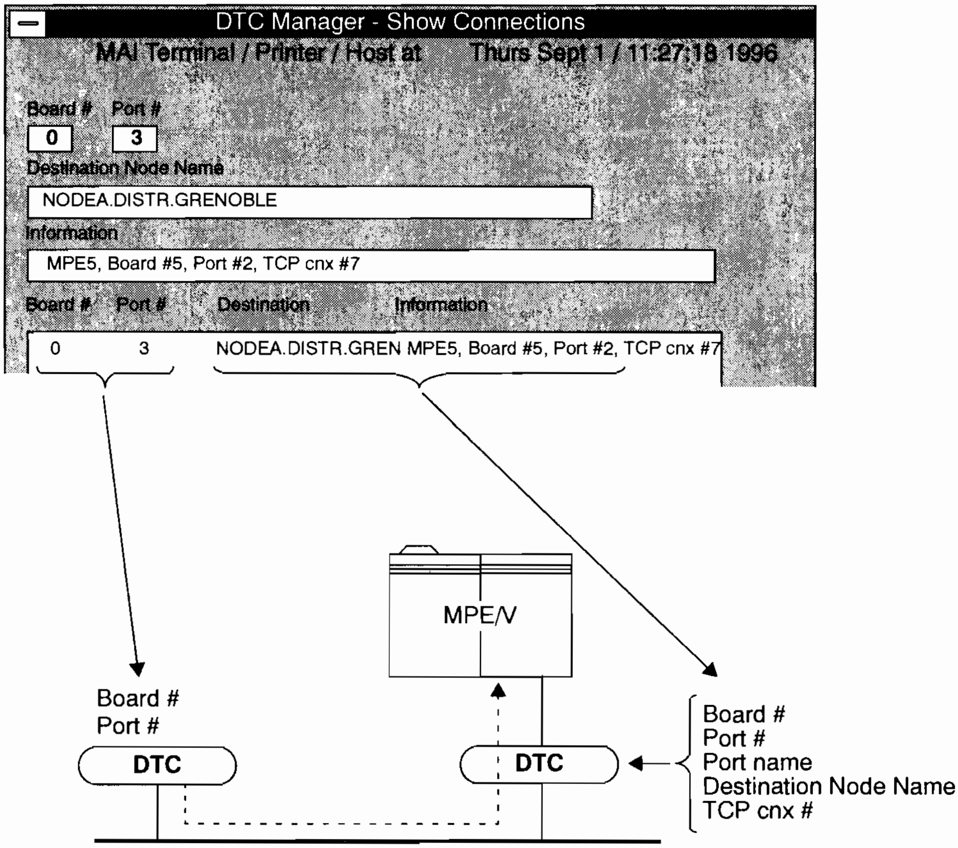
The list at the bottom of the window displays the board and port of the source DTC, the destination and as much information as will fit on the line. When you select a line in the list, all the information available on the connection is displayed in the fields in the top half of the window.



AFCP Board Connection — Example 1



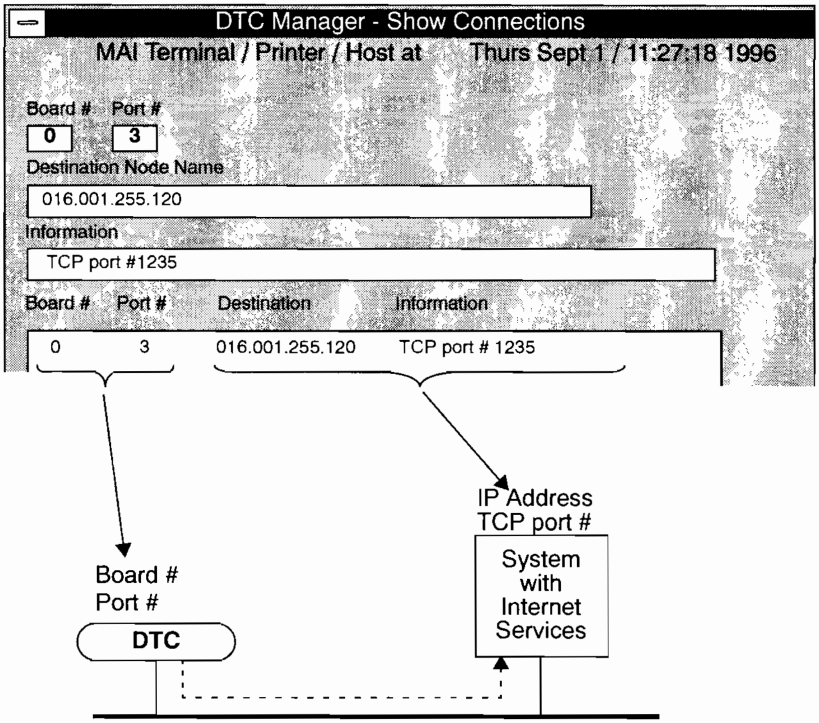
Extended Switching Connection — Example 1



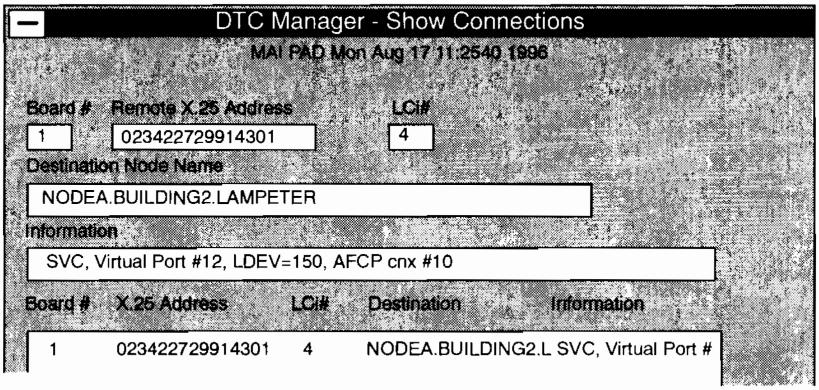
The order of the items in the information field is:

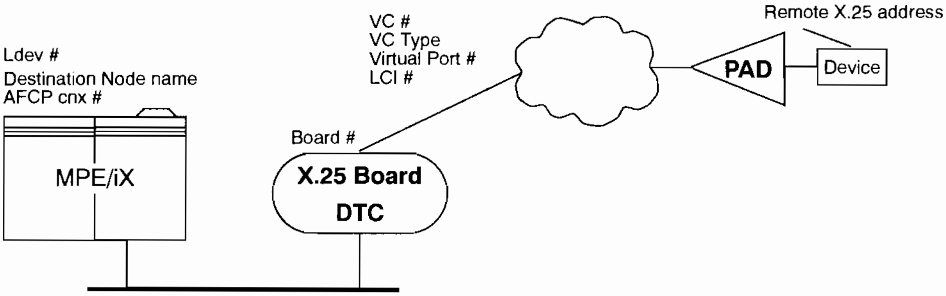
Port name, destination DTC board #, destination port #, TCP connection #.

Telnet Connection — Example 1



PAD Connection — Example 1





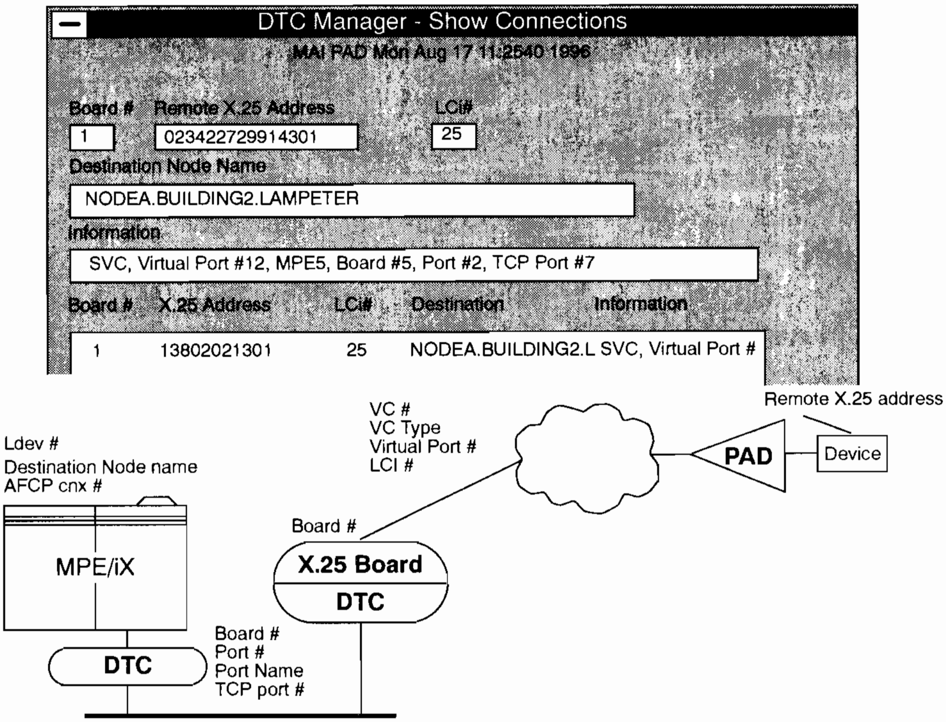
The order of the information in the information field is:

VC type, Virtual Port number, LDEV, AFCP connection number.

The information given in the window for this type of connection is as follows.

Field	Information
Board #	X.25 board in DTC.
Remote X.25 Address	X.25 address of device attached to PAD, whether there is logon or programmatic access.
LCI #	LCI number of the connection between DTC and X.25 network.
Destination Node Name	Nodename of destination MPE system.
Information	**VC type** of the link from DTC X.25 board to PSN. **VC number** of the link from DTC X.25 board to PSN. **LDEV** on MPE system. **AFCP** connection number on MPE system.

