



*LineJet™*  
Printers

**LineJet™ Print Server  
User's Guide**

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# LineJet™ Printers

**LineJet™ Print Server  
User's Guide**

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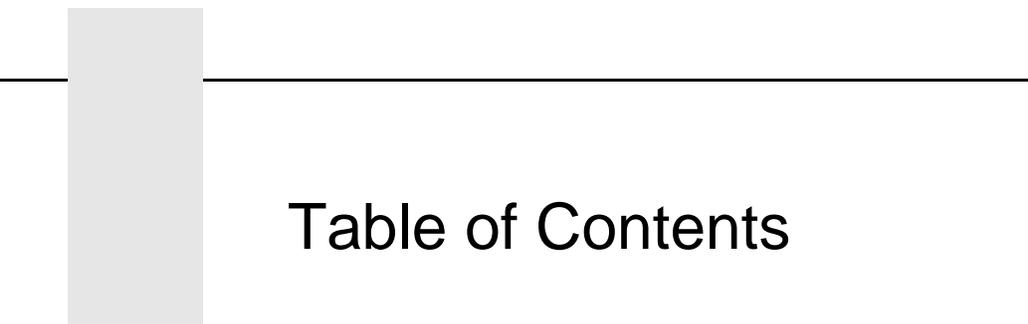
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# 1

# *Introduction*

---

## Overview

---

This chapter introduces you to the LineJet™ Print Server architecture and special features, as well as providing information on installation and configuration tools.

---

### **What is the LineJet Print Server Card?**

---

The LineJet Print Server allows you to attach printers on a local area network (LAN) rather than attaching them directly to a host system. Following simple configuration steps, these peripherals can be simultaneously shared with users on the network whether you are using TCP/IP, NetBIOS over TCP/IP, or IPX (Novell®).

The LineJet Print Server package contains a network interface card to attach itself and the printer to the network. This Ethernet™ 10/100Base-T interface connector is what allows the printer to communicate with the network, and the interface itself has a number of options and indicator switches, which are described in “Print Server Interface” on page 15.

---

### **What Special Features are Available?**

---

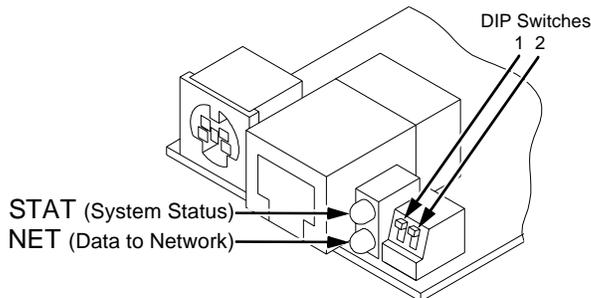
The LineJet Print Server offers an extensive list of features including:

- built-in HTML forms for easy cross-platform configuration
- availability of printer manager software
- a detailed and easy-to-use command shell built in to the firmware
- multi-level configuration security through passwords, permission levels, and access lists

- WAN-wide communication access
- numerous printer logging methods (e.g. automatic email) to record printer errors and usage
- remote management through HTML forms, Telnet sessions, “**rsh/rcmd/remsh**” commands, SNMP, and pre-defined log methods
- extensive built-in troubleshooting tools
- built-in “**telnet**” and “**ping**” clients
- configurable memory usage by disabling protocols and destination services
- multiple destinations/queues for versatile printer manipulation and distinct print setups
- header and trailer strings to instruct printers on font, pitch, printing, etc.
- flexible naming conventions
- automatic network connection and frame type sensing
- simultaneous printing across all I/O ports and all supported protocols
- multiple network protocol support

## Print Server Interface

The LineJet Print Server interface card at the rear of the printer has two indicator lights, shown in Figure 1.



**Figure 1. Status Indicator Lights and DIP switches**

### Run and Auto Reset Modes

Run Mode is the normal operating state of the LineJet Print Server. Auto Reset mode is entered when the watchdog timer is triggered and the Print Server resets itself. In either mode, the STAT LED flashes at a varying rate, depending on whether the unit IP address is configured. The Run Mode and Auto Reset Mode indicator descriptions are given in Table 1.

**Table 1. Run Mode and Auto Reset Mode Indicator Descriptions**

STAT	Indication	Description
OFF	flashes on once per second	Normal Mode, IP address configured
OFF	flashes on 2 times per second	IP address not configured
ON	flashes off once per second	Download (MOS)
ON	flashes off twice per second	Error

## Network Indicator

The NET LED displays the status of the network link. When the NET LED is on, this confirms link integrity. The NET LED flashes off for 1/3 second when a data packet is being transferred. When the NET LED is off, the network connection has been severed.

## DIP Switches

On the back of the interface, you will find a small window, where you can access two DIP switches labeled 1 and 2 (see Figure 1). The functions of the DIP switches are explained in Table 2.

**Table 2. DIP Switch Settings**

DIP Switch		Comments
1	2	
off	off	<b>Normal operation.</b> With both DIP switches in the “off” position, the LineJet Print Server boots up using the settings in flash memory rather than the default settings.
on	off	<b>Factory default settings.</b> With the DIP switches in this configuration, the LineJet Print Server boots up and all settings stored in flash memory are erased except the Ethernet address and key value.
off	on	<b>Default IP.</b> With the DIP switches in this configuration, the LineJet Print Server boots up with factory default settings. However, the stored settings in flash memory are intact. Setting DIP switch 2 to “on” does not clear any settings stored in flash memory, it boots the unit in a different state with the settings in flash memory temporarily ignored.
on	on	If the LineJet Print Server is connected to a network with link integrity and then reset to MOS, a download will be forced. If the unit is not connected to a network, it will print a test page.

## Conventions Used In This Manual

---

Command syntax and examples are formatted as follows:

- The Courier font in **boldface** indicates commands that you type:

```
$ ping ftp.HP.com
```

- Regular Courier font indicates displayed results:

```
ftp.HP.com is alive
```

- Variable values are shown in *italics* in command syntax, output, and in text.

```
ping ipname
```

```
ipname is alive
```

### Warnings, Cautions, and Notes

---

#### Warning



Warning messages call attention to situations that could hurt you.

---

---

#### Caution



Conditions that could damage the printer or related equipment.

---

---

#### Note



A note gives you helpful hints about printer operation and maintenance.

---



---

# 2

## *Installation and Configuration*

### **Installation**

---

#### **Connecting to the Network**

---

To attach the LineJet Print Server card to a network as illustrated in Figure 2, plug the network cable into the LineJet Print Server connector.

Watch the LEDs in the rear of the printer as they cycle through the power on self test (see page 15). When the test is complete, the STAT led is flashing.

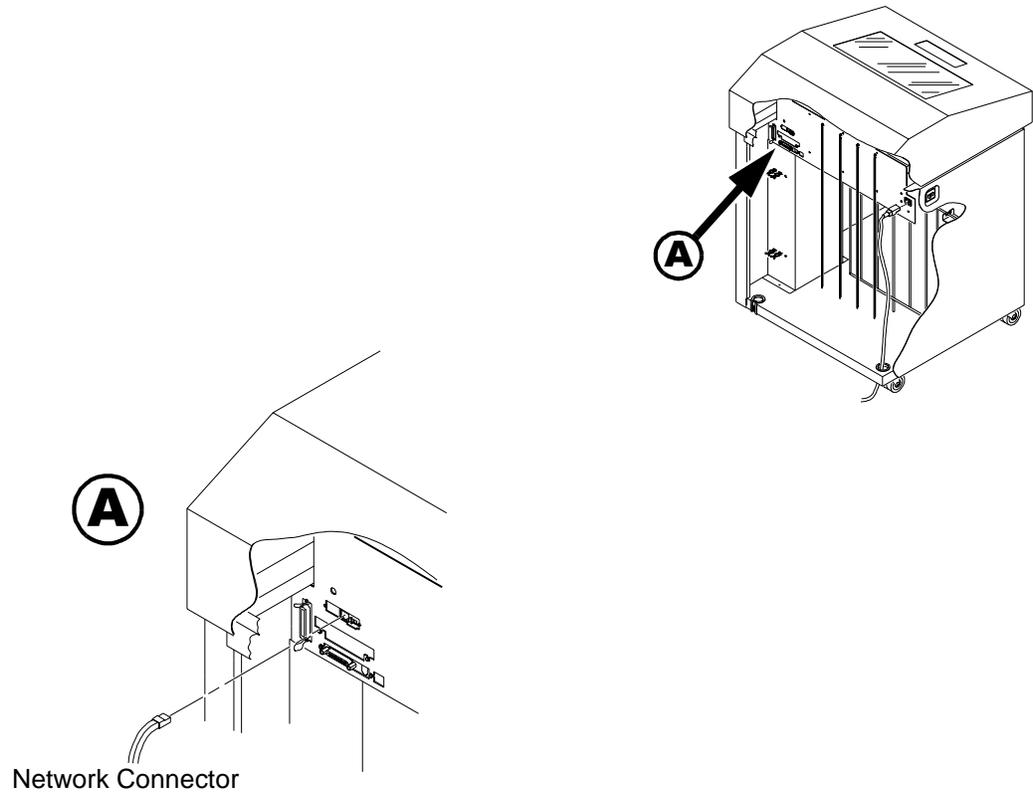


Figure 2. Physical Setup

### Configuration Tools

---

There are two parts to a LineJet Print Server setup:

1. Configuring the LineJet Print Server card so it can be seen on the network. This involves network related settings (e.g. an IP address within TCP/IP environments) configured through the built-in command shell, npsh, or from the control panel.
2. Configuring a host with a new printer so it knows how to send data to the LineJet Print Server. Just being able to see the printer on the network does not mean you can automatically print to it. A host has to be told where to send the data.

---

#### Note



Some network environments do not require any network settings to be configured on the LineJet Print Server card. However, all network setups require configuration on the host end.

---

### Configuration Using the Printer Control Panel

---

The LineJet Print Server settings can be set from the printer control panel. The procedure is described below.

---

#### Caution



**When the printer is first powered on, the message “ENET IS INIT” displays on the control panel. This process takes about two minutes. Make sure not to change the LineJet Print Server settings while this message is displayed to prevent a loss of LineJet Print Server configuration information. When the initialization is complete, the message “ENET IS READY” displays, and the LineJet Print Server settings may be safely changed from the control panel.**

---

You can set any of three listed parameters from the printer control panel. These parameters are located in the ETHERNET PARAMS menu. The available parameters are:

- IP Address
- Gateway Address
- Subnet Mask

The procedure for changing any of the parameters is the same. The procedure for changing the IP Address is given here as an example. Use the same procedure for the other required parameters. To change the IP Address parameter:

1. Make sure the printer is on and raise the printer cover.
2. Press the ON LINE key to place the printer in the OFFLINE mode.
3. Unlock the ENTER key. Refer to the *User's Guide* for instructions.
4. Press the LEFT or RIGHT arrow key until the LCD displays "ETHERNET PARAMS."
5. Press the DOWN arrow key to access the "IP Address" parameter.
6. Press the DOWN arrow key to view the current IP Address.
7. Press the DOWN arrow key to access the portion of the IP Address to be changed.
8. Press the LEFT or RIGHT arrow key to select the portion of the IP Address to be changed.
9. Press the DOWN arrow key.
10. Press the LEFT or RIGHT arrow key to select the desired value.
11. Press the ENTER key to make the selection. An asterisk appears to the right of the value.
12. Press the UP arrow key and you will be returned to step 8.
13. When you are finished changing parameters, exit the configuration menus and lock the ENTER key. (Refer to your printer's *User's Guide* for details.)

---

### Caution



**When a change is made from the control panel, the LineJet Print Server is re-initialized. The messages "ENET IS RESET" and "ENET IS INIT" display on the control panel. This process takes several minutes. Make sure not to shut the printer off or make further changes to the LineJet Print Server settings during this initialization period to prevent a loss of LineJet Print Server configuration information. When the initialization is complete, the message "ENET IS READY" is displayed.**

---

## HTML Forms

---

The LineJet Print Server settings can be configured over TCP/IP through a standard Web browser. The LineJet Print Server Web pages provide a handy way to access some of the commands built in to the print server.

---

**Note**



If a router is used, make sure a gateway value is configured.

---

To access the LineJet Print Server home page:

1. Make sure the print server has an IP address and subnet mask so it is recognizable on your TCP/IP network.
2. Make sure your network station can successfully “ping” the LineJet Print Server over the network.
3. Direct your Web browser to the Uniform Resource Locator (URL) “**http://IPaddress**” (e.g. “**http://192.75.11.9**”).

The LineJet Print Server HTML structure is divided into several menus as shown in Figure 3.

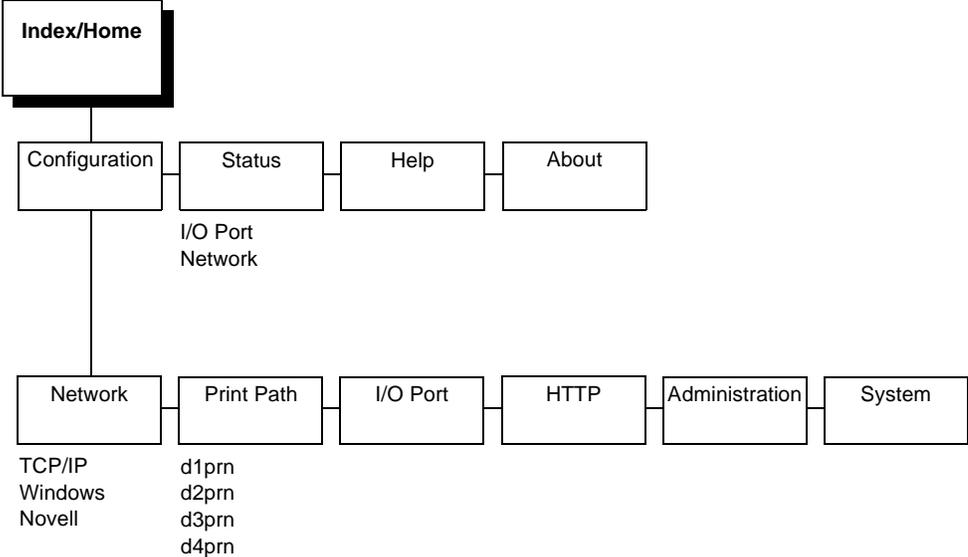


Figure 3. LineJet Print Server HTML Structure



Online help is available for all HTML pages.

## Printer Status Screen

Using the printer IPAddress and any standard web browser, you can check the status of the printer. Figure 4 shows the exact state of the printer by showing the printer LCD message.

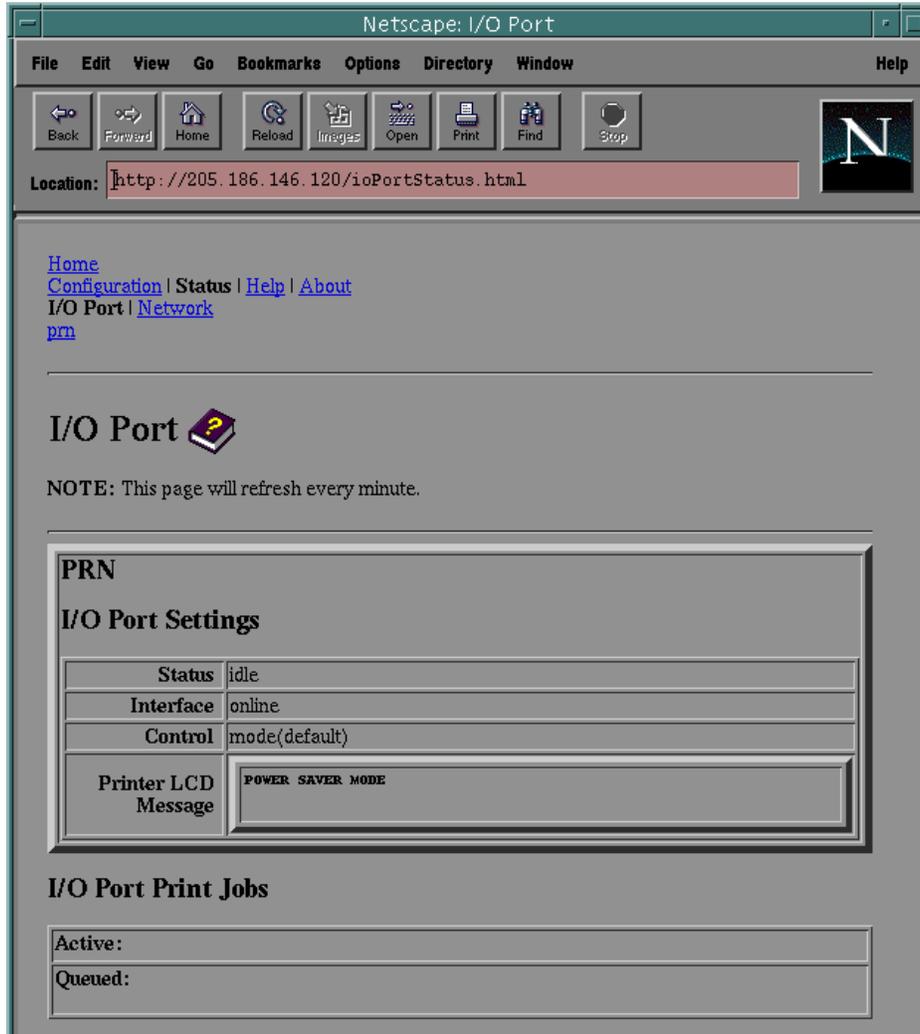


Figure 4. WWW Printer Status Screen

## Configuration Alternatives

---

Besides the HTML forms and software provided, the LineJet Print Server internal command shell, npsh, can also be reached using these methods:

### Telnet

A TCP/IP command that helps configure LineJet Print Server settings remotely. A TCP/IP host starts a Telnet session with the print server and logs in to the device command shell to alter and view settings.

Example:

```
telnet 192.75.11.9
```

### Remote Shell

A TCP/IP command that helps configure print server settings remotely. A TCP/IP host uses this command to remotely execute a single command on the LineJet Print Server.

Example:

```
rsh spike list prn
```

This command remotely executes the npsh command “**list prn**” on the LineJet Print Server named **spike**.

---

# 3

## *Approaches to Network Printing*

### **Overview**

---

Configuring your network printing is based on the network protocols and host environments you already use, or plan to use. It is common to find multiple network protocols co-existing in the same network.

The LineJet Print Server is a multi-protocol device, able to accommodate many protocols at the same time. The actual print job order operates on a first in-first out basis. This means it is possible to configure your LineJet Print Server using any or all of the methods listed in this manual, for use at the same time. This concept is what creates the ability to use powerful printer management tools in parallel with the act of printing. The protocol for a print job and the protocol for the management tool will often be different.

These ideas are also what differentiate networks by size and network protocol use. Some common network arrangements include peer to peer networks and print job servers.

### **Peer to Peer Networks**

---

Peer to peer networks can be used when you have few machines, few printers, only one network protocol, and any host can print to the printer. A variation of this is a mini-server which “shares” its printer with the other computers, and often all the networked machines reside in a single room or building. The LineJet Print Server improves flexibility in printer placement and setup by becoming just another “peer”, rather than dedicated to a single machine.

A common peer to peer network arrangement would be comprised of Windows<sup>®</sup> 95/98 with TCP/IP configured to use the netBEUI protocol to connect to the print server. A second common extension of this arrangement is to install a third party “LPR PORT MONITOR” on each PC and use simple TCP/IP to connect to the print server. If Windows NT is used for the peer computers, LPR is included and is easy to set up. Windows 95/98 does not have such a monitor, but many are available for free for download from the Web.

## Print Job Servers

---

In most larger networks, rather than directing any host running any protocol to the networked printer resource, the usual practice for managing of print jobs is to designate one protocol and method for printing, then to designate specific computers as print job servers. Computers designated as print job servers have large hard disk space to store print data and typically spool management software. All clients direct their print job to the computer designated as the print job server rather than the printer; therefore, the client to print job server network protocol used might not be the same as the print job server to LineJet Print Server. Large network environments today are generally TCP/IP or Novell network protocols, or a mixture of the two.

