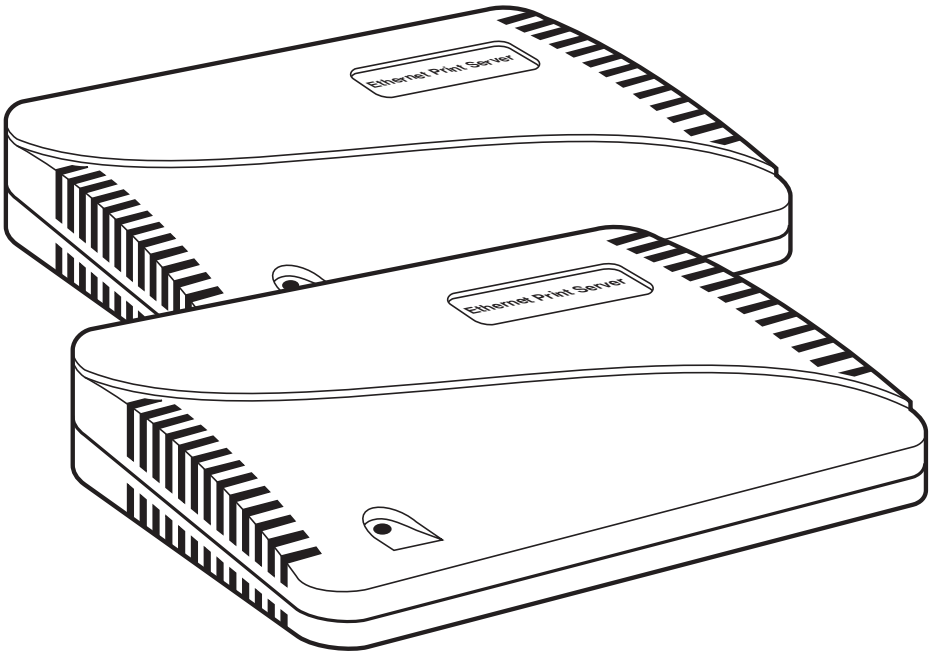




OCTOBER 1995

LE3810A-R2	LE3840A
LE3810AE-R2	LE3840AE
LE3820A	LE3845A
LE3820AE	LE3845AE
	LT310A
	LT310AE

## Ethernet Print Server High Speed Ethernet Print Server 4-Port



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ELECTRICAL SAFETY STATEMENT**

**INSTRUCCIONES DE SEGURIDAD**

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
  - A: El cable de poder o el contacto ha sido dañado; u
  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
  - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
  - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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# 1. Specifications

**Indicators**—(1) green LED for power and status

**Connectors**—LE3810A-R2, LE3810AE-R2: Network: (1) RJ-45 female (10BASE-T), (1) DB25 female (parallel);  
LE3820A, LE3820AE: (1) RJ-45 female (10BASE-T), (1) BNC female, (1) RJ-45 Uniport, (1) DB25 female (parallel);  
LE3840A, LE3840AE, LE3845A, LE3845AE: Network: (1) RJ-45 female (10BASE-T), (1) BNC female (10BASE2), (3) DB25 female (parallel), (1) RJ-45 female (Uniport)  
All units: 5-pin DIN female to external power supply

**Temperature**—32 to 122° F (0 to 50° C)

**Humidity**—5 to 80%; non-condensing

**Printer Ports**—

Parallel (All units)—Speed: 625 Kbps;

Word Size: 8 bits Strobe: 1 microsecond (can be set to 0.5, 1, 5, or 10)

Flow Control: Ready/Busy Serial/Uniport (LE3840A, LE3840AE only)—Speed: 9600 baud (can be set to 19,200)

Word Size: 8 (can be set to 5, 6, 7, or 8)

Parity: None (can be set to None, Even, Odd, Mark, Space)

Stop Bits: None (can be set to None, Even, Odd, Mark, Space)

Flow Control: Ready/Busy

**Power**—LE3810A: 115 VAC, 5 VDC 1 A output, 12V at 200 MA, external transformer, power consumption 20 VA;

LE3810AE, LE3840A, LE3840AE: 115/230 VAC auto-sensing in-line power supply 2/ IEC 950 connector

**Size**—2"H x 7"W x 4"D (5.1 x 17.8 x 10.1 cm)

**Weight**—1.2 lb. (0.6 kg)

## 2. Introduction

The Ethernet Print Server High Speed (LE3810A-R2, LE3810AE-R2) provides a high-speed parallel port for your parallel printer and a connection for your twisted-pair Ethernet interface. It also provides support for Novell NetWare and UNIX protocols.

The Ethernet Print Server (LE3820A, LE3820AE) provides a high-speed parallel port for your parallel printer, and connections for an RJ-45 Uniport and your Ethernet interface (thin or twisted-pair). It also provides support for Novell NetWare, UNIX, and Apple protocols.

The Ethernet Print Server 4-Port (LE3840A, LE3840AE) provides three high speed parallel ports and an RJ-45 Uniport to let you connect up to 4 printers, and a connection for your Ethernet interface (thin or twisted pair). It supports the Novell protocol only.

The Ethernet Print Server 4-Port (LE3845A, LE3845AE) provides three high speed parallel ports and an RJ-45 Uniport to let you connect up to 4 printers, and a connection for your Ethernet interface (thin or twisted pair). It supports Novell NetWare, UNIX, and Apple protocols.

### NOTE

**The Uniport is serial by default. To use the Uniport as a parallel port, you need a parallel port adapter (LT310A).**

Both models of the Ethernet Print Server support Novell NetWare® versions 2.15 or 3.10 and higher and 4.00, AppleTalk®, and TCP/IP for Sun (Solaris® 1.1, 2.1), BSD System V Rel. 4, and DEC™ (ULTRIX™ 4.3) and HP® UNIX® systems.

### 2.1 How to Configure Networks

- For Novell, use NetWare PCONSOLE to do the configuration.
- For AppleTalk, if you connect a PostScript® printer to parallel port #1, you do not even need to configure. But if you have different requirements, you can use the AppleTalk Administration program to configure the Ethernet Print Server.
- For TCP/IP, use the Install script to set up your UNIX version to work with Ethernet Print Server printers.

### 2.2 Benefits

With each network protocol, the Ethernet Print Servers give you these benefits:

- High performance—send data as fast as your printer can receive the data.
- Easy installation—install the Ethernet Print Server quickly in three easy steps: configure and activate each network protocol, plug in the devices, and plug in the power supply.
- Full print-server support—supports all print-server features defined for Novell, AppleTalk, and TCP/IP.
- Put printers anywhere—Directly connect up to four printers, or three printers and one input device.
- Versatility—The Ethernet Print Server incorporates Streams, a UNIX technology, to provide a common interface for error handling, operating system and hardware interfacing normally done differently by each NOS. So printing can be performed simultaneously and concurrently using different protocols on the same or different printers.

### 2.3 About the Ethernet Print Server Troubleshooting Software for Workstations

The Ethernet Print Server provides the following troubleshooting tools for each NOS:

- For Novell, NIMANAGE lets users troubleshoot problems by sending test prints or viewing status reports or error logs on the Ethernet Print Server, check or modify any configuration option not directly tied to the print server, and change the print server name, the printer ports it uses, and the password it uses to log in.
- For AppleTalk, the AppleTalk Administration Program provides functions that let you reset the Ethernet Print Server, view the Ethernet Print Server configuration or an error log, and change the printer setup.
- For TCP/IP, the software provides error messages and a status page to alert you to data that was incorrectly input.

### 2.4 What's in Your Package

The Print Server package contains the following:

- (1) Ethernet Print Server High Speed or Ethernet Print Server 4-Port
- Power adapter

- This user manual
- (3) Utility and diagnostics diskettes

## 2.5 Hardware/NetWare Requirements

The Ethernet Print Server hardware, software, and installation programs require the following:

- **NOS Version Supported:** Novell NetWare version 2.15, 3.10, or 4.0 and above, any AppleTalk version (EtherTalk Phase II only), TCP/IP compatible with Sun (Solaris 1.1, 2.1), BSD System V Rel. 4, DEC (ULTRIX 4.3) and HP UNIX systems.
- **Software requirements:** NIMANAGE requires any IBM PC or compatible with 512 KB of available random-access memory (RAM), one floppy drive (for the Ethernet Print Server software), PC-DOS or MS-DOS® version 3.3x or later; AppleTalk Administration Program requires any Macintosh computer with a disk drive; TCP/IP requires that the Ethernet Print Server host software be installed on every host that spools directly to the Print Server.
- **Hardware connections:** The Ethernet Print Server parallel ports connect to any printer that has a Centronics parallel port, requiring a Centronics male to Centronics female or DB25 male cable; the Ethernet Print Server network connection supports 10-Mbps Ethernet networks that use either ThinNet (10BASE2) or 10BASE-T hardware; the Ethernet Print Server Uniport is compatible with the RS-232C standard supporting baud rates of up to 19.2 kbps for input devices, and up to 115 kbps for output devices using the UNIPOINT-OUT adapter. (If you don't use the adapter, output devices will support baud rates of up to 19.2 kbps.)

## 3. Installation

### 3.1 Hardware Description

The Ethernet Print Server High Speed or 4-Port is a small unit that you can attach to the side of your printer, or let it stand freely next to the printer. The hardware allows users on an Ethernet network running Novell NetWare versions 2.15 or 3.10 and above and 4.00 to access a parallel printer located anywhere on the network.

### 3.2 Status Light Indicator

The status light indicator (the green LED) on the front of the Ethernet Print Server unit lets you see the power-on status or diagnose problems. See **Chapter 7, Troubleshooting**, for details.

### 3.3 Ethernet Print Server Back Panel

The back panel of the Ethernet Print Server High Speed has three connectors and the Ethernet Print Server 4-Port has seven connectors. One connector is for the power supply, and the remaining connectors are for the network or printer and other devices to attach.

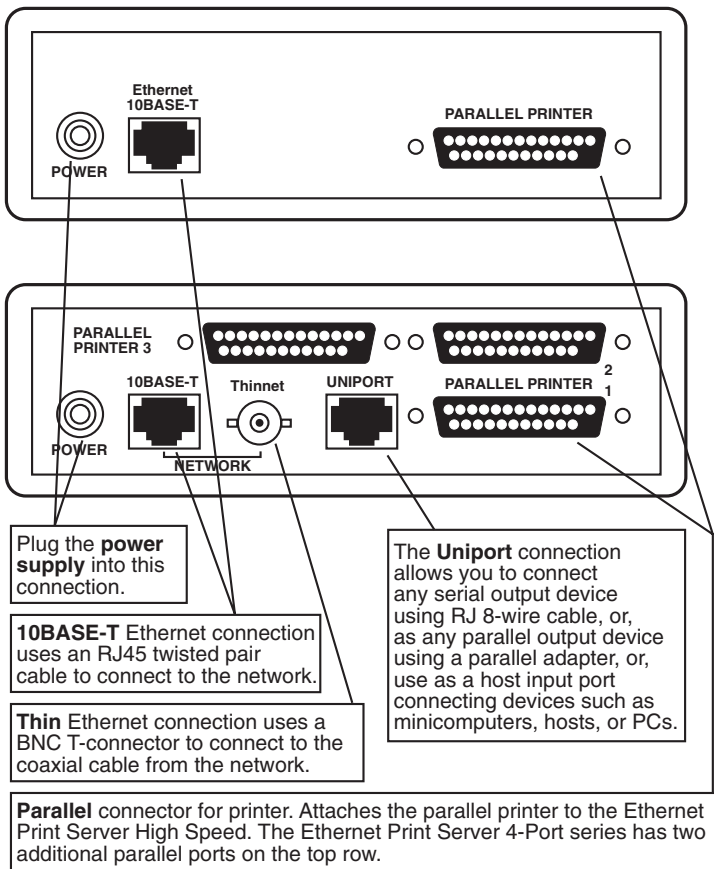


Fig. 3-1. Ethernet Print Server Back Panel.

### 3.4 Hardware Installation

Use the following steps to connect the network and devices, such as printers, plotters, or minicomputers, to the Ethernet Print Server.

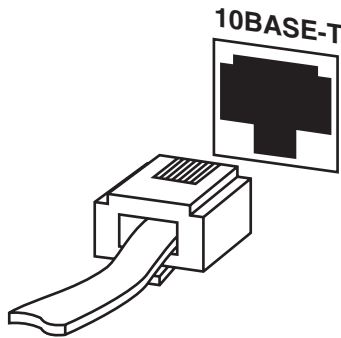
1. Connect the Ethernet Print Server to the network.
2. Connect the parallel printer(s).
3. Connect devices to the Uniport.

Do not connect the Ethernet Print Server's power supply until ALL hardware installation and software configuration steps are completed.

#### **STEP 1: CONNECT THE NETWORK TO THE ETHERNET PRINT SERVER**

You can connect the network in one of two ways:

- Using the 10BASE-T Ethernet interface. The 10BASE-T network connection uses a 4-wire twisted pair RJ cable to plug into the RJ-45 network connector (marked 10BASE-T on the back panel) on the Ethernet Print Server. Once you make the connection, you are finished with this step. Go to Step 2.



**Fig. 3-2. 10BASE-T Connection.**

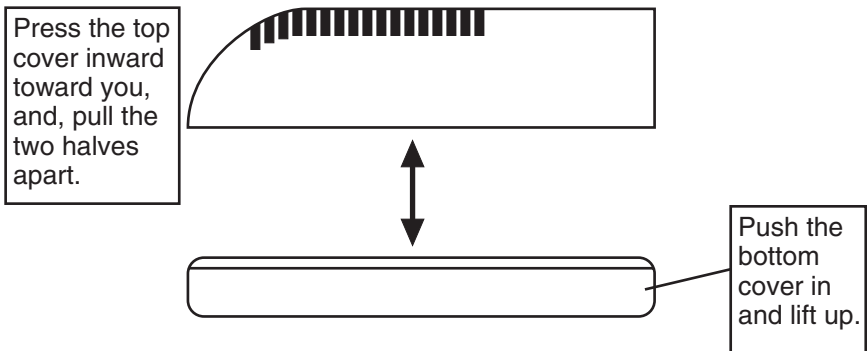
*ThinNet Interface: Change Jumper First*

You need to change a jumper inside the Ethernet Print Server unit before you can print using the ThinNet Ethernet interface.

*How to Change the Ethernet Print Server Jumper*

The Ethernet Print Server 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 from the Ethernet 10BASE-T interface to the ThinNet interface. The default is the 10BASE-T interface.

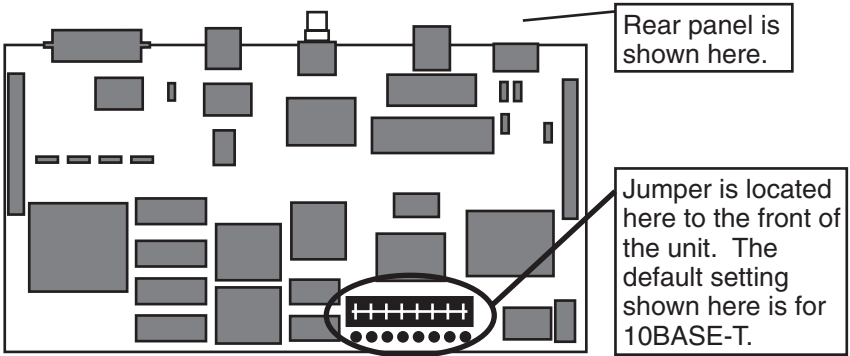
1. Make sure you do not have the Ethernet Print Server unit plugged into a wall outlet. If it is, unplug the power cord before you open the unit.
2. Hold the side of the unit against your body. Grab the side that is the farthest away from your body and press the bottom half of the unit inward toward you. Pull the two halves apart, as shown in **Fig. 3-2**.



**Fig. 3-3. Opening the Unit.**



3. Locate the jumper on the component side of the board.



**Fig. 3-4. Jumper Location.**

4. To change the default jumper from 10BASE-T to ThinNet, move the jumper from its present setting TP (on one side of the jumper) to the jumper setting marked THIN.



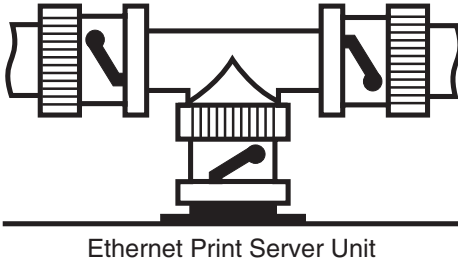
This is the default setting for the Ethernet Print Server. Move the jumper from the pins labeled **TP** to the pins labeled **THIN**. Always cover the middle row of pins for either setting.

Once you change the jumper, it should look like the illustration above. You can then use your Thinnet interface for your network connection.

**Fig. 3-5. Changing the Jumper.**

- Put 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 all the connections into its slots on the bottom and top units.

- Using a ThinNet Ethernet interface. The ThinNet Ethernet wires use a BNC T-connector (not included) to plug into the BNC port on the Ethernet Print Server (marked ThinNet on the back panel). Thin Ethernet cable is a quarter-inch coaxial cable (usually RG-58/U) that uses the cylindrical BNC T-connector to attach to the BNC port.

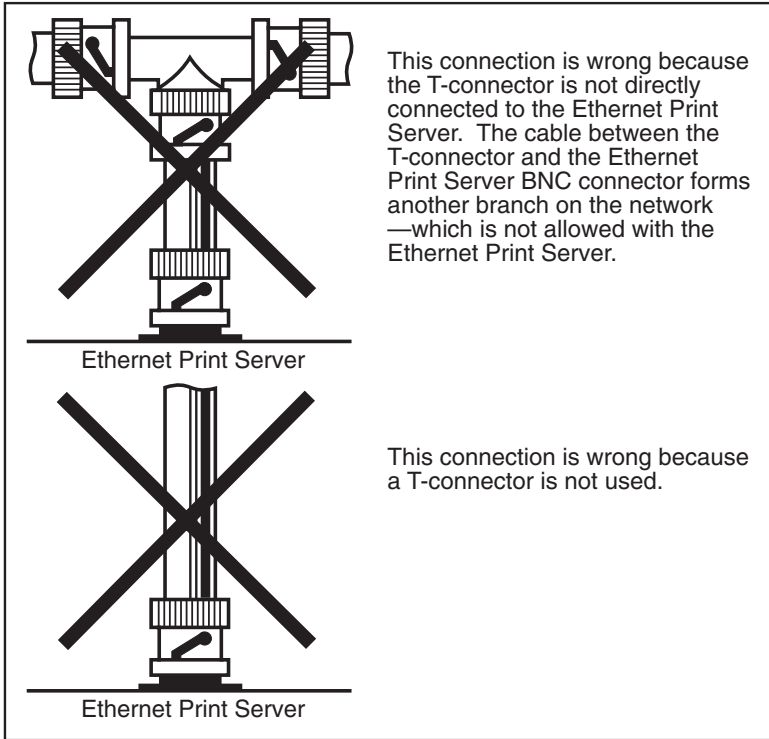


Connect a BNC T-connector directly to the Ethernet Print Server BNC port as shown in the picture to the left. Any other type of connection will not work with the Ethernet Print Server.

**Fig. 3-6. ThinNet Interface.**

*Wrong BNC Connections to the Ethernet Print Server*

**Fig. 3-6** shows 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 Ethernet Print Server) directly connected to the port marked ThinNet.

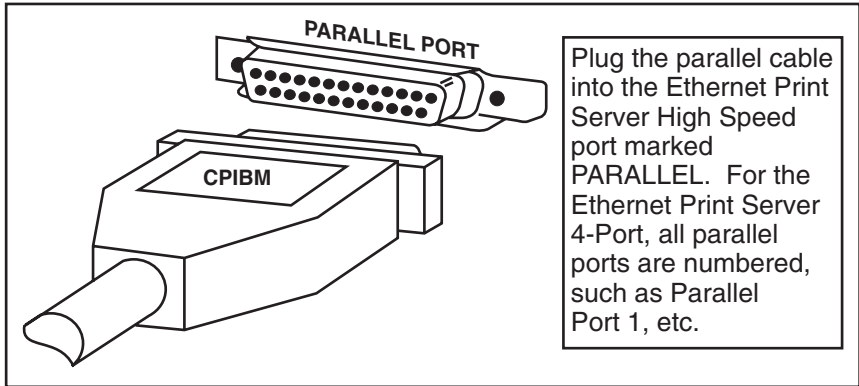


**Fig. 3-7. Wrong Connections.**

## ETHERNET PRINT SERVERS HIGH SPEED AND 4-PORT

### STEP 2: CONNECT THE PARALLEL PRINTER(S)

Connect the parallel printer(s) to the Ethernet DB25 female plug. Use a parallel cable with a DB25 male plug for the Ethernet Print Server connection. See **Fig. 3-8**.



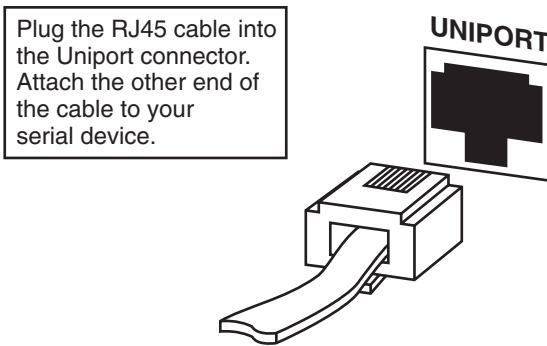
**Fig. 3-8. Connecting the Parallel Port.**

### STEP 3: CONNECT A DEVICE TO UNIPOINT

Connect serial devices to the 8-wire RJ Uniport connector, such as printers, plotters, or minicomputers. Using the Uniport adapters, you can convert a Uniport to a long-distance, high-speed parallel output port.