PAD Connection — Example 2



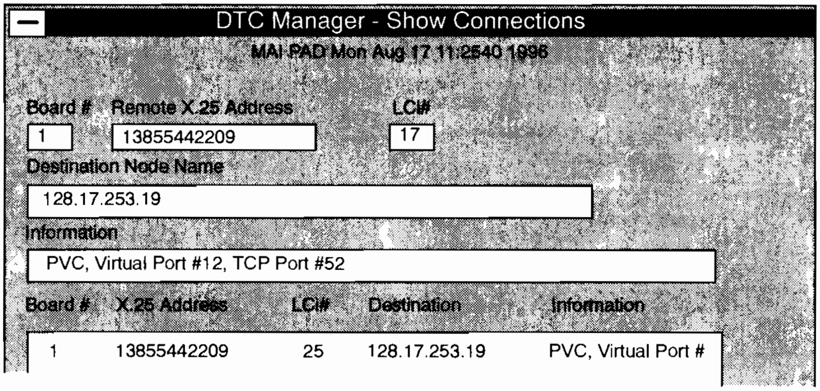
The order of the items in the information field is:

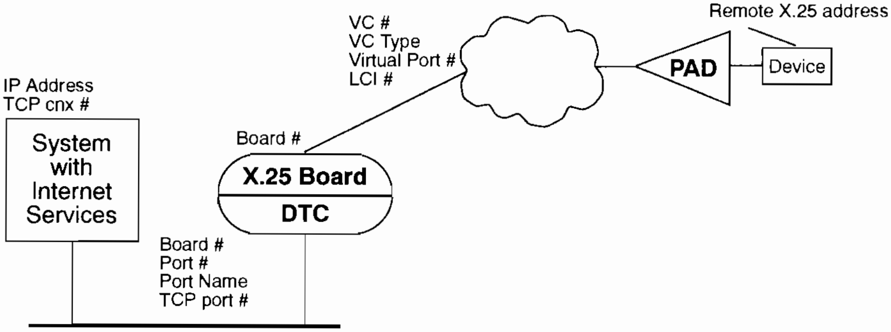
VC type, Virtual Port number, Port name of destination DTC, Board number of Destination DTC, Port number of destination DTC, TCP port number of connection between the DTCs.

The information given in the window for this type of connection is as follows:

Field	Information
Board #	X.25 board in source DTC.
Remote X.25 Address	X.25 address of device attached to PAD, whether there is logon or programmatic access.
LCI #	LCI number of the connection between DTC and X.25 network.
Destination Node Name	Nodename of destination MPE/V system.
Information	**VC type** of the link from DTC X.25 board to PSN. **VC number** of the link from DTC X.25 board to PSN. **Port name** of port on destination DTC that MPE system is connected to. **Board number** of destination DTC. **TCP port number** of connection between DTCs.

PAD Connection — Example 3





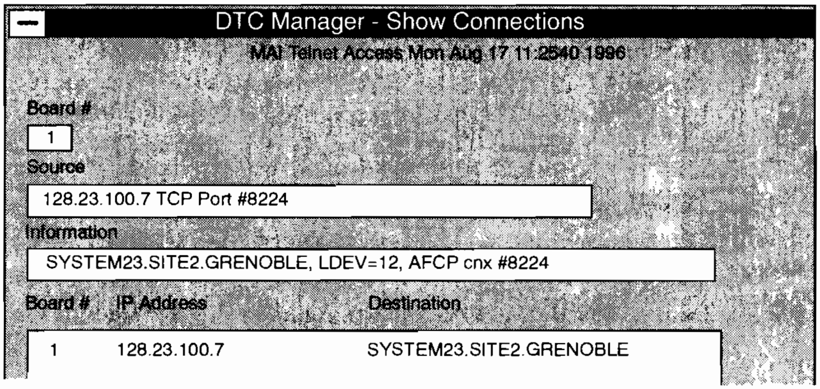
The order of the items in the information field is:

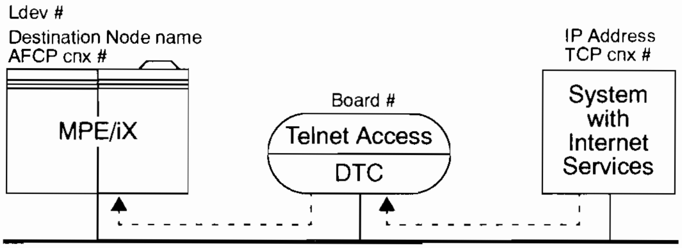
VC Type, Virtual Port number, TCP port number.

The information given in the window for this type of connection is as follows:

Field	Information
Board #	X.25 board in source DTC.
Remote X.25 Address	X.25 address of device attached to PAD, whether there is logon or programmatic access.
LCI #	LCI number of the connection between DTC and X.25 network.
Destination Node Name	Nodename of destination system.
Information	**VC type** of the link from DTC X.25 board to PSN. **VC number** of the link from DTC X.25 board to PSN. **Port name** of port on destination DTC that system is connected to. **Board number** of destination DTC. **TCP port number** of connection between DTCs.

Telnet Access Connection — Example 1





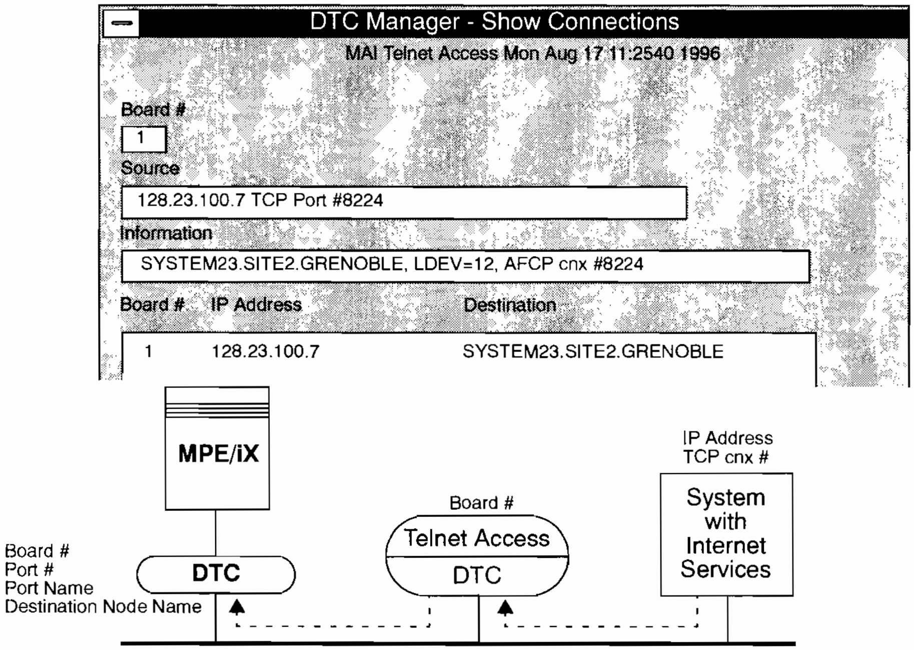
The order of the items in the information field is:

Destination Node Name, LDEV number, AFCP connection number

The order of the items in the source field is:

IP address of source system, TCP port number of connection between Internet Services system and DTC.

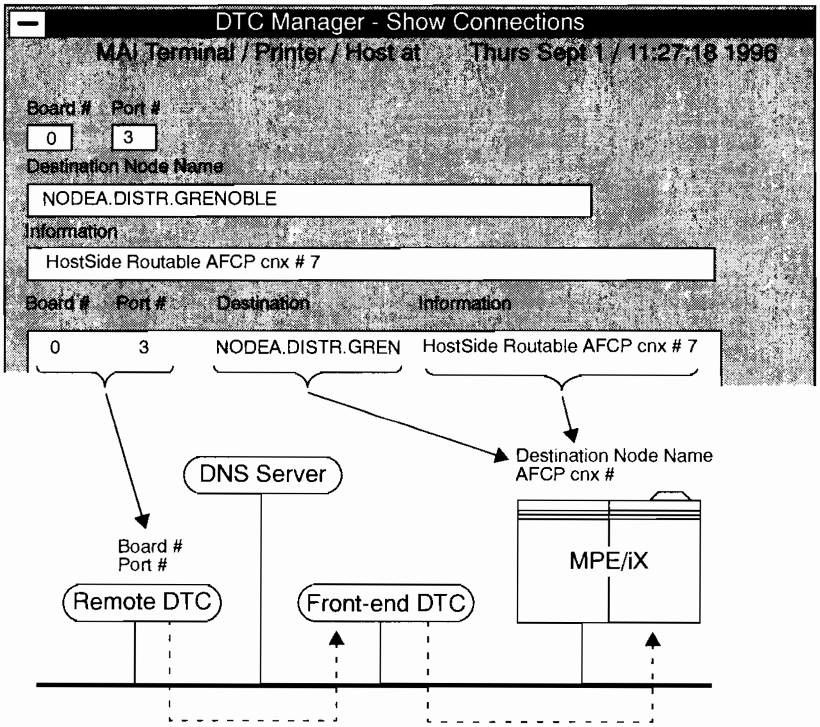
Telnet Access Connection — Example 2



The order of the items in the information fields is:

Destination Node Name, Board number of destination DTC, port number of destination DTC, TCP connection number of connection between source system and DTC with Telnet Access board.

Routable AFCP Connection — Example 1



The destination nodename is the NS name of the MPE system.

Identifying Devices with Routable AFCP

There are various ways to find the names and numbers of the computer systems and devices involved in any Routable AFCP connection.

Getting Information from the HP 3000 Host

By using DEVINF.DTS0000.TELESUP, you can obtain a table showing the following information for each connection: the ldev number, the DTCs NS name and LAN address, the board number, and the port number. In the case of a Routable AFCP connection, the NS name and IP address of the front-end DTC are shown in the table.

By using other facilities of DEVINF, you can find the NS name of the remote DTC, and the AFCP cnx numbers of the HP 3000 and the remote DTC.

Getting Information from the Front-End DTC Manager

Using event logging, you can find:

- the HP 3000's LAN address from its NS name
- the remote DTCs IP address from its NS name.

Getting Information from the Remote DTC Manager

Using Show Connections, you can find:

- the remote DTCs port and board numbers
- the HP 3000's NS name and AFCP cnx number.

Using Port Status, you can find:

- the HP 3000's NS name
- the HP 3000's Telnet Express name as specified by the user
- the remote DTCs AFCP cnx number
- the front-end DTCs IP address.

Getting Information from the DNS Configuration

The HP 3000's NS name is in the TXT record associated with the HP 3000's ARPA name in the remote DTCs domain.

The front-end DTCs IP address is in the WKS record associated with the HP 3000's ARPA name.

X.25 Site Management

X.25 Site Management displays information on X.25 system-to-system connections between MPE systems.