Common example of larger networks utilizing the LineJet Printer and Print Server:

- **Many Windows 95/98 clients directing print jobs to an NT server.** The Windows 95/98 clients, NT server, and LineJet printer might or might not be in the same physical location, building or even country. The LineJet printer is located based on where its output is needed, not where the jobs originate. Remote printer management tools (LineJet Printer Manager, SNMP, etc.) give the same ability to the administrator today that networking has provided in the past.
- **Windows 95/98, HP 3000, NT, Novell network client computers direct output to a Unix<sup>®</sup> machine designated as the print job server which spools and manages print jobs.** The designated print server could just as well be an HP 3000 or IBM AS/400 as a Unix (or Linux) machine.

---

# 4

## *TCP/IP Configuration*

---

### **TCP/IP LineJet Print Server Configuration**

---

This configuration procedure assumes you have an already existing network and TCP/IP attached to a Windows 95/98/NT, Unix, or other machine.

You will configure network printing by adding the necessary TCP/IP values to the LineJet Print Server and associating the Print Server as an output port for a Windows printer on a 95/98/NT client or server, or to a print queue or logical printer in Unix, AS/400<sup>®</sup>, or HP 3000.

#### **Before You Begin**

---

1. You must obtain the IP address and subnet mask to be used for the LineJet Print Server. In addition, a gateway value may be needed. A gateway is a device that knows how to find other TCP/IP devices on other sections of the network that may need to know about the LineJet printer.
2. The NetBEUI/NetBIOS protocol may be used to define the network port for a Windows printer instance. (Use the following sequence: Start, Settings, Printers, Add, network printer, network path or queue name...) NetBEUI/NetBIOS does not route, which means you must use it on a single network segment, but this setup is ideal for a single network or a small network.

## Creating Aliases

---

All TCP/IP systems provide a means to make multiple operations easy using an alias, which is a logical name to IP/MAC address association. This step is an important one in the Unix world if DNS (Domain Name Services) is being used, and can simplify the other environments as well.

Locate the **hosts** file. (If you are using Windows 95/98 and have never had a **hosts** file, you can create one easily using Notepad or any other text editor and save it to the Windows directory.) Edit the file to add your new LineJet Printer, and save the file. Rebooting is not necessary.

Location of **hosts** file:

Windows 95/98	windows
NT	windows/system32/drivers/etc
Unix	/etc
HP 3000	host.net.sys

Example of entries in a **hosts** file:

10.200.30.123	printer1
10.200.30.130	accounting
192.168.2.33	next_state
10.200.30.18	MIS

---

**Note**

Make the names easy to remember but descriptively useful.

---

In most Unix systems using DNS, a **hosts** table is constructed as shown above. The file **nsswitch.conf** or its equivalent is then edited to associate a MAC (hardware address) to an IP address in the **hosts** file. In doing this, any individual client workstation only needs a single address entry, and that is the address of the DNS host, as a **ping** to printer1 is actually resolved by the DNS machine and returned to the client workstation. This means an administrator need only maintain one **hosts** file for all to use, making updating central.

For peer to peer and small networks, using a local **hosts** table on each workstation can function in place of DNS.

## Methods For Setting TCP/IP Values

Methods available to set TCP/IP values vary based the operating environment. (See Table 3.)

**Table 3. Available TCP/IP Setup Methods**

Operating Environment	arp	bootp	DHCP
Unix, HP 3000, Windows NT, OS/2	✓	✓	✓
Windows 95/98	✓		
AS/400	✓	✓*	

**Note**



\*AS/400 can use bootp as of OS/400 v4.3

- **arp.** Easy to use but cannot be routed, so printer and host computer must be on same network segment. Requires use of print server MAC.
- **bootp.** Workhorse method. Can be routed, allows assigning IP address, subnet mask, gateway value in one step.
- **DHCP.** Easy in concept, poor choice for printers because printers must always have the same IP values, but can be used to facilitate the location of print servers if the MAC value is known.

If you are unsure which method to use, you can use the front panel of the printer to set the TCP/IP values without a live network connection.

For bootp, arp, and NetBEUI/NetBIOS, the MAC address of the LineJet Print Server is required. If the LineJet Print Server is pre-installed, the MAC address can be obtained by using the LineJet printer diagnostic print test E-net Test Page, or by using the printer control panel to view the MAC Address value in the ETHERNET PARAMS configuration submenu (see your *User's Guide* for details). In addition, a label attached to the rear of the printer will show the MAC address, which reads "00:80:72:xx:yy:zz". This value is also known as the "hardware address" or "ethernet address".

The DHCP (Dynamic Host Configuration Protocol) is useful to locate a print server. DHCP is not generally useful for using other than NetBEUI/NetBIOS, as most queuing mechanisms need to know the static location (IP address) of a printer, and with each DHCP power on cycle will likely change.

## Assign TCP/IP Values

---

### Method 1: Using the Printer Control Panel

All of the basic TCP/IP values can be easily set and stored in the LineJet Print Server via the printer front panel, under the ETHERNET PARAMS menu. Refer to “Configuration Using the Printer Control Panel” on page 21 for instructions.

Set the IP Address, Subnet Mask or Gateway Values, then press the ON LINE key to store those values in the LineJet Print Server. These steps do not require the printer to be connected to your network.

After setting the TCP/IP values, connect the printer to the designated hub or switch port via UTP cable. With the LineJet printer powered on, use a **ping** to the assigned IP Address for the LineJet Print Server:

- **Windows 95/98/NT, OS/2.** Open a DOS shell (or OS/2 window), type: **ping xxx.xxx.xxx.xxx** using the IP value you assigned above.
- **AS/400.** At a command prompt type:  
**ping 'xxx.xxx.xxx.xxx'** (IP address must be in single quotes).
- **Unix.** At a terminal session command prompt, type:  
**ping xxx.xxx.xxx.xxx.**

---

**Note**

If you made a **hosts** table alias name entry (or set up DNS) you can **ping** the alias instead of having to remember the actual IP Address. Similarly, the alias can be substituted for the URL in telnet sessions or Web browser sessions.

---

If you receive a positive response “reply received from...”, then proceed. If you instead get a “destination unreachable” message, or a “no reply from...” message, recheck values and cables you have used.

Once you have established a positive **ping** response, you may wish to use a browser to change or set items such as the “workgroup” name to match that of your client network, or to change other values or names or check printer status. To do this, open your browser, and in the URL line enter the IP Address of the LineJet Print Server, and press ENTER. When the LineJet Web Page displays, click on “Configuration”. When prompted for a user name and ID, enter **root**, press ENTER, and press ENTER a second time for a blank password. You may now change the workgroup name and other values.

If your web browser is set to use a proxy (or you don’t know), use a telnet command session order to finish your setup using store and set commands (refer to Chapter 13, “Commands”).

Use the following example of a telnet session to change the Windows workgroup name in the LineJet Print Server from the default of “workgroup” to “Acme” to match your company setup.

For Windows 95/98/NT or OS/2, open a DOS window. For AS/400, start from a command prompt. For Unix, start from a terminal session prompt:

```
telnet xxx.xxx.xxx.xxx
> login
> user 'root' (default user name for configuration)
> anything (default is no password)
> welcome root user (sample response)
> store pserver smb workgroup Acme
> ok
> reset (print server will need about 30 seconds to reset)
session disconnected
```

You should now be able to browse the LineJet Print Server in “Network Neighborhood”, which will display as having resources d1prn, d2prn, d3prn, d4prn.

- The TCP/IP values are not stored in the printer configuration, so it is not necessary to use the printer configuration menu for the above.
- If the printer is attached to your network via UTP cable, and you entered a gateway value, then executing the printer diagnostic test, E-net Test Page will verify your settings and execute a **ping** to the gateway (a “good” response is “gw-IP is alive” ) which assures you of a functioning network connection (cable is good, connection is functional, values are correct, all that remains is setting up printing). To run the E-net Test Page test, see your *User’s Guide*.

## Method 2: Setting TCP/IP Values Using A Network

Start with the printer powered off. Have the IP Address, Subnet Mask and Gateway values ready.

For arp assignment, the syntax is:

```
arp -s ipaddress MAC_address
```

Example using Windows 95/98/NT:

On a DOS command prompt enter

```
arp -s 192.168.20.20 00-80-72-09-00-5F
```

(set the static arp value; be certain to replace the IP Address of this example with a valid one of your own)

```
list arp -a
```

(to ensure you have the “static entry”)

Example using Unix (not AIX):

On a command prompt enter

```
arp -s 192.168.20.20 00:80:72:09:00:5F
```

(set the static arp value; be certain to replace the IP Address of this example with a valid one of your own)

Example using AIX:

On a command prompt enter

```
arp -s ether 192.168.20.20 00:80:72:09:00:5F
```

(set the static arp value; be certain to replace the IP Address of this example with a valid one of your own)

Windows uses hyphens to separate the values in the MAC address, Unix and others use colons.

Now power the printer up. Wait a minute or more after power up for the LineJet Print Server to obtain the address above.

Test by issuing the command **ping *IP\_address***.

If you do not get a positive **ping** response, check your arp table entry, and check that the printer is on the same “wire” as you are (same IP address range, different in only the value after the last period). Check that you did not accidentally use the same IP address you or someone else is using. If so, at a DOS prompt use the command: **arp -d *IP\_address*** to delete the erroneous entry and then create the corrected value.

If you do get a positive **ping** response, proceed to store this value into the LineJet Print Server after first removing the static arp entry to avoid conflict. You may do this by either telnet or a web browser:

At a DOS prompt use the command: **arp -d 192.168.20.20** (with your own IP Address value in place of this one) to delete the static arp entry.

### Telnet

Using a DOS window (or a third party tool capable of a telnet session), use the following:

```
telnet xxx.xxx.xxx.xxx or hosts_table_name
login: root (default)
password: (no password is default)
welcome root user> (ignore warning messages about differences)
store TCP/IP 1 addr from current (save the arp assigned value)
list TCP/IP (you will see your IP address and a subnet address. If the
subnet address is incorrect, use the following command to modify it)
store TCP/IP 1 mask 255.255.255.0 (enter your mask value in
place of this one)
```

If you have a gateway value, enter it now using the following commands:

```
store TCP/IP add default router gateway_value 1
reset (following this step, in a minute or so you should be able to ping
the print server)
```

### Web Browser

Initiate the Web browser and enter the IP Address or `hosts` table name in the URL line.

Click on **Configuration**.

Log in as `root`, no password.

Enter the values you need for subnet mask and gateway as in the above example, clicking on **Submit** when ready. The final step is to click on **System Administration**, and **Reset Adapter** to store the values. Be sure to delete the static arp entry before this last step: at a DOS prompt use the command `arp -d 192.168.20.20` (with your own IP Address value in place of this one) to delete the static arp entry.

---

#### Note



Windows 95/98 pre-winsoc2 TCP/IP has a bug in which an arp entry will not be created unless a valid arp entry already exists in the arp table on the client you are using. The easiest way to accomplish this is to `ping` your own workstation in the DOS window, and then use the command `arp -a` to view the arp table to ensure you have a valid arp entry before using the `arp -s` command.

---

### Using BOOTP

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BOOTP allows you to dynamically assign an IP address to the LineJet Print Server upon bootup. In addition, the BOOTP server can provide additional details like a default router/gateway address. To configure the LineJet Print Server with its TCP/IP settings using BOOTP:

1. On your BOOTP server, make an entry in the `/etc/bootptab` file for the LineJet Print Server.

Syntax:

```
LineJetIPname: \  
:sm=netmask: \  
:hd=homedirectory: \  
:bf=null: \  
:gw=defaultgateway: \  
:ht=ethernet: \  
:ha=ethernetaddress: \  
:ip=ipaddress: \  

```

```
:ts=timeserver:\  
:to=timezone:
```

Example:

```
spike:\  
:sm=255.255.255.0:\  
:hd=/usr/null:\  
:bf=null:\  
:gw=192.75.11.1:\  
:ht=ethernet:\  
:ha=008072070060:\  
:ip=192.75.11.9:\  
:ts=192.75.11.7:\  
:to=25200:
```

2. Turn the LineJet Print Server on so that it immediately sends out a BOOTP request. Wait one minute to allow the IP address assignment process to complete. You should see the STAT LED, on the LineJet Print Server interface, slow down indicating it knows about an IP address to use.
3. Try to “**ping**” the LineJet Print Server IP address from a network station to see if it can be seen on your network.

---

### Note



You will be able to communicate with the LineJet Print Server from network stations on different subnets if the print server has been told about its default router/gateway in the BOOTP response from the BOOTP server.

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# 5

## *HP 3000 Configuration*

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### **Overview**

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This chapter details a complete HP 3000 configuration setup.

With the release of MPE/iX version 5.5 and higher, it is now possible to use the spooler on the HP3000 to control printing on devices attached to a network. *The Native Mode Spooler Reference Manual* (HP P/N 32650-90166, Edition 5, Sept. 1998 or later) and *Configuring and Managing MPE/iX Internet Services* (HP P/N 32650-90835) are essential references to assist you in this configuration.

---

## HP 3000 LineJet Print Server Configuration

---

Follow the instructions below to configure printing to a LineJet Print Server by using TCP/IP print to socket, sometimes referred to as “native tcpip mode”. The configuration parameters are set via entries in the file `npconfig` (`npconfig.pub.sys`).

1. If you have not already done so, use program `sysgen` (`sysgen.pub.sys`) to add the necessary logical device descriptions. Create one logical device for each LineJet Printer you wish to add:
  - a. log in as `MANAGER.SYS`
  - b. enter the command `:run sysgen.pub.sys`
  - c. at the `>` prompt, enter `io` to start the I/O configurator
  - d. enter the command  
`io> ad ldev=xx;id=HPTCPJD;path=NONE`  
`HPTCPJD` is the HP-supplied logical network device type.
  - e. enter the `ld xx` configuration command to view the addition (where `xx` is the logical device number you chose in step d.)
2. Identify the IP address, subnet mask, and gateway value to be used for each LineJet Print Server. These values are necessary for any network printing. Often, only the IP address value will vary from printer to printer.

You can assign these values to the LineJet Print Server by entering the values in the printer control panel (see page 21), or by using the `bootpd` process as described in chapter 4 of *Configuring and Managing MPE/iX Internet Services*. If you use `bootpd`, create an entry in the `bootp` configuration file for each LineJet Print Server you are adding. For example:

```
printer1: ht=ether: ha=00807209yyyy: ip=xxx.xxx.xxx.xxx:\  
sm=xxx.xxx.xxx.xxx: gw=xxx.xxx.xxx.xxx:
```

---

**Note**

Be sure to replace the `xxx` fields with the correct IP Address, subnet mask and gateway mask values you are using.

---

---

In this example, the **ha** value is the MAC address of the LineJet Print Server being added. Replace **yyyy** with the last four digits of the MAC address for the individual print server. If the LineJet Print Server is pre-installed, the MAC address can be obtained by using the LineJet printer diagnostic print test E-net Test Page, or by using the printer control panel to view the MAC Address value in the ETHERNET PARAMS configuration submenu (see your *User's Guide* for details). In addition, a label attached to the rear of the printer will show the MAC address, which reads "00:80:72:xx:yy:zz".

---

**Note**



You may use the LineJet Printer Manager to manage your LineJet printers, but not on the HP 3000. See the *LineJet Printer Manager User's Guide* for complete information on the program.

---

3. Configure the printer so the active emulation is PCL, PCL/PGL, or PCL/VGL, depending on your printer software. This configuration should also be set as the printer's power up configuration. The spooler utilizes PJP (Printer Job Language commands) to interact with the printer. Page level recovery (silent run) also requires this ability.
4. Log into the LineJet Print Server using a telnet session. You can use telnet on your HP 3000, or another workstation with TCP/IP installed (such as Windows, etc.), or via a web browser session. Use the following commands to establish a reverse communication channel for PJP to function:
  - a. `telnet xxx.xxx.xxx.xxx` or `telnet host_name`  
(example: `telnet 192.192.192.192` or `telnet LineJet1`)

**NOTE:** The `telnet host_name` command will only work if the host's table entry (with the `xxx.xxx.xxx.xxx` format) has been defined in the host file of the HP 3000.

- b. log in as user name `root`, no password (or by using the user name and password you may have stored in the adapter).
- c. `set dest dlprn backchannel prn`  
`save`  
`list dest` (this will allow you to see your change)  
`exit`

5. Create or modify the `npconfig` file. As a starting point, you can use the system file `npconfig.samp`.

For each logical network printer that points to a physical LineJet Print Server using the `npconfig` file entries, make the following minimum entries (assume a logical device 201 has been set in `sysgen`):

```
201 ( network_address = xxx.xxx.xxx.xxx
tcp_port_number = 9100
pjl_supported = true
snmp_enabled = false )
```

The entry `snmp_enabled = false` must be entered as shown.

6. The `npconfig` file is read each time the printer commands `spooler nn;start` or `startspool nn` are used, meaning if corrections are needed to the file it is not necessary to restart the HP 3000, only the spooler. Stop the spooler by using a `stopspool` command, then restart it using one of the commands described above.

If you have other HP LaserJet printers already configured, and are using a global `setup_file` entry, and you experience font or other difficulties with the LineJet line matrix printers, create a separate setup file which is empty to override the global entries. This may be required since the LineJet printer uses PCL Level II, which is a minimal set of PCL, and the typical HP 3000 global setup file may contain PCL commands beyond those in PCL II. This will not affect your ability to use the LineJet printer effectively. Refer to *The Native Mode Spooler Reference Manual*.

Do not use entry `jam_recovery = true`, as this command is not appropriate for a LineJet printer and will result in problems.

To avoid spool/job start, stop, and resume problems, please refer to the sections in chapter 3 of *The Native Mode Spooler Reference Manual* titled "Operating a Network Printer" and "Spooler Processes and Network Printing". Appendix C of the same manual contains useful information on silent run.

Use `npconfig` entries `banner_header` and `banner_trailer` for banner or trailer pages. Default value is "false".

---

# 6

## *Windows Configuration*

---

### Overview

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This chapter details a complete Windows configuration setup including:

1. Identifying the LineJet Print Server on the network using TCP/IP as the underlying protocol
2. Configuring the LineJet Print Server with its mandatory TCP/IP settings (IP address and subnet mask)
3. Configuring a new printer on the Windows station

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### Windows Environment Description

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The LineJet Print Server card supports network printing under Windows environments by using TCP/IP. In a Windows NT<sup>®</sup> setup, pure TCP/IP is used as the network protocol whereas with Windows 95<sup>®</sup> or Windows 98<sup>®</sup>, NetBIOS over TCP/IP is used.

Figure 5 shows two of the most common Windows setups you will see with the LineJet Print Server. The ideal configuration is a network printer defined on the NT server to be shared by Windows 95 clients. However, any Windows station can also go directly to the LineJet Print Server.

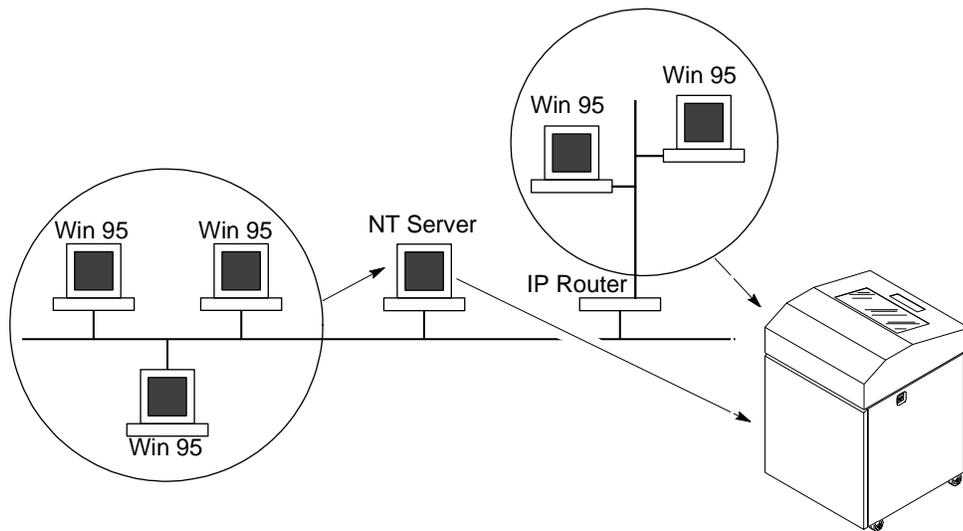


Figure 5. Windows Integration

## Windows LineJet Print Server Configuration

The IP address and subnet mask are mandatory TCP/IP settings and are needed before the print server can be detected on the network. There are also additional settings which are optional. This section offers alternative methods for configuring your LineJet Print Server in a Windows environment and mentions some of the more common optional settings available.