*Uniport: Serial Output Devices and Input Devices*

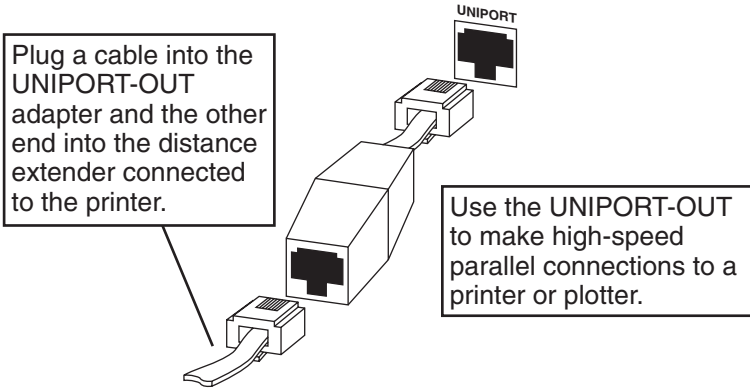
For serial output devices such as serial printers or plotters, or input devices such as minicomputers, use a straight 8-wire RJ cable to plug into the Ethernet Print Server back panel (marked Uniport). You can use baud rates of up to 19200 for this type of Uniport connection. See **Fig. 3-9**.



**Fig. 3-9. Connecting a Device to Uniport.**

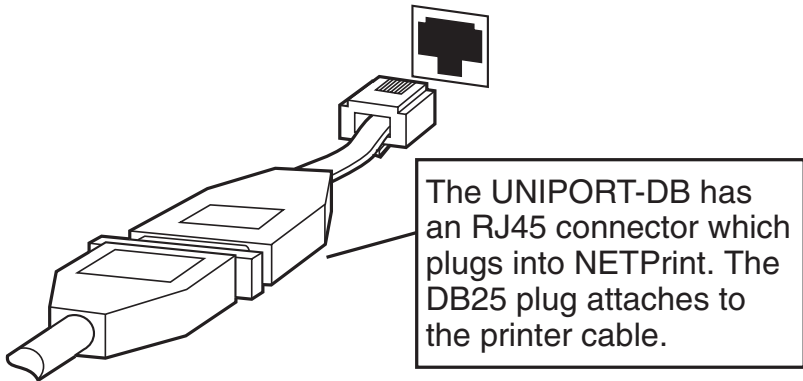
*Uniport: High Speed Output Devices*

For output devices only, use a Uniport adapter (UNIPOINT-OUT) to make the Uniport a high speed parallel connection for your printer or plotter. **Fig. 3-8** shows you how to connect the Uniport parallel adapter to the Uniport plug on the Ethernet Print Server. Data will be sent to the attached printer or plotter at a rate of 115 kbps.



**Fig. 3-10. Uniport-OUT Adapter.**

For both standard serial and Uniport connections, you can also convert the Uniport plug on the Ethernet Print Server back panel to a DB25 plug using the DB25 adapter. See **Fig. 3-11** to make the connection.



**Fig. 3-11. Uniport: DB25 Adapter.**



### **3.5 Next Step**

Do not plug your power supply into the Ethernet Print Server or a wall outlet. You need to configure the Ethernet Print Server for each network protocol before you power the Ethernet Print Server on.

#### *Configure the Ethernet Print Server Protocols*

To continue installation, you must configure and activate each network protocol to work with the Ethernet Print Server. Each protocol has its own chapter; go to the Configuration section for each protocol you will configure.

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

## 4. Novell NetWare Configuration and NIMANAGE Utility

### 4.1 Introduction

This chapter is divided into four topics:

- **Section 4.2, Configuration: Before You Begin**, is for users who have a very large network tied into many different sites. This topic explains how to set up a primary file server.
- **Section 4.3, Configuration: Using NetWare 2.15 or 3.10 and Later**, lets you configure the Ethernet Print Server. Use PCONSOLE to set up all your Ethernet Print Server printers so that users can print.
- **Section 4.4, Configuration: Using NetWare 4.00**, lets you configure the Ethernet Print Server. Use PCONSOLE to set up all your Ethernet Print Server printers so that users can print.
- **Section 4.5, Using the NIMANAGE Utility**, describes the PC-based program that lets you activate network protocols, configure the print server and printer ports, reset the Ethernet Print Server remotely, and troubleshoot problems.
- **Section 4.6, Using NetWare Utilities/Making Changes to the Ethernet Print Server**, explains how to use Novell NetWare utilities with the Ethernet Print Server.

### NOTE

To configure the Ethernet Print Server for Novell NetWare users, you must follow the steps in Section 4.3 or 4.4 before you print.

### 4.2 Configuration—Using PCONSOLE: Before You Begin

Ethernet Print Server 4-Port users only: If you have a very large network tied into many different sites, you should read the following about primary file servers. If you don't have such a network, go to the PCONSOLE explanation for your NetWare version **Section 4.3** or **4.4**).

### 4.2.1 WHEN YOU DON'T DEFINE A PRIMARY FILE SERVER

When a primary file server is not defined, the print server searches for file servers as follows:

- File servers that are no more than 4 hops away. A hop is a step in the data transmission from one node (a workstation or server) through an intermediate node. The four hops that the print server searches are the four LAN segments directly connected to the first workstation or server.
- File servers that have no more than 1/4 second propagation delay. This delay is the amount of time it takes a packet to go from the print server unit to the file server.
- The print server has a maximum limit of 16 file servers.

### 4.2.2 WHAT IS A PRIMARY FILE SERVER?

A primary file server is set up in PCONSOLE from the File Servers to be Serviced option. You need to place a minimum of two file servers on this file server list. These servers must be no more than 4 hops away with a propagation delay (the time it takes a packet of data to go to the print server unit from the file server) of no more than 1/4 second.

The print server searches for the primary server starting with the servers that are closest (0 hops) and works its way outwards to a maximum of 4 hops.

### 4.2.3 WHEN THE PRINT SERVER FINDS A PRIMARY FILE SERVER

When the print server finds a primary server, it

- stops searching for other servers.
- reads the list of servers set up in NetWare's PCONSOLE.
- attempts to attach to every server in the list no matter where it is.

### 4.2.4 YOUR CHOICES

- If you do not want to define a primary file server for the print server and want to search up to four LAN segments for file servers to be used by the print server, then go to **Section 4.3** or **4.4**.
- If you want to define a primary file server, use this section for instructions on how to use the PCONSOLE to do so.

### 4.2.5 SUMMARY

Following is a summary of steps you will perform in order to define a primary file server:

1. Start PCONSOLE
2. Choose “Print Server Information” on the Available Options menu.
3. Choose the print server you want to configure and then choose “Print Server Configuration” on the Print Server Information menu. Choose “File Servers to be Serviced” on the Print Server Configuration menu.
4. Choose the file server. To add additional file servers to the list, press the <Ins> key. A list of Available File Servers appears.
5. Escape back to the Print Servers list and then go to Step 2 of Configuration Using PCONSOLE, Section 4.7 or 4.8, for your version of NetWare.

### STEP 1: START PCONSOLE

#### SUPERVISOR/ADMINISTRATOR RIGHTS

You must have supervisor/administrator rights BEFORE you use PCONSOLE. You need supervisor/administrator rights in order to complete this process.

- a. Log into the network as supervisor/administrator.
- b. Type PCONSOLE and press <Enter>.
- c. Choose “Print Server Information” on the Available Options menu. See Fig. 4-1.

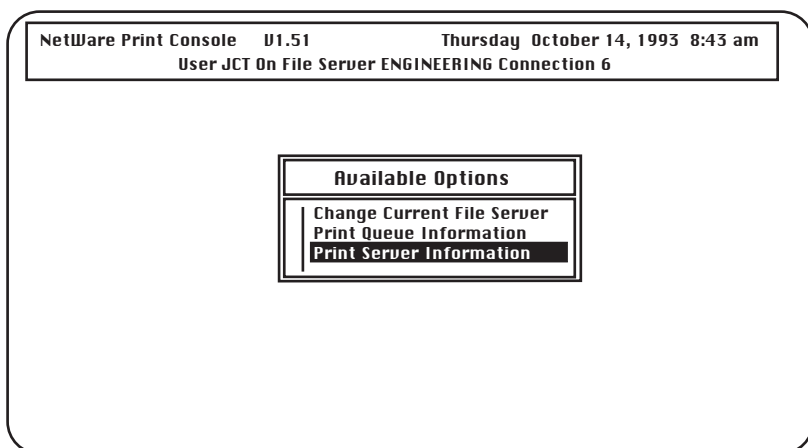


Fig. 4-1. Available Options Menu.

## ETHERNET PRINT SERVERS HIGH SPEED AND 4-PORT

Result: The Print Servers menu appears.

### STEP 2: CHOOSE THE PRINT SERVER YOU WANT TO CONFIGURE

When the list of Print Servers appears, find the serial number for the Print Server you are configuring. The serial number is located on the bottom of the unit. If it is not listed, make sure the Print Server is powered on and then restart PCONSOLE. See Fig. 4-2.

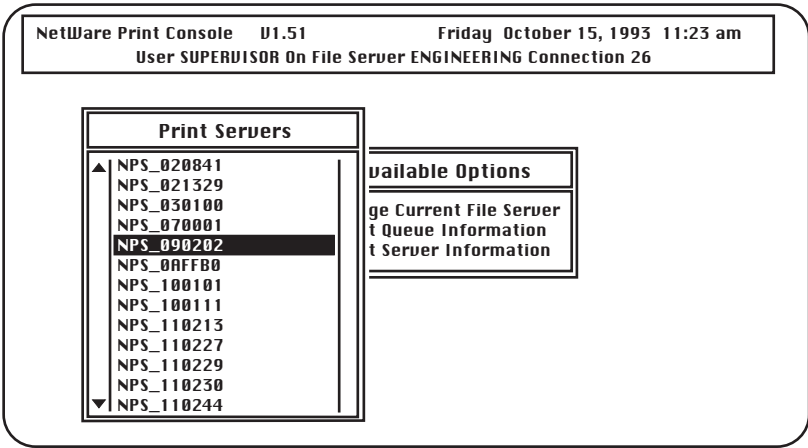


Fig. 4-2. Configure Print Server.

Result: Once you choose the Print Server you want to configure, the Print Server information menu appears.

### STEP 3: CHOOSE PRINT SERVER CONFIGURATION, THEN FILE SERVERS TO BE SERVICED

When the Print Server Information menu appears, select “Print Server Configuration” and press <Enter>. Then choose “File Servers to Be Serviced” and press <Enter>.

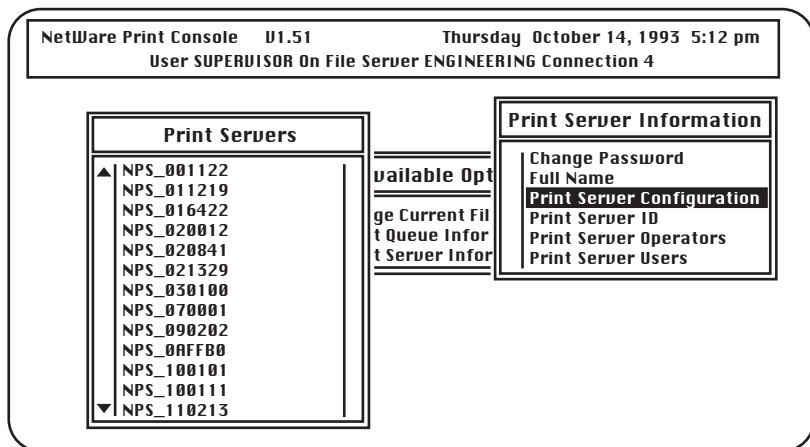
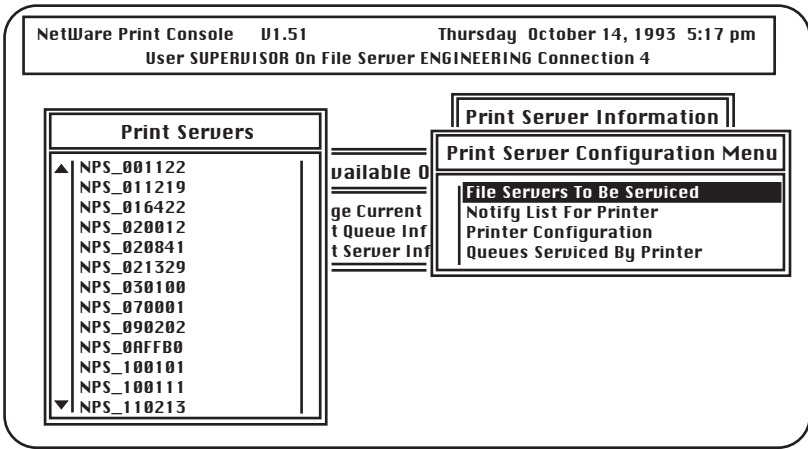


Fig. 4-3. Choose Print Server Configuration.



**Fig. 4-4. Choose File Servers to Be Serviced.**

Result: A list of File Servers to Be Serviced appears.

**STEP 4: SELECT A PRIMARY FILE SERVER**

When the File Servers to Be Serviced menu appears, select the file server you want as the primary file server. Press the <Ins> key to display a list of all available file servers.

**NOTE**

If the file servers (minimum of 2) displayed under the File Servers to Be Serviced menu are the ones that you want to access, then you do not need to do anything else—go to Step 5.

Result: Once you have chosen your file servers, you are ready to configure the Print Server.

**STEP 5: START THE PRINT-SERVER CONFIGURATION**

NetWare 2.15 or 3.10 and above users, go to **Section 4.3** to configure the Print Server.

NetWare 4.00 users, go to **Section 4.4** to configure the Print Server.

### **4.3 Configuration—Using NetWare 2.15, 3.10 and Later**

Follow these steps to configure the Print Server with PCONSOLE.

1. Log into the network as Supervisor and start PCONSOLE.
2. Create a new print server and enter the Print Server name.
3. Configure the Print Server.
4. Assign print queues to the printer.
5. Set up NOTIFY options for the printer (optional).
6. Ethernet Print Server High Speed users only: If you are using NetWare 3.10 or later, set unencrypted passwords to ON.

#### **4.3.1 ENCRYPTED PASSWORDS**

The Print Server 4-Port supports encrypted passwords. The Print Server High Speed does not support encrypted passwords.

#### **4.3.2 PCONSOLE VERSION**

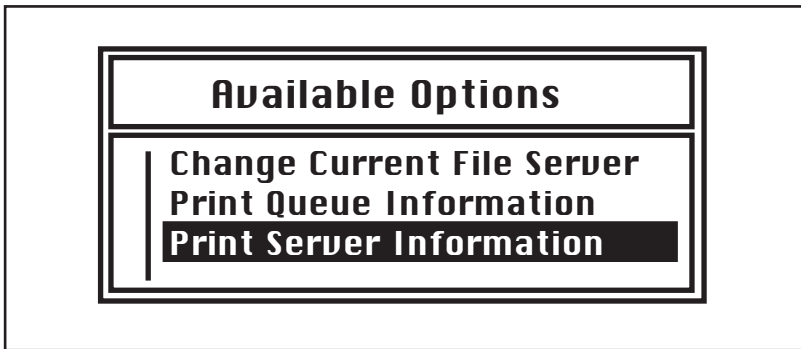
Make sure you have a version of PCONSOLE other than version 1.0. You cannot configure the Print Server with version 1.0. If you have this version, contact Novell for a PCONSOLE upgrade.

#### **STEP 1: START PCONSOLE**

Make sure you have supervisor rights before you begin, or you will not be able to configure the Print Server devices. After you log into the network, type PCONSOLE and press <Enter>.

Choose “Print Server Information” from the Available Options menu. See **Fig. 4-5**.





**Fig. 4-5. Print Server Information.**

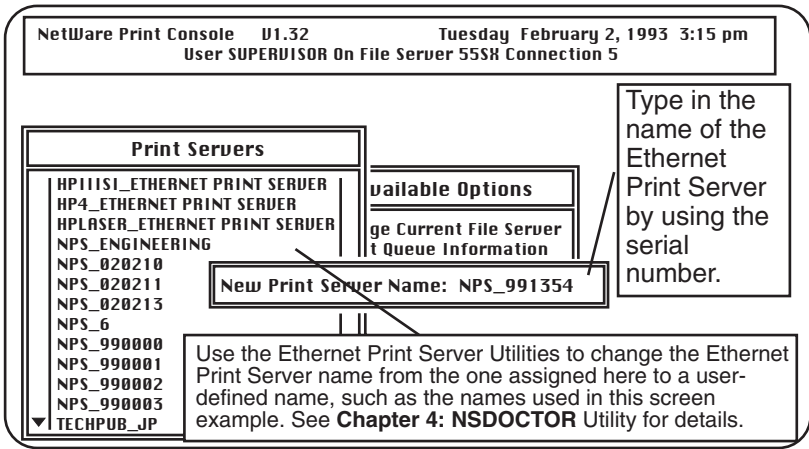
Result: The Print Servers menu appears.

**STEP 2: ENTER THE PRINT SERVER NAME**

A print server takes the print jobs from queues and sends them to a Print Server printer. You need to create a Print Server name for the Print Server.

- When the Print Servers menu displays, press the <Ins> key to display the New Print Server Name entry box.
- Type the name of the Print Server into the entry box. First type NPS, followed by an underscore, then type in the 6-digit serial number printed on the label on the bottom of the unit, like this: NPS\_<serial\_number>.

The screen example shows how you would enter the Print Server name if you had a serial number of 991354.

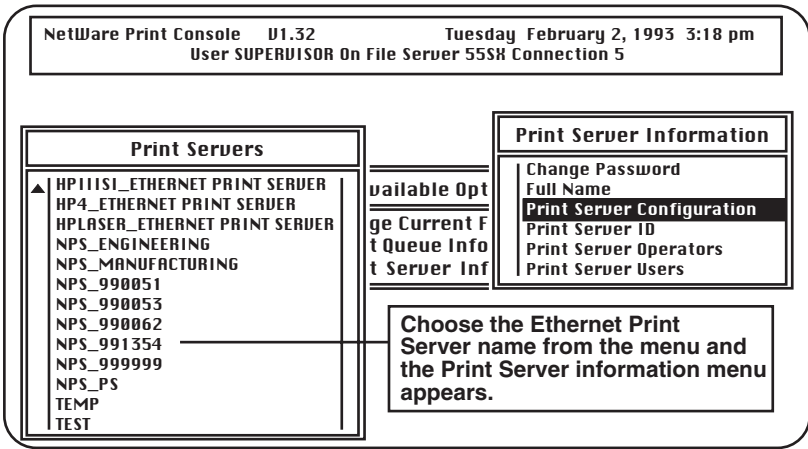


**Fig. 4-6. Print Server Name.**

### *Configure the Print Server*

The configuration tells the Print Server which printers the print server supports.

1. Press <Enter> once you have added the Print Server name to the Print Servers list. The Print Server Information menu appears. Choose “Print Server Configuration” on that menu, then choose the Print Server name you assigned in Step 2. See **Fig. 4-7**.



**Fig. 4-7. Print Server Information.**

2. Choose “Printer Configuration” on the Print Server Configuration Menu. The Configured Printers menu appears. Assign the Print Server printer(s) as follows:
  - Print Server High Speed parallel port and Print Server 4-Port to Printer 0.
  - Print Server 4-Port Parallel Port #2 to Printer 1.
  - Print Server 4-Port Parallel Port #3 to Printer 2.
  - Print Server 4-Port Uniport to Printer 3. If you use the Uniport as a printer port, then you **MUST** assign it to Printer 3—even if you do not use all the parallel ports.

## NOTE

**Make sure you assign the correct number to your printer. Choose Remote Other/Unknown as TYPE. You DO NOT need to make changes to any other items on the screen.**

The screen example in Fig. 4-10 shows the printer setup for a printer attached to the Print Server High Speed parallel port or Print Server 4-Port parallel port #1.

### *Assigning Names*

On the Printer Configuration screen, you can use the NAME field to identify your printer(s). However, you should not make any other changes unless you have the knowledge to do so.

NetWare Print Console    01.32
Tuesday February 2, 1993 3:20 pm

User SUPERVISOR On File Server 55SX Connection 5

Co	Printer 0 configuration
Not In	Name: HPLASER111S1
Not In	Type: Remote Other/Unknown
Not In	Use interrupts: <input checked="" type="checkbox"/> Yes
Not In	IRQ:                    7
Not In	Buffer size in K:    3
Not In	Starting form:        0
Not In	Queue service mode: Change forms as needed
Not In	Baud rate:
Not In	Data bits:
Not In	Stop bits:
Not In	Parity:

Assign the Ethernet Print Server High Speed parallel port and Ethernet Print Server 4-Port parallel port #1 printer to Printer 0; Ethernet Print Server 4-Port parallel port #2 printer to Printer 1; Ethernet Print Server 4-Port parallel port #3 printer to Printer 2, and, always assign the Ethernet Print Server 4-Port Uniport printer to Printer 3 (whether you install all three parallel printers or not).

**Fig. 4-8. Printer Configuration Screen.**

3. When you have finished configuring each printer, then press <Esc> to exit and choose Yes when you are prompted to save changes. Make sure you return to the Print Server Configuration Menu.