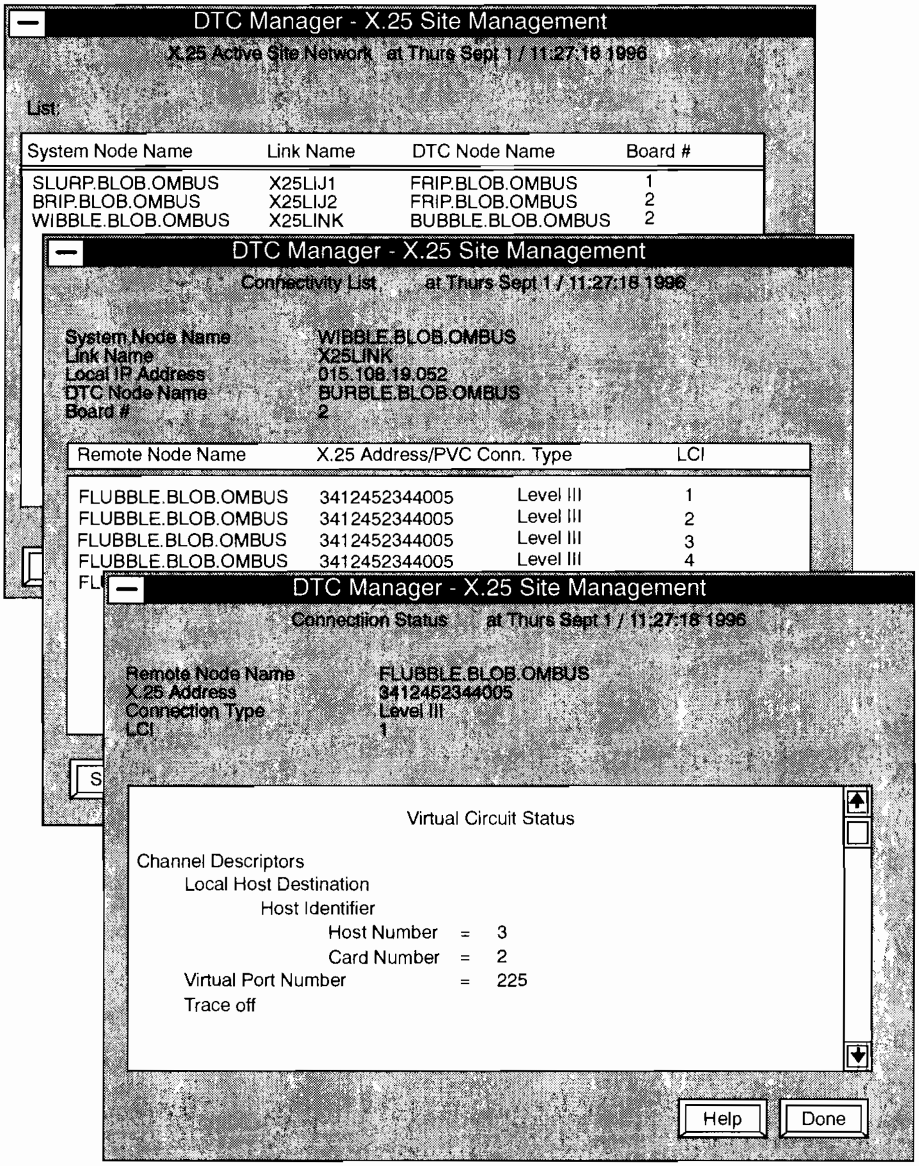
The connection information covers three areas.

- Information on the DTC connected to the DTC Manager you are working at, and the system connected to it.
- Information on the virtual circuit between the DTC and the PSN.
- Information about the second system. This system is called the remote system in the windows.

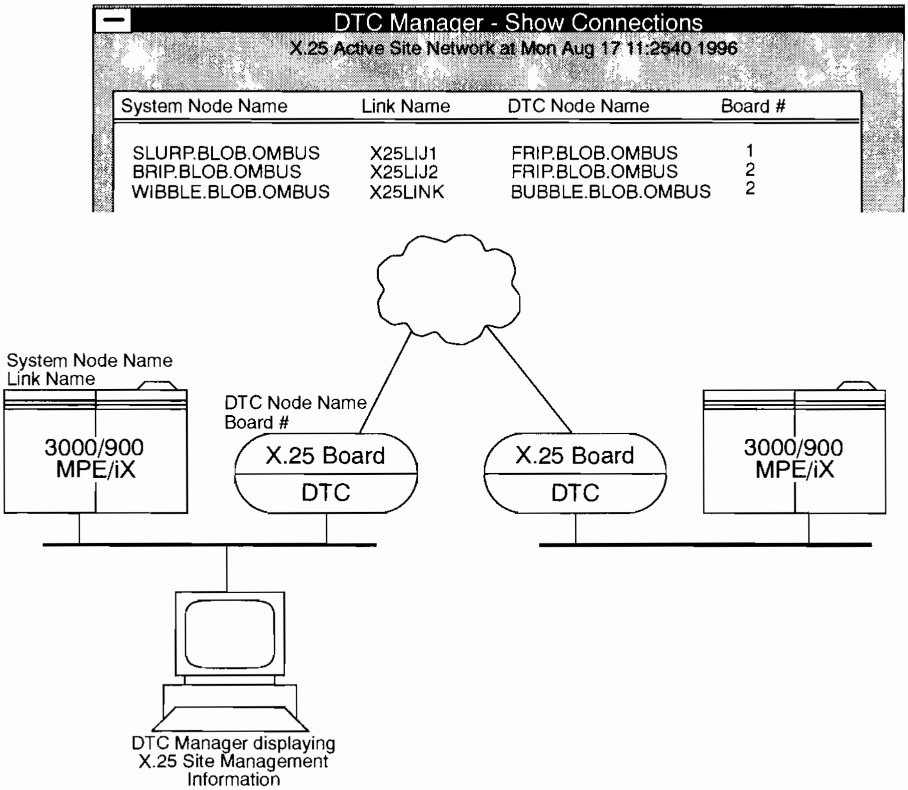
Three windows are available.

- The first window lists all the system-to-system connections running through the DTC you are monitoring.
- The second window gives more detailed information on the connections.
- The third window gives detailed information on one connection.

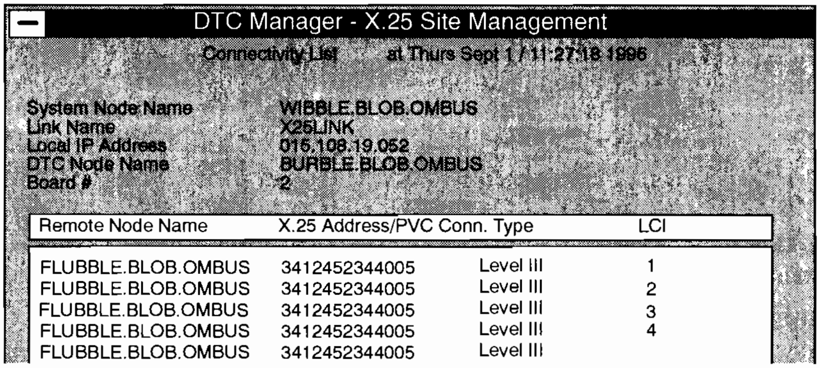
The following figure shows the three windows in the order in which they appear. The examples show the screens and how the information in them corresponds to the connection.

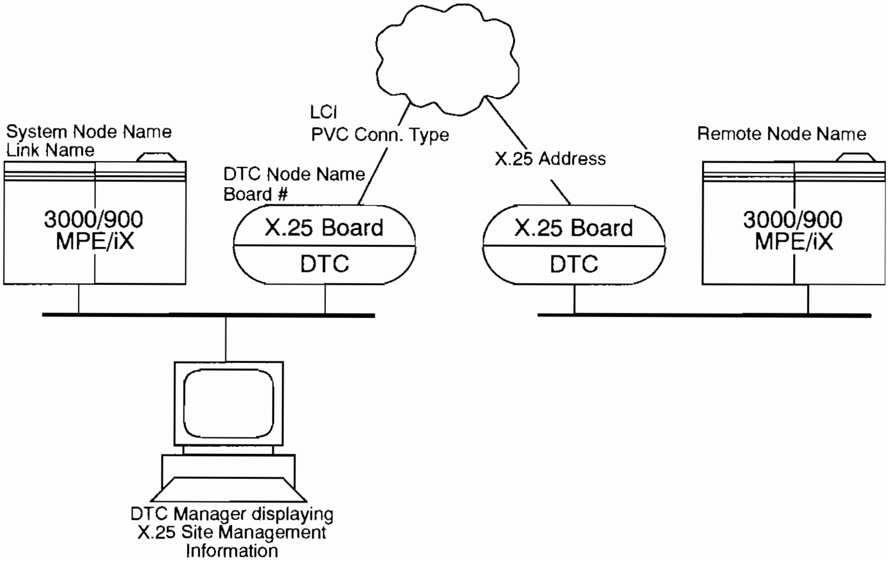


X.25 Site Management Window

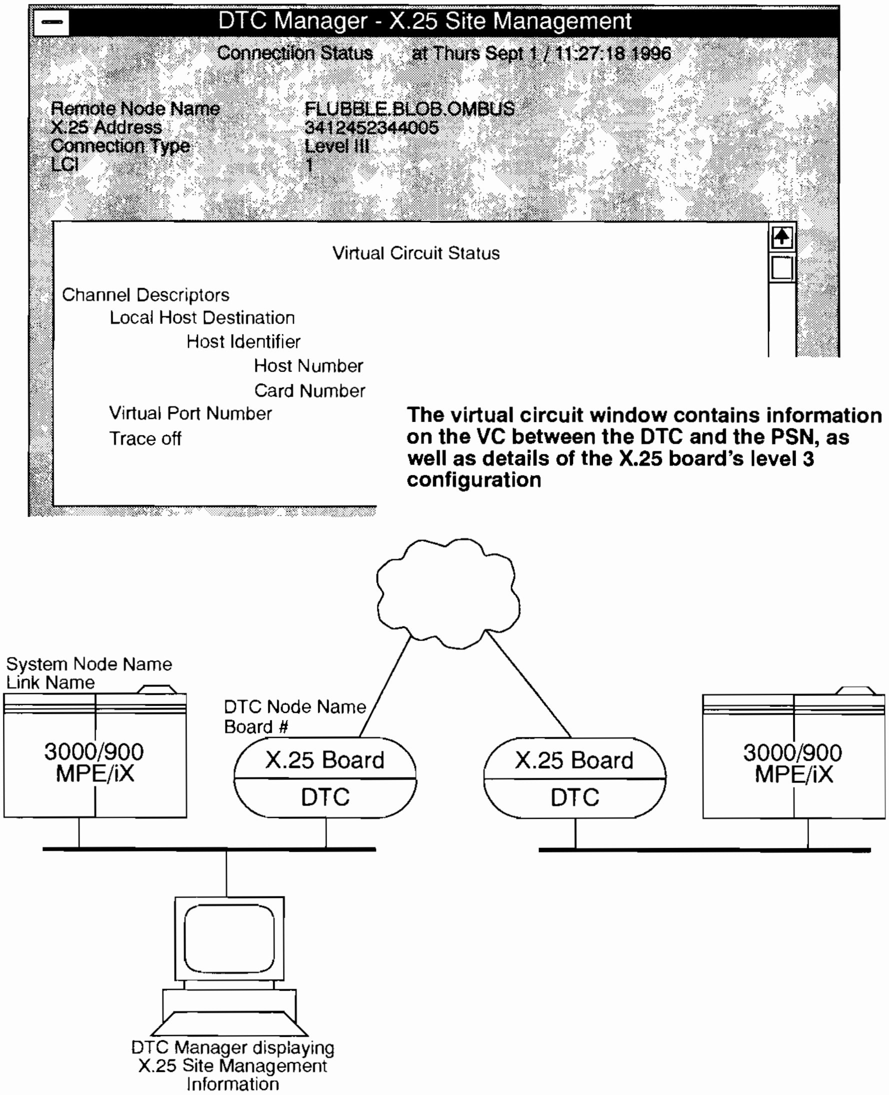


X.25 Site Management — Show Connections Window





X.25 Site Management — Show Connectivity Window



Start, Stop and Show X.25 Traces

An X.25 trace contains information on all the transactions that occur during an X.25 connection. The information in an X.25 trace is useful and intelligible only to an X.25 expert. You can only have one trace running at a time.