### Mandatory

Since TCP/IP is used for Windows printing, the LineJet Print Server must be configured with a minimum of an IP address and subnet mask before it can be seen on the network.

## Optional

---

Additional settings, like routing entries, can be configured. This allows communication across subnets when no other router exists.

Configuration of the LineJet Print Server can be done from the printer control panel, Web browser, or host commands. To configure these options, see “Configuration Tools” on page 21.

## Communicating Across Routers

---

Since Windows environments rely on TCP/IP to communicate with the LineJet Print Server, crossing routers becomes an issue.

After following one of the LineJet Print Server configuration methods mentioned, you will most likely only be able to communicate with the print server from the same subnet. This means any hosts across a router will not be able to see your LineJet Print Server. In order for hosts across a router to see your LineJet Print Server, it is best to store a default router/gateway within the print server so that any packets destined for another subnet get forwarded to this router automatically. The router (or series of routers) can then take over ensuring the packets get to their final destination on another subnet on your network.

To configure a default router/gateway within the LineJet Print Server:

1. Load a Web browser on your Windows station and direct it to the URL “<http://LineJetIPAddress/networkConf.html>” (e.g. “<http://192.75.11.9/networkConf.html>”).

---

**Note**

If prompted for a “User ID” and password first, type in “**root**” for the ID and press ENTER at the password prompt since there is no password by default.

2. At the “Network Configuration” HTML form that displays, click in the first field below the “Gateway” heading and type in the IP address of the default router/gateway for the LineJet Print Server subnet.
3. Click on the SUBMIT button when done and physically repower the print server to make the new settings take effect.

## Changing Workgroup Names

Windows environments define groups of related computers as “workgroups.” By default, the LineJet Print Server belongs to the workgroup called “WORKGROUP”. However, you may want to change this to suit your network better. To do this:

1. Load a Web browser on your Windows station and direct it to the URL “<http://LineJetIPAddress/networkConf.html>” (e.g. “<http://192.75.11.9/networkConf.html>”).

### Note



If prompted for a “User ID” and password first, type in “root” for the ID and press ENTER at the password prompt since there is no password by default.

2. At the “Network Configuration” HTML form that displays, search for the “Windows (NetBIOS TCP/IP)” section and highlight the “Workgroup Name” field.
3. Type in the new workgroup name for the LineJet Print Server.
4. Click on the SUBMIT button when done and physically repower the print server to make the new settings take effect.

## Changing Destination Names

When defining some printers within Windows environments, the LineJet Print Server requires that you specify a pre-defined destination rather than any name you would like. For example, when creating a new printer under Windows NT, you are presented with a screen similar to Figure 6.

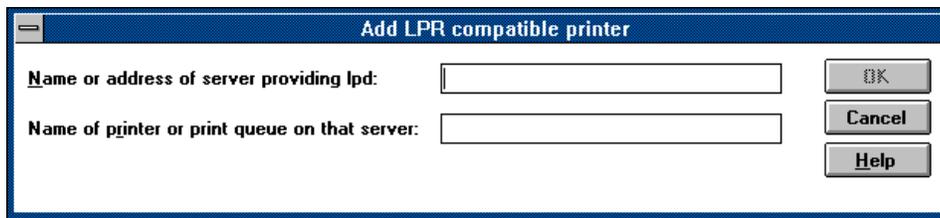


Figure 6. Windows NT Print Setup Dialogue Box

The first field requires the IP address for the LineJet Print Server and the second field must be filled in with a valid destination from the print server (e.g. d1prn). Otherwise, LPR will not be able to access the printer. Table 4 outlines the default destinations to choose from.

**Table 4. LineJet Print Server Default Destinations**

Destination	Mapped I/O Port
d1prn	PRN
d2prn	PRN
d3prn	PRN
d4prn	PRN

This name can be changed to something more meaningful using the built-in HTML forms. To do this:

1. Load a Web browser on your Windows station and direct it to the URL "<http://LineJetIPaddress/destConf.html>" (e.g. "<http://192.75.11.9/destConf.html>").

---

**Note**



If prompted for a "User ID" and password first, type in "**root**" for the ID and press ENTER at the password prompt since there is no password by default.

2. At the "Print Path Configuration" HTML form that displays, select a destination link from the top of the page to bring up the appropriate destination form. By default, you should see a line near the top of the form showing the destinations listed in Table 4.
3. Once the desired destination HTML form displays, highlight the "Name" field and type in the new name for this destination.
4. Click on the SUBMIT button when done and physically repower the print server to make the new setting take effect.

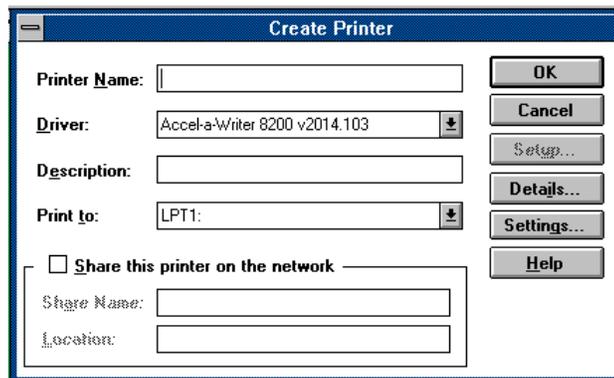
## Windows Host Configuration

This section covers Windows NT and Windows 95, Windows 3.1 and Printronix Printing System (PPS) new printer setups.

### Windows NT 3.51 Host Setup

To configure a new printer on a Windows NT 3.51 station:

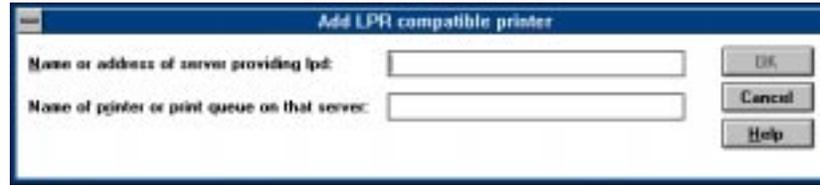
1. Open the “Control Panel.”
2. Double click on “Printers.”
3. Select “Create a Printer” from the “Printer” menu to display the dialogue box in Figure 7.



**Figure 7. Create a Printer Dialogue Box**

4. Define a name to represent this print setup and select the appropriate driver for the printer that will be used in this setup. For printer driver choose “generic text” or Epson “FX1050” or “Proprinter” based on print need.
5. Under the “Print To” field, select “Other...”

6. Select “LPR Port” from the list that displays and click OK to bring up a dialogue box similar to the one found in Figure 8.



**Figure 8. Add LPR Compatible Printer Dialogue Box**

7. Type in the IP address or host name of the LineJet Print Server in the first field.
8. Type in the name of a pre-defined destination/queue on the LineJet Print Server in the second field.

---

**Note**



This name must be a name of an existing destination/queue on the LineJet Print Server and it must be lowercase by default. You will probably use “**d1prn**”.

---

9. Click OK when done specifying these two fields.

You now have a new network printer which relies on the standard TCP/IP print protocol, LPD, to print remotely to a printer with the LineJet Print Server.

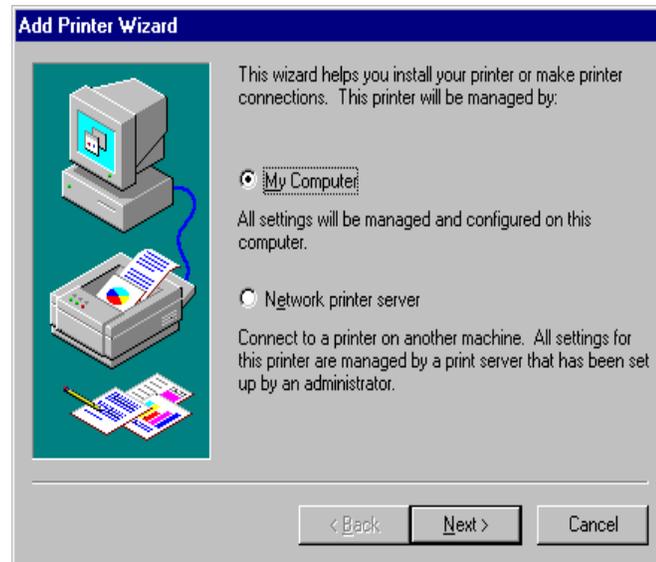
## Windows NT 4.0 Host Setup

---

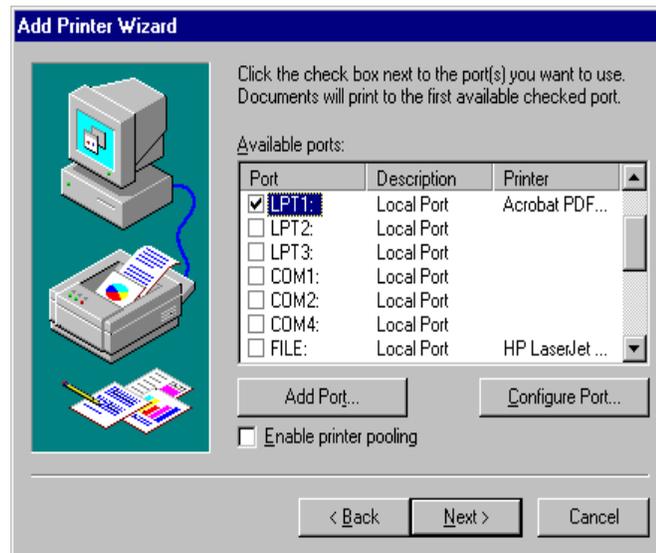
This installation procedure assumes that the LineJet Print Server adapter is configured with the correct IP address, subnet mask and gateway (if required). In addition, the administrator can “**ping**” and telnet to the LineJet Print Server adapter from the server console.

If this is not the case, use the printer front panel to configure the LineJet Print Server adapter before proceeding.

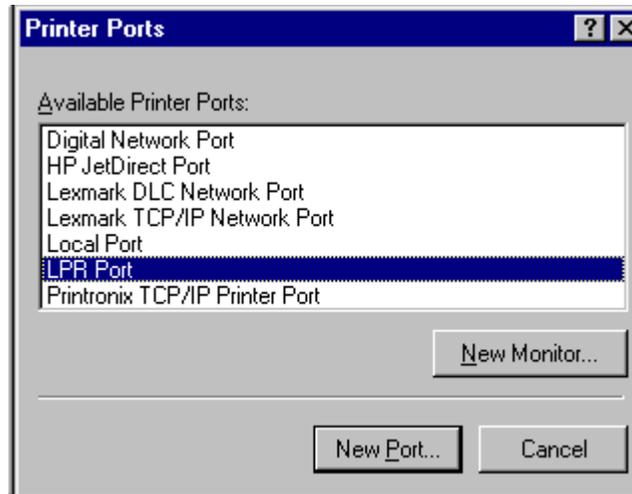
1. Select “Settings:Printers” from the “Start” menu.
2. Double click on the “Add Printer” icon. The “Add Printer Wizard” window is displayed.



3. Select "My Computer".



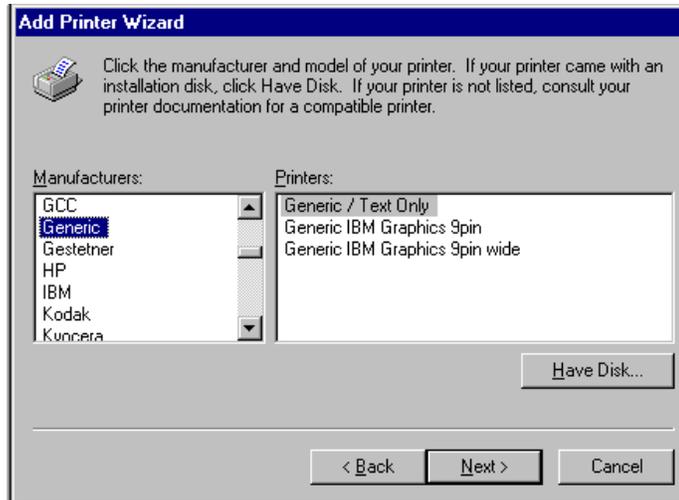
4. At the next window, click on "Add Port ...".



5. Double click on "LPR Port". If LPR Port is not listed it means that Microsoft TCP/IP Printing service is not installed.



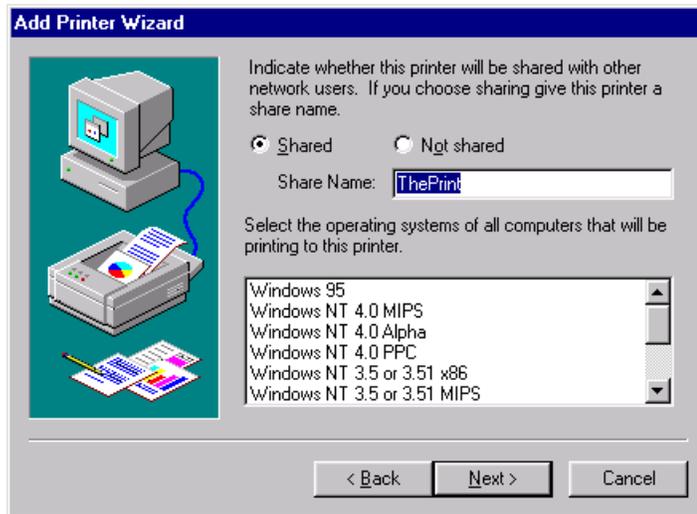
6. In the "Name or address of server providing lpd:" box, enter the IP address of the LineJet Print Server adapter. In the "Name of printer or print queue on that server:" box, enter **d1prn**.



7. Select the “Generic/Text only” printer driver or install the LineJet driver. The generic driver is good for troubleshooting installation problems. The network administrator can always go back and install the LineJet driver at a later time.



8. In the “Printer Name” box, enter a name for this printer.



- Determine if the printer is shared with other network users. If it is shared, the share name and the operating system must be selected.



- Print a Windows test page.
- If there are any problems during or after installation, see "Windows NT 4.0 Host Setup Problems" on page 62.

## Windows 95 Host Setup

---

To configure a new printer on a Windows 95 station:

1. Select “Settings:Printers” from the “Start” menu.
2. Double click on the “Add Printer” icon.
3. Select “Network Printer” from the second window of the “Add Printer” wizard that loaded.
4. At the next window, click on BROWSE to help fill in the network path of this printer.
5. At the “Browse for Printer” dialogue box that displays, double click on the appropriate workgroup containing the LineJet Print Server. By default, the print server falls under the workgroup, “WORKGROUP.”
6. Continue searching the network until you see the LineJet Print Server name, “M\_XXXXXX”, where “XXXXXX” equals the last six digits of the print server Ethernet address found when a configuration is printed.
7. Once you see the LineJet Print Server, double click on it to display a list of pre-defined destinations/queues to choose from.
8. Select a destination/queue that will use “**d1prn**”.
9. Click OK once you have selected a destination.
10. Back at the network path window, select NEXT since this path should now be filled in for you.
11. At the next window, select the appropriate print driver and click on NEXT.
12. Fill in a name for this new network printer at the next window and decide if you want this to be the default printer. This printer name can be anything you would like as long as it is unique.
13. When prompted for a test page, select either “Yes” or “No” depending on the state of the attached printer and click on FINISH.

Windows may ask for a disk or CD-ROM to load the appropriate printer driver to complete this new printer setup.

There should now be a new printer icon within the “Printers” folder. This new network printer relies on NetBIOS over TCP/IP as the underlying protocol to print to the LineJet Print Server.

## Printronix Printing System (PPS) Host Setup

---

To configure a PPS LPR port for a printer on a Windows station, you will need to:

1. Insert the diskette labeled “PPS” into the floppy drive.
2. Load the File Manager or WinFile and look under the floppy drive for a PPS ZIP file.
3. Double click on the PPS ZIP file to extract all files within it to a directory on the Windows station.
4. Once extracted to a directory, find the “Setup” file and double click on this to load the InstallShield Wizard.
5. Answer the prompts throughout the wizard and select “Yes” to restart your computer at the end.
6. Once your computer is rebooted, open the “Settings:Printers” folder to view your existing printers.

---

**Note**



PPS will only work with an existing printer. Therefore, if you do not have an existing printer that you can alter, create one now using any port settings you would like. These will be changed in the following steps.

---

7. Select the printer that you want to use with PPS and click the right mouse button to bring up a sub-menu.
8. Select “Properties” from this menu to display the current settings for this printer.
9. Click on the “Details” tab to display the printer port settings.
10. Click on the ADD PORT button.
11. At the “Add Port” dialogue box that displays, click on the button labeled “Other.”
12. Click on “TCP/IP Printer Port” within this “Other” list.
13. At the next dialogue box that displays, fill in the host name or IP address of the LineJet Print Server in the first field.
14. Fill in a valid TCP port number on the LineJet Print Server in the second field. The choice is **4400** or **9100** for PRN.

15. Click OK when done to return to the “Details” window. You should now see something relating to “PPS Port” within the “Print to the following port:” field.
16. Click OK to close this printer properties window.

You now have a new network printer which relies on PPS to print remotely to a printer off of the LineJet Print Server.

## Windows 3.1 Host Setup

---

If you are running Windows 3.1 stations on your network, you will need to rely on either TCP/IP or IPX to print to the LineJet Print Server. If IPX is used, you will have a print queue defined on a Novell file server which your Windows 3.1 stations will send their print jobs to. The LineJet Print Server will then service this print queue as either a PSERVER or an RPRINTER. Please see Chapter 5, “Novell Configuration” for further details.

If you want to rely on TCP/IP, you will need a third party TCP stack loaded onto your Windows station since TCP/IP support did not automatically come with Windows until the introduction of Windows NT and Windows 95. You may also be running a third party stack if you decided not to use a Microsoft operating system.

Some common TCP stacks are FTP Software's<sup>®</sup> OnNet, NetManager's<sup>®</sup> Chameleon, and Frontier Technologies<sup>®</sup> SuperTCP. In each case, they allow your Windows 3.1 station to communicate with other TCP/IP devices. This means you can send print jobs to the LineJet Print Server as well.

The most common print method offered with Windows TCP stacks is LPR/LPD, a multi-platform remote printing protocol used on everything from PCs to mainframes. The LPR print setup is very simplistic, involving only two parameters:

1. **LineJet Print Server IP address.** The IP address or host name of the print server you want to print to.
2. **LineJet Print Server destination/queue.** A pre-defined name on the print server telling the device which I/O port to send the jobs to. The standard name for the PRN port is “**d1prn**”. This destination name is case sensitive and by default, all names are lowercase.

### Windows Troubleshooting Tips

---

This section provides information on possible solutions to some standard configuration errors. If you require technical support, please have as much of the following information as you can available when you call:

1. What level of software are you running?
2. What type of attachment do you have?
3. What is your host operating system?
4. Give a detailed description of the problem.
5. How often, and when, does the problem occur?
6. Give a detailed description of your network and the components attached.

Please follow these tips to determine what the problem may be with your LineJet Print Server configuration.

### LineJet Print Server Card Cannot Be Found on the Network

---

- Have you assigned the LineJet Print Server a unique and valid IP address which corresponds with the other IP addresses on your network? For example, are you sure no other device is using this IP address?
- Are you sure you are trying to talk to the LineJet Print Server from a Windows station on the same subnet? Currently, the print server can only be seen locally unless you configured a routing entry earlier.
- If you look at the back of the printer, is the STAT LED flashing once a second or is it quicker than that? A slower, once-a-second rate tells you that the print server is in fact configured with an IP address. A faster rate says it knows nothing about this so you may need to try the configuration process again.
- Have you confirmed that the network connection to the LineJet Print Server is working correctly? Trying different network cables and locations will help narrow down the problem.

## HTML Configuration Forms Will Not Display

---

- Can you “ping” the LineJet Print Server from your Windows station? If not, please refer to “LineJet Print Server Card Cannot Be Found on the Network” above.
- Have you used the correct URL for the LineJet Print Server home page? It should be “**http://LineJetIPAddress**” (e.g. “**http://192.75.11.9**”).