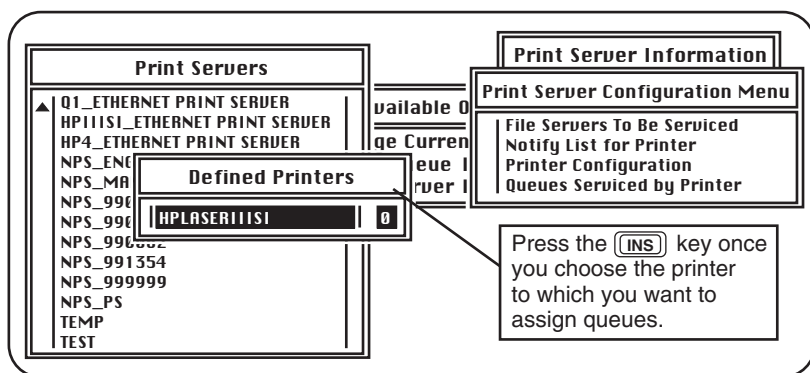
### STEP 4: ASSIGN PRINT QUEUES TO PRINT SERVER PRINTERS

When you assign queues to the defined printers, you authorize the Print Server to service these queues.

### NOTE

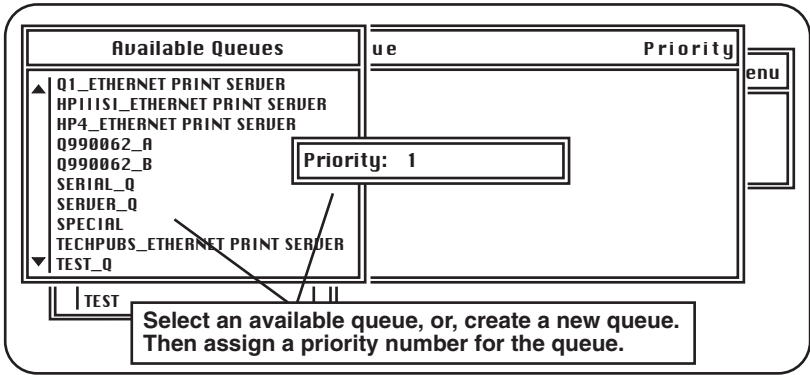
**Assign queues only to the Print Server. Do not assign one queue to two different print servers. If a queue is assigned to multiple print servers, print jobs may not go to the Print Server printer(s).**

1. Choose “Queues Serviced by Printer” from the Server Configuration Menu.
2. Select the appropriate printer from the list of Defined Printers. A screen (which should be blank for the initial installation) appears. Press the <Ins> key to bring up a list of Available Queues for the Print Server printer. See **Fig. 4-9**.



**Fig. 4-9. Available Queues.**

3. Choose a queue and assign a priority level (from 1 to 10) to the queue. Accept the default priority level displayed on the screen. Press <Enter> and the queue appears on the list for the selected printer. Press <Ins> to enter additional queues. See **Fig. 4-10**.



**Fig. 4-10. Priority Screen.**

4. When you have finished assigning the queues, press <Esc> and then choose Yes to save changes. Continue to <Esc> back to the Print Server Configuration Menu.

If you do not want to set up notify functions, then continue to <Esc> and choose Yes to save changes. Print Server High Speed users: NetWare 3.10 and above users should go to Step 6.

### STEP 5: (OPTIONAL) SET UP NOTIFY OPTIONS FOR THE PRINTERS

To notify users or user groups if a problem occurs with a print job, you need to set up the Notify functions. The Print Server supports the enhanced NOTIFY features for printers, including informing users when the printer is off-line, jammed, opened, out of paper, in need of a reset, low on toner, or waiting for a manual paper feed, or when the printer has the wrong form loaded, a memory error, an engine failure, or a higher-priority print job from another source.

1. Choose "Notify List for Printer" on the Print Server Configuration Menu.
2. Select a printer from the Defined Printers list. The notification screen appears (which should be blank for the initial installation). Press <Ins> to view a list of Notify Candidates.

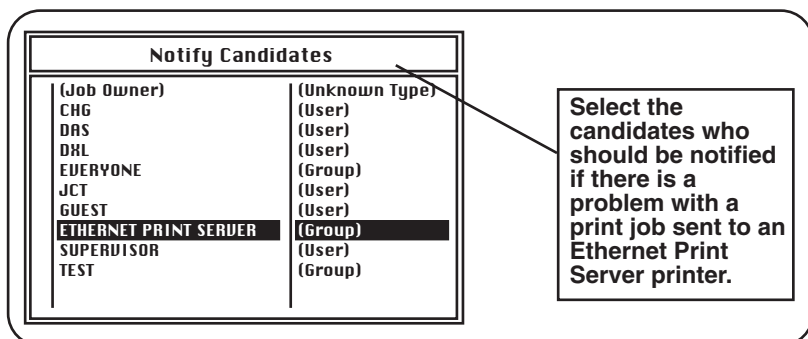
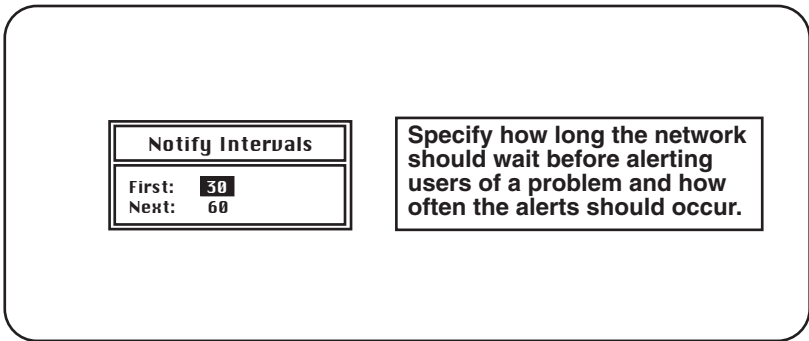


Fig. 4-11. Notify Candidates.



3. Select the user or group from the Notify Candidates list. Set the first and next intervals in the Notify Intervals screen. Use the defaults. The first and next intervals are how many seconds the network will wait before it notifies candidates about a print-job problem. The intervals specify how often after the first notification candidates will be notified. Type in a number in seconds (not minutes) for each interval and press <Enter>.



**Fig. 4-12. Notify Intervals.**

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 configuration.

### STEP 6: ETHERNET PRINT SERVER HIGH SPEED USERS: SET UNENCRYPTED PASSWORDS TO ON (NETWARE 3.X AND ABOVE)

You need to enable encrypted passwords by adding the statement below to your AUTOEXEC.NCF file on the server using either the NetWare INSTALL.NLM utility on the server or the NetWare SYSCON utility on a workstation when logged in as supervisor. You can also type the statement below at the server console (but when typed at the server console, it is not permanent).

```
SET ALLOW UNENCRYPTED PASSWORDS=ON
```

Encrypted passwords do not work with the Print Server High Speed. However, encrypted passwords are supported in the Print Server 4-Port.

#### *Supporting Multiple File Servers*

See Appendix D for information on supporting multiple file servers. This includes information on passwords for multiple file servers assigned to the print server.

#### *When You Finish*

Once you complete your PCONSOLE installation, go to the Hardware Installation in **Section 4.9**.

## 4.4 Configuration—Using NetWare 4.0

Novell NetWare 4.0 operates in two modes, Directory Services and Bindery Services. You need to use Bindery mode for your Print Server configuration. Directory Services mode allows users to log onto one server in a multi-server network and access all servers on the network transparently. Unlike earlier NetWare versions 2.x and 3.x which did not offer Directory Services, you need only log onto the network once to access all servers.

However, in order for the Print Server to function properly with NetWare 4.0, it must be configured in PCONSOLE to use Bindery Services mode. Once this is done, the Print Server will run as a Novell Print Server with all the additional functionality of NetWare 4.0, since both modes run simultaneously and transparently to each other.

## NOTE

If the Print Server is connected to a NetWare 4.0 server and you suspect that Bindery Services mode is not running, the Print Server will confirm that condition by producing a status page stating no active file servers could be found. The status page, in effect, tells you that you are running Novell with the Directory Services version of PCONSOLE and must instead use the Bindery Services version of PCONSOLE.

### 4.4.1 CONFIRMING BINDERY CONTEXT WITH NOVELL NETWARE 4.0

Before the Print Server can be installed on a Novell NetWare 4.0 server, confirm that the server has a Bindery Context (name for server under Bindery Services mode). If the server has no Bindery Context, the Novell administrator must either execute 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 into the server as ADMIN.
2. At the prompt, perform a DOS TYPE of Z:\SYSTEM\AUTOEXEC.NCF.
3. When the file appears, look for a statement that is similar to:

```
SET BINDERY CONTEXT=0=Name
```

#### *How to Use Name*

Name is the designation for the Server Context, and can be obtained by starting PCONSOLE. At the upper left corner of the screen displaying the Available Options menu, the Context is shown. For example,

```
0=DIGITAL PROD
```

4. If you see no such statement in the screen, then you must add that statement for the Print Server to work. Exit from PCONSOLE and use a DOS text editor to add the following statement to the AUTOEXEC.NCF file:

```
SET BINDERY CONTEXT=0=  
DIGITAL_PROD
```

Print Server High Speed users should go to Step 5 below.

5. Print Server High Speed users: The Print Server does not support encrypted password. Since you are changing your AUTOEXEC.NCF file, include the following statement in the AUTOEXEC.NCF file:

```
SET ALLOW UNENCRYPTED PASSWORDS=ON
```

6. Now that you have added statements to the AUTOEXEC.NCF file, you must power down the server and restart it for the changes to take effect. If you don't want to make permanent changes to your AUTOEXEC.NCF file, you can type the SET command at the Server console to make changes. Any changes will be in effect until the server is powered down and restarted again.

### 4.4.2 CONFIGURING IN BINDERY MODE WITH PCONSOLE

One enhancement over earlier NetWare versions is the use of function keys, displayed at the bottom of the screen. You will use these keys to configure the Print Server on PCONSOLE.

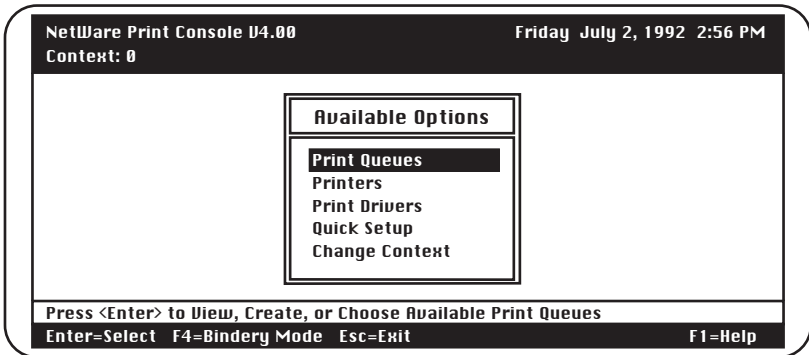
Once you are sure you have installed the Bindery Context, you can configure the Print Server on NetWare 4.0 by performing these steps:

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

If you encounter any errors during installation, try logging out and logging in again.

#### STEP 1: START PCONSOLE

Before you begin, log into the network as ADMIN. After you log in, type PCONSOLE and press <Enter>. The screen below appears.



**Fig. 4-13. Start PCONSOLE Screen.**

## **STEP 2: SELECT BINDERY MODE**

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

## **NOTE**

If you receive a message asking you to log into a server with Bindery connections, the server you are attached to does not have Bindery Mode enabled. Follow the previously listed steps to add Bindery Services or log onto a server with Bindery Services activated.

### STEP 3: SELECT QUICK SETUP OPTION

When the Available Options screen appears, select Quick Setup and press <Enter>. See the screen example in Fig. 4-14.

### NOTE

Use Quick Setup to connect your print server, print queue and printer correctly. If you need to modify these items later, see Step 6.

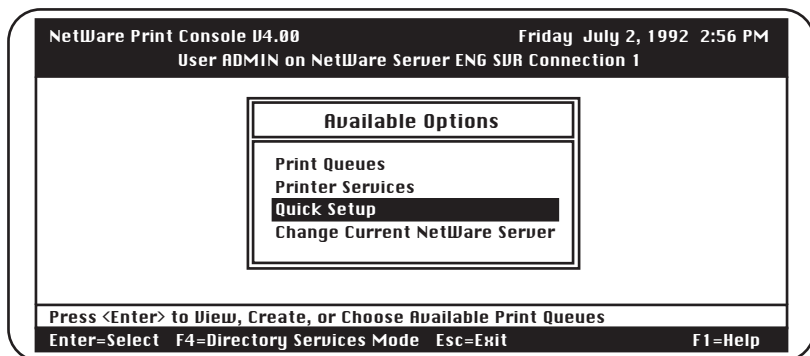


Fig. 4-14. Quick Setup Option.

## ETHERNET PRINT SERVERS HIGH SPEED AND 4-PORT

### STEP 4: ENTER PRINT SERVER, PRINTER, AND QUEUE NAMES

1. When Print Services Quick Setup window appears, enter the print server name by using the <F3> (Modify) key.
2. Type in the name using the format NPS\_XXXXXX, where XXXXXX is the Print Server serial number.
3. Press <Enter>. The serial number is stamped on the bracket of the board. Next, tab down to the New Printer field, enter a name, and press <Enter>, then tab to the New Print Queue field, enter a name, and press <Enter>.

NetWare Print Console V4.00 Friday July 2, 1992 2:56 PM  
User ADMIN on NetWare Server ENG SUR Connection 1

**Print Services Quick Setup**

Print Server:	NPS_990434
New Printer:	F1
New Print Queue:	Q1
Banner Type:	Text
Printer Type:	Parallel
Location:	Auto Load (Local)
Interrupt:	None (polled mode)
Port:	LPT1

Specify the print server that will service the new printer and print queue.  
Press <Enter> to list available print servers

Enter=Select F10=Save Changes F3=Modify Esc=Exit F1=Help

Fig. 4-15. Enter Print Server, Printer, and Queue Names.

### STEP 5: ENTER PRINTER TYPE NAME

Tab down 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. With all your choices now selected, press the <F10> key (Save Changes) to save your configuration.

Follow steps 1 through 5 to configure all servers connected to your Print Server units on the network.

### STEP 6: 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 screen.

Selecting either Print Queues or Print Servers will call up information screens from which you can view or modify more choices.

- On the Print Queues Information screen, you can select Print Jobs, Status, Attached Print Servers, Information, Users, Operators, and Print Servers.
- On the Print Server Information screen, you can select Printers, Information and Status, Users, Operators, Description, Password, and Audit.

### STEP 7: PLUG IN THE POWER SUPPLY

Once you have finished configuring the Ethernet Print Server with PCONSOLE, you can plug the power supply into the Ethernet Print Server and into a wall outlet.

The front-panel green LED should do the following:

- Go on when the unit first powers up. The Ethernet Print Server does a series of self-tests. If a problem is found, the light blinks in a particular pattern to identify the problem. See **Chapter 7, Troubleshooting** for details.
- When the Ethernet Print Server passes the self-tests, the light blinks three times and stays on solid. The Ethernet Print Server then sends a status page to the printer attached to parallel port #1.
- The network software initializes. This takes about 15 seconds. You are now ready to print.

If the green LED does not go on at any time, try plugging the power cord into another wall outlet. If it still does no power on, call for technical support.



### *Supporting Multiple File Servers*

See **Appendix C** for information on supporting multiple file servers. This includes information on passwords for multiple file servers assigned to the Ethernet Print Server.

### *Status Page Examples*

**Fig. 4-16** shows an example of the status page. This page will print after the self-tests, and any time you power up the Ethernet Print Server.

### *PostScript Format*

The status page is formatted for PostScript printers. For text-based printers such as HP Lasers, the status page prints the information shown on in **Fig. 4-16**, as well as any PostScript codes. If after the self-tests the Ethernet Print Server cannot log into the file server or find a password, a status page prints detailing the problem and listing a solution.

Unit Serial No.: 020012	Version: 0.400
Network Address: 00:40:at:02:71:60	Connector: 10BASE-T
Network Topology: Ethernet	
Network Speed: 10 Mbps	
Novell Network Information	
Novell Print Server Name: NPS_020012	Password Defined: Yes
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 Number128	
AppleTalk Zone: Ether A1	
TCP/IP Network Information	
Frame Type: Ethernet II	Subnet Mask: 255.0.0.0
Protocol Address: 192.9.200.231	
Port Number: 1	Port Type: Parallel
Novell Connection Information	
Printer Name: Printer 0	
File Server: ENGINEERING	
Queue: 12_2	Priority: 1 Attached: Yes
Queue: 12_1	Priority: 1 Attached: Yes
Notify: EPG	First: 30 Repeater: 2000
Notify: SUPERVISOR	First: 30 Repeat: 60
File Server: 55SX	
Queue: 62_2	Priority: 5 Attached: Yes
Queue: 62_1	Priority: 3 Attached: Yes
Notify: GDF	First: 30 Repeat: 60
Notify: SUPERVISOR	First: 30 Repeat: 60
AppleTalk Connection Information	
AppleTalk Printer Name: NP125 LaserWriter 1	
TCP/IP Connection Information	
Port Number: 10002	
Novell Connection Information	

**Fig. 4-16. Status Page Example.**

### 4.5 Introduction to NIMANAGE

The Print Server program NIMANAGE is a PC-based program that includes the following functions or utilities:

- Configure the Novell Print Server, Uniport Input Print Server, or printer port.
- Reset the Print Server unit remotely.
- Help to troubleshoot problems on the Print Server.

Use the utilities to make changes to your Print Server setup or to update your Print Server firmware with a new release.

### 4.6 How to Install

To install the Print Server software, you must do the following:

#### NOTE

**We recommend that you install the program on the file server, since the utilities require communication across the network. Make sure you are logged onto the network as SUPERVISOR (NetWare 2.15 or 3.10 and above) or ADMIN (NetWare 4.0) before you begin.**

1. Place the Print Server Utility and Diagnostics Program diskette into the floppy drive of a workstation. If you are not installing the software on the file server, then make sure you are using the workstation on which you want to install the software.
2. Type A: (or B:) and press <Enter>. Type INSTALL and press <Enter>. An information screen appears. Read the screen and press any key to continue.
3. Accept or change the path where the Print Server Utility and Diagnostics Programs will be placed. The default choice is SYS:\PUBLIC, shown on the screen in **Fig. 4-17**. If you want to change it, use the arrow keys to delete the default choice and type in a new path.

Ethernet Print Server High Speed/4-Port

Directory to load Software: SYS:\PUBLIC\_\_\_\_\_

If you wish to load to a different server, please exit and log into the correct file server. To load to a different drive, simply type the new drive letter as part of your directory.

<ENTER> Accept and continue.            Use arrow keys to move cursor.

<ESC> Exit install.

<F1> Additional help.

**Fig. 4-17. Changing the Path.**

4. Follow the prompts you receive on the screen and remove the installation diskette from the workstation drive when finished.

If you have installed the Print Server Utility on the file server, then you initiate the program as follows:

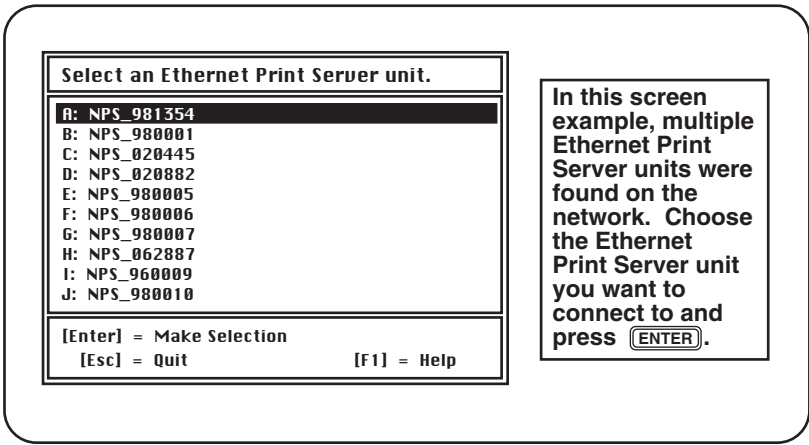
- Log into the server as SUPERVISOR or ADMIN. Type NIMANAGE and press <Enter> at the prompt. The NIMANAGE Main Menu appears.

If you have installed NIMANAGE on the hard drive of a workstation, then you initiate the program as follows:

- Go to the directory on the hard drive where you have installed the Print Server software.
- Type NIMANAGE and press <Enter>. The NIMANAGE Main Menu appears.

## **4.7 NIMANAGE: Choose the Print Server**

Choose the Print Server that you want to connect to. If you cannot connect to the chosen Print Server for any reason, you receive an error message. See **Fig. 4-18**.



**Fig. 4-18. NIMANAGE: Choose the Print Server.**

### **4.8 NIMANAGE: Print Server Utility Menu**

After you choose a Print Server unit, the Print Server Utility Main Menu appears. See **Fig. 4-19**.

