Digital Network Interface Card for Ethernet

DNIC-E'NET Configuration Guide

Order Number: EK–LN17E–CG. A02

Digital Equipment Corporation
Maynard, Massachusetts

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Notice

Specifications described in this publication are subject to change without notice. Use of some features may be limited by your hardware or software configuration. Contact your dealer or Digital for details.

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Chapter 1

Introduction

Overview

Congratulations on choosing the Digital Network Interface Card for Ethernet (DNIC-E'NET) to upgrade your Digital laser printer to a network printer.

This guide describes the DNIC-E'NET and tells you how to configure it on your network for remote printing.

Note

It is not the purpose of this guide to provide instruction in the general design, configuration and use of local area networks. Use of this guide requires a working knowledge of networks and is therefore intended primarily for network administrators.

Document Conventions

This guide uses the following typographical conventions:

- Text that is displayed on the screen is presented in **bold typeface**, in English only.
- Keywords that you enter via the keyboard are presented in `computer typeface`.
- Variables that you enter via the keyboard are presented in *italic typeface*.
- Function keys are shown in brackets. For example, `<Esc>` represents the Escape key and `<Ctrl>` represents the Control key.

The DNIC-E'NET

The DNIC-E'NET is an Ethernet interface card that plugs directly into the printer. Connection to the Ethernet network may be made using either Thinnet (10base2) cable (which uses a BNC connector), or unshielded twisted-pair (UTP/10baseT) cable (which uses an RJ-45 connector). Two LEDs on the connection panel provide immediate visual indication of network activity.

When your printer is attached to a network with the DNIC-E'NET, it may be used from virtually any computer on the network. If more than one system requests a print job at the same time, the DNIC-E'NET assures that each job is printed in the order it is received at the DNIC-E'NET.

The DNIC-E'NET includes protocol stacks for four Ethernet-based networking systems, which provide support for a variety of user networks: IPX/SPX (for Novell NetWare), EtherTalk (for Macintosh AppleTalk), TCP/IP (for UNIX, SNMP, Windows NT), and LAT (for Digital printing envirnoments). Your DNIC-E'NET supports all of them simultaneously.

The DNIC-E'NET connects your network directly to the printer's internal bus, making it faster than a printer connected via the serial or parallel port.

The default DNIC-E'NET configuration is applicable for most systems. It may be modified, however, from a host terminal via the DNIC-E'NET's Remote Console Facility (RCF) virtual port (except on EtherTalk networks).

The procedures described in this manual are the most common and direct approaches for each task. Because many networks have local modifications or run third-party print control software, the proper procedures for your specific network may be different. Also, some of the procedures in this manual may require the expertise and access privileges of a system administrator.

Before You Begin

Before you begin installation, take a moment to verify that you have received everything listed below:

- DNIC-E'NET Printer Server in an antistatic bag
- *DNIC-E'NET Configuration Guide* (this book)
- Four 3.5 inch diskettes:
  - — Novell NetWare Diagnostic Utility
  - — UNIX Installation Utility
  - — SNMP MIB (DOS format)
  - — SNMP MIB (tar format)
- The printer's User Guide for instructions on how to install the DNIC-E'NET

Important Information

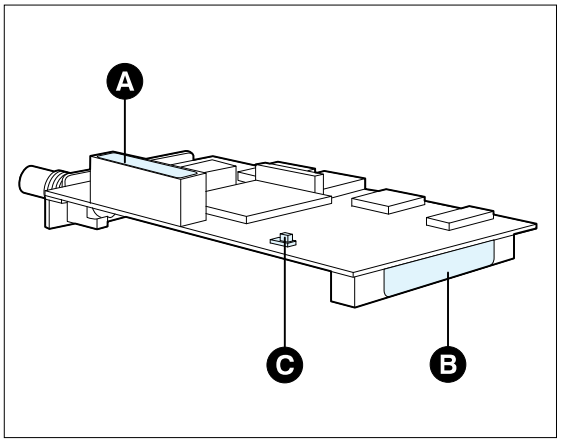
It is important that you make a note of the unique Ethernet hardware address of your DNIC-E'NET, its serial number, and other information. You will need this information during the installation and if you contact Digital for assistance or upgrades. Figure 1.1 shows the location of the Ethernet hardware address and serial number on the DNIC-E'NET.

Figure 1.1 Location of Ethernet hardware address and serial number

A Serial number

B Ethernet hardware address

C JX1 pins



Caution

Pins 2 and 3 on JX1 must be strapped together for proper operation of the DNIC-E'NET.

Once the DNIC-E'NET is installed, the numbers will not be easily accessible. We suggest you note them here and on the back of this guide for later reference.

Ethernet Hardware Address

00-00-C9-_____ _____-_____ _____-_____ _____

Serial Number

_____ _____ _____ _____ _____ _____ _____ _____ _____

DNIC-E'NET Server Name

Next, enter the last six characters of the Ethernet hardware address, but without the dashes, in the spaces below. This is the DNIC-E'NET's default name:

DNE _____ _____ _____ _____ _____ _____

Default Configuration

The DNIC-E'NET is preconfigured with services for all protocols as well as a remote access port. Table 1.1 shows the default configuration. Except as indicated, the default settings can be changed by logging in to the DNIC-E'NET with privileged access.

Table 1.1 DNIC-E'NET default configuration

Parameter	Default Setting
Passwords	system (privilege mode) access (host login)
IP Address Subnet Mask	138.239.254.253 255.255.0.0
Server Name	DNE*xxxxxx* (*xxxxxx* = last six characters of Ethernet hardware address)
Printer Service Service Name TCP Port Number	 DNE*xxxxxx*_1 (*xxxxxx* = last six characters of Ethernet hardware address) 2501
lpd Service TCP Port Number	 515
lpd Queues ASCII data PostScript or binary files	 TEXT PASSTHRU
Management Access Telnet Port Number RCF Port Number TES Service Name	 23 2048 DNE*xxxxxx* (*xxxxxx* = last six characters of Ethernet hardware address)

Installation and Connection to the Network

Before you move on to the physical installation of the DNIC-E'NET, make sure you have the proper cabling and software on your system before you proceed.

If your system has the required operating system, software, and cables, you are ready to move on to the physical installation of the DNIC-E'NET, as discussed in your printer's User Guide. After installation, return to this book with *Chapter 2: Connecting the DNIC-E'NET*.

Chapter 2

Connecting the DNIC-E'NET

Overview

This chapter discusses connecting the DNIC-E'NET to the network after you have installed it in the printer. For installation instructions, refer to your Digital printer's User Guide.

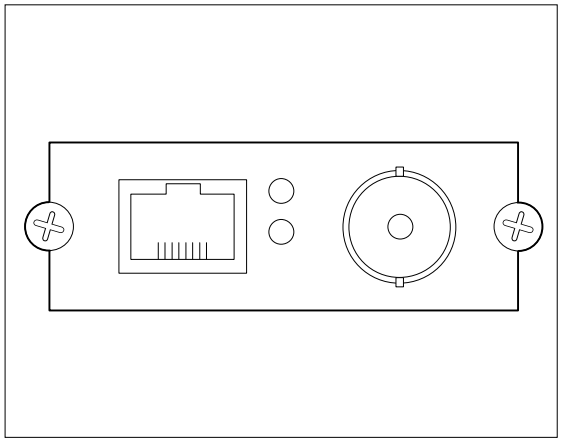
Caution

Before connecting to the network, power the printer off.

Connecting to the Network

The DNIC-E'NET may be connected to your network using Thinnet (10base2) cable with a BNC connector, or UTP (Unshielded Twisted Pair, 10baseT) cable with an RJ-45 connector. Figure 2.1 shows the location of the ports on the DNIC-E'NET.

Figure 2.1 DNIC-E'NET Connection Panel



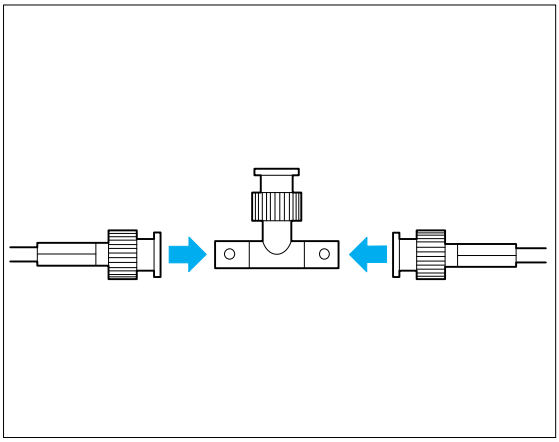
Caution

Never connect network cables to both the BNC and UTP ports on the DNIC-E'NET at the same time.

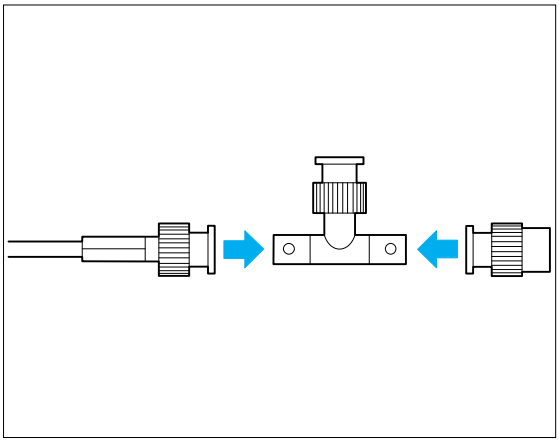
Caution

If you are connecting to an active Ethernet network, the connection must be performed quickly to avoid interrupting the network for a long period.

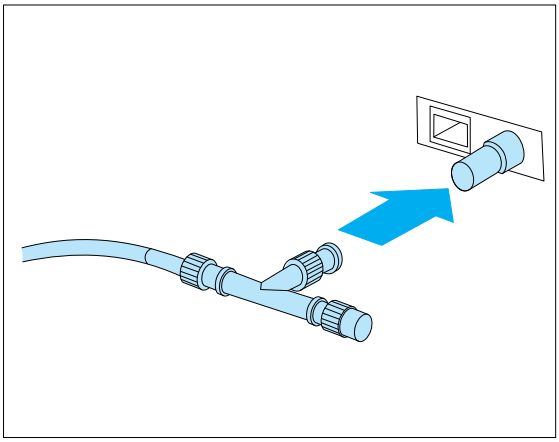
Thinnet (10base2) Connection



1 **If you are patching into the middle of the cable, use a BNC T-adapter to connect to the Ethernet cable.**



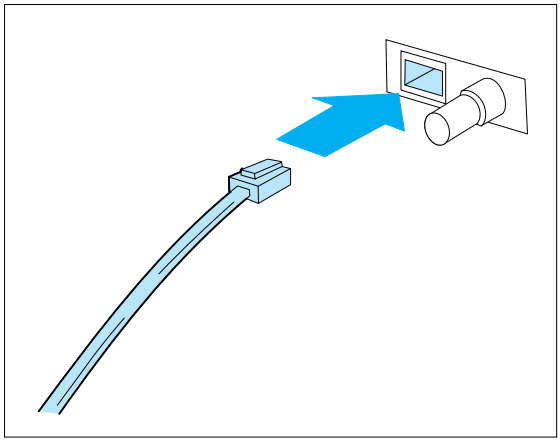
2 **If you are connecting to the end of a cable segment, connect the Ethernet cable to one side of the BNC T-adapter and connect a 50 Ohm Ethernet terminator to the other side.**



3 **Attach the BNC T-adapter to the BNC port on the DNIC-E'NET.**

Do not attach anything to the port labeled UTP.

Twisted-pair (10baseT) Connection



1. **Attach one end of the twisted-pair cable to the UTP port on the DNIC-E'NET, using a standard RJ-45 connector.**

2. **Attach the other end of the cable to a UTP wall outlet adapter, or other 10baseT Ethernet source.**

Do not attach anything to the port marked BNC.

Initial Testing

After installing the DNIC-E'NET and connecting the Ethernet cable, you are ready to power up and test the system as follows:

1. **Verify that the Ethernet cable is connected to only one port (BNC or UTP).**

2. **Power ON the printer.**

   Wait for the printer to complete its self-tests.

3. **If the DNIC-E'NET powers up properly and is connected to the network via UTP (10baseT), the green LED on the DNIC-E'NET's faceplate will be lit (for BNC connection the green LED will be off).**

   The yellow LAN LED will flash in accordance with any network activity. If the yellow LED is not flashing and you know there is network activity, verify that the DNIC-E'NET is properly connected to the network and the printer is powered up.

4. **Print a Configuration Sheet and check that the card is present on the Configuration Sheet.**

   See the printer's User Guide for instructions on printing a Configuration Sheet, if necessary.

5. **Configure your DNIC as described in the following chapters (see the table on the next page).**

If your network is...	Then go to...
Novell NetWare	*Chapter 3: Using the Printer with Novell NetWare*
AppleTalk	*Chapter 4: Using the Printer with EtherTalk*
UNIX TCP/IP	*Chapter 5: Using the Printer with UNIX TCP/IP*
LAT	*Chapter 6: Using the Printer with LAT*
Windows 95	*Chapter 7: Using the Printer with Windows 95*
Windows NT	*Chapter 8: Using the Printer with Windows NT*
SNMP	*Chapter 9: Using the Printer with SNMP*

Using Multiple Network Cards

Depending on the model of your printer, combinations of optional network cards may be installed (i.e., Ethernet and LocalTalk).

For information about the DNIC-L'TALK, refer to the *Digital Network Interface Card for LocalTalk DNIC-L'TALK Configuration Guide*.

Chapter 3

Using the Printer with Novell NetWare

Overview

This chapter provides an overview and step-by-step procedures for setting up the printer on a Novell NetWare network. These procedures require that you have NetWare Print Server v1.22 or later and the NetWare access privileges of the system supervisor if you elect to use the printer as a Novell Remote Printer.

While the instructions in this section are complete, setting up a printer on a Novell network is not a trivial task. You may need to consult your system supervisor or network administrator, or refer to *Chapter 10: Troubleshooting*.

Note

To avoid confusion, you should remember that the DNIC-E'NET is a printer server, while the Print Server is a Novell software utility that manages the operation of printers on the NetWare network.

Note

If you plan to use the Document Services for Printing (DS/P) Status and Management Services (SMS) software in Novell NetWare, refer to the Document Services for Printing User Guide.

Network Considerations

Novell NetWare RPRINTER mode requires one of the following:

- PSERVER.VAP for v2.x NetWare file servers
- PSERVER.NLM for NetWare file servers
- PSERVER.EXE for a stand-alone PC-based print server

PSERVER mode has no additional requirements.

Note

The DNIC-E'NET supports NetWare 4.x BEM (Bindery Emulation Mode) only and not native NetWare 4.x.

When running native NetWare 4.x, RPRINTER is supported using Novell's Pserver.NLM and Pserver.EXE.

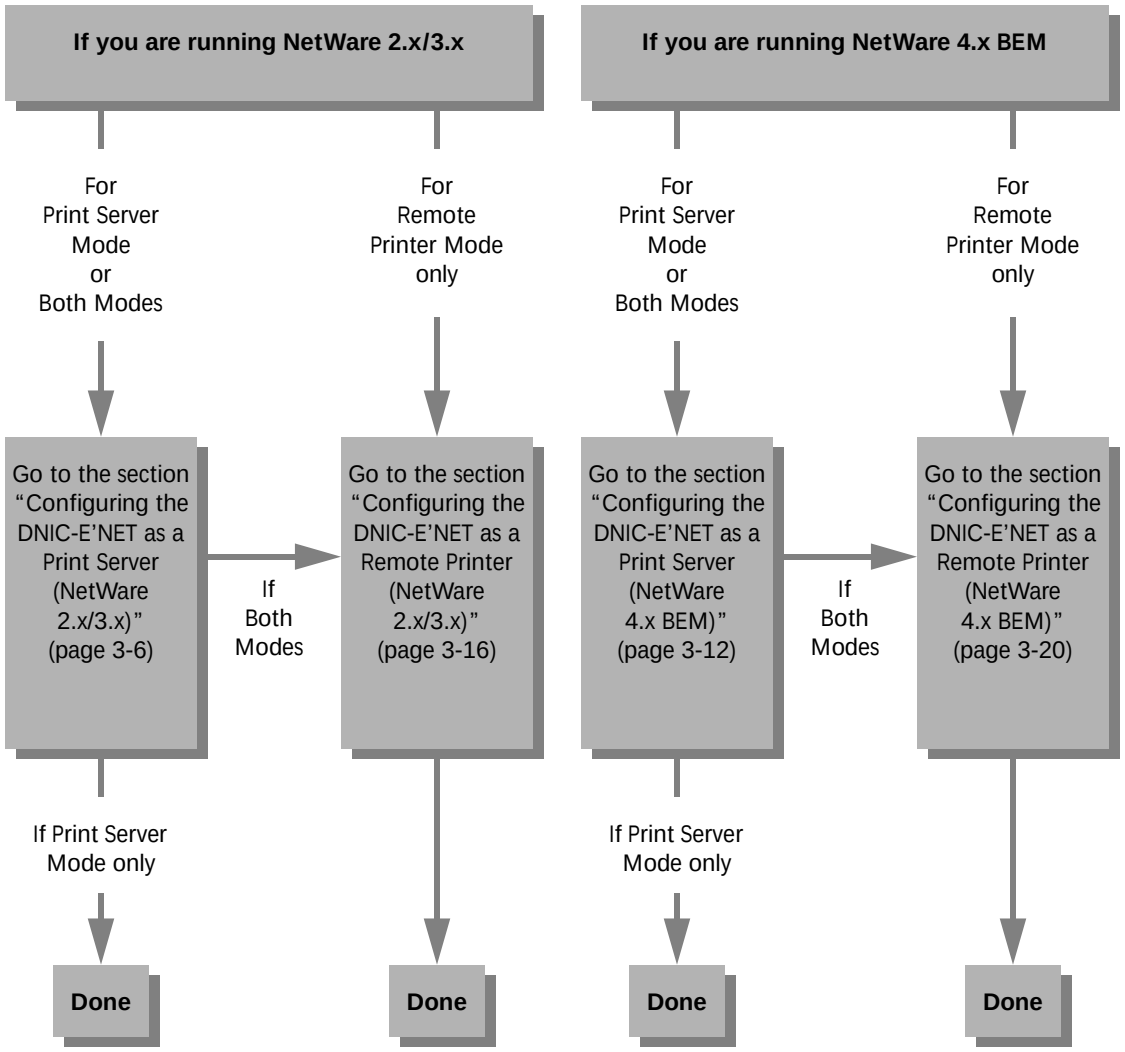
Configuration Options

The DNIC-E'NET-equipped printer can be configured in any of the following modes:

- PSERVER mode
- RPRINTER mode
- Both modes simultaneously

Figure 3.1 on page 3-5 shows the options for configuring the DNIC-E'NET.

