RapidPrint 200 Network Interface Box

User's Guide

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Digital Equipment Corporation
Maynard, Massachusetts

FCC Notice

This equipment has been tested and found to comply with the limits of a Class A digital device, Pursuant to Part 15 of the FCC Rules.These limits are designed to provide a reasonable protection against harmful interference when the equipment is operated in a commercial environment. The equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Installing this equipment in an FCC Level B product results in an FCC Level A Composite System as defined in the FCC Rules and Regulations.

Canadian Department of Communications compliance statement:

This equipment does not exceed Class A limits per radio noise emissions for digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications. Operation in a residential area may cause unacceptable interference to radio and TV reception requiring the owner or operator to take whatever steps are necessary to correct the interference.

Avis de conformite aux normes du ministere des Communications du Canada:
Cet equipment ne depasse pas les limites de Classe A d'emission de bruits radioelectriques pour les appareils numerriques tells que perscrites par le Reglement sur le brouillage radioelectrique etabli par le ministere des Communications du Canada. L'exploitation faite en milieu residentiel peut entrainer le brouillage des receptions radio et tele, ce qui obligerait le proprietaire ou l'operateur a prendre les dispositions necessarires pour en eliminer les cause.

The following statements are required in accordance with CISPR-22.

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Dieses ist ein Gert der Funkstrgrenzwertklasse A. In Wohnbereichen knnen bei Betreib dieses Gertes Rundfunkstrungen auftreten, in welchen Fllen der Benutzer frentsprechende Gegenmanahmen verantwortlich ist.

Ceci est un produit de Classe A. Dans un environment domestique, ce produit risque de crer des interfrences radiolectriques, il appartiesdra alors l'utilisateur de prendre les mesures specifiques appropries.

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Preface

Intended Audience

This book is written for experienced system managers and network administrators. It contains information on how to set up the RapidPrint 200 Network Interface Box in the following environments:

- Novell
- AppleTalk
- TCP/IP
- LAT

Document Organization

This guide is organized as follows:

Chapter	Title	Contents
Chapter 1:	RapidPrint 200 Network Interface Box Introduction	Describes the benefits and network requirements of the RapidPrint 200 Network Interface Box.
Chapter 2:	Installation	Describes how to install the RapidPrint 200 Network Interface Box into your network. This must be done in all instances. The following chapters describe how to install software on various Network Operating Systems. You only need to do the procedures applicable to the NOS's that you will be using.
Chapter 3:	Novell Configuration and Utility	Describes how to configure the RapidPrint 200 Network Interface Box using Novell NetWare products.
Chapter 4:	Macintosh EtherTalk NPManage Utility	Describes how to configure the RapidPrint 200 Network Interface Box for an AppleTalk environment.
Chapter 5:	TCP/IP Configuration	Describes how to configure the RapidPrint 200 Network Interface Box for a TCP/IP environment.

Document Organization Continued

Chapter 6:	Setting Up and Using the RapidPrint 200 Network Interface Box in a LAT Environment	Describes how to configure the connected printer to function like a serial printer connected to a Digital DECserver device.
Chapter 7:	Troubleshooting	Describes how the RapidPrint 200 Network Interface Box normally operates and how to troubleshoot problems you might have with it, the printer, or any network operating system.
Appendix A:	10BaseT Cable Specifications	Contains 10BaseT specifications for this particular application.
Appendix B:	RapidPrint 200 Specifications	Contains specifications, including setup jumper defaults.
Appendix C:	Constructing Print Queues for LAT-Connected Printers	Describes how to set up print queues for OpenVMS and ULTRIX.
Appendix D:	Connecting a DECcolorwriter 1000 Printer to the RapidPrint 200 Using the Parallel Channel with Serial Backchannel	Provides procedures to set up the DECcolorwriter 1000 and RapidPrint 200 for the best performance.
Appendix E:	Pin Out for the Parallel Port	Provides pin out for the parallel port
Appendix F:	Serial Port and Cable Information	Provides serial port and cable information.

Conventions

The following terms and conventions are used in this guide:

Term or Convention	Meaning
Note	Notes provide important additional information.
— (Dash)	A statement preceded by a dash describes the result of a step.
✔ (check mark)	A statement marked by a check mark indicates a special instruction related to a step.
Bold	User entry information is shown in bold type.
`Screen Display`	Screen displays are shown in type.
Italics	File and document names are shown in italic type.

1. RapidPrint 200 Network Interface Box Introduction

The RapidPrint 200 Network Interface Box is a multiprotocol network interface box for parallel port and serial port printers. The RapidPrint 200 Network Interface Box features:

- A high-speed bus input/output connection for Ethernet interface (10BaseT or 10Base2).

- A serial port that can support a normal full duplex EIA 423 serial printer or serve as the backchannel for the parallel port.

- A parallel port that can support the following printer interfaces:

    Centronics
    Centronics with serial backchannel
    IEEE 1284 compatible and nibble modes
    Dataproducts

- Support for the following protocols or Network Operating Systems:

    IPX/SPX Novell NetWare versions 2.15, 3.1X, 4.0X
    LAT
    AppleTalk
    TCP/IP for
        SUN (Solaris 1.1, 2.0)
        BSD System V Rel. 4
        Digital's (ULTRIX 4.3)
        UNIX systems
        OSF/1, V2.0 and V3.0
        Windows NT

The network interface box provides automatic switching between network protocols. Print jobs can be sent from each NOS supported by the network interface box.

The box is easy to install because a simple network or Digital utility is used to configure the network interface box for each NOS.

1.1 Configuring Networks

The following list summarizes the available protocols and network operating systems (NOS) and their utilities program for configuring the RapidPrint 200. The network interface box may be set up to interact with any combination of these network services.

Network	Configuration Program
IPX/SPX (Novell)	NetWare's PCONSOLE and NPmanage utility
AppleTalk	Digital's NPmanage utility
TCP/IP (UNIX)	Digital's INSTALL scripts and NSCONFIG
LAT (VMS, UNIX, and ULTRIX)	Digital's Maintenance Operation Protocol (MOP)

1.1.1 Benefits of Network Protocols

With each network protocol, you receive these benefits:

- **High performance** - send data at speeds up to 115.2 kbps for serial printers, and up to printer maximum speeds for parallel printers.

- **Easy installation** - install the network interface box quickly in two easy steps:

  1. Connect the box.

  2. Configure each network protocol.

- **Full print server support** - supports all the print server features defined for Novell, AppleTalk, TCP/IP, and LAT.

- **Reliability** - the network interface box incorporates *Streams*, a UNIX technology, to provide a common interface for error handling, and operating system and hardware interfacing normally done differently by each NOS. Printing can be supported concurrently using different protocols on the same printer.

1.2 Network Interface Box Software for Installation, Operation, and Troubleshooting

The network interface box provides the following troubleshooting tools for each NOS:

- For **Novell**, Installation and Operation use standard Novell Printing service utilities. In addition, the Network Printer Management (NPmanage for Novell) utility lets users troubleshoot problems by sending test prints, checking status, resetting the network interface box, and enabling/disabling the status page. You can also view or modify certain configuration options and change the print server name and the password it uses to log in.

- For **AppleTalk**, The NPmanage for AppleTalk program provides additional functions that let you view the network interface box configuration and error log, change the name and zones, modify certain configuration options, and enable/disable the powerup status page.

- For **TCP/IP**, Operation uses standard UNIX facilities. Installation uses Digital's software that provides utilities for configuring various TCP/IP options.

- For **LAT**, use the same printing software that works with serial printers connected to DECservers. Use MOP commands to set the configuration information.

1.3 What's In Your Package

The network interface box carton contains the following:

- One RapidPrint 200 Network Interface Box
- This manual
- Three 3.5-inch diskettes that contain:

    NPmanage for NetWare

    NPmanage for Macintosh

    NSCONFIG and installation scripts for UNIX operating systems

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Note: These diskettes may also contain a README file containing the latest information about your network interface box installation and operation. Read these files before going any further with the installation.

- Power supply
- Envelope containing mounting hardware

1.4 Hardware/NOS Requirements

The hardware, software, and installation programs require the following:

NOS Versions Supported: (at least one of the following)

- Novell NetWare version 2.15, 3.1X, or 4.0X running IPX/SPX
- Macintosh—Systems 6.XX and System 7.XX running EtherTalk
- UNIX compatible versions, such as:

    SUN (Solaris 1.1, 2.0)
    BSD System V Rel. 4
    Digital (ULTRIX 4.3)
    IBM AIX UNIX
    OSF/1
    Windows NT running TCP/IP
- LAT version V5.2

RapidPrint 200 Network Interface Box Software Requirements:

- Novell NetWare installation and printing requires NetWare Capture, NPRINT or PCONSOLE (later than 1.0) utilities provided with NetWare 2.15, 3.1x, or 4.0X. NPmanage requires any IBM PC or compatible with 512K bytes of available random access memory (RAM) and one 3.5-inch floppy drive (for the RapidPrint 200 Network Interface Box software). PC or MS-DOS version 3.3X or later is also required.

- EtherTalk printing requires the Macintosh EtherTalk driver and the PS Printer driver with the PPD file for the DEClaser printer. The AppleTalk Administration Program runs on any Macintosh computer with a disk drive.

- TCP/IP requires a UNIX host with a 3.5-inch floppy drive.

- LAT requires that you use the software that works with the serial printers on DECservers.

Hardware Connections:

- The network interface box network connection supports 10 megabit Ethernet networks, which use either 10Base2 (also known as Thinnet or ThinWire) or 10BaseT (twisted pair) hardware.

Printer Connection Types:

- Parallel modes:

  1284-nibble

  Dataproducts

  Centronics compatible

  Centronics compatible with serial backchannel

- Serial modes:

  Independent

  Dependent

2. Installation

2.1 Hardware Description

The RapidPrint 200 is a small unit that can be attached to the side of a printer or stand freely next to a printer. The hardware allows Ethernet networks running the following software to access either a serial or a parallel printer (or both printers) connected to the RapidPrint 200 box:

- TCP/IP
- AppleTalk
- TCP/IP compatible with SUN (Solaris 1.1, 2.1)
- BSD System V Rel. 4
- DEC (ULTRIX 4.3
- HP UNIX
- Windows NT
- OSF/1
- LAT

The parallel port can use any of three signaling methods:

- Centronics mode
- IEEE 1284 nibble mode
- Dataproducts mode

Selection between Centronics/1284 and Dataproducts is done by using a jumper located within the RapidPrint unit. Selection between Centronics and 1284 is automatic based on the capabilities of the printer attached to the parallel port.

In Centronics mode you can choose either output to printer only or output to printer with serial back channel, depending on how the RapidPrint unit is configured.

2.1.1 Status Light Indicator

The status light indicator (the green LED) on the front of the RapidPrint box displays the power-on status or diagnose problems. See Chapter 7 for details.

2.1.2 About the Back Panel

The back panel of the RapidPrint has five connectors. One connector is for the power supply and the remaining connectors are for the network or printer. See the following back panel example.
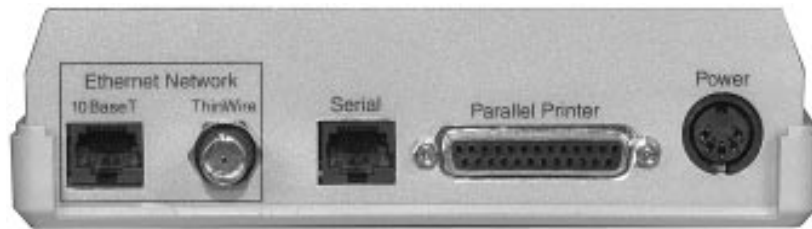
Component	Description
10BaseT Ethernet Connector	This connector uses an RJ45 twisted pair cable to connect to the network.
ThinWire	The ThinWire Ethernet connector uses a BNC T-connector to the coaxial cable from the network.
Serial	The serial connector allows you to connect to any serial printer through an RJ45 connector.
Parallel	The parallel connector attaches a parallel printer to the RapidPrint box.
Power	The power supply supplies power to the RapidPrint box.

2.2 Hardware Installation Summary

Use the following steps to connect the printer to the RapidPrint 200.

Hardware Installation Summary

1. Connect RapidPrint to the network.
2. Connect the parallel printer.
3. Connect printer to the serial port.

Note: Do NOT connect the RapidPrint power supply until ALL hardware configuration steps are completed.

2.2.1 Connect the Network to RapidPrint

You can connect the network interface box to either a ThinWire or 10BaseT network. ThinWire is the factory default.

2.2.1.1 Using a ThinWire Ethernet Interface

You must plug a T-connector to the RapidPrint box. Plug the T-connector into the BNC port, which is marked ThinWire on the back panel. The T-connector attaches the thin Ethernet cable (a .25-inch coaxial cable (usually RG-58/U)). The figure below shows the proper connection to the BNC port.

> **Note:** Both sides of the T connector must be connected to either a ThinWire cable or to a termination resistor.
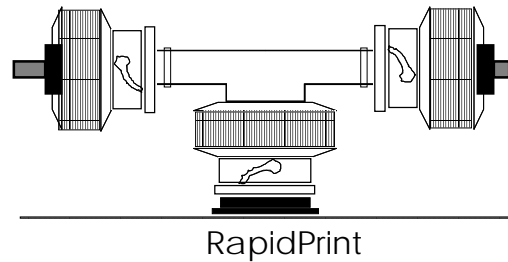
RapidPrint

2.2.1.2 Wrong BNC Connections to RapidPrint

The following figures show two incorrect ways to make the BNC connection. You must always make your BNC connection using a T-connector (which is not provided with your RapidPrint package) directly to the port marked ThinWire.
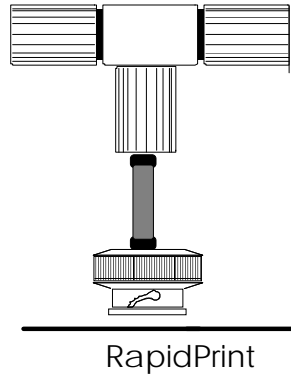
RapidPrint

This connection will not work, because the T-connector is not directly connected to the RapidPrint box. The cable between the T-connector and the RapidPrint forms another branch on the network, which is not allowed on the Ethernet network.
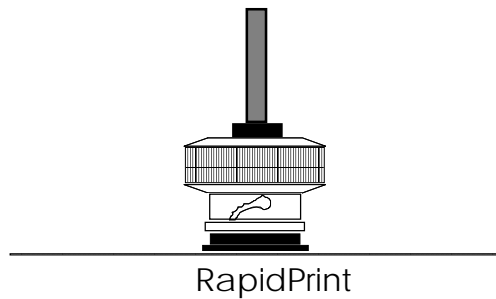
RapidPrint

This connection will not work, because a T-connector is not used.

2.2.1.3 10BaseT Interface

The jumpers inside the RapidPrint 200 box must be changed before using the 10BaseT Ethernet interface. The 10BaseT network connection uses a 4-wire twisted pair RJ cable to plug into the RJ45 network connector (marked 10BaseT on the back panel) on RapidPrint. See section 2.3 for information on changing jumpers.

2.2.2 Connect the Parallel Printer

To connect a parallel printer to the RapidPrint 200, use the proper cable listed in the table. You can use a BC19M or equivalent cable for connecting any Centronics and 1284 type printer to the parallel port. For printers with Dataproducts type interfaces, use a BC27Z type cable. See Appendix E for the pin out of this port and the wiring information of the BC27Z cable. The BC27Z cable comes in 10 and 30 feet lengths. Plug a parallel cable into the connector marked parallel port and tighten the screws on the cable plug.

See Section 2.3 for setting up the port for the appropriate signaling.

See Appendix D for connecting a DECcolorwriter 1000 (LF02).

2.2.3 Connect a Printer to the Serial Port

Use the appropriate cable and adapters as indicated in the table to connect your serial printer to the RapidPrint box. See Appendix F for the pin out of this port and for cable length information.

Set up the serial port parameters to match your printer using the utility for your NOS. This port can be set up for operation at baud rates from 2400 to 115200. See Appendix D when connecting a DECcolorwriter 1000 (LF02) using the serial port as a backchannel.

Note: The number of stop bits for the serial port is fixed at one.

Adapter/Cable	Product Used on
For RS232 25D(M) to RJ45, use Adapter: H8575-A Cable: BN24H-xx	LN03, LN03R, LA210, LA120
For RS232 25D(F) to RJ45, use Adapter: H8575-E Cable: BN24H-xx	LN05, -06, -07,-07C,-09 HPLJIII, HPLJII, HPLJ4 LF02, LZW-II, LA600
For RS423 MMJ to RJ45, use Adapter: none Cable: BN24H-xx	LN08, LN07C
For RS422 25D(F) to RJ45, use Adapter: H8585-AD Cable: BN26X-xx	LN09, HPLJ4
For Dataproducts type printers [25D(M) to 50D(M)] Cable: BC27Z	LG06/12 or any other printer that supports the Dataproducts interface using the 50D(M) connector.
For parallel printers [25D(M) to 36 Centronics (Plug)] Cable: BC19M	Any printer with a standard Centronics/1284 type interface.

2.3 Hardware Jumpers

The RapidPrint 200 is designed to withstand minor bumps and bangs without accidentally opening. Follow the steps in this section to open the plastic unit if you need to change the jumpers

1. Unplug the power cord BEFORE opening the RapidPrint unit.

2. Hold the side of the unit against your body. Grab the side farthest away from your body and press the bottom half of the unit inward toward you. Pull the two halves apart.

3. Locate the area of the jumpers on the board.

   - The jumpers for factory defaults and Centronics/Dataproducts are near the upper left corner of the board.

   - The jumpers for the connections, link integrity test, and collision threshold are near the bottom right corner of the board.
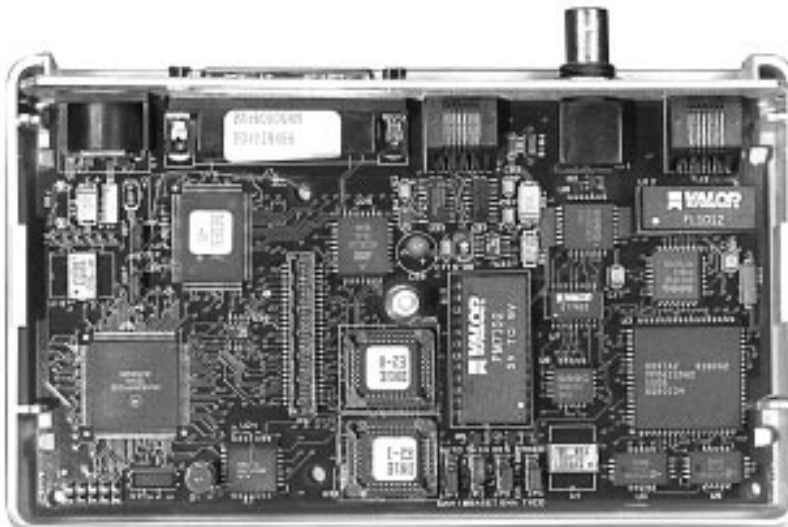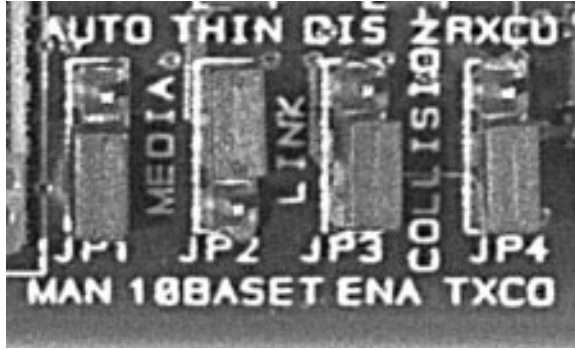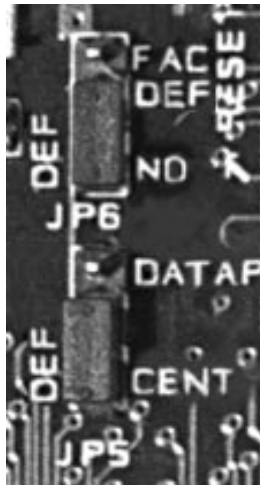
4. Change the jumpers, according to your configuration. The following table describes your options.