## Errors Occur when Defining an LPR Printer

---

- Can you “ping” the LineJet Print Server from your Windows NT station? If not, please refer to “LineJet Print Server Card Cannot Be Found on the Network” above.
- Did you specify the correct IP address or host name for the LineJet Print Server in the first field of the “Add LPR Compatible Printer” box?
- Did you specify a valid destination/queue on the LineJet Print Server in the second field of the “Add LPR Compatible Printer” dialogue box? If so, did you also enter it in lowercase letters?
- LPR is available only on Windows NT, not on Windows 95 or 98 (unless a third party software is added).

## Can Not Browse the LineJet Print Server Card on the Network

---

- Have you looked under the right Windows workgroup? By default, the LineJet Print Server will be found under “WORKGROUP.”
- Are you able to browse other Windows stations and devices on the network from this same station?
- Has this Windows station been given enough time to update its registry so it can see this newly added workgroup device? Sometimes Windows stations can take considerable time, depending on the size of the network.

## Printer Errors when Printing or No Output

---

- Is there a large job currently printing taking up all of the printer resources? Usually when printing from Windows 95 stations, a busy printer can cause Windows to display a printer error message. This is because it demands immediate printer attention rather than holding the data until the printer is ready again. The best way around this is to use a central spooling station like an NT server.
- Have you tried restarting the spooler under “Control Panel:Services”? Sometimes this is needed to get printing started.

---

**Note**



As a last resort, you may want to reboot the Windows station. Sometimes this is the only option to completely clear this situation. The LineJet Print Server usually has nothing to do with this problem.

---

## TCP/IP Access Problem

---

If you can “**ping**” the printer from a workstation, but you cannot Web browse, Telnet, or print to the printer through the LineJet Print Server, there may be an incorrect entry in the TCP access list. In order for this workstation to use the LineJet Print Server interface in this case, one of two things must happen.

1. The TCP list must have an entry added to grant access to this workstation.
2. All entries must be deleted from the TCP list to grant all workstations/hosts access to the above TCP services.

To view the current access list:

Use the printer control panel to access the configuration menu (see the *User's Guide* for configuration menu information). From the DIAGNOSTICS/Printer Tests menu choose the E-net Test Page. When the page prints, look under the “TCP ACCESS TABLE” section for the TCP access list entries.

To add/delete a TCP access list entry, refer to “TCP Access Lists” on page 181.

### Note



When the following procedure is used, the TCP access list will be cleared but all IP addresses will need to be entered again after the procedure is complete.

---

To reset all TCP/IP values to the factory defaults when access is impossible:

1. Obtain a printer configuration printout using the control panel. See the *User's Guide* for configuration menu information.
2. Power off the printer.
3. On the Print Server Interface, place SWITCH 2 in the down position.
4. Power on the printer and wait for the ONLINE state.
5. On the Print Server Interface, place SWITCH 2 in the up position.
6. From a workstation attached to this network segment, create an ARP entry. The LineJet Print Server IP address and hardware or MAC address are needed. At the workstation enter:

```
arp -s <ipaddress> <MACaddress>
```

```
ping <ipaddress>
```

7. Try to “ping” this IP address to see if the LineJet Print Server can be seen on your network. If the interface does not respond, verify you are on the same network segment as the printer and that the ARP entry was created.
8. Telnet into the Print Server using the same IP address as above. Log in as root with no password.
9. At the system prompt, enter:

```
store tcpip from default
```

```
config http on
```

```
save
```

```
reset
```

### Note



This will reset all TCP/IP settings to factory default and reset the LineJet Print Server.

---

10. Power the printer off and then back on.
11. Set the IP address, subnet mask, and default gateway parameters to the desired values.
12. If Web browser access does not work, Telnet into the LineJet Print Server as root. Enter the following command:

**config http on**

If you are still experiencing difficulty accessing or browsing the printer, contact technical support for further assistance.

## Web Browser/HTTP Problem

---

In some cases you may not be able to browse the printer web page simply because the LineJet Print Server HTTP may be turned off.

If you can not “ping” the LineJet Print Server IP address, make sure the IP Address, subnet mask, and default gateway are set correctly by checking the Ethernet Parameters menu from the operator panel. See the *User's Guide* for configuration menu information.

If you can “ping” the LineJet Print Server IP address but can not access the web pages, perform the following procedure to verify the LineJet Print Server HTTP is turned on.

1. Telnet into the Print Server and log in as root with no password.
2. At the system prompt enter the following commands:

**config http on**

**save**

**reset**

3. After approximately 30 seconds, point your browser to the Print Server IP address. The printer web pages should now be accessible.

If you are still experiencing difficulty accessing or browsing the printer, contact technical support for further assistance.

## Windows NT 4.0 Host Setup Problems

The installation procedure covered earlier in this chapter assumes that the LineJet Print Server adapter is configured with the correct IP address, subnet mask and gateway (if required), and that the administrator can “ping” and telnet to the LineJet Print Server adapter from the server console. If this is *not* the case, use the printer front panel to configure the LineJet Print Server adapter before proceeding.

The LineJet Print Server installation for Windows NT 4.0 also requires “Microsoft TCP/IP Printing” service on the server. To install this service, click on the Network icon in the Control Panel and click on the “Services” tab. Click on “Add Service” and select “Microsoft TCP/IP printing”.

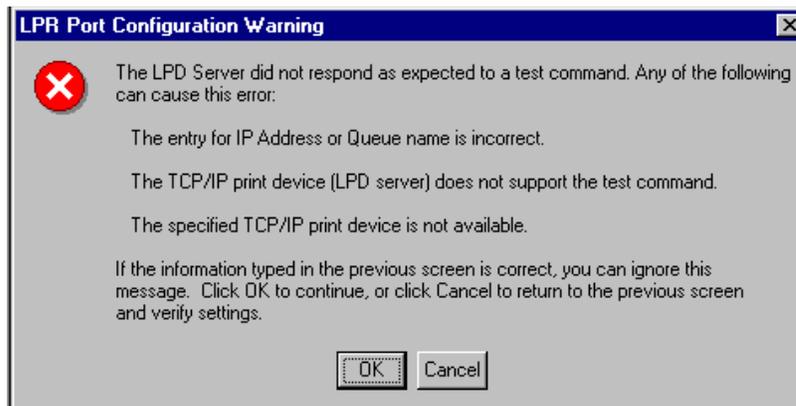
- Are you logged in as the “Administrator”?

This installation requires administrator privileges.

- “LPR port” is not listed in step 5.

Cancel the installation and install Microsoft TCP/IP printing service on the server.

- LPR configuration warning during step 6.



The Ethernet cable is not plugged in, or printer is not turned on. This message is a communication failure between the NT server and the LineJet Print Server card. Check cabling, IP address settings, gateway, etc.

- Test page does not print or prints incorrectly.
  1. Is the printer online? Re-send test page.
  2. The print queue name in step 6 should be "d1prn"; however, the name can be changed. To verify the queue names, print an Ethernet Test Page. Refer to your *User's Guide* for information.
  3. The Printronix NT print driver requires P-Series emulation active on the printer. The Generic/Text driver should print in any printer emulation.
  4. Delete then re-install Microsoft TCP/IP Print service on the server.



---

# 7

## *Unix Configuration*

---

### **Overview**

This chapter details a complete Unix setup including:

1. Configuring the LineJet Print Server with its mandatory TCP/IP settings (i.e. IP address and subnet mask).
2. Configuring the Unix host station with a new printer.

---

### **Unix Environment Description**

The LineJet Print Server supports network printing under various TCP/IP environments including all variations of Unix. Printing can come from multiple hosts directly or through central spooling machines. Figure 9 illustrates this.

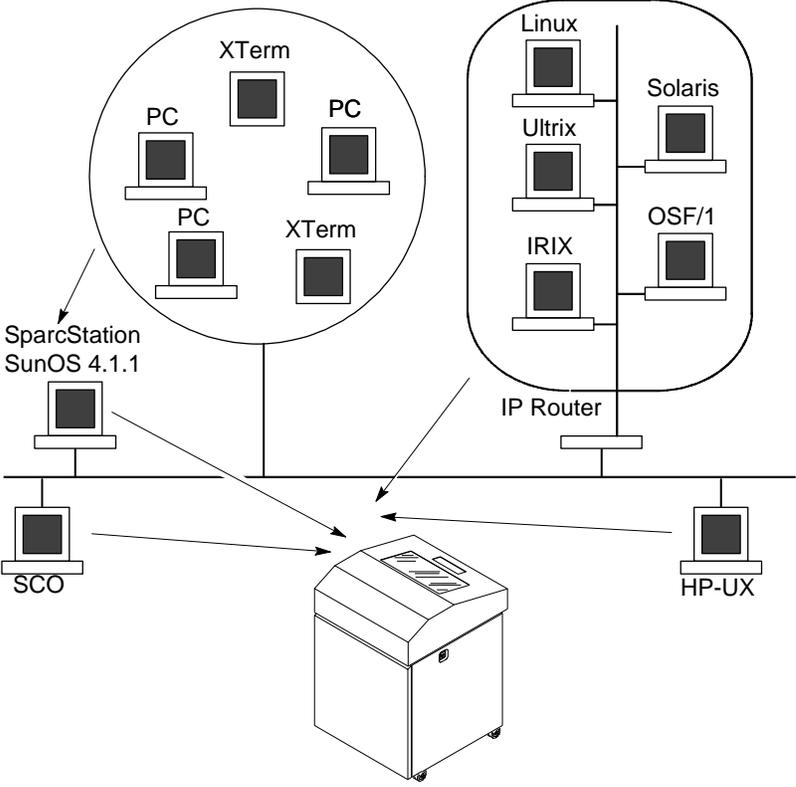


Figure 9. Unix Integration

## Unix LineJet Print Server Configuration

---

There are mandatory settings needed before the print server can be detected on the network, as well as some additional optional settings. This section offers alternative methods for configuring your LineJet Print Server and mentions some of the more common optional settings available.

### Mandatory

---

The LineJet Print Server must be assigned TCP/IP values of IP Address, Subnet Mask, and Gateway Value (if required) before setting up and establishing print queues and logical Unix printers. Refer to Chapter 4, “TCP/IP Configuration”.

Additionally, the file `etc/hosts` on the Unix system (or the DNS server known to the Unix workstation being set up) must be updated to include the IP Address and logical name for the LineJet Print Server, or a DNS server needs to be set with this information so that the Unix print daemons (software processes) can communicate with the physical LineJet Print Server.

### Optional

---

Additional settings, like routing entries, can be configured allowing for communication across subnets.

Configuration of the LineJet Print Server can be done from the control panel or through host commands. To configure these options, see “Configuration Tools” on page 21.

## Communicating Across Routers

---

Since Unix environments rely on TCP/IP to communicate with the LineJet Print Server, crossing routers becomes an issue.

After following one of the LineJet Print Server configuration methods mentioned (other than the BOOTP method), you will most likely only be able to communicate with the print server from the same subnet. This means any host across a router will not be able to see your LineJet Print Server. In order to communicate across a router, it is best to store a default router/gateway within the print server so that any packets destined for another subnet get forwarded to this router automatically. The router (or series of routers) can then take over ensuring the packets get to their final destination on another subnet on your network.

To configure a default router/gateway within the LineJet Print Server:

1. Load a Web browser on your Unix station and direct it to the URL "`http://LineJetIPaddress/networkConf.html`" (e.g. "`http://192.75.11.9/networkConf.html`").

---

**Note**

If prompted for a "User ID" and password first, type in "`root`" for the ID and press ENTER at the password prompt since there is no default password.

---

2. At the "Network Configuration" HTML form that displays, click in the first field below the "Gateway" heading and type in the IP address of the default router/gateway for the LineJet Print Server subnet.
3. Click on the SUBMIT button when done and physically repower the print server to make sure the new setting is in effect.

## Unix Host Configuration

---

There may be times when you would prefer to or have to perform the manual setup steps for a new printer definition. There may also be times when you require a less common print solution such as direct socket capabilities. This section covers these additional setups.

### Manual System V Host Setup

---

This setup involves any Unix operating system using System V print spooling (e.g. SCO, Solaris<sup>®</sup>, HP-UX<sup>®</sup>, DG/UX<sup>®</sup>, etc.). This means an interface file is used for each defined printer and in the case of any System V print setup involving a LineJet Print Server, the RSHD protocol is used to transfer data from the host to the print server.

To manually configure a new System V printer on a Unix station, create a dummy device file that acts as a locking mechanism between contending print jobs.

Syntax:

```
touch /dev/LineJetname.portname
```

where **LineJetname** is the host or IP name of the print server and **portname** is one of its four I/O ports.

Example:

```
touch /dev/spike.prn
```

### Manual LPR/LPD Host Setup

---

The LineJet Print Server also supports Unix operating systems which follow a BSD print system (e.g. SunOS 4.1.x). This means a printcap file is used to define all printers available on the host and interface scripts are not commonly used. Instead, LPR/LPD printers are defined.

To manually configure an LPR/LPD printer on a BSD Unix system:

1. Define an entry for this new printer within the printcap file, `/etc/printcap`.

Syntax:

```
printername:  
:sh:pw#80:mx#0:\  
:rm=LineJetname:\  
:rp=LineJetdestination:\  
:lp=:\  
:sd=/usr/spool/lpd/printername:\  
:lf=/usr/spool/lpd/printername/log:\  
:af=/usr/spool/lpd/printername/acct:
```

where **printername** is any name you would like to give to this new printer, **LineJetname** is the host or IP name of the print server, and **LineJetdestination** is one of the pre-defined destinations/queues on the device.

Example:

```
LPQ1000:  
:sh:pw#80:mx#0:\  
:rm=spike:\  
:rp=dlprn:\  
:lp=:\  
:sd=/usr/spool/lpd/ LPQ1000:\  
:lf=/usr/spool/lpd/ LPQ1000/log:\  
:af=/usr/spool/lpd/ LPQ1000/acct:
```

2. Create the spool directory specified by the “**sd=**” entry in the printcap entry for this printer.

Example:

```
touch /usr/spool/lpd/ LPQ1000
```

3. Create the log and account files specified by the “**lf=**” and “**af=**” entries in the printcap entry for this printer.

Example:

```
touch /usr/spool/lpd/LPQ1000/log  
touch /usr/spool/lpd/LPQ1000/acct
```

4. Change permissions and ownership on the spool directory and everything within it.

Example:

```
chmod -R g+rwX,o+rX /usr/spool/lpd/ LPQ1000
chmod -R daemon.daemon /usr/spool/lpd/ LPQ1000
```

5. Start the printer daemon for this new printer.

Example:

```
lpc start LPQ1000
```

You now have a new printer which relies on LPR/LPD to print to a LineJet Print Server printer. Use the following command to test printing:

Syntax:

```
lpr -printername filename
```

Example:

```
lpr -LPQ1000 /etc/hosts
```

## Direct Printing

---

### FTP printing

The LineJet Print Server contains four logical printers (destinations) labeled as d1prn through d4prn. For FTP printing, establish an FTP session, followed by a **put** to the **dest**. Since the printer emulation can be PCL<sup>®</sup>-II, Epson<sup>®</sup>, or Proprinter<sup>®</sup>, be sure the file you **put** to print is both printable and suitable for the printer emulation. Straight text is useable in all cases.

Example:

Type the commands as shown, followed by the enter key. Assume the file you want to print is `/etc/inetd.conf`, which is a simple text file.

**ftp MyLineJet** (*MyLineJet* needs to be a ping-able DNS name, or if no DNS, in the local `/etc/hosts` file, or it can be a dotted IP Address for the LineJet Print Server)

at the user prompt, type **root**

at the password prompt, press ENTER (default password for **root** is blank until you change it)

```
cd dest/d1prn  
put /etc/inetd.conf  
quit
```

---

#### Note



If the file you want to print is a binary file, enter the command **bin** before the **put** command.

---

### Remote shell printing

The LineJet Print Server is BSD capable, and has an internal lp daemon. Each Unix system has a remote shell function which can be used to access this process: Sun, etc. is `rsh`; UX is `remsh`; AIX is `rcmd`.

For example, printing the file `/etc/inetd.conf` on an HP-UX system to the second logical `dest` in the LineJet Print Server:

```
remsh MyLineJet lp -d d2prn < /etc/indetd.conf
```

You may also use this form:

```
cat /etc/inetd.conf | remsh MyLineJet lp -d d2prn
```

In this form of printing the printer status will be fed back as to on/off line.

## Spoiled Printing

---

### Printing Setup on HP-UX

#### Method 1, SAM

A simple way to set up printing on HP-UX is using SAM, the system administration tool.

1. At command prompt in a terminal session, start SAM.
2. Double click on **Printers/Plotters**.
3. Under **Actions** choose **Add Remote Printer**.
4. In the entry panel that opens, make the following entries (remember Unix is case sensitive, so `d1prn` is not the same as `D1PRN`):
  - a. For Printer Name, enter anything you want. This is actually the Unix Queue name; example, "Accounting".
  - b. For Remote System Name, enter the DNS/pingable name; example, "MyLineJet".
  - c. For Remote Printer Name, enter a dest on the LineJet; example, "d1prn".
  - d. Accept defaults for Remote Cancel model and Remote Status model.
  - e. Check the box next to "Remote Printer is on a BSD system".

- f. Click on OK.
5. You will be asked if you want to add the new printer to HP Vue, this is optional. Other optional choices include making this the system printer and allowing anyone to cancel a job.
6. Test your new printer by either a command line print:  
`lp -d Accounting /etc/inetd.conf`  
or, via an application which can be directed to a selected printer.

### **Method 2, Command Line**

The following procedure requires root privilege.

1. Assume a print queue (aka Unix printer). **Quality** is desired.
2. DNS/IP Address name of LineJet Print Server is **MyLineJet**.
3. The **dest** d4prn is to be used on the LineJet Print Server.
4. The default BSD interface file **rmodel** on the HP-UX system will be used.
5. Issue the following commands (in order shown):  
`lpshut` (stops the print scheduler)  
`lpadmin -pQuality -mrmodel -v/dev/null -ormMyLineJet -orpd4prn -ob3` (sets up queue)  
`lpsched` (restarts print scheduler)  
`accept Quality` (allows queue to accept jobs)  
`enable Quality` (allows queue to pass jobs)

Explanation of command line:

`-m` indicates model **rmodel** is to be associated with **Quality**  
`-v` indicates use `/dev/null` as a file interlock to avoid contention  
`-orm` is name of remote Print Perver  
`-orp` is name of remote printer on remote Print Server  
`-ob3` declares remote Print Server is a BSD type

Other useful commands are `lpstat` and `lpmove [ /usr/lib ]`

6. You can now do a test print:  
`lp -d Quality /etc/inetd.conf`

## Printing Setup on Sys V (Sun 2.5.x, 2.6, 2.7 and Similar)

Sys V printing is characterized by use of the `lp` printer interface program, `lpsched` printer scheduler, and the use of an interface file. The file `lpadmin` is used in setting up the print queue definition. As of Sun 2.6 and on, the interface file `netstandard` is provided in a generic interface file intended for network print servers such as the LineJet Print Server. Also as of Sun 2.6 the ability to print to a socket (sometimes called raw tcp) or a remote printer (`dest` for LineJet) is provided.

Root access is required to use `lpshut` (stop the print scheduler to add a new printer with `lpadmin`), `lpsched` and `lpadmin`.

For the following example, assume the print queue to be created is `lobby`, and the ping-able IP Address name of the LineJet is `LJ_PS1`, and you wish to print to remote printer (`dest`) `d1prn` on `LJ_PS1`. As always with Unix, commands are case-sensitive. Also, be sure to use the `bourne` or `korn` shell, not the `cshell` when using the commands.

The command structure:

- stop print scheduler
- use `lpadmin` to describe print queue (often referred to as the logical Unix printer of the same name)
- start the print scheduler
- enable the print queue
- accept the print queue (allow it to accept print jobs)
- do a test print

Two examples are shown, one using the logical `dest` `d1prn` on `LJ_PS1`, and the second using default port 9100 on `LJ_PS1`.