The **Start Trace** and **Stop Trace** commands are found in the **DTC X.25** submenu of the **Monitor** menu.

- **Start Trace** starts an X.25 trace on an X.25 board.

  X.25 must have already been started (using the **Start X.25** command) before you start a trace.

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

- **Stop Trace** stops the trace started by **Start Trace**.

- **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 X.25 trace has to have stopped before you can use **Show Trace Log**.

Starting an X.25 trace

1 Select the DTC then choose **Start Trace** from the **DTC X.25** submenu of the **Monitor** menu.

2 If you have a DTC 48 or 72 MX with more than one X.25 board installed, select an X.25 board from the DTC backplane display, and choose **OK**.

3 The trace filter window is displayed. Select the functionality to trace, then choose **OK**. The DTC Manager **Help** contains a description of all the fields.

   - To run a trace at X.25 level 2 or 3, choose the appropriate button.

   - To run a trace on a specific logical channel, choose the **LCI** button then select the LCI entry field and type in the logical channel identifier.

4 Select **Header Only** or **Full Packet**, to set the trace filter.

Selecting Level 3 Trace Filters

If you have chosen level 3 tracing, you can also choose to trace PAD LCIs only, or PAD and system-to-system LCIs, by selecting the appropriate button; or you can enter the nodename and link name for a specific host, to trace LCIs associated with that host. Choose **Help** for further information about the filter screen fields.

How to Stop an X.25 trace

Use **Start/Stop Trace** to stop an X.25 trace.

How to Display a Trace Log

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

2 Enter the file name of the trace log file you want to view. The default file name 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 window 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. Choose **Help** for a full description of the trace filter window fields.

   The trace log is displayed.

An X.25 Trace contains a record for each X.25 packet processed by the protocol implementation running on the DTC. A good knowledge of X.25 protocol is required to understand and use the trace log for diagnostic or monitoring purposes.

Copying and Deleting Trace Files

An X.25 trace file contains up to 1 MB 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 have the name that you gave them in the **Show Trace Log** window (no file name extension is used).

You can use the Microsoft Windows File Manager **copy** and **delete** commands from the **File** menu to copy the files to a diskette and to delete them from the OpenView workstation's hard disk. Alternatively, for copying the files, you can use the DTC Manager **Backup** function.

Controlling the DTC

Apart from changing a DTCs configuration to make it behave differently, the control of a DTC is limited to starting and stopping the X.25 and Telnet Access boards, and resetting ports, boards or the entire DTC.

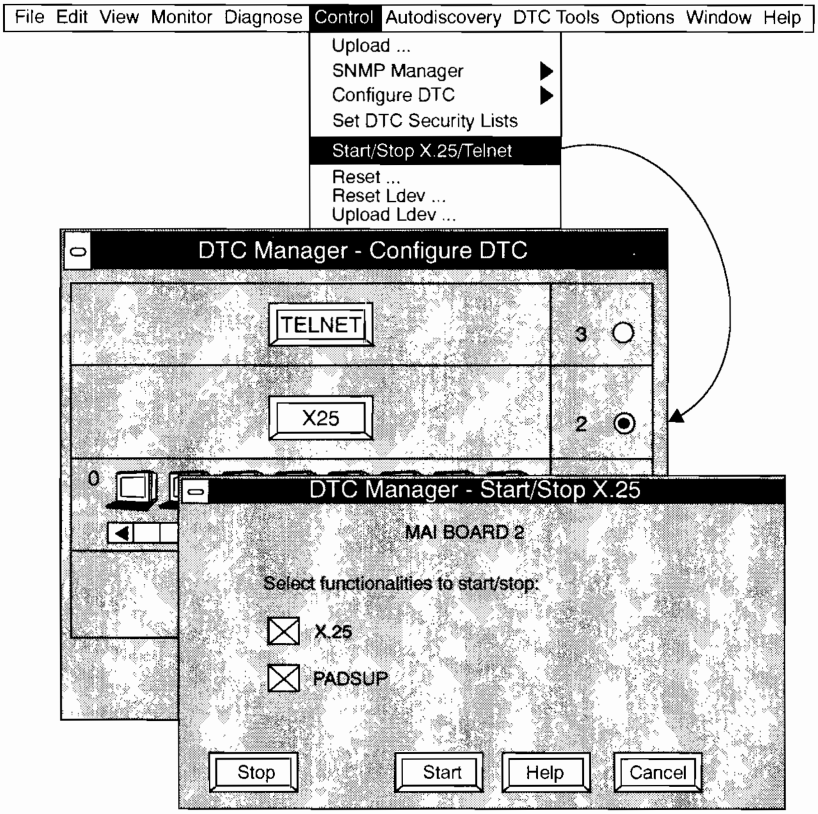
Using the following commands, you can start, stop and reset DTC boards:

- **Start/Stop X.25/Telnet**—starts and stops the PAD and X.25 software on X.25 and Telnet Access Boards
- **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 ldev**—resets an ldev on an HP 3000 Series 900 system.

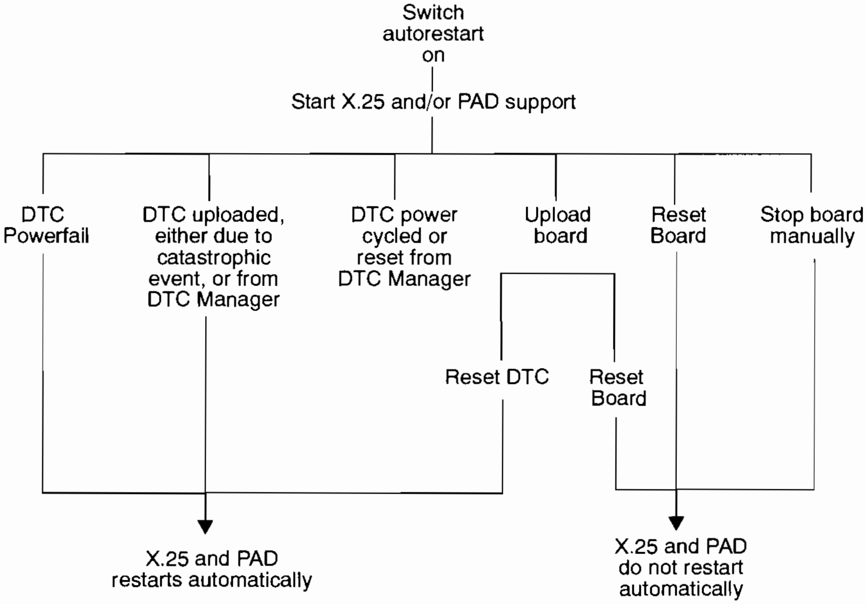
Start/Stop X.25 and PAD

The **Start/Stop X.25** command starts and stops X.25 and PAD Support.

- X.25 must be started either before or at the same time as PAD Support.
- PAD Support must be stopped before X.25 can be stopped, or both can be stopped at the same time.



When the DTC is reset 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.



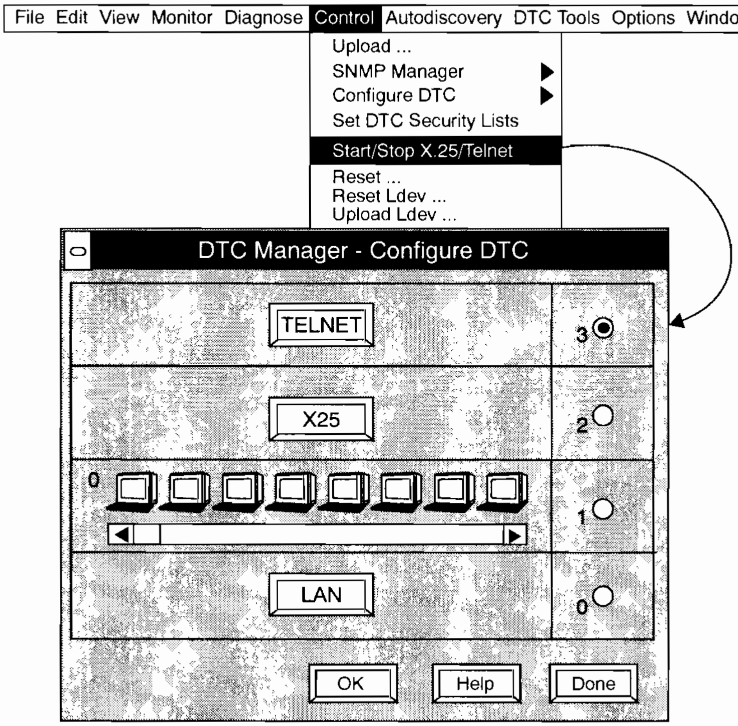
The message **X.25 start successful** indicates that the DTC has responded to the **Start X.25** command; it does not indicate that the DTC has successfully established communication with the network (X.25 level 3). To check that level 3 communications have been established, use the **Level 3 Status**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

Starting and Stopping X.25 Connections to MPE Systems

A NETCONTROL START command must be run on the MPE/iX host before X.25 communications can occur. If the **Start X.25** command is being issued after a **Stop X.25** command a NETCONTROL ADDLINK command must be run on the host MPE/iX system.

Starting and Stopping Telnet Access

The **Start/Stop Telnet...** command starts and stops Telnet Access boards. When the DTC is powered up and receives its download, the code on the installed Telnet Access board enters an idle state. Issuing the **Start Telnet** command from the OpenView workstation starts the Telnet Access board.



Resetting Objects

The following objects can be reset:

- asynchronous ports
- X.25 boards
- Telnet Access boards
- an entire DTC
- ldevs (logical devices) on HP 3000 systems.

Caution Resets are disruptive. Read the following information carefully before resetting anything._

Resetting an entire DTC

All terminal I/O connections are closed by a DTC reset. Telnet and X.25 boards are stopped.

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.

If Automatic Restart was configured (in the LAN configuration window), then any X.25 and PAD Support or Telnet functions already running are restarted after the box reset.

Resetting an Asynchronous Port

All communications through the port are closed.