To Do This...	Change This Jumper
Allow automatic or manual sensing of the physical connection to the network (ThinWire or 10BaseT). NOT SUPPORTED IN THIS RELEASE.	MANUAL/AUTO MAN/AUTO JP1 Autoselection is not supported in this release. Therefore, the jumper is shipped in the MAN position. Autoselection is for future use and will render the device inoperable if used.
Select the physical connection to the network.	MEDIA THIN/10BASET JP2 The selections are marked THIN for the ThinWire and 10BASET for twisted pair, respectively. Move the jumper to match the connection want for your RapidPrint box. The default setting is THIN.
Enable or disable the link integrity test.	LINK DIS/ENA JP3 The setting is normally enabled and used with the 10BaseT mode. Move this jumper to disable the test if your hub does not support link integrity testing. The default setting is enabled. The link signal can be determined by the Link LED of your network device.
Select the collision threshold for the ThinWire Interface.	COLLISION RXCO/TXCO JP4 This jumper is for the ThinWire interface only. It is used primarily to assist in localizing network difficulties. The jumper is set to the TXCO position by default.
Select either Centronics or Dataproducts mode for the parallel interface.	CENT (DEF)/DATAP JP5 This jumper allows you to select the mode, according to the printer to be connected to the parallel interface. The default setting is CENT.

Reset the RapidPrint box to the factory defaults.	NO/FAC DEF JP6
	You can reset the RapidPrint box to its factory defaults by using the following procedure:
	1. Remove Power from the RapidPrint box.
	2. Remove the cover and move the JP6 jumper to the setting marked FAC.
	3. Connect power to the RapidPrint box and wait until the unit has completed its initialization. Initialization is complete when the LED continuously blinks three times and pauses.
	4. Remove power from the RapidPrint box again.
	5. Move JP6 to the NO position.
	6. Replace the cover and connect power to the unit.
	The RapidPrint box is now set to the factory defaults. The default is NO.

5. Reassemble the unit by putting the top cover of the unit back in place by snapping the two plastic pieces together. Make sure you line up the back panel, which contains the connection into its slots on the bottom and top units.

2.4 Next Step

2.4.1 Plug in Power Supply

You need to configure RapidPrint for each network protocol after you power-on RapidPrint.

2.4.2 Configure RapidPrint Protocols

To continue installation, you must configure each network protocol to work with RapidPrint. Each protocol has its own chapter. Refer to the Configuration section in the following chapters for each protocol you will configure.

> Note: The utility diskettes included with the RapidPrint 200 must be installed before following the steps in the chapters listed below.

- Chapter 3 — Novell configuration steps
  (We recommend that you do this first since Novell is always active.)
- Chapter 4 — AppleTalk configuration steps
- Chapter 5 — TCP/IP configuration steps
- Chapter 6 — MOP configuration steps

2.4.3 Power Up Sequence

When the RapidPrint 200 is first powered on, the following sequence should occur. After an 8 to 10 second delay, the LED should blink fast three times. After 1.5 minutes, the status page(s) should print to each of the ports connected. No status will be shown for the serial port when it has been configured as a backchannel, therefore, you may only get one status page.

3. Novell Configuration and Utility

If you will not be printing from Novell, you may skip this chapter.

This chapter is divided into the following sections:

- **Configuration - Using NetWare** lets you configure the network interface box for use with NetWare 2.15, 3.1X, or 4.X. Use PCONSOLE to set up the network interface box print server functions.

- **Using the NPmanage Utility** describes the PC-based program that lets you configure the print server function and troubleshoot problems.

- **Using NetWare Utilities** explains how to use Novell NetWare utilities with the network interface box print server function.

3.1 Configuration - Using NetWare

Use PCONSOLE to set up queues and print servers for your network interface box.

3.1.1 PCONSOLE Configuration Process

The tasks necessary to set up queues and print servers with PCONSOLE are explained in the sections immediately following the next table.

PCONSOLE Configuration Stages	
1.	Start PCONSOLE and select the desired file server.
2.	Create the desired print queue.
3.	Create a Print Server.
4.	Configure the network interface box Print Server and Printer Ports.
5.	Assign print queues.
6.	Set up the NOTIFY options (optional).
7.	Repeat the process for any other file servers that contain print queues serviced by the network.

3.1.2 Start PCONSOLE and Select File Server

There are two requirements to start the configuration process:

- Verify that you have supervisor privileges on the file servers on which the network interface box print server is to be entered.

- Verify that your version of PCONSOLE is later than 1.0.

Follow these steps to start PCONSOLE.

1. Log in to the network and type **PCONSOLE**. Press Enter.

2. Choose **Change Current File Server** from the Available Options menu. See screen example.

```
Netware Print Console V1.51      Thursday December 2, 1993   9:56 am
              User SUPERVISOR  On File Server ENGINEERING   Connection 4



                           Available Options
                       Change Current File Server
                       Print Queue Information
                       Print Server Information
```
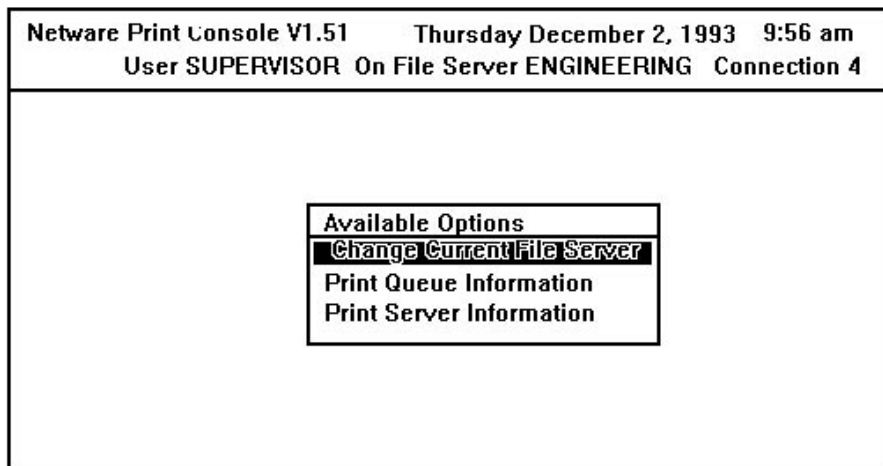
3. If the name of the file server on which you wish to install the network interface box print server is not displayed, press Insert to get a list of available file servers. Highlight the name on the desired file server and press Enter. Enter log-in name (supervisor) and password.

4. Highlight the name of the file server on which you wish to install the network interface box. Press Enter

5. Return to the Available Options menu by pressing Esc.

3.1.3 Create Print Queues

The print server must be assigned to at least one print queue on the file server. If the print queue which the network interface box is to service already exists, and you know the name of this queue, skip to Section 3.1.4.

 1. Choose **Print Queue Information** from the Available Options menu, and press Enter. A list of existing queues is displayed.

```
Netware Print Console V1.51      Thursday December 2, 1993   9:56 am
          User SUPERVISOR  On File Server ENGINEERING   Connection 4



                        Available Options
                        Change Current File Server
                        Print Queue Information
                        Print Server Information


```
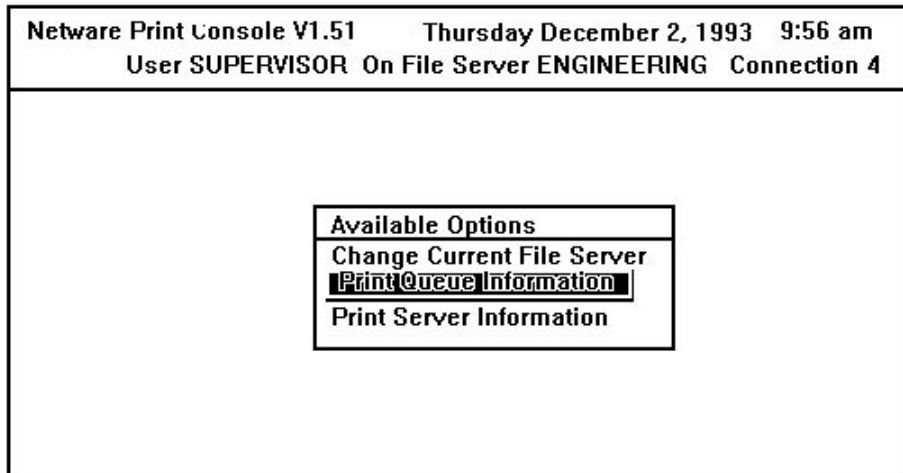
2. To create a new queue, press Insert . Enter the name of the queue and press Enter. It is not necessary to enter any more information about the new queue at this time.

3. Return to the Available Options menu by pressing Esc.

Reminder: One queue is required for each port that you have a printer connected to.

3.1.4 Enter the Network Interface Box Print Server Name

A print server takes the print jobs from queues and sends them to a network interface box-connected printer. Follow these steps to enter a print server name for the network interface box.

 1. Choose **Print Server Information** from the Available Options menu, and press Enter. A Print Server menu listing the existing print servers is displayed.

```
Netware Print Console V1.51      Thursday December 2, 1993   9:56 am
             User SUPERVISOR  On File Server ENGINEERING   Connection 4

     Print Servers
     DEC_180100
     DEC_180101              vailable Options
     DEC_180102              hange Current File Server
     DEC_180899              rint Queue Information
     DEC_180108              rint Server Information
     DEC_181832
     DEC_180001           New Print Server Name: DEC_181354
     DEC_181999
```
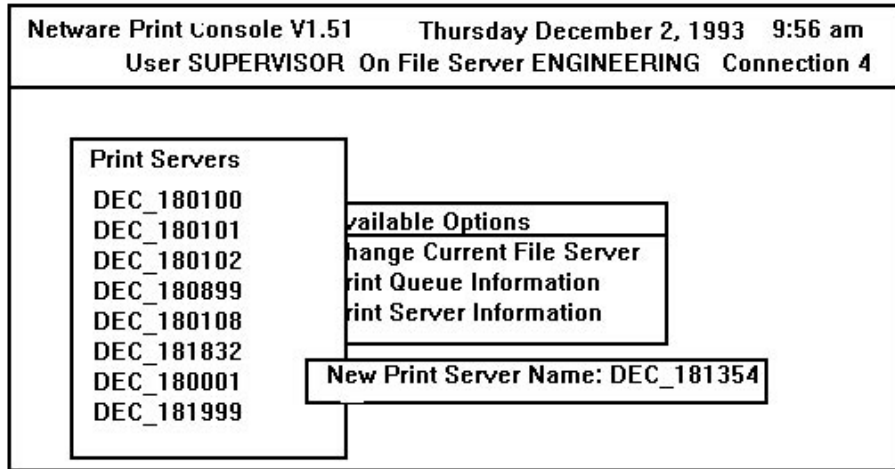
2. With the Print Server menu displayed, press the Insert key to display the New Print Server Name entry box.

3. Type the name of the network interface box print server into the entry box. Unless the name has been changed with NPmanage for NetWare utility, the print server name is set to the factory default.

    DEC_XXXXXX

Where:

XXXXXX is the 6-digit serial number of the network interface box which was printed on the first line of the Status and Configuration sheet of Chapter 2 and can be found on the label on the bottom of the network interface box.

The screen example above shows how you would enter the print server name if its serial number were 181354.

Note: You may enter a name and then later use NPmanage to change the name.

4. Press Enter to add the network interface box print server name to the Print Servers list.

3.1.5 Configure the Network Interface Box NetWare Print Server

The following steps configure the NetWare print server function of the network interface box.

1. Highlight the network interface box print server name on the Print Servers list. Press Enter. The **Print Server Information** menu appears as shown below.

2. Choose **Print Server Configuration** from the menu. Press Enter.
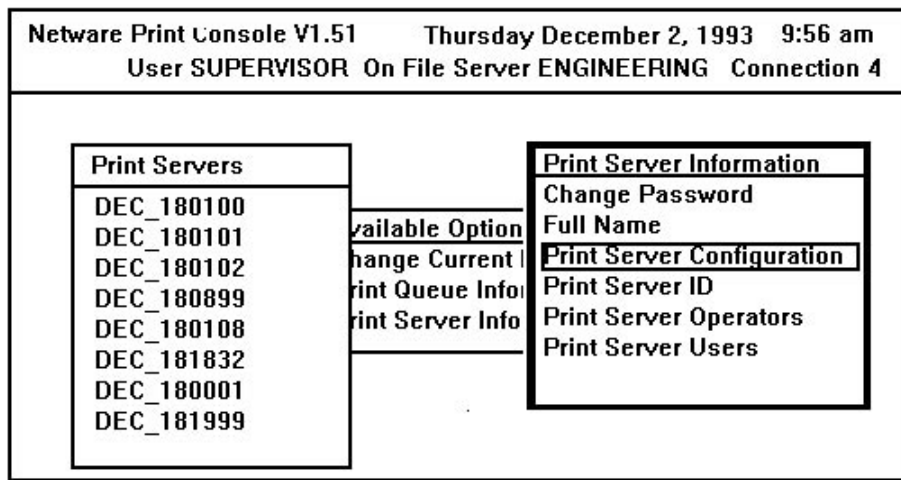
3. Choose **Printer Configuration** from the Print Server Configuration menu. Press Enter. The Configured Printers menu appears. Since this is a new print server entry, all printers are labeled "Not Installed".

4. Choose Printer 0 and press Enter. The Printer 0 configuration screen appears. The name should indicate port 1 or use any meaningful name related to the printer to be connected to the parallel port. **Note: Printer 0 = parallel and Printer 1 = serial.**

5. Although it is not necessary for operation, you may modify the printer name on this sheet to something which would help you identify the printer. This name is used in the print server "Notify Messages". Highlight **Name**, enter the desired name and press Enter.

6. Highlight **Type** and press Enter. A list of various printer types is displayed. Choose **Remote Other/Unknown** and press Enter. This will cause default entries in the other fields. These defaults are usually optimal and should not be changed without specific detailed knowledge of the effects.

7. Press Esc. Elect to save changes when prompted. Press Enter again to return to the Print Server Configuration menu.

8. If you are also connecting a printer to the serial port, choose Printer 1 and press Enter. Setup Printer 1 for the serial port using steps 5 through 7.

```
Netware Print Console V1.51      Thursday December 2, 1993   9:56 am
              User SUPERVISOR  On File Server ENGINEERING   Connection 4
┌─────────┬──────────────────────────────────────────────┐
│   Co    │           Printer 0 Configuration             │
├─────────┼──────────────────────────────────────────────┤
│ Not In  │ Name: RapidPrint 200                          │
│ Not In  │ Type: Remote Other/Unknown                    │
│ Not In  │                                               │
│ Not In  │ Use Interrupts: Yes                           │
│ Not In  │ IRQ: 7                                        │
│ Not In  │                                               │
│ Not In  │ Buffer Size in K: 3                           │
│ Not In  │ Starting From: 0                              │
│ Not In  │ Queue service mode: Change forms as needed    │
└─────────┴──────────────────────────────────────────────┘
```

The RapidPrint 200 is assigned to Printer 0. Set the TYPE field to Remote Other/Unknown. Press Enter.   You do not need to make entries in the other fields.

3.1.6 Assign Print Queues to the Network Interface Box Printers

When you assign queues to the defined printer, you authorize the network interface box print server to service these queues.

> **Note:** Do not assign one queue to two different print servers. If a queue is assigned to multiple print servers, print jobs may not go to the intended printer. However, you may assign more than one queue to a printer.

1. Choose **Queues Serviced By Printer** from the Print Server Configuration Menu.

2. Select the print name you entered in step 3.1.5 from the list of **Defined Printers**. A screen (which should be blank for the initial installation) appears. Press Insert to list **Available Queues** for the network interface box-connected printer. See screen example.

```
Netware Print Console V1.51      Thursday December 2, 1993    9:56 am
        User SUPERVISOR  On File Server ENGINEERING   Connection 4

   ┌─────────────────────┐        ┌─ Print Server Information ─┐
   │ Print Servers       │        │ Print Server Configuration Menu
   │ DEC_180100          │        │ File Servers to Be Serviced
   │ DEC_180101          │ vailable Option │ Notify List for Printer
   │ DEC_180102          │ hange Current │ Printer Configuration
   ┌─ Defined Printer ───┐ Queue Info │ Queues Serviced by Printer
   │                     │ Server Info │
   │ DEC_150115      │ 0 │
   │                     │
   │ DEC_180001          │
   │ DEC_181999          │
   └─────────────────────┘

   ┌──────────────────────────────────────────┐
   │ Press Insert to choose the printer serviced │
   │ by the network by the network interface box. │
   └──────────────────────────────────────────┘
```

3. Choose a queue and assign a priority level (from 1 to 10) to the queue. It is recommended that you accept the default priority level that appears. Press Enter. The queue appears on the list for the printer. Press Insert to enter additional queues. See the following screen example

```
Netware Print Console V1.51      Thursday December 2, 1993   9:56 am
            User SUPERVISOR  On File Server ENGINEERING   Connection 4

    Available Queues                                        Priority
    QZ_1
    QZ_1A
    QZ_1B
    QZ_1C        Priority: 1
    QZ_1D
    QZ_2
    QZ_3


        Select an available queue        Assign a priority number
        or create a new queue.           to the queue.
```
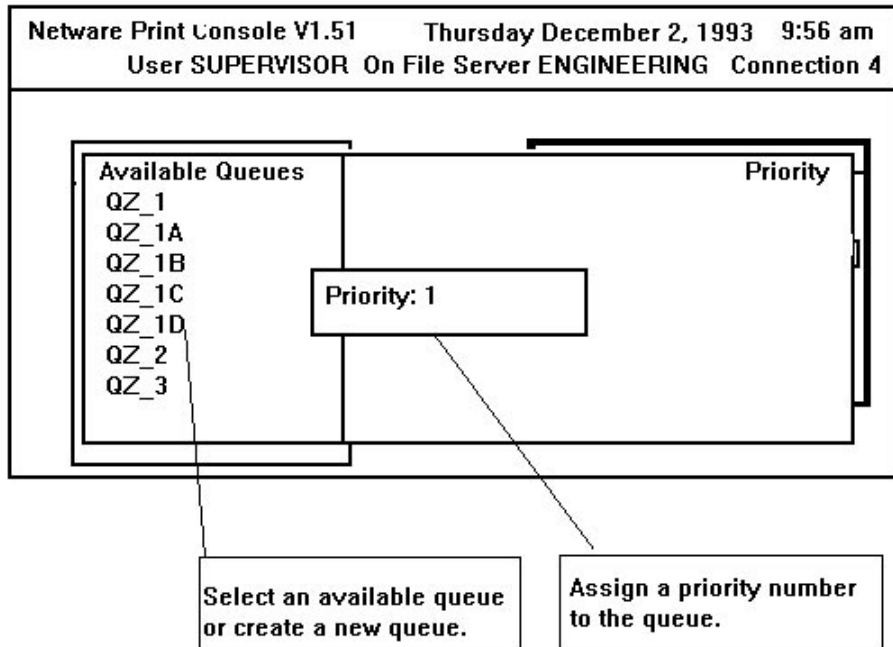
4. When you have finished assigning the queues, press Esc and then choose YES to save the changes. Continue pressing Esc to return to the Print Server Configuration menu. If you want to set up NOTIFY options, continue to section 3.1.7. Otherwise, continue to press Esc and choose YES to save your changes.
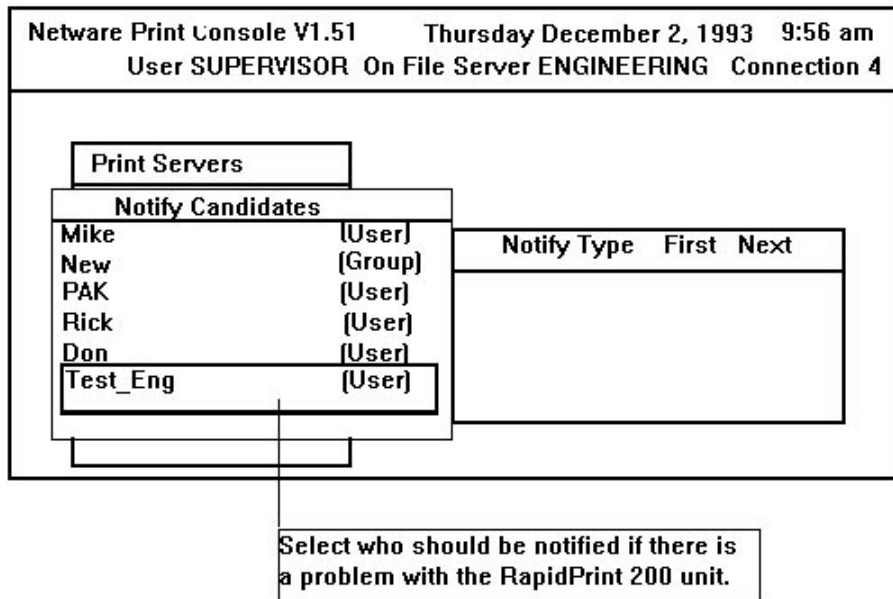
3.1.7 Set Up Notify Options for the Network Interface Box-Connected Printer(s) *(Optional)*

To allow the network interface box to notify users or user groups if a problem occurs with the printer, you need to set up the Notify options. The network interface box supports the enhanced Notify options for printers, including informing users when the printer:

- is off-line, jammed, opened, or out of paper,
- requires a manual paper feed or a form change, or
- experiences an engine failure.