### Using the `dest` `d1prn`

```
lpshut
lpadm -p lobby -v/dev/null (gives file interlocking)
lpadmin -p lobby -i/usr/lib/lp/model/netstandard
lpadmin -p lobby -sLJ_PS1!d1prn
lpsched
enable lobby
accept lobby
```

**Using the raw tcp socket 9100:**

```
lpshut
lpadmin -p lobby -v/dev/null (gives file interlocking)
lpadmin -p lobby -i/usr/lib/lp/model/netstandard
lpadmin -p lobby -o dest=LJ_PS1:9100 -o protocol=tcp
lpsched
enable lobby
accept lobby
```

To do a test print for either form using the `/etc/hosts` file:

```
lp -d lobby /etc/hosts
```

**LPR/LPD Printing Setup on BSD systems  
(Sun 4.x, DEC<sup>®</sup> Ultrix<sup>®</sup>, Free BSD, etc.)**

BSD system printing can be characterized by the use of a printcap file which identifies the print queue and describes information about the print device, and the use of a spooling directory where print files are temporarily placed until printed. Root access is required to set up the printcap file.

Assume printer queue name to be used is **backdock**, and IP Address name of the printer is **linejet01** (ping-able name in **hosts** file or known to DNS server), and that you wish to use the first logical printer (**dest**) **d1prn**, of your LineJet Print Server.

1. Create print queue/printcap entry in file `/etc/printcap` (printcap file syntax is rigid, and observes strict letter case):  
**backdock|back1:\** (backdock is the Unix printer name, and back1 is referred to as the short printer name)  
**:rm=linejet01:rp=d1prn:\**  
**:lp=:\**  
**:sd=/usr/spool/lpd/backdock:\** (this is the path to the spooling directory you will create)  
**:sh:mx#0:**

2. Create the spool directory to use, set the correct permissions and ownership of the spool directory and objects within it, and start the printer daemon for this new printer:

```
mkdir /usr/spool/lpd/backdock
chmod -R g+rx,o+rx /usr/spool/lpd/backdock
chmod -R daemon.daemon /usr/spool/lpd/backdock
lpc start backdock
```

3. You now have the printer **backdock** set up and started. Test the printer by sending the file `/etc/resolv.conf`, for example:  
`lpr -Pbackdock /etc/resolv.conf`

## Unix Troubleshooting Tips

---

This section provides information on possible solutions to some standard configuration errors. If you require technical support, please have as much of the following information available when you call:

1. What level of software are you running?
2. What type of attachment do you have?
3. What is your host operating system?
4. Give a detailed description of the problem.
5. How often, and when, does the problem occur?
6. Give a detailed description of your network and the components attached.

Please follow these tips to determine what the problem may be with your LineJet Print Server configuration.

### Nothing Prints

---

- Can you “ping” the LineJet Print Server from your Unix station? If not, please refer to Chapter 4, “TCP/IP Configuration”.
- Is the LineJet Print Server able to communicate with the attached printer? To test this, you can:
  1. “telnet” to the print server (e.g. “telnet 192.75.11.9”) and log in as “root”.
  2. Enter the command “start fox prn”.
  3. Execute “stop prn” right after starting the test.

This test will send the same text line over and over to the attached printer.

- Is the job getting stuck in the Unix host queue? If so, check that the printer is online. If it is, there is a configuration error on the Unix station so creating a new print setup may be needed.

- Is the control panel showing any activity to indicate it is receiving data? If so, but there is nothing printing, check to see if a manual form feed is needed. Also, ensure that the printer can support the type of job coming through.
- Do all jobs fail or just certain ones? For example, is it possible that jobs from a certain application are the only ones to fail? If so, check the type of data it sends to make sure it matches the printer emulation. Check the application printer configuration for mistakes.
- If you are using System V, was the spooler restarted?

## Stair-Stepped Output

---

Stair-stepped output is print which starts at the top left of the page but every line thereafter starts a little further over to the right. It also refers to Unix jobs that print one line of text at the top of a page followed by a series of blank pages.

This kind of output happens only with Unix text jobs if carriage return insertion is not incorporated into the print setup. The printer may be told to do a linefeed but the Unix job does not specify anything about a carriage return to follow this.

To fix this, carriage return insertion must be enabled somewhere in the print setup. The easiest and most common location is on the LineJet Print Server itself within the appropriate model. The feature is called “onlcr” and the command syntax is:

```
set model modelname stty onlcr  
save
```

For example, if printing to the destination, **d1prn**, the associated model is **m1**. Therefore, the command is:

```
set model m1 stty onlcr  
save
```

## No Form Feed or Extra Page Comes Out

---

Unix text jobs may also have problems outputting the last page of a job especially when the BSD Remote (LPD) print method is used. This means the form feed button has to be pressed on the printer to get this last page out.

To make this process automatic, tell the LineJet Print Server to handle this task by setting this feature “on” in the appropriate model. The command syntax is:

```
set model modelname trailer $FF  
save
```

For example, if printing to the destination, **d2prn**, the associated model is **m2**. Therefore, the command is:

```
set model m2 trailer $FF  
save
```

For default destination model mappings of the LineJet Print Server, please see “LineJet Print Server Naming Schemes” on page 188.

---

# 8

## *Novell Configuration*

---

### **Overview**

---

This chapter details a complete Novell setup, including:

1. Identifying the LineJet Print Server card on the network.
2. Configuring the LineJet Print Server with its mandatory print setup settings.
3. Configuring a new print queue on the file server.

For additional information about further options available with the 10/100 Base-T interface, see Chapter 9, “Novell Configuration for 10/100Base-T Interfaces”.

## Novell Environment Description

The LineJet Print Server card supports network printing under Novell environments by using IPX. It supports all 3.1X versions of NetWare. Figure 10 provides a Novell setup overview. Version 4.1X is supported under bindery emulation only.

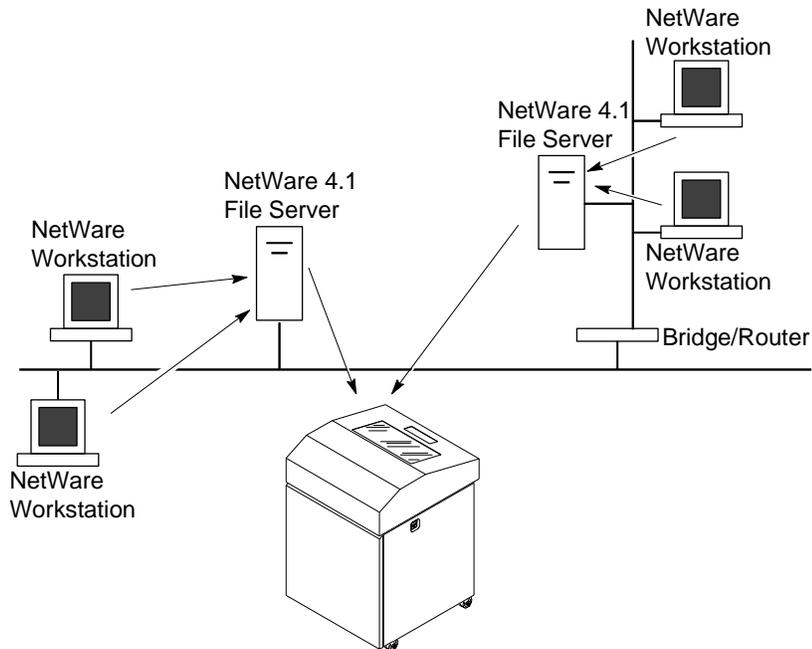


Figure 10. Novell Integration

---

## Novell LineJet Print Server Configuration

---

### Mandatory

Under all Novell environments, the LineJet Print Server card does not require any network settings to make it visible on the network. Simply plug it in to your network and power it on. However, with a new print queue setup on a Novell file server, there can be some mandatory settings needed on the LineJet Print Server.

### Optional

Additional settings are available to fine-tune the LineJet Print Server's Novell functionality. These options include:

- **NDS Context.** The NDS context in which the print server object was created. This option is required if you create the print server object in a different context from the context the file server object for the file server that you logged in with is on.
- **NDS Tree.** The NDS tree the print server object was created in. This is only needed if your environment uses more than one NDS tree.
- **Mode.** The mode the LineJet Print Server will run in. This can be either auto, bindery, or NDS. The default is auto so that the LineJet Print Server can autosense which mode it should run in. See "NetWare Version 4.x RPRINTER Setup" on page 92 for information on what to do when using both bindery and NDS file servers at the same time.
- **Preferred File Server.** In a bindery setup, this specifies the file server that the print server object was created on. In an NDS setup, this specifies a file server(s) that the print server object resides on. Since NDS is distributed, most administrators will not know which file server(s) the print server object is actually stored on, so in most NDS environments this option is not used.

For additional information about these options, see Chapter 9, "Novell Configuration for 10/100Base-T Interfaces".

## Using HTML Forms

---

When defining a new print queue on a Novell file server, a new print server must be defined to represent the LineJet Print Server. This name must match the pre-defined name given to the print server. By default, this name is in the format “M\_XXXXX” where “XXXXX” equals the last six digits of the LineJet Print Server Ethernet address found on a configuration printout or control panel settings under Ethernet parameters, MAC Address (e.g. M\_071C1A).

To use the HTML forms to define a print queue, do the following:

1. Load a Web browser on a network station that can communicate with the print server over TCP/IP. The command to change the print server name is:

Syntax:

```
store pserver name newname
```

Example to change the name to `micro1`:

```
store pserver name micro1
```

2. Direct your Web browser to URL  
“`http://LineJetIPAddress/adminConf.html`”  
(e.g. “`http://192.75.11.9/adminConf.html`”).

---

### Note



If prompted for a “User ID” and password first, type in “`root`” for the ID and press ENTER at the password prompt since there is no password by default.

---

3. At the “Administration Configuration” HTML form that displays, highlight the field beside the “Name” heading and type in the new name of the print server.
4. Click on the SUBMIT button when done and physically repower the printer to make the new setting take effect.

## Novell Host Configuration

---

Under all versions of NetWare<sup>®</sup>, both PSERVER and RPRINTER setups are supported by the LineJet Print Server. Since a PSERVER setup is the most common, you will find the necessary steps to configure the LineJet Print Server as a PSERVER shown first. Configuration for RPRINTER and NPRINTER setup follow the PSERVER information.

---

### Note



The LineJet Print Server can service up to four printers on one file server. It can not service multiple file servers at one time.

---

## NetWare Version 3.x PSERVER Setup

---

To configure a print queue on a NetWare 3.1x network:

1. Log on to the Novell file server as supervisor.
2. Enter PCONSOLE.
3. Select "Print Queue Information" from the PCONSOLE Main Menu.
4. Press INSERT to add a new queue to the list of currently defined queues showing.
5. Type in the name of this new queue when prompted and press ENTER. This can be any name you would like.
6. Press ESCAPE to return to the Main Menu.
7. Select "Print Server Information" and press ENTER.
8. Press INSERT when the list of existing print servers displays.
9. Type the name of the LineJet Print Server when prompted for a print server name and press ENTER when done. By default, the LineJet Print Server is named "M\_XXXXXX" where "XXXXXX" equals the last six digits of the print server Ethernet address found on configuration printouts or reading MAC address on control panel. (e.g. M\_071C1A).
10. Back at the print server list, select this newly defined LineJet Print Server and press ENTER.
11. Select "Print Server Configuration" from the menu that displays.

12. Select "Printer Configuration" from the next menu to display a list of configured printers.
  13. Select the first item listed as "NOT INSTALLED" and press ENTER.
  14. At the printer configuration window, type in the name for this new printer. This name must be one of the pre-defined destinations/queues on the LineJet Print Server. This will normally be "dlprn".
  15. Go to the "Type" field and press ENTER to see the possible choices.
  16. Select "Defined Elsewhere" from this list.
  17. When done, press ESCAPE and select "Yes" to save the changes to this new printer.
  18. Press ESCAPE again to return to the "Print Server Configuration" menu.
  19. Select "Queues Serviced by Printer."
  20. Select this new printer from the printer list that displays and press ENTER.
  21. At the empty queue list that displays, press INSERT.
  22. Select the queue created in step 5 and press ENTER.
  23. When prompted for the priority, press ENTER to select the default or select a priority.
  24. Press ESCAPE until back at the PCONSOLE Main Menu.
  25. Repower the printer.
  26. Wait two minutes and then select "Print Queue Information" from the PCONSOLE Main Menu.
  27. Select this new queue from the menu that displays. Select "Currently Attached Servers" to see which print server is servicing this queue.
- At this point, the LineJet Print Server name (e.g. M\_071C1A) should show within this window. This means the LineJet Print Server knows about this new Novell print queue it must service as a PSERVER. Therefore, it will poll this queue regularly looking for jobs to print.

**Note**

The LineJet Print Server can service up to four printers on one file server. It can not service multiple file servers at one time.

---

## NetWare Version 3.x RPRINTER Setup

---

These steps are for Novell environments with Netware 3.x (or earlier) file servers.

To configure a new RPRINTER on a NetWare 3.x network:

1. Log in to the LineJet Print Server command shell, npsh, as root.

If you have TCP/IP available and this print server already has an IP address stored within it, you can use the built-in HTML configuration forms or a Telnet session. Please see “Configuration Tools” on page 21 for further details. If you have only Novell available, you will need to use a PC, laptop, or terminal.

**Note**

If you use HTML configuration, you will need to go to the “Network Configuration” HTML form (i.e. “<http://LineJetIPAddress/networkConf.html>”; e.g. “<http://192.75.11.9/networkConf.html>”) and look under the “Novell” section. The settings in the following step are found there. If using a Telnet session, you will need to manually execute the commands listed in the next step.

---

2. Store the RPRINTER settings on the LineJet Print Server. This will refer to an existing PSERVER.NLM on the file server or to one that you will create later in these steps.

Syntax:

```
store rprinter add PSERVERname printernumber  
LineJetdestination
```

Example for an RPRINTER servicing printer **0** of the PSERVER.NLM called `pserver1` and sending jobs to the LineJet Print Server destination `d1prn`:

```
store rprinter add pserver1 0 d1prn
```

3. Leave this LineJet Print Server login session and log on to the NetWare 3.x file server as Supervisor.
4. Load a PSERVER.NLM if there is not one loaded already. This will be the PSERVER that the LineJet Print Server services as an RPRINTER so it must match the PSERVER name given in step 2.
5. Enter PCONSOLE.
6. Select "Print Queue Information" from the PCONSOLE Main Menu.
7. Press INSERT to add a new queue to the list of currently defined queues.
8. Type in the name of this new queue when prompted and press ENTER. This can be any name you would like.
9. Press ESCAPE to return to the Main Menu.
10. Select "Print Server Information" and press ENTER.
11. Press INSERT when the list of existing print servers displays.
12. Select the print server that you want the Print Server to service as an RPRINTER. This is the PSERVER.NLM loaded in step 4.
13. Select "Print Server Configuration" from the menu that displays.
14. Select "Printer Configuration" from the next menu to display a list of configured printers.
15. Select an item from the list (i.e. either an existing printer name or a "Not Installed" one) to display the printer configuration window.
16. Assign a name (if not an existing printer) to this printer.
17. At the "Type" field, select "Remote Other/Unknown."
18. Press ESCAPE to save the changes.
19. Press ESCAPE until back at the "Print Server Configuration" menu.
20. Select "Queues Serviced by Printer" to display a list of defined printers.
21. Select the printer you just defined and press ENTER.
22. At the list of queues that displays, press INSERT to add a queue to the list.
23. Select the queue defined and press ENTER.

24. When prompted for a priority, press ENTER to select the default or select a priority.
25. Press ESCAPE until you have exited PCONSOLE.
26. Reload the PSERVER.NLM that the LineJet Print Server is to service as an RPRINTER.
27. Repower the Print Server by turning the printer off and then on.
28. Wait two minutes and then check your PSERVER to see if the appropriate printer is being serviced. The PSERVER should indicate that the printer is "Waiting for job."

At this point, the LineJet Print Server knows to receive any jobs this PSERVER.NLM has to send to it through the defined printer.

## NetWare Version 4.x PSERVER Setup

---

LineJet Print Server destinations are case sensitive and will not be recognized if they are typed incorrectly. By default, they are all lower case. If you are setting up a NetWare 4 environment, the destination must be renamed to uppercase to match the PCONSOLE entry.

The LineJet Print Server can be used in a NetWare 4 environment with either of the following options:

- Set the LineJet Print Server up as a PSERVER, replacing a dedicated printer.
- Set the LineJet Print Server up as an RPRINTER, interacting with an existing PSERVER (see page 92).

Following a PSERVER setup, bindery emulation is required. To configure the LineJet Print Server as a PSERVER in a NetWare 4 environment:

1. Log in to the Novell as supervisor.
2. Enter PCONSOLE.
3. Press F4.
4. Select PRINT QUEUES.
5. Press INSERT to add a queue.
6. Type in new queue name and press ENTER.

7. Press ESCAPE.
8. Select PRINT SERVERS.
9. Press INSERT to add the new print server.
10. Type the name of the LineJet Print Server. By default, it is "M\_XXXXXX" where "XXXXXX" equals the last six digits of the Ethernet address. (e.g. M\_000BF5)
11. Select this new print server and press ENTER.
12. Select PRINTERS.
13. Press INSERT to add a printer to the list.
14. Type in the name of one of the default destinations on the unit for the NAME field and go to the type field.
15. Press ENTER at this field and select DEFINED ELSEWHERE. If DEFINED ELSEWHERE is not available, choose PARALLEL.
16. Press ENTER on the Print Queues Assigned field.
17. Press INSERT to display all queues; select the one you defined in step 5 and press ENTER.
18. Select a priority and press ENTER. Priority 1 should be sufficient.
19. Press ESCAPE until you are back to Main Menu.
20. Reboot the Print Server by repowering the printer.
21. Check the CURRENTLY ATTACHED SERVERS and verify the print server is active.
22. Press ESCAPE until you are out of the PCONSOLE.

Even though the entire print set up is done through PCONSOLE, you may want to communicate directly with the print server in order to modify settings, monitor the unit, etc. To communicate with the print server, the optional host software, **npsh.exe**, is included. **npsh.exe** is a DOS executable program that can be run from a DOS prompt on a NetWare workstation.

**npsh.exe** performs the following:

**npsh nvplist**

Lists all of the LineJet Print Server devices on the network; each name is in the default format M\_XXXXXX (where XXXXXX equals the last six digits of

the unit Ethernet address). This is regardless of whether it is configured as a PSERVER or an RPRINTER.

### ***npsh unitname***

Starts a Telnet-like session with the named print server, allowing you to configure, monitor, and troubleshoot the unit with the built-in command set.

### ***npsh unitname command***

Initiates a single Command with guest access only to the unit instead of entering into a complete session.

To communicate with the unit using **npsh.exe**:

1. From a DOS prompt on a Novell workstation, begin an npsh session with the unit.

### ***npsh unitname***

Starts a Telnet-like session with the named print server with guest access only.

2. To obtain root access to the unit, type:

### ***supervisor***

A standard login screen is displayed prompting you for the login name and password.

3. Login to the unit as root user.

### ***root***

Root users require the use of a password as configured in the unit user list.

4. Enter the password. If this password is not yet set, press enter at the password prompt. Otherwise, enter the password that is already stored in the unit.

### ***password***

You are now logged in to the unit as a root user and can access any npsh command on the unit.

---

### **Note**



Because **npsh.exe** makes use of broadcasts, you may have problems communicating across a router.

## NetWare Version 4.x RPRINTER Setup

---

LineJet Print Server can be configured to service both RPRINTER, NDS mode, and PSERVER, bindery mode.

Use the following procedure to set up an RPRINTER form of attachment on a 4.x server:

1. LineJet Print Server requires a bindery server login on the 4.1x as the first step to servicing RPRINTER. This bindery login is necessary for registering the LineJet Print Server PSERVER name; no bindery queues or printers are setup. Using PCONSOLE, bindery mode, create a bindery printer server object whose name matches that of the LineJet Print Server at the root context of the 4.1x box (i.e., M\_03092B). After creating the bindery PrintServer on the 4.1x server, reboot LineJet Print Server and use the **debug Novell pserver** command via a Telnet or npsh session, or print the E-net Test Page out to make sure there is a successful server login.
2. Using either PCONSOLE in NDS mode, or NWADMIN:
  - a. create an NDS queue (any name you want), or simply use an existing one;
  - b. create a print server to use (any valid name, or choose one already in existence);
  - c. create a printer object to use with the print server object you chose or created, and attach it to the chosen queue;

---

**Note**

The 4.1x queue name, print server name, and printer object don't have to match any LineJet Print Server name; multiple printers can be defined, but only one print server can be attached to.