Figure 3.1 Configuring the DNIC-E'NET



Configuring the DNIC-E'NET as a Print Server (NetWare 2.x/3.x)

To configure your DNIC-E'NET as a Print Server under NetWare 2.x/3.x, complete each of the following procedures in this section:

- Adding the Print Server and Printer
- Selecting the Print Queue
- Assigning the Print Queue
- Restarting the DNIC-E'NET
- Defining the Print Job Configuration

Note

DS/P provides an automatic set-up procedure for configuring the printer in PSERVER mode. You may find it much easier to use than configuring the printer manually.

Note

After configuring your DNIC-E'NET as a Print Server, go to "Setting Required/ Preferred File Server Mode" (page 3-28) if your network has more than 25 file servers.

Adding the Print Server and Printer

These procedures use the commands for Novell NetWare 2.x or 3.x. Unless noted, commands can be upper or lower case. Typed commands should be entered by pressing the <ENTER> key.

1. **Log in to the Novell file server so that you have supervisor privileges. At the prompt, enter:**

   LOGIN *fileserver*\SUPERVISOR

   At the prompt, enter the password.

2. **At the system prompt, enter:** PCONSOLE.

3. **Select Print Server Information from the Available Options menu.**

   To select an item from a menu in PCONSOLE, use the arrow keys to highlight the item, then press <Enter>.

4. **Press <Insert> to define the DNIC-E'NET.**

5. **Enter the server name as:** DNE*xxxxxx*

   where *xxxxxx* is the last six characters of the Ethernet hardware address.

6. **Select the Print Server you just defined.**

7. **Select Print Server Configuration from the menu.**

8. **Select Printer Configuration.**

9. **Select one of the Not Installed printers from the list of printers displayed.**

10 **Enter the printer name:** DNE*xxxxxx*_1

where *xxxxxx* represents the last six characters of the DNIC-E'NET's Ethernet hardware address. Upper and lower case letters aren't important. For example, a valid name would be: DNE123456_1

If the printer name has been changed using the DS/P UTILITY, then print the Configuration Sheet to get the printer's name. The printer's name is the print server's name followed by "_1".

11 **Press the <Dn-arrow> key to select Type, and press <Enter> to display the printer types.**

Select the printer type **Defined Elsewhere**.

12 **Save your changes by pressing <Esc> and selecting Yes to confirm the save.**

13 **Press <Esc> to return to the Print Server Configuration menu.**

14 **Press <Esc> several times until the Available Options menu is again displayed.**

Selecting the Print Queue

1 **Select Print Queue Information from the Available Options menu.**

To select an item from a menu in PCONSOLE, use the arrow keys to highlight the item, then press <Enter>.

2 **Select an existing Print Queue from the list (or create a new Print Queue following the instructions below, and then select it).**

To create a new print queue, press <Insert> and a dialog box opens. Enter a name for the print queue and press <Enter>. Press <Esc> until you return to the **Available Options** menu where you can select the new print queue.

Selecting a print queue brings up the **Print Queue Information** menu.

3 **Select the Queue Servers menu, and select the Print Server you defined in Step 5 on page 3-7.**

Press <Insert>, select the server, then press <Enter>. This adds it to the list.

4 **Press <Esc> several times until the Available Options menu is again displayed.**

Assigning the Print Queue

1. Select **Print Server Information** from the **Available Options** menu.
2. Select the print server from the list.
3. Select **Print Server Configuration** from the menu.
4. Select **Queues Serviced by Printer** from the **Print Server Configuration** menu.
5. Select the Digital printer name (for example, DNE123456_1).
6. Press `<Insert>` to display the list of available queues.

   Select the queue to be serviced by the Digital printer.
7. Enter a Priority level number for the printer (default is 1, highest) and press `<Enter>`.
8. If you wish to service several queues with the Digital printer, repeat Steps 6 and 7 for each additional queue.
9. Press `<Esc>` until the **Available Options** menu is displayed.

Restarting the DNIC-E'NET

The following procedure restarts the DNIC-E'NET to read the new configuration.

1. **Select Print Server Information from the Available Options menu.**
2. **Select your DNIC-E'NET Print Server name.**
3. **Select Print Server Status and Control.**
4. **Select Server Info.**
5. **Select the current server status field.**
6. **Select Going down after current jobs.**

Defining the Print Job Configuration

The last task is to define a print job for special configuration for the printer. There are many utility and add-on programs that do this. Refer to your documentation for those programs for further information.

If you wish also to configure the DNIC-E'NET for Remote Printer mode, go to the section *"Configuring the DNIC-E'NET as a Remote Printer (NetWare 2.x/3.x)"* (page 3-16).

Configuring the DNIC-E'NET as a Print Server

(NetWare 4.x BEM)

These procedures use the commands for Novell NetWare 4.x BEM. Unless noted, commands can be upper or lower case. Typed commands should be entered by pressing the `<ENTER>` key.

Note

After configuring your DNIC-E'NET as a print server, go to "Setting Required/ Preferred File Server Mode" (page 3-28) if your network has more than 25 file servers.

1 **Log in to NetWare in the Bindery Emulation Mode as ADMIN (or ADMIN equivalent) by typing:**

`[drive]:\login fileserver/username /b`

then press `<ENTER>`.

2 **Enter your password when prompted, then press** `<ENTER>`.

3 **At system prompt, enter** `PCONSOLE`**, then press** `<ENTER>`.

4 **Select Quick Setup at the Available Options menu.**

5 **Enter the print server name:** `DNExxxxxx`

where *xxxxxx* is the last six characters of the Ethernet LAN address. Upper and lower case is not important.

6 **Enter the printer name:** `DNExxxxxx_1`

where *xxxxxx* represents the last six characters of the DNIC-E'NET's Ethernet hardware address. Upper and lower case letters aren't important.

If the printer name has been changed using the DS/P UTILITY, then print the configuration sheet to get the printer's name. The printer's name is the print server's name followed by "_1".

7 **Enter the Queue Name.**

8 **Save your changes by pressing <Esc> and selecting Yes to confirm.**

9 **Press <Esc> until you have exited PCONSOLE.**

10 **Power the printer OFF, then back ON.**

The DNIC-E'NET will not create a connection if PCONSOLE is running during power up.

Printer type does not affect this setup.

If you also wish to configure the DNIC-E'NET for Remote Printer mode, go to the section *"Configuring the DNIC-E'NET as a Remote Printer (NetWare 4.x BEM)"* (page 3-20).

Servicing Queues from Multiple NetWare File Servers

When the DNIC-E'NET is configured as a Print Server (PSERVER mode) and that same Print Server is configured to service print queues from more than one Novell NetWare file server, the multiple file servers must be cross linked. To cross link these file servers, follow the procedure below.

Note

Depending on how you log in to the 4.x file server, the menu titles may have different names.

1 **Log in with supervisor privileges to a NetWare file server where a Print Server already exists. At the prompt, enter:**

`LOGIN` *`fileserver`*`\SUPERVISOR`

At the prompt, enter the password.

2 **At the system prompt, enter** `PCONSOLE`.

3 **From the Available Options menu, select Print Server Information (Print Servers Information in 4.x).**

To select an item from a menu in PCONSOLE, use the arrow keys to highlight the item, then press `<Enter>`.

4 **From the Print Servers menu, select Print Server (PSERVER) already created for the target DNIC-E'NET.**

Refer to "Adding the Print Server and Printer" (page 3-7) for the procedure to create a Print Server.

5 **From the Print Server Information menu, select Print Server Configuration (Serviced NetWare Servers in 4.x).**

6 **From the Print Server Configuration menu, select File Servers To Be Serviced.**

(Skip this step for 4.x.)

7 **From the File Servers To Be Serviced menu (Serviced Netware Servers in 4.x), press <Insert>.**

8 **From Available File Servers menu (Available NetWare Servers in 4.x), select the file server to cross link.**

9 **Repeat Steps 7 and 8 for each file server in the cross link pool.**

10 **Repeat Steps 1 to 9 on every file server in the cross link pool. The Available Files Servers list (Available NetWare Servers in 4.x) should be the same on all file servers servicing the common Print Server.**

For example, if file servers A, B, and C on the network are cross linked, carry out Steps 1 to 9 on file server A. Then, log in to file server B, and repeat Steps 1 to 9. Finally, log in to file server C, and repeat Steps 1 to 9.

Configuring the DNIC-E'NET as a Remote Printer

(NetWare 2.x/3.x)

To configure your DNIC-E'NET as a remote printer under NetWare 2.x/3.x, complete each of the following procedures in this section:

- Selecting the Print Queue
- Adding the Remote Printer
- Assigning and Restarting the Print Queue
- Defining the Print Job Configuration

These procedures use the commands for Novell NetWare 2.x or 3.x. For other systems, the procedures may differ. Unless noted, commands can be upper or lower case, and typed commands should be entered by pressing the <Enter> key.

Note

After configuring your DNIC-E'NET as a remote printer, go to "Setting Required/ Preferred File Server Mode" (page 3-28) if your network has more than 25 file servers.

Selecting the Print Queue

1 **Log in to the Novell file server so that you have supervisor privileges.**

At the prompt, enter:
`LOGIN` *`fileserver`*`\SUPERVISOR`

At the prompt, enter the password.

2 **At the system prompt, enter:** `PCONSOLE`**.**

3 **Select Print Queue Information from the Available Options menu.**

To select an item from a menu in PCONSOLE, use the arrow keys to highlight the item, then press `<Enter>`.

4 **Select an existing Print Queue from the list (or create a new Print Queue and then select it).**

To create a new item, press `<Insert>`, which opens a dialog box. Type in a name and press `<Enter>`, and the new item will appear on the list. Press `<Enter>`.

This brings up the **Print Queue Information** menu.

5 **Press** `<Esc>` **several times until the Available Options menu is again displayed.**

Adding the Remote Printer

1. **Select Print Server Information from the Available Options menu.**

2. **If several Print Servers are displayed, select the one you want to service the Digital printer.**

   You may also create a new Print Server and select it.

3. **Write down the names of the Print Queue and Print Server assigned to the DNIC-E'NET.**

   You'll need to know these names later.

4. **Select Print Server Configuration from the menu.**

5. **Select Printer Configuration.**

6. **Select one of the Not Installed printers from the list of printers displayed.**

7. **Enter the printer name:** DNE*xxxxxx*_1

   where *xxxxxx* represents the last six characters of the DNIC-E'NET's Ethernet hardware address. Upper and lower case letters aren't important. For example, a valid name would be: DNE005008_1

8. **Press the <Dn-arrow> key to select Type, and press <Enter> to display the printer types.**

   Select **Remote Other/Unknown** from the list.

9. **Save your changes by pressing <Esc> and selecting Yes to confirm the save.**

10. **Press <Esc> to return to the Print Server Configuration menu.**

Assigning and Restarting the Print Queue

1. **Select Queues Serviced by Printer from the Print Server Configuration menu.**
2. **Select the Digital printer name (for example, DNE123456_1).**
3. **Press <Insert> to display the list of available queues.**

   Select the queue to be serviced by the Digital printer.
4. **Enter a Priority level number for the printer (default is 1, highest) and press <Enter>.**
5. **Press <Esc> until the Available Options menu is displayed.**
6. **If you wish to service several queues with the Digital printer, repeat Steps 3 and 4 for each additional queue.**
7. **Press <Esc> until the message Exit PCONSOLE appears.**

   Select **Yes** to exit PCONSOLE.
8. **Shut down and restart the Print Server per Novell procedures.**

Defining the Print Job Configuration

There are many utility and add-on programs that define special printer configurations. Refer to the respective program's documentation for further information.

Configuring the DNIC-E'NET as a Remote Printer

(NetWare 4.x BEM)

These procedures use the commands for Novell NetWare 4.x BEM. Unless noted, commands can be upper or lower case. Typed commands should be entered by pressing the <ENTER> key.

Note

After configuring your DNIC-E'NET as a remote printer, go to "Setting Required/Preferred Server Mode" if your network has more than 25 file servers.

1 **Log in to NetWare in the Network Directory Services Mode as ADMIN equivalent.**

For example, type:
`f:\login fileserver/username`

2 **At the system prompt, type** `PCONSOLE`**, then press** <ENTER>.

3 **Select Quick Setup at the Available Options menu.**

4 **Enter the Print Server Name.**

Specify name of existing Print Server or new Print Server.

5 **Enter the Printer Name:** `DNE`*xxxxxx*`_1`

where *xxxxxx* is the last six characters of the Ethernet LAN address. Upper and lower case is not important.

If the printer name has been changed using the DS/P UTILITY, then print the configuration sheet to get the printer's name. The printer's name is the print server's name followed by "_1".

6 **Enter the Queue Name.**

7 **Set printer type to OTHER / UNKNOWN.**

8 **Save your changes by pressing <Esc> and selecting Yes to confirm.**

9 **Press <Esc> until you have exited PCONSOLE.**

10 **Power the printer OFF, then back ON.**

The DNIC-E'NET will not create a connection if PCONSOLE is running during power up.

11 **Down the PSERVER using the Status and Information selection in PCONSOLE.**

12 **At the server system console prompt (or the DOS prompt of the printer server) load the PSERVER.**

- **If you are running the NLM, the command to start the PSERVER is:**
  load PSERVER *name*
- **If you are running PSERVER.EXE, use:**
  PSERVER *name*

Bindery Emulation Mode must be enabled on the file server.

Setting Optional Configurations

This section describes optional procedures for communicating with the DNIC-E'NET to monitor system parameters or to change the parameters from their factory defaults.

Logging in to the DNIC-E'NET

To monitor or change configuration parameters on the DNIC-E'NET, you must first log in to the Remote Console Facility (RCF) port from your host.

Note

The RCF port is a pseudo port on the DNIC-E'NET; there is no physical connector to attach a terminal. The only intended purpose of the RCF port is to allow for remote management of the server, and therefore the port can only be accessed from the network side.

Novell hosts require the terminal emulation program, *TES*, and the *Kermit* protocol to access the DNIC-E'NET's RCF port. Both of these are furnished on the Novell NetWare Diagnostic Utility diskette.

TES is a terminate-and-stay-resident (TSR) program that can be loaded from any DOS prompt or loaded at boot time from an *AUTOEXEC.BAT* file. It must be loaded before you start *Kermit*.

The following procedure installs the software on your system and establishes a connection.

1 **Insert the Novell NetWare Diagnostic Utility diskette in your disk drive and enter the following to install the files from the diskette in drive A: to drive C:**

```
a:install a: c:
```

2 **Run TES by entering:**

```
cd c:\tes-krmt
tes
```

To display information about TES commands, at the DOS prompt, enter: `tes help`

3 **Run Kermit by entering:**

```
kermit
```

The following prompt will appear:

MS-Kermit>

4 **Specify which port to use. In the name** DNE*xxxxxx***, the x's stand for the last six characters of the DNIC-E'NET's Ethernet hardware address. Enter:**

```
set port tes DNExxxxxx
```

For example:

```
set port tes DNE123456
```

5 **To connect to the DNIC-E'NET, enter:**

```
connect
```

6 **When the Kermit connection screen appears, press <Enter> until the DNIC-E'NET login banner is displayed.**

Before executing various server commands (Table 3.1 on page 3-26 shows many of the most common), you must first follow the instructions below:

- At the `Enter username, or HELP>` prompt, type *`first_name`*, and press `<ENTER>`.
- At the `Server>` prompt type `su`, and press `<ENTER>`.
- At the `Password>` prompt, type `system`, and press `<ENTER>`.

The `Server>>` prompt is returned and you can now enter server commands. See the section *"Basic DNIC-E'NET Commands"* (page 3-25).

7 **To end the connection, press:**

`<Alt><X>`

Basic DNIC-E'NET Commands

The basic DNIC-E'NET commands are as follows:

- **SHOW** displays the DNIC-E'NET's current information. Display screens vary according to the specific SHOW parameter. The syntax is:

  `show` *parameter*

- **MONITOR** is the same as SHOW, except the display screen is updated every 10 seconds (every 1 second in privileged mode). Press any key to exit the display. The syntax is:

  `monitor` *parameter*

- **LIST** displays the DNIC-E'NET's NVRAM (non-volatile RAM) parameter settings. Display screens vary according to the specific LIST parameter. The syntax is:

  `list` *parameter*

- **SET** temporarily changes a parameter to a given value. The change is valid until you log out from the DNIC-E'NET or turn OFF the printer. The syntax is:

  `set` *parameter value*

- **DEFINE** permanently changes an NVRAM parameter to a given value. The change takes effect when you reinitialize the DNIC-E'NET (power OFF, power ON the printer). The syntax is:

  `define` *parameter value*

- **CHANGE** is a combination of **SET** and **DEFINE**; it immediately changes a parameter and permanently updates it in the NVRAM as well. The syntax is:

  `change` *parameter value*

- **HELP** displays instructions on the use of the various commands. The syntax is:

  `help` *commandname*

Table 3.1 lists the most useful DNIC-E'NET commands, organized by task.