1. Choose **Notify List for Printer** on the Print Server Configuration menu.

2. Select the printer from the **Defined Printers** list. The notification screen appears (which should be blank for the initial installation). Press Insert to view a list of **Notify Candidates**.

```
Netware Print Console V1.51        Thursday December 2, 1993    9:56 am
            User SUPERVISOR  On File Server ENGINEERING   Connection 4

        ┌──────────────────────┐
        │  Print Servers        │
      ┌─┴────────────────────┐  │
      │   Notify Candidates   │──┘        ┌────────────────────────────┐
      │ Mike            [User]│           │  Notify Type   First  Next │
      │ New             [Group]│          │                            │
      │ PAK             [User]│           │                            │
      │ Rick            [User]│           │                            │
      │ Don             [User]│           │                            │
      │ Test_Eng        [User]│           │                            │
      └──────────────────────┘           └────────────────────────────┘
              │
        ┌─────┴──────────────────────────────────────┐
        │ Select who should be notified if there is   │
        │ a problem with the RapidPrint 200 unit.     │
        └─────────────────────────────────────────────┘
```

3. Select the user or group from the **Notify Candidate** list. Set the first and next intervals in the **Notify Intervals** screen. It is recommended that you use the defaults. The first and next intervals are how many seconds the network waits before it notifies candidates about a print job problem. The intervals specify how often after the first notification candidates are notified. Type in a number in seconds for each interval and press `Enter`.

```
Notify Intervals

First:          30
Next:           60
```

Specify how long the print server should wait before alerting the Notify list of a problem and how long alerts should be repeated.

4. Press `Esc` to exit the program and select Yes when prompted to save changes. You can then exit the PCONSOLE function or make changes to your network interface box configuration.

3.1.8 Installing the Network Interface Box Print Server on Multiple File Servers

You can install the network interface box print server on multiple NetWare 2.x and 3.x file servers (up to sixteen) by following the procedure starting with section 3.1.2 for each file server. Use the procedure in section 3.2 for 4.x file servers.

The network interface box will normally attach to file servers that are no more than 4 hops and have no more than 1/4 second propagation delay. For extremely large or complex networks, this allows a bounded search time on startup. If the network interface box is to attach to file servers beyond this range, the file servers to be serviced should be entered into the Print Server Configuration of a "primary" file server. The primary file server may be any file server within the 4-hop, 1/4 second propagation time limits.

List the file servers to be serviced when installing the network interface box on the primary file server by selecting **File Server To Be Serviced** options under the **Print Server Configuration Menu**. This may be done before the step in paragraph 3.1.6. Once the File Servers To Be Serviced list is displayed, press Insert to display the **Available File Servers** list.

Highlight the name of each file server to be serviced and press to add this name to the File Servers To Be Serviced list. Note that you must also install the network interface box on each of these file servers.

When the list is complete, press Esc to return to the Print Server Configuration menu and proceed with network interface box installation on the primary file servers.

When you assign multiple file servers to the network interface box, you must use the same password, or no password on all file servers. You set the password for the network interface box using the NPmanage program. See Section 3.3. You identify the password of the network interface box print server on each file server using the **Change Password** option under the Print Server Information menu of the PCONSOLE utility. You must also do all of the usual steps for each server in addition to these steps for each server.

3.1.9 Next Step in Installation

If you configure the print server for Novell NetWare last, then you can power cycle the RapidPrint 200 box.

If you still need to configure other protocols, go to the appropriate chapter for the other protocols (Chapters 4, 5, and 6). When all installations are complete, go on to Chapter 7.

3.2 Configuration - Using NetWare 4.0X

Novell's NetWare 4.0 operates in two modes, **Directory Services** and **Bindery Services.** The network interface box must be configured in PCONSOLE to use Bindery Services mode to function properly with NetWare 4.0. Once this is done, the network interface box will run as a Novell print server with all the additional functionality of NetWare 4.0 since both Directory and Bindery Services modes run simultaneously and transparently to each other.

Note: If the network interface box is connected to a NetWare 4.0 server and the Bindery Services mode is not running, the network interface box will not find the file servers on which it is installed. The status page will indicate that Novell NetWare protocol is not active.

3.2.1 Confirming Bindery Context in Novell NetWare 4.0

Before the network interface box can be installed on a Novell NetWare 4.0 server, confirm that the server has a Bindery Context (name for the server under Bindery Services mode). If the server has no Bindery Context, the Novell administrator must execute either a SET command from the console prompt, or modify the AUTOEXEC.NCF file to include the proper SET command and re-start the server.

To confirm the server has a Bindery Context, perform the following steps:

1. Log in to the server as ADMIN.

2. At the DOS prompt, print out the AUTOEXEC.NCF file by entering:
   `TYPE Z:\SYSTEM\AUTOEXEC.NCF.`

3. When the file displays, look for a statement similar to:
   `SET BINDERY CONTEXT =O=`*Name*
   Where *Name* is the designation for the Server Context and can be obtained by starting PCONSOLE. The Context is shown in the upper left corner of the Available Options menu screen. For example,
   `O=DIGITAL_EQUIP`

4. If you do not see such a statement on the screen, then you must add that statement for the network interface box to work. Exit from PCONSOLE and use a DOS text editor to add the following statement to the AUTOEXEC.NCF file:
   `SET BINDERY CONTEXT = O = `*Name*`

5. Alternatively, the network administrator can type the SET command at the server. Note, however, that any SET changes remain in effect only until the server is powered down and restarted again.

3.2.2 Configuring in Bindery Mode with PCONSOLE

Once you are sure you have installed the Bindery Context, you can configure the network interface box on NetWare 4.0 by completing the following process. If you encounter any errors during the process, try logging out and logging in again.

1	Start PCONSOLE.
2	Select Bindery Mode.
3	Select Quick Setup option.
4	Enter Print Server, Printer, and Queue names.
5	Enter printer TYPE name.
6	Add to Print Server and Queue lists.

3.2.2.1 Start PCONSOLE

Before you begin, log in to the network as ADMIN on a 4.0X server. After you log in, type **PCONSOLE** and press Enter. The next screen appears.
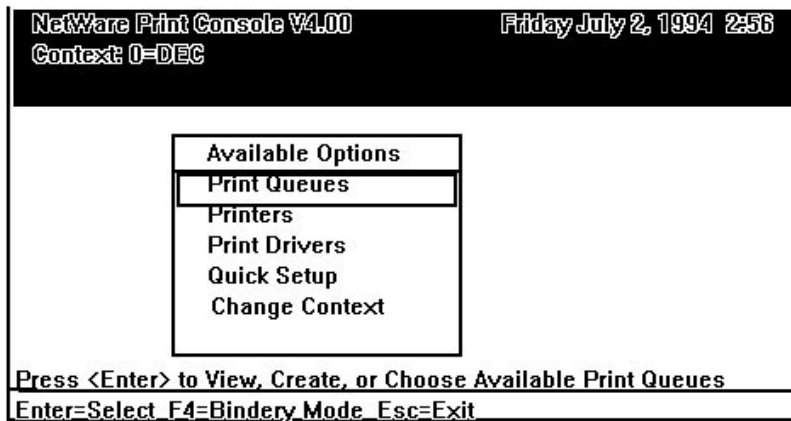
3.2.2.2 Select Bindery Mode

When the Available Options screen appears, press F4 (for Bindery Mode).

Note: If you receive a message asking you to log in to a server with Bindery connections, it means that the server you are attached to does not have Bindery Mode enabled. Follow the procedure in section 3.2.1 to add Bindery Services or log onto a server with Bindery Services activated.

3.2.2.3 Select Quick Setup

When the Available Options menu appears, select Quick Setup and press Enter. See next screen example. Use Quick Setup to connect your print server, print queue, and printer correctly. If you need to modify these items later, see section 3.2.2.5.

```
NetWare Print Console V4.00          Friday July 2, 1994 3:25 PM
  User ADMIN on NetWare Server ENG_SVR Connection 1




                 Available Options
         Print Queues
         Printer Servers
         Quick Setup
         Change Current Netware Server



Press <Enter> to View, Create, or Choose Available Print Queues
Enter=Select_F4=Bindery Mode_Esc=Exit
```
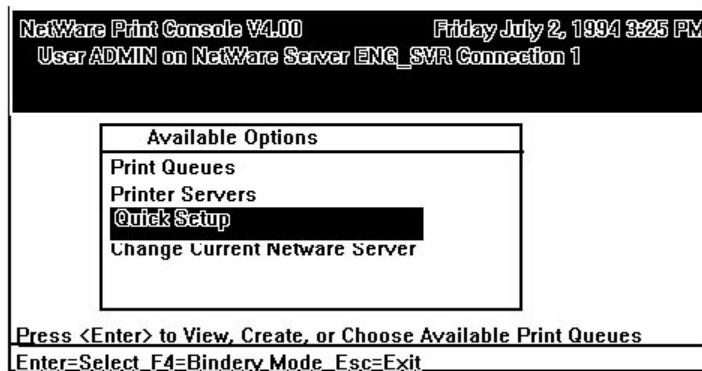
3.2.2.4 Enter Print Server, Printer, and Print Queue Names

When the Print Services Quick Setup window appears (shown below), follow the steps listed on the next page.

```
NetWare Print Console V4.00         Friday July 23, 2994 3:56 PM
  User ADMIN on NetWare Server ENG_SVR Connection 1


               Print Server Quick Setup
   Printer Server: DEC_9934334
   New Printer:    F1
   New Print Queu: Q1

   Banner Type: Text
   Printer Type:  Parallel
   Location:      Auto Load [Local]
   Interrupt:     None [Polled mode]
```
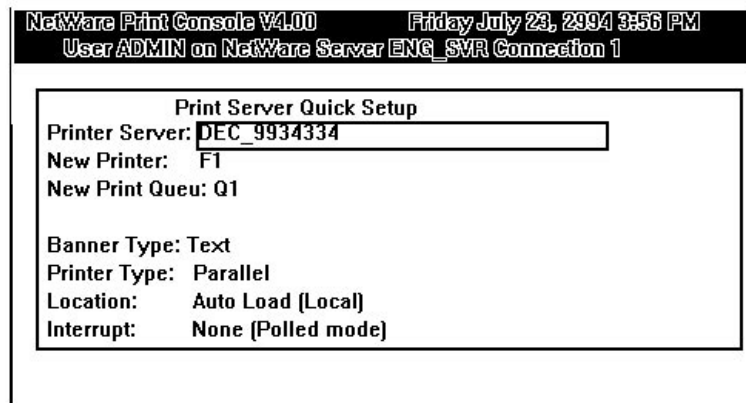
1. With **Print Server** highlighted, modify the entry by pressing F3.

2. Type in the Print Server name and press Enter. Unless it has already changed using NPmanage, this name is formed from the network interface box serial number printed on the last line of the status/configuration report during Step 7 of the physical installation described in **Chapter 2**. The factory default name is of the form:

   DEC_XXXXXX

   Where XXXXXX is the serial number of your network interface box.

3. Press Tab to move to the New printer name field. Enter a name and press Enter .

4. Press Tab to move to the New print queue name field. Enter the name you wish the print server to use when reporting printer events via Notify. Press Enter.

5. Press Tab to move to the Printer type field and press Enter. When the pop-up window appears, select the Other/Unknown option. Press Enter to select your choice.

6. With all your choices now selected, press F10.

Follow steps 1 through 6 to configure all NetWare 4.X file servers which are to contain print queues serviced by the network interface box.

3.2.2.5 Add to Print Server and Queue Lists

If you need to view, add, delete or modify print servers or print queues after your initial setup, select either the Print Queues or Print Servers options from the Available Options menu.

Selecting either Print Queues or Print Servers options displays information screens from which you can view or modify more choices.

- On the Print Queues Information screen, you can select from Print Jobs, Status, Attached Print Servers, Information, Users, Operators, and Print Server choices.

- On the Print Server Information screen, you can select from Printers, Information and Status, Users, Operators, Description, Password, and Audit items.

This can also be done using Windows-based NWADMIN following the same basic steps.

3.3 Using the NPmanage Utility

NPmanage is a PC-based program that allows you to configure and manage your RapidPrint Network Interface Box from a Novell system. The utility allows you to do the following, plus much more:

- Configure the Novell print server and TCP/IP print server.
- Turn the Configuration and Status printout on or off.
- Change print server name and password
- Troubleshoot the network interface box.

The NPmanage utility includes a context-sensitive help menu that explains all of its features. Press the F1 key to receive help.

3.3.1 How to Install and Start NPmanage

Although unnecessary, it is suggested that you load the program onto an area of the file server restricted to personnel with Supervisor or Administrator privileges. Copy the NPmanage.* files from the NPmanage diskette.

1. To execute the NPmanage program from any workstation on the network, make sure that you have access to the directory containing the program. Type **NPmanage** and press Enter. NPmanage will search the network for compatible print servers and present a list by serial number. Press the F1 key to receive help.

2. Choose the network interface box you want to connect to by highlighting its serial number and pressing Enter. The program will display screens indicating connecting and checking processes. If you cannot connect to the chosen network interface box for any reason, you will receive an error message.

3. After connection is made to the selected network interface box, the Diagnostic and Utilities menu appears. See the following section for details of the NPmanage utility.

3.3.2 NPmanage Utility

The following choices are available from the Diagnostics and Utilities menu.

Troubleshoot
- Send test page to either port in PCL or PS format
- Read Error log
- Report Print Server status- either port
- Reset Unit

General Setup Print Server Configuration
- Enable/Disable Powerup Status Page
  - Select PostScript or PCL protocol
- Setup Printer Ports
  - For the Parallel Port
    - Set Strobe Size
    - Specify Start of Job String
    - Specify End of Job String
  - For the Serial Port
    - Set the Baud Rate
    - Set Number of Data Bits
    - Specify Parity
    - Enable/Disable Ready/Busy and XON/XOFF
    - Specify Start of Job String
    - Specify End of Job String
- Setup Printer Protocols
  - Enable/Disable the Network Protocols
- Reset Unit to Factory Defaults

Setup Novell Print Server
- Set Print Server Name
- Set Password to the File Server

Setup TCP/IP

- Specify IP Address, Subnet Mask, and Gateway Address

Configure Serial Port Independent
- Serial Port Operated Independently
- Serial Port as a Backchannel for the Parallel Port

3.3.3 When Configuration Changes Take Effect

All changes made by one of the NOS management utilities only takes effect when the unit is either Reset (Novell or Macintosh NPmanage) or Initialized Server (MOP) or when power is cycled to the network interface box.

3.4 Using the NetWare Utilities

This section explains how to use Novell NetWare utilities to do the following with the network interface card. Use this information whenever you want to make changes to your original PCONSOLE configuration (completed as part of the Configuration Using NetWare section.)

- Attach and select a file server.
- Select or delete queues for the network interface card print server.
- Set up NOTIFY functions.
- Use CAPTURE and NPRINT.

Section 3.3 also explains how to make changes to the network interface box.

Note: See your Novell NetWare documentation for detailed information on the utilities listed starting on the next page. Each print server utility is found in the *NetWare Print Server Manual*. The table lists what you can do with the print server when using these utilities.

3.4.1 How to Remove Queues Assigned to a RapidPrint 200 Network Interface Box

To remove queues assigned to the network interface box print server, do the following.

1.   Start the PCONSOLE utility.

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

3.   Select the network interface box print server from the **Print Servers** list.

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

5.   Select **Queues Serviced by Printer** from the **Print Server Configuration** menu.

6.   Select the printer from the **Defined Printers** list.

7.   Highlight a queue on the **File Server/Queue/Priority** screen.

8.   Press delete key to remove the queue.

9.   Repeat steps 7 and 8 to delete additional queues.

10. Press Esc and save all changes.

Note: To change the priority setting for the print queue, press Enter at the **File/Server/Queue/Priority** screen to display the **Priority** setting screen. To change the priority settings, press the arrow key to delete the current setting. Type a new number from 1 to 10 and press Enter. The first queue serviced by the print server is 1, and 10 is the last.

3.4.2 How to Make Changes to a Network Interface Box Configuration

Refer to the table below when you need to change configuration information of a network interface box.

When you want to	Then you must
Move the network box and printer to another location on the same network	Move the printer to its new location and make the network connections. You do not need to reconfigure with PCONSOLE
Move the network box and printer from its current network to a new network	Follow the configuration instructions in Chapter 3.
Attach or remove a new file server to the network interface box	Use the PCONSOLE utility.
Add or remove queues to the network interface box	Use the PCONSOLE utility. See the section called Print Queue Functions in this chapter.
Change the printer server name	Use the network card NPmanage program. See Using the NPmanage Utility for details.
Move the network interface box to another printer	Reinstall the network interface box, following the procedures in Chapters 2 and 3.

4. Macintosh EtherTalk NPmanage Utility

This chapter explains how to print through the network interface box from a Macintosh using EtherTalk and how to use the NPmanage utility for Macintosh systems. Be sure you have installed the PSPrinter driver that came with your printer.