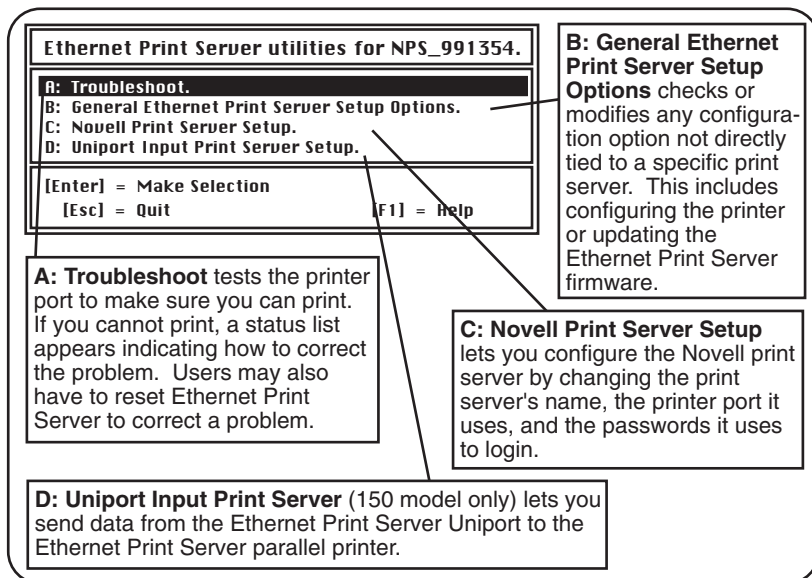
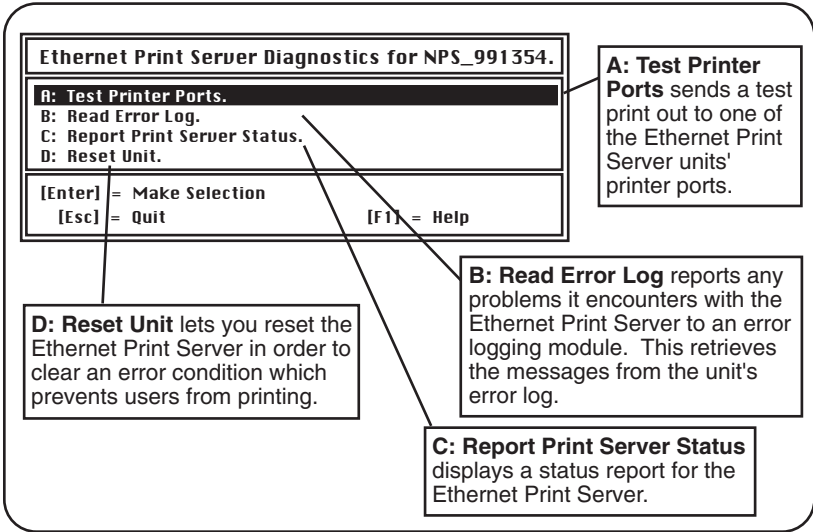


Fig. 4-19. NIMANAGE: Print Server Utility Menu.

## 4.9 A: Troubleshoot Option

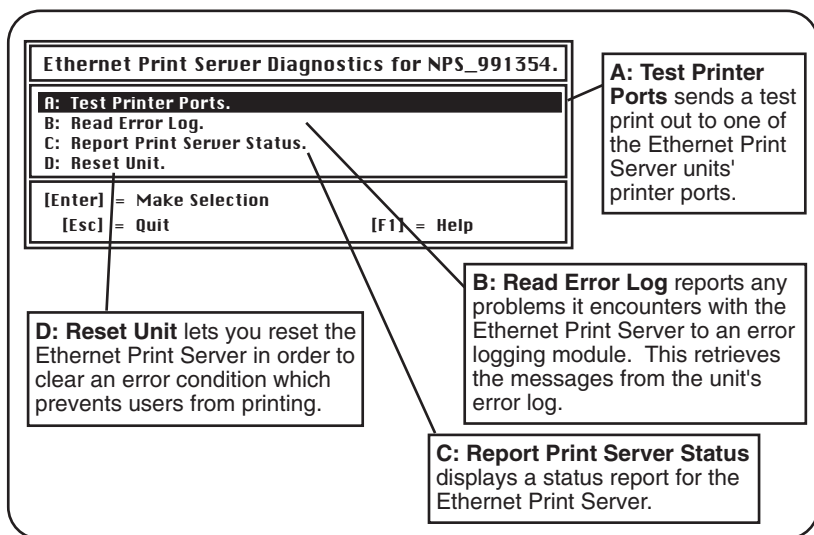
When you choose A: Troubleshoot, a sub-menu displays the troubleshooting functions.



**Fig. 4-20. A: Troubleshoot Option.**

**4.9.1 A: TEST PRINTER PORTS OPTION**

Test Printer Ports sends a test print to one of the Print Server printer ports. You must first select the printer port. See **Fig. 4-21**.



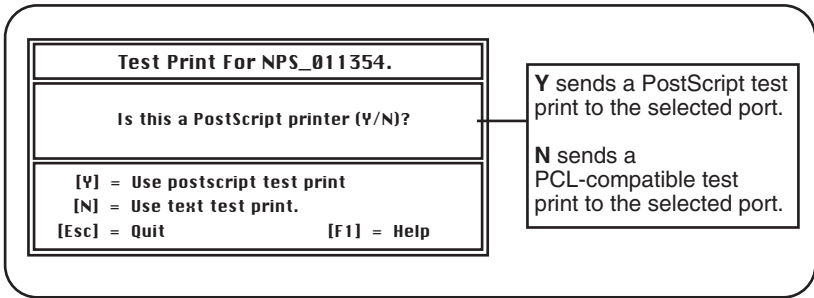
**Fig. 4-21. Test Printer Ports Option.**

*PostScript or PCL-based Printers*

Next select the type of print job you want to send—a PostScript print job (for PostScript printers only) or text, for PCL compatible printers like the HP LaserJet. Once you answer this prompt, a print job is sent to the selected printer port. If the port is being used by a print server for a print job, then you receive the appropriate error message. Try to print again after the other job has printed. See

**Fig. 4-22.**





**Fig. 4-22. PostScript or PCL-Based Printers.**

A test page will print on the selected printer. For examples of the test print, see **Figures 4-23** and **4-24**.

**Fig. 4-23** shows a copy of the PostScript test print job. This prints to a PostScript printer when you type Y for the screen shown on the previous page.



# ETHERNET PRINT SERVERS HIGH SPEED AND 4-PORT

```
*****
Ethernet Print Server NPS_011364 Port #1 Text Test Print
*****
ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz!@#%^&*()01234667890
0ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz!@#%^&*()0123466789
90ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz!@#%^&*()012346678
890ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz!@#%^&*()01234667
7890ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz!@#%^&*()0123466
67890ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz!@#%^&*()012346
667890ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz!@#%^&*()01234
4667890ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz!@#%^&*()0123
34667890ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz!@#%^&*()012
234667890ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz!@#%^&*()01
1234667890ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz!@#%^&*()0
*****
Ethernet Print Server NPS_011364 Port #1 Text Test Print
*****
If you can read these messages, then your Ethernet Print Server/MIO unit and printer are working
properly. Be sure to read all of these messages carefully.
*****
Ethernet Print Server NPS_011364 Port #1 Text Test Print
*****
Congratulations on your purchase of the Ethernet Print Server NPS_011364
*****
Ethernet Print Server NPS_011364 Port #1 Text Test Print
*****
Ethernet Print Server NPS_011364 Port #1 Text Test Print
*****
Ethernet Print Server: Every printer on the LAN needs one!
*****
Ethernet Print Server NPS_011364 Port #1 Text Test Print
*****
Ethernet Print Server NPS_011364 Port #1 Text Test Print
*****
Ethernet Print Server: The LAN print server
*****
Ethernet Print Server NPS_011364 Port #1 Text Test Print
*****
```

Fig. 4-24. Text Test Print Job.

## 4.9.2 B: READ ERROR LOG

The Error Log contains messages from the Print Server's error log. See **Fig. 4-25**. The <PgUp><PgDn> keys can be used to scroll through the error log.

### NOTE

Use this screen when you are experiencing a problem. Technical Support will use this screen to help you diagnose any problems. This screen is not intended for inexperienced users.

Error Log in Ethernet Print Server unit NPS_991354				
Module Name	Error #	Description	Line1/4	*** top of list ***
NUL_PS	6	prt <0>: Unable to login to print server [NPS_990011]		
NUL_PS	2	Printer [0]: Unable to attach to file server [DPI_CORP]		

The module where the error occurred.

The number assigned to the error message.

A description of each error message. Use this description to diagnose any error condition or problem.

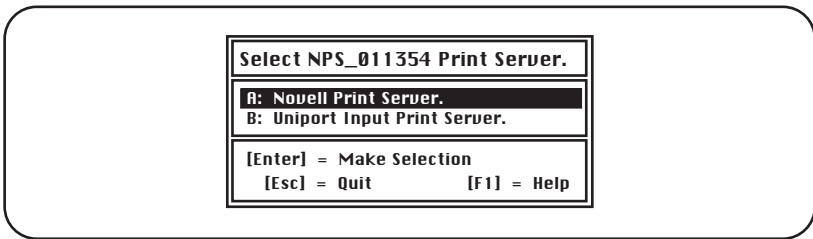
[Home] / [End] / [PgUp] / [PgDn] / [↑] / [↓] = View  
[Esc] = Quit [F1] = Help

**Fig. 4-25. Error Log.**

**4.9.3 C: REPORT PRINT SERVER STATUS***Two Status Types*

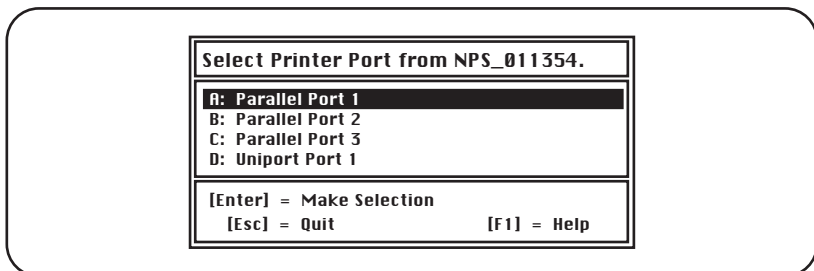
This function displays a status report for the selected print server. Choose the print server you want to see the status for, and the status screen appears.

“Novell Print Server” (which is the module that services print jobs from your Novell network) is for the parallel printer port(s) and “Uniport Input Print Server” (which is the module that routes print jobs received from the Uniport to the parallel port—when this option is used—for Print Server 4-Port models only) is for the Uniport.



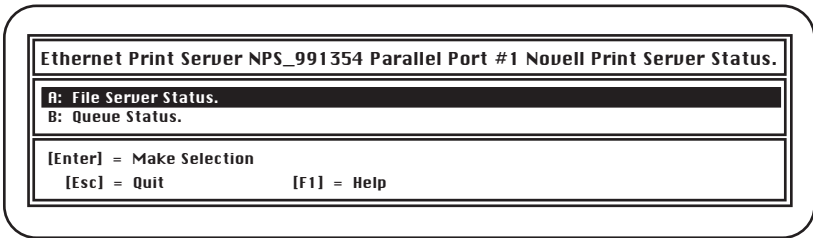
**Fig. 4-26. Report Print Server Status.**

Once you make the above selection, you then need to choose the printer port and type of status report you want to see.



**Fig. 4-27. Select Printer Port.**

Select the printer port for which you want to view status messages. You can view messages for the status of either the parallel ports or Uniport (4-Port model only). Make sure you choose the correct port. Once you make your selection, the screen shown in **Fig. 4-28** appears.



**Fig. 4-28. Status Message.**

Select the type of status message that you want. Choose A: File Server Status for the currently logged in file servers, or B: Queue Status for the queues assigned to the Print Servers. See **Fig. 4-29**.

Queue Status of Ethernet Print Server NPS_991354 Port #1			
Server Name	Queue Name	Status	Line1/2
DPI_CORP	HP_111S1_MAC	Attached	
DPI_CORP	HP_111_S1	Attached	
[Home] / [End] / [PgUp] / [PgDn] / [↑] / [↓] = View [Esc] = Quit			[F1] = Help

This is the **Queue Server** status message for the Ethernet Print Servers, depending on whether you choose Novell or Uniport Input Print Server (Uniport is on Ethernet Print Server 4-Port model only). Use the status message to correct any problem or error condition.

**Fig. 4-29 Print Server Status.**



## 4.10 Using the NetWare Utilities/Making Changes

### 4.10.1 INTRODUCTION

This section explains how to use Novell NetWare utilities to do the following with the Print Server unit:

- Attach and select a file server.
- Select or delete queues for the Print Server.
- Set up NOTIFY functions.
- Use CAPTURE and NPRINT

Use this information whenever you want to make changes to your original PCONSOLE configuration (completed as part of **Section 4.3** or **4.4**).

This chapter also explains how to make changes to the Print Server.

### 4.10.2 NOVELL NETWARE UTILITIES

You should 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.

- **PCONSOLE**—Use this to set up the Print Server and to set the print queues for the Print Server printers. PCONSOLE helps to control network printing and allows you to view information about network printing. You can do the following under PCONSOLE:
  - **File Server**—Attach to or log out of file servers, select the currently used file server, or change your username on the file server.
  - **Print Queue**—Create queues, assign operators and users, authorize print servers, handle print jobs, and view print-queue information.
  - **Print Server**—Set up, delete, or down print servers, attach to file servers, define and control printers; service queues; assign operators and users, and view information on print jobs.
- **PRINTDEF**—Use to set up a database of printer definitions. Define device drivers for network printers, plotters, and other devices. The information defined with the utility is then used by CAPTURE, NPRINT, PCONSOLE, and PRINTCON.
- **PRINTCON**—Use to define the preferred print options and set the options up as standard configurations. PRINTCON serves as a database for printing with CAPTURE, NPRINT, and PCONSOLE.

The tasks include edit print job configurations, select default print job configurations, and copy print job configurations from one user to another.

- **CAPTURE**—Use to print screen displays, save data to a network file, and print to a network printer from a non-network software application.
- **NPRINT**—Use to print files from outside an application to a network printer. The files must be DOS text files or files that are formatted by the application for a specific printer type (HP LaserJet, for example).

### 4.10.3 FILE SERVER FUNCTIONS

#### *How to Attach to a File Server*

You must be attached to a file server and have Supervisor rights to perform these PCONSOLE functions. You use PCONSOLE for most of the tasks explained in this chapter. Follow these steps:

1. Start the PCONSOLE utility. Select “Change Current File Server” from the Available Options menu. A list of file servers you are attached to appears.
2. Press <Ins> to display the available file servers.
3. Select the file server you want to use from the Other File Servers screen.
5. Type your user name in the User Name screen and then press <Enter>.

### **NOTE**

**The Password screen appears if the user name you enter has a password attached to it. Type in the password and press <Enter>.**

#### *How to Select a Current File Server*

You must select your current file server before you can perform any PCONSOLE tasks for that file server. Follow these steps:

1. Start the PCONSOLE utility. Select Change Current File Server from the Available Options menu. A list of file servers you are attached to appears.
2. Select the current file server from the File Server/User Name screen.

### 4.10.4 PRINT QUEUE FUNCTIONS

#### *How to Select Print Queues*

When you send a print job, each job is sent to a print queue. The print queue then sends the job to a specified printer. If a print server is servicing queues on multiple file servers, you must assign queues to printers on each file server. Follow the steps below to assign queues to Print Server printers.

1. Start the PCONSOLE utility. Select "Print Server Information" from the Available Options menu.
2. Select the Print Server from the Print Servers list.
3. Select "Print Server Configuration" from the Print Server Information menu.
4. Select "Queues Serviced by Printer" from the Print Server Configuration menu.
5. Select a printer from the Defined Printers list.
6. Press <Ins> at the File Server/Queue/Priority screen. The Available Queues list appears.
7. Select a queue from the Available Queues list.
8. Press <Enter> at the Priority screen to leave the priority setting at 1.

Repeat steps 6 and 7 to assign additional queues to the printer.

### **NOTE**

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

9. Press <Esc> and save all changes.

#### *How to Remove Queues*

To remove queues assigned to the Print Server, you need to do the following:

1. Start the PCONSOLE utility. Select "Print Server Information" from the Available Options menu.
2. Select the Print Server from the Print Servers list.
3. Select "Print Server Configuration" from the Print Server Information menu.

5. Select “Queues Serviced by Printer” from the Print Server Configuration menu.
5. Select a printer from the Defined Printers list.
6. Highlight a queue on the File Server/Queue/Priority screen.
7. Press <Del> to remove the queue.
8. Repeat steps 6 and 7 to delete additional queues.

### NOTE

**To simply change the priority setting for a queue, press <Enter> at the File Server/Queue/Priority screen to display the Priority setting screen. Press the <Backspace> key to delete the current setting. Type a new number from 1 to 10 and press <Enter>. 1 is the first queue serviced by the print server, and 10 is the last.**

9. Press <Esc> and save all changes.

#### 4.10.5 HOW TO SET UP NOTIFY

You can specify users or groups of users that are notified if a problem occurs with a print job sent to the Print Server printer. If the Print Server is servicing queues on multiple file servers, you must set a NOTIFY list for each file server. Follow these steps:

1. Start the PCONSOLE function. Select “Print Server Information” from the Available Options menu.
2. Select the Print Server from the Print Servers menu.
3. Select “Print Server Configuration” from the Print Server Information menu.
4. Select Notify List for Printer from the Print Server Configuration menu.
5. Select the Print Server printer from the Defined Printers menu.
6. Press <Ins> at the File Server/Notify Name/Notify Type/First/Next screen. The Notify Candidates screen appears.
7. Select the user or user group from the Notify Candidates screen. The Notify Intervals screen displays.
8. Set the First and Next intervals for notifying users about Print Server printer problems. First is how long after the problem first occurs that users should be notified, and Next specifies how long after the first notification that users should be notified.

9. Press <Esc>, and the Save Changes screen appears. Select Yes and press <Enter>. Press <Esc> until you receive the prompt to Exit PCONSOLE; then select Yes and press <Enter> to exit.

### 4.10.6 HOW TO MAKE CHANGES TO THE PRINT SERVER

Use **Table 4-1** when making changes to the Print Server unit.

**Table 4-1. Making Change to the Print Server Unit.**

When you want to...	Then you must...
move the unit and printer to another location on the same network	move the Print Server and printer to their new location and make the hardware connections as explained in <b>Chapter 3</b> . You do not need to configure the unit with PCONSOLE.
move the unit and printer from their current network to a new network	follow the hardware installation and software configuration instructions in <b>Chapter 3</b> .
attach new file servers to the Print Server unit	use the PCONSOLE utility. See <b>Appendix C</b> for instructions.
remove a file server attached to the Print Server unit	use the PCONSOLE utility. See <b>Appendix C</b> for instructions.
add new queues to the Print Server unit.	use the PCONSOLE utility. See <b>Section 4.10.4</b> .
remove queues from the Print Server unit	use the PCONSOLE utility. See <b>Section 4.10.4</b> .

**Table 4-1. Making Change to the Print Server Unit (continued).**

When you want to...	Then you must...
change printers	remove the current printer from its connection and place the new printer on the parallel port connection. Make any changes necessary for the printer configuration using PCONSOLE. NOTE: If you are changing printer types (PCL to PostScript or vice versa), use NIMANAGE to change the status report.
change the Print Server name	Use the NIMANAGE program, which is on the Utility and Diagnostics diskette. See <b>Section 4.8</b> for details.

# 5. AppleTalk Configuration and Administration Program

## 5.1 Introduction

This chapter explains how to configure and use the AppleTalk Administration Program.

- If you are configuring your AppleTalk network for the Ethernet Print Server/MIO, then first read **Section 5.3**.
- If you want to use the AppleTalk Administration Program, go to **Section 5.4**.

## 5.2 Enable the AppleTalk Protocol

Make sure the AppleTalk protocol is enabled, or you will not be able to print. Use NIMANAGE to check or to enable the AppleTalk protocol.

## 5.3 Configuration—For AppleTalk

### NOTE

Attach a PostScript printer to the Ethernet Print Server's parallel port #1 and you do not need to do anything else to configure the Print Server. Macintosh computers can print to any PostScript Ethernet Print Server printer by using Chooser to select your network and printer (Ethernet Print Server #<serial\_number> 1), where 1 stands for the Ethernet Print Server parallel port #1). Once selected, print as you normally would. If you do not attach a PostScript printer to parallel port #1 (and do not plan to connect one), you must install and use the AppleTalk Administration Program (included in your package) to configure the Ethernet Print Server for AppleTalk users.

### *How to Configure*

- If you have a PostScript printer connected to the Ethernet Print Server parallel port #1, then all you need to do is choose a printer. Go to **Choosing the Printer** in this section.
- If you have more than one printer you want to print to, then you need to set up the Ethernet Print Server for each printer. Go to **Section 5.4**.

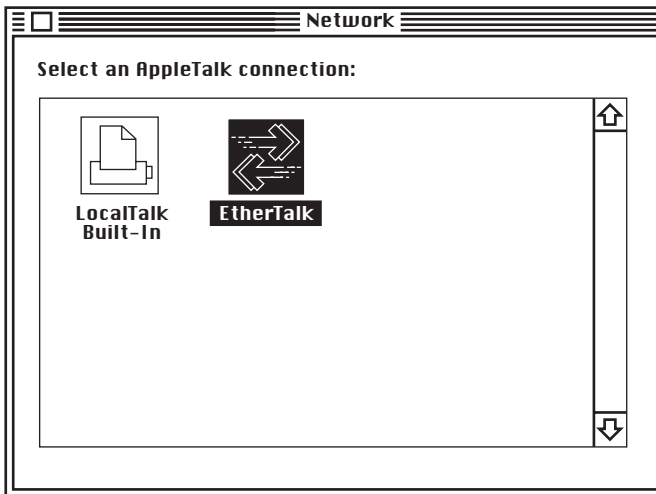
### NOTE

The AppleTalk Administration program also lets you select a Zone and assign a printer name. See Section 5.4, Using the Administration Program for information.