Table 3.1 DNIC-E'NET tasks and commands

Task	Command
Display information about the DNIC-E'NET characteristics and the specific options that are enabled.	**show server characteristics** Each parameter displayed may be altered using the appropriate SET/CHANGE/DEFINE command. If you have a VT100 compatible terminal, the show server characteristics command displays a "stack" of overlapping screens which can be cycled for display with the arrow keys.
Display revision levels and the self-test results.	**show server hardware**
Display Document Services for Printing (DS/P) parameters (refer to the *Document Services for Printing Guide*).	**show server dsp**
Display the overall server configuration and start-up parameter setting.	**show server local**
Display the overall network configuration, including the Ethernet hardware address and the protocols currently supported.	**show server network**
Change the login password.	**define server login password *'password_1'*** (where *'password_1'* is the new login password)
Change the privileged password.	**define server privilege password *'password_2'*** (where *'password_2'* is the new privileged password) This command changes the 'SU' user password.
Change the server name.	**define server name *server_name*** (where *server_name* is the new server name) This command will affect the functioning of all current set-ups and may cause a problem with DS/P.
Change the frame type.	**define server netware *frame type*** This command sets the frame type for the DNIC-E'NET. The default is AUTOSELECT.
Reset the DNIC-E'NET to factory defaults.	**init delay 0 default**

Table 3.1 DNIC-E'NET tasks and commands *(continued)*

Task	Command
Display network configuration parameters.	**show server netware**
Disable PSERVER.	**define server pserver disable**
Enable PSERVER.	**define server pserver enable**
Disable RPRINTER.	**define server rprinter disable**
Enable RPRINTER.	**define server rprinter enable**
Define a preferred file server for the printer's DNIC-E'NET.	**define node *server_name* nfserver** (where *server_name* is the preferred file server's name)
Define the preferred file server as required.	**define server netware required enable** The printer's DNIC-E'NET will only operate if the preferred file server is available for connection. When the required file server is down, the printer's DNIC-E'NET will not come up.
Define the preferred file server as not required.	**define server netware required disabled** The printer's DNIC-E'NET will first try to connect to the preferred file server. If it is down, the DNIC-E'NET will connect to the first available file server.
Define routing tables.	**define node ip *ggg.ggg.ggg.ggg* gateway default** (where *ggg.ggg.ggg.ggg* is the address of the default router for the printer's network segment)

Setting Required/ Preferred File Server Mode

Within networks that have more than 25 file servers, Digital recommends that a “Required File Server” be established for each DNIC-E’NET card to speed up the initialization process. When you set a required file server, the DNIC-E’NET will attach itself to that server and will only come up when the required file server is up and a connection between the two has been established. The DNIC-E’NET will not come up when the required file server is down.

Setting a required file server is important for two reasons:

- First, if the required file server crashes (or is downed for routine maintenance) the DNIC-E’NET card will have the information it needs to recover.
- Second, in large networks (25 or more file servers) the DNIC-E’NET will not broadcast itself to the whole network (to reduce network traffic).

It is also possible to specify a file server as “preferred” (instead of required). When a preferred file server is set, the DNIC-E’NET first tries to establish a connection with the preferred file server. If it cannot connect to the preferred file server, it searches for the next available file server.

The commands for setting Required/Preferred File Server mode are listed in Table 3.1 on page 3-27.

Chapter 4

Using the Printer with EtherTalk

Overview

This chapter tells you how to configure an EtherTalk network to print files to the Digital printer.

Note

- *To use the EtherTalk protocol, your Macintosh must be running AppleTalk Phase 2.*
- *EtherTalk on the DNIC-E'NET is not enabled unless PostScript is installed in the printer. Make sure your printer has the PostScript Option kit installed.*

The printer's AppleTalk services are visible from the Chooser of a Macintosh running AppleTalk Phase 2 networking whenever the Digital printer is powered up and the network hardware installation (i.e. cabling, etc.) is installed correctly. The DNIC-E'NET automatically configures its network parameters (address, network number, zone, etc.) when it powers up.

You can also use the DECprint Supervisor (DCPS) for OpenVMS to access the printer using the EtherTalk protocol.

You may wish to customize the configuration to your needs. This is explained in the section *"Customizing a Printer Service"* (page 4-7).

Installing the Printer Driver

Your printer requires the installation of two types of software before printing can begin. The first is a PostScript printer driver that is optimized for use with the Digital LN17ps printer. The second is known as a PostScript Printer Description (PPD) file and is written to take advantage of your printer's unique printing capabilities.

To install the printer driver, follow the steps below.

1 **Insert the PostScript Printer Driver for Macintosh diskette into your Macintosh.**

2 **When the window appears, double-click on the OnPAGE™ II installation icon.**

The credits screen will appear.

3 **Click the Continue button to enter the installer section.**

An installation "Notes screen" will appear describing the various installation options available along with any late breaking news about the installation procedure.

4 **Click the Continue button.**

The software install screen appears.

5 **For a complete installation, select All Software from the menu.**

6 **Click the Install button.**

The following automatic sequence takes place:

- The OnPAGE™ II driver is placed in the Extensions folder in the System folder.
- A "PPD Folder" is created in the System folder.
- An "OnPAGE™ Extras" folder is created on the desktop. Contained in this folder are the "OnPAGE™ Printer Utility," OnPAGE™ "ReadMe" files (late breaking news) and any vendor printer specific "Notes."

Note

If you wish to rename your printer, it should be done before selecting the driver in the Chooser. See “Customizing a Printer Service” (page 4-7).

Accessing a Remote Printer

As explained in the previous section, the DNIC-E'NET is preconfigured with AppleTalk services. Use the following procedure to access your printer.

If your Macintosh is connected to additional types of networks, such as LocalTalk or Token Ring, you may need to select the Ethernet network before you can access your printer's Ethernet card.

1. **Select Control Panels from the Apple menu.**
2. **Double-click the Network icon.**
3. **If the EtherTalk icon isn't already selected, click on the EtherTalk icon.**
4. **Click OK.**
5. **If your network administrator has divided your EtherTalk network into zones, another dialog box will appear. Select the appropriate zone for your computer.**
6. **Verify that you are connected to a Phase 2 AppleTalk network and that PostScript is installed in the printer.**
7. **Select Chooser from the Apple menu.**
8. **Click the OnPAGE icon.**
9. **If the AppleTalk Active button isn't already on, click the Active button to turn AppleTalk ON.**
10. **If your network administrator has divided your AppleTalk network into zones, click the zone that includes your printer.**

    All of the AppleTalk printers that are on your network (or in the current zone) will appear in a list box. Select the name of your printer).
11. **Click the Setup button.**

12 **Choose the PostScript Printer Definition (PPD) utility that corresponds to your printer.**

13 **Close the Chooser and return to your application.**

The computer will indicate that you have changed your current printer. Click **OK** to return to your application.

Customizing a Printer Service

To change the AppleTalk configuration of your printer server, use the OnPAGE utility. This utility is in a folder named "OnPAGE Extras" and can be installed when the OnPAGE driver is installed. The utility has the following functions:

- Receive printer information
- Retrieve the printer's font list
- Download a PostScript file
- Download PostScript fonts to the printer
- Rezone a printer on an AppleTalk network
- Rename a printer

The instructions for these functions are contained in the OnPAGE documentation which comes with the driver.

Caution

If combinations of network interface cards are installed in the printer, be aware that any changes to the printer name, printer device type and zone name will propagate through all AppleTalk capable cards (i.e., Ethernet and LocalTalk).

Chapter 5

Using the Printer with UNIX TCP/IP

Overview

The UNIX operating system comes in many different varieties. The following environments are supported:

- SunOS releases 4.0, 4.1, 4.1.x, and 5.x
- Solaris releases 1.1 (SunOS 4.1.x) and 2.x (SunOS 5.x) and 3.x
- IBM AIX releases 3.1, 3.2.x, and 4.1
- ULTRIX-32 releases 3.0, 4.0, and 4.3
- Interactive UNIX System v/386 release 3.2
- SCO UNIX release 3.2
- Hewlett Packard HP-UX releases A.B8.05 and A.09.x (SVR5)
- AT&T System V release 4.0 with NCR TCP/IP
- USL System V release 4.2

Note

The DNIC-E'NET does not support UNIX FTP (File Transfer Protocol).

Network Considerations

UNIX TCP/IP systems require:

- Support for lpd or Digital-supplied rprint
- Client support of TCP/IP, TELNET, and UDP

Printer Language Settings

Refer to Table 5.1 for the correct printer language settings.

Table 5.1 Printer language settings

If your system is…	And you want to print…	At the host, set the printer model to…	At the printer, set System Language to…
AIX	PCL	hplj-3si	PCL or PostScript
	PostScript	PostScript	PCL or PostScript (Do not send header or trailer pages if set to PCL.)
HP	PCL	PCL1	PCL or PostScript
	PostScript	PostScript	PCL or PostScript
Solaris 2.3	PCL	none	PCL or PostScript
	PostScript	none	PCL or PostScript

Installation

Installing a printer in the UNIX environment can be a bit complex. The DNIC-E'NET supports *lpd*, which is the most common print protocol, as well as *rprint*, a printer interface program supplied by Digital. Essentially, the installation of a network printer under TCP/IP involves:

- Copying certain files to the host system and altering some configuration files.
- Setting up either the *lpd* print protocol, or the Digital-supplied *rprint* print filter.

Before proceeding, you should check with your network administrator to assign a new IP address and subnet mask (if necessary) for the DNIC-E'NET.

Because this is a time-consuming process for even experienced UNIX administrators, we have furnished an automated installation program, called *Enstall*, that will do most of the

work for you. Use of this program is described in the section *"Automatic Installation Procedure"* (page 5-6).

Caution

Do not attempt to use printer setup or administration tools that are provided with the host operating system software to configure the DNIC-E'NET card.

We recommend that you use *Enstall*, which is discussed in the section *"Automatic Installation Procedure"* (page 5-6). However, if you prefer to install the DNIC-E'NET software manually, refer to the section *"Manual Installation Procedure"* (page 5-8).

Automatic Installation Procedure

The *Enstall* program automatically installs the required files and configures the DNIC-E'NET for you by asking a few simple questions.

Note

Enstall will not work if the printer and the workstation on which Enstall is running are on different networks or subnets.

Note

A minimum of five to ten megabytes of disk space is required on the UNIX system for the Enstall software and spool queues.

Enstall supports installation of pre-compiled host utilities for the following UNIX systems:

- AIX/RS6000
- AT&T 386
- SCO 386
- SUN/SPARC
- SOLARIS/SPARC
- USL UnixWare 386
- ULTRIX MicroVax

Installing binary files is quicker and less sensitive to system variations. If your system is not listed above, the system is required to have a C compiler to enable *Enstall* to compile the *RPRINT.C* and *TELRCF.C* files, also included on the diskette.

Caution

If you are unsure whether or not your UNIX host is 100% hardware and software compatible with the supplied pre-compiled host utilities, you should compile the utilities on your host.

1 **Insert the UNIX Installation Utility diskette in your disk drive.**

2 **Change to the working directory under which the files will be installed.**

3 **At the system prompt, enter the command:**

```
tar xvf device_name
```

where *device_name* refers to the drive in which the diskette was inserted.

For example:

```
tar xvf /dev/fd0
```

This installs the files in the current working directory.

4 **Enter the commands:**

```
cd dec
enstall -s
```

5 **Read and follow the instructions on the screen.**

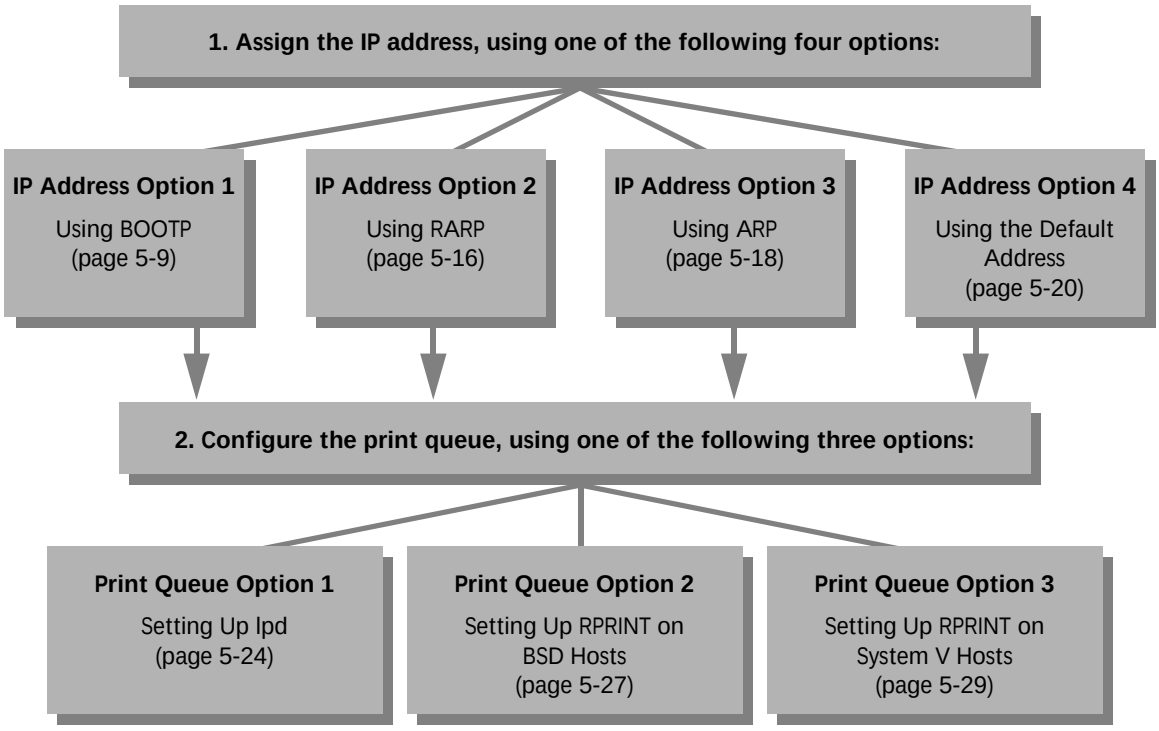
The DNIC-E'NET is now ready for use on your UNIX TCP/IP network.

6 **If necessary, repeat this procedure for each UNIX system requiring access to the printer.**

Manual Installation Procedure

If you wish to install the Digital printer manually, you must assign the IP address, configure some system files, and then configure the print queue. Assigning the IP address is easiest if you have the BOOTP (Bootstrap Protocol) or RARP (Reverse Address Resolution Protocol) daemon running on your system. You may also use the standard UNIX ARP command to assign the IP address. Figure 5.1 shows the options for manual installation.

Figure 5.1 Manual installation procedure



Note

In the following procedures, if the /etc/ethers *or* /etc/hosts *file on your host is administered by NIS (formerly, Yellow Pages), you must update the appropriate NIS master hosts database instead.*

IP Address Option 1: Using BOOTP

Overview

BOOTP (Bootstrap Protocol) is a service provided under TCP/IP. Implementing BOOTP allows it to find the following information from the network based on its hardware address upon powering on the printer:

- Server IP Address
- Server Subnet Mask
- Server Network Load Path Name and File Name
- Host IP Address
- Gateway IP Address
- Time Server IP Address
- Domain Name Server IP Address
- Server Node Name
- Server Domain Name

The DNIC-E'NET acts as a BOOTP client and sends a BOOTP request packet onto the network at a set interval time. This broadcast continues until a BOOTP server receives and acknowledge its request. Once the BOOTP server receives the request, it attempts to service the request by trying to provide any information that it may have based on the BOOTP client hardware address. If no information is available on the server, no acknowledgment is sent back to the client and the BOOTP request packet continues to be broadcasted. If information is found on the server, an acknowledgment is sent back to the client along with the information and the client ceases any further BOOTP request packet broadcast.

In most cases, BOOTP will be used in the following way:

The client will broadcast its hardware address looking for a server that might know what its assigned IP address is. On the server, there will be a bootptab (a bootp file) which has a list of hardware addresses and the corresponding IP addresses that are assigned to each of them as a one to one

relation. If the client's hardware address is found on the server's bootptab, an acknowledgment is sent back to the client telling that I know who you are and here is your IP address. Once a IP address is stored onto the DNIC, any host using TCP/IP can communicate to it.

In another case, BOOTP can be a way to assign an IP address and to do a FLASH download of the latest firmware onto the card. If a FLASH download is being used, the directory and file names would be included in the same table information where the IP address is being assigned in the BOOTPTAB file. Once the IP address is sent back to the client from the server along with the name of the boot file (e.g. DNE10068), the client will send another request for the boot file.

Here is an example of what a BOOTPTAB file may look like on your Unix System under the /etc directory:

```
ClientName:ht=ether:ha=000812342A7B:ip=13.241.4.10:
PrinterName:ht=tr:ha=00012A3B4D22:ip=13.241.4.22:
DigitalPrinter:ht=ether:ha=1234567890AB:ip=13.241.4.44:\
  :hd=/usr/tftpboot:bf=DNE10068:
```

The first field is the name that you want the client to be called. The colon separates each identifiers and the slash is a line continuation.

Note

BOOTP works only on a DNIC-E'NET running at a firmware level of 4.14 or above.

Table 5.2 describes the BOOTPTAB identifiers. It is not complete, however, and additional identifiers may be available on different UNIX platforms. Use UNIX's man page command on bootpd to find out more about your particular system.