4.1 Choosing the Printer

To choose the network interface box-connected printer on AppleTalk, do the following:

1. Select the EtherTalk link for AppleTalk by clicking on the Apple icon in the Macintosh menu bar.

2. Select **Control Panel**.

3. Click on **Networks**.

4. Choose **EtherTalk** as the AppleTalk connection. See the screen example.
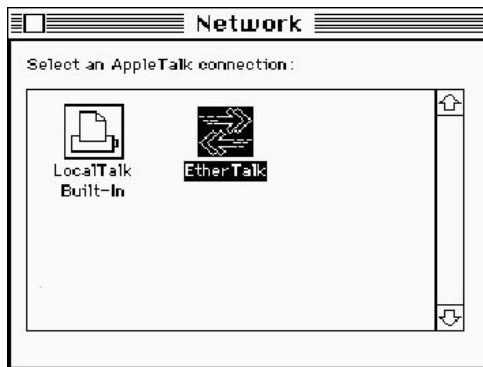
5. Click on the Apple icon.

6. Select **Chooser**.

7. Select the appropriate zone.

8. Scroll the window and select **PSPrinter** from the display panel on the left. See the screen example below.

```
┌──────────────────────────── Chooser ────────────────────────────┐
│ ┌──┐                                                              │
│ │  │                                                              │
│                                    Select a PostScript Printer:   │
│ ┌──────────────────────────┐  ┌──────────────────────────────┐  │
│ │  [&&]         [&&]     ⇧ │  │ [A] DEClaser 5100 2        ⇧ │  │
│ │                          │  │ [A] High Speed HPPS NIC      │  │
│ │ LaserWriter 8  LaserWrit...8.1.1mod│  │    IVS Printserver 17/600    │  │
│ │  [PDF]        [  ]        │  │    Joe's ANSI Pro 630        │  │
│ │                          │  │    Joe's ColorWriter 1000    │  │
│ │ PDFWriter     PSPrinter ⇩ │  │    Joe's LaserWriter Pro 630 │  │
│ └──────────────────────────┘  │    Joe's LPS32               │  │
│                               │    Joe's Pro 630             │  │
│ AppleTalk Zones:              │    LaserJet 4               │  │
│ ┌──────────────────────────┐  │    LEVEL DCPS queue GARMND   │  │
│ │ MRO Components & Peripherals ⇧│  │    LEVEL GARMND AN duplex 1 ⇩│  │
│ │ MRO Marlboro MA          │  └──────────────────────────────┘  │
│ │ MRO MRO2 Marlboro MA     │                    Background Printing│
│ │ MRO MRO3 Marlboro MA     │  ┌─────────┐  ◉ On  ○ Off          │
│ │ MSO Maynard MA           │  │ Setup... │                       │
│ │ NJO Parsippany NJ        │  └─────────┘                        │
│ │ NWO Oslo LocalTalk       │              ◉ Active              │
│ │ NWO Oslo Norway        ⇩ │  AppleTalk  ○ Inactive            │
│ └──────────────────────────┘                              7.4    │
└──────────────────────────────────────────────────────────────────┘
```

9. Choose AppleTalk Printer Name of the network interface box from the printer list on the right side of the display. This name is listed on the Status/Configuration report referred to in section 7.1.3. The default name displayed in the box is:

    DEC_xxxxxx <#>

10. Select **SETUP**. When the Setup screen is displayed, select AUTO SETUP.

4.2 Using the NPmanage Utility

The NPmanage program has seven functions:

- **Reset**, to revert to default settings
- **Configuration**, to view and/or modify the AppleTalk Printer Name or AppleTalk Printer Zone
- **Error Log**, to view error log,
- **Printer Setup**, to display printer setup options..
- **Protocol Setup,** to enable/disable servicing of other protocols and to view/modify the TCP/IP IP address, subnet and default gateway names.
- **Options**, to enable or disable the power-on status page.
- **Serial Port**, to select baud rate, data bits, parity, and flow control.

To access this program, do the following:

1. Copy the files from the Macintosh NPmanage utility diskette (supplied with the network interface box) to a folder. For example, place the program in a folder called Utility.

2. Double click on the RapidPrint NPmanage utility icon when it appears on the desktop. The Zone and Print Server Device Dialog box displays as shown below:

3. Choose the Zone and network interface box.
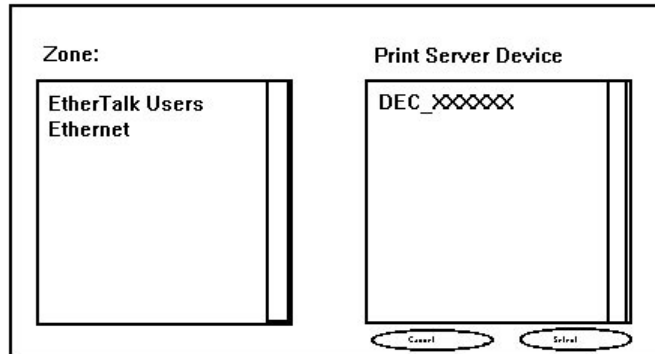
Select the Zone that has the network interface box you want to administer. All available network interface boxes in that zone appear in the Device Dialog box. If your network has no zones, you choose only from the Device Dialog box. No Zone Dialog box appears.

Select the Device you want to use. (The RapidPrint 200 default device name is DEC_xxxxxx.) Once you select the device, click on LAN Print Server in the menu bar at the top of your screen. The following menu appears.

LAN Print Server
   Reset
   Configuration...
   Error Log
   Printer Setup...
   Protocol Setup...
   Options...
   Serial Port

4.3 How To Configure the Network Interface Box

4.3.1 Reset

The reset function resets the network interface box so your changes can take effect.

4.3.2 Configuration

Configuration allows you to change the Print Server Device name and the AppleTalk Zone name. These changes are retained in the network interface box.
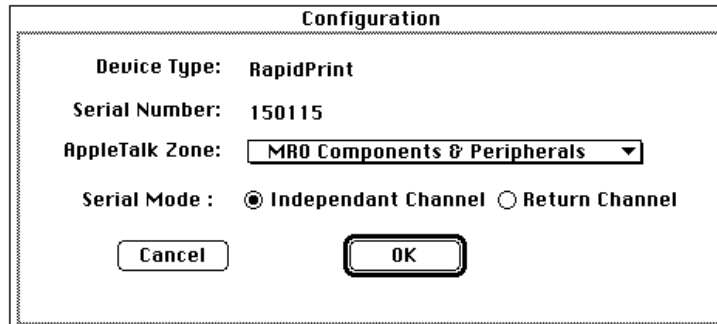
Serial Mode

If the printer connected to the parallel port has support for a serial backchannel, then select 'Return Channel' in the screen. Otherwise, select 'Independent Channel.'

4.3.3 Error Log

The Error Log is used to view the log of errors that the network interface box has registered. This screen can display normal operational diagnostics and errors. Digital Customer Support may need the information on this screen if you have problems with the network interface box.

When you select Error Log on the menu, an error log screen appears. Below is an example of an error log.

Note: The error log is empty when there are no problems.

You can print the error log by using the Print option under the File menu. To save the contents of the error log, do one of the following:

- Use the **Save As** option from the File menu to save the entire log file.
- Use the **Edit** option to copy and paste some or all of the log file contents.
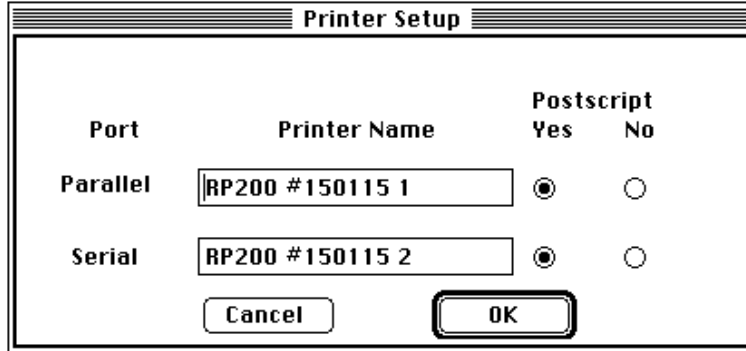
4.3.4 Printer Setup

This option displays your printer setup options. Select PostScript as appropriate for each port.

Note: The selection for Serial displays only if you have already selected Independent Channel in the Configuration dialog box.

```
================= Printer Setup =================

                                        Postscript
      Port          Printer Name        Yes     No

    Parallel     [RP200 #150115 1    ]   ⦿      ○

     Serial      [RP200 #150115 2    ]   ⦿      ○

                   ( Cancel )      (( OK ))
```

4.3.5 Protocol Setup

Protocol setup is used to configure network protocols other than AppleTalk. This includes the setup necessary for TCP/IP users. This option is found on the LAN Print Server menu shown on page 4-3.

> **TCP/IP Users:** If you do not have an IP address, Subnet Mask, or Default Gateway address (optional) established when you bring up this screen, the information in the fields will not be correct. You must enter the correct IP address, Subnet Mask, and if needed, the Default Gateway address values now. If you supply erroneous values, TCP/IP will not be enabled and you will not receive any error messages.

The following screen appears for this option.

1. Click to ON all protocols which you want active. Click to OFF all protocols you do not want to use.

2. Enter the IP Address and Subnet Mask if you have enabled TCP/IP. Also, if you have a Default Gateway Address, enter the address now.

3. Click on OK when you have finished using this screen.

Disable protocols that are not in use to reduce unnecessary overhead.

4.3.6 Options

The Options menu is used to enable or disable the printing of the power-on status page. This sends a status page to any printer that is attached to the network interface box each time it is powered on. This option is found on the LAN Print Server menu shown on page 4-3. The following screen appears for this option.

```
┌─────────────────────────────────────────────┐
│ ≡≡≡≡≡≡≡≡≡≡≡ Control Options ≡≡≡≡≡≡≡≡≡≡≡ │
│ ┌─────────────────────────────────────────┐ │
│ │                                         │ │
│ │  Status Sheets:                         │ │
│ │      ◉ Enable                           │ │
│ │      ○ Disable                          │ │
│ │                                         │ │
│ │   ┌──────────┐        ┌──────────┐      │ │
│ │   │  Cancel  │        │    OK    │      │ │
│ │   └──────────┘        └──────────┘      │ │
│ │                                         │ │
│ └─────────────────────────────────────────┘ │
└─────────────────────────────────────────────┘
```
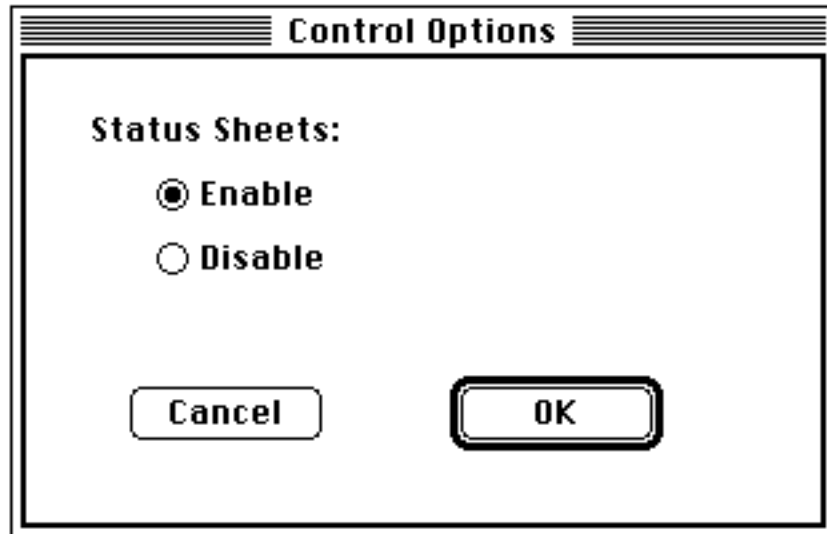
Click on Enable to send a status page to the printer(s) each time the network interface box is powered on, or reset (initialized) or Disable to disable status page printing each time the box is powered on.

4.3.7 Serial Port

The Serial Port option displays the status of the serial port that is selected in the Configuration option. Choose the parameters to match the printer attached to the serial port. Note: Stop bits are fixed at 1.

```
┌─────────────────────────────────────────────────────┐
│                     Serial Port                      │
├─────────────────────────────────────────────────────┤
│ Baud Rate:                                           │
│            ○ 2400    ○ 4800   ○ 9600    ○ 19200      │
│            ○ 38400   ● 57600  ○ 76800   ○ 115200     │
│                                                      │
│ Data Bits:   ○ 7              Parity:  ● None        │
│              ● 8                       ○ Odd         │
│                                        ○ Even        │
│ Flow Control: ○ DTR/DSR                              │
│               ● XON/XOFF                             │
│         ╭──────────────╮        ╭──────────────╮     │
│         │   Cancel     │        │     OK       │     │
│         ╰──────────────╯        ╰──────────────╯     │
└─────────────────────────────────────────────────────┘
```

5. TCP/IP Configuration

Use this chapter if you will be printing from a UNIX system. This chapter explains how to configure the network interface box for use with TCP/IP. After the RapidPrint 200 is configured, it provides standard UNIX printing services so you can use the same filters and commands that you use now. The RapidPrint 200 contains installation software for the following platforms

- DEC ULTRIX RISC Versions 4.3 and 4.4
- DEC OSF/1 Versions 2.0 and 3.0
- Solaris Versions 1.1.3 (SunOS 4.1.3) and 2.3 (SunOS 5.3)
- HP-UX Series 700 and 800 Version 9.01
- IBM AIX Version 3.2.5
- SCO UNIX Version 3.2

The RapidPrint 200 also contains source code that you can recompile for configuring the card for other System V platforms.

The following general procedure enables TCP/IP printing:

1. Load the RapidPrint 200 software.
2. Configure the IP address.
3. Run the appropriate installation script.
4. Complete the configuration for your operating system.
5. Run the *nsconfig* utility.

5.1 Loading the Software

1. Log in as *superuser* to the system that will spool directly to the RapidPrint 200.

2. Insert the RapidPrint 200's diskette for TCP/IP in the host drive.

3. Go to or create the directory in which you want to install the software.

4. Use the *tar* command to load the software from the diskette.

5.2 Configuring the IP Address

You can configure the IP address for the box in one of the following ways:

- Use NPmanage for NetWare, as described in Chapter 3.

- Use NPmanage for EtherTalk, as described in Chapter 4.

- Use the Internet Boot Protocol *(bootp)*.

- Use the reverse ARP (*rarp*) capability (Ethernet II frame type only).

- Use a reverse *ping* capability.

For each method, you provide the Ethernet address of the network interface box. The Ethernet address is the 12-character code that you recorded in Chapter 2 and is printed on the configuration status report each time the box is plugged in.

You can use the *bootp, rarp*, or *ping* procedures only when the RapidPrint 200 does not have an IP address. After the RapidPrint 200 has an IP address, you must use the *nsconfig* utility or, for NetWare and EtherTalk, the NPmanage utility to change an IP address.

> **Note**: These configuration methods require that the host be on the same subnet as the RapidPrint 200 initially. Once you give it its IP address, you can change it to a new subnet using nsconfig.

5.2.1 Using *bootp* to Enter the IP Address

The *bootp* daemon is a native TCP/IP option for configuring the IP address of a diskless network device. To store the IP address, use the following procedure:

1. Unplug the RapidPrint 200 printer.

2. Log in as *superuser* on the host.

3. Find the Ethernet address of the network interface box. The address is printed on the configuration status report each time you turn the unit on attached to a printer.

4 . Edit the *hosts* file (usually */etc/hosts*) to add the IP address and RapidPrint 200's node name. See the network administrator for the IP address. For example, a RapidPrint 200 named *printfast* with an IP address of 16.34.200.200 has the following entry:
    16.34.200.200 `printfast`

5. Stop the *bootp* daemon if it is running.

6. Edit the */etc/bootptab* file and add the following information:
```
printfast:\
    :ht = hardware type:\
    :ha = ethernet address:\
    :ip = IP address:\
    :sm = subnet mask:\
    :gw = gateway address:
```

For example, for an RFC 1048 system:
```
printfast:\
    :ht = ether:\
    :ha= 0040AF03AF6E:\
    :ip = 16.34.200.200:\
    :sm = 255.255.255.0:\
    :gw =16.34.200.10:
```

The same information uses this format on an RFC 951 system:
```
host      htype  haddr                iaddr
bootfile
printfast  1  00:40:af:03:af:6e  16.34.200.200
defaultboot
```

7. Start the bootp daemon by typing:
   bootpd -s

8. Connect RapidPrint 200 to the network and plug it in.

9. Wait until the box powers up and finishes initializing to allow enough time for the IP address to become known and to be saved in non-volatile memory. After the unit has powered up fully, turn the unit off.

10. Turn the unit back on again and send a ping command to verify that the RapidPrint 200 obtained its IP address. For example:

    ping 16.34.200.200

    If the RapidPrint 200 has the address, the result is a confirmation message:

    ```
    16.34.200.200 is alive
    ```

11. Remove, or comment out, your changes to the */etc/bootptab* file.

12. Stop the *bootp* daemon and, if you want it to run, restart it.

5.2.2 Using *rarp* to Enter the IP Address

The Reverse Address Resolution Protocol (*rarp*) allows network devices to query a server for their IP addresses on startup. To store the IP address, use the following procedure:

1. Unplug the RapidPrint 200.

2. Log in as *superuser* on the *rarpd* server.

3. Find the Ethernet address of the RapidPrint 200. The address is printed on the configuration status report when you power on the unit connected to a printer.

4. Edit the *hosts* file (usually */etc/hosts*) to add the IP address and network interface box's node name. See the network administrator for the IP address. For example, a RapidPrint 200 with the name of *printfast* has the following entry:

    ```
    16.34.200.200 printfast
    ```

5. Edit the */etc/ethers* file to add the Ethernet address. To continue the
    example, for the *printfast* box with an Ethernet address of
    00:40:c8:00:00:ff, make the following entry:

    ```
    00:40:c8:00:00:ff  printfast
    ```

6. If the **rarp** daemon is running, stop it and restart it. Verify that the
    daemon is running.

7. Check to see that the box is connected to the network and the printer and
    plug it in.

8. Wait until the unit powers up and finishes initializing to allow enough
    time for the IP address to become known and to be saved in non-volatile
    memory. After the unit has powered up fully, turn the unit off.

9. Plug in the unit again and send a ping command to verify that the
    RapidPrint 200 obtained its IP address. For example:

    ping 16.34.200.200

    If the RapidPrint 200 has the address, the result is a confirmation
    message:

    ```
    16.34.200.200 is alive
    ```

10. Remove, or comment out, your changes to the */etc/ethers* file.

11. Stop the *rarp* daemon and, if you want it to run, restart it.

5.2.3 Using *ping* to Enter the IP Address

Use the following procedure to enter the IP Address:

1. Turn off the RapidPrint 200.

2. Log in as *superuser* on the host.

3. Find the Ethernet address of the network interface box. The address is printed on the configuration status report each time you turn the unit on attached to a printer.

4. Edit the *hosts* file (usually */etc/hosts*) to add the IP address and RapidPrint 200's node name. See the network administrator for the IP address. For example, a RapidPrint 200 with a name of *printfast* and an IP address of 16.34.200.200 has the following entry:
   ```
   16.34.200.200 printfast
   ```

5. Add an entry to the ***arp*** cache for the RapidPrint 200's IP address and Ethernet address. For example:
   arp -s 16.34.200.200   0:40:c8:0:0:ff

6. Check to see that the box is connected to the network and the printer and plug it in.

7. Send a ping command to the network interface box to give it an IP address. For example:
   ping 16.34.200.200
   ping printfast

   Although the network interface card cannot respond to the *ping* command, it can read its own address from the packets.