Resetting Telnet Access

All connections on the board are closed by a reset. Telnet board is stopped.

Telnet must be explicitly restarted using **Start/Stop Telnet** if the board is reset. Even if **Automatic Restart** was configured in CPU configuration, the Telnet function will not be automatically restarted after the board reset.

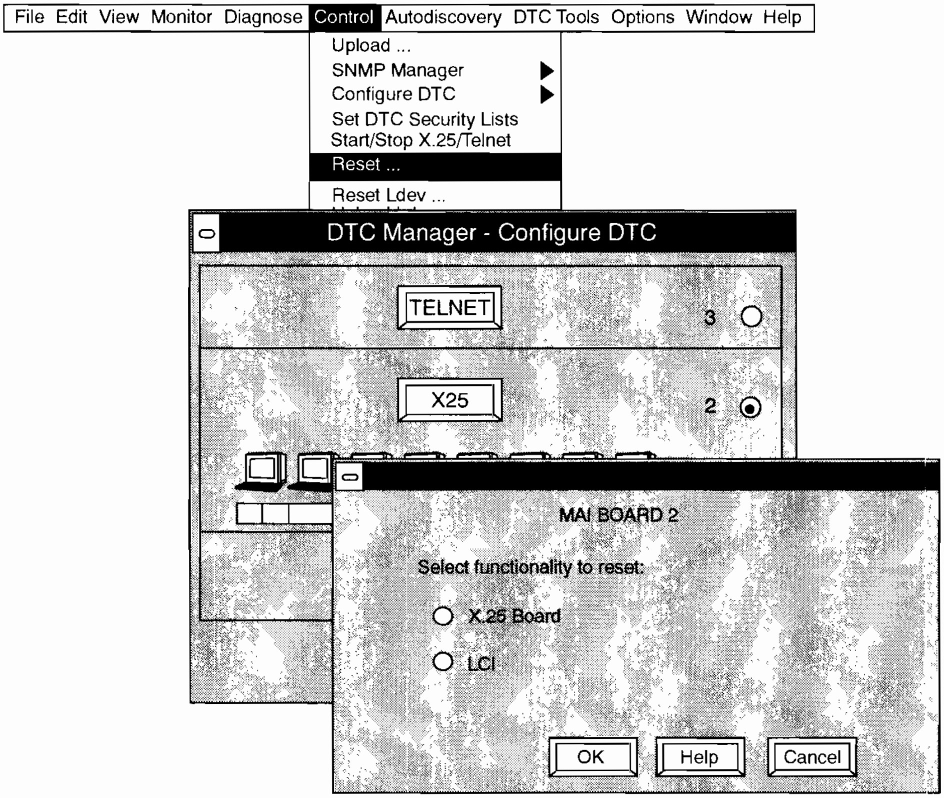
Resetting X.25 boards and LCIs

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

Even if **Automatic Restart** was configured in the CPU configuration window, the X.25/PAD Support functions will not be automatically restarted after the board reset.

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.

The following diagram show how to reset an X.25 board or LCI (Logical Channel Identifier). The same principle applies to all objects that can be reset.



To reset logical channels (LCIs), you must specify the LCI number.

- Use **Show Connections** to find the LCI number associated with a PAD support connection.
- Use **X.25 Site Management** to find the LCI number of a system-to-system

connection.

Resetting ldevs (HP 3000 Systems Only)

Caution Resetting an ldev closes all communications passing through it. If a DTC asynchronous port is associated with the ldev, it will also be reset.

Procedure for Resetting an ldev

1 Identify the ldev number using **Show Connections** on the DTC or **Show Sessions** on the host.

2 Select the host on the map then choose **Reset ldev** from the **Control** menu.

3 Enter the ldev number and choose **OK**.

Note that you cannot reset an ldev in the case of a Routable AFCP connection.

Resetting routable AFCP

A routable AFCP connection may need to be reset from both sides (from the manager of the remote DTC and from the host).

Information HP Engineers might ask you to collect

HP engineers or support staff may ask you to provide the following information to help diagnose problems.

The following commands provide information that is only useful to HP engineers. You should only use these commands if asked to do so by an HP engineer as part of troubleshooting.

- **Upload** copies the contents of a DTCs memory to the PC.
- **Upload Ldev** copies the contents of an ldev on an HP 3000 to the PC.
- **Extended Trace** records all the information that passes through a port and uploads it to the PC.

Note

The standard AFCP timer profiles have been reconfigured to use shorter timeouts. If you find that your connections are timing out too soon, try changing to a higher-numbered timer profile, which will use a longer timeout.

Upload

Caution

Use the upload function with care because:
- uploading data from the DTC disrupts data communications
- connections will be closed and data may be lost
- an upload contains a large amount of information and may fill the workstation's hard disk, causing operating problems (an upload from a DTC 72MX could be 12 Mbytes).

Upload copies the contents of the DTCs memory to the DTC Manager for diagnosis by HP engineers. You should never need to initiate an upload yourself. Each type of upload creates a file in a special MS-DOS directory. The file contains a binary image of the DTCs RAM and cannot be read without special formatting tools available only to HP engineers.

The following items can be uploaded.

- Entire DTC
- Asynchronous Port
- X.25 board
- LCI
- Telnet Access Board.

The **Automatic Restart** function does not work when a Telnet Access or X.25 board uploads, either triggered from DTC Manager, or as a result of a catastrophic event on the board. The boards remain down after the upload, and do not request downloads. In order for Automatic Restart to be active you must reset and start the boards manually from DTC Manager using the **Reset...** and **Start/Stop X.25/Telnet** functions respectively. See the online help for more information.