Table 5.2 BOOTPTAB Identifiers

Identifiers	Value Type	Description
bf	character string	Name of the bootfile
bs	integer	Size of boot file in 512 byte block
cs	IP address(es)	Cookie server address list
ds	IP address(es)	Domain name server address list
gw	IP address(es)	Gateway address list
ha	hexadecimal	Hardware address of the client
hd	character string	Home directory of the bootfile
ht	character string or integer	Hardware type
ip	IP address	Client's IP address
sa	IP address	Server's IP address
sm	IP address	Client's subnet mask
ts	IP address(es)	Time server address list
vm	character string	Selector of the vendor's magic cookie

Table 5.3 Hardware type ht identifier

Symbolic Name	Hardware Code	Description
ethernet, ether	1	10 MB Ethernet
ethernet3, ether3	2	3 MB Ethernet

Configuring the DNIC-E'NET Using BOOTP

No initial configuration settings are required to get BOOTP working on the DNIC. Just install the DNIC into the printer and have a network cable attached to the card. Power down and then back up. Before powering up, you need to follow the instructions in installing the BOOTP server.

The DNIC is defaulted with BOOTP on with the following variables set:

- 2 network hops if no IP address is known
- 0 network hops if an IP address is known

Installing the BOOTP Server on the Same Segment

1 **Identify which UNIX platform will be the BOOTP server.**

2 **Check to be sure that TCP/IP is running on the server:**

```
ps -ef | grep inetd
```

If TCP/IP is not running don't continue any further until you get it up and running. Bootp will not work since its activated by the inetd (internet daemon).

3 **Check to see if the bootpd is running:**

```
ps -ef | grep bootpd
```

If the bootpd is not running then you need to uncomment a line in the /etc/inetd.conf file. Look for a line with the beginning string of bootpd or bootps, uncomment that line.

4 **Add entries into the bootptab file. Use an editor and edit the /etc/bootptab file.**

Here is an example of what a BOOTPTAB file may look like on your Unix System under the /etc directory:

```
ClientName:ht=ether:ha=000812342A7B:ip=13.241.4.10:
PrinterName:ht=tr:ha=00012A3B4D22:ip=13.241.4.22:
DigitalPrinter:ht=ether:ha=1234567890AB:ip=13.241.4.44:\
  :hd=/usr/tftpboot:bf=DNE10068:
```

The first field is the name that you want the client to be called. The colon separates each identifier and the backslash is a line continuation.

Find out the hardware address of the DNIC by printing out a configuration sheet on the printer.

Add that hardware address to the /etc/bootptab file with an IP address that you what to assign. Also include the hardware type like ether. If you are also doing a FLASH download, following the instructions mentioned in the overview section of this chapter.

Installing the BOOTP Server on a Different Segment and Using a Router

1. **Do Step 1 through Step 4 on page 5-13.**

2. **Determine which router is between the Bootp server and the Bootp client (DNIC).**

3. **Telnet into that router and enable Bootp service. This will allow Bootp requests to be passed from the router.**

4. **While still logged in on the router, you will specify the address of the Bootp server or the network segment where a Bootp server can be found.**

5. **On the UNIX Platform that is being the Bootp server, be sure you include the routing path to the router by using the UNIX command:**

   `route add host` *`router_IPaddress host_IPaddress`*

   For example:

   ```
   route add host 200.1.106.11 200.1.106.4
   ```

6. **Verify that the routing path has taken by doing the following Unix command:**

   ```
   netstat -r
   ```

7. **Check the communication to the router by Pinging to the router:**

   `ping` *`router's IP address`*

   For example:

   ```
   ping 200.1.106.11
   ```

Checking to See If BOOTP Worked on the DNIC

1. **Power ON the printer so that it can send out a BOOTP request.**

2. **Check that it received the IP address by entering**

   ```
   arp -a
   ```

   on the Unix machine. This will show you the entries made into the ARP Static Table.

3. **You can also verify that the Bootp client received the IP address by printing out a Configuration Sheet.**

Next you will need to configure the print queue, using one of the following three options:

- *"Print Queue Option 1: Setting Up lpd"* (page 5-24)
- *"Print Queue Option 2: Setting Up RPRINT on BSD Hosts"* (page 5-27)
- *"Print Queue Option 3: Setting Up RPRINT on System V Hosts"* (page 5-29)

IP Address Option 2: Using RARP

To determine if RARP is running on your host, enter:

```
ps -ax | grep rarpd      (BSD)
```

or

```
ps -ef | grep rarpd      (System V)
```

Note

If the system does not display a process number for the RARP daemon, skip to the section "IP Address Option 3: Using ARP" (page 5-18).

If RARP is running on your host, proceed as follows:

1 **Edit the file** */etc/ethers* **(or** */usr/etc/ethers***) by adding a line describing the server as follows:**

00:00:c9:xx:xx:xx server_node_name

where *00:00:c9:xx:xx:xx* represents the Ethernet hardware address of the DNIC-E'NET. The default *server_node_name* is DNE*xxxxxx*, where *xxxxxx* is the last six characters of the Ethernet hardware address.

For example, if the Ethernet hardware address is 00-00-c9-12-34-56, enter the following line in the *ethers* file:

```
00:00:c9:12:34:56 DNE123456
```

You may change the server node name to a more convenient name if desired. Refer to the section "Setting Optional Configurations" (page 5-32).

2 **Edit the file** */etc/hosts* **(or** */usr/etc/hosts***) by adding a line describing the server as follows:**

```
ddd.ddd.ddd.ddd    server_node_name
```

where *ddd.ddd.ddd.ddd* is the IP address assigned by your network administrator. The *server_node_name* must match the name entered in the */etc/ethers* file.

For example, if the IP address is 138.239.111.111, enter:

```
138.239.111.111    DNE123456
```

On some systems, such as those using a Domain Name Service, you may have to update the NIS master hosts database. Update the DNS database instead of /etc/hosts in this case.

When the server is booted, the host receives the RARP request from the server and sends the IP address in the */etc/hosts* file to the DNIC-E'NET, which then stores it in memory.

3 **Turn the printer OFF, then back ON.**

Caution

Be sure to write down the new IP address. Without it, you will not be able to locate the printer on the network.

Next you will need to configure the print queue, using one of the following three options:

- *"Print Queue Option 1: Setting Up lpd"* (page 5-24)
- *"Print Queue Option 2: Setting Up RPRINT on BSD Hosts"* (page 5-27)
- *"Print Queue Option 3: Setting Up RPRINT on System V Hosts"* (page 5-29)

IP Address Option 3: Using ARP

This method offers a convenient means of assigning or reassigning an IP address to the DNIC-E'NET. The IP address assigned with this method is stored in the DNIC-E'NET's permanent memory as well as RAM. The ARP command is standard on all UNIX platforms, although its syntax may vary from one system to another. You will need the DNIC-E'NET's Ethernet hardware address and the IP address you wish to assign for this procedure.

Note

To start this procedure, the IP address on the DNIC-E'NET should be either "None" or the factory default (138.239.254.253).

1 **Logon to your UNIX host as root user.**

2 **Issue the ARP command.**
On most UNIX platforms, the syntax is:

`arp -s` *`ddd.ddd.ddd.ddd xx:xx:xx:xx:xx:xx`*
`ping` *`ddd.ddd.ddd.ddd`*

where *`ddd.ddd.ddd.ddd`* is the newly assigned IP address in decimal dot notation and *`xx:xx:xx:xx:xx:xx`* is the Ethernet hardware address in hexadecimal notation.

Do not use leading zeros in the IP or Ethernet hardware address.

For example:

```
arp -s 126.16.1.2 0:0:c9:0:8:2a
```

On AIX you will need to include an additional argument to indicate which type of LAN interface is being used. For Ethernet, the command is:

arp -s *HostName ddd.ddd.ddd.ddd xx:xx:xx:xx:xx:xx*

For example:

```
arp -s HostName 126.16.1.2 0:0:c9:0:8:2a
```

On some systems, such as AT&T System V, the ARP command is implemented as "arpbypass" with the following syntax:

```
arpbypass -f1 set ddd.ddd.ddd.ddd
 0xnn.0xnn.0xnn.0xnn.0xnn.0xnn.0xnn
```

where the nn's are hexadecimal digits.

For example:

```
arpbypass -f1 set 126.16.1.2
 0x0.0x0.0xc9.0x0.0x8.0x2a
```

3 **Reboot the DNIC-E'NET by powering the printer OFF and then ON.**

4 **From the UNIX command prompt type:**

`ping` *ddd.ddd.ddd.ddd*

where *ddd.ddd.ddd.ddd* is the newly assigned IP address.

You should see response packets from the DNIC-E'NET displayed on your screen. Your DNIC-E'NET now has the new IP address in both permanent memory and RAM.

If there is no response, even after a few minutes, type the command interrupt key (usually `<Ctrl><C>`) to stop the `ping` command.

Next you will need to configure the print queue, using one of the following three options:

- *"Print Queue Option 1: Setting Up lpd"* (page 5-24)
- *"Print Queue Option 2: Setting Up RPRINT on BSD Hosts"* (page 5-27)
- *"Print Queue Option 3: Setting Up RPRINT on System V Hosts"* (page 5-29)

IP Address Option 4: Using the Default Address

If the RARP daemon was not found on your system, and the ARP method failed to assign the IP address, you must log in directly to the DNIC-E'NET.

Note

The IP address, subnet mask, and routing table can be set up through the telnet utility, provided that the printer can be accessed from a workstation on the same network. This procedure will NOT work if the printer is on a different network, which may be the case if you are using subnetting to divide your network. An example explaining how to install a printer on a network with subnetting is provided in Appendix B.

1 Print a Configuration Sheet to identify the IP address of the printer.

If the IP address is "none", then reset it to the default by first powering the printer OFF, unplugging the Ethernet cable, then powering the printer back ON. Wait 2-3 minutes, then print a Configuration Sheet. The default IP address (138.239.254.253) should be printed on it. Then reconnect the cable.

2 Set up a routing table entry to the DNIC-E'NET card for the printer on the UNIX workstation.

On the UNIX workstation, type:

```
route add host 138.239.254.253
    aaa.aaa.aaa.aaa 0
```

(where *aaa.aaa.aaa.aaa* is the IP address of the UNIX workstation), then press <ENTER>.

You may check the routing table by typing `netstat -r`, *then pressing* <ENTER>.

3 **Log in to the DNIC-E'NET card on the printer through telnet by typing:**

`telnet 138.239.254.253 2048`

then press `<ENTER>`.

The port number "2048" is important for proper terminal emulation.

4 **At the "#" prompt type `access` then press `<ENTER>`.**

This password ("access") will not appear on the screen.

5 **At the `Local>` prompt, type `su`**

6 **At the `Password>` prompt type `system` then press `<ENTER>`.**

This password will not appear on the screen.

Certain Telnet clients must first enter a Backspace keystroke and then enter the password.

7 **Define the printer's IP address by typing:**

`define server ip` *`ddd.ddd.ddd.ddd`*

(where *`ddd.ddd.ddd.ddd`* is the IP address of the printer), then press `<ENTER>`.

8 **If necessary, redefine the subnet mask (if your network uses subnet routing). Otherwise, skip to Step 9.**

To redefine the subnet mask, type:

`define server subnet` *`mmm.mmm.mmm.mmm`*

(where *`mmm.mmm.mmm.mmm`* is the subnet mask for the network), then press `<ENTER>`.

9 **Define routing tables in the DNIC-E'NET card if the printer needs to know the address of routers in the system. Otherwise, skip to the next step.**

Type:

```
define node ip ggg.ggg.ggg.ggg gateway
    default
```

(where *ggg.ggg.ggg.ggg* is the address of the default router for the printer's network segment).

Then press <ENTER>.

10 **To enable the parameters set above, reset the DNIC-E'NET by typing:**

```
init delay 0
```

11 **Log out of the DNIC-E'NET by typing:**

```
logout
```

then press <ENTER>.

12 **Log in to the host and edit the file** */etc/hosts* **(or** */usr/etc/hosts***) by adding a line describing the server as follows:**

ddd.ddd.ddd.ddd server_node_name

where *ddd.ddd.ddd.ddd* is the IP address you assigned in Step 7.

For example, if the IP address is 138.239.111.111, enter:

```
138.239.111.111    DNE123456
```

Caution

After you change the default IP address, be sure to write down the new IP address. You will need it in order to locate the printer on the network.

Next you will need to configure the print queue, using one of the following three options:

- *"Print Queue Option 1: Setting Up lpd"* (page 5-24)
- *"Print Queue Option 2: Setting Up RPRINT on BSD Hosts"* (page 5-27)
- *"Print Queue Option 3: Setting Up RPRINT on System V Hosts"* (page 5-29)

Print Queue Option 1: Setting Up *lpd*

Follow this procedure to use the native *lpd* print protocol on a BSD host with the DNIC-E'NET. Exact syntax may vary from one UNIX system to another. First, determine if *lpd* is supported on your system by entering:

```
ps -ax | grep lpd
```

Note

The lpd *service is only defined for the DNIO port (port 1) on the DNIC-E'NET.*

Note

If the system does not return a process number for lpd, *you must use* rprint *as described in the section "Print Queue Option 2: Setting Up RPRINT on BSD Hosts" (page 5-27).*

If *lpd* is supported, proceed as follows:

1 **On your host, check to see if an error log exists. If not, create it. Then edit the** */etc/printcap* **file to contain an entry similar to the following:**

```
XRX_PCL|DigitalLN17|DNIO port:\
     :lp=:\
     :rm=node_name:\
     :rp=queue_name:\
     :mx#0:\
     :lf=/usr/spool/lpd/errorlog:\
     :sd=/usr/spool/lpd/xrx_pcl:
```

where *XRX_PCL* is the printer name, *node_name* is the machine name for the remote printer, and *queue_name* is the queue name. Valid queue names are:

- TEXT - Adds a carriage return after each linefeed in the file. Use this queue for standard document files.
- PASSTHRU - Passes the file directly to the printer without modification. Use this queue for binary files such as PostScript, PCL, and HPGL, as well as screen dumps and graphics.

If the TEXT queue is used, PostScript and HPGL files cannot be sent using this entry. However, a second printer definition can be used for PostScript and/or HPGL files.

2 **Create the spooling directory. For example:**

```
mkdir /usr/spool/lpd/xrx_pcl
```

3 **Add the server's node_name to the */etc/hosts* file. The node_name must match the name entered in the printcap file in step 1.**

For example:

```
138.239.111.111          node_name
```

Be sure that *node_name* is the same name you entered in the */etc/printcap* file in step 1.

Update the DNS database instead of /etc/hosts if the system uses a Domain Name Service.

4 **Start the printer queue by entering:**

```
lpc start printer_name
```

5 **To print via the spooler, use the command:**

```
lpr -Pprinter_name file_name
```

Refer to your host system documentation for a list of spooler commands.

Print Queue Option 2: Setting Up RPRINT on BSD Hosts

To configure your BSD host with *rprint*, so that it can initiate a print job, do the following:

Note

A C compiler is required to perform this procedure, or you may use one of the pre-compiled binary sets on the UNIX Installation Utility diskette (if applicable).

1 ***tar*** **the Digital utility** *rprint.c* **from the UNIX Installation Utility diskette to your host system and change to the subdirectory where it is loaded (for example,** */usr/xrx***).**

2 **Edit the file** *environ.h* **to reflect the appropriate system type.**

The following are typical system parameters for Sun SparcStations:

```
#define SOCK   1
#define SYSV   0  (0 because a BSD system)
#define LING   1
#define ROBUST 1
```

3 **Compile and link** *rprint.c* **by entering the command (your compiler commands may differ):**

```
cc rprint.c -o rprint
```

4 **Create a dummy device file with the following commands:**

```
touch /dev/xrx
chown daemon /dev/xrx
chmod 666 /dev/xrx
```

where *xrx* is the name of the printer.

Some systems may also require a chgrp *command. Refer to your system manuals.*

5 **Create the directory for the spooled files.**

For example:

```
mkdir /usr/spool/xrx
chown daemon /usr/spool/xrx
chmod 666 /usr/spool/xrx
```

where *xrx* is the name of the spooler.

6 **Edit** */etc/printcap* **to add an entry for the Digital printer.**

For example, the following entry defines a printer with the PostScript option, on the DNIO port (port 1, TCP port 2501), the rprint program residing in the usr/xrx directory, and the spooler residing in the usr/spool/xrx directory.:

```
xrx|xrx|DNIO printer:\
:lp=/dev/xrx:\              (dummy device name)
:sd=/usr/spool/xrx:\        (dir for spooled files)
:of=/usr/xrx/rprint:\ (location of rprint program)
:xrx_n=138.239.111.111:\     (server IP address)
:xrx_p=2501:\                (TCP port number)
```

The following additional entries are recommended for PostScript printers:

```
:mx#0:\                     (unlimited buffer space)
:sh:\             (suppress burst page headersheet)
:sf:\                        (suppress form feeds)
:xrx_text=disable:          (required for PostScript)
```

The last line should not end with the backslash (\). All preceding lines do.

7 **Initialize the new spool device. For example:**

```
lpc start xrx      (printer name in printcap file)
```

8 **Print a PostScript test file using a command similar to the following:**

```
lpr -Pxrx ps_file
```

Print Queue Option 3: Setting Up RPRINT on System V Hosts

To configure your System V host so that it can initiate a print job, do the following:

Note

A C compiler is required to perform this procedure, or you may use one of the pre-compiled binary sets on the UNIX Installation Utility diskette (if applicable).