8. Turn the box off and back on again and then send the ping command again to verify that the RapidPrint 200 obtained its IP address.

9. Remove the entry from the arp cache using the following command. Specify the RapidPrint 200 either by its IP address or by its name. For example:
   arp -d printfast

5.3 Choosing the Type of Installation

	Host-Resident	Remote-Resident
DEC ULTRIX 4.3 and 4.4	✔	✔
Solaris 1.1.3 (SunOS 4.1.3)		✔
DEC OSF/1 2/0 and 3.0	✔	✔
Solaris 2.3 (SunOS 5.3) **System V Release 4**	✔	
HP-UX 9.01	✔	
IBM AIX 3.2.5	✔	✔
SCO UNIX 3.2	✔	

For most operating systems, you have the option of using host-resident printing or remote-resident printing which uses the line printer daemon (lpd). Choose a method that is appropriate for your site, based on the following differences:

- The host-resident method can print the user name and file name on its banner page; the remote-resident method prints a banner page with the host's name.

- The host-resident method requires you to repeat the configuration procedure on every host that you want to be able to print jobs. The remote-resident method requires you to configure the unit one time, when you install the RapidPrint 200.

After choosing a method, issue one of the following commands:

To perform a host-resident installation:	nicinst_2
To perform a remote-resident installation:	lpdinst

5.4 Completing the Configuration

Go to the subsection for your operating system and follow the instructions for the type of installation you chose.

5.4.1 DEC ULTRIX and DEC OSF/1

These systems can use host-resident or remote-resident installation.

5.4.1.1 Remote-Resident Installation

1. Enter the **lpdinst** command creates the */usr/nic* directory and copies the appropriate files to it. You then run the *lprsetup* utility to make changes to the contents of the */etc/printcap* file.

2. Enter the following command:

    lprsetup

3. Select **add** and press Enter.

4. Enter a name for your printer and press Enter.   Press Enter at the prompt to see a list of supported printers.

5. Enter **remote** as the printer type and press Enter.

6. Press Enter at "Enter printer synonyms."

7. Either press Enter at the prompt to accept the default spooler directory or enter the name of your directory and press Enter.

    OSF/1 systems: At this point, the script prompts for an error log. Either press Enter at the prompt to accept the default location and file name or enter the name of your file location and name and press Enter.

8. Enter the name of the remote system and press Enter.

9. Enter **PORT1** as the name of the printer on the remote system and press Enter.

10. Enter Q and press Enter. The system displays its print configuration, based on your responses. For example:

```
Printer_name
Symbol Type Value
lp    STR
rm    STR some_name
rp    STR PORT1
sd    STR /usr/spool/some_dir
```

OSF/1 systems: The list also includes the lf symbol and the file specification for the error log.

11. Either enter **Y** at the prompt to confirm the configuration or press **N** to cancel the changes.

12. You have the option of adding some text to further identify the printer. Press Enter.

13. Select **exit** to save the configuration and press Enter.

Note: Repeat these steps substituting PORT2 for PORT1 to set up a queue for the serial port.

Go to Section 5.5 for instructions on running the *nsconfig* utility.

5.4.1.2 Host-Resident Installation

The **nicinst_2** command creates the */usr/nic_2* directory and copies the appropriate files. It then starts a script that prompts you for information. Your responses change the contents of the */etc/printcap* file.

1. At the prompt, enter the IP node name of the RapidPrint 200 and press Enter.

2. Enter a name for your printer and press Enter. The system displays your responses and inquires if you want to accept this configuration, based on your responses.

3. Either enter **Y** at the prompt to confirm the configuration or enter **N** to cancel the changes. The system displays a printcap entry based on your responses and inquires if you want to append the entry to the *etc/printcap* file.

4. Either enter **Y** at the prompt to confirm or enter **N** to cancel the change.

The script creates a spool directory in */usr/spool* for your printer.

Repeat the procedure on each system that you want to have access to the printer.

Go to Section 5.5 for instructions on running the *nsconfig* utility.

5.4.2 Solaris 1.1.3 (SunOS 4.1.3)

The **lpdinst** command creates the */usr/nic* directory and copies some files. You then edit the */etc/printcap* file to include the printer and its spooler directory. The printcap entry causes the file to be printed on the printer that contains the RapidPrint 200.

1. Edit the */etc/printcap* file and locate the entry for your printer at the end of the file.

2. Add the capability codes for remote host and remote printer, **rm** and **rp**, respectively. Specify the RapidPrint 200 as the remote host and PORT1 as the remote printer. For example, for the parallel port:

```
your_printername|RapidPrint 200:\
:lp=:\
:rm=your_RapidPrint 200:\
:rp=PORT1:\
:sd=/usr/spool/your_dir/your_printername:
```

   Exit from the file.

3. Create the spooling directory. For example:

   mkdir /usr/spool/your_dir/your_printername

   Note: Repeat these steps substituting PORT2 for PORT1 to set up a queue for the serial port.

Go to Section 5.5 for instructions on running the *nsconfig* utility.

5.4.3 Solaris 2.3 (SunOS 5.3) and SVR4

The **nicinst_2** command creates the */usr/nic* directory and copies some files. It then starts a script that prompts you for information. After you complete the script, you make the information available to the *lp* utility by editing an interface program, usually a shell script. The default interface file is called *standard*, but you can use an interface file customized for a particular type of printer.

1. Make a copy of the interface file in the directory */usr/nic* for PORT1. For example:

   cp /usr/spool/lp/model/standard /usr/nic/port1_interface

2. Go to the directory */usr/nic* and edit the interface file.

3. Change the shell variable *FILTER* to invoke *nicfilter*. To accomplish this, search for the line FILTER='${LPCAT} 0" and replace it with the following:

   ```
   FILTER="/usr/nic/infilter |
   /usr/RapidPrint_200/RapidPrint 200filter
   printer_name printer_port ${nobanner} \
   ${user_name} ${request_id} ${files}"
   ```

   where *printer_name* and *printer_port* are the names specified in the file */etc/hosts*. The remaining arguments are optional and are used to create a banner that includes sender name, job number, and filename. Omit the last four arguments to use the default banner.
   If your interface file does not have the FILTER shell variable defined, you can enclose the entire standard file in parentheses and piping it to *nicfilter*.

4. Use the *lpadmin* command by typing the following commands:

   lpadmin -p printer_name -v /dev/null -i interface_file
   enable printer_name
   accept printer_name

Repeat the procedure on each system that you want to have access to the printer.

Go to Section 5.5 for instructions on running the *nsconfig* utility.

5.4.4 HP-UX

The **nicinst_2** command creates the */usr/nic_2* directory and copies some files. It then starts a script that prompts you for information. After you complete the script, you add the information to the *lp* utility.

1. Use the *kill* command to stop the scheduler process.

2. Enter the following commands:

   **lpadmin -printer_name -v/dev/nic_2/printer_name -mlaserjet
   enable printer_name
   accept printer_name**

   where *printer_name* is the name specified during the **nicinst_2** procedure. You can also use the other options for the *lpadmin* command.

3. Restart the scheduler with the following command:

   /usr/lib/lpsched

Repeat the procedure on each system that you want to have access to the printer.

Go to Section 5.5 for instructions on running the *nsconfig* utility.

5.4.5 AIX RISC System/6000

This operating systems can use either host-resident or Remote-resident installation.

The AIX operating system uses the *qdaemon* program and configuration information stored in the */usr/lpd/qconfig* file to handle printing services. The configuration information includes entries for each virtual printer and physical device known to the system.

You configure the RapidPrint 200 in a similar manner to configuring a local printer. The only difference is the physical printer device must be a named pipe used by the RapidPrint 200's print daemon to route data.

5.4.5.1 Remote-Resident Installation

The **lpdinst** command creates the */usr/nic* directory and copies some files. Then use the following procedure:

1. Enter the following at the system prompt:

   smit spooler

2. Select **Manage Remote Printer System** from the menu.

3. Select **Client Services** from the menu.

4. Select **Remote Printer Queues** from the menu.

5. Select **Add a remote queue** from the menu. A form to be fill out is displayed, as shown in the example.

Requested Information	Example	Description
NAME of the queue to add	print1	Local print queue
ACTIVATE the queue?	yes	Default
Will this become the default queue?	no	Default
Queueing DISCIPLINE	first come, first served	Job order
ACOUNTING FILE pathname		Optional
DESTINATION HOST for remote jobs	Printfast	NIC node name
SHORT FORM FILTER for queue	usr/lpd/bsdshort	Required
LONG FORM FILTER for queue	usr/lpd/bsdlong	Required
Name of QUEUE on remote printer	PORT1	NIC port name
NAME of device to add	print1	Local device
BACKEND PROGRAM pathname	usr/lpd/rembak	Default

Substitute PORT2 for PORT1 for serial port.

6. Change the values displayed on the screen. You must replace the **short form filter** and **long form filter** values.

7. When you are finished, press Enter.

Go to Section 5.5 for instructions on running the *nsconfig* utility.

5.4.5.2 Host-Resident Installation

The **nicinst_2** command creates the */usr/nic* directory and copies some files. It then starts a script that prompts you for information. Your responses change the contents of the */etc/qconfig* file.

1. Shut down *qdaemon* using the command:

   stopsrc -s qdaemon

2. Invoke SMIT with the following command:

   smit spooler

3. Select **Manage Local Printer Subsystem** from the menu.

4. Select **Virtual Printers** from the menu.

5. Select **Add a Virtual Printer** from the menu.

6. At the entry for **printer type**, type **1** and press Enter.

7. At the entry for **device name**, type the name for the printer that you used during the **nicinst_2** program and press Enter.

8. From the list of printer models, find the model number of your printer. Enter the list number (**not** the model number).

9. At the prompts for header pages and trailer pages, type **Y** to enable these pages or **N** to disable them.

10. Enter the queue name for your printer and the prompt and press Enter.

11. If you want this printer queue to be the default one, type **Y** at the prompt; otherwise, type **N**. Press Enter.

    The system displays a message that the printer has been configured.

12. Press Enter and then press Enter again to exit SMIT.

13. Edit the */etc/qconfig* file

14. To search for your printer's name, type the following command and press Enter:

printer_name

The command locates the following line:

```
printer_name : file = /dev/printer_name
```

15. Replace */dev* with */dev/nic*

16. Exit from the editor and save the file.

17. Restart the qdaemon process with the following command:

startsrc -s qdaemon

Repeat the procedure on each system that you want to have access to the printer.

Go to Section 5.5 for instructions on running the *nsconfig* utility.

5.4.6 SCO UNIX

The **nicinst_2** command creates the */usr/nic* directory and copies some files. It then starts a script that prompts you for information. After you complete the script, you add the information to the *lp* utility.

Enter the following commands:

lpadmin -printer_name -v /dev/nic_2/printer_name
enable printer_name
accept printer_name

where *printer_name* is the name specified during the **nicinst_2** procedure. You can also use the other options for the *lpadmin* command.

Repeat the procedure on each system that you want to have access to the printer.

Go to Section 5.5 for instructions on running the *nsconfig* utility.

5.5 Running NSCONFIG

The *nsconfig* utility sends the *nicprint.conf* file to the RapidPrint 200 to define or update the information stored in the Non-Volatile Memory. Use the following procedure to run *nsconfig*:

1. Edit *nicprint.conf*. The location of the file depends on which installation you used:

If you used...	Then nicprint.conf resides in...
nicinst_2	usr/nic_2/nicprint.conf
lpdinst	usr/nic/nicprint.conf

The file has two columns of parameters and values separated by tab characters.

2. Change the parameters to your new values. All fields must be filled, even if a parameter does not apply to your RapidPrint 200. Also, the default gateway IP address must always be on the same subnet as the RapidPrint 200's IP address.

nicprint.conf

This file contains the configurable parameters to be used when initiating a communication with the N.I.C. This file can be altered manually. Remember to leave a tab between the description and the parameter. The following table shows the contents of that file with the default values.

Description	Parameter
Internet-Address	0.0.0.0
Netmask	255.0.0.0
Forwarding	N
Trailers	N
Base-Port-Number	10000

Description	Parameter
Keepalive	Y
Max-Transmission-Unit	1500
Broadcast	0
SNMP-System-Description	Network printer
SNMP-System-ID	1.3.6.1.4.1.24
Ethernet	Y
Default-Router-IP	0.0.0.0
Serial-Direction	out
Serial-Baud-Rate	19200
Serial-Data-Bits	8
Serial-Stop-Bits	1
Serial-Parity	None
Serial- DTR/DSR	Enabled
Serial-XOn/XOff	Enabled
Novell-Protocol	Y
Apple-Protocol	Y
Banners-ON/OFF	OFF
Parallel-port1-data-format	PCL PS OTHER
Serial-port2-data-format	PCL PS OTHER
Parallel -port-data-format	UNUSED
Parallel -port-data-format	UNUSED
LAT-Protocol	Y
Powerup Status Page	Y

The following table describes each field.

Parameter	Description
Internet-Address x.x.x.x	The TCP/IP address for the unit being configured. The address must be a valid TCP/IP address.
Netmask x.x.x..x	This parameter describes the TCP/IP packet class being used on your network.
Forwarding *Fixed*	The parameter for this items is fixed to N. It is present only for reference and not be changed.
Base-Port-Number *Fixed*	The parameter for this items is fixed 10000. It is present only for and should not be changed.
Keepalive *Fixed*	The parameter for this items is fixed to Y. It is present only for reference and does not to be changed.
Max-Transmission-Unit *Fixed*	The parameter for this items is fixed to 1500. It is present only for reference and should not be changed.
Broadcast *Fixed*	The parameter for this items is fixed to 0. It is present only for reference and should not be changed.
SNMP-System-Description "Description"	This is the SNMP description of the to be configured. Use Network Printer for this item.
SNMP-System-ID *Fixed*	The parameter for this items is fixed. 1.3.6.1.4.1.24. It is present only for reference and should not be changed.
Ethernet *Fixed*	The parameter for this item is fixed to Y. It is present only for reference and should not be changed.
Default-Router-IP x.x.x.x	The TCP/IP address for the default. If you do not use a router then leave the address at 0.0.0.0.
Serial-Direction IN/OUT	Defines whether or not the serial port is as an independent channel or a backchannel for the parallel port. IN specifies independent, OUT specifies backchannel.
Serial-Baud-Rate 2400/4800/9600/19200/38400/57600/115200/76800	Specifies the baud rate to be used for the serial port. It must be the same as the device connected to the serial port.
Serial-Data-Bits 7/8	Specifies the number data bits to be used the serial port. It must be the same as the device connected to the serial port.

Parameter	Description
Serial-Stop-Bits *Fixed*	Specifies the number of stop bits to be for the serial port. It must be the same the device connected to the serial port.
Serial-Parity None/Odd/Even	Specifies the parity to be used for serial port. It must be the same as the device connected to the serial port.
Serial-DTR/DSR Enabled/Disabled	This parameter is used to enable hardware flow control. It can be used alone or with Xon/Xoff.
Serial-Xon/Xoff Enabled/Disabled	This parameter is used to enable (Y)/disable (N) flow control. It can be used alone or with DTR/DSR.
Novell-Protocol Y/N	This parameter is used to Enable(Y)/Disable (N) the IPX protocol.
Apple-Protocol Y/N	This parameter is used to Enable(Y)/Disable (N) the EtherTalk protocol.
Banners-ON/OFF On/Off	This parameter is used for set LPD banners on and off.
Parallel-Port1-data-format Serial-port2-data-format PCL/ASCII/PS/OTHER	The LPD filters to be used for the printers attached to the corresponding port. More than one filter can be used.
Parallel-Port-data-format Parallel-Port-data-format *Fixed*	The parameter for these items is fixed to UNUSED. It is present only for reference and should not be changed.
LAT-Protocol Y/N	This parameter is used to Enable(Y)/Disable(N) the LAT protocol.
Powerup-Status-Page Y/N	This is used to Enable(Y)/Disable(N) printing of the power up status page

3. Exit from the editor and save the file.

4. Run *nsconfig* with the RapidPrint 200's IP address or its name (as entered in */etc/hosts*). For example:

nsconfig 16.34.200.200
nsconfig printfast

5. Turn the unit off and then on again.

You are now ready to print.

5.6 After the Configuration

Whenever you make changes to the configuration information, run the *nsconfig* utility and then turn the box off and on again.

If you have more than one RapidPrint 200 printer in your network, edit the *nicprint.conf* file each time you use the *nsconfig* utility to specify the particular RapidPrint 200 you intend to modify. Or, make a copy of the *nicprint.conf* file for each RapidPrint 200 giving each copy a unique name. When you use *nsconfig*, copy the unique file to the file name *nicprint.conf*.

6. Setting Up and Using the RapidPrint 200 Network Interface Box in a LAT Environment

When the RapidPrint 200 Network Interface Box is properly installed, the printer acts like a serial printer connected to DECserver device. Using printing software that works with serial printers connected to DECservers works with the network interface box.

To fully setup the network interface box, you need to know the following:

- Physical Ethernet hardware address
- LAT node name
- LAT port name

The following procedure provides all the information needed by an experienced system manager to set up the network interface box. Use this procedure and then write the results in the following parameter table.

1. Locate the Ethernet physical address of your network interface box. Use the status page to locate the address. The status page printers after you power-on your printer, unless you have disabled it.

   For example: **`00-40-AF-27-11-55`**

   The Ethernet physical address is located on the network interface box.

2. Derive the LAT node name from the Ethernet physical address.

   For example: **`LAT_0040AF271155`**

   The LAT node name is the Ethernet physical address, without the hyphens and with the prefix LAT_.

3. The LAT port names are PORT_1 and PORT_2. The parallel port is PORT 1 and the serial port is PORT 2. See the following table.

Parameter	Example	Your Value
DEClaser LAT Node Name	LAT_0040AF271155	
DEClaser LAT Port Name	PORT_1	PORT_1
DEClaser LAT Port Name	PORT_2	PORT_2

When you have completed this procedure, go to the following section of this manual to complete the setup:

Go to section:	To set up the network interface for:
6.1	OpenVMS systems
6.2	ULTRIX systems
6.3	OSF/1 systems
6.4	Maintenance Operation Protocols (MOP)

6.1 Using the Network Interface Box on OpenVMS Systems with LAT

Take the information you recorded in the parameter table to your system manager. Advise the system manager to treat this device as a serial printer connected to a DECserver, for software configuration purposes, and follow the software's instructions. Digital recommends using DECprint Supervisor for OpenVMS software when using a PostScript printer.

For use with DECprint Supervisor, see the *DECprint Supervisor for OpenVMS System Manager's Guide.* Detailed instructions are also provided in Appendix C of that manual.

For use with LATSYM, see the *OpenVMS System Manager's Manual* and the *OpenVMS System Management Utilities Reference Manual.*

6.2 Using the Network Interface Box on ULTRIX with LAT

Take the information you recorded in the parameter table to your system manager. Advise the system manager to treat this device as a serial printer connected to a DECserver, for software configuration purposes, and refer to the *ULTRIX Guide to System and Network Setup*. In most cases, you should use the 'ln03r' printer type to properly configure the printer in 'lprsetup'. Detailed instructions are also provided in Appendix E of that manual.

6.3 Using the Network Interface Box on OSF/ 1 Systems with LAT

Take the information from the parameter table to your system manager. Advise the system manager to treat this device as a serial printer connected to a DECserver, for software configuration purposes, and refer to the *Digital OSF/1 Guide to System Administration*. In most cases, use the 'ln05r' printer type to properly configure the printer in 'lprsetup'.