---

Example:

NDS queue name:	Finance
NDS print server name:	Fin_Q
NDS printer name:	Fin_Prt_1
NDS printer name:	Accounting_Prt_1

3. At a 4.1x console session, if a pserver.nlm session is already running for Fin\_Q, first unload it, then reload it to find the new objects, or, simply issue **load pserver Fin\_Q**.

If you are successful the print server console screen will show a "printer status" option. In the "printer status" window, note the numbers assigned to the printers you created. Assume for our example that one printer previously existed (number 0), and we are adding two more, whose numbers became 1, and 2.

On the load command you must strictly follow case of the name (this is not required on the LineJet Print Server).

4. Via a Telnet or npsh session create RPRINTER attachments:

```
store rprinter add Fin_Q 1 d1prn
```

This command assigns destination d1prn as the RPRINTER 1 service path.

```
store rprinter add Fin_Q 2 d4prn
```

This command assigns destination d4prn as the RPRINTER 2 service path.

For LineJet Print Server entries, case does not have to be observed. Also, if you want to change the destination names from dxprn, do so first with the **set dest <dest> name <new name>** command, being sure to use the save command so these reappear after a reboot.

5. Reboot the LineJet Print Server adapter (power the printer off and on, or use the **reset** command) so the new RPRINTER service names are broadcast.
6. Open a Telnet or npsh session and log into LineJet Print Server. Wait a minute or two, then use the **list rprinter** command, and you should see your entries. You could also do this by looking at the connection status on the 4.1x PSERVER printer status entries.
7. If you add, delete or change RPRINTER entries on LineJet Print Server or 4.1x console, you should always unload and reload the pserver.nlm module to register the changes. The LineJet Print Server can be configured and ready before the pserver.nlm is reloaded, or LineJet Print Server can be reset after pserver.nlm is reloaded.

8. A web browser can also be used to see the RPRINTER attachments, etc. and status.

## Novell Troubleshooting Tips

---

This section provides information on possible solutions to some standard configuration errors. If you require technical support, please have as much of the following information available when you call:

1. What level of software are you running?
2. What type of attachment do you have?
3. What is your host operating system?
4. Give a detailed description of the problem.
5. How often, and when, does the problem occur?
6. Give a detailed description of your network and the components attached.

Please follow these tips to determine what the problem may be with your LineJet Print Server configuration.

### NetWare 3.x - No PSERVER Connection

---

- Has the LineJet Print Server been power cycled once the PCONSOLE steps were completed? This will make the print server boot up and realize which print queue and file server it needs to service.
- Is the LineJet Print Server already servicing a queue on another file server? If so, it can not service another file server at the same time.
- When defining a new **"print server"** within PCONSOLE, did you use the correct name for the LineJet Print Server (e.g. M\_071C1A)? By default, it only recognizes itself as "M\_xxxxxx" where "xxxxxx" equals the last six digits of its Ethernet address found on the configuration printout.
- When defining a new **"printer name"** within PCONSOLE, did you use a pre-defined destination/queue rather than a name of your own?

By default, the LineJet Print Server only recognizes names like “**dlprn**.” All other names will be ignored by the device.

- Is the LineJet Print Server in **Bindery** mode as seen under the “**list pserver**” output on the device? If servicing only a NetWare 3.x file server, it must be set to handle Bindery services. The default setting is Bindery.
- Is there an available NetWare user license for the LineJet Print Server to use while it acts as a PSERVER? Every PSERVER takes up one user license since it logs in to the Novell file server.
- Have you given the connection process some time after repowering the LineJet Print Server? In larger Novell environments, the file server identification and connection process can take several minutes.

## NetWare 4.x - No PSERVER Connection

---

- Has the LineJet Print Server been power cycled once the PCONSOLE steps were completed? This will make the print server boot up and realize which print queue and file server it needs to service.
- Is the LineJet Print Server already servicing a queue on another file server? If so, it can not service another file server at the same time.
- When defining a new “**print server**” within PCONSOLE, did you use the correct name for the LineJet Print Server (e.g. M\_071C1A)? By default, it only recognizes itself as “M\_XXXXXX” where “XXXXXX” equals the last six digits of its Ethernet address found on the configuration printout.
- When defining a new “**printer name**” within PCONSOLE, did you use a pre-defined destination/queue rather than a name of your own? By default, the LineJet Print Server only recognizes names like “**dlprn**.” All other names will be ignored by the device.
- Is the LineJet Print Server in **Bindery** mode as seen under the “**list pserver**” output on the device? If servicing only a NetWare 4.x file server, it must be set to handle Bindery services. The default setting is Bindery.

- Is there an available NetWare user license for the LineJet Print Server to use while it acts as a PSERVER? Every PSERVER takes up one user license since it logs in to the Novell file server.
- Have you given the connection process some time after repowering the LineJet Print Server? In larger Novell environments, the file server identification and connection process can take several minutes.

---

# 9

## *Novell Configuration for 10/100Base-T Interfaces*

### Overview

---

This chapter provides additional information for Novell environments using the 10/100Base-T interface, including:

1. **LineJet Print Server Configuration.** This section includes: setting the preferred file server, setting password security, adjusting polling time, changing the LineJet Print Server name, changing the LineJet Print Server frame type, changing the LineJet Print Server mode, setting the LineJet Print Server NDS context, and setting the LineJet Print Server preferred NDS tree.
2. **Host Configuration.** This section includes: NDS PSERVER setup, Bindery PSERVER setup, referencing a Bindery queue in NDS, and RPRINTER/NPRINTER setups.
3. **Troubleshooting tips.** This section covers PSERVER setups, RPRINTER/NPRINTER setups, and printing related problems.

## Novell LineJet Print Server Configuration (10/100Base-T)

There are no mandatory Novell settings needed before the print server can be detected on the network. However, there can be some mandatory settings needed before a Novell print queue can be serviced by the LineJet Print Server. These mandatory settings are covered separately for Netware 3.x and 4.x under the Host Configuration heading.

The print server setup in a Novell environment is much simpler than that required in a TCP/IP one. No addresses, masks, or router entries are necessary and in most cases, the LineJet Print Server can simply be connected to the network, turned on, and then configured for printing from a Novell station through PCONSOLE or Netware Administrator. See Figure 11 for an example of a Novell network, showing the use of file servers and how they relate to the print server.

However, there are some optional parameters you may wish to change such as the preferred file server(s), print server password, polling time, frame type, print server name, NDS context, and NDS preferred tree. The following sections describe these optional parameters.

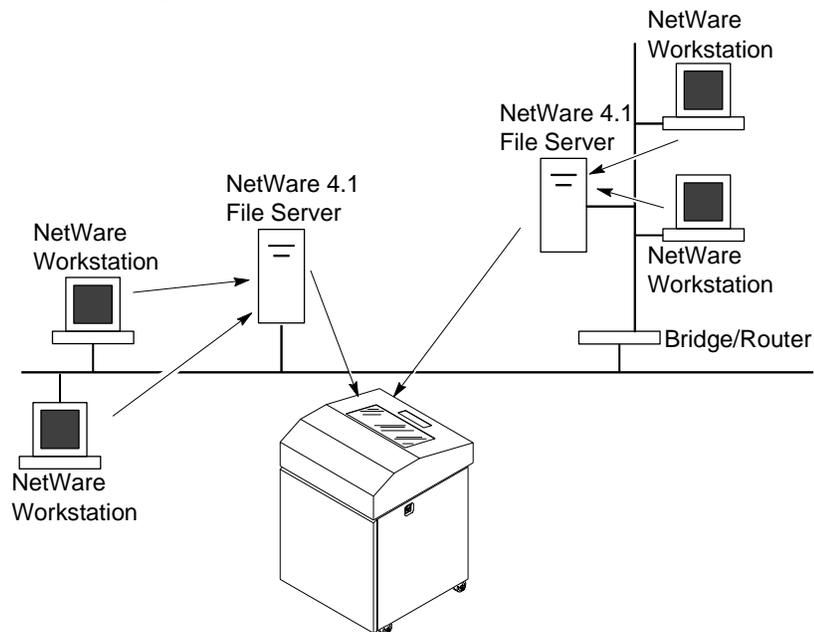


Figure 11. Novell Integration

## Preferred File Server (NDS and Bindery setups)

---

In a bindery setup, the preferred file server specifies the file server that the print server object was created on. In an NDS setup, it specifies a file server that the print server object resides on. Since NDS is distributed, most administrators will not know which file server(s) the print server object is actually stored on, so in most NDS environments this option is not used. This feature is useful in a large Novell network so that the LineJet Print Server does not ignore important file servers. If you are setting up the LineJet Print Server to work with a Bindery file server, it is a good idea to set a preferred server on the LineJet Print Server.

To view which file servers the LineJet Print Server does acknowledge at a given time, use the **debug nest fserver** command. See Chapter 13, "Commands", for more information.

### Adding Preferred File Server

#### HTML Method

1. Load a Web browser on a network station that can communicate with the print server over TCP/IP.
2. Direct your Web browser to URL:  
`"http://LineJetIPAddress/networkConf.html"`  
(e.g. `"http://192.75.11.9/networkConf.html"`).

---

#### Note



If prompted for a "User ID" and password first, type in **root** for the ID and press ENTER at the password prompt since there's no password by default.

3. Look under the "Novell" section and add the name of the preferred file server in the "File Server" field.
4. Click on the SUBMIT button when done and physically re-power the print server to make the new settings take effect.

### Manual (Telnet) Method

1. Telnet to the print server. This will bring up a login screen:  
`telnet ipaddress`

---

**Note**

If prompted for a “User ID” and password first, type in “**root**” for the ID and press ENTER at the password prompt since there’s no password by default.

---

2. You should now see a prompt displayed that has the LineJet Print Server’s IP address followed by a colon then root.  
`ipaddress:root>`
3. At the prompt, enter:  
`store pserver novell fserver add fservername`  
where *fservername* is the name of the Novell file server you want to add as a preferred file server. This adds the specified file server as a preferred file server on the LineJet Print Server.
4. Reset the unit to ensure the changes take effect.  
`reset`

### Removing Preferred File Server

#### HTML Method

1. Load a Web browser on a network station that can communicate with the print server over TCP/IP.
2. Direct your Web browser to URL:  
`“http://LineJetIPAddress/networkConf.html”`  
(e.g. “`http://192.75.11.9/networkConf.html`”).

---

**Note**

If prompted for a “User ID” and password first, type in “**root**” for the ID and press ENTER at the password prompt since there’s no password by default.

---

3. Look under the “Novell” section and remove the name of the preferred file server from the “File Server” field.

## Setting Password Security (NDS and Bindery setups)

---

4. Click on the SUBMIT button when done and physically re-power the print server to make the new settings take effect.

### Manual (Telnet) Method

1. Telnet to the print server. This will bring up a login screen:  
`telnet ipaddress`



#### Note

If prompted for a “User ID” and password first, type in “**root**” for the ID and press ENTER at the password prompt since there’s no password by default.

2. You should now see a prompt displayed that has the LineJet Print Server’s IP address followed by a colon then root.  
`ipaddress:root>`
3. At the prompt, enter:  
`store pserver novell fserver del fservername`  
where *fservername* is the name of the Novell file server you want to remove as a preferred file server.
4. Reset the unit to ensure the changes take effect.  
`reset`

## Setting Password Security (NDS and Bindery setups)

---

Besides the general security measures, a Novell setup provides further password security. A password can be set on the LineJet Print Server and within your PCONSOLE or Netware Administrator setup so that when the LineJet Print Server tries to login to the file server, the passwords are compared.

To set the password on the Novell host for use in a PSERVER setup, you will need to:

### Netware 4.x

1. Login to NetWare Administrator as a user with security equal to “Admin” on your Novell host.

2. Double click on the print server object you are using for your setup. This will bring up the print server objects details pages.
3. Select the “Change Password...” button on the “Identification” page.
4. At the prompts, type and re-type the new password. Press OK when you are finished.
5. Proceed to the next section to store the password on the LineJet Print Server.

### Netware 3.x

1. Enter PCONSOLE as **supervisor** on your Novell host.
2. Select “Print Server Information” from the main menu.
3. Select the appropriate printer and press ENTER.
4. Select “Change Password”.
5. At the prompts, type and re-type the new password. Press ENTER when you are finished.
6. Proceed to the next section to store the password on the LineJet Print Server.

### Print Server Setup - HTML Method

1. Load a Web browser on a network station that can communicate with the print server over TCP/IP.
2. Direct your Web browser to URL:  
**“<http://LineJetIPaddress/networkConf.html>”**  
(e.g. “<http://192.75.11.9/networkConf.html>”).

---

**Note**

If prompted for a “User ID” and password first, type in “**root**” for the ID and press ENTER at the password prompt since there’s no password by default.

---

## Setting Password Security (NDS and Bindery setups)

---

3. Look under the “Novell” section and add the new password to the “Pserver Password” field.

---

### Note



The passwords entered in Netware Administrator or PCONSOLE must match the password set on the unit.

---

4. Click on the SUBMIT button when done and physically re-power the printer to make the new settings take effect.

### Print Server Setup - Manual (Telnet) Method

1. Telnet to the print server. This will bring up a login screen:

```
telnet ipaddress
```

---

### Note



If prompted for a “User ID” and password first, type in “**root**” for the ID and press ENTER at the password prompt since there’s no password by default.

---

2. You should now see a prompt displayed that has the LineJet Print Server’s IP address followed by a colon then root.

```
ipaddress:root>
```

3. At the prompt, enter:

```
store pserver novell passwd password
```

---

### Note



The passwords entered in Netware Administrator or PCONSOLE must match the password set on the unit.

---

4. Reset the unit to ensure the changes take effect.

```
reset
```

---

## Adjusting Polling Time (NDS and Bindery setups)

---

To set the poll time the LineJet Print Server will use when checking for new jobs under a PSERVER setup:

### Netware 4.x

1. Login to NetWare Administrator as a user with security equal to “Admin” on your Novell host.
2. Double click on the printer object you wish to change the poll time for. This will bring up the printer objects details pages.
3. Click on “Configuration” to display the configuration page.
4. Change the “Service Interval” to the desired number (in seconds).

---

**Note**

You may also want to change the “Service mode for forms” to “Change forms as needed”. If you do not do this, the LineJet Print Server will need to poll the file server twice as much to get all the information it needs.

---

5. Re-power the LineJet Print Server by turning the printer off and on to make the changes take effect.

### Netware 3.x

1. Enter PCONSOLE as **supervisor** on your Novell host.
2. Select “Print Server Information” from the main menu, and press ENTER.
3. Select the print server you have been using for your PSERVER setup and press ENTER. By default this will be “M\_XXXXXX” where “XXXXXX” equals the last six digits of the print server’s Ethernet address found on the bottom of the device (e.g. “M\_091C1A”).
4. Select “Print Server Configuration” from the menu that displays.
5. Select “Printer Configuration” from the next menu to display a list of configured printers.
6. Select the printer you wish to alter the poll time for and press ENTER.

## Changing the LineJet Print Server Name (NDS and Bindery setups)

---

7. Change the “Sampling Interval” to the desired number (in seconds).

---

### Note



You may also want to change the “Service mode for forms” to “Change forms as needed”. If you do not do this, the LineJet Print Server will need to poll the file server twice as much to get all the information it needs.

---

8. Press ESCAPE and select “Yes” to save the changes to this new printer.
9. Re-power the LineJet Print Server by turning the printer off and on to make the changes take effect.

## Changing the LineJet Print Server Name (NDS and Bindery setups)

---

When defining a new print queue on a Novell file server, a new print server must be defined to represent the LineJet Print Server. This name must match the pre-defined name given to the print server. By default, this name is in the format “M\_XXXXX” where “XXXXX” equals the last six digits of the LineJet Print Server’s Ethernet address found on the bottom of the device (e.g. “M\_091C1A”). You must make sure that the print server object that you are using for your PSERVER setup has the same name as that stored on the LineJet Print Server. If you need to rename the print server object in Netware Administrator, please delete the object, and re-create it with the new name. Netware administrator seems to have some problems with renaming objects.

---

### Note



Changing the name will effect all of the protocols that are running on the LineJet Print Server.

---

## HTML Method

1. Load a Web browser on a network station that can communicate with the print server over TCP/IP.

2. Direct your Web browser to URL:  
"http://*LineJetIPaddress*/adminConf.html"  
(e.g. "http://192.75.11.9/adminConf.html").

---

**Note**

If prompted for a "User ID" and password first, type in "root" for the ID and press ENTER at the password prompt since there's no password by default.

---

3. Look under the "System Information" section and enter the new name into the "Name" field.
4. Click on the SUBMIT button when done and physically re-power the printer to make the new settings take effect.

### Manual (Telnet) Method

1. Telnet to the print server. This will bring up a login screen:  
`telnet ipaddress`

---

**Note**

If prompted for a "User ID" and password first, type in "root" for the ID and press ENTER at the password prompt since there's no password by default.

---

2. You should now see a prompt displayed that has the LineJet Print Server's IP address followed by a colon then root.  
`ipaddress:root>`
3. At the prompt, enter:  
`store pserver name name`
4. Reset the unit to ensure the changes take effect.  
`reset`

### Changing the LineJet Print Server Frame Type (NDS and Bindery setups)

---

The LineJet Print Server allows the user to store a particular frame type for the unit to adhere to in a Novell environment.

#### HTML Method

1. Load a Web browser on a network station that can communicate with the print server over TCP/IP.
2. Direct your Web browser to URL:  
`"http://LineJetIPaddress/networkConf.html"`  
(e.g. `"http://192.75.11.9/networkConf.html"`).

---

#### Note



If prompted for a "User ID" and password first, type in `"root"` for the ID and press ENTER at the password prompt since there's no password by default.

---

3. Look under the "Novell" section and go to the "Frame Type" field to select the appropriate frametype.
4. Click on the SUBMIT button when done and physically re-power the printer to make the new settings take effect.

#### Manual (Telnet) Method

1. Telnet to the print server. This will bring up a login screen:  
`telnet ipaddress`

---

#### Note



If prompted for a "User ID" and password first, type in `"root"` for the ID and press ENTER at the password prompt since there's no password by default.

---

2. You should now see a prompt displayed that has the LineJet Print Server's IP address followed by a colon then root.  
`ipaddress:root>`

3. At the prompt, enter:  
`store pserver novell frametype [ethernet2 | 802.3  
| 802.2 | 802.2snap | autosense]`
4. Reset the unit to make the changes take effect.  
`reset`

## Changing the LineJet Print Server Mode (NDS and Bindery setups)

---

The LineJet Print Server allows the user to store a particular mode for the unit to operate in. This will be either NDS, Bindery, or autosense. If autosense is used, the LineJet Print Server will first attempt to login to a NDS file server and if it fails it will try to login to a Bindery file server.

---

**Note**

If you are using both NDS and Bindery file servers in your setup, make sure the mode is set to auto.

---

## HTML Method

1. Load a Web browser on a network station that can communicate with the print server over TCP/IP.
2. Direct your Web browser to URL:  
`"http://LineJetIPaddress/networkConf.html"`  
(e.g. `"http://192.75.11.9/networkConf.html"`).

---

**Note**

If prompted for a "User ID" and password first, type in `"root"` for the ID and press ENTER at the password prompt since there's no password by default.

---

3. Look under the "Novell" section and go to the "Service Type" field to select the appropriate mode.
4. Click on the SUBMIT button when done and physically re-power the printer to make the new settings take effect.

### Manual (Telnet) Method

1. Telnet to the print server. This will bring up a login screen:  
`telnet ipaddress`

---

#### Note



If prompted for a “User ID” and password first, type in “**root**” for the ID and press ENTER at the password prompt since there’s no password by default.

---

2. You should now see a prompt displayed that has the LineJet Print Server’s IP address followed by a colon then root.  
`ipaddress:root>`
3. At the prompt, enter:  
`store pserver novell mode [nds | bindery | auto]`
4. Reset the unit to make the changes take effect.  
`reset`

### Setting the LineJet Print Server NDS Context (NDS setups)

---

The LineJet Print Server allows you to store the print server object in any context within the NDS tree you choose. By default the LineJet Print Server will look for the print server object in the same context as the file server object it connects to is stored in.

### HTML Method

1. Load a Web browser on a network station that can communicate with the print server over TCP/IP.
2. Direct your Web browser to URL:  
`“http://LineJetIPaddress/networkConf.html”`  
(e.g. “`http://192.75.11.9/networkConf.html`”).