1 **tar the Digital utility** *rprint.c* **from the UNIX Installation Utility diskette to your host system and change to the subdirectory where it is loaded (for example,** */usr/xrx***).**

2 **Edit the file** *environ.h* **for the appropriate system type.**

The following are typical system parameters for a generic System V system:

```
#define SOCK    1 (0 if sockets are not supported)
#define SYSV    1 (1 because System V UNIX)
#define LING    1
#define ROBUST 1
#define PRINTCAP "/usr/xrx/printcap"
```

3 **Compile and link** *rprint.c* **as follows:**

(your compiler commands may differ)

```
cc rprint.c -o rprint
```

4 **Edit the */usr/xrx/printcap* file to include an entry for the Digital printer(s).**

If you are using the rprint precompiled binary, the printcap file must be in the `/etc` *directory.*

For example, the following entry defines a printer on the DNIO port (port 1, TCP port 2501):

```
xrx_pcl|xrx_1|DNIO printer:\
    :lp=xrx_pcl:\          (dummy device name)
    :xrx_n=138.239.111.111:\   (IP address)
    :xrx_p=2501:             (TCP port number)
```

If this printer will be used for PostScript or graphic image files, include the following line in the printcap entry:

```
    :xrx_text=disable:\
```

5 **Edit the printer interface script file. First copy the sample Digital printer interface file, *lp_dumb*, to another file that corresponds to the printer name you selected.**

For example:

```
cp lp_dumb lp_xrx_pcl
```

6 **Edit the *lp_xrx_pcl* file to specify the correct path to the rprint program. Assuming that the rprint program is kept in */usr/xrx*, enter the second to the last line of the *lp_xrx_pcl* file as follows:**

(shell commands)

```
| /usr/xrx/rprint `basename $0` $1 $5
exit $?
```

If you are familiar with UNIX bourne shell script programming, you can edit the *lp_xrx_pcl* file and modify the banner page that precedes the printed output to suit your needs.

7 **Install the printer into the System V spooler system. Before shutting down the spooling system, check to see that there are no print jobs running (enter `lpstat -o`). If jobs are running, wait until they are completed. Then, enter the following:**

```
/usr/lib/lpshut

/usr/lib/lpadmin -pxrx_pcl   -v/dev/null
  -i/usr/xrx/lp_xrx_pcl

/usr/lib/lpsched

/usr/lib/accept xrx_pcl

enable xrx_pcl
```

8 **To make the printer the default system printer, enter:**

```
/usr/lib/lpadmin -dxrx_pcl
```

9 **Test the printer spooler operation by entering:**

```
lp -dxrx_pcl test.dat
```

If the host is configured correctly, a banner page and the contents of the *test.dat* file will be printed.

If the test fails, check to see if the printer is in proper emulation mode, or refer to your UNIX system administration manual for information on printer spooler operation.

Setting Optional Configurations

This section describes optional procedures for communicating with the DNIC-E'NET to monitor system parameters or to change the parameters from their factory defaults.

Logging in to the DNIC-E'NET

To monitor or change configuration parameters on the DNIC-E'NET, you must first log in to the Remote Console Facility (RCF) port from your host.

Note

The RCF port is a pseudo port on the DNIC-E'NET; there is no physical connector to attach a terminal. The only intended purpose of the RCF port is to allow for remote management of the server, and therefore the port can only be accessed from the network side.

Use the following procedure to log in to the DNIC-E'NET:

1. **Log in to the DNIC-E'NET using the following command:**

   `telnet` *`ddd.ddd.ddd.ddd 2048`*

   where *`ddd.ddd.ddd.ddd`* is the IP address. The default IP address is 138.239.254.253.

   If you are using the default address, identify the DNIC-E'NET to your host by entering:

   `route add host 138.239.254.253` *`host_ip`* `0`

   where *host_ip* is the IP address of your UNIX host.

2. **At the # prompt, enter the password.**

   The default is `access`. You will not see what you type.

3. **At the Local> prompt, enter:**

   `su`

4 **At the Password> prompt, enter the password.**

The default is `system`. You will not see what you type.

Certain Telnet clients must first enter a Backspace keystroke and then enter the password.

5 **At the Local> prompt, enter the DNIC-E'NET commands you want to use.**

See the next section for a list of the basic commands. See Table 5.4 on page 5-35 for more details about the commands. In general, the commands you use most often are:

`define server subnet` *`mmm.mmm.mmm.mmm`*

`define node ip` *`ggg.ggg.ggg.ggg`* `gateway default`

6 **Enter** `logout` **at the Local> prompt.**

7 **Turn the printer off and back on.**

To verify your settings, log in to the DNIC-E'NET again and use the SHOW SERVER command.

Basic DNIC-E'NET Commands

The basic DNIC-E'NET commands are as follows:

- **SHOW** displays the DNIC-E'NET's current information. Display screens vary according to the specific SHOW parameter. The syntax is:

  `show` *parameter*

- **MONITOR** is the same as SHOW, except the display screen is updated every 10 seconds (every 1 second in privileged mode). Press any key to exit the display. The syntax is:

  `monitor` *parameter*

- **LIST** displays the DNIC-E'NET's NVRAM (non-volatile RAM) parameter settings. Display screens vary according to the specific LIST parameter. The syntax is:

  `list` *parameter*

- **SET** temporarily changes a parameter to a given value. The change is valid until you log out from the DNIC-E'NET or turn OFF the printer. The syntax is:

  `set` *parameter value*

- **DEFINE** permanently changes an NVRAM parameter to a given value. The change takes effect when you reinitialize the DNIC-E'NET (power OFF, power ON the printer). The syntax is:

  `define` *parameter value*

- **CHANGE** is a combination of **SET** and **DEFINE**; it immediately changes a parameter and permanently updates it in the NVRAM as well. The syntax is:

  `change` *parameter value*

- **HELP** displays instructions on the use of the various commands. The syntax is:

  `help` *commandname*

Table 5.4 lists the most useful DNIC-E'NET commands, organized by network environment and task.

Table 5.4 DNIC-E'NET tasks and commands

Task	Command
Display information about the DNIC-E'NET characteristics and the specific options that are enabled.	**show server characteristics** Each parameter displayed may be altered using the appropriate SET/CHANGE/DEFINE command. If you have a VT100-compatible terminal, the show server characteristics command displays a "stack" of overlapping screens which can be cycled for display with the arrow keys.
Display revision levels and the self-test results.	**show server hardware**
Display Document Services for Printing (DS/P) parameters (refer to the *Document Services for Printing Guide*).	**show server dsp**
Display the overall server configuration and start-up parameter setting.	**show server local**
Display the overall network configuration, including the Ethernet hardware address and the protocols currently supported.	**show server network**
Change the login password.	**define server login password *'password_1'*** (where *'password_1'* is the new login password)
Change the privileged password.	**define server privilege password *'password_2'*** (where *'password_2'* is the new privileged password) This command changes the 'SU' user password.
Change the server name.	**define server name *server_name*** (where *server_name* is the new server name) This command will affect the functioning of all current set-ups and may cause a problem with DS/P.

Table 5.4 DNIC-E'NET tasks and commands *(continued)*

Task	Command
Reset the DNIC-E'NET to factory defaults.	**init delay 0 default**
Display network configuration parameters.	**show server TCP**
Create a new remote printer service.	**change service *name tcp_port* priority *nn*** (where *name* is the new service name, *tcp_port* is a value between 3000 and 5000, and *nn* is a value of 0 to 15, with 15 being the highest) Default services all have a priority of 0 (lowest priority). All files sent to a new service set with a higher priority take priority over files sent to the default services. Quotation marks around the service name are required when using upper and lower case characters in the name.
Define the printer's IP address.	**define server ip *ddd.ddd.ddd.ddd*** (where *ddd.ddd.ddd.ddd* is the IP address of the printer)
Redefine the subnet mask.	**define server subnet *mmm.mmm.mmm.mmm*** (where *mmm.mmm.mmm.mmm* is the subnet mask for the network)
Define routing tables.	**define node ip *ggg.ggg.ggg.ggg* gateway default** (where *ggg.ggg.ggg.ggg* is the address of the default router for the printer's network segment)

Chapter 6

Using the Printer with LAT

Overview

This chapter gives you information to follow when configuring a Digital printer for use from a LAT host system. The procedures require the OpenVMS access privileges of the system administrator.

Network Considerations

LAT systems require client support of the LAT protocol under the OpenVMS operating system.

LAT Node Name

The printer's LAT node name is identical to its Novell PSERVER name. You can print a configuration sheet and find the PSERVER name in the Ethernet section.

Configuring an OpenVMS LAT Host for LATSYM

The following is an example that your system administrator may use to set up the printer queue on the host for PCL printing with the LN17 printer. The actual commands will vary according to system configuration, type of printer, and application requirements. LATSYM is the LAT symbiont.

See *"Configuring an OpenVMS LAT Host for DCPS"* (page 6-5) for information on PostScript printing from a LAT host.

1 **At the $ prompt enter the following command:**

```
run sys$system:latcp
```

2 **To set up a LAT application port, at the LATCP> prompt enter the following sequence of commands:**

```
create port ltannn: /log
set port ltannn: /application -
    /node=DNExxxxxx /port=PORT_1
exit
```

where *ltannn* is the port name assigned by the network administrator.

The qualifier /node *represents the DNIC-E'NET's server name. If the name was changed, the new name must be used instead. Be sure you match the case (upper / lower) of the node name and port name (to preserve case, use quotation marks).*

3 **To set up the terminal parameters, at the $ prompt enter the following sequence of commands:**

```
set terminal ltannn: /perm -
 /device=la36 /width=80 /page=66 -
 /lowercase /nobroadcast

set protection=(s:rwlp,o,g,w:rwlp) -
 /device ltannn:

set device ltannn: -
 /spooled=(queue_name, -
 sys$sysdevice:)
```

where *queue_name* is defined by you or the system administrator.

4 **To initialize the printer queue, at the $ prompt enter the following command:**

```
initialize /queue /start -
 /processor=latsym -
 /retain=error -
 /on=ltannn: -
 /default=(noburst, flag=one, -
 notrailer) -
 /record_blocking -
 queue_name
```

5 **Print a file.**

For example:

```
print /queue=queue_name file_name.ext
```

If you do not use `/noflag` *in the print command, a banner page will print at a width of 132 characters.*

Configuring an OpenVMS LAT Host for DCPS

You can send PostScript jobs to the LN17ps printer using either LATSYM (see *"Configuring an OpenVMS LAT Host for LATSYM"* (page 6-3)) or the DECprint Supervisor (DCPS) for OpenVMS software. Using the DCPS software for PostScipt printing provides several advantages over using LATSYM. These advantages include:

- Translation of ANSI text to PostScript
- Tray selection and page rotation features
- Printing of separator pages
- Robust handling of printer communication and error conditions

For information on configuring an OpenVMS LAT host to communicate with your PostScript LN17ps printer, see the *DECprint Supervisor for OpenVMS Software Installation Guide*.

Setting Optional Configurations

This section describes optional procedures for communicating with the DNIC-E'NET to monitor system parameters or to change the parameters from their factory defaults.

Logging in to the DNIC-E'NET

To monitor or change configuration parameters on the DNIC-E'NET, you must first log in to the Remote Console Facility (RCF) port from your host.

Note

The RCF port is a pseudo port on the DNIC-E'NET; there is no physical connector to attach a terminal. The only intended purpose of the RCF port is to allow for remote management of the server, and therefore the port can only be accessed from the network side.

Use the following procedure to log in to the DNIC-E'NET:

1. **Run the NCP utility on the OpenVMS system by entering:**

   `run sys$system:NCP` (or `mcr ncp`)

2. **Connect to the DNIC-E'NET RCF port by entering:**

   `connect via` *qna-0* `physic addr` *nn-nn-nn-nn-nn-nn*

   where *qna-0* is your actual circuit type, and *nn-nn-nn-nn-nn-nn* is the DNIC-E'NET's Ethernet hardware address.

3. **At the # prompt, enter the password.**

   The default is `access`. You will not see what you type.

4 **Enter your user name if the following prompt is displayed:**

Enter username or HELP>

(Any name is acceptable as a user name.)

You can now enter commands. You must be in privileged command mode to enter privileged commands (Steps 5 and 6). The most useful commands are discussed in the section *"Basic DNIC-E'NET Commands"* (page 6-8).

5 **At the Local> prompt, enter:** `su`

6 **At the Password> prompt, enter the password.**

The default is `system`. You won't see what you type. See Table 6.1 on page 6-9 for a list of basic commands.

7 **To end the connection, press:**

`<Ctrl><D>`

Basic DNIC-E'NET Commands

The basic DNIC-E'NET commands are as follows:

- **SHOW** displays the DNIC-E'NET's current information. Display screens vary according to the specific SHOW parameter. The syntax is:

  `show` *parameter*

- **MONITOR** is the same as SHOW, except the display screen is updated every 10 seconds (every 1 second in privileged mode). Press any key to exit the display. The syntax is:

  `monitor` *parameter*

- **LIST** displays the DNIC-E'NET's NVRAM (non-volatile RAM) parameter settings. Display screens vary according to the specific LIST parameter. The syntax is:

  `list` *parameter*

- **SET** temporarily changes a parameter to a given value. The change is valid until you log out from the DNIC-E'NET or turn OFF the printer. The syntax is:

  `set` *parameter value*

- **DEFINE** permanently changes an NVRAM parameter to a given value. The change takes effect when you reinitialize the DNIC-E'NET (power OFF, power ON the printer). The syntax is:

  `define` *parameter value*

- **CHANGE** is a combination of **SET** and **DEFINE**; it immediately changes a parameter and permanently updates it in the NVRAM as well. The syntax is:

  `change` *parameter value*

- **HELP** displays instructions on the use of the various commands. The syntax is:

  `help` *commandname*

Table 6.1 lists the most useful DNIC-E'NET commands, organized by network environment and task.

Table 6.1 DNIC-E'NET tasks and commands

Task	Command
Display information about the DNIC-E'NET characteristics and the specific options that are enabled.	**show server characteristics** Each parameter displayed may be altered using the appropriate SET/CHANGE/DEFINE command. If you have a VT100-compatible terminal, the show server characteristics command displays a "stack" of overlapping screens which can be cycled for display with the arrow keys.
Display revision levels and the self-test results.	**show server hardware**
Display Document Services for Printing (DS/P) parameters (refer to the *Document Services for Printing Guide*).	**show server dsp**
Display the overall server configuration and start-up parameter setting.	**show server local**
Display the overall network configuration, including the Ethernet hardware address and the protocols currently supported.	**show server network**
Change the login password.	**define server login password *'password_1'*** (where *'password_1'* is the new login password)
Change the privileged password.	**define server privilege password *'password_2'*** (where *'password_2'* is the new privileged password) This command changes the 'SU' user password.
Change the server name.	**define server name *server_name*** (where *server_name* is the new server name) This command will affect the functioning of all current set-ups and may cause a problem with DS/P.
Reset the DNIC-E'NET to factory defaults.	**init delay 0 default**

Table 6.1 DNIC-E'NET tasks and commands *(continued)*

Task	Command
Display network configuration parameters.	**show server lat**
Change enabled LAT group codes	**define server group *n1–n2,n3–n4,...*** **define port 1 authorized group *n1–n2,n3–n4,...*** The *n1*, *n2*, *n3*, and *n4* represent group numbers and *n1–n2* represents a range of group numbers. Server and port group codes should match as indicated above. OpenVMS host must be enabled for one or more of these group codes.

Chapter 7

Using the Printer with Windows 95

Overview

This chapter describes the process needed to enable printing on a Windows 95 system:

1. **Install TCP/IP software, if not already installed.**
2. **Using the Windows 95 arp and ping commands, set the IP address of the DNIC-E'NET.**

   Optionally, set a subnet mask and default gateway address by Telnet to port 2048 of the DNIC-E'NET.
3. **Use the Add Printer Wizard to do the following:**
   - A **Select Digital as your printer manufacturer and Digital DEClaser 5100/Net for your printer type.**
   - B **Select the Digital Network Port for your printer. Define the port type as Digital RapidPrint Server (via TCP/IP) and enter the port number as 2501.**
4. **Install the Digital LN17 PostScript driver for use with your new LN17 printer.**

This chapter also provides optional procedures for changing configuration parameters on the DNIC-E'NET.

Installing the Software

All the software necessary to the DNIC-E'NET is included in the Windows 95 operating system. Follow the steps below to install the software. You do not need to perform the following procedure if TCP/IP Protocol and TCP Printing are already installed. Skip to the section *"Setting the IP Address"* (page 7-5).

1. **Run Windows 95.**
2. **From the Start button, select Settings, then Control Panel.**
3. **Double-click the Network icon in the Control Panel window.**
4. **In the Network dialog box, select the Configuration tab. Click Add.**
5. **Select Protocol from the network components list and click Add.**
6. **In the Select Network Protocol dialog box, select Microsoft as the manufacturer and TCP/IP as the protocol. Click OK.**
7. **Select TCP/IP. In the Network dialog box, click Properties to specify TCP/IP properties:**
   - **Select the IP Address tab. Specify the IP address of the PC (obtain from your system administrator). Specify the subnet mask (if applicable).**
   - **Select the Gateway tab and enter the appropriate IP address (if applicable).**
   - **Select the DNS Configuration tab and enable DNS (if applicable). Specify a host name and domain.**
   - **Click OK.**
8. **Restart the PC.**

To verify that the TCP/IP software is installed, open the **Network** dialog box again and check that **TCP/IP** appears in the **Installed Network Components** list.

Setting the IP Address

This section describes how to set the IP address of the DNIC-E'NET. Check with your system administrator for an IP address.

Note

When initially setting the IP address, your client system and printer must be on the same subnet.

1. **From the Start button, select Programs, then MS-DOS Prompt to open an MS-DOS window.**

2. **From the command line, set the IP address:**

   `arp -s` *`ddd.ddd.ddd.ddd xx-xx-xx-xx-xx-xx`*

   `ping` *`ddd.ddd.ddd.ddd`*

   where *`ddd.ddd.ddd.ddd`* is the printer's IP address and *`xx-xx-xx-xx-xx-xx`* is the DNIC-E'NET hardware address. This information can be found on the printer's Configuration Sheet.