6.4 Configuring the Network Interface Box with MOP

The MOP utility can be used to obtain the status and configuration of the network interface box and to configure the box. The following procedure can be used on a VMS system to log in as the remote console.

1. $ mcr ncp connect via BNA-0 phys addr 00-40-af-12-55-f8

2. Press Return. Your terminal and the network box respond with its prompts <#>

    # <password> (Default is ACCESS.)

3. The network interface box responds with the LOCAL> prompt.

4. Enter the commands as outlined in the following pages.

From an Ultrix or OSF system, use the following command to log in as the remote console:

ccr -c ln0 -h <LAT-address>

You can use a dash or a colon between the address characters as shown here:

 08:00:2b:2d:9c:0f or 08-00-2b-2d-9c-0f.

"ln0" is the network circuit for your system. See your system manager for the type of network circuit on your system. Also see the MAN pages of ccr for more information.

Note: Use a ^D to exit the remote console.

The following Maintenance Operation Protocols (MOP) commands are used to configure the network interface box.

6.4.1 CIRCUIT TIMER

The CIRCUIT TIMER characteristic defines the interval at which the print server sends virtual circuit messages to the LAT service node. This value is important for balancing fast response time and network utilization against optimal service node performance. The circuit timer value ranges from 30 to 200 milliseconds. The default is 100 milliseconds. To change the circuit timer, use the command shown in the following example.

Note: You can abbreviate the following commands by typing only the letters up to the asterisks in each word.

```
Local> D*EFINE SERV*ER C*IRCUIT T*IMER 90
```

6.4.2 RETRANSMIT LIMIT

The RETRANSMIT LIMIT characteristic specifies the number of times that the print server resends a message without an acknowledgment. After the specified time limit, the print server times out the circuit.

The retransmit limit range is from 4 to 120. If traffic load is heavy or the network experiences noise problems, set the value higher than the default value of 8. On the other hand, if rapid error detection is important, you may want to specify a lower value. The following example shows how to change the retransmit limit:

```
Local> D*EFINE SERV*ER R*ETRANSMIT L*IMIT 100
```

6.4.3 SPEED

The SPEED characteristic enables you to configure the serial port for devices that operate at the following speeds: 2400, 4800, 9600, 19200, 38400, 57600, 76800 and 115200 bits per second (bps). The following example shows how to change the port speed:

```
Local> D*EFINE PO*RT S*PEED 2400
```

6.4.4 FLOW CONTROL

The FLOW CONTROL characteristic allows the print server to start and stop data transfer between the port and the attached device. Flow control prevents data losses due to lack of buffering space.

The FLOW CONTROL characteristic does not apply to data transfer between the print server and a network resource. For a particular session, however, the network resource might manage FLOW CONTROL between the port and the host. FLOW CONTROL types include XON, DSR, and DISABLE.

When the print server uses XON/XOFF FLOW CONTROL on a port, it sends:

- An XON character to start the data transfer between the port and the attached device.
- An XOFF character to stop the data transfer between the port and the attached device.

XON/XOFF is the type of FLOW CONTROL that Digital Equipment Corporation's terminals, personal computers, printers and modems use.

The following example shows how to enable XON/XOFF FLOW CONTROL:

```
Local> D*EFINE PO*RT F*LOW C*ONTROL <Y>
```

Note <Y> equals X*on, DS*R, Both or DI*sable.

6.4.5 PARITY

The PARITY characteristic determines the type of parity checks that the print server performs. Parity settings are displayed in the following table:

Setting	Check Performed Per Character
Even	Even number of one bits
Odd	Odd number of one bits
None	No parity checking performed (default)

The following example shows how to change the parity:

```
Local> DEFINE PORT PA*RITY <X>
```

Note: <X> equals O*DD, E*VEN or N*ONE

6.4.6 CHARACTER SIZE

The CHARACTER SIZE characteristic indicates the number of bits in a data character. The print server supports character sizes of 7 or 8 bits, and the default is 8 bits. The following examples shows how to set the character size:

```
Local> D*EFINE PO*RT C*HARACTER S*IZE 7
Local> D*EFINE PO*RT C*HARACTER S*IZE 8
```

6.4.7 SERVER IDENTIFICATION

The SERVER IDENTIFICATION is a string that can be up to 40 ASCII characters long. This following string is shown as the Identification: when a list or show server command is issued.

```
Digital RapidPrint 200
```

The SHOW SERVER displays S.I: Digital RapidPrint 200

The print server also uses the identification string when it multicasts messages about the availability of services.

To change the server identification, use the following command:

```
Local> D*EFINE SERV*ER I*DENTIFICATION "<X>"
```

X may be the null string "" or 1 to 40 ASCII characters. The default identification is Digital RapidPrint 200.

6.4.8 PRINT SERVER NAME

The PRINT SERVER NAME characteristic is a string of 1 to 16 characters, restricted ASCII. Restricted ASCII sets include A_Z, 0-9, $, - (hyphen), _ (underscore), and . (period) as well as conversion of all lowercase letters to uppercase letters. This name must be unique on the LAT network. When the print server offers a service, it periodically multicasts the name over the local area network. The following example shows how to change the print server name:

```
Local> D*EFINE SERV*ER N*AME LAT$PRINTSERVER1
```

The default print server name is LAT_ethernet-address. This value is the 12-digit hexadecimal Ethernet address of the print server. This address does not contain hyphens.

6.4.9 ASSIGNING A PORT NAME

When you select a port name for a device, follow these guidelines:

- The factory-set default port name is PORT_n, where n is the port number.
- Port names must be a string of 1-16 characters.
- Allowable characters are A to Z, 0 to 9, $, - (hyphen), _ (underscore), and . (period).
- Each port name must be unique to the print server.

The following example shows how to change the names for both the parallel and serial ports:

```
Local> D*EFINE PA*RALLEL P*ORT N*AME <port-name>
Local> D*EFINE SERI*AL P*ORT N*AME <port-name>
```

6.4.10 DEFINING PORT PULSE WIDTH FOR PARALLEL PORT

You can change the port pulse width for the parallel port if you experience missing or incorrect characters in your printouts. The default is one microsecond, other choices are five and ten microseconds. The following example shows the command:

```
Local> D*EFINE PO*RT P*ULSE W*IDTH <#>
```

Choices for <#> are 1, 5, or 10.

6.4.11 DEFINING SERIAL PORT INDEPENDENT

A unique feature of the RapidPrint 200 is the modes provided by the serial port. One is the standard bi-directional serial port independent enabled and the second is the capability to serve as the backchannel for the parallel port independent disabled. These modes are indicated on the show server or list server displays under 'Backchannel:' as 'Independent' or as "Parallel' respectively. When the serial port is set up for backchannel, the data received on this port is returned to the network as the receive channel for the parallel port. From LAT, the RapidPrint then communicates to the printer which is attached (with both a parallel and serial cables) as LAT would to any standard LAT port. Two Digital printers which have this capability are the DECcolorwriter 1000 (LF02) and the DEClaser 1152.

You should set the mode for the serial port to match the capabilities of the printer. See Appendix D for how to set up the LF02 and the RapidPrint 200.

The command is:

```
Local> D*EFINE P*ORT I*NDEPENDENT <X>
```
Choices for <X> are E*NABLE or D*ISABLE.

6.4.12 ENABLE/DISABLE PROTOCOLS

You can define protocols using the following command:

```
Local> D*EFINE  <Y> <X>
```
<Y> has the value T*CP/IP, A*PPLE, or N*ETWARE and <X> may be E*NABLE or D*ISABLE.

6.4.13 ENABLING STATUS/CONFIGURATION REPORTS

When the network interface box is first powered on it will automatically print a status/configuration report for the RapidPrint 200. You can turn off this option using the following command:

```
Local> D*EFINE ST*ATUS R*EPORT <X>
```

<X> may be E*NABLE or D*ISABLE

6.4.14 LOGOUT

This command logs out a port on the print server and disconnects any sessions associated with the port. After you log out a port, the port characteristics in the operational database for that port are reset to the values defined in the permanent database.

　　If a port has signal control enabled, the LOGOUT command causes outgoing signals to be dropped. The command and its options are:

```
Local> LO*GOUT PO*RT <Z>
```

<Z> may be 1,2, or A*ll.

6.4.15 INITIALIZE COMMAND

To use the INITIALIZE command in its default mode of operation, enter the following:

```
Local> INIT*IALIZE SERV*ER
```

　　In this mode of operation, the following steps occur:

1. If the print server has a ROM daughter card installed on the board, the print server will be loaded directly from the daughter card.
2. If the print server has no ROM daughter card installed, it will be loaded directly from on-board ROM.

6.4.16 SPECIFYING PASSWORDS

There is one password characteristic that you need to set: SERVER LOGIN PASSWORD. SERVER LOGIN PASSWORD defines the password for the print server. The command is:

```
Local> D*EFINE SERV*ER LO*GIN PASSWORD "password"
```

The default password is ACCESS. A password can have 1 to 16 ASCII characters.

6.4.17 SERVER MAINTENANCE PASSWORD

This privileged command specifies a password that must be entered by remote operators and by persons using the DECnet NCP CONNECT, TRIGGER, or LOAD commands to downline load the print server. The command for changing the Server Maintenance Password is:

```
Local> DEFINE SERVER MAINTENANCE PASSWORD "hex-password"
```

The default password is 0000000000000000 (sixteen zeros). This password can have 1 to 16 hexadecimal characters (values 0 through 9 and A through F only).

You can omit the password value if MAINTENANCE PASSWORD is the only characteristic in the command line. The print server then prompts for the password. Enter the password or 0 in response to the password prompt.

6.4.18 SHOW AND LIST COMMANDS

If the following command(s) is issued the display will read:

Local> sh*ow s*erver

RapidPrint 200   ROM Version 1.0.4   Uptime: 0 1:09:07

Identification: Digital RapidPrint200

LAT Server Name: LAT_0040AF1252F8   Address: 00-40-AF-12-52-F8

Retransmit Limit: 60   Circuit Timer (ms):   100

TCP/IP: ENABLED   AppleTalk: ENABLED   NetWare: ENABLED

Management Port Status: Connected (AA-00-04-00-48-1C)

Parallel Port Name: PORT_1   Protocol: AppleTalk
Connected Node: Interface: Centronics
Strobe Width (us):   1   Paper Empty: No
Serial Port Name: PORT_2   Protocol: LAT
Connected Node: PRINCE   Framing Errors: 0
Backchannel: Independent   Parity Errors: 0
Speed: 57600   Overrun Errors:
0
Flow Control: XON   Input XOFFed:
No
Parity: NONE   Input Signals:
Active
Character Size: 8   Output Signals: Active

Local> li*st serv*er

RapidPrint 200   ROM Version 1.0.4   Uptime: 4 3:17:42

Identification: Digital RapidPrint200

LAT Server Name: LAT_0040AF1252F8   Address: 00-40-
AF-12-52-F8

Retransmit Limit: 60   Circuit Timer (ms):   100

TCP/IP: ENABLED   AppleTalk: ENABLED   NetWare: ENABLED

Management Port Status:

Parallel Port Name: PORT_1   Protocol:
Connected Node: Interface: Centronics
Strobe Width (us):   1   Paper Empty:
Serial Port Name: PORT_2   Protocol:
Connected Node: Framing Errors: 0
Backchannel: Independent   Parity Errors: 0
Speed: 57600   Overrun Errors: 0
Flow Control: XON   Input XOFFed:
Parity: NONE   Input Signals:
Character Size: 8   Output Signals:

Local> sho counters

RapidPrint 200   ROM Version 1.0.4   Uptime: 4 3:17:42

Seconds Since Zeroed:	236880	Frames Sent,	1	Collision: 2221
Bytes Received:	1025675879	Frames Sent,	2	Collisions: 0
Bytes Sent:	43033848	Send Failures:	0	
Frames Received:	15670119	Send Failures Reasons:	0000000000	
Frames Sent:	649380	Receive Failures:	135	
Multicast Bytes Rcv'd:	689353510	Received Failure Reasons	0000000111	
Multicast Bytes Sent:	176492	Unrecognized Destination:	156294	
Multicast Frames Rcv'd:	6031083	Data Overrun:	1839	
Multicast Frames Sent:	2141	User Buffer Unavailable:	0	
Frames Sent, Deferred:	0	System Buffer Unavailable:0		
Messages Received:	30	Duplicates Received:	0	
Messages Transmitted:	30	Messages Re-Transmitted:	0	
Solicitations Accepted:	10	Illegal Messages Rcv'd:	0	
Solicitations Rejected:	0	Illegal Slots Rcv'd:	0	
Multiple Node Addresses:	0	Illegal Multicasts Rcv'd:	0	

Use the ZERO COUNTERS command to reset the counter for the
RapidPrint 200 box. This is useful for troubleshooting network problems.

Local> zero counters
Local> sho counters
RapidPrint 200   ROM Version 1.0.4   Uptime: 4 3:20:53

Seconds Since Zeroed:	0	Frames Sent,	1	Collision:	11
Bytes Received:	8653	Frames Sent,	2	Collisions:	0
Bytes Sent:	1798	Send Failures:	0		
Frames Received:	172	Send Failures Reasons:		0000000000	
Frames Sent	44	Receive Failures:		0	
Multicast Bytes Rcv'd:	5517	Received Failure Reasons:			
0000000000					
Multicast Bytes Sent:	0	Unrecognized Destination:	1		
Multicast Frames Rcv'd:	0	Data Overrun:	0		
Multicast Frames Sent	0	User Buffer Unavailable:	0		
Frames Sent, Deferred:	0	System Buffer Unavailable:	0		
Messages Received:	0	Duplicates Received:	0		
Messages Transmitted:	0	Messages Re-Transmitted:	0		
Solicitations Accepted:	0	Illegal Messages Rcv'd:	0		
Solicitations Rejected:	0	Illegal Slots Rcv'd:	0		
Multiple Node Addresses:	0	Illegal Multicasts Rcv'd:	0		

7. Troubleshooting

7.1 How to Use This Chapter

This chapter describes how to troubleshoot any problems you might have with the RapidPrint print server, the printer or any network operating system (NOS). First go to How to Diagnose Problems, then go to the appropriate section to troubleshoot the problem.

7.1.1 How to Diagnose Problems

Many problems you experience can be resolved using the status light, status and error pages. Use the procedure below to narrow down the focus of your problem:

Step	Action
1	Check the RapidPrint status light to make sure there is no error condition. See Section 7.1.2 for more information.
2	Check to see if a status page has printed on your parallel printer. This page confirms the setup you defined for your RapidPrint. Section 7.1.3 shows an example of a status page. If error pages print on your parallel printer, following the instruction on the error page to correct the problem.
3	Use the troubleshooting software or error messages to diagnose problems for Novell, AppleTalk, or TCP/IP protocols. For This Protocol Use... Novell NPmanage AppleTalk AppleTalk Administration TCP/IP Error messages
4	Read the section titled "How to Determine the Cause of a Problem. When you have diagnosed the problem, use one of the checklists in the chapter.

7.1.2 RapidPrint Status Light

The RapidPrint green LED status light can also help you determine if print jobs are getting to the RapidPrint printer. The table below gives the different conditions that the status light displays:

When the green LED . . .	And RapidPrint is . . .	THEN RapidPrint . . .
Normal Operating Conditions		
is ON solid	first powered on	is performing self-tests.
blinks 3 times and stays ON solid	finished with the self-tests	prints out the status pages.
is ON solid after completing the self-tests	searching for file server to login to (for about five seconds)	is ready to receive print jobs.
is ON solid	awaiting print jobs	is functioning properly.
Error Conditions		
blinks RAPIDLY	performing self-tests	detects a bad RAM chip. Call Digital Technical Support
blinks rapidly 4 times and then pauses	performing self-tests	failed the Ethernet hardware self-test. Check the network.
blinks short then long continuously	performing self-tests	did not pass the ROM checksum test. Call Digital Technical Support.
blinks slowly	awaiting print jobs	detects that one or more printers needs attention. This means a printer could be off-line or a form change is required.
blinks rapidly	awaiting print jobs	detects a serious error which prevents it from functioning properly.
three short blinks	resetting to factory defaults.	power off. Move jumper JP6 to DEF/NO and power on again.

7.1.3 Status and Error Pages

Below is the status page that is printed when RapidPrint is first powered on and after it passes its self-tests.

```
Unit Serial No: 991354                           Version: 01.01

Network Address: 00:40:af:22:31:28

Network Topology: Ethernet                                 Connector: 10 Base T

Network Speed: 10 Mega Bits

Novell Network Information

        Novell Print Server Name: DEC_280101      Password Defined: No

        Frame Type: Novell 802.3

AppleTalk Network Information

        Frame Type: 802.2 SNAP on 802.3

        Protocol Address: Net Number 10  Node Number 151        Socket Number 128

        AppleTalk Zone: Default Zone

TCP/IP Network Information

        Frame Type: Ethernet  II                              Subnet Mask: 255.255.255.0

        Protocol Address: 192.92.187.26

DEC LAT Network Information

        Frame Type: Ethernet  II

DEC MOP Network Information

        Frame Type: Ethernet  II (802.2 SNAP on 802.3)    MOP Version: 3.0 (4.0)

Port Number: 1                        Port Type: Parallel

Novell Connection Information

        Printer Name: RP200_280101

                File Server: ENGINEERING

                        Queue: 280101  Priority: 1      Attached: Yes

                        No Notify Defined

AppleTalk Connection Information

        AppleTalk Printer Name: RP200 #280101 1

TCP/IP Connection Information

        Port Number: 10001

DEC LAT Connection Information

        Node name: LAT_0040AF223128

        Port name: PORT_1

Port Number: 2                                Port Type: Serial

Novell Connection Information

        Printer Name: RP200_SERIAL

                File Server: ENGINEERING

                        Queue: 280101_S         Priority: 1     Attached: Yes

                        No Notify Defined

AppleTalk Connection Information

                AppleTalk Printer Name: RP200 #280101 2

TCP Connection Information

                Port Number: 10002

DEC LAT Connection Information

                Node name :    LAT_0040AF223128

                Port name:     PORT_2
```

7.1.4 How to Determine the Cause of a Problem

Check the following items in order to troubleshoot the printing problems:

Check status page

- Check the RapidPrint status page(s) to confirm that you installed and configured each network protocol correctly.

Did you change your network?

- If you changed your network, make sure the changes you made did not affect the configuration for the RapidPrint printers.

- See the appropriate chapter to confirm that you have installed and configured the network protocol correctly for the RapidPrint.

- If you added, changed or removed any new hardware to the network, check to see if the hardware was installed correctly.

- If you added any new software applications, make sure the program is compatible and installed correctly for the network. See your network protocol documentation to confirm.

- Check if other RapidPrint users cannot print.

- Check to see if the users having problems are all on the same network operating system. If they are, go to the troubleshooting section for that NOS.

- Check to see if the users are trying to print to the same RapidPrint printer. If they are, check the connection for that printer on the RapidPrint unit. Make sure it is securely fastened. Also, if each user is running on a different network operating system, see the troubleshooting section for each NOS.

- Check to see if the users are trying to print to different RapidPrint printers. If they are, check the printer connections first. Make sure each printer is securely fastened to the RapidPrint unit. Also, if each user is running on a different network operating system, see the troubleshooting section for each NOS.

7.2 Troubleshooting: Printer and Network Connections

7.2.1 Printer Checklist

Make sure the printer is functioning properly.

- Is the printer plugged into a live wall outlet and is the power switch in the ON position? Try another wall outlet.

- Is the printer on-line? Check the printer to make sure it is on-line or nothing will print.

- If the printer has a control panel, is the display blank? If it is, the printer is not powered on.