#### *Choosing the Printer*

Choose a printer on AppleTalk exactly the same way you choose a printer for any printer job. Do the following:

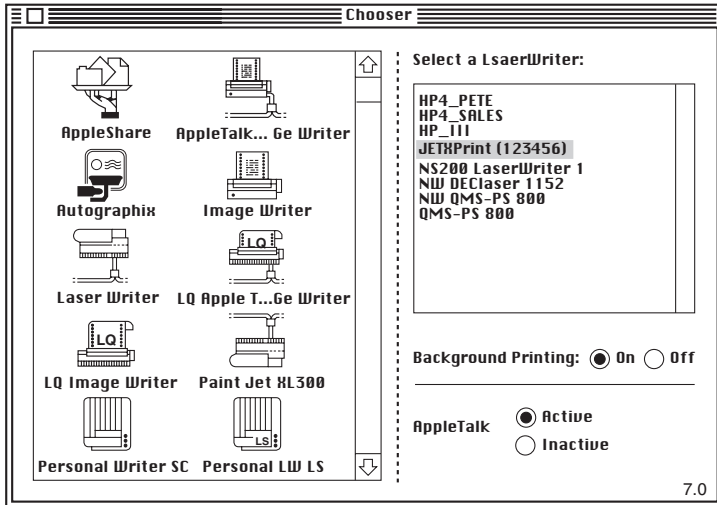
1. Pull down the menu and select Control Panel.
2. Click on Networks and choose EtherTalk (or its equivalent) as the AppleTalk connection. See **Fig. 5-1**.



**Fig. 5-1. Select AppleTalk Connection.**



3. Go back to the menu and select Chooser.
4. Select LaserWriter from the display panel on the left (see **Fig. 5-2**).



**Fig. 5-2. Chooser.**

5. Choose Print Server #123456 1 from the list.

## NOTE

If you want to use a printer other than the one attached to parallel port #1, simply choose the printer name that identifies the other printer you want to use.

## 5.4 Using the AppleTalk Administration Program

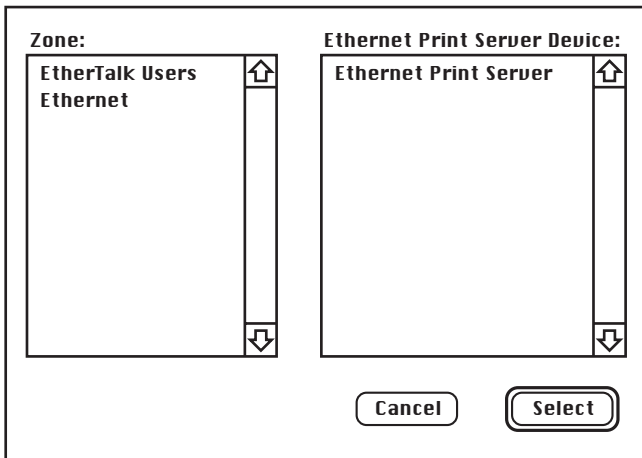
### WHEN TO USE AND HOW TO INITIATE

The Administration program is used for three purposes:

- To configure the Ethernet Print Server when you do not have a PostScript printer attached to parallel port #1, or when you have PostScript printers attached to more than one parallel port and/or the Uniport.
- To change the network zone and/or change printer names for the Ethernet Print Server printer.
- To help technical support diagnose problems. Functions included are: view the configuration, error log, and printer setup.

To access the Administration program, do the following:

1. Copy the files from the program's diskette (supplied with the Ethernet Print Server) to a folder. For example, place the program in a folder called Utility.
2. Double-click on the Administration program icon when it appears on the desktop. The Zone and Ethernet Print Server Device Dialog menu appears as shown below.



**Fig. 5-3. Choose the Zone and the Ethernet Print Server/MIO Device.**

If your network has no zones, choose only from the Ethernet Print Server Device field. No Zone field appears.

3. Select the Zone that has the Ethernet Print Server device you want to administer, and the available print server devices on that Zone appear in the Ethernet Print Server Device field.
4. Select the Ethernet Print Server device. “LAN Print Server” appears in the menu bar at the top of your screen. See the menu-bar example below.



**Fig. 5-4. Menu Bar.**

### *How to Configure Ethernet Print Server*

Use Printer Setup to configure your Ethernet Print Server for PostScript printers.

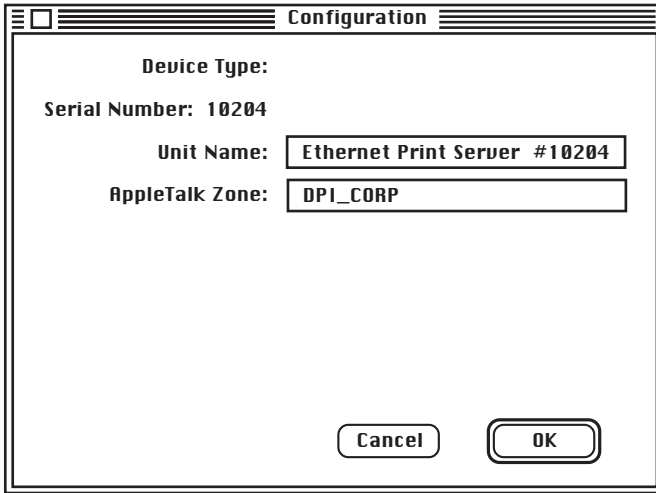
Each menu item is explained on the pages that follow. Reset and Serial Port options are unavailable.

#### *Reset*

Reset cannot be used by the Ethernet Print Server unit. If you want to reset the Ethernet Print Server, do so through the front panel of your printer or simply by turning the printer off and on. This item is grayed out on the Ethernet Print Server menu.

#### *Configuration*

Configuration allows you to change the Ethernet Print Server device name, the AppleTalk Zone name, and view the configuration features of the Ethernet Print Server board. The Ethernet Print Server creates a default name you can change so it is more significant for you. For example, NP ACCOUNTING, etc. Be sure to power the printer off and on to accept changes made. Changes will not occur if the Ethernet Print Server is not recycled. When you choose this item on the Ethernet Print Server menu, the screen in **Fig. 5-5** appears.

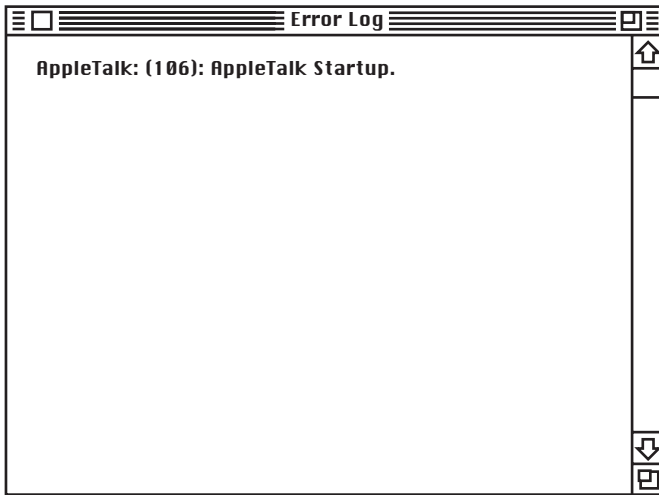


**Fig. 5-5. Configuration Screen.**

### *Error Log*

The Error Log is used to view the log of errors that the Ethernet Print Server board has registered. This screen can display normal operational diagnostics as well as errors. Technical Support uses this screen if your Ethernet Print Server encounters problems.

When you select Error Log on the Ethernet Print Server menu, an error-log screen appears. **Figure 5-6** is an example of an error log.



**Fig. 5-6. Error Log.**

You can print the Error Log contents 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 cut, copy, and paste some or all of the log file contents.

### *Printer Setup*

Printer Setup is used to configure the Ethernet Print Server when a PostScript printer is configured. Printers without PostScript cannot be used by AppleTalk users.

After you make your choices, be sure that you power the printer off and on to accept the selections made. Changes will not occur if the Ethernet Print Server is not recycled.

When you choose this item on the Ethernet Print Server menu, the following screen appears:

Port number	Printer Name	PostScript	
		Yes	No
1	Ethernet Print Server #123456 1	<input checked="" type="radio"/>	<input type="radio"/>
2	This Port Not Available	<input type="radio"/>	<input checked="" type="radio"/>
3	This Port Not Available	<input type="radio"/>	<input checked="" type="radio"/>
Uniport	This Port Not Available	<input type="radio"/>	<input checked="" type="radio"/>

**Port Number identifies the Ethernet Print Server port. Only port 1 (MIO) is usable.**

**PostScript identifies whether the printer connected to the port is PostScript or not. If the printer is PostScript, YES is chosen. Only PostScript printers will appear in Chooser. Non-PostScript printers cannot be used by AppleTalk users.**

**Printer Name is the name assigned to the Ethernet Print Server printer. If there is no entry or if you want to change the name, then click on the box and type in the printer name.**

**The Ethernet Print Server attached printer will appear as shown above. You can change the name if you want to. The name shown above contains the Ethernet Print Server serial number.**

**Click on OK when you are done viewing the configuration or making changes to it.**

**Fig. 5-7. Printer Setup.**

### *Protocol Setup*

Protocol Setup is used to set up the protocols on the unit when you do not have access to a Novell NetWare server or workstation and/or when TCP/IP users do not have access to a rarp server.

Ethernet Print Server users are limited to 2 protocols. Be sure to turn off protocols that you are not going to use. TCP/IP users also must enter the IP address, Subnet Mask, and Default Gateway.

### *TCP/IP Users*

If the Ethernet Print Server does not have an IP address and Subnet Mask established when you bring up this screen, the information in the IP address and Subnet Mask fields will be incorrect. You must enter the correct IP address and Subnet Mask values now. If you supply erroneous values, TCP/IP will not be enabled and you will not be alerted by an error message.

When you choose this item on the Ethernet Print Server menu, the following screen appears:

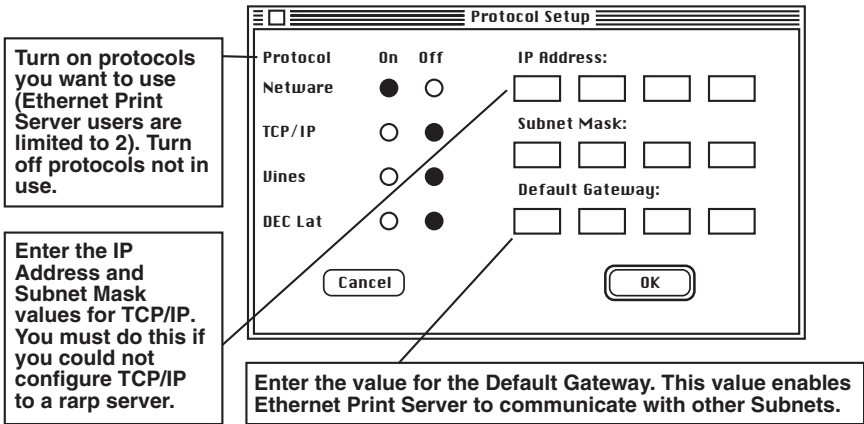


Fig. 5-8. Protocol Setup.

### NOTE

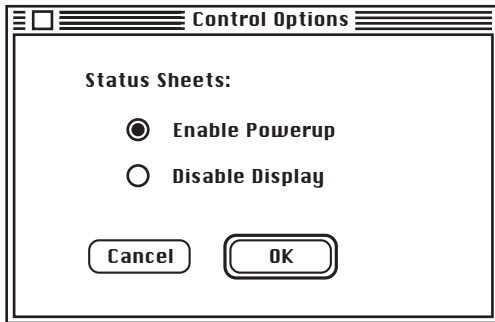
After you select your protocols, be sure that you power the printer off and on to accept the selections made. Changes will not occur if the Ethernet Print Server is not recycled.

### Options

Options is used to enable or disable displaying the Power-on Status Page when you do not have access to Novell NetWare. When enabled, the power-on status page prints after the printer attached to the Ethernet Print Server is turned on. The default is the on position.



When you choose this item on the Ethernet Print Server menu, the following screen appears:



**Fig. 5-9. Control Options.**

### *Serial Port*

The Serial Port option is used to configure the Uniport as a serial port to a printer. The settings are identical to those set by NIMANAGE under Novell. Factory-default settings are indicated in **Fig. 5-10**.

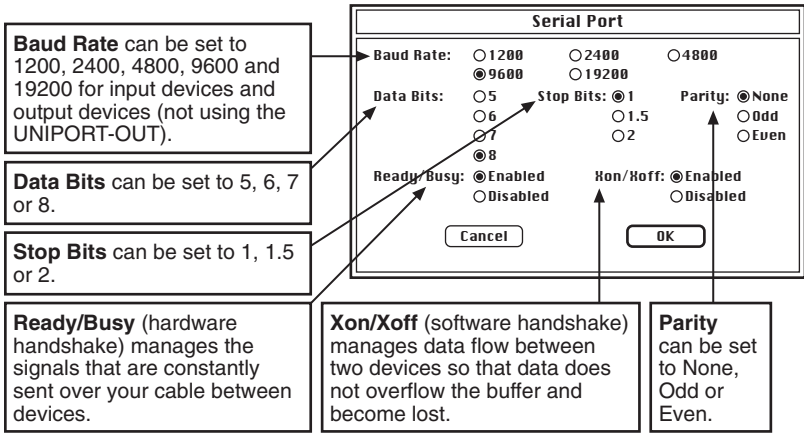


Fig. 5-10. Serial Port.

## 6. UNIX Printing through TCP/IP

### 6.1 Introduction

UNIX systems offer various ways to print data via TCP/IP, some easy, others more complicated. The Ethernet Print Server supports the same variety of printing options under different UNIX versions, all requiring simple system setup before you can print. This chapter divides UNIX printing via TCP/IP into three parts:

- Part A describes UNIX system setup, including configuring your host and Ethernet Print Server through these options: NIMANAGE, bootp or ping. In any UNIX system, you must name an IP address (subnet mask and gateway address optional).
- Part B describes alternative printing methods: lpd and host-side printing. lpd lets you print directly from the Ethernet Print Server without installing Ethernet Print Server software on your host. It is the easiest method and we recommend it highly. We also offer host-side printing for users who require broader filtering and banner options.
- Part C describes nsconfig, a TCP/IP configuration utility.

The Ethernet Print Server supports:

- All UNIX systems that support lpd
- Sun Solaris Ver. 1 and Ver. 2.x
- System V Rel. 4 (on 386 platforms)
- HP/UX Series 700 and 800
- SCO UNIX
- OSF1/ALPHA
- IBM AIX
- DEC ULTRIX 4.2 RISC

### Part A: UNIX System Setup Options

### 6.2 How to Set up

Complete the following two steps to setup your UNIX system to print through TCP/IP.

**STEP 1: CONFIGURING THE HOST**

You must add a node name and assigned IP address to the local hosts database for each host that will spool jobs directly to the Ethernet Print Server. Usually, this involves adding the Ethernet Print Server node name and IP address to the `/etc/hosts` file or configuring through Network Information Service (NIS) or Domain Name System (DNS). Call up the `/etc/hosts` file and type, for example:

```
192.9.200.200 DPIfast
```

The hosts file now has an IP address for an Ethernet Print Server unit named `DPIfast`. Go to Step 2.

**STEP 2: CONFIGURING THE ETHERNET PRINT SERVER'S IP ADDRESS**

There are several ways to give the Ethernet Print Server its IP address. If you have a Novell server on this network, you can configure the IP and gateway addresses, and the subnet mask, through the `NIMANAGE` for Windows utility. See **Chapter 4** for details. If you do not have a Novell server, there are other TCP/IP configuration options:

- `bootp`
- `ping`

**CAUTION**

**You must enable TCP/IP with `NIMANAGE` before configuring the Print Server. You must first run `NIMANAGE` to activate TCP/IP (and disable other protocols) on the Ethernet Print Server. Otherwise, TCP/IP will not work.**

*Configuring the IP Address through `bootp`*

The `bootp` (Internet Boot Protocol) daemon is a native TCP/IP option for configuring the IP address of a diskless network device. To run the `bootp` daemon, first edit the `/etc/bootptab` file to include parameters for the Ethernet Print Server. To configure the Ethernet Print Server's IP address for a SUN/BSD system, take the following steps. For other systems, the sequence of steps varies. See your UNIX manual.

1. Edit the `/etc/bootptab` file. For example:

```
lpd:\
:ht=ether:\
:ha=0040AF03AF6E:\
:lp=192.9.200.10:\
:sm=255.0.0.0:\
:gw=192.0.200.219:
```

In the example above, `:ha` is the Ethernet address, `:ip` is the IP address, `:sm` is the subnet mask, and `:gw` is the gateway address.

2. Invoke the bootp daemon by typing:

```
bootpd -s
```

### NOTE

**Once you have created an IP address (and you are running TCP/IP only), using bootp or nsconfig is the only way to change the IP address.**

You are finished configuring the Ethernet Print Server's IP address and other parameters. Skip to **Section 6.3, Printing with lpd**. If you prefer host-side printing, go to **Section 6.4, Installing TCP/IP for Ethernet Print Server if Not Running lpd**.

#### *Configuring the IP Address with ping*

You can use ping to give the Ethernet Print Server its IP address. To do so, you must add an entry to the arp (Address Resolution Protocol) cache to let the host map the IP address to the Ethernet address (printed on the bottom of the Ethernet Print Server unit). The arp command is:

```
arp -s 192.9.200.200  
00:40:af:03:ae:20
```

Now connect the Ethernet Print Server to its Ethernet drop and ping it either by name or by its IP address. For example, type:

```
ping dpifast
```

or

```
ping 192.9.200.200
```

The Ethernet Print Server should read its IP address from the ping packets. The ping command will return, "no answer from dpifast." When the unit has read its IP address, it will reset. Wait a few minutes and try to ping the Ethernet Print Server again. Ping should respond with a confirmation message.

### NOTE

**Once you have created an IP address (and you are running TCP/IP only), using bootp or nsconfig are the only ways to change the IP address—ping cannot be used to do this.**

Configuration is done, go to the next page or, for host-side printing, see **Section 6.4, Installing TCP/IP for Ethernet Print Server if not Running lpd**.

## Part B: lpd and Host-side Printing Options

### 6.3 Printing with lpd

lpd is our implementation of the standard UNIX line printer daemon that lets you print across a TCP/IP network without installing software on your host—with all filtering and banners done by the Ethernet Print Server. Remote printing uses the same commands (lpr, lpq, lpc) as local printing.

The process begins when lpd finds a printer on a remote system by looking at the remote (rm) entry in the /etc/printcap file for that printer.

lpd handles a print job for a remote printer by opening a connection with the lpd process on the remote system and sending the data file (followed by the control file containing control information for this job) to the remote system. lpd then filters the data and prints the job according to information contained in the control file and its own printcap file.

lpd recognizes the format of a certain data type and filters the data, if possible, so it can be printed on the type of printer you specify. You can instruct lpd what type of printer is attached to the Ethernet Print Server port one of two ways. First, you can run the nsconfig utility from a UNIX host. Second, you can accept the default port settings (PCL on ports 1 and 2, and PostScript on ports 3 and 4).

You also have the option to configure the port for both PCL and PostScript data. This feature is useful if you have an emulation-sensing printer that prints both data types.

#### *Intelligent Queue*

lpd provides an intelligent queue (IQ) feature that can route an incoming job to an idle printer. IQ provides load balancing by eliminating the chance that a job will have to wait at one port when another is available.

#### *When to Use IQ*

For example, if you have four PCL printers in a printer room attached to an Ethernet Print Server, you should define on local printer and specify IQPORT as the remote printer name. Performance is improved because multiple jobs do not queue up waiting for a printer while another sits idle.

If a printer runs out of paper or requires service, only the job currently being printed is delayed. Incoming jobs are automatically routed to an open printer. IQ simplifies setup even more by stipulating that one logical printer be used to filter and print automatically all types of jobs. And you need only one short printcap entry per Ethernet Print Server.

IQ provides automatic switching for jobs with different formats. For example, if you define one IQPORT entry and you have a PostScript printer and 3 PCL printers, IQ will automatically perform emulation sensing and route jobs to an appropriate idle printer.

But, if the PostScript printer runs out of paper, jobs could queue up, eventually seizing all available connections and freezing PCL jobs out until the PostScript printer is brought back on line. In such a situation, it would be better to define an IQPORT printer for the PCL jobs and a PORTx printer for the PostScript printer.

### *When Not to Use IQ*

If you have printers in different areas, it is best to name one printer per port. When printers are scattered, using IQ would only confuse users since they wouldn't know where their jobs were going.

### *Data Formats*

lpd maintains a list of data formats supported by the printer attached to each port. When data is received from a remote lpd, the unit senses whether the data is ASCII, PCL, PostScript, or Other.

If the data is destined for a specific port (printer name PORTx), and there is a filter that can convert the data to a format supported by that port (or if no filter is needed), then the job will be printed. If no filter can be found, the job is pulled from the network and discarded.

Port configurations can be changed from their default settings by using nsconfig.

Currently supported filters can provide CR/LF expansion, which allows ASCII files to be printed by a PCL printer, and ASCII-to-PostScript conversion. So a port that supports PostScript or PCL can also print ASCII files.

## CAUTION

**lpd does not support queue status.**

To implement lpd on BSD systems, see the next section. For AIX remote printing, go to **Section 6.11**. For HP/UX remote printing, go to **Section 6.8**.

### *Setting Up a BSD Remote Printer to Use lpd*

Set up a remote printer on the host that sends jobs to the Ethernet Print Server using lpd. You will add an entry to the /etc/printcap file on your host for each printer you use. The steps are described below.

1. Open the `etc/printcap` file. Make an entry naming the Ethernet Print Server as the remote host and a particular port as the remote printer name: `PORT1`. Choosing `PORT1` sends jobs queued on a local host to a specific Ethernet Print Server port.

A typical `printcap` entry is shown below.

```
<printer_name>|DPI printer:\
:lp=\
:rm=<remote_host>:\
:rp=PORT1:\
:sd=/usr/spool/lpd/<printer_
name>:
```

This entry will send a job spooled to the printer you designate (`printer_name`) to be printed at port 1 of the Ethernet Print Server you designate.