3. **Wait 2 to 3 minutes and enter the ping command again to test your setting:**

   `ping` *`ddd.ddd.ddd.ddd`*

4. **Type `exit` to close the MS-DOS window.**

5. **Turn the printer off, then back on.**

6. **When the printer is online, print a new Configuration Sheet to verify the new IP address.**

Proceed to the section *"Configuring the DNIC-E'NET for Windows 95"* (page 7-6).

Configuring the DNIC-E'NET for Windows 95

This section describes how to configure the DNIC-E'NET in the Windows 95 environment. It is assumed that the permanent IP address has already been set on the DNIC-E'NET. If the permanent IP address has not been set, go to the previous section *"Setting the IP Address"* (page 7-5).

In Windows 95, local printers that are attached to the network require a network port driver. Windows 95 includes a port driver that is suitable for use with the LN17 printer. To install the port driver, you need to add the Digital DEClaser 5100/Net printer. This printer includes the port driver. After installing the port driver to enable access to all features of your printer, install the LN17 printer type using the Windows driver disk that comes with your printer. Do the following steps for this procedure:

1. **From the Start button, select Settings, then Printers.**
2. **Open the Add Printer icon.**
3. **Click Next on the Add Printer Wizard.**
4. **Choose Local Printer and click Next.**
5. **Select Digital in the Manufacturer list box, and Digital DEClaser 5100/Net in the Printer list box. Click Next.**
6. **Insert the Windows 95 CD-ROM disc or floppy diskette, if necessary. Then click OK to copy the files.**
7. **In the Add Printer Wizard, click Add Port.**
8. **In the Add Port - Digital Network Port dialog box:**
   - **A Select port type Digital RapidPrint Server (via TCP/IP).**
   - **B Under Port Information, enter the IP address.**
   - **C Enter the port name.**
   - **D Click Options.**

9 **In the Digital RapidPrint Server Options dialog box:**

A Enable Print Banner Page (optional — for use with PostScript printing only).

B Under Additional Port Information, select Other and enter port number 2501. (Do not use the Configure button. This step applies only to the RapidPrint server, not the LN17 printer.)

C Click OK.

10 **Click OK in the Add Port - Digital Network Port dialog box.**

11 **In the Add Printer Wizard, check that the port you created is available and selected. Click Next.**

12 **Enter a name for your printer and click Next, then click Finish on the next screen.**

13 **Select the new printer icon in the Printers window, and from the File menu, select Properties.**

14 **Select the Details tab from the Properties dialog box, and click New Driver.**

15 **Respond Yes in the Printers warning box.**

16 **In the Select Device dialog box:**

A Click Have Disk to install the LN17 driver for Windows 95.

B Make sure that a Digital LN17 driver is listed in the Models box.

C Click OK. The Copying Files message box appears.

To verify that the printer is ready to accept jobs, open the **Properties** dialog box for the printer, select the **General** tab, and click **Print Test Page.**

Setting Optional Configurations

This section describes optional procedures for communicating with the DNIC-E'NET to monitor system parameters or to change the parameters from their factory defaults.

Logging in to the DNIC-E'NET

To monitor or change configuration parameters on the DNIC-E'NET, you must first log in to the Remote Console Facility (RCF) port from your host.

Note

The RCF port is a pseudo port on the DNIC-E'NET; there is no physical connector to attach a terminal. The only intended purpose of the RCF port is to allow for remote management of the server, and therefore the port can only be accessed from the network side.

Use the following procedure to log in to the DNIC-E'NET:

1. **At the DOS prompt, enter:**

   `Telnet` *`print_server_ip_address`* `2048`

2. **At the # prompt, enter the password.**

   The default is `access`. You will not see what you type.

3. **At the Local> prompt, enter:**

   `su`

   or

   `set priv`

4. **At the Password> prompt, enter the password.**

   The default is `system`. You will not see what you type.

   Certain Telnet clients first need to enter a Backspace keystroke and then enter a password.

5 **At the Local> prompt, enter the DNIC-E'NET commands you want to use.**

See Table 7.1 on page 7-12 for more details about the commands. In general, the commands you need to use are:

`define server subnet` *`mmm.mmm.mmm.mmm`*

`define node ip` *`ggg.ggg.ggg.ggg`* `gateway default`

6 **Enter** `logout` **at the Local> prompt.**

7 **Turn the printer off and back on.**

To verify your settings, log in to DNIC-E'NET again and use the SHOW SERVER command.

Basic DNIC-E'NET Commands

The basic DNIC-E'NET commands are as follows.

Note

When entering commands in the Telnet program, the Backspace key returns the cursor to the beginning of the line. To back up and delete characters on the command line, use the Delete key instead.

- **SHOW** displays the DNIC-E'NET's current information. Display screens vary according to the specific SHOW parameter. The syntax is:

  `show` *parameter*

- **MONITOR** is the same as SHOW, except the display screen is updated every 10 seconds (every 1 second in privileged mode). Press any key to exit the display. The syntax is:

  `monitor` *parameter*

- **LIST** displays the DNIC-E'NET's NVRAM (non-volatile RAM) parameter settings. Display screens vary according to the specific LIST parameter. The syntax is:

  `list` *parameter*

- **SET** temporarily changes a parameter to a given value. The change is valid until you log out from the DNIC-E'NET or turn OFF the printer. The syntax is:

  `set` *parameter value*

- **DEFINE** permanently changes an NVRAM parameter to a given value. The change takes effect when you reinitialize the DNIC-E'NET (power OFF, power ON the printer). The syntax is:

  `define` *parameter value*

- **CHANGE** is a combination of **SET** and **DEFINE**; it immediately changes a parameter and permanently updates it in the NVRAM as well. The syntax is:

  `change` *parameter value*

- **HELP** displays instructions on the use of the various commands. The syntax is:

  `help` *commandname*

Table 7.1 lists the most useful DNIC-E'NET commands, organized by network environment and task.

Table 7.1 DNIC-E'NET tasks and commands

Task	Command
Display information about the DNIC-E'NET characteristics and the specific options that are enabled.	**show server characteristics** Each parameter displayed may be altered using the appropriate SET/CHANGE/DEFINE command. If you have a VT100-compatible terminal, the show server characteristics command displays a "stack" of overlapping screens which can be cycled for display with the arrow keys.
Display revision levels and the self-test results.	**show server hardware**
Display Document Services for Printing (DS/P) parameters (refer to the *Document Services for Printing Guide*).	**show server dsp**
Display the overall server configuration and start-up parameter setting.	**show server local**
Display the overall network configuration, including the Ethernet hardware address and the protocols currently supported.	**show server network**
Change the login password.	**define server login password *'password_1'*** (where *'password_1'* is the new login password)
Change the privileged password.	**define server privilege password *'password_2'*** (where *'password_2'* is the new privileged password) This command changes the 'SU' user password.
Change the server name.	**define server name *server_name*** (where *server_name* is the new server name) This command will affect the functioning of all current set-ups and may cause a problem with DS/P.
Reset the DNIC-E'NET to factory defaults.	**init delay 0 default**

Table 7.1 Page 1 of 2

Table 7.1 DNIC-E'NET tasks and commands *(continued)*

Task	Command
Display network configuration parameters.	**show server TCP**
Create a new remote printer service.	**change service *name tcp_port* priority *nn*** (where *name* is the new service name, *tcp_port* is a value between 3000 and 5000, and *nn* is a value of 0 to 15, with 15 being the highest) Default services all have a priority of 0 (lowest priority). All files sent to a new service set with a higher priority take priority over files sent to the default services. Quotation marks around the service name are required when using upper and lower case characters in the name.
Define the printer's IP address.	**define server ip *ddd.ddd.ddd.ddd*** (where *ddd.ddd.ddd.ddd* is the IP address of the printer)
Redefine the subnet mask.	**define server subnet *mmm.mmm.mmm.mmm*** (where *mmm.mmm.mmm.mmm* is the subnet mask for the network)
Define routing tables.	**define node ip *ggg.ggg.ggg.ggg* gateway default** (where *ggg.ggg.ggg.ggg* is the address of the default router for the printer's network segment)
	Table 7.1 Page 2 of 2

Chapter 8

Using the Printer with Windows NT

Overview

This chapter describes the process needed to enable printing on a Windows NT network.

1. **Install TCP/IP software, if not already installed**
2. **Using the arp and ping commands, set the IP address of the DNIC-E'NET.**

   Optionally, set a subnet mask and default gateway address by Telnet to port 2048 of the DNIC-E'NET.
3. **Install the LN17 driver, select the Digital Network Port for your printer and define the port type as Digital RapidPrint Server (via TCP/IP). Enter the port number as 2501.**

   Or

   Install the LN17 driver, select the LPR Port for your printer and for Name or address of host providing lpd box, enter the printer's IP address. For the Name of the printer on that machine box, type PASSTHRU.

This chapter also provides optional procedures for changing configuration parameters on the DNIC-E'NET.

Note

The DNIC-E'NET is supported only on Version 3.51 of Windows NT.

Network Considerations

Windows NT systems require:

- Microsoft Windows NT Server, Version 3.51
- Microsoft Windows Workstation, Version 3.51

Installing the Software

All the software necessary to the DNIC-E'NET is included in the Windows NT operating system. Follow the steps below to install the software. You do not need to perform the following procedure if TCP/IP Protocol and TCP Printing are already installed. Skip to the section *"Setting the IP Address"* (page 8-5).

You must be logged on with administrator privileges to perform the following procedure.

1. **Run/Start Windows NT. From the Program Manager, double-click on the Main icon.**
2. **Double-click on the Control Panel icon.**
3. **Double-click on the Network icon.**
4. **Click Add Software.**
5. **Select TCP/IP protocol and related components and click Continue.**
6. **Select the following installation options:**
   - **TCP/IP Network Printing Support**
   - **Simple TCP/IP Services**

   and click Continue.
7. **Enter the path indicating where the Windows NT Operating System files are located and click Continue.**
8. **In the TCP/IP Configuration window, select the appropriate Ethernet adapter.**
9. **Enter the IP address of the PC (obtain from your system administrator).**
10. **Enter the subnet mask (if applicable).**
11. **Click on the Advanced button.**

12 **In the Default Gateway box, enter the appropriate IP address (if applicable).**

13 **Click on the OK button.**

This will return to the TCP/IP configuration window.

14 **Click on the OK button .**

15 **Restart the PC.**

To verify that the TCP/IP software is installed, check that **TCP/IP Protocol** appears in the **Installed Network Software** list box of the **Networks Setting** dialog box.

Setting the IP Address

This section describes how to set the IP address of the DNIC-E'NET. Set the IP address if you have more than one Digital LN17 printer to be used in the TCP/IP environment or if your subnet cannot reach this IP address. Check with your system administrator for an IP address.

Note

When initially setting the IP address, your client system and printer must be on the same subnet.

1. **From the Program Manager, double-click on the Main icon.**
2. **Double-click on the MS-DOS Prompt icon.**
3. **From the command line, set the printer's IP address:**

   `arp -s` *`ddd.ddd.ddd.ddd xx-xx-xx-xx-xx-xx`*

   `ping` *`ddd.ddd.ddd.ddd`*

   where *`ddd.ddd.ddd.ddd`* is the printer's IP address and *`xx-xx-xx-xx-xx-xx`* is the DNIC-E'NET hardware address. This information can be found on the printer's Configuration Sheet.
4. **Wait 2 to 3 minutes, and enter the ping command again to test your setting:**

   `ping` *`ddd.ddd.ddd.ddd`*
5. **Type `exit` to close the MS-DOS window.**
6. **Turn the printer off, then back on.**
7. **When the printer is online, print a new Configuration Sheet to verify the new IP address.**

Configuring the DNIC-E'NET for Windows NT

This section describes how to configure the DNIC-E'NET in the Windows NT environment. It is assumed that the permanent IP address has already been set on the DNIC-E'NET. If the permanent IP address has not been set, go to the previous section *"Setting the IP Address"* (page 8-5)

You can set up your printer to use either of the following:

- Digital Network Port (recommended)
- LPR Port

Using the Digital Network Port

Use the following procedure to set up your printer to use the Digital Network Port:

1. **Double-click on the program group Main.**
2. **Double-click on the Print Manager icon.**
3. **From the Printer Menu, select Create Printer.**
4. **In the Printer Name box, enter the printer name, up to 32 characters.**
5. **In the Driver box, select Other to install, then select the Digital LN17 PostScript driver that came with your printer.**

   A Windows NT driver is provided with the printer.
6. **In the Description box, enter an optional description.**
7. **Click on the box Share this printer on the network (optional).**

   The Share name will be the first 8 characters of the name entered in Step 4.
8. **In the Print to box, scroll down and select Other....**
9. **In the Print Destinations window, select Digital Network Port and then OK.**

10 **In the Add Port - Digital Network Port window, enter the following:**

A Select the port type Digital RapidPrint Server (via TCP/IP).

B For Address of printer, enter the printer's IP address.

C Enter a name for the port. You can use the same name as you did for the printer. Then click on the Options button.

11 **In the Digital RapidPrint Server Options dialog box:**

A Enable Print Banner Page (optional — for use with PostScript printing only).

B Under Additional Port Information, select Other and enter port number 2501. (Do not use the Configure button. This step applies only to the RapidPrint server, not the LN17 printer.)

C Click OK.

12 **Click on the OK button in the Add Port window, then in the Create Printer window.**

13 **You may see an additional dialog box that allows you to set default parameters such as paper size, paper source, etc. When completed, click on the OK button.**

A window will appear with the printer name as the title.

14 **Close this window and an icon will be displayed in the Print Manager.**

15 **You may now select this printer as the default printer.**

16 **Close the Print Manager.**

The printer is now ready to accept jobs.

Using the LPR Port

Use the following procedure to set up your printer using the LPR Port:

1. **Double-click on the program group Main.**
2. **Double-click on the Print Manager icon.**
3. **From the Printer Menu, select Create Printer.**
4. **In the Printer Name box, enter the printer name, up to 32 characters.**
5. **In the Driver box, select Other to install, then select the Digital LN17 PostScript driver that came with your printer.**

   A Windows NT driver is provided with the printer.
6. **In the Description box, enter an optional description.**
7. **Click on the box Share this printer on the network (optional).**

   The Share name will be the first 8 characters of the name entered in Step 4.
8. **In the Print to box, scroll down and select Other....**
9. **In the Print Destinations window, select LPR Port and then OK.**
10. **In the Add Port - LPR Compatible Printer window, enter the following:**

    A **For Name or address of host providing lpd box, enter the printer's IP address.**

    B **For Name of printer on that machine box, type** PASSTHRU .

    Then click on the OK button.

11 **Click on the OK button in the Create Printer window.**

12 **You may see an additional dialog box that allows you to set default parameters such as paper size, paper source, etc. When completed, click on the OK button.**

A window will appear with the printer name as the title.

13 **Close this window and an icon will be displayed in the Print Manager.**

14 **You may now select this printer as the default printer.**

15 **Close the Print Manager.**

The printer is now ready to accept jobs.

Setting Optional Configurations

This section describes optional procedures for communicating with the DNIC-E'NET to monitor system parameters or to change the parameters from their factory defaults.

Logging in to the DNIC-E'NET

To monitor or change configuration parameters on the DNIC-E'NET, you must first log in to the Remote Console Facility (RCF) port from your host.

Note

The RCF port is a pseudo port on the DNIC-E'NET; there is no physical connector to attach a terminal. The only intended purpose of the RCF port is to allow for remote management of the server, and therefore the port can only be accessed from the network side.

Use the following procedure to log in to the DNIC-E'NET:

1. **At the DOS prompt, enter:**

   `Telnet print_server_ip_address 2048`

2. **At the # prompt, enter the password.**

   The default is `access`. You will not see what you type.

3. **At the Local> prompt, enter:**

   `su`

   or

   `set priv`

4. **At the Password> prompt, enter the password.**

   The default is `system`. You will not see what you type.

   Certain Telnet clients need to enter a Backspace keystroke and then enter the password.

5 **At the Local> prompt, enter the DNIC-E'NET commands you want to use.**

See the next section for a list of basic commands. See Table 8.1 on page 8-14 for more details about the commands. In general, the commands you need to use are:

```
define server subnet mmm.mmm.mmm.mmm
define node ip ggg.ggg.ggg.ggg gateway
  default
```

6 **Enter** `logout` **at the Local> prompt.**

7 **Turn the printer off and on.**

To verify your settings, log in to the DNIC-E'NET again and uses the SHOW SERVER command.

Basic DNIC-E'NET Commands

The basic DNIC-E'NET commands are as follows.

Note

When entering commands in the Telnet program, the Backspace key returns the cursor to the beginning of the line. To back up and delete characters on the command line, use the Delete key instead.

- **SHOW** displays the DNIC-E'NET's current information. Display screens vary according to the specific SHOW parameter. The syntax is:

  `show` *parameter*

- **MONITOR** is the same as SHOW, except the display screen is updated every 10 seconds (every 1 second in privileged mode). Press any key to exit the display. The syntax is:

  `monitor` *parameter*

- **LIST** displays the DNIC-E'NET's NVRAM (non-volatile RAM) parameter settings. Display screens vary according to the specific LIST parameter. The syntax is:

  `list` *parameter*

- **SET** temporarily changes a parameter to a given value. The change is valid until you log out from the DNIC-E'NET or turn OFF the printer. The syntax is:

  `set` *parameter value*

- **DEFINE** permanently changes an NVRAM parameter to a given value. The change takes effect when you reinitialize the DNIC-E'NET (power OFF, power ON the printer). The syntax is:

  `define` *parameter value*

- **CHANGE** is a combination of **SET** and **DEFINE**; it immediately changes a parameter and permanently updates it in the NVRAM as well. The syntax is:

  `change` *parameter value*

- **HELP** displays instructions on the use of the various commands. The syntax is:

  `help` *commandname*

Table 8.1 lists the most useful DNIC-E'NET commands, organized by network environment and task.