- When using a printer that has automatic protocol selection, and using DCPS then ensure that you use a fixed protocal instead of the automatic selection.

- For printers without a control panel, check to see if the server has gone down, or, if there is a loose or disconnected cable connection from the network.

- If the printer has a control panel, does it display an error? The error may result from a break in communication from the network to the printer. This results from the network server going down, or, from loose or unconnected cables.

- Did you send a PCL type job to a PostScript printer? If you did, the print job will not print. Make sure you send your job to the correct printer type.

- Strobe size setting for your printer may be wrong. Use NPmanage (Chapter 3) to change the strobe size for the parallel printer. The default is 1. Change the setting to 5 since the printer may need a higher setting.

- Is the printer jammed?

- The handshaking set for your printer connected to the serial port may be wrong. Use NPmanage to set the serial port to the correct printer handshaking protocol. See your printer's owner's manual for details.

7.2.2 If Print Jobs Partially Print

If your print jobs partially print or your graphics do not print correctly, make sure all your connections are securely fastened and the defaults for the parallel and serial ports are set correctly in NPmanage.

For parallel ports, change the strobe size using NPmanage, if necessary. The default setting is 1, though some printers require a higher setting such as 5. An incorrect setting for your printer could cause print jobs to partially print.

Check your connections from the network to the RapidPrint unit.

- Make sure you are using the correct network interface port and that each connection is secure.

- Try another cable to make sure you do not have a bad cable.

- Make sure your ThinWire connection uses a BNC T-connection. Make sure you have changed the jumper in the RapidPrint unit to the ThinWire interface. See Chapter 2 for details. The 10BaseT interface is the default jumper setting.

- Make sure you have the 10BaseT interface plugged into the RJ connector marked 10BaseT on the RapidPrint unit.

7.2.3 Troubleshooting: RapidPrint Unit

Make sure you have properly configured the RapidPrint unit for each network protocol you are using - Novell, AppleTalk and TCP/IP.

Enable all protocols you have connected

- For all protocols, make sure that the ones you are using are enabled. Use Digital's NPmanage utility to enable the protocols that you are using with RapidPrint.

- For Novell, make sure you configured all RapidPrint printers using PCONSOLE. You need to configure each printer you want to use.

- For AppleTalk, make sure the RapidPrint printer(s) are listed in Chooser. If you did not use software to configure printers for AppleTalk, make sure a PostScript printer is attached to the parallel port. This printer appears as the RapidPrint #<number> 1 in Chooser (unless you have changed it).

- Check the RapidPrint status page to make sure your network protocol is enabled.

- Check the RapidPrint status page to make sure there is no error message on it. If there is an error page, follow the instructions on the page to make your corrections and then try printing again.

- If the serial has a printer attached, use NPmanage to make sure the port is enabled for printing.

It is recommended that you first use NPMANAGE's Troubleshooting utilities. See Chapter 3: Using the NPmanage Utility. If you have not resolved the problem after running NPmanage, then go through the checklists which start below.

7.2.4 NetWare Checklist

- Is the RapidPrint print server name entered correctly? The name must be DEC_<<serial_number>>. The serial number is located on the bottom of the unit.

- Did you assign print queues to the RapidPrint printers? See Chapter 3: Configuration - Using PCONSOLE. It is recommended that you assign the print queues to the RapidPrint printers only. If print queues are assigned to other network printers, the print jobs may be going to the other network printer.

- Did you assign the RapidPrint printer(s) to the printer type Remote Other/Unknown in PCONSOLE? See Chapter 3: Configuration—Using PCONSOLE.

Note

If the PCONSOLE settings are correct, the connection between the printer and network may have been broken. Turn the printer off and wait for a status message that indicates the printer is Not Connected (using PCONSOLE). Turn the printer back on and the status should change to Waiting for Job. If this does not happen, unplug the RapidPrint power source and then turn the RapidPrint power on again.

- Make sure the correct form has been enabled. Use PCONSOLE to check.

- Printer is being serviced by more than one print server. Use PCONSOLE to direct print jobs to the RapidPrint print server.

- Make sure the print job timeout is long enough. Most graphics applications require a 2 minute timeout. Specify a longer timeout using PRINTCON or CAPTURE. See your NetWare Print Server manual.

7.2.5   File Server Checklist

- Make sure the right file server is associated with the RapidPrint print server. Use PCONSOLE to check this.

- Make sure the file server is up and running.

- Make sure there is enough disk space on the file server and that the file server is up and running.

- Also, make sure you have the proper Supervisor rights (NetWare 2.15 and 3.10 and above) or Administrator rights (NetWare 4.00 and above) in order to configure the RapidPrint printers.

- Run NetWare's COMCHECK utility to make sure the file server and RapidPrint print server are communicating. You can run COMCHECK from any network workstation.

7.2.6   Workstation Checklist

- For all network workstations trying to access RapidPrint printers, check to see if the network is loaded on the workstation. See the Novell NetWare documentation for assistance.

- Make sure that the software application running on the workstation is set up to print to the RapidPrint printer. For instance, are you using the correct print driver?

- Is the workstation connected to the print queue necessary for printing to the RapidPrint printer(s). Print a file and verify that it goes to the correct queue. See Chapter 3: Using NetWare Utilities.

- Make sure the print queues assigned to the RapidPrint printer(s) are not assigned to other network printers. If the queues are assigned to another printer, the print jobs may be going to that printer.

- Use NetWare's PRINTCON to see if AUTO ENDCAP is turned on. If it is not, change the configuration so it is turned on. Auto Endcap lets you send data to a network printer.

- Use NetWare's PRINTCON or CAPTURE to set a longer print job timeout. Timeouts should be at least 2 minutes for graphics applications.

7.2.7 RapidPrint Configuration Checklist

If you have checked all your hardware connections, then check the following configuration information:

- Use NPmanage to check the status of the Print Server. See Chapter 3 for details. The Troubleshoot Option of the Report Print Server Status displays a report for the selected RapidPrint. This report includes a status of file servers and queues assigned to a RapidPrint printer along with a description of any problems.

- The RapidPrint printers may not be assigned to the correct print queues. Use PCONSOLE to direct print jobs to the correct queues, then check to see if the print job is in the queue.

- If devices were added or changed, use PCONSOLE to make sure you configured the new devices correctly.

- Make sure the RapidPrint name has been entered correctly. If you changed the name in NPmanage, you must also change the name in PCONSOLE before you can print. Normally, the RapidPrint name is entered as DEC_<<serial_number>> as part of the installation.

- You cannot use PCONSOLE version 1.0 to configure the RapidPrint. Contact Novell for an upgrade.

- Make sure if the serial port is being used as an output port that it is enabled to receive print jobs. Use NPmanage to check.

7.2.8 Printer Server/File Server/Printer Connection Checklist

Check the following to see if the RapidPrint print server and selected file server is sending data to the RapidPrint printer:

- If the RapidPrint cannot log into the file server, or, cannot service jobs from a file server, then:

- The RapidPrint print server is not created on that file server. Use PCONSOLE to create the print server on the correct file server.

- The password assigned to the RapidPrint through PCONSOLE does not match the password assigned through NPmanage. Use NPmanage to update the password stored in RapidPrint.

- Use PCONSOLE to check if the print jobs are being sent to the RapidPrint printer. Make sure the print job is in the print queue and waiting to be printed. PCONSOLE must be in Remote printer mode to check this.

7.2.9 Workstation to RapidPrint Connection Checklist

To make sure the workstation is communicating with the RapidPrint, check the following:

- Print a file from the workstation and make sure the print job gets to the RapidPrint print queue using PCONSOLE. If the print job does get to the queue then the problem is not with the workstation/print server connection.

- Use CAPTURE to send data to the RapidPrint printer from a workstation software application. See your NetWare print server manual for information.

- Make sure another printer is not taking the print jobs from the queues BEFORE the RapidPrint can service the job. To do this, disable the other printer until you can verify the RapidPrint printer setup.

- Make sure any serial-connected printers match the baud rate, flow, word size, parity and stop bits of the RapidPrint unit.

7.2.10 Serial Port Checklist

If you print to a serial printer, check the following:

- printer is assigned to Printer 1 in PCONSOLE.
- serial port is not enabled as a backchannel for the parallel port.

7.2.11   RapidPrint Loses Its Novell File Server Connection

If RapidPrint loses its connection to the file server, it can take approximately 5 to 10 minutes to reconnect. You do not need to do anything if the RapidPrint loses the connection, since it will automatically try to reconnect on its own.

If the connection is not made after a reasonable amount of time, you should check the other error conditions listed in this chapter to help troubleshoot the problem.

7.2.12   Troubleshooting: AppleTalk Protocol

When setting up the RapidPrint for the AppleTalk protocol, you do not need to use the AppleTalk Administration Program to configure if all you are going to use is a PostScript printer that is attached to parallel port #1.

For AppleTalk, check the following:

- Is a PostScript printer attached to the parallel port? If not, did you configure the AppleTalk protocol using AppleTalk Administration Program? See Chapter 4.
- Is the Macintosh computer connected to the network through Ethernet, and, has the Macintosh EtherTalk driver been selected? Go to the Control Panel, then Network to check.
- Did you select the correct RapidPrint unit and correct zone? See the AppleTalk Administration Program in Chapter 3.

7.2.13 Printer Checklist

You should always make sure that the printer is powered on and that it is on-line.

- Is the printer you want to use a PostScript printer? Only PostScript printers appear in Chooser. Other printer types cannot be used by AppleTalk users.
- Does the printer driver you want to use appear in Chooser?
- Does the printer name appear in Chooser? For example, if you did not use the AppleTalk Administration Program to configure the RapidPrint, then look for RapidPrint # <number> 1 in Chooser.
- Check Chooser to see if AppleTalk is on.
- If you are on a network with multiple zones, make sure the correct zone is chosen. See Chapter 4: Using the AppleTalk Administration Program.
- Did you select the correct printer in Chooser? You must first select the printer icon and then select the printer name.
- If you renamed the printer in the AppleTalk Administration Program, did you reselect the printer under its new name?
- If you placed the printer in a new zone, did you reselect the zone?
- Check to see if there are other printers with similar names in Chooser. Make sure you chose the RapidPrint printer.
- If background printing is enabled, select the Print Monitor to see if there is an error in printing.
- If you used the AppleTalk Administration Program, did you configure the printer(s) correctly? Are PostScript printers indicated by a Yes and non-PostScript printers indicated by a No?

7.3 Troubleshooting: TCP/IP Protocol

7.3.1   Making RapidPrint.conf Edits

You can edit the *nicprint.conf* file if needed. You may want to change the IP address or Subnet mask values, for instance, by changing the values in the Parameter column. To edit the file, do the following:

1. Change the directory:

If you used ...	Change the directory to...
nicinst_2	/usr/nic_2
lpdinst	/usr/nic

For example:
```
cd /usr/nic_2
```

2. Write the current IP address. For example, type:
```
/usr/nic_2/nsconfig 192.9.200.010
```

3. Now change your RapidPrint's IP address by editing the /etc/hosts file or through DNS or NIS to conform with the new address.

Appendix A   10BaseT Cable Specifications

Use the following considerations when choosing your 10BaseT cables to connect to the RJ45 connector on the RapidPrint 200 Network Interface Box:

- Use only twisted pair cable (with at least two twists per foot or six twists per meter).

- When making the twisted pair connections, keep conductor pairs together. Do not form a pair by taking a conductor from one pair and twisting it with a conductor of another pair. See diagram below on how to make a correct twisted pair connection.

Pair Number	Pin Number	Color	Description
2	1	white/orange	Data Transmit (Hub Receive)
2	2	orange/white	Data Transmit (Hub Receive)
3	3	white/green	Data Receive (Hub Transmit)
1	4	white/blue	Not Used
1	5	blue/white	Not Used
3	6	green/white	(Hub Receive) Data Transmit
4	7	white/brown	Not Used
4	8	brown/white	Not Used

Appendix B   RapidPrint 200 Specifications

Specification	Description
Size	9.7 cm x 16.6 cm x 1.9 cm (3 7/8 in x 6 5/8 in x 3/4 in)
Weight	567 grams (20 ounces)
Environment	0 to 50 degrees Celsius (32 to 122 degrees Fahrenheit) 5 to 80 % humidity
Controls and Indicators	One green LED
Power	50 VDC at 750 MA
Configuration	Stored in nonvolatile memory
Connectors	BNC, RJ45, DB25D
Setup Jumpers	JP1 Connector Select: Manual (MAN) is the default. JP2 Media: ThinWire is the default. JP3 Link: Link Enabled (ENA) is the default. JP4 Threshold Level: Transmit (TXCO) is the default. JP5 and JP6: The default positions are marked DEF.

C.   Constructing Print Queues for LAT-Connected Printers

After the RapidPrint 200 Network Interface Box is installed (described in Chapter 6), you must set up print queues to allow users to print files. This Appendix describes how to set up print queues.

Section C.1 contains the procedure to manually enter commands to set up OpenVMS print queues. Both *DECprint Supervisor for OpenVMS (DCPS)* and LATSYM procedures are included in this section.

See Section C.2 for the procedures to set up ULTRIX print queues.

Note: This section presumes that LAT is properly setup and running on your system.

C.1   Setting Up OpenVMS Print Queues for Network Interface Box-Connected Printers

The following procedure sets up print queues on OpenVMS systems for network interface box-connected printers. The procedure involves the following tasks:

- Determining prerequisite information, Section C.1.1

- Setting up print queues for printers supervised by DECprint Supervisor, Section C.1.2

- Setting up print queues for printers on LATSYM, Section C.1.3

Use the procedure outlined in Section C.1.1 to determine the necessary prerequisite information, and then write the results in the parameter table on page C-3. The information from this table is used to set up the print queues.

Note: You must have OpenVMS OPER and PHY_IO privileges to execute the commands used to set up the print queues. If you do not have these privileges, ask your system manager to set up the print queues.

C.1.1 Determining Prerequisite Information

Use the following procedure to obtain the information necessary to set up OpenVMS print queues. Write the results from each step in the table on page C-3. Perform the following steps for each port on the network interface box that you intend to configure.

1. Obtain the Ethernet physical address of your network interface box (found on the network interface box status/configuration sheet and on the label on the bottom of the box). For example:
   00-40-AF-27-11-55

2. Derive the LAT node name from the physical address. For example:
   LAT_0040AF271155

   — The LAT node name is the Ethernet physical address without the hyphens but with the prefix LAT_.

3. The LAT port names of the network interface box are Port_1 and Port_2.

4. Choose an OpenVMS LAT Port Name (LTAnnnn). For example:
   LTA9999

   — AN OpenVMS LAT port name is required for each network interface box. The LAT port name has the form LTA*nnnn*

   Where:

   nnnn is a unique number. Choose a number between 1 and 9999. To avoid potential conflicts, it is conventional to number LAT printer ports downward from 9999, because LAT port numbers for terminal services generally increment from 1.

   To show the OpenVMS LAT port names already in use, type:
   $ SHOW DEVICE LTA

5. Create a queue name. For example:

   LATPR1

   —The queue name may be a string of 1 to 31 characters. The character string can include any letters, digits, the dollar sign ($), and the underscore (_), and must include at least one alphabetic character. To see a list of print queue names already in use, type:

   $ SHOW QUEUE/DEVICE=PRINTER

6. Choose the appropriate printer data type.

   a.   PostScript (select PostScript if you plan to use DECprint Supervisor)

   b.   PCL5/5E

   c.   AutoSelect (automatic selection of the protocol by the printer)

7. Determine the queue processor according to the printer data type selection. For example:

   DCPS$SMB

   — For PostScript printing, select DECprint Supervisor for OpenVMS (DCPS) symbiont DCPS$SMB. Refer to the DECprint Supervisor documentation for additional printing features.

   — For basic PCL-only printing capability, select LATSYM (see Section C.1.3).

8. Create a description string. For example:

`Gerry's printer node LAT_0040AF27115`

— The description string may contain up to 255 characters.

C.1.1.1 RapidPrint Network Interface Box Setup Information

Step	Parameter	Example	Your Value
1	Network Interface Box Physical Address	00-40-AF-27-11-55	00-40-AF-
2	Network Interface Box LAT Node Name	LAT_0040AF271155	
3	Network Interface Box Port Name	PORT_1 PORT_2	PORT_1 PORT_2
4	OpenVMS LAT \<Port>	LTA9999 LTA9998	
5	Queue Name	LATPR1 LATPR2	
6	Printer Protocol	PostScript ANSI	
7	Queue Processor	DCPS$SMB LATSYM	
8	Descriptions String	Gerry's printer node LAT_0040AF271155	

C.1.2 Setting Up Print Queues Using DECprint Supervisor

To set up DECprint Supervisor print queues for RapidPrint 200 Network Interface Box connected printers, refer to the *DECprint Supervisor for OpenVMS System Manager's Guide.* This section only describes the procedures for setting up the LAT port.

C.1.2.1 Modifying the LAT Startup File

This section describes the commands to place in your LAT startup file.

File Name: Depending on your system configuration, the file name is either:

- LTLOAD.COM
- LAT$SYSTARTUP.COM

File Location: This file typically resides in one of the following directories:

- SYS$STARTUP:
- SYS$MANAGER:

Port Designations:

- Port 1 is the parallel port.
- Port 2 is the serial port.

1. Create the OpenVMS LAT port. For example the following command creates the OpenVMS port name LTA9998:

   ```
   $ MCR LATCP CREATE PORT LTA9998/NOLOG/APPLICATION
   ```

   Format:

   ```
   $ MCR LATCP CREATE PORT openvms-port-name/NOLOG/APPLICATION
   ```

The CREATE PORT command creates an OpenVMS logical port to connect with a physical port on a LAT node.

2. Map the OpenVMS LAT port to the network interface box node and port. For example:

```
$ MCR LATCP SET PORT LTA9998 -
   /NODE=LAT_0040AF271155/PORT=PORT_1 -
   /QUEUED/APPLICATION/NOLOG
```

In the example:

- LTA9998 is the OpenVMS LAT port name

- LAT_0040AF271155 is the network interface box LAT node name

- PORT_1 is the network interface box port name

Format:

```
$ MCR LATCP SET PORT openvms-port-name -
/NODE=lat-node-name/PORT=lat-port-name -
/QUEUED/APPLICATION
```

- The PORT command maps an OpenVMS logical port to a physical port on a LAT node.

- To break a VMS command into two lines, put a hyphen at the end of the line.

Note: You can define the LAT connection for the printer in the DCPS$STARTUP.COM file. This makes it easier for you to solve configuration problems because all the information is in one file. See the comments in the file for more information.

C.1.3 Setting Up Print Queues for LATSYM

Use the following procedure to determine the commands you must place in system startup files to set up LATSYM print queues for RapidPrint 200 Network Interface Box connected printers. Use the prerequisite information from the parameter table when performing this procedure.

LAT startup information is usually located in a LAT startup file. The queue startup information is in either a queue startup file or in the system startup file, typically SYS$MANAGER:SYSTARTUP_V5.COM (or SYS$MANAGER:SYSTARTUP_VMS.COM for Open VMS 6.0 or higher, and Open VMS AXP, all versions).

Depending on your system configuration, the LAT startup file that you need to modify is either LAT$SYSTARTUP.COM or LTLOAD.COM. This file is typically located in the SYS$STARTUP: or SYS$MANAGER: directory.

Ensure that SYSTARTUP_V5.COM (or SYSTARTUP_VMS.COM) invokes LTLOAD.COM or LAT$STARTUP.COM, which in turn invokes LAT$SYSTARTUP.COM. The LAT$STARTUP.COM or LTLOAD.COM file must be executed after DECnet is started.