2. Create the spooling directory. For example, type:

```
mkdir /usr/spool/lpd/<printer_
name>
```

3. To print via the spooler, use the `lpr` command. Type:

```
lpr -P <printer_name> <file_name>
```

Installation and testing is done. You are ready to print.

#### *Setting Up an AIX Remote Printer to Use lpd*

Set up a remote printer on the host that sends jobs to the Ethernet Print Server using `lpd`. To do this:

1. At the prompt, type: `#smit spooler <cr>`
2. When a window appears, select “Manage Remote Printers.”
3. When a menu appears, select “Client Services.”
4. Another menu appears. Select “Remote Printer Queues.”
5. Another menu appears. Select “Add a Remote Queue.”
6. When a window appears, change the values shown to configure your Ethernet Print Server. The values displayed are default values. You must replace short and long form filter values with the values shown in **Table 6-1**.



**Table 6-1. Configuring Your Ethernet Print Server.**

Requested Information	Example	Description of Inputted Data
Name of queue to add	print 1	Name of local printer queue
Destination Host	PrintFast	IP hostname
Short Form Filter	/usr/lpd/bsdshort	Required value
Long Form Filter	/usr/lpd/bsdlong	Required value
Name of remote printer queue	PORT1-PORT4 or IQPORT	Port on Ethernet Print Server
Name of device to add	print1	Name of local queue

7. After you have supplied all values, press <Enter>. You are now prepared to print.

*Setting Up an HP/UX Remote Printer to Use lpd*

Set up a remote printer on the host that sends jobs to the Ethernet Print Server using lpd. To do this:

1. At the prompt, type: #sam <cr>
2. When a window appears, select "Printer/Plotter Manager."
3. When the menu appears, select "List printer and plotters."
4. When a list appears, select Actions in the title bar.
5. From the pull-down menu, select "Add Remote Printer."
6. When a window appears, add values to configure the "Ethernet Print Server."
7. At the bottom of the screen, select "Remote Printer is on BSD system" from the three choices available.

**Table 6-2.**

Requested Information	Example	Description of Inputted Data
Printer name	<print queue name>	add print queue name here
Remote System Name	<IP hostname>	add hostname
Remote Printer Name	<PORT1-PORT4 or IQPORT>	add lpd queue name

8. Click on the OK button.
9. Ping the unit to test communications. Type:  
ping <your IP address>
10. Ping should confirm your IP address with the message:  
<your IP address> is alive
11. If the connection is confirmed, you can print.

*Setting Up a DEC ULTRIX 4.3 RISC or OSF1/ALPHA Remote Printer to use lpd*

Set up a remote printer on the host that sends jobs to the Ethernet Print Server using lpd. To do this, type:

1. At the prompt, type: lprsetup
2. Select add and press return.
3. Enter a name for your printer and press return.
4. You are asked if you want more information on specific printer types. Press return.
5. A list of printers supported by ULTRIX appears. Type “remote” and press return.
6. Enter a printer synonym (alias) and press return.
7. Designate a spooler directory and press return or accept the default spooler directory displayed and press return.
8. Designate a remote system name and press return.
9. Designate a remote system printer name. Press return. Type, for example: “PORT1”
10. You are asked to enter the name of a printcap symbol from a displayed list. Type Q and press return.
11. Your configuration is displayed. You are asked whether these values are final. Type Y or N and press return. An example is shown below.

Printer #7		
Symbol	type	value
lp	STR	
rm	STR	netprint_host
rp	STR	PORT1
sd	STR	/usr/spool/lpd7

**Fig. 6-1. Printer Example.**

In the example above, lp is the line printer, rm is the remote host, rp is the remote printer, and sd is the spooler directory.

12. You are asked to add comments to the printcap file. For example, you can type the following and press return:

larry's printer down the hall

13. Select exit to save your configuration and press return.  
You are now prepared to print.

### *Setting Up a SCO UNIX Remote Printer to Use lpd*

Set up a remote printer on the host that sends jobs to the Ethernet Print Server using lpd. To do this:

1. At the prompt, type: `mkdev rlp`
2. You will now be asked a series of questions. Do you want to install or remove a remote printer? Type Y.
3. Do you want to change printer description file `/etc/printcap`? Type Y.
4. Write a printer name. For example, type: `HPlaser1`
5. Is `HPlaser1` a remote printer or a local printer? Type R.
6. Enter a name for the remote host that `HPlaser1` is attached to. For example, type: `Ethernet Print Server`.
7. Confirm that you want to attach `HPlaser1` to the Ethernet Print Server. Type Y.
8. Confirm the preceding connection as your system default. Type Y.
9. You are returned to the beginning of the setup to enter another printer name or quit. Type Q.

10. Do you want to start the remote daemon now? Type Y.
11. Using a line editor of your choice, edit the `/etc/printcap` file by changing the `:rp=` entry to reflect the name of the port you are connected to. For example, type: "PORT1." A sample printcap file is shown below:

```
printer1:\
:lp=:rm=NETPrint:rp=PORT1:sd=/usr/spool/lpd/printer1:
```

`lp=` is used to specify the device name for a local printer; this field must be empty. `rm=` specifies the remote machine name or network name of the print server. `rp=` is the remote printer name or the name of the print server. `sd=` is the name of the spool directory on the client.

## 6.4 Installing TCP/IP for the Ethernet Print Server if Not Running lpd

### *Using the Install Script*

This section describes how to quickly and easily install TCP/IP for the Ethernet Print Server on your ULTRIX 4.3 RISC, System V Rel. 4, Solaris (Ver. 1.x, 2.x), SCO UNIX, OSF1/ALPHA, IBM AIX, or HP/UX operating system.

To install TCP/IP:

1. Log in as superuser onto a UNIX system, which will spool directly to the Ethernet Print Server.
2. Load the Ethernet Print Server diskette in a host drive.
3. Go to (or create) the directory in which you want to install TCP/IP. For example, type:

```
mkdir/usr/my_install
cd/usr/my_install
```

4. Use the `tar` command to load the software from the diskette. Choose your UNIX version example from the following list:
  - For UNIX version BSD/ULTRIX/AIX, an example is "`tar -xvf/dev/rfd0`"
  - For UNIX version System V, an example is "`tar -xvf /dev/rdsk/f13ht`"

### NOTE

The device name varies depending on the type of computer you use and its peripheral designations. The first BSD floppy device is usually called `rfd0`.

After performing the tar, the system will display a list of files copied via the tar for BSD/ULTRIX users.

5. Run the installation script. For example, type:

```
tcpinst
```

The script automatically downloads the correct utilities for your particular system and prompts you for information as needed. See the choices below, read the introductory section on BSD, System V or AIX system printing, and continue installation.

## 6.5 Introduction to BSD Printing

A BSD system printer is configured through the `/etc/printcap` (printer capability) file that contains a full description of the printer including: printer name, device name, spooling directory, input/output filters. To add a new printer, you must add an entry to the `printcap` file.

Printing on a BSD system is controlled by the `lpr` command along with the line printer daemon (`lpd`), which controls the spooling area for each printer. When a file is spooled for printing through `lpr`, the system creates a control file for the job along with a copy of (or link to) the file itself in the spool directory for the target printer. `lpd` is then notified that there is a job ready for that printer. `lpd` reads the control file and sends the data file(s) to the printer using the configuration information in `/etc/printcap`.

The input filter specified in the `printcap` file provides format conversions or any processing desired on the input data. For example, an input filter called `psfilter` translates ASCII data to PostScript and passes PostScript data through untouched. Example `printcap` entries are provided for each supported BSD system.

Here are a few of the most important print commands, along with some salient features. Refer to your system documentation for detailed descriptions.

### *Print Commands*

- `lpr`—The `lpr` command spools named files to the spool area for printer `printer_name` and notifies `lpd` that a job is waiting.

```
lpr -P <printer_name><file1><file2>...
```

- `lpq`—The `lpq` command reports the status of queued jobs for printer `printer_name`.

```
lpq -P <printer_name>
```

- `lprm`—The `lprm` command removes a job from the queue for printer `printer_name`. `Job_num` can be obtained from the `lpq` command.

`lprm -P <printer_name> <job_num>`

- `lpc`—The `lpc` command provided Line Printer Control functions including and exceeding the basic commands listed above. Refer to your system's documentation for more detail.

## 6.6 Installing and Printing on Ver. 1 Sol. and OSF1 Systems

Continue installation begin in **Section 6-4**.

6. What is the node name of the Ethernet Print Server unit? For example, type the following and press return:

DPIfast

7. What is the printer name for the printer attached to the Ethernet Print Server? Type a printer name and press return.

8. What type of Ethernet Print Server are you installing? Select one of the following choices:

- 1) Ethernet Print Server High Speed

- 2) Ethernet Print Server 4-Port

Type 1 or 2 and press <Return>.

9. Which port do you want your printer attached to? The screen will display a list of ports available on this Ethernet Print Server. Select one and press return.

For example, type 1 and pres return.

10. Your screen will now display the information you provided the install script. For example:

Type of the Ethernet Print Server: Ethernet Print Server

Node name of the Ethernet Print Server: DPIfast

Printer name to be used by this printer: <printer\_name>

The printer is attached on: port 1

You are asked to accept this configuration. Type “yes” or “no” and press return.

11. Is this printer PostScript? Type “yes” or “no.” Pres <Return>.
12. The script creates a printcap entry for the printer just configured. The screen displays the entry and asks if you want the script to append it to your /etc/printcap file. See the next page to perform manual edits.

### NOTE

**In your /etc/printcap file, be sure not to change the name of the device given the Ethernet Print Server in Step 7. You must reference the same lp: entry you wrote on the lp command line of the printcap file. For example:**

```
<printer_name> |Ethernet Print Server printer:\  
:lp=/dev/dpi/<printer_name>\  
:if=/sur/dpi/infilter\  
:sd=/usr/spool/<printer_name>:
```

### NOTE

**All printcap entries must be prefaced with a tab except for the entry on the first line.**

13. The script creates a spool directory in /usr/spool and starts the daemon for the newly configured printer. It also displays the path used if you ever need to restart the daemon. See example below.

```
/usr/dpi/dpi_print/dev/dpi/<printer_name> DPFast 10001 &
```

The example reflects names you provide the script.

14. Installation for the system is done. You are not prompted to configure any more printers. Type “yes” or “no” and press return. We also suggest you ping the Ethernet Print Server to test communications.

### *PostScript Printing*

When you configure a printer for the Ethernet Print Server, the TCP/IP installation script can create an entry in the /etc/printcap file for your printer.

If you answered no to Step 10, the install script uses an input filter (infilter) that supplies CR/LF translation to print ASCII files on a PCL printer. If you answered yes, your printcap file will reference pfilter (described below). Proprietary and public domain filters are available for broader filtering capabilities.

An input filter called pfilter provides a simple ASCII-to-PostScript conversion. Normal PostScript format files will not be affected.

The output filter `psbanner` prints PostScript banners.

If you wish to use these filters, you must change `infilter` and `outfilter` entries in the `/etc/printcap` file. A sample `printcap` entry that uses these filters is shown below:

```
<printer_name>|Ethernet Print Server printer:\
:lp=/dev/dpi/<printer_name>:\
:if=/usr/dpi/psfilter:\
:of=/usr/dpi/psbanner:\
:sd=/usr/spool/<printer_name>:
```

Continue the installation begun in **Section 6.4** by following the steps below:

6. What is the node name of the Ethernet Print Server unit? Type the node name and press return.
7. What is the printer name for this Ethernet Print Server-linked printer? Type a printer name and press return.
8. What type of Ethernet Print Server are you installing? Select one from the following choices:

1) Ethernet Print Server High Speed

2) Ethernet Print Server 4-Port

Type 1 or 2 and press <Return>.

9. Which port do you want your printer attached to? The screen displays a list of ports available on this Ethernet Print Server. Select one and press <Return>.

For example, type 1 and press <Return>.

10. Your screen will now display the information you provided the install script. For example:

Type of Ethernet Print Server: Ethernet Print Server 4-Port

Node name of the Ethernet Print Server: DPIfast

Printer name to be used by this printer: <printer\_name>

The printer is attached on: port 1

You are asked to accept this configuration. Type “yes” or “no” and press <Return>.

11. Is this printer PostScript? Type yes or no. Press <Return>.



12. The script creates a printcap entry for the printer just configured. The screen displays an entry and asks if you want the script to append it to your `/etc/printcap` file. The next page shows a sample printcap file.

### NOTE

**All printcap entries must begin with a tab except for the entry on the first line.**

Like all BSD systems, ULTRIX uses the `/etc/printcap` file to configure a printer. The interface to the installation script is the same for all BSD systems, however, the printcap entry is different.

If you use the printcap entry generated automatically by the installation script, this will be transparent to you.

ULTRIX uses `dpifilter`, a network-direct filter that sends standard input directly to the Ethernet Print Server. Since ULTRIX accepts pipelines and command-line arguments in the printcap input filter entry, this can be done with no loss of flexibility. The input filter for an Ethernet Print Server on ULTRIX must be piped into `dpifilter`. The arguments to `dpifilter` are the Ethernet Print Server name and port number entered during installation. The installation script generates the example shown below for a printer connected to the Ethernet Print Server unit named `DPIfast`.

### NOTE

**Any filter that works for a local ULTRIX printer can be used in place of the `infilter` program.**

```
<printer_name>|Ethernet Print Server printer:\
:lp=/dev/null:\
:if=/usr/dpi/infilter|usr/dpi/dpifilter DPIfast 10001:\
:of=/usr/dpi/outfilter:\
:sd=/usr/spool/spool/
<printer_name>:
```

### *PostScript Printing*

When you configure an Ethernet Print Server printer, the TCP/IP install script can create a printer entry in the `/etc/printcap` file. This default entry uses the input filter supplied on the install diskette. With this entry, you can print ASCII and PCL format files on PCL printers and PostScript format files without banners on PostScript printers.

Most PostScript printers will not print an ASCII file. You must convert it to PostScript format first. There are a variety of filters that can accomplish this, both proprietary and public-domain.

An input filter called `psfilter` provides a simple ASCII-to-PostScript conversion. Normal PostScript format files will not be affected. An output

filter, psbanner, will generate PostScript banners. To use these files, simply edit the printcap entry created during installation. See the sample printcap entry using these filters below:

```
<printer_name>|Ethernet Print Server printer:\
:lp=/dev/null:\
:if=/usr/dpi/psfilter|usr/dpi/\
dpifilter DPIfast 10001:\
:of=/usr/dpi/psbanner:\
:sd=/usr/spool/<printer_name>:
```

## 6.7 Introduction to System V Release 4 Printing

The lp system provides printer support on System V Rel. 4 systems. You can easily configure and use a printer from a small set of commands that will work on any SVR4 system. Some systems (HP, AIX) provide sophisticated system management tools that produce the same results. You can use these instead of lp tools when convenient.

Simply put, the lp system works by passing output data through an interface program that is usually a shell script. The interface script generates a banner page, sets up the output device (using stty), and writes the data to the printer.

By default, the system uses an interface file called “standard.” However, you can configure a printer to use a specific interface file designed for a particular type of printer. The sophistication and flexibility of the interface script plays a large role in determining the difficulty involved in adding a remote printer to an SVR4 system.

The lp system classifies both files and printers by content-type, or format. For example, if a printer is configured to support a content-type of PostScript, then PostScript files can be printed directly. However, an ASCII file must be converted before it can be printed.

The filter subsystem automatically provides format conversions—in this case, ASCII to PostScript. Use the lpfiler command to list, modify, or add filters. You can identify a file as a given content-type when it is printed by using the -t (for type) option with the lp command.

Here are a few of the most important commands, along with some salient features. Refer to your system documentation for more detailed descriptions.

### PRINT COMMANDS

lpadmin—The lpadmin command configures a printer (printer\_name) and associates it with a given device and interface program (there is no /etc/printcap file). The -i option tells lpadmin to use the interface file customized for this printer. Lpadmin uses the standard interface file if you don't use -i option. See the example below:

```
lpadmin -p <printer_name>  
-v/dev/null  
-i/usr/dpi/<interface_file>
```

accept enable—After you run the accept command, you can queue print requests for the named printer. Jobs will not print until you run the enabled command. If the lp system detects a problem, it automatically disables the printer. You must enable the printer manually when it is fixed. Check printer status via lpstat. See examples on the next page.

```
accept <printer_name>  
enable <printer_name>
```

lpstat—lpstat outputs a complete status of the entire printer system. Use the -d printer\_name option to obtain the status of a given printer. See example below:

```
lpstat -t
```

lp prints the named files on printer printer\_name. If you specify a content-type and the printer does not support that content-type, the lp system tries to find a filter that can convert the file to the correct format. If you don't specify a content-type, the printer tries to recognize the file type and convert it (if necessary) on its own. See below:

```
lp -d<printer_name>T<content-type><file1><file2>...
```

### 6.8 Installing and Printing on an HP/UX System

Continue the installation begun in **Section 6.4** by following the steps below.

6. What is the node name of the Ethernet Print Server? For example, type the following and press return:

```
DPIfast
```

7. What is the printer name for this Ethernet Print Server-linked printer? Type a printer name and press return.

8. What type of Ethernet Print Server are you installing? Select from the following choices:

- 1) Ethernet Print Server High Speed
- 2) Ethernet Print Server 4-Port

9. Which port do you want your printer attached to? The screen displays a list of ports available on this Ethernet Print Server. Select one and press return.

For example, type 1 and press return.

10. Your screen will now display the information you provided the install script. For example:

```
Type of Print Server: Ethernet Print Server
Node name of the Print Server: DPIfast
Printer name to be used by this printer: <printer_name>
The printer is attached on: port 1
```

Do you want to accept this configuration? Type “yes” or “no” and press return.

11. Is this printer PostScript? Type “yes” or “no.” Press <Return>.

12. The script starts the daemon for the newly configured printer automatically. It also displays the path used in case you ever need to restart the daemon. In the following example, the path would be:

```
/usr/dpi/dpi_print/dev/dpi/printer_name DPIfast 10001 &
```

This example reflects names supplied the script earlier.

When the installation script is complete, you must still configure the printer and make it known to the lp system.

The HP/UX lp system uses the lpadmin maintenance command to configure a printer (there is no /etc/printcap file). The specific commands to do this are:

```
lpadmin -p printer_name -v dev/dpi/printer_name
enable printer_name
accept printer_name
```

You can also use other options for the lpadmin command. See your system documentation for details. Note that the printer name must be the same as the one you entered during the Ethernet Print Server installation. HP supplies the sam program as an alternative to configure the printer.

When using sam, specify everything as if the printer were directly connected to /dev/dpi/printer\_name.

The software installed with your HP system can satisfy most of your printing needs. HP supplies ASCII-to-PostScript filters and the system will invoke them automatically if you define the content type of the printer as PostScript. The HP/UX lp system also supplies interface scripts that produce PostScript banners. Use the lpfilter command to define new filters and content types if necessary. The full power and flexibility of the lp print service is now available to you: printing across the network is completely transparent.

## 6.9 Installing and Printing on a System V (Solaris Ver. 2)/System V Rel. 4 386-based Machine

Installation and setup is exactly the same for System V Solaris and SVR4 i386-based machines. Our solution uses a network direct filter called `dpifilter`. The system invokes `dpifilter` directly from the printer interface file.

After completing steps 1-5 in **Section 6.4**, you must still configure the printer and make it known to the `lp` system. Follow the steps below.

6. Select your system. Choose one from these options:

- 1) AT&T/SVR4; 386
- 2) SCO UNIX System V
- 3) None of the above

Type 1, 2, or 3 and press <Return>.

7. You have now installed TCP/IP on the Ethernet Print Server. Copy your interface file (`/usr/dpi` is a good place to keep your copy).
8. You must edit the printer interface program this printer uses to redirect output to the Ethernet Print Server. You can then configure your printer with using `lpadmin`.

In most cases, you will use the default interface script named "standard" (usually found in the `/usr/spool/lp/admins/lp/model` directory). Sometimes you may wish to use an interface tuned to a specific printer. You must have a copy of the interface file for the port you want to initialize. For example:

```
cp/usr/spool/lp/model/standard /usr/dpi/port1_interface
```

Most Version 2 Solaris machines have a shell variable called `FILTER` that you can change to invoke `dpifilter`. A typical example is shown next.

### *FILTER*

```
FILTER="/usr/dpi/infilter|/usr/dpi/dpifilter\  
netprint_name netprint_port ${nobanner}\  
${user_name}${request_id}  
${files}"
```

You must specify the `netprint_name` and `netprint_port` for `dpifilter` to connect to the Ethernet Print Server unit. The name must be the same one that you entered in `/etc/hosts` for this Ethernet Print Server. If you connect your printer to port one, `netprint_port` must be 10001.

The remaining arguments are optional. `dpifilter` uses them to produce a high quality banner. The `lp` print service user name, request id, file names and options always pass to the interface file. There they will be available in any interface script as shell variables although they may have different names.

If you disable banners in the `lp` command, the system will set the `$(nobanner)` option to `yes`. This will suppress the banner generation.

If you don't define the `FILTER` shell variable in your interface file, you can usually modify it to pipe data to `dpifilter`. The simplest way to accomplish this is to enclose the entire script in parentheses and pipe it to `dpifilter`, using the arguments described above.

If you wish to use the banner generated by the interface file, simply omit the last four arguments. Note that these arguments are shell variables from the interface file—they may have different names. We used names from the standard interface file supplied with most Version 2 and i386 systems. If you experience difficulties, call for technical support.

### *PostScript Printing*

The `lp` print service commands installed with your system will satisfy most printing needs. They include: ASCII-to-PostScript filters that are invoked automatically if you define the content type of the printer as PostScript.