Table 8.1 DNIC-E'NET tasks and commands

Task	Command
Display information about the DNIC-E'NET characteristics and the specific options that are enabled.	**show server characteristics** Each parameter displayed may be altered using the appropriate SET/CHANGE/DEFINE command. If you have a VT100-compatible terminal, the show server characteristics command displays a "stack" of overlapping screens which can be cycled for display with the arrow keys.
Display revision levels and the self-test results.	**show server hardware**
Display Document Services for Printing (DS/P) parameters (refer to the *Document Services for Printing Guide*).	**show server dsp**
Display the overall server configuration and start-up parameter setting.	**show server local**
Display the overall network configuration, including the Ethernet hardware address and the protocols currently supported.	**show server network**
Change the login password.	**define server login password *'password_1'*** (where *'password_1'* is the new login password)
Change the privileged password.	**define server privilege password *'password_2'*** (where *'password_2'* is the new privileged password) This command changes the 'SU' user password.
Change the server name.	**define server name *server_name*** (where *server_name* is the new server name) This command will affect the functioning of all current set-ups and may cause a problem with DS/P.
Reset the DNIC-E'NET to factory defaults.	**init delay 0 default**

Table 8.1 Page 1 of 2

Table 8.1 DNIC-E'NET tasks and commands *(continued)*

Task	Command
Display network configuration parameters.	**show server TCP**
Create a new remote printer service.	**change service *name tcp_port* priority *nn*** (where *name* is the new service name, *tcp_port* is a value between 3000 and 5000, and *nn* is a value of 0 to 15, with 15 being the highest) Default services all have a priority of 0 (lowest priority). All files sent to a new service set with a higher priority take priority over files sent to the default services. Quotation marks around the service name are required when using upper and lower case characters in the name.
Define the printer's IP address.	**define server ip *ddd.ddd.ddd.ddd*** (where *ddd.ddd.ddd.ddd* is the IP address of the printer)
Redefine the subnet mask.	**define server subnet *mmm.mmm.mmm.mmm*** (where *mmm.mmm.mmm.mmm* is the subnet mask for the network)
Define routing tables.	**define node ip *ggg.ggg.ggg.ggg* gateway default** (where *ggg.ggg.ggg.ggg* is the address of the default router for the printer's network segment)
	Table 8.1 Page 2 of 2

Chapter 9

Using the Printer with SNMP

Overview

This chapter describes the network management and performance evaluation features that are available on the DNIC-E'NET. These features incorporate the Simple Network Management Protocol (SNMP) and include an Emulex Private management information database (MIB).

Note

The use of SNMP on the DNIC-E'NET requires that the TCP/IP protocol is enabled on the DNIC-E'NET.

SNMP

SNMP (Simple Network Management Protocol) is a standard by which a network manager may, through a network management station (NMS), poll the DNIC-E'NET and other devices on the network for statistics and configuration information. The DNIC-E'NET can also send alarms to the NMS to inform the manager of critical DNIC-E'NET events. The manager can analyze all data and make adjustments to enhance overall network performance.

Groups of related information (i.e., counters) that a device makes available to SNMP are referred to as a management information database (MIB). The printer supports the following standard MIBs:

- MIB II (defined in RFC 1213)
- Character Device MIB (defined in RFC 1316)
- Parallel Printer-like device MIB (defined in RFC 1318)

  (This MIB identifies the DNIO slot parameters.)
- Emulex Private MIB (described in the emulex.mib file on the SNMP MIB diskette)

A full description of SNMP and MIBs is beyond the scope of this guide. For further information, refer to the following:

- RFC 1155 - *Structure and Identification of Management Information for TCP/IP-based Internets (SMI)*
- RFC 1156 - *Management Information Base for Management of TCP/IP Internets (MIB)*
- RFC 1157 - *A Simple Network Management Protocol (SNMP)*
- *The Simple Book: An Introduction to Management of TCP/IP-based Internets*

The Emulex enterprise MIB is summarized in the section *"Emulex Private MIB"* (page 9-9), and fully described in the readme.mib file located on the SNMP MIB diskette.

The procedures in this document assume you have a working knowledge of SNMP. Digital therefore recommends you study the above documents before proceeding. In general you will also require privileged status for the DNIC-E'NET and supervisor privileges on the hosts.

DNIC-E'NET SNMP Setup

The SNMP parameters for each DNIC-E'NET must be configured as follows:

1 **Verify that the DNIC-E'NET is properly installed and configured for your network, and that those DNIC configuration areas pertaining to TCP/IP are correctly set up.**

2 **Log in to the DNIC-E'NET using the following command:**

`telnet` *`ddd.ddd.ddd.ddd 2048`*

where *`ddd.ddd.ddd.ddd`* is the IP address. The default IP address is 138.239.254.253.

If you are using the default address, identify the DNIC-E'NET to your host by entering:

`route add host 138.239.254.253` *`host_ip`* `0`

where *host_ip* is the IP address of your UNIX host.

3 **At the # prompt, enter the password.**

The default is `access`. You won't see what you type.

4 **At the Local> prompt, enter:**

`su`

5 **At the Password> prompt, enter the password.**

The default is `system`. You won't see what you type.

6 **Define SNMP community names and associated access modes with the command:**

```
change snmp community name access mode
```

where *name* is the community name and *mode* is the access mode for the community. Access modes may be read, rw (read/write), or none. These parameters must match the ones you configured in the NMS. The factory defaults are community name of *public* with access mode *read*.

For security purposes, the SNMP sets are disabled to prevent unauthorized access and use. This complies with the mode being read only. In order to use these sets, and comply with the mode being rw (read/write), the network administrator must enter the following command to enable or disable the SNMP sets as desired:

```
set/define/change snmp set
[enabled|disabled]
```

If the community name of public *does not comply with the mode being* rw *(read/write), change the community name to* manager *(or the name used by your SNMP manager):*

```
change snmp community manager access
rw
```

To display additional information about any of the commands, enter:

```
help set snmp set
help define snmp set
help change snmp set
```

7 **Optionally, you can define the IP address of an SNMP trap host in the DNIC-E'NET's SNMP table with the command:**

```
define snmp trap ip ddd.ddd.ddd.ddd
```

where *ddd.ddd.ddd.ddd* is the IP address of the trap host.

Currently, the following traps are supported:

```
coldStart(0)
authenticationFailure(4)
```

8 **If the Network Management Station (NMS) and the printer are on different networks or different subnets, add the NMS to each DNIC-E'NET's routing table. Use either of the following commands:**

```
change route ip nms_address
```

or

change node *name* ip *ipaddress* gateway default

where *name* is the name of the gateway and *ipaddress* is the IP address of the default gateway.

9 **To display the DNIC-E'NET's current information and to verify all parameter settings are entered correctly, enter the following command:**

```
show server snmp
```

NMS Setup

Following are the basic steps that a system manager must take to install and configure SNMP on the NMS. Specific procedures will vary for different network management software running on different hosts.

1. **Install the network management software on the NMS host according to the documentation for the application package.**

2. **Compile the Emulex MIBs contained in the file emulex.mib. This is on the SNMP MIB diskette.**

   The MIB is provided in ASN.1 syntax and may be run through any standard MIB compiler.

3. **Set up SNMP community names and their associated access rights, to match those that will be used by the DNIC-E'NET.**

   The default community name is usually public. The default access is usually read-only.

4. **Set up the node name of each DNIC-E'NET and its associated IP address in the NMS host.**

   On a UNIX host, this is usually done by making an entry for each server in the /etc/hosts file.

5. **If the NMS and the printer are on different networks or subnets, you should enter routing information for each DNIC-E'NET in the NMS routing table. Refer to your NMS host documentation for further information.**

Emulex Private MIB

The complete definition of the Emulex private MIB is provided in the readme.mib file on the SNMP MIB diskette. The MIB is provided in ASN.1 syntax and may be run through any standard MIB compiler.

The Emulex private MIB provides the network manager with access to most of the information that is normally accessible via the DNIC command set for configuring the DNIC-E'NET via SNMP. Some of the objects identified by this MIB are not applicable to the printer.

Note

In some objects, the DNIC-E'NET is identified as "Performance Series Server."

Stored Parameters

There are two databases that are maintained by the DNIC-E'NET: Permanent and Temporary. The permanent and temporary databases are not identical. There will be some attributes that are related to one and not the other. The general definitions are as follows:

- Permanent

  Parameters are stored in non-volatile memory and will not change when the server is re-initialized, unless a factory reset is effected. These parameters may be displayed using the LIST command and set using the DEFINE command when a telnet connection is established with the card.

- Temporary

  Parameters are stored in volatile memory. This is the current value of a parameter and typically is initialized to the permanent value when the server is booted. The temporary value may change with no effect on the permanent value. These parameters may be displayed

using the SHOW or MONITOR command and set using the SET command when a telnet connection is established with the card.

When a SNMP Request is issued to the DNIC-E'NET, certain attributes will be returned to the requester. The information will come from the two databases mentioned above.

SNMP Requests and their definitions are listed on the SNMP MIB diskette. Refer to the SNMP MIB diskette, for UNIX or DOS, whichever is appropriate to your system.

Chapter 10

Troubleshooting

Overview

This chapter describes some methods you can use to troubleshoot problems with the DNIC-E'NET. It also tells you how to obtain further assistance.

Basic Check Procedure

If you experience problems printing to the printer, first check for the following:

- Is the printer powered up?
  - — The printer's Control Panel display reads:

    ```
    Online          ___
    Ready
    ```

  - — If the Control Panel display reports an error, refer to the *LN17 and LN17ps Printers User Guide* for further information.
  - — Print a Configuration Sheet from the Test Menu and verify that the Ethernet settings are correct.
- Is the DNIC-E'NET properly installed in the printer and connected to the Ethernet network? Check that:
  - — The DNIC-E'NET is connected to the network via a Thinnet **or** UTP (10BaseT) cable. If the UTP is used, then the green LED on the DNIC-E'NET's faceplate will be lit.
  - — The yellow LED on the DNIC-E'NET's faceplate is ON or flashes to indicate network activity for UTP or Thinnet. If the LED is always off, verify that the network is active and is connected to both the host computer and the printer.

Network Operational Problems

Table 10.1 lists common network operational problems, the possible causes, and recommended corrective actions.

Table 10.1 Network Operational Problems

Problem	Possible Causes	Corrective Actions
Files won't print.	Bad cable connections.	Check the network: Observe the green and yellow LEDS between the twisted pair and coaxial connectors on the printer. • The green LED is on when the printer is powered on and connected to the network through the twisted pair connector. This LED will not be lit with a thinnet connection. • The yellow LED flashes when the interface card receives any network traffic. If the connection is twisted pair, observe the LEDs on the Ethernet hub. They should be on if the device is connected and powered on. If these LEDs are not on, try replacing hardware starting with cables.
	There is a problem with the DS/P connection.	See the troubleshooting section in the Document Services for Printing Guide.
		Table 10.1 Page 1 of 3

Table 10.1 Network Operational Problems *(continued)*

Problem	Possible Causes	Corrective Actions
There are intermittent breaks in transmission.	A network cable is damaged.	A damaged cable may still be capable of intermittent throughput, with occasional breaks in transmission. It is difficult to detect if no external cable damage is visible. Try to disassemble and test each section separately until the bad cable or connectors are found. Replace cable or connectors immediately.
	The maximum cable length is exceeded.	Check cable length specifications for your network. Ethernet networks have limitations on the maximum cable length for each network segment. Exceeding these limitations can cause problems such as ghosting (intermittent appearance and disappearance of network services or devices). Following is the recommended maximum allowable cable lengths: • ThinNet (10Base2, uses RG-58/U coaxial cable with T connectors to attached devices, and two 50 ohm terminators, one at each end of the bus.) A maximum of 185 meters (607 feet) and 30 attachments per segment. • 10BaseT (10Base-T uses 24 gauge, unshielded twisted pair cables with RJ-45 connectors. The cables run from attached devices to a central hub.) 100 meters (330 feet) per cable.
		Table 10.1 Page 2 of 3

Table 10.1 Network Operational Problems *(continued)*

Problem	Possible Causes	Corrective Actions
Performance is degraded.	A slowdown in network performance may be caused by an inappropriate use of network services. (Example: Running a print job from a file server instead of from a local hard disk may cause unnecessary slowdown in performance.)	Observe proper network usage.
	There may be an incompatible software driver on the computer requesting the service.	All computers using a particular network service should have the same version of the driver installed. These include the printer drivers, and network service devices, such as file servers, print servers and mail servers, etc. When printer drivers are incompatible, messages will appear for users to reinitialize the driver. Remove the driver on the user's computer, install the correct version that is consistent with the other network users, and then restart the computer.
	There may be system software conflicts. Any device may cause network problems if it is operating with system software that differs from the standard version used on the network. Symptoms might be limited to the affected device or might affect network performance in other ways.	Determine whether or not there are system software conflicts.
		Table 10.1 Page 3 of 3

Resetting the DNIC-E'NET to the Factory Defaults

In the event that you are unable to log into the DNIC-E'NET (as explained in the *"Setting Optional Configurations"* section of the applicable network chapter), use the following procedure to reset the DNIC-E'NET back to its factory defaults.

1. **Power OFF the printer and remove the network connections.**
2. **Remove the controller board from the printer.**
   Refer to the printer's User Guide for instructions, if necessary.
3. **Locate the JX1 jumper on the DNIC-E'NET.**
   Refer to Figure 1.1 on page 1-5, if necessary.
4. **Move the jumper from its current position (connecting pins 2 and 3) so that it connects pins 1 and 2.**
5. **Replace the controller board in the printer.**
6. **Power ON the printer and wait five minutes.**
7. **Power OFF the printer.**
8. **Remove the controller board from the printer.**
9. **Move the JX1 jumper back to connect pins 2 and 3.**
10. **Replace the controller board in the printer.**
11. **Power ON the printer, print a Configuration Sheet, and verify that the IP address is set to either 138.239.254.253 or NONE.**
12. **Replace the network connections.**
13. **Power OFF and ON the printer.**
14. **Print a Configuration Sheet and verify that the IP address is set to NONE and that the PSERVER NAME has returned to DNExxxxxx, where xxxxxx is the last six digits of the Ethernet hardware address.**

Novell NetWare Problems

Table 10.2 lists common Novell NetWare problems, the possible causes, and recommended corrective actions. Before you take any action, however, refer to the Novell Print Server Guide, and verify that the queue, print server, and printer were configured correctly.

Table 10.2 Novell NetWare problems

Problem	Possible Causes	Corrective Actions
Files won't print.	Bad cabling.	Use the NOTIfy parameter with NPRINT or CAPTURE. If the NOTIfy message does not appear at the bottom of the screen, check the cables and connectors.
	Incorrect installation of printer.	Use TES and Kermit to log on to the server through a Novell workstation connected to the same network segment. To install TES and Kermit on C:, insert the Novell NetWare Diagnostics Utility diskette in A: C:> A:Install A: C: Load TES, the terminal emulation software: C:> CD \TES-KRMT C:\TES-KRMT> TES Start Kermit, the terminal emulator used with TES: C:\TES-KRMT> KERMIT The Kermit prompt should appear. To select VT300 emulation: MS-Kermit> TAKE VT300.INI To get a list of server names: MS-Kermit> RUN TES NAMES The system will respond with a list similar to the following example: Known TES servers - DNE00024E DNE000239
		Table 10.2 Page 1 of 4

Table 10.2 Novell NetWare problems *(continued)*

Problem	Possible Causes	Corrective Actions
Files won't print (continued).	Incorrect installation of printer (continued).	Connect to the desired server, in this case DNE000239. MS-Kermit> SET PORT TES DNE000239 MS-Kermit> CONNECT Press <ENTER> to get the server screen. To log on as superuser: Enter username, or HELP> su Server> su Password> system (password will not appear on the screen) To check NOVELL status: Server> show server netware A screen will be displayed, with information such as Pserver state ("WAITING_FOR _JOB/IDLE", for example). Check this information to be sure jobs are being submitted correctly: "fserver" gives the name of the connected file server. "queue" gives the NetWare print queue name.
	Print Queue is not attached to print server.	Use PCONSOLE to make sure the print queue is attached to the print server. The steps are as follows: 1. Type PCONSOLE at the command line. 2. Select Print Queue Information. 3. Select the print queue associated with the printer. 4. Select Currently Attached Servers. The Print server name should be located here. If the print server name is not located here, contact the system administrator.
		Table 10.2 Page 2 of 4

Table 10.2 Novell NetWare problems *(continued)*

Problem	Possible Causes	Corrective Actions
Files won't print (continued).	Print Server not running on file server.	Use PCONSOLE to check the status of the print server. The steps are as follows: 1. Type PCONSOLE at the command line. 2. Select Print Server Information. 3. Select the print server name that matches the name on the printer's configuration sheet. 4. Select Print Server Status/Control menu. 5. Select Server Info. 6. The print server status is located in the Current Server Status field. If it is not running, contact the system administrator to verify that the printer is properly installed.
	Print job is still in queue.	Use PCONSOLE to see if there are other print jobs queued up to be printed before your print job. The steps are as follows: 1. Type PCONSOLE at the command line. 2. Select Print Queue Information. 3. Select Current Print Job Entries. 4. Look to see if your print job is still in the print queue. If it is, wait until your job is at the front of the queue.
		Table 10.2 Page 3 of 4

Table 10.2 Novell NetWare problems *(continued)*

Problem	Possible Causes	Corrective Actions
NetWare File Server console message: "DNExxxxxx can't add printer 0, no resources".	Incorrect installation of Print Server DNExxxxxx.	Delete print server DNExxxxxx and associated print queues. Re-do install. When the configuration is correct, Print Queues and Print Servers have directories in the SYSTEM directory of the file server. These directories correspond to the Object IDs that can be viewed with Pconsole. The print queue directory will be named xxxxxxxx.QDR, where the xxxxxxxx corresponds to the Print Queue ID. It will be empty after jobs are printed. The print server directory will be named yyyyyyyy, where the yyyyyyyy corresponds to the Print Server ID. It will typically have at least 2 files: queue.000 and print.000.
Corruption of downloaded fonts or forms on NetWare systems.	Netware replaces tabs (x'09') with spaces.	Override the default CAPTURE and NPRINT "Tabs" parameter with /NT for no tabs.
NetWare jobs break up.	CAPTURE and NPRINT "TImeout" parameter is too short.	Increase the "TImeout" parameter.
PostScript prints error sheets for NetWare banner sheets.	The PostScript interpreter incorrectly interprets the NetWare banner sheet.	Suppress the NetWare banner sheet or change the default emulation on the printer port to PCL and turn Language Sensing on. (These steps are performed at the printer.)
Jobs sent by Microsoft Windows applications are not re-routed from LPT1 to the network printer after the NetWare Capture command is run.	"Fast Printing Direct to Port" is selected under the Control Panel options, causing the application to drive LPT1 directly.	De-select fast printing. The path under Windows is: Main Control Panel Printers Connect Remove the "X" from the "Fast Printing Direct to Port" box.
		Table 10.2 Page 4 of 4

EtherTalk Problems

The following table lists common EtherTalk problems, the possible causes, and recommended corrective actions.