Upload File Filenames

Uploaded data are 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 DTCs 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
```

The file name extensions are:

.ext	Object Uploaded	Comments
.bx	LAN board	x cycles from 1 through 3, then back to 1, for each new upload.
.pyx	Port	This extension is used for both ordinary port uploads and uploads made using Extended Trace. y is the number of the slot in which the board is installed. x cycles from 1 through 3, then back to 1, for each new upload. The information is written to three files in turn. Each upload overwrites the previous one, and you must copy or rename the files with new file names if you want to retain the upload data.
.syx	X.25 board	y is the number of the slot in which the X.25 board is installed. x cycles from 1 through 3, then back to 1, for each new upload.
.lci	Logical channel	Each upload overwrites the previous one, and you must copy or rename the files with new file names if want to retain the upload data.
.ldv	Logical Device (HP3000/900)	Each upload overwrites the previous one, and you must copy or rename the files with new file names if want to retain the upload data.
.txy	Telnet Access board	x varies from 1 to 3, and is incremented for each new upload file. y is the slot number, 1 to 5

Procedure for Uploading Information from a DTC

1. Use **Show Connections** to find LCIs of PAD connections.
2. Use **X.25 Site Management** to find LCIs of X.25 system-to-system connections.
3. Use **Show Connections** to find the ldev number.
4. Choose **Upload** from the Control menu.
5. Select the item to upload.
6. When the upload is finished, a message displaying the name of the uploaded file is displayed.

Upload ldev

Upload ldev copies the contents of an HP 3000 logical device to the DTC Manager for diagnosis by HP engineers. You should never need to initiate an upload yourself. The file contains a binary image of the DTCs RAM and can only be read with special formatting tools available only to HP engineers.

An ldev upload may take several megabytes of disk on the DTC Manager PC.

Note that you select the *host icon* on the map, *not* the DTC icon, to upload an ldev. The icon's nodename must have been entered in UPPER CASE in the **Describe** window for the upload to work.

Procedure for Uploading an ldev

1. Identify the ldev number using **Show Connections** on the DTC Manager, or Show Sessions on the HP 3000.
2. Select the host icon on the map, and choose Upload ldev from the Control menu.
3. Enter the ldev number.

   The name of the file is given when the upload is finished.

   The file will be called `C:\DTCMGR\UPLOAD\nodename.LDV`, where nodename is the name of the host.
4. After the upload has finished, the ldev is automatically reset.

Extended Trace

An **Extended Trace** is an upload of a DTC 72MX, DTC 16TN, DTC 16MX or DTC 16iX asynchronous port that records all the information on the port during a given period. You should never need to initiate an extended trace yourself. The information is copied to a file on the PC. The file contains a binary image of the DTCs RAM and can only be read with special formatting tools available only to HP engineers.

When the trace is enabled, all the information is loaded into a cyclical buffer on the DTC: when the limit of the buffer is reached, new data overwrite the old data. You must copy the contents of the buffer to the DTC Manager's hard disk using the **Upload Port** command. The maximum size of an extended trace is approximately 330 Kbytes.

Procedure for Running an Extended Trace

1. Choose **Enable/Disable Extended Trace** from the **Monitor** menu.
2. Double-click on the port to trace.
3. Choose **Enable** to start the trace.
4. Use Upload Port from the Control menu to upload the port contents. Do not disable the extended trace before uploading the port contents—if you do so, the trace will be lost.
5. Choose **Disable** to end the trace and upload the information to the DTC Manager.

   The name of the file is given when the upload is finished.

   The file is called `C:\DTCMGR\UPLOAD\nodename.PRT`, where nodename is the name of the DTC.
6. After the upload has finished, the port is automatically reset.

DTC Tools

This section describes the following functions, which are available from the Tools menu of the OpenView DTC Manager:

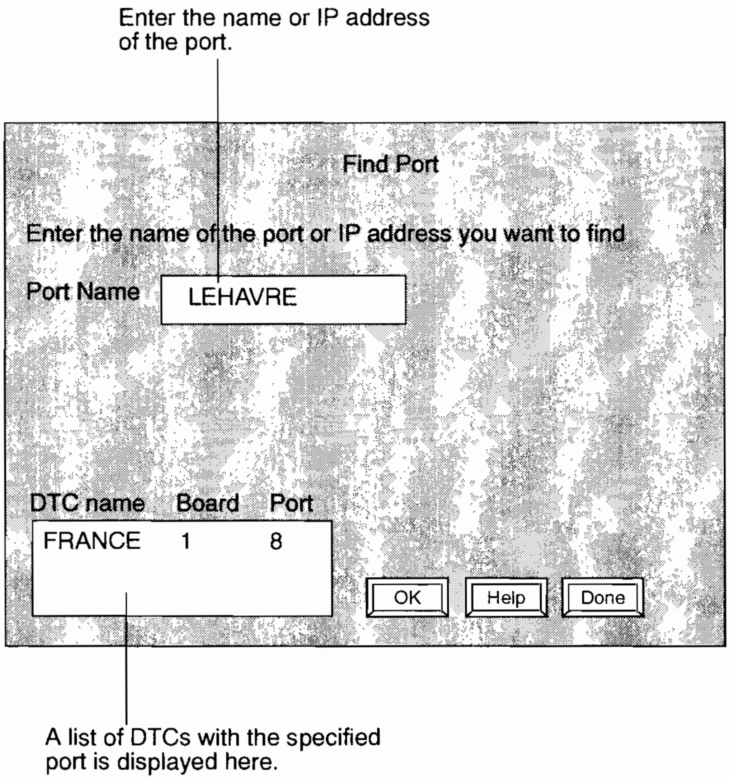
- **Find Port**, which enables you to locate all DTC ports or group of ports configured with a particular name or IP address.
- **Manage Multiple DTCs**, which can be used to control or configure one or more DTCs. **Manage Multiple DTCs** simplifies the process of duplicating a command or copy procedure when you are working with more than one DTC.
- **Download ROM**, which is used to reprogram the DTCs EEPROMs.

The following DTC Tool is available from the File menu of the OpenView DTC Manager:

- **Quickmap**, which enables you to select any DTC configured on the DTC Manager or system without using a network map.

Find Port

Find Port searches all the DTCs managed by the DTC Manager for the port name or IP address. If the port is found, the name of the DTC and the board number are displayed in the results window.



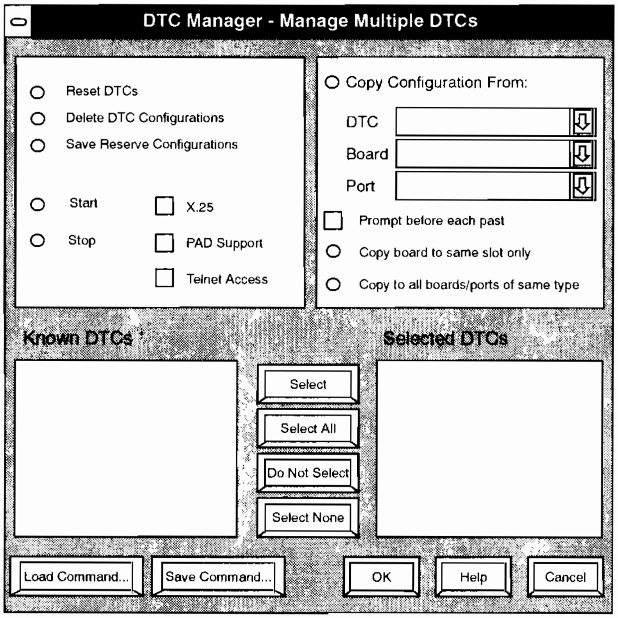
Manage Multiple DTCs

The **Manage Multiple DTCs** tool (called **Multiple DTCs** in this chapter) allows you to apply a command to more than one DTC at once.

Only those DTCs that are currently managed from the OpenView workstation can be addressed by **Multiple DTCs**. The following commands are available.

- Start/Stop X.25 boards.
- Start/Stop PAD Support.
- Start/Stop Telnet Access boards.
- Reset DTCs.
- Delete DTC configurations.
- Paste configurations to DTCs, boards or ports.

The Manage Multiple DTCs window is shown below.



The basic principle is as follows. A list of all available DTCs managed by the OpenView workstation appears in the **Known DTCs** list.

1 Copy the DTCs you want to act on from the **Known DTCs** list to the **Selected DTCs** list.

2 Select the function to apply to the selected DTCs — for example, **Reset DTCs**.

3 Choose **OK**.

4 The function is applied to all the DTCs in the **Selected List**.

5 If you want to save the information as a command that you can run again later, choose **Save Command....**

Commands Available for Managing Multiple DTCs

The following commands are available for managing multiple DTCs. Only one command can be used at a time, so complex sequences of commands, such as **Reset, Start X.25** are not possible.

- **Reset DTCs**
- **Delete DTC Configurations**
- **Save Reserve Configurations**
- **Start X.25/PAD/Telnet.**
- **Stop X.25/PAD/Telnet**
- **Copy Configuration From**

X.25, PAD Support and **Telnet Access** can all be selected at the same time.

If the command you have selected is not applicable to a DTC in the **Selected DTCs** list, for example if **Stop X.25** is selected but there is no X.25 board in a DTC in the list, a warning message is displayed when **Manage Multiple DTCs** tries to execute the command. **Manage Multiple DTCs** then continues with the next DTC in the list and an event is logged in the file MULTIDTC.ERR.

Selecting the DTCs to Operate on

The **Selected DTCs** field must be filled with the names of the DTCs to which you want to apply the command.

To add a DTC to the Selected DTCs list

Either, select the DTC name in the **Known DTCs** list and then choose **Select**, or, double-click on the DTC name in the **Known DTCs** list.

To remove a DTC from the Selected DTCs list

Either, select the DTC name in the **Selected DTCs** list and then choose **Unselect**, or double-click on the DTC name in the **Selected DTCs** list.

Applying the Command

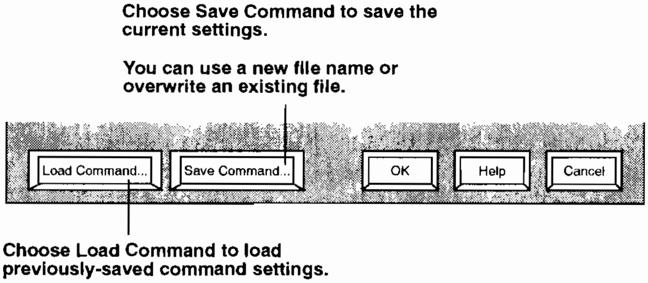
Once the list of selected DTCs is correct and the command or copy operation has been chosen, choose **OK** to execute the command. The **Command in Progress...** window is displayed while the command is running, to show the progress of the command and to display error messages if any problems occur.

To Cancel a Running Command

Choose **Abort** in the **Command in Progress** window. The command finishes acting on the current DTC then stops.

Saving and Loading a Command

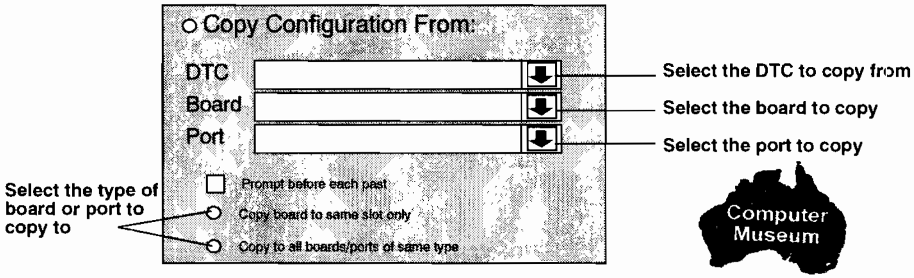
You can save the current Manage Multiple DTCs settings and reload them later. The information is saved in a file with the extension .CMD. Note that the file is binary and cannot be edited manually.



Configuring Multiple DTCs

You can copy configuration information from a specified DTC to all the DTCs in the selected list. The following configurations can be copied:

- port
- board
- entire DTC (except for items that must be unique, for example the LAN address).



Configurations can only be copied between DTCs of the same type, for example from a DTC 72MX to a DTC 72MX. The only exception is that configurations can be copied from a DTC 48/3000 to a DTC 48.

Event and Error Log File

Events and errors that occured during the execution of the multiple DTCs command are logged in the file

```
[DTCMGRDIR]\DTCMGR\EXE\MULTIDTC\MULTIDTC.ERR
```

where `[DTCMGRDIR]` is the directory in which the DTC Manager software is installed.

The log file can be read using an ASCII text editor, such as the Microsoft Windows Notepad. The previous event/error logging file is automatically deleted whenever **Manage Multiple DTCs** is started.

Download ROM

This section explains the principles of downloading a DTCs EEPROMS.

WARNING	**Downloading EEPROMS incorrectly can make a DTC totally unusable. Only download EEPROMS if told to do so by an HP engineer. Follow the instructions carefully.**

Download ROM loads new code into a DTCs EEPROMs. The new code is copied from a diskette on the OpenView workstation to the DTC. All connections are closed by an EEPROM download, and the entire operation takes approximately 10 minutes.

You must enter the revision number of the new code as a security feature. The revision number is only available from HP. Follow the instructions provided with the new code to download an EEPROM.

Quickmap

Quickmap is a special map that displays a DTC and a system:

- selecting the DTC lists all the DTCs managed by the DTC Manager
- selecting the system lists all the systems available.

See the online help for more information on **Quickmap**.

Procedure for Loading Quickmap

1 Choose the **Open Map** option of the **File** menu.

2 Select the file