You can use the `lpfilter` command to define new filters and content types if necessary. The full power and flexibility of `lp` print service is available. Printing across the network is transparent once you have properly configured your printer.

## **6.10 Installing and Printing on an SCO UNIX System**

Installation and setup is similar for HP/UX and SCO UNIX systems. Our solution uses a network direct filter called `dpifilter`. The system invokes `dpifilter` directly from the printer interface file.

After completing steps 1-5 on page **X** and **Y**, you must still configure the printer and make it known to the `lp` system. Follow the steps below:

6. Select your system. Choose one from these options:

- 1) AT&T/SVR4; 386
- 2) SCO UNIX System V
- 3) None of the above

Type 1, 2, or 3 and press <Return>.

7. What is the node name of the Ethernet Print Server unit? For example, type the following and press return:

DPIfast

8. What is the printer name for this Ethernet Print Server-linked printer? Type a printer name and press return.

9. What type of Ethernet Print Server are you installing? Select one from the following choices:

1) Ethernet Print Server High-Speed

2) Ethernet Print Server 4-Port

10. Which port do you want your printer attached to? The screen displays a list of ports available on this Ethernet Print Server. Select one and press <Return>.

For example, type 1 and press <Return>.

11. Your screen will now display the information you provided the install script. For example:

Type of the Print Server: Ethernet Print Server

Node name of the Print Server: DPIfast

Printer name to be used by this printer: <printer\_name>

The printer is attached on: port 1

Do you want to accept this configuration? Type “yes” or “no” and press return.

12. Is the printer PostScript? Type “yes” or “no.” Press return.

13. The script starts the daemon for the newly configured printer automatically. It also displays the path used in case you ever need to restart the daemon. In the following example, the path would be:

```
/usr/dpi/dpi_print /dev/dpi/printer_name DPIfast 10001 &
```

The example reflects names supplied to the script earlier.

When the installation script is complete, you must still configure the printer and make it known to the lp system.

The SCO UNIX lp system uses the lpadmin maintenance command to configure a printer (there is no /etc/printcap file). The specific commands to do this are:

```
lpadmin -p printer_name
```

```
-v/dev/dpi/printer_name  
enable printer_name  
accept printer_name
```

You can also use other options for the `lpadmin` command. See your system documentation for details. Note that the printer name must be the same as the one you entered during the Ethernet Print Server installation. SCO supplies the `sam` program as an alternative to configure the printer.

When using `sam`, specify everything as if the printer were directly connected to `/dev/dpi/printer_name`.

### *PostScript Printing*

The software installed with your SCO system can satisfy most of your printing needs. SCO supplies ASCII-to-PostScript filters and the system will invoke them automatically if you define the content type of the printer as PostScript. The SCO UNIX `lp` system also supplies interface scripts that produce PostScript banners. Use the `lpfilter` command to define new filters and content types if necessary. The full power and flexibility of the `lp` print service is now available to you: printing across the network is completely transparent.

## **6.11 Installing and Printing on an AIX RISC System/6000**

The AIX printing subsystem is driven by the `qdaemon` program. The `qdaemon` uses configuration information stored in the `/usr/lpd/qconfig` file to manage queues and route jobs to the proper devices. This information includes entries for each virtual printer and physical device known to the system.

An AIX virtual printer is simply a high-level software view of a data stream, queue, and device that controls how a given job will be processed. A different virtual printer should be defined for each data stream that a real printer supports. For example, you would use different virtual printers for PostScript and PCL jobs, even though they are destined for the same physical printer.

Configuring an Ethernet Print Server printer on an AIX system approximates configuration of a local printer as closely as possible. The only difference is that the physical device associated with your Ethernet Print Server printer must be a named pipe used by the print daemon to route data to an Ethernet Print Server. The most straightforward way to add a printer to your system is:

- Run the installation script, providing the printer name and Ethernet Print Server information as prompted.
- Configure a virtual printer using `printer_name` as the physical device, where `printer_name` is the same name chosen for your printer during installation.



- Shut down the qdaemon using the command “stopsrc -s qdaemon” and edit /usr/lpd/config to change the special file for device printer\_name from /dev/printer\_name to /dev/dpi/printer\_name. Restart the daemon with “startsrc -s daemon.”

The installation script then will create the named pipe and Ethernet Print Server information you supplied.

Since the AIX System Management Interface Tool (SMIT) will not accept a named pipe as a printer device, the installation script also creates a null-character device in /dev/printer\_name.

### *Virtual Printer Commands*

Virtual printers can be added either through SMIT or through the mkvirprt command, entering the device name printer\_name for configuration purposes. During this process, you also select a particular printer type for the new printer, which inherits the set of predefined attributes for that printer type. In most cases, this set of attributes will be sufficient, but it can be changed either through SMIT or by using the chvirprt command. If you need more extensive changes on your printer, see the AIX RISC System/6000 documentation for assistance.

After the virtual printer has been added, there will be a stanza in /usr/lpd/qconfig for device printer\_name that looks like:

```
printer_name
file=/dev/printer_name
backend=/usr/lpd/piobe
```

Edit /usr/qconfig and change “file=/dev/printer\_name” to “file=/dev/dpi/printer\_name.” Output spooled on the virtual printer defined above will now be sent to the named pipe and routed to the Ethernet Print Server.

## **Part C: nsconfig—TCP/IP Configuration Utility**

This section describes loading and using nsconfig, a program to change parameters such as IP and gateway addresses. If you run NetWare, we recommend changing parameters using NIMANAGE. If you do not run NetWare or prefer using nsconfig, take the following steps. If you have already loaded TCP/IP (via tcpinst), skip steps 1-4.

1. Load the Ethernet Print Server diskette in a host drive.
2. Create and go to the directory in which you want to install nsconfig. For example, type

```
mkdir /usr/my_install
cd /usr/my_install
```

## NETPRINT.CONF

This file contains the configurable parameters to be used when initiating a communication with the Ethernet Print Server. This file can be altered manually; just remember to leave a tab field between the description and parameter.

Table 6-3. NETPRINT.CONF.

Description	Parameter
Internet-Address	192.9.200.200
netmask	255.0.0.0
Forwarding	N
Trailers	N
Base-Port-Number	10000
Keepalive	Y
Max-Transmission-Unit	1500
Broadcast	0
SNMP-System-Description	Ethernet Print Server Box, Spman
SNMP-System-ID	1.3.6.1.4.1.24
Ethernet	Y
Default-Router-IP	192.9.200.219
Serial-Direction	out
Serial-Baud-Rate	19200
Serial-Data-Bits	8
Serial-Parity	none
Serial-Ready/Busy	Enabled
Serial-Xon/Xoff	Enabled
Novell-Protocol	Y
Apple-Protocol	N
Banners-on/off	N
Parallel-port1-data-format	PCL, PS, Other
Parallel-port2-data-format	PS
Parallel-port3-data-format	UNUSED
serial-port-data-format	UNUSED

- Use the tar command to load the program from the diskette.  
Choose your example from the following:

- BSD/ULTRIX/AIX—tar -xvf /dev/rfd0
- System V—tar -xvf /dev/rdsk/fl3ht

- After performing the tar, run the nsconfig installation program.  
Type the following command:

```
lpdinst
```

The Ethernet Print Server lpd configuration utility is now installed.  
To use nsconfig, continue.

### NOTE

**Be sure that all edited parameters in this file reflect your desired configuration before you save it and run nsconfig.**

- Call up the netprint.conf file and make editing changes. For example, to make Port 2 handle PCL and PostScript data, your entry should read:

```
Parallel-port2-data-format PCL PS
```

### NOTE

**Parameters in the sample file are default values.**

- Save netprint.conf. Again, first be sure that all edited parameters are correct, especially your IP address.
- Run the nsconfig utility with the Ethernet Print Server's IP address or name (from the /etc/hosts file). Type, for example:

```
nsconfig 192.9.200.200
```

- Power the Ethernet Print Server off and on only if you have changed any of the lpd-specific parameters.

# 7. Troubleshooting

## 7.1 How to Use This Chapter

This chapter describes how to troubleshoot any problems you might have with the Ethernet Print Server, the printer, or any network operating system (NOS). First go to **Section 7.2**, then go to the appropriate section to troubleshoot the problem.

## 7.2 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:

1. Check the Ethernet Print Server status light to make sure there is no error condition. See **Section 7.3**.
2. Check to see if a status page has printed on your parallel printer. This page confirms the setup you have defined for your Ethernet Print Server.  
Check to see if error pages have printed on your parallel printer.
3. Use the troubleshooting software or error messages to diagnose problems for the Novell, AppleTalk, or TCP/IP protocols. Use NIMANAGE for Novell, the AppleTalk Administration Program for AppleTalk, or error messages for TCP/IP.
4. Go to **Section 7.5**. When you have determined the problem, then use one of the checklists in this chapter.

## 7.3 Status Light

The Ethernet Print Server's green LED status light can also help you determine if print jobs are getting to the Ethernet Print Server printer. **Table 7-1** gives the different conditions that the status light displays.

**Table 7-1. Status Light Conditions.**

<b>When the green LED...</b>	<b>And the Print Server is...</b>	<b>Then the Print Server...</b>
<i>Normal Operating Conditions</i>		
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 a file server to log into (for about five seconds)	is ready to receive print jobs.
is ON solid	awaiting print jobs	is functioning properly.
<i>Error Conditions</i>		
blinks rapidly	performing self-tests	detects a bad RAM. Call for technical support.
blinks rapidly 4 times and then pauses	performing self-tests	failed the Ethernet hardware self-test. Check the network.
blinks short and then long continuously	performing self-tests	did not pass the ROM checksum test. Call for technical support.
blinks slowly	awaiting print jobs	detects that one or more printers need attention. This means a printer could be off-line or a form change is needed.
blinks rapidly	awaiting print jobs	detects a serious error that prevents proper functioning.

## 7.4 Status and Error Pages

Fig. 7-1 shows the status page that is printed when the Ethernet Print Server is first powered on and after it passes its self-tests.

```

Unit Serial No: 020012                                Version 02.00
Network Address: 00:40:af:02:71:60
Novell Print Server Name: NPS_020012                 Password Defined: No
Unit IP Address: No active IP address
Port Number: 1      Port Type: Parallel
Novell Connection Information
Printer Name: Printer 0
File Server: ENGINEERING
Queue: 12_2          Priority: 1                      Attached: Yes
Queue: 12_1          Priority: 1                      Attached: Yes
Queue: 12_0          Priority: 1                      Attached: Yes
Notify: EPG          First: 30                       Repeat: 2000
Notify: SUPERVISOR  First: 30                       Repeat: 60
File Server: 55SX
Queue: 62_2          Priority: 5                      Attached: Yes
Queue: 62_1          Priority: 3                      Attached: Yes
Notify: GDF          First: 30                       Repeat: 60
Notify: SUPERVISOR  First: 30                       Repeat: 60
AppleTalk Connection Information
AppleTalk Printer Name: NP125 LaserWriter 1
TCP/IP not defined for port 0
Port Number 1      Port Type: Serial
Novell Connection Information
Printer Name: Printer 1
File Server: ENGINEERING
No Queue Attached
No Notify Defined
File Server: 55SX
No Queue attached
No Notify Defined
AppleTalk not defined for port 1
TCP Connection Information
Port Number: 10002
Host Print Server NOT defined

```

Fig. 7-1. Status Page.

Use the status page to check if the protocols you are using are defined for each Ethernet Print Server printer port. If a protocol is not defined, first make sure the protocol is enabled. Protocols are enabled and disabled in the NIMANAGE program. See **Chapter 4** for details.

### *Error Pages*

An error page prints if either one of the following occurs with the Novell NetWare protocol:

- the Ethernet Print Server is unable to log into any active file server, or
- the Ethernet Print Server is unable to communicate with any Novell file servers.

Examples of each error page are shown next.

The error page shown in **Fig. 7-2** prints when you are unable to login to any active file server.

Ethernet Print Server Serial No: 991354  
Print Server Name: NPS\_991354

Version: 1.00  
Password Defined: No

This unit was unable to login to any active file servers because of one of the following conditions:

- a) The file servers may not have been configured with a print server.
- b) The unit's print server name setting may be incorrect.
- c) The print servers configured may not have been assigned with the correct password.
- d) The unit's password setting may be incorrect.
- e) The file server does not have any available connections for the unit to attach to.

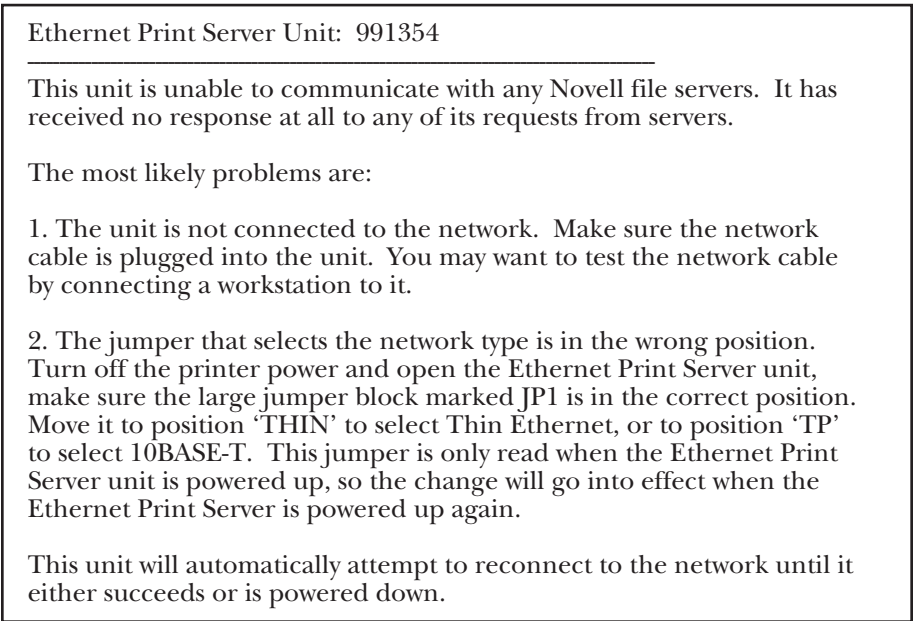
The following are solutions to resolve each condition listed above:

- a) Configure a print server using the unit's print server name setting on each active file server with PCONSOLE.
- b) Verify the unit's print server name with NIMANAGE. Change the unit's setting if not correct.
- c) Change the password of the print server configured in each active file server to the unit's setting with PCONSOLE.
- d) Verify the unit's password with NIMANAGE. Change the unit's setting if not correct.
- e) Make connections available on file servers by freeing up any unnecessary user connection on the system.

**Fig. 7-2. Error Page.**



The error page shown in **Fig. 7-3** prints when you are unable to communicate with any Novell file servers.



**Fig. 7-3. Error Page.**

## **7.5 How to Determine the Cause of a Problem**

You should check the following items in order to determine the cause of your printing problems.

- Check status page—Check the Ethernet Print Server 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 Ethernet Print Server printers.
- See the appropriate chapter to confirm that you have installed and configured the network protocol correctly for the Ethernet Print Server.
- If you added, changed, or removed any hardware on 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 Ethernet Print Server 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 Ethernet Print Server printer. If they are, check the connection for that printer on the Ethernet Print Server 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 Ethernet Print Server printers. If they are, check the printer connections first. Make sure each printer is securely fastened to the Ethernet Print Server unit. Also, if each user is running on a different network operating system, see the troubleshooting section for each NOS.

## 7.6 Troubleshooting: Printer and Network Connections

### 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.
- 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 NIMANAGE (Chapter 4) 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?
- A longer delay between PostScript print jobs is needed. This is a common problem for PostScript printers. Use NIMANAGE to set a delay between print jobs sent to your printer. See **Appendix D**.
- The handshaking set for your printer connected to the Uniport may be wrong. Use NIMANAGE to set the Uniport to the correct printer handshaking protocol. See your printer's owner's manual for details.

### *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 Uniport ports are set correctly in NIMANAGE.

For parallel ports, change the strobe size using NIMANAGE, 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.

### *Network Connections*

Check your connections from the network to the Ethernet Print Server 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 ThinNet connection uses a BNC T-connection. Make sure you have changed the jumper in the Ethernet Print Server unit to the ThinNet interface. See **Chapter 3** for details. The 10BASE-T interface is the default jumper setting.
- Make sure you have the 10BASE-T interface plugged into the RJ connector marked 10BASE-T on the Ethernet Print Server unit. The Uniport also uses an RJ connector.

## **7.7 Troubleshooting: Ethernet Print Server Unit**

Make sure you have properly configured the Ethernet Print Server 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 the NIMANAGE utility to enable the protocols that you are using with the Ethernet Print Server.
- For Novell, make sure you configured all Ethernet Print Server printers using PCONSOLE. You need to configure each printer you want to use.
- For AppleTalk, make sure the Ethernet Print Server 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 parallel port #1. This printer appears as the NETPrint #123456 1 in Chooser (unless you have changed it).
- Check the Ethernet Print Server status page to make sure your network protocol is enabled.
- Check the Ethernet Print Server 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 Uniport has a printer attached, use NIMANAGE to make sure the port is enabled for printing. Remember, Uniports can be used as input ports for minicomputers and PCs.

### 7.8 Troubleshooting: Novell Protocol

We recommend that you first use NIMANAGE's Troubleshooting utilities. See **Chapter 4: Using the NIMANAGE Utility**. If you have not resolved the problem after running NIMANAGE, then go through the checklists that start below.

#### *NetWare Checklist*

- Is the Ethernet Print Server name entered correctly? The name must be NPS\_<serial\_number>. The serial number is located on the bottom of the unit.
- Did you assign print queues to the Ethernet Print Server printers? See **Chapter 4**. We recommend that you assign the print queues to the Ethernet Print Server 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 Ethernet Print Server printers to the printer type Remote Other/Unknown in PCONSOLE? See **Chapter 4**.

### 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 Ethernet Print Server power source, plug it in, and then turn the Ethernet Print Server 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 Ethernet 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.

#### *File Server Checklist*

- Make sure the right file server is associated with the Ethernet 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 Ethernet Print Server printers.
- Run the NetWare COMCHECK utility to make sure the file server and Ethernet Print Server are communicating. You can run COMCHECK from any network workstation.

#### *Workstation Checklist*

- For all network workstations trying to access the Ethernet Print Server 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 Ethernet Print Server printer. For instance, are you using the correct print driver?
- Is the workstation connected to the print queue necessary for printing to the Ethernet Print Server printer(s)? Print a file and verify that it goes to the correct queue. See **Chapter 4**.
- Make sure the print queues assigned to the Ethernet Print Server 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.

#### *Ethernet Print Server Configuration Checklist*

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

- Use NIMANAGE to check the status of the print server. See **Chapter 4** for details. The Troubleshoot Option of the Report Print Server Status displays a report for the selected Ethernet Print Server. This report includes a status of file servers and queues assigned to an Ethernet Print Server printer along with a description of any problems.

- The Ethernet Print Server 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 Ethernet Print Server name has been entered correctly. If you changed the name in NIMANAGE, you must also change the name in PCONSOLE before you can print. Normally, the Ethernet Print Server name is entered as NPS\_<serial\_number> as part of the installation.
- You cannot use PCONSOLE version 1.0 to configure the Ethernet Print Server. Contact Novell for an upgrade.
- Make sure if the Uniport is being used as an output port that it is enabled to receive print jobs. Use NIMANAGE to check.

### *Print Server/File Server/Printer Connection Checklist*

Check the following to see if the Ethernet Print Server and selected file server is sending data to the Ethernet Print Server:

- If the Ethernet Print Server cannot log into the file server, or cannot service jobs from a file server, then:
  - the Ethernet 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 Ethernet Print Server through PCONSOLE does not match the password assigned through NIMANAGE. Use NIMANAGE to update the password stored in the Ethernet Print Server.
- Use PCONSOLE to check if the print jobs are being sent to the Ethernet Print Server 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.

### *Workstation to Ethernet Print Server Connection Checklist*

To make sure the workstation is communicating with the Ethernet Print Server, check the following:

- Print a file from the workstation and make sure the print job gets to the Ethernet Print Server 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 Ethernet Print Server 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 Ethernet Print Server can service the job. To do this, disable the other printer until you can verify the Ethernet Print Server printer setup.
- Make sure any serial-connected printers match the baud rate, flow, word size, parity, and stop bits of the Ethernet Print Server unit.

### *Uniport Checklist*

If you print to a Uniport printer or cannot print from a Uniport input device to an Ethernet Print Server parallel printer, check the following:

- For Uniport printers, check that the
  - printer is assigned to Printer 3 in PCONSOLE.
  - Uniport is not enabled as an input port. Use NIMANAGE to check.
- For Uniport input devices, check that the
  - Uniport is enabled as an input port. Use NIMANAGE to enable the Uniport as an input.
  - network is not sending print jobs to an Ethernet Print Server printer. A print job from a Uniport input device will not print until the network has finished sending print jobs.
  - Uniport does not have a print queue assigned to it in PCONSOLE.

### *Ethernet Print Server Loses its Novell File Server Connection*

If the Ethernet Print Server 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 Ethernet Print Server 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.



## 7.9 Troubleshooting: AppleTalk Protocol

When setting up the Ethernet Print Server 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 parallel port #1? If not, did you configure the AppleTalk protocol using the AppleTalk Administration Program? See **Chapter 5**.
- 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 Ethernet Print Server unit and correct zone? See the AppleTalk Administration Program in **Chapter 4**.

### *Printer Checklist*

You should always make sure that the printer is powered on and 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 Ethernet Print Server, then look for Print Server #991354 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 5**.
- 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 Ethernet Print Server printer.

- If background printing is enabled, select the print monitor to see if there is an error in printing.
- If you use 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?