To ensure that each print job begins with the printer in a known state, instruct LATSYM to send a printer reset command between jobs. A device control library containing reset commands for various printer data types is located in the SYS$LIBRARY directory.

C.1.3.1 Modifying the LAT Startup File

This section describes the commands to place in your LAT startup file. The
name of the file is either LTLOAD.COM or LAT$SYSTARTUP.COM,
depending on your system configuration.

1. Create the OpenVMS LAT port. For example:

```
$ MCR LATCP CREATE PORT LTA9999
```

In the example, LTA9999 is the OpenVMS LAT port name.

```
Format: $ MCR LATCP CREATE PORT openvms-port-name
```
The CREATE PORT command of the LAT Control Program
(LATCP) creates an OpenVMS logical port to connect with a
physical port on a LAT node.

2. Map the OpenVMS LAT port to the network interface box node and
port.

Example:

```
$ MCR LATCP SET PORT LTA9999 -
   /NODE=LAT_0040AF271155/PORT=PORT_1 -
   /QUEUED/APPLICATION
```

In the example:

- LTA9999 is the OpenVMS LAT port name
- LAT_0040AF271155 is the network interface box LAT node name
- PORT_1 is the network interface box port name

Format:

```
$ MCR LATCP SET PORT openvms-port-name -
   /NODE=lat-node-name/PORT=lat-port-
name/QUEUED/APPLICATION
```

The SET PORT command maps an OpenVMS logical port to a
physical port on a LAT node.

C.1.3.2 Constructing the Reset Library

This section describes how to construct the RapidPrint 200 reset library. Because you must enter the <ESC> character, Digital suggests you first use an editor such as EDT to create a temporary file containing the commands and then execute the resulting file.

Note: In EDT insert special characters as follows:
To insert <ESC> press (Ctrl) + ([ ) twice.
To insert a <FF>, press (Ctrl) + (L) on the main keyboard.

---

1. Enter the editor. For example:

   ```
   $ EDIT/EDT CONSTRUCT_RESET_LIB.COM
   ```

2. Type the following commands into the file.

   ```
   $ LIBRARY/TEXT/CREATE  SYS$SYSCOMMON:[SYSLIB]:DEClaser
   $ LIBRARY/TEXT/REPLACE SYS$SYSCOMMON:[SYSLIB]:DEClaser-
   SYS$INPUT/MODULE=RESET_PCL
   $DECK
   <ESC>]OpenVMS;2<ESC>\<ESC>P<ESC>E<ESC>\
   $EOD
   ```

3. Exit the editor.

4. To execute the commands, enter the following:

   ```
   @CONSTRUCT_RESET_LIB.COM
   ```

C.1.3.3 Creating the Queue Startup Information

This section describes the commands to place in your queue startup file or in
your system startup file to construct RapidPrint 200 Network Interface Box-
based queues.

1. Define a default form for the queue. For example:
   ```
   $ DEFINE/FORM DEClaser_DEFAULT 1 -
   /NOTRUNCATE/WIDTH=80/MARGIN=BOTTOM=0/STOCK=DEFAULT -
   /DESCRIPTION="DEClaser default"
   ```

   In the example, DEClaser_DEFAULT is the name of the form, and 1 is
   the number of the form.

   Format:
   ```
   $ DEFINE/FORM form-name form-number -
   /WIDTH=80/MARGIN=BOTTOM=0/STOCK=DEFAULT -
   /DESCRIPTION="DEClaser default"
   ```

   — Printer queues require a default form definition. In OpenVMS each
     form has a name and a number. A reasonable convention for form
     numbers is to choose the lowest available form number.

   To display the form numbers already in use, enter:
   ```
   $ SHOW QUEUE/FORM
   Form name    Number Description
   ---------    ------------------------------
   DEFAULT        0    System-defined default
   ```

For compatibility with a wide range of printers and application software, the default form described above differs somewhat from the typical system-defined default form. The width is 80 columns instead of 132, there is no bottom margin instead of the usual 6 lines, and there is no line truncation.

2. Set the OpenVMS LAT port to receive no broadcast messages:

```
$ SET TERMINAL/NOBROADCAST/PERMANENT LTA9999:
```

In the example, LTA9999 is the OpenVMS LAT port name.

Format:

```
SET TERMINAL/NOBROADCAST/PERMANENT OpenVMS-port-name
```

3. Initialize and start the print queue. For example:

```
$ INITIALIZE/QUEUE LATPR1/START -
   /PROCESSOR=LATSYM/LIBRARY=DEClaser -
   /FORM_MOUNTED=DEClaser_DEFAULT -
   /SEPARATE=RESET=RESET_PCL/ON=LTA9999:
```

In the example,

LATPR1 is the queue name.

DEClaser_DEFAULT is the form name.

RESET_PCL is the name of the reset module.

LTA9999 is the OpenVMS LAT port name.

Format:

```
$ INIT/QUEUE queue-name/START -
   /PROC=LATSYM/LIB=DEClaser -
   /FORM_MOUNTED= form-name -
   /SEPARATE=RESET= reset-module/ON=openvms-port-name
```

The INITIALIZE/QUEUE command creates the queue if it does not already exist, associates a name with the queue, and makes other necessary associations with the queue, such as the processor, a library for setup and reset modules, a mounted form, a specific reset module, and a port.

5. Reset=none for autoselect.

6. Set the queue description. In the following example, LATPR1 is the queue name; LAT_0040AF271155 is the node name you want to set up.

```
$ SET QUEUE LATPR1/"Gerry's  Printer LAT_0040AF271155"
```

Format: `SET QUEUE queue-name/DESCRIPTION=string`

The SET QUEUE command changes the attributes of a queue. The /DESCRIPTION qualifier specifies a string of up to 255 characters used to provide information about the queue.

7. Set the queue default job separators and form options. For example:

```
$ SET QUEUE LATPR1
/DEFAULT=(NOFEED,FORM=DEClaser_DEFAULT)
```

Refer to the *DECprint Supervisor for OpenVMS System Manager's Guide* for detailed instructions on using the DEFINE/FORM feature.

In the example, LATPR1 is the queue name and DEClaser_DEFAULT is the form name.

Format: `$ SET QUEUE queue-name -`
`/DEFAULT=(option,NOFEED,FORM=form-name)`

- The SET QUEUE command changes the attributes of a queue. The /DEFAULT qualifier establishes defaults for certain options of the PRINT command. Defaults are specified by the list of options.

- NOFEED instructs the queue processor not to send a form feed character automatically when the printer reaches the bottom margin of the form. The FORM option specifies the default form for jobs submitted without a specific form request. Refer to the *OpenVMS DCL Dictionary* for more information about options.

8. Start the queue. For example:

```
$ START/QUEUE LATPR1:
   Format: START/QUEUE queue-name[:]
```

Where *queuename* is the name of the queue to be started or restarted.

The queue name can now be used in the PRINT command. For example, the following command sends the file to LATPR1:

```
PRINT/QUEUE=LATPR1 TEST_FILE.TXT
```

Refer to your OpenVMS documentation or online help for more information about the PRINT command and its qualifiers.

C.2 Setting Up ULTRIX Print Queues for RapidPrint 200 Connected Printers

The following procedure may be used to manually set up print queues on ULTRIX systems for network interface box connected printers. The procedure involves the following tasks:

- Defining LAT terminal lines

- Updating the terminal initialization file (*/etc/ttys*) and printer capability database (*/etc/printcap*) using the `lprsetup` command

  Note: You must be logged in as a superuser in order to configure print queues. If you do not have these privileges, see your system manager to set up the print queues.

The lta terminal driver provides support for remote terminals (which includes printer terminal lines) using Local Area Transport (LAT) protocol. The LAT protocol allows you to access printers using the network interface box. LAT lines are created in sets of 16, and the ULTRIX software provides a default of 16 LAT lines, which corresponds to lta0. The network interface box uses only one line.

Perform the following steps for each network interface box you intend to configure.

1. Obtain the Ethernet physical address from the network interface box.

   Example: `00-40-AF-27-11-55`

2. Derive the LAT node name from the physical address. For example:
   `LAT_0040AF271155`

   — The LAT node name is the Ethernet physical address without the hyphens, but with the prefix LAT_.

3. The LAT port name of the network interface box is PORT_1 or PORT_2.

C.2.1 Verifying that LAT is in Your System Configuration

Use the following procedure to verify that LAT is in your system configuration.

1. Type the following command:

```
# egrep 'LAT|lat|lta'
/usr/sys/conf/vax/[HOSTNAME]
# egrep 'LAT|lat|lta'
/usr/sys/conf/mips/[HOSTNAME]
```

In the example, the pathname of the system configuration file is /usr/sys/conf/vax, or /usr/sys/conf/mips, depending on whether you are configuring a VAX or MIPS machine, and the system configuration file name is the host name of the machine in uppercase letters.

- You should observe the following output:

```
options     LAT
  pseudo-device lat
  pseudo-device lta n
```

Where:

n represents the number of LAT lines your system has configured.

If the above command does not yield the output as shown, you must add LAT devices to your system configuration. Refer to the *ULTRIX Guide to System and Network Setup* for information on how to carry out this task.

C.2.2 Setting Up LAT Ports for Use With Printers

Use the following procedure to select the LAT terminal line(s) to use with your printer(s). For example, /dev/tty03.

> **Note:** You must be logged in as root or become superuser.

1. Using the following example as a guide, place an lcp entry in the /etc/rc.local file. The new entry must be after the `sendmail` section:

   ```
   if [ -f /etc/lcp ]; then
   /etc/lcp -s -h /dev/tty03 >/dev/console
   fi
   ```

   In the example, `tty03` is the selected terminal.

2. To immediately effect the changes, you can enter the following command or reboot the system:

   ```
   # /etc/lcp -s -h /dev/tty03 ; kill -HUP 1
   ```

C.2.3 Adding Printers With lprsetup

If you are not using PATHWORKS for ULTRIX, use the `lprsetup` command to add printers to your system. The `lprsetup` command does the following:

- Creates an */etc/printcap* entry
- Creates a spooling directory
- Creates accounting files
- Creates error log files
- Modifies the */etc/ttys* file

> **Note**: The `lprsetup` command is a component of the optional software subset ULTPRINTxxx (for VAX machines) or UDTPRINTxxx (for MIPS machines). If you have not added the optional subset, you must do so before using the *lprsetup* command. See the *Guide to System Environment Setup* and the setld(8) reference page for information on adding software subsets.

C.2.4 lprsetup Command

Before running the lprsetup command, you should determine the type of printer you are adding. The following instructions guide you to set up the RapidPrint 200 as a PostScript printer, using the ln03r printer type. The lprsetup command provides default settings based on the type of printer you specify.

The lprsetup command allows you great flexibility in setting up parameters for your printer. For an explanation of the printer parameters, see the *Guide to System and Environment Setup*, and the "printcap(5)" reference page. For sample */etc/printcap* entries, see the */etc/printcap.examples* file.

Note: At any point during the following procedure, you can terminate lprsetup with no modifications to the system files by pressing (CTRL/C). Help is available by typing a ? at the prompts from lprsetup mode.

---

1. Log in as root or become superuser.

2. Type the following command:

   # lprsetup

3. Select the add option from the menu.

   ULTRIX Printer Setup Program

   Command < add modify delete exit view quit help >:
   add

   Adding printer entry, type '?' for help.

4. Enter the name of the printer at the prompt:

```
Enter printer name to add [3] :
```

After you provide a printer name, you are asked to select a printer type. Select the value `ln03r`.

```
For more information on the specific printer types
Enter 'printer?'
```

The `lprsetup` command uses an internal numbering scheme and, by default, assigns the next available number to the printer you are adding. It then automatically assigns the default number and `lp` *default-number* as printer names.

5. After you have entered the printer name, you are prompted to enter additional synonyms by which you want the printer known:

```
Enter printer synonym:
```

Entering synonyms for the printer you are adding is optional. If you do not want to assign your printer a synonym, press [Return] .

6. The `lprsetup` program prompts you for a series of printer parameters. Accept the defaults or specify the values for the printer parameters when `lprsetup` prompts you.

The prompts look like the following:

```
a. Set device pathname 'lp' [/dev/tty03] ?
```

```
b. Set accounting file 'af' [/usr/adm/lp3acct] ?
```

```
c. Set spooler directory 'sd' [/usr/spool/lpd3] ?
```

```
d. Set printer error log file 'lf' [/usr/adm/lp3err]?
```

```
e. Set printer connection type 'ct' [dev] ? lat
```

Specify `lat` here; do not use the default.

```
f.  Set terminal server name 'ts' [] ?
LAT_0040AF271155
```

You need to specify the network interface box's LAT node name LAT_ethernet address from Step 2 of section C.1.1.

```
g.  Set terminal server output port 'op' [] ? PORT_1
```

Specify the network interface box's port name as PORT_1 or PORT _2.

```
h.  Set terminal server output service 'os' [] ?
```

Press [Return]. This parameter has no effect.

i. Enter the name of the printcap symbol you
want to modify. Other valid entries are as
follows:

`q` to quit (no more changes)

`p` to print the symbols you have specified so far

`l` to list all of the possible symbols and defaults
The names of the printcap symbols are as follows:

af br cf ct df dn du fc ff fo fs gf ic if lf lo
   lp mc mx nc nf of op os pl pp ps pw px py rf rm
   rp rs rw sb sc sd sf sh st tf tr ts uv vf xc xf
   xs Da Dl It Lf Lu Ml Nu Or Ot Ps Sd Si Ss Ul Xf

Enter symbol name:

The final prompt, Enter symbol name:, allows you to specify additional
printer parameters. Unless you have special requirements, enter q here.

j.   When you have entered all of the printer parameters, you are shown
your choices and asked to confirm them, as follows:
```
Printer #3
----------

Symbol      type     value
------      ----     -----
af          STR   /usr/adm/lp3acct
br          INT   9600
ct          STR   lat
fc          INT   0177777
fs          INT   03
if          STR   /usr/lib/lpdfilters/ln03rof
lf          STR   /usr/adm/lp3err
lp          STR   /dev/tty03
mc          INT   20
mx          INT   0
of          STR   /usr/lib/lpdfilters/ln03rof
op          STR   PORT_1
os          STR
pl          INT   66
pw          INT   80
rw          BOOL   on
sd          STR   /usr/spool/lpd3
ts          STR   LAT_0040AF271155
uv          STR   4.0
xc          INT   0177777
xf          STR   /usr/lib/lpdfilters/xf
xs          INT   044000
Are these the final values for printer 3 ? [y]
```

If the parameters are correct, enter `y`. If the parameters are not correct, enter `no`. You are then prompted for the name of the incorrect parameter so that you can change it.

k. You are asked if you want to place comments in the printer entry as follows:

```
Adding comments to printcap file for new printer,
type '?' for help. Do you want to add comments to the
printcap file [n] ? :
```

Type `n`.

l. After the `lprsetup` program completes its work, the following message appears:

```
Set up activity is complete for this printer.
Verify that the printer works properly by using
the lpr(1) command to send files to the printer.
Command < add modify delete exit view quit help >:
```

If you are finished adding printers, answer `quit` at the prompt.

You should be ready to print. For information on printing, consult the man pages for 'lpr'. For example, `man lpr`.

Note: It may be necessary to edit the */etc/ttys* file for the selected device. In the following example, the selected device is */dev/tty03*. The entry in the etc/ttys file should be:

```
tty03 "/etc/getty std.9600" network off
nomodem #lat terminal
```

Appendix D   Connecting a DECcolorwriter 1000 Printer to the RapidPrint 200 Using the Parallel Channel with Serial Backchannel

Use the following procedures to set up the DECcolorwriter 1000 and RapidPrint 200 for the best performance.

1. Connect the DECcolorwriter 1000 parallel port to the RapidPrint 200 parallel port with a BC19M-10 cable and the serial port with a H8575E adapter along with a BN24H cable.

2. Set up DCPS queues for both the ports on the RapidPrint 200.

3. If necessary, cycle power on the DECcolorwriter 1000 to obtain a power up status page.

4. Set up the serial port on the RapidPrint 200 to match the serial port on the DECcolorwriter 1000.

5. Using the queue for the serial port set up in step 2, transfer the PostScript program listed on the next page to the DECcolorwriter 1000 to set up the serial port for 38400.

6. Set up the RapidPrint 200 serial port for 38400, select the serial port to be the backchannel for the parallel port, and then initialize the server.

7. Delete the queue for the serial port because that queue will no longer work once step 6 has been completed.

The RapidPrint 200 will now provide bi-directional communication to the DECcolorwriter 1000 on LAT port 1.

The PostScript program for setting the serial port to 38400 is:

```
%!
%
%       This program sets up a Level 2 PostScript
printer for 38,400,
%     XonXoff,no parity and one stop bit.
%
%     Make sure the printer is running Level 2
PostScript.
systemdict/languagelevel known {languagelevel 2
eq}{false}ifelse
not {quit} if mark
{
        (%Serial_NV%) 6 dict begin
        /Password () def
        /FlowControl (XonXoff) def
        /Parity (None) def
        /DataBits 8 def
        /StopBits 1 def
        /Baud 38400 def
            currentdict end setdevparams
}         stopped cleartomark
end
```

Appendix E   Pin Out for the Parallel Port on the RapidPrint 200

Sig Name	Alt Name	Connector
Centronics	**1284**	**25 D**
Strobe L	HostClk	1
Data 1		2
Data 2		3
Data 3		4
Data 4		5
Data 5		6
Data 6		7
Data 7		8
Data 8		9
Acknlg	PrtClk	10
Busy H		11
PError	AckDataReq	12
Select		13
AutoFd	HostBusy	14
Fault L	DataAck	15
Init	Init	16
SelectIn	1284Active	17
Signal Gnd		18
Returns		19
Returns		20
Returns		21
Returns		22
Returns		23
Returns		24
Returns		25

Pin out for the BC27Z Cable

Sig Name	Connector	Connector	Dataproducts Name
Centronics	25 D	50 D	
Strobe L	1	38	Strobe H
Data 1	2	19	Data 1
Data 2	3	20	Data 2
Data 3	4	1	Data 3
Data 4	5	41	Data 4
Data 5	6	34	Data 5
Data 6	7	43	Data 6
Data 7	8	36	Data 7
Data 8	9	30	Data 8
Acknlg	10	—	———
Busy H	11	23	Demand H
PError	12	—	———
Select	13	21	Online H
AutoFd	14	—	———
Fault L	15	22	Ready H
Init	16	—	———
SelectIn	17	—	———
Signal Gnd	18	37 / 46	Strb Rtn & Verify
Returns	19	3 / 4	Data 1 & 2 Return
Returns	20	2 / 40	Data 3 & 4 Return
Returns	21	18 / 42	Data 5 & 6 Return
Returns	22	35 / 14	Data 7 & 8 Return
Returns	23	7 / 6	Dem & Rdy Return
Returns	24	5	Online Return
Returns	25	45	Verify Return

E-2   Pin Out for the Parallel Port

Appendix F   Serial Port and Cable Information

Pin out for the Serial Port

Pin Number	Signal Name	Signal Description
1	RXD return	Receive Data Return
2	RXD	Receive Data
3	TXD return	Transmit Data Return
4	—	—
5	—	—
6	TXD	Transmit Data
7	DTR	Data Terminal Ready
8	DSR	Data Set Ready

Supported Cables

Cable Name	Length	Notes
BN24H	1, 3, 4, 7 meters	
BN26X	3 and 7.5 meters	
BC16E	1 to 2,000 feet	This can be used with an H8572 adapter to extend a BN24H cable