```
C:\DTCMGR\EXE\QUICKMAP.OVM
```

Managing the HP OpenView Workstation

The following procedures explain how to manage the PC on which the DTC Manager runs. The following topics are covered.

- Passing control of a DTC to another workstation.
- The DTC Manager file system.
- Backing up and restoring DTC files.
- Deleting DTCs from the network map and the DTC Manager's database.

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 want 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 for Transferring Control of a DTC

1 Stop any traces running on the DTC Manager.

2 Backup the configuration files of the DTCs to be transferred, using the **Backup** procedure.

3 Either

   a switch off the OpenView workstation from which you are transferring the files

   or

   b delete the DTCs configuration from the old OpenView workstation.

   This ensures that the DTCs being transferred are no longer managed by the old workstation.

4 Add the DTC icon on the map for the DTC transferred.

5 Restore the files on the new workstation, using the **Restore** procedure.

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

7 To ensure that the DTCs that you have transferred now send management information to the new OpenView workstation, take the following steps.

a Select the DTC on the network map.

b Choose **Configure DTC**, **Dynamic** from the **Control** menu.

c Select the LAN board and choose **Configure**.

d Choose **OK**.

e Choose Done from the backplane window.

f Choose **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 disruption of the DTCs.

The DTC Manager File System

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

Files and Subdirectories	Used for
ACCLIST	File containing access lists.
MAP802	File that maps DTC names to 802.3 addresses.
\CODE	Subdirectory containing the code common to all DTCs.
\COPY	Subdirectory used by Copy/Paste function.
\DEFAULT	Subdirectory for default DTC configuration files.
\EXE	Subdirectory for the DTC executable code and resource files.
\MULTIDTC	Contains the event log file for the Multiple DTCs command.
\MULTIVER	Subdirectory containing the MVS utility.
label.DTC	Subdirectory created for each DTC configured on the workstation (label is the DTCs label on the network map).
\$CONF$	Contains the DTCs permanent configuration files, which are copied to \$DWLD$ after a successful download.
\$DWLD$	Contains the DTCs current configuration, created when the DTC is successfully downloaded, then updated with changes made by the **Configure -> Dynamic** function.
\$RSVES$	Contains the DTCs reserve configuration.
\MONITOR	Subdirectory for X.25 trace and event log files.
\SYMBOLS	Icon for each type of DTC.
\UPLOAD	Subdirectory for upload files.
\LAYOUT	Subdirectory for HP use only.
\DTCMGR.PAT	Subdirectory used to store patch files.
\DTCMGR.SAV	Subdirectory for HP use only.

Deleting DTC Management Files

The `\DTCMGR\MONITOR` and `\DTCMGR\UPLOAD` directories are used to store files that are generated as part of normal DTC management activities. The files can be very large: up to 512 Kbyte for each log file, up to 12 Mbytes for upload files and up to 1 MByte for for each trace file. An X.25 board may upload up to 1.6 MByte. To avoid filling the hard disk, these directories must be periodically cleaned up, as part of normal maintenance of the workstation.

You can delete these files using the Microsoft Windows File Manager **delete** function. See "Backing Up and Restoring DTC Management Files" 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.

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 practice to keep backups of your DTC management files on diskettes. The Backup and Restore functions 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.

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

- While the disk read/write operations that 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 diskette.
- The system MUST be in the same state when you back up and restore. For example, 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 MS-DOS prompt using a backup utility, and it may be useful to write an MS-DOS batch file to manage the backup procedure. Alternatively, as DTC Manager version 14.4 and later supports Internet Services, it is also possible to backup onto a UNIX disk.

Backing Up Files

To back up files, you will need one or more formatted diskettes. 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 table in Chapter 1. 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. Choose **Backup** from the **DTC Manager** option of the **File** menu; the first screen on the next page appears.

   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 the files you want to back up are found here unless you have copied them into another directory. If you do want to change the source directory, select the ? box, and select the correct directory.

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

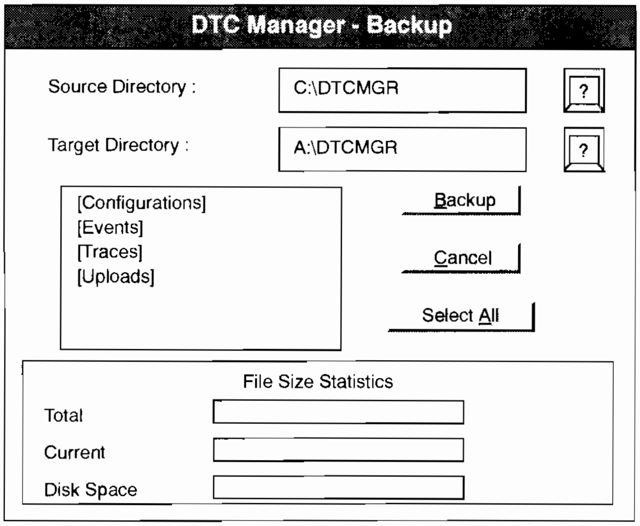
2. In the list box in the middle of the **Backup** window, select the type of file that you want to back up. You then see a list of the files, as shown on the second screen on the next page.

3. Select the file you want to back up.

4. Choose **Backup** to start copying the selected files to the backup disk.

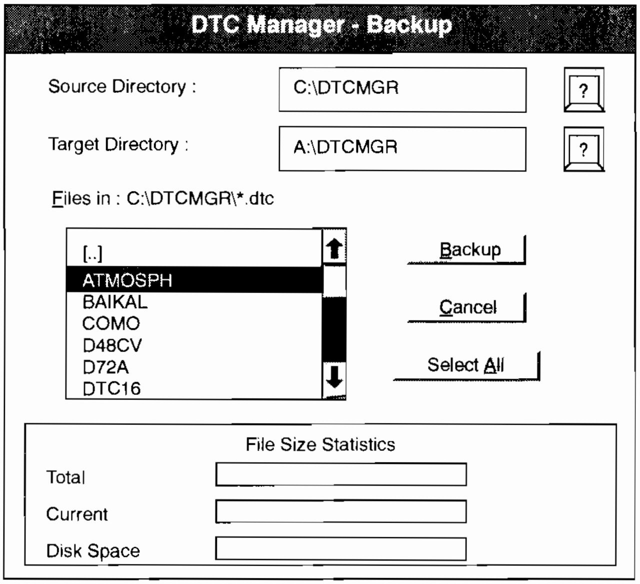
   As the backup proceeds, data about the files being copied to the backup disk are displayed in the Backup window, shown on the second screen on the next page.

Selection Screen



To backup config for example

Screen to choose which files to backup

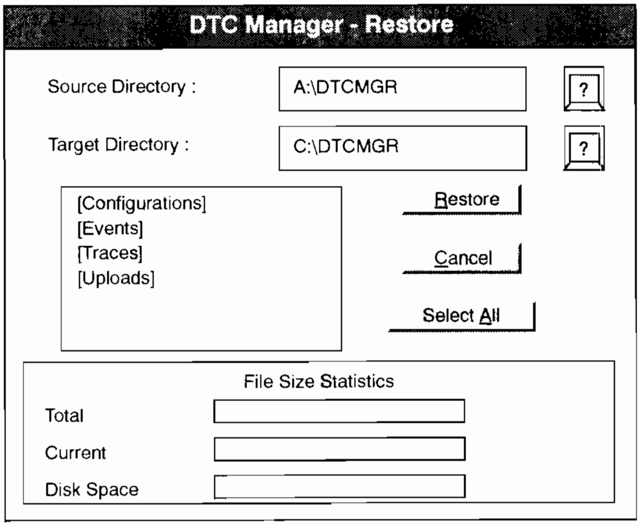


Restoring DTC File Backups

DTC files that have been backed up to a diskette can be restored to the hard disk using a procedure that is almost identical to the backup procedure described in the preceding section.

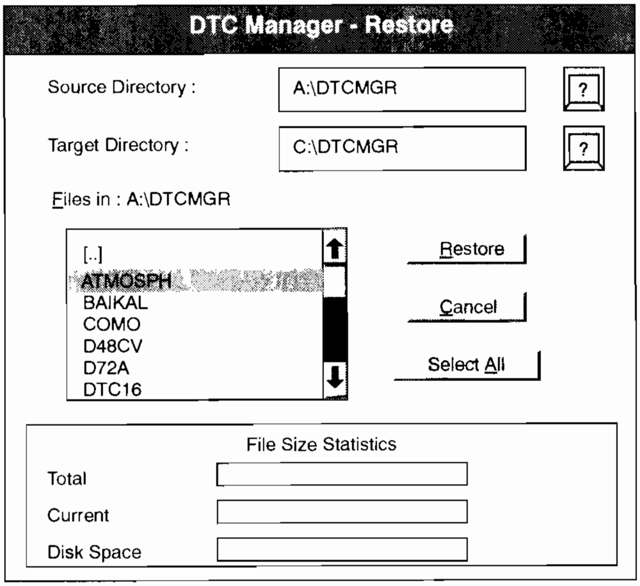
Place the diskette containing the backup files in the A: drive, then, in step 2 of the procedure, choose **Restore...** from the **DTC Manager** option of the **File** menu instead of **Backup....**

Selection Screen



To restore config, for example

Screen to choose which files to restore



Note	
	The **Restore...** procedure can only be used to restore files backed up using the **Backup...** procedure described above.

Backing Up and Restoring the Network Map

To back up the network maps you must copy the map files from the \OV subdirectory. These files have the extensions OVD, OVI, OVM. You can copy these files using the following command at the MS-DOS prompt.

```
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 diskette in drive A.

You can also use the Microsoft Windows File Manager **Copy** function to copy the files.

Generally, the files for each map are quite small, typically only a few kilobytes each.

To restore the network map, insert the diskette that contains the map file into the A: drive and use the following command at the MS-DOS command line:

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

Copying and Deleting X.25 Trace Files

An X.25 trace file may contain up to 1 MB of data. As a normal part of system maintenance on the OpenView workstation, these files must be removed from the hard disk. The copied log files are 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 Microsoft Windows File Manager **copy** and **delete** commands from the File menu to copy the files to a diskette or to delete them from the workstation's hard disk. Alternatively, for copying the files, you can use the **Backup** feature.

Deleting a DTC

Caution When a DTC is removed from the network, it should also 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 **MS-DOS** or **Microsoft Windows** delete functions._

To delete a DTC configuration.

1 Log on to DTC Manager (if you are not already logged on).

2 Select **Delete Configuration Files** from the **DTC Manager** option of the **File** menu.

3 Select the DTC to delete from the list of DTCs, and choose **Delete**.

4 Choose **OK** confirm.

The DTC configuration files are deleted, but the symbol representing that DTC is still part of the map. Proceed as follows to remove the symbol.

1 Select the DTC.

2 Choose **Cut** from the **Edit** menu.

Refer to the *HP OpenView Windows User's Guide* for more information.

Troubleshooting HP OpenView DTC Manager

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

The online help provides a comprehensive listing of all DTC Manager internal error messages, together with their cause and the action that must be taken. Take the following steps to display the error message online help.

1 Choose **Help** from the Microsoft Windows Program Manager.

2 Choose **Contents**.

3 Choose **Open** from the **File** menu.

4 Enter the path of the file OVDTCMGR.HLP. You will find this file in the DTCMGR subdirectory of the EXE directory: for example, C:\DTCMGR\EXE\OVDTCMGR.HLP. If you do not know the name of the subdirectory, use the Search option in the Microsoft Windows File Manager to locate OVDTCMGR.HLP.

The following table summarizes the general procedures to be followed in case of error.

Error Message	Action
OV DTC Internal Error	Use the online help for an explanation of the cause of the error and the action to be taken. Note the error number and what was done just before the message was 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 does not work, close OpenView Windows and then start DTC Manager again.
MS-DOS File System Error or PC File system Error or OV DTC MGR File System Error	Close OpenView Windows and return to the MS-DOS prompt. Run a disk-checking utility (such as CHKDSK) on the workstation hard disk drive that contains the DTC Manager directories. Verify that there is some free disk space. Reboot the PC, start DTC Manager again and then retry the operation that generated the error.

PC Memory Problems

If your PC has memory problems, you could be running the wrong version of Microsoft Windows. Check in the **About Program Manager...** from the **Help** menu to determine which version of Windows is currently installed.

It you do not have sufficient disk space on your PC, you should remove files that are no longer needed before you start installing or updating any of the software. You need at least 12 Mbyte of spare disk space.

Disk space requirement is dependent upon the number of DTCs; the DTC Manager can support up to 150 DTCs.

If you are upgrading any of the software in the stack, refer to the documentation that accompanies it for its disk space requirements.

If you do not have enough disk space, follow the guidelines below:

- DO NOT remove the files AUTOEXEC.OV or *.ODM.
- Run SCANDISK or another disk checking utility to detect and fix lost sectors and other problems on the disk.
- See the MS-DOS and Windows documentation for information on which MS-DOS files can be deleted.
- See the chapter "Deleting DTC Management Files" for information on which DTC Manager files can be deleted.
- Delete all the files in the temporary directory pointed to by the MS-DOS environment variables, TMP and TEMP.
- If TMP and TEMP are not set, create a directory for temporary files, for example C:\TMP, then edit AUTOEXEC.BAT to set the TMP and TEMP variables and to delete the contents of the directory when the PC boots. For example, create the directory C:\TMP, then add the following lines to AUTOEXEC.BAT:

```
set tmp=c:\tmp
set temp=c:\tmp
del c:\tmp\*.*
```

- To get maximum disk space, first back up all the files from the PC's hard disk, then repartition the disk so that all the disk space is allocated to drive C:.