---

#### Note



If prompted for a “User ID” and password first, type in “**root**” for the ID and press ENTER at the password prompt since there’s no password by default.

---

3. Look under the “Novell” section and enter the new context in the “NDS Context” field.
4. Click on the SUBMIT button when done and physically re-power the printer to make the new settings take effect.

### Manual (Telnet) Method

1. Telnet to the print server. This will bring up a login screen:  
`telnet ipaddress`

---

**Note**

If prompted for a “User ID” and password first, type in “**root**” for the ID and press ENTER at the password prompt since there’s no password by default.

---

2. You should now see a prompt displayed that has the LineJet Print Server’s IP address followed by a colon then root.  
`ipaddress:root>`
3. At the prompt, enter:  
`store pserver novell context context`
4. Reset the unit to make the changes take effect.  
`reset`

### Setting the LineJet Print Server Preferred NDS Tree (NDS setups)

---

The LineJet Print Server supports Novell environments that have multiple trees. If your environment has more than one tree you may want to set a preferred tree. By default, the LineJet Print Server will try to login to each tree it finds in turn until it is successful.

### HTML Method

1. Load a Web browser on a network station that can communicate with the print server over TCP/IP.

## Setting the LineJet Print Server Preferred NDS Tree (NDS setups)

---

2. Direct your Web browser to URL:  
"http://*LineJetIPaddress*/networkConf.html"  
(e.g. "http://192.75.11.9/networkConf.html").

---

### Note



If prompted for a "User ID" and password first, type in "root" for the ID and press ENTER at the password prompt since there's no password by default.

---

3. Look under the "Novell" section and enter the preferred tree in the "NDS Preferred Tree" field.
4. Click on the SUBMIT button when done and physically re-power the printer to make the new settings take effect.

### Manual (Telnet) Method

1. Telnet to the print server. This will bring up a login screen:  
`telnet ipaddress`

---

### Note



If prompted for a "User ID" and password first, type in "root" for the ID and press ENTER at the password prompt since there's no password by default.

---

2. You should now see a prompt displayed that has the LineJet Print Server's IP address followed by a colon then root.  
`ipaddress:root>`
3. At the prompt, enter:  
`store pserver novell tree tree`
4. Reset the unit to make the changes take effect.  
`reset`

## Novell Host Configuration (10/100Base-T)

---

This section covers PSERVER and RPRINTER/NPRINTER setups on the LineJet Print Server. The LineJet Print Server can handle up to eight RPRINTER/NPPRINTER setups.

Even though the entire print setup is done through Netware Administrator or PCONSOLE, you may need to communicate directly with the print server in order to modify settings, monitor the unit, etc.

For Netware 4.x environments, you can obtain a NWAdmn3x snap-in program called MPAdmin. This snap-in can be used to configure PSERVER setups as well as additional settings on the LineJet Print Server.

---

**Note**



NWAdmn3x is only included with Netware 4.11 and higher releases. If you are using Netware 4.10, you can either upgrade to Netware 4.11, or go to Novell's web site and get the patches to upgrade the Nwadmin program for Netware 4.10 to Nwadm3x for Netware 4.11. Alternatively, you can perform the setup without using MPAdmin.

---

### NDS PSERVER Setup (Netware 4.x)

---

There are a number of possible ways to configure the LineJet Print Server for use in a Novell NDS PSERVER setup. These include using the MPAdmin snap-in for Netware Administrator, using generic print server objects in Netware Administrator, or by using PCONSOLE. The following steps describe a setup using generic print server object in Netware Administrator. Setups using PCONSOLE are less common, and will not be discussed.

To create a printer/print queue in an NDS environment using Netware Administrator print server objects, you will need to:

1. Login to NetWare Administrator as a user with security equal to "Admin" on your Novell host.
2. Click with the right mouse button on a branch in the tree that you would like to create a print queue object in.
3. Select "Create..." from the menu that pops up to bring up the "New Object" dialogue.

4. Select "Print Queue" from the "Class of new object" list, and then click on "OK".
5. Select "Directory Service Queue", and type the name of the queue into the "Print Queue name" field.
6. Fill in the "Print Queue Volume" field by typing in a volume or browsing for one. Click on "Create" when you're done.
7. Click with the right mouse button on a branch in the tree that you would like to create a printer object in.
8. Select "Create..." from the menu that pops up to bring up the "New Object" dialogue.
9. Select "Printer" from the "Class of new object" list, and then click on "OK".
10. Type in the name for the printer in the "Printer name" field.

---

### Note



The Printer object name must match one of the destination names on the LineJet Print Server. This will most likely be **d1prn**.

---

In NDS, a printer object can only be attached to one print server object at a given time as Novell is using the printer object to represent a physical printer. A physical printer can only be attached to one parallel or serial port at a time. Thus, if you assign a printer object to another print server object, the new print server object will "steal" it from the old one (this also happens with non-LineJet Print Server print server objects).

In order to properly process print jobs sent to the LineJet Print Server, the printer object created in Novell must refer to the destination on this server and not to the actual physical printer. On the LineJet Print Server, print jobs must pass through an extra layer (a "destination") before being sent on to the printer. This destination allows for further processing of the print job before sending it to the printer.

If you are using multiple print servers, you will have to either rename all your destinations to ensure that no printer object names conflict or keep all the printer objects for one print server in a different context than those for the other print server.

11. Select "Define additional properties" and click on "Create".

12. Click on “Assignments” in the dialogue that pops up, and then on the “Add...” button.
13. Select the queue you defined earlier, or browse for a different one.
14. Click on “OK” to assign this queue to this printer.
15. Click on “OK” to close the Printers details dialogue and make the changes permanent.
16. Click on a branch in the tree (i.e. context) that you would like to create the LineJet Print Server print server object in.

---

**Note**

If the context you choose is different than the one the file server object for the file server you are using is in, you must set the context on the LineJet Print Server. See “Setting the LineJet Print Server NDS Context (NDS setups)” on page 109.

---

17. Click with the right mouse button to bring up a submenu, and choose “Create...” from this menu.
18. A dialogue titled “New Object” should pop up. In the “Class of new object” list, select “Print Server” and click on “OK”.
19. Type in the name for the print server in the “Print Server name” field. By default the name is “M\_XXXXX” where “XXXXX” equals the last six digits of the print server’s Ethernet address found on the bottom of the device (e.g. “M\_091C1A”).

---

**Note**

The name you use here must match the name stored on the LineJet Print Server. This name can be found by using the “**list pserver**” command. See “List Commands” on page 172 for more information.

---

20. Select the “Define additional properties” and click on the “Create” button.
21. Click on “Assignments” in the dialogue that pops up, and then on the “Add...” button.
22. Select the printer you created earlier.
23. Click on “OK” to assign this printer to this print server.

24. Click on “OK” to close the printer servers details dialogue and make the changes permanent.
25. Physically re-power the printer to make the new settings take effect.

### **Bindery PSERVER Setup (Netware 3.x and Netware 4.x)**

---

A Bindery PSERVER setup is possible under both Netware 3.x and Netware 4.x. If you are using Netware 4.x, Bindery emulation is required. Please consult your Novell manual on how to setup Bindery emulation. A Bindery setup using PCONSOLE in Netware 3.x is described in “NetWare Version 3.x RPRINTER Setup” on page 87. The setup using PCONSOLE in Netware 4.x is described in “NetWare Version 4.x RPRINTER Setup” on page 92.

### **Referencing a Bindery Queue in NDS (Netware 3.x and Netware 4.x)**

---

If you would like to reference a Bindery queue when you perform your PSERVER setup in NDS, you must create a PSERVER object for the LineJet Print Server on the file server where the Bindery queue resides. This is important because in order to service the queue, the LineJet Print Server must log on to the queue’s file server. Since the queue is not an NDS queue, the LineJet Print Server can’t login under NDS, so it must login under Bindery.

This will only work if there is a valid PSERVER object on the file server. This PSERVER object must have the same name that was used for the NDS setup. By default this will be “M\_XXXXXX” where “XXXXXX” equals the last six digits of the print server’s Ethernet address found on the bottom of the device (e.g. “M\_091C1A”). This PSERVER object does not need to have any printers or queues assigned to it. Also, when referencing a Bindery queue in NDS, the Novell Mode on the LineJet Print Server must be set to “auto” so that both NDS and Bindery logins are possible. See “Setting the LineJet Print Server NDS Context (NDS setups)” on page 109.

---

## RPRINTER/NPRINTER Setup (Netware 3.x and Netware 4.x)

---

This procedure associates an existing PSERVER with a remote LineJet Print Server acting as a RPRINTER/NPRINTER in a NetWare 3.x or Netware 4.x environment. It is the PSERVER's responsibility to get jobs from the queue and to pass them off to the LineJet Print Server acting as the remote printer. Unlike a PSERVER setup, the LineJet Print Server does not deal directly with the queues.

---

**Note**

As a RPRINTER/NPRINTER, the print server does not use a login ID. A non-LineJet Print Server print server such as PSERVER.NLM or PSERVER.EXE must be running for RPRINTER to operate. Also, if the LineJet Print Server loses a connection to a PSERVER, it will automatically reconnect when that server becomes available again.

---

The following steps assume that you have created a PSERVER object in either Netware 3.x or Netware 4.x and have assigned printers and queues to it. If you have not already done this, do it now. The setup is similar to creating a PSERVER setup for the LineJet Print Server, except that there are no restrictions about which names may be used for the print server and printer objects.

---

**Note**

Write down the printer number(s) assigned to the printer(s) you are going to be using for this setup. You will need them in a later step.

---

### HTML Method

1. Load a PSERVER on your Netware 3.x or Netware 4.x file server (i.e. issue a `load pserver pservername` command on the file server).

---

**Note**

If it is a NDS PSERVER on a Netware 4.x file server, you must specify the PSERVER name and context for *pservername*. For example:  
`load pserver .sales_ps.sales.hp`

---

2. Load a Web browser on a network station that can communicate with the print server over TCP/IP.

## RPRINTER/NPRINTER Setup (Netware 3.x and Netware 4.x)

---

3. Direct your Web browser to URL:  
"http://*LineJetIPaddress*/networkConf.html"  
(e.g. "http://192.75.11.9/networkConf.html").

---

### Note



If prompted for a "User ID" and password first, type in "root" for the ID and press ENTER at the password prompt since there's no password by default.

---

4. Look under the "Novell" section and find a row in the RPRINTER category.
5. Click on "Enabled" and enter the name used with the PSERVER.NLM started in step 1 into the "Print Server Name" field.

---

### Note



If it is a NDS pserver, only enter the PSERVER name and not the context (e.g. *sales\_ps*).

---

6. Enter the printer number of the printer you would like serviced into the "Printer Number" field, and then select the destination on the LineJet Print Server you would like to use for output.
7. Repeat steps 4 through 6 for each additional printer you would like to have serviced.
8. Click on the SUBMIT button when done and physically re-power the printer to make the new settings take effect.

### Manual (Telnet) Method

1. Load a PSERVER on your Netware 3.x or Netware 4.x file server (i.e. issue a load *pserver pservername* command on the file server).

---

### Note



If it is a NDS PSERVER on a Netware 4.x file server, you must specify the pserver name and context for *pservername*. For example:  
load pserver .sales\_ps.sales.hp

---

2. Telnet to the print server. This will bring up a login screen:  
`telnet ipaddress`

---

**Note**

If prompted for a “User ID” and password first, type in “**root**” for the ID and press ENTER at the password prompt since there’s no password by default.

---

3. You should now see a prompt displayed that has the LineJet Print Server’s IP address followed by a colon then root.  
`ipaddress:root>`
4. At the prompt, **store** the RPRINTER settings on the LineJet Print Server. The ***pservername*** refers to the existing PSERVER.NLM on the file server created in step 1.

Syntax:

```
store rprinter add pservername printernumber  
LineJetdestination
```

Example for an RPRINTER servicing printer 0 of the PSERVER.NLM called ***pserver1*** and sending jobs to the LineJet Print Server destination ***d1prn***:

```
store rprinter add pserver1 0 d1prn
```

---

**Note**

If it is a NDS pserver, only enter the PSERVER name and not the context (e.g. ***sales\_ps***).

---

5. Physically re-power the printer to make the new settings take effect. Wait two minutes and then check your PSERVER to see if the appropriate printer is being serviced. The printer should display a message such as “Waiting for job”. At this point, the LineJet Print Server knows to receive any jobs this PSERVER.NLM has to send to it through the defined printer.

---

## Troubleshooting (10/100Base-T)

---

### PSEVER Setup

---

If there is no connection with the LineJet Print Server after you have completed the print setup, there are several things to confirm.

---

**Note**

The debug information that is mentioned in this section can be found by either `telnet`-ing to the LineJet Print Server and issuing the commands given, or launching a browser to the Novell status page on the LineJet Print Server (e.g. <http://192.168.11.9/networkNovellStatus.html>).

---

- Have you tried repowering the LineJet Print Server? Wait about a minute before checking to see if it has logged in and attached to a queue.
- Is the network connector fastened tightly to the unit?
- Is the LineJet Print Server already servicing a queue on another file server? If so, it cannot service another file server at the same time.
- Is there an available NetWare user license for the LineJet Print Server to utilize while it acts as a PSEVER? Every PSEVER takes up one user license since it logs in to the Novell file server.
- When going through the PSEVER setup steps, did you name the LineJet Print Server “M\_XXXXXX” where “XXXXXX” equals the last six digits of the Ethernet address? This is the default format of the unit’s name when it is acting as a PSEVER.

---

**Note**

This “M\_XXXXXX” name must have six digits after the “\_” so if necessary, pad out each byte with a zero (0).

---

- Has the LineJet Print Server’s name been changed from its default of “M\_XXXXXX” and if so, have you incorporated this new name into your PSEVER setup?

- Is there a password set for the Print Server to utilize when it is logging in to the file server? Make sure the LineJet Print Server's PSERVER password matches that of the PSERVER setup or set both places to no password.
- When setting the LineJet Print Server up as a PSERVER, did you specify a destination on the LineJet Print Server (e.g. `d1prn`) for the printer name and did you remember this name is case sensitive?

---

**Note**

LineJet Print Server destinations are case sensitive so they will not be recognized if they are typed incorrectly. By default, they are all in lowercase. If you are setting up in a NetWare 4.x environment, the destination must be renamed to uppercase to match the PCONSOLE or Netware Administrator entry. Please see `set dest destination name newname` on page 164 for information on changing names.

---

- Does the destination you used in your PSERVER setup have the Novell service enabled? Please see the “Commands” chapter for information on enabling/disabling services.
- Try doing a `debug nest ipx` telnet command on the LineJet Print Server (or find the “IPX Layer” section on the Novell HTML status page). Check that a board has been bound to the LineJet Print Server, and that the network number is correct for your network. If not, you may want to set a specific frame type for the LineJet Print Server to use. You can find out what frame type is bound to which board number using the `debug nest odi` command (or from the “ODI Layer” section on the Novell HTML status page).
- Try a `debug nest fserver` telnet command (or find the “File Servers” section on the Novell HTML status page). If no file servers show up, then there is probably a problem with the network connection, or the LineJet Print Server card is not on a Novell network. Try a `debug nest sap` telnet command (or find the “SAP” section on the Novell HTML status page) to see if the LineJet Print Server card is seeing any network activity.
- Try a `debug nest pserver` telnet command (or find the “PSERVER” section on the Novell HTML status page). Look for a valid queue under the “EPS QUEUES” section. If the printer field contains a number and there is a valid file server, but there is no

queue, then you probably made an error in the setup, try again. If it's an NDS PSERVER setup, look for a line with the following type of message "Could not login to NDS Tree <TREE> as <PSERVER.<CONTEXT>". This means that either the tree is wrong, the context stored on the LineJet Print Server for the print server object is wrong, the print server object password is wrong, or the print server object name is wrong.

- Try a **debug nest rprinter** telnet command (or find the "RPRINTER" section on the Novell HTML status page). Look for the following type of line: "(0:ENPReadConfig):[0:213] Destination = <X>", where <X> is between 0 and 3. If they all say "Destination = 65536" then the PSERVER setup did not complete properly. If there was a valid queue under "EPS QUEUES" in the **debug nest pserver** command, then the printer name probably doesn't match an existing destination name on the LineJet Print Server, or Novell has been disabled for that destination. If there is a valid "Destination = " line, then double check that there is an entry for this number under the "ENP INFO" section.

---

### Note



Debug messages for the PSERVER setup are in the RPRINTER section here because the PSERVER setup on the LineJet Print Server shares some code with the RPRINTER setup.

---

- Try a **debug nest logs** telnet command (or find the "General Messages" section on the Novell HTML status page). Look for a valid entry for the printer. It will look something like this: "(0:InitSinglePrinter): printer=<X> name=<NAME>". Then look for the following lines: "(0:Printf): RemoteMonitor(<X>); printer is" and "(0:Printf): WAITING\_FOR\_JOB". If you see these lines the LineJet Print Server is setup properly, and the problem points to a setup issue on the workstation.
- If the LineJet Print Server has logged in to the file server but has not attached to the queue, there may be a permission problem. Make sure the appropriate users have rights to this queue (they should be in the group "everyone.") Also, you may have to assign the queue to "root" so that is available to everyone.

- Did you rename any objects in Netware Administrator during your setup? Netware Administrator seems to have a problems renaming objects. If so, delete everything and start over.

If none of these help your situation, you may want to try the whole setup again. Completely delete the setup that is giving you trouble and go through the setup again, following each step carefully.

---

**Note**

Be sure to reboot the printer before beginning a new setup and after completing a PSERVER setup. Wait at least a minute for the Print Server to login and attach to a queue.

---

### RPRINTER/NPRINTER Setup

---

If there is no connection with the LineJet Print Server after you have completed the print setup, there are several things to confirm.

---

**Note**

The debug information that is mentioned in the section can be found by either `telnet`-ing to the LineJet Print Server and issuing the commands given, or launching a browser to the Novell status page on the LineJet Print Server (e.g. <http://192.168.11.9/networkNovellStatus.html>).

---

- Have you tried repowering the printer? Wait about a minute before checking to see if it has logged in and attached to a queue.
- Is the network connector fastened tightly to the unit?
- Is the LineJet Print Server already servicing a queue on another file server? If so, it cannot service another file server at the same time.
- Is there an entry when a `list rprinter` telnet command is done on the LineJet Print Server (not found on the Novell HTML status page)? When the LineJet Print Server is configured as an RPRINTER, this command should produce the appropriate entry.
- If the LineJet Print Server has logged in to the file server but has not attached to the queue, there may be a permission problem. Make sure the appropriate users have rights to this queue (they should be in the group “everyone.”) Also, you may have to assign the queue to “root” so that is available to everyone.

- Does the destination you used in your RPRINTER setup have the Novell service enabled? Please see the “Commands” chapter for information on enabling/disabling services.
- Try doing a **debug nest ipx** telnet command on the LineJet Print Server (or find the “IPX Layer” section on the Novell HTML status page). Check that a board has been bound to the LineJet Print Server, and that the network number is correct for your network. If not, you may want to set a specific frame type for the LineJet Print Server to use. See the LineJet Print Server Commands section above. You can find out what frame type is bound to which board number using the **debug nest odi** command (or from the “ODI Layer” section on the Novell HTML status page).
- Try a **debug nest sap** telnet command (or find the “SAP” section on the Novell HTML status page) to see if the LineJet Print Server is seeing any network activity.
- Try a **debug nest rprinter** telnet command (or find the “RPRINTER” section on the Novell HTML status page). Look for an entry for one of the numbers 4 to 7 under “ENP INFO”. The “dest” field should match the destination used on the LineJet Print Server. If no entry is found, check that the destination has the Novell service enabled. If the “ERROR-CODE” field has an error of 308, make sure no other RPRINTER setup is servicing this printer object at the same time. Only one RPRINTER connection is allowed to service a PSERVER.NLM printer.
- If the LineJet Print Server has logged in to the file server but has not attached to the queue, there may be a permission problem. Make sure the appropriate users have rights to this queue (they should be in the group “everyone.”) Also, you may have to assign the queue to “root” so that is available to everyone.

If none of these help your situation, you may want to try the whole setup again. Completely delete the setup that is giving you trouble and go through the setup again following each step carefully.