Table 10.3 EtherTalk Problems

Problem	Possible Causes	Corrective Actions
Cannot see printer in the Chooser.	AppleTalk is not active.	Make sure AppleTalk is on. Check the radio buttons in the lower right area of the Chooser window.
	Ethernet is not the selected interface.	From the Apple menu, open the Control Panels item. Select the Networks control panel.Make sure that EtherTalk is the selected network interface.
	Did not look in right AppleTalk network zone.	Select the proper AppleTalk zone from the list in the lower left area of the Chooser window.
	Driver is not compatible with the printer.	Select the proper driver from icons in the upper left area of the Chooser window. The likely choices are LaserWriter, PSPrinter, or OnPage. Your system may have others available. Check with your system manager for other possible options.
	Printer is served from a print server.	Some systems are configured to disallow direct access from users' workstations. Check with your system manager to see if this is the case.

Table 10.3 EtherTalk Problems

Problem	Possible Causes	Corrective Actions
Print job fails with a message like "printer not found."	Printer is powered off.	Check at the printer to ensure that it has power (and that the printer's cables are properly connected).
	Name of the printer is changed.	You may need to go back to the Chooser and reselect your printer by its new name. AppleTalk printers that enter the network with the same name as a printer already active on the network append a digit character to that name to distinguish themselves from their network neighbors. For example, if "LN17ps" is already active when another LN17ps printer is powered up, the second printer will try to join the network as "LN17ps1," "LN17ps2,"and so on, until it finds a unique name. If several printers with the same name are powered up at nearly the same time, you may find it difficult to tell which physical printer takes which suffixed name. For this reason, Digital recommends that each LN17ps printer be given a unique name when it is first installed. To rename the printers use the printing utilities that come with your Macintosh computer or with your printer driver.

UNIX TCP/IP Problems

Table 10.4 on page 10-16 lists common UNIX TCP/IP problems, the possible causes, and recommended corrective actions. Before you take any action, however, first check for the following.

- On a TCP/IP network host computer, enter the command:

  `ping` *`ddd.ddd.ddd.ddd`*

  where *`ddd.ddd.ddd.ddd`* is the IP address. If you do not succeed, the problem is most likely with the network facility or configuration parameters.

- Attempt a remote login to the RCF port as described in the section *"Logging in to the DNIC-E'NET"* (page 5-32).

  — If you do not succeed, the problem is most likely with the network facility or configuration parameters.

  — If you can perform a remote login, the problem is most likely with the print queue definitions.

- Have you changed the IP address, server name, or service name in the DNIC-E'NET? Be sure the correct information is also found in your host configuration files.

- On TCP hosts, ensure that the server name (DNE*xxxxxx*), IP address, and Ethernet hardware address are entered in the */etc* files, such as */etc/ethers*, */etc/hosts*, and */etc/printcap* (only some of these files might be used). If you are using NIS (Yellow Pages), this information must be entered in the NIS master hosts file.

- If you encounter trouble printing from a TCP host using *lpd*:

  — Examine the */etc/printcap* file to ensure the correct printer name, queue name, and node (server) names are entered.

  — Verify that you used the correct queue for the type of file: *rp=PASSTHRU* for PostScript, PCL, or binary files; *rp=TEXT* for ASCII files.

- If you are printing from a TCP host using *rprint*, error events are written to a default log file named */tmp/rpn[pid].log*, where *[pid]* is a process number.
  - — Check the error log(s) in the */tmp* directory for possible problems. If errors are not reported or if the error log does not exist, verify the printer status using the *lpc* (BSD) or *lpstat -t* commands (System V).
  - — Examine the */etc/printcap* file for the *xrx_text* entry and change *disable* to *enable*.
- Log in to the DNIC-E'NET and verify that the print definitions are enabled for the protocol you are using. Also verify that the service you are trying to use is authorized for the desired protocol. Authorized protocols for the server are displayed using the *SHOW SERVER NETWORK* command. The command *SHOW SERVICE name CHARACTERISTICS* will display authorized protocols for the *name* service. These commands are discussed in the section *"Basic DNIC-E'NET Commands"* (page 5-34).
- If you experience difficulties locating the problem on TCP/IP networks, use the *Log File* or *Trace Mode* options.

Table 10.4 UNIX TCP/IP problems

Problem	Possible Causes	Corrective Actions
Cannot access the DNIC-E'NET from your workstation.	Card was previously installed, and the IP address is from a different network (i.e., subnet) than the network you are trying to reach it from (e.g., 13.0.0.18).	Use a manual routine to set the IP address. Set up a routing table on the workstation. The workstation in this example has IP address 13.1.217.153. route add host 13.0.0.18 13.1.217.153 0 To check the routing table, enter: netstat -r The workstation screen will display your entry, as well as others. Ping the device you are trying to reach: ping 13.0.0.18 The device will answer "13.0.0.18 is alive" if it is connected. If the connection times out, stop here and re-check cables, routing tables, etc., because there is no path to the device. Telnet to the server on the ethernet card: telnet 13.0.0.18 2048 Log on to the server in order to redefine the IP address to 13.1.217.156. Press <ENTER> to get the # prompt, and then "access" at the # prompt. The Local> and Password> prompts will appear automatically. Local> su Password system Local> define server ip 13.1.217.156 Local> logout Modify UNIX files (/etc/hosts and /etc/printcap) as described in the Installation and Configuration Guide. Power OFF and ON the printer to enable the new IP address.
		Table 10.4 Page 1 of 4

Table 10.4 UNIX TCP/IP problems *(continued)*

Problem	Possible Causes	Corrective Actions
Cannot access the DNIC-E'NET from your workstation (continued).	Printer is not on the same network.	Telnet into the printer from a workstation on the same network. Set route to workstation with either of the following commands: For a specific workstation: change route ip *workstation_ip_address* where *workstation_ip_address* is the IP address of the workstation. For a default router: change node *name* IP *gateway_ip_address* gateway default where *name* is the name of the gateway and *gateway_ip_address* is the IP address of the gateway.
Unable to reach the DNIC-E'NET from your TCP/IP host.	There is a router between the UNIX host and the printer being installed, and the router is unaware of the default (138.239.254.253) IP address.	Modify the DNIC-E'NET IP address by connecting to the DNIC-E'NET through another DNIC-E'NET server using the "Connect RCF" command.
arp command not successful.	Printer not set to default IP address. Host Name incorrect. Printer not on same physical and logical net as server.	Disconnect the printer from the network, cycle the power, and let the printer sit idle for 5 minutes. This will set the default IP address of 138.239.254.253. Print a Configuration Sheet to confirm. Check TCP/IP configuration. Move printer to the same physical or logical net as the File Server. Follow the DNIC documentation on how to change the IP address manually and set routing in the appropriate section in *"Manual Installation Procedure"* (page 5-8).
		Table 10.4 Page 2 of 4

Table 10.4 UNIX TCP/IP problems *(continued)*

Problem	Possible Causes	Corrective Actions
UNIX files won't print.	Missing entries in /etc/hosts and /etc/printcap files.	Check the /etc/hosts and /etc/printcap files, and rectify if needed. The following examples are from a SUN workstation. /etc/hosts /etc/hosts connects the IP address with the server name. The server name is case sensitive. The name must match exactly wherever it is used on the UNIX host. For example: 13.1.217.156 DNE00024E /etc/printcap /etc/printcap is the "printer capability" file. This entry in /etc/printcap goes with the above /etc/hosts entry: xrx_pcl|Digital LN17 Printer:\ :lp:\ :rm= DNE00024E:\ :rp=TEXT:\ :mx#0:\ :sd=/usr/spool/lpd/xrx_pcl: A spool directory, /usr/spool/lpd/xrx_pcl, must be made with the "mkdir" UNIX command. To print a file named "test" using lpr: lpr -Pxrx_pcl test
UNIX text files print off the right edge of the page.	Incorrect value for the rp parameter in /etc/printcap.	For ASCII text, to add a carriage return for each linefeed, enter :rp=TEXT:
Problems with printing PostScript files under UNIX.	Incorrect value for the rp parameter in /etc/printcap.	For a PostScript passthrough (binary) mode, enter :rp=PASSTHRU:

Table 10.4 Page 3 of 4

Table 10.4 UNIX TCP/IP problems *(continued)*

Problem	Possible Causes	Corrective Actions
IP address as shown in Configuration Sheet is "none" (possible out-of-the-box setting).		Refer to *"Manual Installation Procedure"* (page 5-8).
		Table 10.4 Page 4 of 4

Note

When connected to an Ethernet network, there is a certain maximum number of devices per network segment and per network. To avoid network problems, check the device limitation for your network type and the number of devices on your network to make sure you are not exceeding the recommended limit. If necessary, subdivide the network using bridges and routers.

LAT Problems

If you are printing from a LAT host, ensure that the queue was set up and is running.

If the printer will not print, the server's name has been changed. Follow these steps to correct the problem:

1. **Connect to the card using the instructions in the section *"Logging in to the DNIC-E'NET"* (page 6-6).**

2. **Issue the command:** `show server lat.`

   Verify the name is the same as the node name you set up in Step 2 in the section *"Configuring an OpenVMS LAT Host for LATSYM"* (page 6-3).

3. **Issue the command:** `show port 1.`

4. **Verify that the port name is PORT_1.**

   Note that the port name must end in an "_1." If this is not correct, then rename the port. The command is:

   `change port 1 name` *`name`*.

5. **If either of these items is different than those defined in Step 2 in the section *"Configuring an OpenVMS LAT Host for LATSYM"* (page 6-3), then redo Step 2 using this new server name.**

Windows NT Problems

Table 10.5 lists common Windows NT problems, the possible causes, and recommended corrective actions.

Table 10.5 Windows NT Problems

Problem	Possible Causes	Corrective Actions
Cannot access the DNIC from your workstation.	DNIC cannot complete workstation request for connection.	Make sure the printer is on the same physical segment as the workstation.
Files do not print from NT Server workstation.	Incorrect value for **Print Destinations** field.	Make sure that the LPR Port is selected in the **Print Destinations** window. See the section *"Configuring the DNIC-E'NET for Windows NT,"* Step 9 on page 8-6.
	Incorrect IP address entered.	Make sure that the correct IP address of the printer has been entered in the **Name or address of host providing lpd** box. See the section *"Configuring the DNIC-E'NET for Windows NT,"* Step 10 on page 8-7.
Files do not print from NT clients.	The **Share this printer on the network** field was not set.	Make sure that the field **Share this printer on the network** was checked. It is located in the **Add LPR Compatible Printer** window and allows other users to share this printer. See the section *"Configuring the DNIC-E'NET for Windows NT,"* Step 7 on page 8-6.
		Table 10.5 Page 1 of 5

Table 10.5 Windows NT Problems *(continued)*

Problem	Possible Causes	Corrective Actions
Print jobs come out incorrect.	Incorrect value in the **Name of printer on that machine** field.	For print jobs that use a printer driver, enter `PASSTHRU` in the **Name of printer on that machine** box. This box is located in the **Add LPR Compatible Printer** window. See the section *"Configuring the DNIC-E'NET for Windows NT,"* Step 10 on page 8-7.

	Banner page causes problems with the Auto Emulation Switching.	Add the following lines to the SYSPRINT.sep file:
		`@L %% Title:separator`
		`@L %% Adobe-PS20 ESPF-1.2`
		The file should end in a control-D. Therefore, insert the following line at the end of the SYSPRINT.sep file:
		`@L <HEX 04>`
		This file is located in the C:\windows\system32 directory.

Text files print off the right edge of the page.	Incorrect value in the **Name of printer on that machine** field.	For ASCII text, to add carriage return for each linefeed, enter `TEXT` in the **Name of printer on that machine** box. This box is located in the **Add LPR Compatible Printer** window. See the section *"Configuring the DNIC-E'NET for Windows NT,"* Step 10 on page 8-7.
		Table 10.5 Page 2 of 5

Table 10.5 Windows NT Problems *(continued)*

Problem	Possible Causes	Corrective Actions
The IP address cannot be changed using ARP.	The IP address was not set to the default.	Set the IP address to the default by unplugging the card from the network and turning on the printer. Wait 2-3 minutes. Plug the printer into the network. Try ARP again making sure all letters are upper case. Or: 1. Set the IP address to the default by unplugging the card from the network and turning on the printer. Wait 2-3 minutes. 2. Define a route on the Windows NT Host with the command: route add *IP_addr1 IP_addr2* where *IP_addr1* is the default IP address of the printer and *IP_addr2* is the IP address of the server. 3. Verify the route is present using the command: route print 4. Telnet to the card and set the IP address with the command: Telnet *IP_addr1* 2048 where *IP_addr1* is the default IP address. 5. At the # prompt, type: access At the LOCAL> prompt, type: su At the PASSWORD> prompt, type: system 6. Type: show server TCP 7. Type: change server ip *IP_addr* where *IP_addr* is the new IP address. 8. If you need to change the subnet masking, the command is: change server subnet subnet_mask 9. If you need to set a default gateway, the command is: change node *name* ip *addr* gateway default where *name* is the node name and *addr* is the gateway IP address.
		Table 10.5 Page 3 of 5

Table 10.5 Windows NT Problems *(continued)*

Problem	Possible Causes	Corrective Actions
A General Protection error occurs in CorelDraw! when printing.	CorelDraw! does not accept the string of the Printer Port as PASSTHRU.	Change the printer service to the printer's model number using the following commands: 1. Open a telnet session from a DOS prompt: telnet print_server_ip_address 2048 2. Logon to the Printer Server as privileged user: Enter user name or help> su Server> su Password> system 3. Enter the following server command: CHANGE SERVICE LPD PORT 1 DISABLE This effectively configures the physical port on the default lpd service as "NONE," which allows "redirecting" of the LPD service to other service records. 4. Define a new service for lpd printer queue (Queue_Name), assign a new TCP Port number (TCP Port), and assign a physical port (n). By default, no filtering is performed on the data stream (PASSTHRU). If carriage return insertion is desired as for text data, enable the filter parameter. CHANGE SERVICE Queue_Name TCP_Port [FILTER ENABLED] TELNET DISABLED PORT n On the Windows NT host, the new printer queue is referenced by the service name; that is, the "-p" argument in the lpr command would be set to the service name (Queue_Name).
		Table 10.5 Page 4 of 5

Table 10.5 Windows NT Problems *(continued)*

Problem	Possible Causes	Corrective Actions
A General Protection error occurs in CorelDraw! when printing (continued).	(Continued).	For example, to configure a text printer named “LN17” on physical port 1 using TCP Port 3001, type: CHANGE SERVICE LN17 3001 FILTER ENABLED TELNET DISABLED PORT 1 Note: The above command is typed all on one line; do not type a <cr> until all information (shown on the lines above) is entered. Note: The TCP Port specified (3001) is required mainly for syntactical purposes to define a new TCP/IP service. The LPD protocol will still use TCP Port 515. However, any print jobs sent to TCP Port 3001 will also utilize the “LN17” service and be directed to physical port 1. 5. Log out of the Printer Server telnet session by entering “logout.” 6. Create a new printer from the Program Manager. In Step 10, the new input for “B” will be the new Queue Name (e.g., LN17) instead of TEXT or PASSTHRU.

Table 10.5 Page 5 of 5

Before Obtaining Technical Assistance

If you continue to experience problems with your DNIC-E'NET and cannot resolve them with the procedures discussed above, contact your dealer or Digital. Before calling, please have the following information available:

- A printer Configuration Sheet
- Model of the printer in which the DNIC-E'NET is installed
- Type of host, operating system, and release level
- Network operating environment
- Type of connection to the network (BNC or UTP)
- Contents of the host files:
  - — **TCP**: */etc/printcap*, */etc/hosts*, */etc/ethers*, and/*or* */etc/inetd.conf* (if relevant to your system)
  - — **Novell NetWare**: *PRINTDEF* and/or *PRINTCON* setups (if relevant to your system)
  - — **EtherTalk**: System level, application, printer software (drivers, PPD, etc.)
- Serial number and Ethernet hardware address of the DNIC-E'NET
- Contents of any error logs, such as */tmp/rpn[pid].log*

If possible, you should be at your host and near the printer when you call. This allows you to perform any suggested actions and immediately report the results.

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