  Refer to the MS-DOS documentation for instructions on repartitioning the hard disk.
- Delete all the TIFF files in \OV\BKGROUND that are larger than 1 Mbyte.

Note Please see the README.TXT file on the first installation disk for further information.

- After removing the files, you may find it useful to run a disk management tool that defragments the files on the hard disk to improve the disk performance, such as the DOS 6.22 Defragmenter tool.

Changing System Files such as OVWIN.INI

The order of OpenView entries in the Microsoft Windows system file OVWIN.INI is crucial to the operation of OpenView and the DTC Manager. **Do not alter the OpenView entries in OVWIN.INI.** If you do, OpenView will be unusable. We also recommend that you do not edit any system files.

Updating or Re-installing Software on the Workstation

From time to time it may be necessary to re-install or update software on the DTC Manager workstation, for example Internet Services or HP OpenView DTC Manager. Changes to other supporting software on the PC, such as Microsoft Windows or HP OpenView for Windows, may cause problems for DTC Manager.

If, following a software reinstallation or update, you use a PING test which is unsuccessful, you should retry several times, as other factors, such as LAN traffic, can stop `PING` getting a response. If you do not get a response after several attempts:

- Make sure that you are using a valid IP address.
- Check if there are any error messages when you reboot the PC
- Check the network software installation and configuration. The network software installation can be tested by pinging the IP address of the PC you are configuring. This `ping` is routed internally by the network software and never gets as far as the LAN card, but it does help to indicate whether the network software is working correctly.
- Make sure you have declared the type of your LAN card correctly during configuration.
- Depending on the PC/TCP version, ensure the correct driver has been configured, that is, PC/TCP for Microsoft Ethernet network (with NDIS for Ethernet version 4.01, DIX for Ethernet frame version 3.5 or 4.01).
- Ensure that you have rebooted your PC to take into account the new parameters.

See the FTP network software documentation for more information.

The DTC User Interface

This chapter explains how to use the DTC user interface. It is included in this manual for support engineers or system administrators who may have to explain to users how to use the DTC user interface.

Only terminals that are allowed terminal switching are connected to the terminal user interface. Other connections are made directly, and the user never sees the user interface.

Command Line Syntax

The following conventions are used for the DTC user interface commands.

[optional] — Text in square brackets is optional, and need not be typed. For example, in the c[onnect] command, you can type connect or just c.

<variable> — Text in chevrons represents a variable that must be entered, for example, the name of a system. You do not type the chevrons.

either | or — A pipe (|) is used to separate two items, one of which must be entered. For example, in <nodename | IP address> you must enter either a nodename or an IP address.

The following example explains this.

```
c[onnect] <nodename | IP address>
```

In the example, to connect to a system, you must type either c or connect followed by either a nodename or an IP address.

DTC User Interface Commands

The following commands are available at the DTC user interface. Each command can be abbreviated. For example, to establish a connection, the user can enter either C or CONNECT. The commands are not case-sensitive, so either c or C can be used.

Connect

Connect opens a connection to a system. The syntax of the commands is

```
c[onnect] <NODENAME | IP ADDRESS | DNS NAME>
```

- If a default destination has been defined for the port, then entering just **C** or **CONNECT** will connect directly to the system.
- You should *never* pad an IP address with leading zeros. For example, if the IP address you are trying to connect to is `128.10.12.11`, you must type connect `128.10.12.11.` If you type connect `128.010.012.011`, the connection attempt will fail.

Disconnect

Disconnect closes the current system connection.

```
d[isconnect]
```

Help

Help displays a list of the available commands, their abbreviations, and a brief explanation of what they do.

```
h[elp]
```

Logout

Logout logs the user out of the DTC.

```
L[OGOUT]
```

If the connection is via modems, the line is dropped. If a session is open on a system, it is closed.

Recall

Recall resumes a connection.

```
R[ECALL]
```

Set ASCII

Set ASCII sets the data transfer mode to ASCII if it has previously been set to Binary by a Set Binary command. Not available for connections to MPE/iX systems. Not available via PAD.

```
A[SCII]
```

Set Binary

Set Binary sets the data transfer mode to binary. Not available via PAD.

```
B[INARY]
```

Status

Status displays a table showing information about the open connections from the terminal.

```
S[TATUS]
```

PAD-Connected Terminal

The syntax for accessing a system from a PAD connected terminal is:

```
<X.25 address>,[D|P]<password>/<PAD profile number>
```

The password is preceded by a `D` or a `P`, depending on the PAD. For the HP 2335A, use a D.

Bibliography

This bibliography lists all the DTC documentation and other documentation that might be useful when installing, configuring and managing DTCs. It provides a brief outline of some of the manuals, and says which manuals are needed for which tasks.

The information in this chapter was correct when it was printed, but it is possible that some part numbers will change during the lifetime of this manual.

The DTC Hardware Installation Manuals

HP 2345A Datacommunications and Terminal Controller Installation and Service Manual (02345-90021)

Installing the DTC 48.

HP 2340A Datacommunications and Terminal Controller Installation and Service Manual (02340-90001)

Installing the DTC 16.

HP J2070A DTC 72MX Communication Server Installation Guide (J2070-90001)

Installing the DTC 72MX.

HP J2060A/J2062A/J2063A HP DTC 16xx Family Installation Guide (5959-4986)

Installing the DTC 16TN, DTC 16iX and DTC 16MX.

HP J2064A DTC 16RX Routable Communications Server Installation Guide (J2064-90001)

Installing the DTC 16RX.

ARPA Telnet Express Installation Guide (02344-90001)

Installing the HP ARPA Telnet Express.

DTC Cabling and Racking Guide (5961-0373)

Installing the DTC in racks and cabinets, and details of cable pinouts for the DTC.

DTC Manager Documentation

DTC Planning Guide (D2355-95017)

This manual gives an overview of the DTC family, the management platforms, and the connections possible. It does not go into technical detail, but provides the level of information needed to understand the DTC and the way it can be used. This manual is not tied to any one management platform.

Using HP OpenView DTC Manager (D2355-90001)

This manual is specific to the PC-based HP OpenView DTC Manager (DTC Manager). It explains how to use the DTC manager to configure and manage DTCs. It gives examples of configuring different types of connections, and explains how to manage DTCs and their connections.

DTC Technical Reference Manual (5961-9820)

This manual covers the technical detail of the DTC, including protocol implementations and limitations, explanations of how connections are established, and information on event logging. In general, this manual is not tied to any one management platform, though some of the information, for example the presentation of event log data, is specific to the PC-based DTC Manager.

The DTC Manager Online Help System

The DTC Manager online help system explains each field of each screen, giving default values, restrictions, and important points to note. It also explains how to perform certain procedures.

Other Documents for PC-based Management

HP OpenView Windows 7.2 SNMP Platform User's Guide (5961-9883)

This manual contains information on installing and using HP OpenView Windows.

Microsoft Windows User's Guide

Information on how to use the Microsoft Windows graphical environment, and how to install Microsoft Windows.

The following manuals may be needed during the installation of the DTC Manager software on the PC.

ARPA network layer software documentation

Information on how to configure ARPA on the PC, and how to use the ARPA configuration software.

PC/TCP Network Software for DOS Installation and Configuration Guide

Information on how to install and configure the PC/TCP software from FTP Software Inc.

PC/TCP Network Software for DOS User's Guide

Information on how to use the PC/TCP software.

HP 3000 Series 900 Documentation

Some of the following HP 3000 Series 900 manuals are cross-referenced in the DTC Manager documentation, others contain useful information and should be available for reference. For a complete list of HP 3000 system documentation, consult one of the manuals listed below.

Using the Node Management Services (32022-61005)

Detailed information about the NMS utilities, including NMMGR.

Configuring Systems for Terminals, Printers and Other Serial Devices (32022-61001)

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

How to configure the system to allow connections to and from remote devices via PAD support.

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

Introduction to asynchronous serial communications, the Distributed Terminal Subsystem (DTS) and basic data communication concepts.

Using file system intrinsics to control asynchronous devices programmatically.

Comparison of serial device connection to MPE V and MPE/iX systems.

Customizing Terminal and Printer Type Files Using the Workstation Configurator (5959-2870)

How to create or modify terminal type or printer type files.

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

Solving problems with connections to MPE/iX systems.

The following manuals may also be useful.

MPE/iX Commands Reference Manual Volume 1 (32650-90003)

MPE/iX Commands Reference Manual Volume 2 (32650-90003)

System Startup, Configuration and Shutdown (32650-90042)

HP 3000/iX Network Planning and Configuration Guide (36922-61023)

Configuring and Managing Host-Based X.25 Links (36939-61004)

Managing Host-Based X.25 Links Quick Reference Card (36939-61003)

HP 36923A LAN 3000/XL Link and Terminal LAN Link Hardware Reference Manual (36921-90001)

LAN Cable and Accessories Installation Manual (5955-7680)

Central Bus Programmable Serial Interface Installation and Reference Manual (30263-90001)

HP 28684A EtherTwist Hub & HP 28688A EtherTwist Hub Plus Installation Steps (5090-2637)

HP 9000 (HP-UX) Documentation

You can obtain the part numbers of these manuals in the current edition of *Finding HP-UX Information*, which gives full details of all HP-UX and HP 9000 documentation.

For configuring and managing the DTC:

Using the HP DTC Manager/UX (J2120-62000)

Installing and configuring the HP-UX-based DTC Manager software.

Managing DTCs from an HP-UX platform.

DTC Device File Access Utilities and Telnet Port Identification (B1014-90012)

Configuring and using the HP DTC Device File Access utilities.

Information on installing and administering DDFA.

Installing and Administering LAN/9000

Installing and Administering ARPA/9000

Information on ARPA Services.

Installing and Updating HP-UX

System Administration Tasks

Finding HP-UX Information

Master list of all manuals on HP-UX and on all HP 9000 products.

Documentation on Other Network Devices

HP 2335A X.25/84 Multiplexer Reference Manual (02355-90021)

Configuring an HP 2335A PAD

Cables for HP 2335A PAD.

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Comments on this manual

Comments on this manual can be sent to the following address

The Manager
Learning Products/Usability
Enterprise Networking & Security Division
Hewlett-Packard France
5 Avenue Raymond Chanas - Eybens
38053 GRENOBLE
France

You can also send comments to the following e-mail address

doc_comments@grenoble.hp.com

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