## 7.10 Troubleshooting: TCP/IP Protocol

### *Making netprint.conf Edits*

You can edit the netprint.conf file if, for instance, you want to change the IP address or subnet mask value. Simply change these values in the parameter column of netprint/conf. To edit the file, do the following:

1. Change directory to /usr/dpi. Type the following:

```
cd /usr/dpi
```

2. Write the current IP address. For example, type:

```
/usr/dpi/nsconfig 192.9.200.010
```

3. Now change your Ethernet Print Server's IP address by editing the /etc/hosts file or through NDS or NIS to conform with the new address.

# Appendix A. Cable Specifications

## A.1 Introduction

This appendix gives detailed information on the following:

- Uniport cables and adapters
- Parallel cables
- 10BASE-T cabling

## A.2 Uniport Cables and Plugs

Uniports can be used a standard serial connections or as parallel connections using the special Uniport adapter (LT310A).

- If you are going to use the Uniport as a standard serial connection for either an input (such as PCs or minicomputers), or output (such as printers or plotters) device, see **Section A.3**—you will need special adapters. There are two types: DB25 to RJ-45 and DB9 to RJ-45. It plugs into the Ethernet Print Server's Uniport.
- If you are going to use the Uniport as a parallel output (to a printer), then you need a special adapter. See **Table A-1** for a description of the Uniport adapters. For cables and plugs for the Uniport connection (LT310A), see **Section A.3**.

## A.3 Serial Cables and Plugs (for the Uniport Connection)

Use **Table A-1** for help when ordering serial cables and plugs. It lists the serial cable types for the devices that you can connect to the Uniport, and the plugs to use on the serial device. All serial cable must be 8-wire.

**Table A-1. Uniport Modular Adapters.**

<b>Device Type</b>	<b>Uniport Modular Adapter</b>
Most IBM® PC and compatibles	C1CB11095
IBM AT® and compatibles	C1CB11096
Most printers, including HP LaserJet and PostScript	C1CB11095
Plotters	C1CB11095
Minicomputers or hosts	C1CB11095

**NOTE**

C1CB11095 is DB25 female, and C1CB11096 is DB9 female. Both adapters listed above must be used with straight-through 8-wire modular cable, between adapter and Uniport, and are configured to connect the Uniport to DTE devices.

**A.4 Parallel Cables**

Use **Table A-2** for assistance when ordering parallel cables.

**Table A-2. Parallel Cables.**

<b>Device Type</b>	<b>Parallel Cable</b>
Most printer types	EYN600

## A.5 Serial Cable Pinning

The following pages contain information on serial pinning for straight cables using RJ-45 (or DB25) connections. DB25 connections require a DB25 adapter (UNIPORT-DB). These pinnings are based on the connector attached to the device.

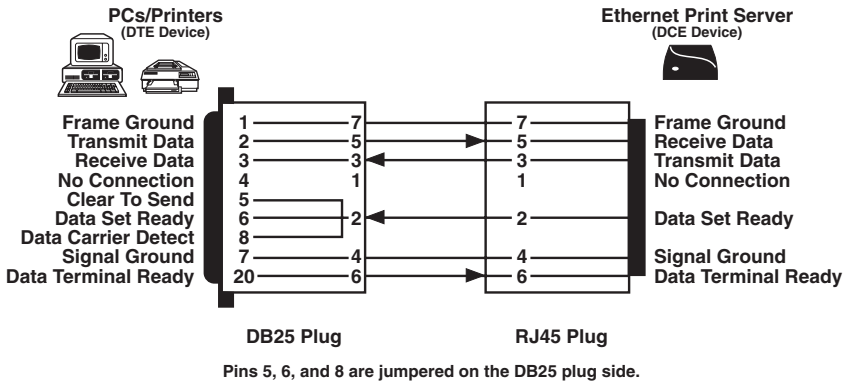


Fig. A-1. DB25 on Device to RJ-45 on Ethernet Print Server.

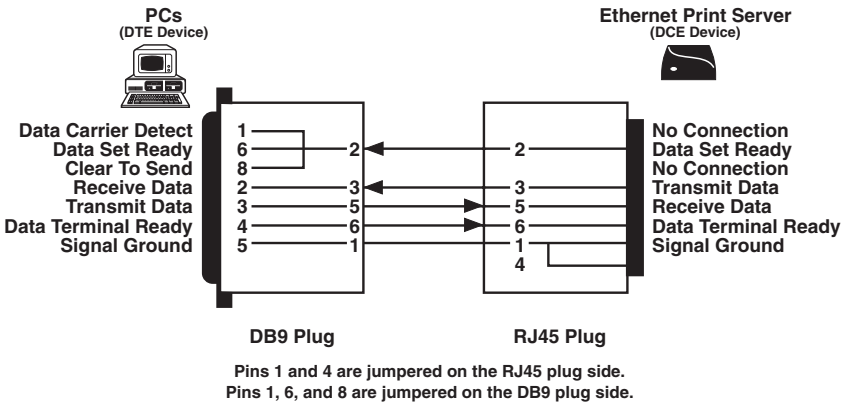


Fig. A-2. DB9 on Device to RJ-45 on Ethernet Print Server.

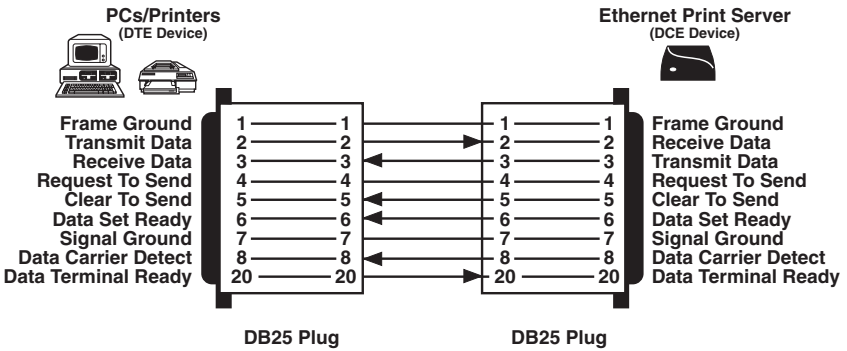


Fig. A-3. DB25 on Device to DB25 (UNIPORT-DB) on Print Server.

# ETHERNET PRINT SERVERS HIGH SPEED AND 4-PORT

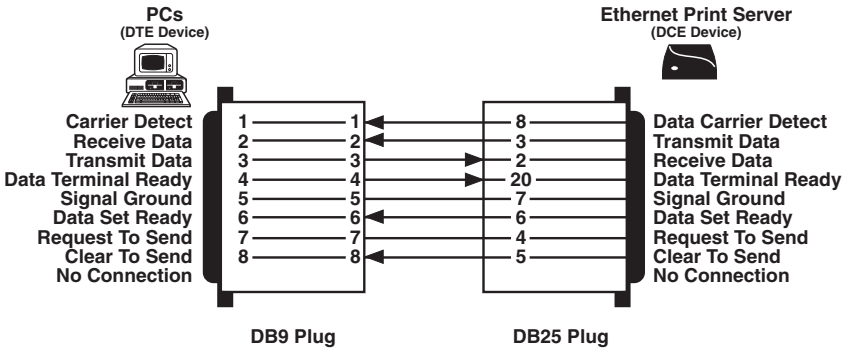


Fig. A-4. DB9 on Device to DB25 (UNIPOINT-DB) on Print Server.

**A.6 Parallel Cable Pin Signal Descriptions**

**Table A-2. Parallel Cable Pin Signals.**

<b>Pin Numbers</b>	<b>Description</b>
1	A signal that goes low for Centronics for a minimum of one microsecond, indicating valid data on each data line. It is an input when receiving data and output when sending data.
2-9	The eight data lines. For the Centronics interface, a high signal is a Binary 1 and a low signal is a Binary 0.
10	Acknowledges the input of a character. It is provided to an attached computer, but the Ethernet Print Server does not require it from an attached printer.
11	Used for hardware data flow control. When data is transmitted, the Ethernet Print Server looks at the state of this line to determine if the device is ready to receive data. When receiving data, this line is used to show that the Ethernet Print Server is ready to receive (low), or that its buffer is full (high).
15	This is an external clock used by some devices, though not very many. It provides clock output to devices that transmit it.
31	This signal goes low on reset or power-up to reset a printer to its start-up default.
12, 13, 32	Held at a constant state compatible with most devices. Many devices do not use these pins at all.



## A.7 Parallel Interface Cables for Printers and Other Devices

The pin layout for the DB25 connector is similar to the IBM PC parallel connector. It uses the following signals for communications (standard TTL levels).

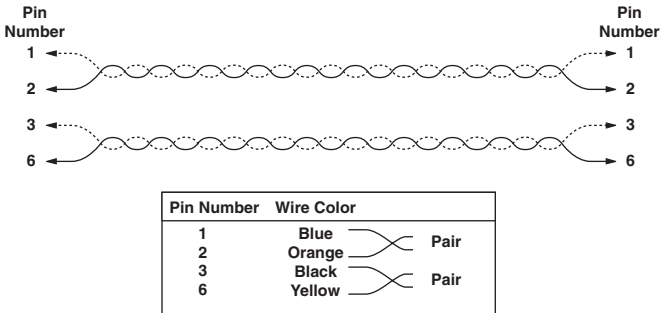
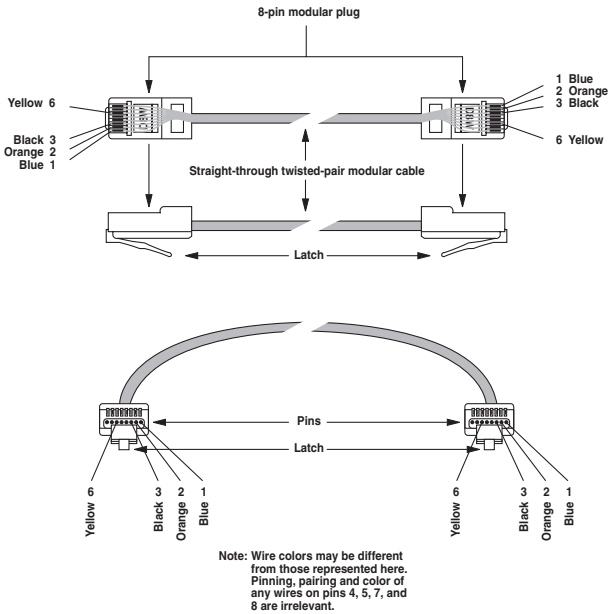
**Table A-3. Parallel Interface Signals.**

<b>DB25 Pin Number</b>	<b>Signal Name</b>
1	- Strobe
2	+ Data Bit 0
3	+ Data Bit 1
4	+ Data Bit 2
5	+ Data Bit 3
6	+ Data Bit 4
7	+ Data Bit 5
8	+ Data Bit 6
9	+ Data Bit 7
10	- Acknowledge
11	+ Busy
12	+ Paper End (Out of paper)
13	+ Select
14	- Auto Feed
15	- Error
16	- Initialize Printer
17	- Select Input
18-25	Ground

## **A.8 10BASE-T Cables**

Use the following important considerations when choosing your 10BASE-T cables to attach to the connector on the Ethernet Print Server:

- 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 **Fig. A-5** for how to make a correct twisted pair connection.



Note: Wire colors may be different from those represented here. Pinning, pairing, and color of any wires on pins 4, 5, 7, and 8 are irrelevant.

**Fig. A-5. Twisted-Pair Connections.**

## Appendix B. Glossary

**Baud Rate**—Indicates the speed in bits per second at which the port sends data to another serial port. Baud rate choices are 300, 1200, 2400, 4800, 9600 (default), or 19200.

**Cable Length**—Used to specify the length of cable between a parallel printer and the Ethernet Print Server unit. If the cable is 25 feet (7.6 m) or less, then use the short cable setting. If the cable is 25 feet to 100 feet (7.6 to 30.5 m), then use the long cable setting.

**Data Bits**—Number of bits in a serial character. It can be 7 or 8 (default).

**End of Job Message (EOJ)**—A string of characters sent to a port at the end of a print job. Typically, this is used to reset the printer to its normal (default) operating mode. For example, an EOJ message is automatically sent to the Ethernet Print Server when a data path is terminated or when a timeout occurs.

The contents of a printer's reset string vary by printer type. See your printer's Owner's Manual to determine your printer's reset command.

**Handshaking**—Handshaking, both hardware (Ready/Busy) and software (Xon/Xoff), is the method used by most devices for controlling the transmission of data.

- Handshaking for parallel devices: Ready/Busy allows data to be sent whenever the printer is not using the busy line in the cable. Ready/Busy and ACK will not allow a character to be sent to the printer unless an ACK signal is received.
- Handshaking for serial devices: Choices include:

**Ready/Busy and Xon/Xoff**—The hardware handshake (Ready/Busy) will not output data when Data Terminal Ready (pin 20) is low. It expects the attached device to stop sending when it drops Clear to Send (pin 5), Data Set Ready (pin 6), and Data Carrier Detect (pin 8). This type of protocol is especially useful for managing the signals constantly being sent between devices. This is the only protocol used for PCs. The software handshake (Xon/Xoff) will not output data when it receives a Control Q (XON). This is crucial for managing data flow between two devices, so that data does not overflow the buffer and become lost.

**Ready/Busy only**—The hardware handshake (Ready/Busy) will not output data when Data Terminal Ready (pin 20) is low. It expects the attached device to stop sending when it drops Clear to Send (pin 5), Data Set Ready (pin 6), and Data Carrier Detect (pin 8).

This type of protocol is especially useful for managing the signals constantly being sent between devices. This is the only protocol used for PCs.

**Xon/Xoff only**—The software handshake (Xon/Xoff) will not output data when it receives a Control S (XOFF). It resumes sending data when it receives a Control Q (XON). This is crucial for managing data flow between two devices, so that data does not overflow the buffer and become lost.

**None**—The output control wire remains HIGH and the input control line is ignored. Select this for cables that do not supply Data Terminal Ready (pin 20).

**Parity**—Parity is a technique used to ensure error-free data transmission between two devices. Parity involves altering the last bit (bit 8) of a data byte to determine the accuracy of the other 7 bits. Bits can either be 0 (low signal) or 1 (high signal). The parity option gives you a choice of four techniques to use. Most devices do not use a parity technique, so the default is None/Space.

**Odd**—The 8th bit is a 0 if the number of 1s in the first 7 bits equals an odd number.

**Even**—The 8th bit is a 0 if the number of 1s in the first 7 bits equals an even number.

**Mark**—The 8th bit is always a 1 (high).

**None/Space**—None specifies that the 8th bit is always a 0 (low), and Space means that the 8th bit is ignored. These two techniques are combined, since some devices do not use parity but still require a particular value for the 8th data bit. In this case, the value is 0 (low).

**Start of Job Message (SOJ)**—A string of characters sent to a port (such as a printer) as soon as a connection is made. The SOJ message is often used for printer setup, printer emulation setup, or to print a banner page identifying the source of the print job.

**Stop Bits**—Stop bits are set to 1, 1-1/2, or 2. Default is 1.

**Strobe Size**—Strobe Size is a value for a hardware signal that is sent to a printer. This value depends on the strobe value that the printer will accept and the length of cable between the Ethernet Print Server and printer. This value may need to be changed if you are having problems printing. The default is 1. If you have problems printing, change this field to a higher value. Check your printer's Owner's Manual for details.

**NOTE**

The strobe size for the printers attached to the Ethernet Print Server parallel ports 2 and 3 are grouped. So, whatever strobe size you set for parallel port 2 is the same setting for parallel port 3. The Ethernet Print Server parallel ports 2 and 3 are set in PCONSOLE as Printers 1 and 2.

# Appendix C. Assigning Multiple File Servers to a Novell Print Server

## C.1 Introduction

You can assign multiple file servers to the Ethernet Print Server using the NetWare PCONSOLE utility.

- During the initial installation, you can assign multiple file servers to the Ethernet Print Server as part of the software installation.
- If you have completed the installation, then you use PCONSOLE to assign the file servers to the Ethernet Print Server. In order for the Ethernet Print Server to service the newly assigned file servers, you need to power the Ethernet Print Server off and back on again.

## C.2 How to Assign Multiple File Servers

Use the following procedure to assign multiple file servers to the Ethernet Print Server:

1. Go to each selected file server and create an Ethernet Print Server as described in detail in **Chapter 3**. To create a print server, choose Print Server Information on the Available Options menu.
2. When the print server menu appears, press the <Ins> key to display the new print server name entry box. Type in the name of the Ethernet Print Server using the serial number printed on the label located on the bottom of the Ethernet Print Server unit. Type in the name as follows:

NPS\_<serial number>

3. Press <Enter> once you type in the Ethernet Print Server name. The Print Server Information menu appears.

Choose Print Server Configuration on that menu.

Choose Printer Configuration on the Print Server Configuration menu. A list of printers appears. Assign the Ethernet Print Server parallel printer 1 to Printer 0, parallel printer 2 to Printer 1, and parallel printer 3 to Printer 2.

After you assign each printer a number, a Printer Configuration menu appears for the printer. Under the field name TYPE, select Remote Other/Unknown as the printer type.

After you configure each printer, save your changes (when you receive the prompt) and escape back to the Print Server Configuration menu.

4. Choose Queues Serviced by Printer from the Print Server Configuration menu.

Select the appropriate printer from the list of Defined Printers. A screen (which should be blank for initial installation) appears. Press the <Ins> key to bring up a list of Available Queues for your printer.

Choose a queue and assign a priority level to the queue (from 1 to 10). Press <Enter>, and then the queue appears on the previous screen. Press <Ins> to enter additional queues.

When you finish assigning queues, escape back to the Print Server Configuration menu. If you do not want to set up NOTIFY functions, go to Step 12. If you want to set up NOTIFY functions, go to the next step.

5. Select users or user groups to be notified if a problem occurring with a print job is sent to an Ethernet Print Server printer.

If you are doing this procedure as part of your initial Ethernet Print Server installation, then you have finished.

If you are doing this procedure after you have done the initial Ethernet Print Server installation, then go to Step 6.

6. Power down the Ethernet Print Server unit and power it back on.  
This will attach the file servers you assigned to the Ethernet Print Server.

### C.3 Using Passwords When Multiple File Servers are Assigned to the Ethernet Print Server

When you assign multiple file servers to the Ethernet Print Server, you will have the same password, or no password for all servers when the Ethernet Print Server logs into the network. You set the password for the Ethernet Print Server using the PCONSOLE utility. You can also specify this password using the NIMANAGE program (see **Chapter 4**).

Whenever the Ethernet Print Server is powered on (during the initial installation and any time afterward), the unit will log into the network specifying a password for all file servers assigned to it. If it doesn't find a password, it will then specify no password to log in.



# Appendix D. Placing Delays Between Print Jobs

## D.1 Introduction

This appendix explains how to send nulls or place time delays in the start-of-job or end-of-job messages for printers serviced by the Ethernet Print Server.

### NOTE

**We recommend using Start- and End-of-Job messages with Novell *only*. We do *not* support using Start and End-of-Job messages with TCP/IP or AppleTalk protocols. If all protocols are enabled, we do *not* recommend using Start- and End-of-Job messages.**

#### D.1.1 PRINTERS THAT HAVE MULTIPLE PORTS

Some printers, like the Dataproducts® LZR 1560, can have more than one port active. These printers scan different ports looking for a print job from another port once the current job is finished. The Ethernet Print Server can have multiple jobs queued for the printer. These jobs normally print one after another without any delay between each job.

If your printer has a LocalTalk port connected to it, you may want to have a short delay between each print job. This delay gives the printer a chance to service a print job from a different port (e.g. LocalTalk port). Otherwise, the printer may first print all jobs from the Ethernet Print Server connection before servicing jobs from a different port.

#### D.1.2 PRINTERS THAT HAVE MULTI-EMULATION

Some printers require a pause or delay between print jobs when switching emulations (e.g. PostScript and PCL). For example, sometimes when a PCL job follows a PostScript job, the PostScript job may not print because there are no delays between the two emulation types. To solve this problem, insert a time delay in the start-of or end-of-job message (in this case @WAITxx where xx is the number of seconds).

#### D.1.3 PRINTING RASTER GRAPHICS

If you are printing raster graphics and need to cancel the print job mid-stream, the printer may be left in the middle of processing a line of raster graphics. If this occurs, the next characters that the printer receives will be mistaken for the remainder of the raster graphics command from the previous job. This means the second print job will not print correctly.

To solve this problem, you can set up the end-of-job message to send one thousand null characters between print-job boundaries. These null characters will finish the canceled raster graphics command so that the next print job will print correctly. Insert the nulls in the end-of-job message (in this case @NULLxx, where xx is the number of nulls times one thousand).

### D.2 How to Place Delays

You can place delays in the start-of-job or end-of-job message using the Ethernet Print Server utilities.

You can have a short delay or send nulls from the start-of-job or end-of-job message by adding the @WAITXX or @NULLXX command to the messages. xx is replaced by a two-digit number.

The @WAIT places delays in seconds between print jobs, while @NULL sends 2-digit thousands of nulls. The xx is any two-digit number from 01 to 99 (1 through 9 must be preceded by 0). For @WAIT, the number stands for seconds, while for @NULL, the value is multiplied by 1,000 for the number of null characters to be sent.

### D.3 Examples

For example, to cause a ten-second delay, add @WAIT10 as the last characters for the end-of-job message for the Ethernet Print Server printer. You can have a wait state of up to 99 seconds.

To send 1,000 nulls, add @NULL01 followed by the printer reset command as the last characters for the end-of-job message for the Ethernet Print Server printer. This will ensure that print jobs end cleanly, even when canceled.



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