---

**Note**

Be sure to reboot the printer before beginning a new setup and after completing an RPRINTER setup. Wait at least a minute for the Print Server to login and attach to a queue.

---

## Printing Related

---

### The job goes to the queue but nothing prints

If nothing is printing, make sure you have a connection to the LineJet Print Server first. Please see the PSERVER or RPRINTER sections above if you are having connection-related problems. Otherwise, consider these points when trying to solve printing problems in a Novell environment:

- Does the job leave the queue or is it stuck there indefinitely? If it leaves properly, the problem points to the actual printing mechanism on your Novell system (i.e. CAPTURE, NPRINT, etc.), to the print job format, or to the printer itself. Otherwise, review the configuration steps you've already followed.
- Have you confirmed that you can print from the LineJet Print Server to the printer ignoring the Novell setup altogether? Please see **start fox | tts | loopb prn** on page 177 for a good test.
- Is anything happening on the printer when the print job is sent? Sometimes, the print job may have arrived at the printer but be waiting for a manual form feed. If this is the case, please see "Set Commands" on page 163 for information on trailer strings.
- Is the printing mechanism you are using (i.e. CAPTURE, NPRINT, etc.) configured to service the appropriate queue?
- Is the LineJet Print Server configured as the queue's "Currently Attached Server"? If not, make sure you have associated the queue and the printer. See "Novell Host Configuration" on page 85.
- Is there a hold on the print job? If you select the job from PCONSOLE's CURRENT PRINT JOB ENTRIES, change the User Hold or Operator Hold to "no".
- If you look in PCONSOLE's CURRENT QUEUE STATUS within the PRINT QUEUE INFORMATION menu, is the server configured to service entries in this queue? It is possible to turn servicing off here.

If you've followed the suggestions above and are still having printing problems, try rebooting the LineJet Print Server. Then either review every step you took in when configuring the LineJet Print Server, or try re-doing

the setup, paying special attention to each step explained in “Novell Host Configuration” on page 85.

### The job prints incorrectly

This category really can be broken down into several sub-categories such as lost characters, garbled data, extra banner pages, or blank pages at the end of the job. However, the reason for these mishaps can generally be traced to the printing mechanism used on your Novell system. These points should be considered when configuring your print method (i.e. CAPTURE, NPRINT, etc.):

- Did you include the **No Tabs** option?
- Did you specify **No Banner** with PostScript printers?
- Did you turn off banner pages and form feeds if this is already taken care of within an application or on the LineJet Print Server? Doubling up of these types of print features is easy to do since these options are provided both on the LineJet Print Server (in a model) and within the print command.
- Are you running the latest version of PSERVER (later than 1.22)? If not, upgrade the PSERVER software.
- In a PSERVER setup, did you ensure that the printer name (e.g. **d1prn**) was set up as “Defined Elsewhere”?
- Is the timeout option in the CAPTURE command set high enough so the printer doesn’t time out before the print processing has had a chance to complete? This can be a problem with graphic jobs.

Some other things to consider when garbled data persists are:

- tab expansion (**x~~t~~ab**) set on (in a model) with graphic jobs
- the correct driver for the printer if printing from within Windows

For additional information on these suggestions or on various Novell printing mechanisms, please refer to your NetWare user manuals.



---

# 10

## *OS/2 Configuration*

---

### Overview

---

This chapter details a complete OS/2 configuration setup including:

1. Configuring the LineJet Print Server Interface with its TCP/IP settings
2. Configuring a new printer on an OS/2 workstation. The procedure given will be from an OS/2 Warp 4 system, but the setup is similar to OS/2 Warp 3 and v2.11.

OS/2 must have TCP/IP installed on it and be configured with the correct IP parameters. See OS/2 documentation/help and your network administrator.

### **Configuring the LineJet Print Server Interface TCP/IP Settings**

---

There are mandatory TCP/IP settings (i.e. an IP address and subnet mask) needed before the print server can be detected on the network. There are also some additional settings that you may want to configure but these are optional. This section offers alternative methods for configuring your LineJet Print Server Interface within an OS/2 environment and mentions some of the more common optional settings available.

## Mandatory Settings

---

The LineJet Print Server Interface must be configured with an IP address and subnet mask at a minimum. Consult your network administrator to obtain the proper values for these parameters.

## Optional Settings

---

One additional setting, the gateway address, is necessary if the OS/2 workstations must communicate with the LineJet Print Server Interface across a router. Consult your network administrator to obtain the proper value for this parameter. To configure these options, see “Configuration Tools” on page 21.

## OS/2 Workstation Configuration

---

OS/2 must use the TCP/IP LPR protocol in order to send jobs to the LineJet Print Server to be printed. This section will explain how to use the LPR command and how to setup an OS/2 print queue which will forward jobs to the printer using the LPR protocol.

## Using the LPR Command

---

At an OS/2 command prompt, enter `lpr -s ip_address -p EthernetInterface_queue filename`

---

### Note



This name must be the name of an existing destination/queue on the LineJet Print Server and it must be lowercase by default. You will most likely use `d1prn`. If the IPDS feature is installed, queue name `d4prn` is not available.

---

## Troubleshooting

Check the IP information on both the LineJet Print Server and the OS/2 station for correctness. Make sure the *LineJet\_queue* is actually defined on the Ethernet Interface and that you are spelling it correctly.

## Using an OS/2 LPR Print Queue

---

This section describes how to setup an OS/2 Warp 4 print queue to print to the LineJet Print Server using the LPR protocol. TCP/IP for OS/2 must be installed on your OS/2 workstation. This procedure is similar to OS/2 Warp 3 and v2.11.

To setup the printer queue:

1. Find the Printer template icon. It may be in the Printers folder or the Templates folder.
2. Right click on the icon then select "Install." The "Create a printer" dialog box is displayed.
3. Enter any desired name for the printer. This will be the name of the printer queue.
4. In the "Default printer driver" list, select the desired driver. If the desired driver does not appear in the list, click on "Install new printer driver..." and follow the instructions to install the desired driver.
5. In the "Output port" list, double click on an unshaded \PIPE\LPDx port. If all are shaded, you will have to double click on a shaded port and change the parameters. If no \PIPE\LPDx ports are shown, follow these steps to install them:
  - a. Right click on a port and select "Install."
  - b. Select the "New port drivers" radio button.
  - c. In the "Directory" field, type `d:\TCPIP\DLL` where *d*: is the drive where the TCPIP subdirectory exists.
  - d. Click on "Refresh." Several \PIPE\LPDx port icons should appear in the "Output port" list. If none appear, type `d:\MPTN\DLL` in step c. and try this step again.

---

**Note**



If no ports appear after completing step d., search your drives for the LPRPDRVR.PDR and type the path to this file, not including the file name, in step c. The final step available is to ask OS/2 support to install these ports.

---

- e. Select all the ports with the mouse pointer and click on "Install."  
The \PIPE\LPDx ports should now show in the "Output port" list.
6. The "\PIPE\LPDx - Setting" dialog box is displayed.
7. In the "LPD server" field, type the IP address of the LineJet Print Server.
8. In the "LPD printer" field, type the name of the defined destination / queue on the LineJet Print Server.

---

**Note**

This name must be the name of an existing destination/queue on the LineJet Print Server and it must be lowercase by default. You will most likely use **d1prn**. If the IPDS feature is installed, queue name **d4prn** is not available.

---

9. Optionally, click on "Help" to understand the other parameters and enter those values.
10. Click "OK."
11. Click on "Create." The print queue is created and placed in the Printers folder or possibly on the OS/2 desktop.
12. Make sure LPRPORTD is running. Type **Ctrl-~~E~~** and check the list for a line that contains LPRPORTD. If it is running, this process is complete. If it is not running, enter the following at the OS/2 command prompt:

**start lprportd**

You will probably want to put this command in your "STARTUP.CMD" file, or use the TCP/IP Configuration tool to set it to autostart on boot up.

Any jobs sent to this queue will now be forwarded to the LineJet Print Server to be printed.

### Starting the LPR Port Daemon

The LPR Port Daemon must be started to enable TCP/IP printing. To start the LPR Port Daemon;

1. Open the TCP/IP folder, which is in the OS/2 System folder for Warp 3.0.
2. Open TCP/IP Configuration.
3. Select the "Autostart" tab on the notebook.
4. In "Services to Autostart," select "lprportd."
5. Select "Foreground Session" and "Minimized."
6. Close the notebook by double clicking the system icon, which is located in the upper left corner.
7. Select "Save."
8. If prompted, respond **Yes** to save the configuration changes.
9. At the OS/2 command prompt, enter `tcpstart` to restart TCP.

### Troubleshooting

Check the IP information on both the LineJet Print Server and OS/2 station for correctness.

Make sure the value in step 8 of "Using an OS/2 LPR Print Queue" is actually defined on the LineJet Print Server. See "Configuration Tools" on page 21 to determine how to verify this. Verify also that you are spelling the printer name correctly.

Verify that LPRPORTD is running.

### TCP/IP Access Problem

---

If you can "ping" the printer from a workstation, but you cannot Web browse, Telnet, or print to the printer through the LineJet Print Server, there may be an incorrect entry in the TCP access list. In order for this workstation to use the LineJet Print Server in this case, one of two things must happen.

1. The TCP list must have an entry added to grant access to this workstation.

2. All entries must be deleted from the TCP list to grant all workstations/hosts access to the above TCP services.

To view the current access list:

Use the printer control panel to access the configuration menu (see the *User's Guide* for configuration menu information). From the DIAGNOSTICS/Printer Tests menu choose the E-net Test Page. When the page prints, look under the "TCP ACCESS TABLE" section for the TCP access list entries.

To add/delete a TCP access list entry, refer to "TCP Access Lists" on page 181.

---

### Note



When the following procedure is used, the TCP access list will be cleared but all IP addresses will need to be entered again after the procedure is complete.

---

To reset all TCP/IP values to the factory defaults when access is impossible:

1. Obtain a printer configuration printout using the control panel. See the *User's Guide* for configuration menu information.
2. Power off the printer.
3. On the LineJet Print Server, place SWITCH 2 in the down position.
4. Power on the printer and wait for the ONLINE state.
5. On the LineJet Print Server, place SWITCH 2 in the up position.
6. From a workstation attached to this network segment, create an ARP entry. The LineJet Print Server IP address and hardware or MAC address are needed. At the workstation enter:

```
arp -s <ipaddress> <MACaddress>
```

```
ping <ipaddress>
```

7. Try to "ping" this IP address to see if the LineJet Print Server can be seen on your network. If the interface does not respond, verify you are on the same network segment as the printer and that the ARP entry was created.
8. Telnet into the LineJet Print Server using the same IP address as above. Log in as root with no password.

9. At the system prompt, enter:  
**store tcpip from default**  
**config http on**  
**reset**

---

**Note**

This will reset all TCP/IP settings to factory default and reset the LineJet Print Server.

---

10. Power the printer off and then back on.
11. Set the IP address, subnet mask, and default gateway parameters to the desired values.
12. If Web browser access does not work, Telnet into the LineJet Print Server as root. Enter the following command:

**config http on**

If you are still experiencing difficulty accessing or browsing the printer, contact technical support for further assistance.



---

# 11

## *AS/400 Configuration, ASCII Printer*

---

### Overview

This chapter details a complete AS/400<sup>®</sup> configuration setup including:

1. Developing Line Descriptions with CRTLINETH
2. Configuring the AS/400 for TCP/IP
3. Configuring the AS/400 for Printing
4. Verifying Printing of AS/400

This document assumes no AS/400 printer configuration has been done. If any configuration has been done, please follow the procedure to the point at which continued configuration is required.

#### **Developing Line Descriptions with CRTLINETH**

For each LAN adapter on the AS/400, a line description needs to be created for the LineJet Print Server. This is required for Release V3R2 and V3R7.

If a line description already exists, make sure the SSAP list includes default options “AA” and “12.” You must also know the LAN speed for the AS/400 LAN adapter.

---

#### **Note**



To change a line description, you need to vary the line off before making the change. After making the change, you need to vary the line back on.

---

To change an existing line description, use the CHGLINETH command.  
To create a line description, use CRTLINETH.

**Note**

SSAPS of "AA" and "12" are automatically set as default values in the line description when "\*CALC" is used in creating new line descriptions. You do not need to set these values unless they have been changed.

To create a line description, enter the following command:

```
CRTLINETH LIND(ETHLAN) RSRNAME(LIN041)
```

Your completed screen should look like Figure 12.

```
5763SS1 V3R2M0 960517                                BLDD60 09/11/96 12:25:46
Line description . . . . . : LIND      ETHLAN
Option . . . . . : OPTION    *ALL
Category of line . . . . . :
Resource name . . . . . : RSRNAME  LIN041
Online at IPL . . . . . : ONLINE  *YES
Vary on wait . . . . . : VRYWAIT  *NOWAIT
Local adapter address . . . . . : ADPTADR *ADPT
Exchange identifier . . . . . : EXCHID 056A1005
Ethernet standard . . . . . : ETHSTD  *ALL
Maximum controllers . . . . . : MAXCTL 40
Error threshold level . . . . . : THRESHOLD *OFF
Text . . . . . : TEXT      *BLANK
-----Active Switched Controllers-----
(No active switched controllers attached)
SSAP list . . . . . : SSAP
-----Source Service Access Points-----
      SSAP      Maximum Frame      Type      SSAP      Maximum Frame      Type
      04         1496         *SNA      AA         1496         *NONSNA
      12         1496         *NONSNA  C8         1496         *HPR
Group address . . . . . : GRPADR
-----Group Addresses-----
(No group addresses found)
Link speed . . . . . : LINKSPEED 10M
Cost/connect time . . . . . : COSTCNN 0
Cost/byte . . . . . : COSTBYTE 0
Security for line . . . . . : SECURITY *NONSECURE
Propagation delay . . . . . : PRPDLY *LAN
User-defined 1 . . . . . : USRDFN1 128
User-defined 2 . . . . . : USRDFN2 128
User-defined 3 . . . . . : USRDFN3 128
Autocreate controller . . . . . : AUTOCRTCTL *NO
Recovery limits . . . . . : CMNRCYLMT
  Count limit . . . . . : 2
  Time interval . . . . . : 5
```

Figure 12. Example LineJet Print Server Line Description

The following three parameters must be specified:

### Line description name (LIND)

This line description name is the user's name for the AS/400 adapter. This name must be identical to the name entered when the TCP/IP is configured on the AS/400.

### Resource name (RSRCNAME)

System-assigned name for the interface (for example, LN041).

### SSAP

When \*CALC is used, the values of "12" and "AA" are entered automatically as defaults. Verify that those SSAP values have not been changed.

## Configuring AS/400 for ASCII using TCP/IP

---

The next step in configuring the AS/400 is to configure the interface on the AS/400 for TCP/IP.

### Note



The AS/400 interface is not the NIC. Do not set the AS/400 interface address to the same address as the NIC IP address. Also do not add the NIC to the AS/400 TCP/IP interface list.

## Configuring with ADDTCPIFC

---

ADDTCPIFC is used to add a TCP/IP interface to AS/400. This step configures the AS/400 for attachments to a TCP/IP network.

At the AS/400 command line, enter the following command:

```
ADDTCPIFC INTNETADR ('9.99.15.188') LIND(ETHLAN)  
SUBNETMASK('255.255.255.0')
```

Your completed screen should look like Figure 13.

System: BLDD6	
Internet address . . . . .	: 9.99.15.188
Subnet mask . . . . .	: 255.255.255.0
Line description . . . . .	: ETHLAN
Line type . . . . .	: *Elan
Interface status . . . . .	: Inactive
Type of service . . . . .	: *Normal
Maximum transmission unit . . . . .	: *Lind
Automatic start . . . . .	: *Yes

**Figure 13. Example ADDTCPIFC Interface**

The following parameters must be specified:

**Internet Address**

Internet address of the AS/400 LineJet Print Server LAN adapter. Do not use the IP address of the NIC.

**Subnet Mask**

The Subnet Mask for this AS/400 TCP/IP interface (for example, **255.255.255.0**).

**Line Description**

The name assigned to the AS/400 line description as described in “Developing Line Descriptions with CRTLINETH” on page 135. Each AS/400 LAN adapter will have its own line description.

---

**Configuring a Router Definition with ADDTCPRTE**

If necessary, use the ADDTCPRTE command to create a route definition. This is required if the printer is somewhere other than on a local segment and must cross bridges.

### Configuring a Local Domain and Hostname

---

The AS/400 print commands, described in “Setting up Printing for ASCII Files” on page 140, require a local name and hostname. If you have already configured LAN attached TCP/IP printers on the AS/400 system, you will have a local domain name and hostname configured on the system.

---

**Note**

If you already have a local domain name and hostname configured on the system, do not change your setup.

---

If the local domain name and hostname file is empty, the file must be setup. This control file information is used to determine if a print request comes from an authorized host.

To configure the local domain and hostname, you will run the CFGTCP command and select Option “12” from the menu. Enter a local domain name, such as *city.company.com*. Enter a local hostname, such as *as400-01*. This is the name of your AS/400 system and must match the hostname for your system in the host entry table. Refer to “Configuring a TCP/IP Host Table Entry”, below.

---

**Note**

If the printer and AS/400 are not on the same local LAN segment, use CFGTCP Option 2 to verify that there is a route defined in the TCP/IP route list.

---

### Configuring a TCP/IP Host Table Entry

---

Although it is optional to create a TCP/IP host table entry, it is suggested that you take this step. Add the AS/400 name and the IP address of the LAN adapter to the “Host Table Entries.”

## Configuring the AS/400 for Printing

---

The procedure for configuring an AS/400 for printing requires that you:

1. Set up the printing capability
2. Verify the setup with a print job

In order to accomplish this configuration, you need the following information:

### Remote Printer Queue name

Set for any of 'd1prn' through 'd4prn'.

---

#### Note



The Remote Printer Queue name must be all lower case. Do not use PASS.

---

---

#### Note



When the IPDS feature is installed, queue name 'd4prn' is not available.

---

### IP address

IP address for the NIC.

## Setting up Printing for ASCII Files

---

The next step in configuring the AS/400 is to setup the remote printing capability. There are two ways to do this. You can specify the LPR parameters manually each time you send a file to the printer, or use Remote Writer and a remote output queue for automatic printing to the printer.

### To use LPR manually:

1. Start TCP/IP, if it is not already running, by entering the command **STRTCP**.
2. At the AS/400 command line, enter **LPR**.

3. The following example displays only the parameters you need to specify.

```
Send TCP/IP Spooled File (LPR)

Type choices, press Enter.
Remote system          RMTSYS          > *INTNETADR
Printer queue         PRTQ           > 'd1prn'
Job name              JOB
User
Number
Spooled file number  SPLNMBR        *ONLY
Destination type     DESTTYP        *OTHER
Transform SCS to ASCII TRANSFORM       *YES
Manufacturer type and model MFRTYPMDL     > *IBM6400EP
Internet address     INTNETADR      > '9.99.2.3'
```

The following parameter values are required:

### Remote system

Enter the hostname of your printer or **\*INTNETADR**, which then prompts you to specify the IP address of your printer.

### Printer Queue (PRTQ)

Set to **'d1prn'** through **'d4prn'**. The remote printer queue name must be all lower case, entered in single quotes.

---

#### Note



When the IPDS feature is installed, queue name **'d4prn'** is not available.

---

### Destination type (DESTTYP)

Specify **\*OTHER** for the DESTTYP parameter.

### Transform (TRANSFORM)

Specify **\*YES**.

**Manufacturer Type and Model (MFRTYPMDL)**

Select a manufacturer type and model. This is the name of the WSCO. Select **\*IBM6400EP** for Epson emulation or **\*IBM6400** or **\*IBM42023** for Proprinter Emulation if you have AS/400 V3R2 and above or V3R7 and above.

**Internet Address (INTNETADR)**

IP address of the NIC.

---

**Note**



You may specify either **\*INTNETADR** (and the NIC IP address) or the hostname for the NIC (if you added the printer to the host table entry as directed in “Configuring a TCP/IP Host Table Entry” on page 139).

---

## To create an Automatic Remote Output Queue:

1. From the AS/400 command line, enter **CRTOUTQ**.
2. The following example displays the parameters you need to specify.

```

Send TCP/IP Spooled File (LPR)

Type choices, press Enter.
Output queue..... OUTQ > USERNAME
  Library ..... *CURLIB
Maximum spooled file size:..... MAXPAGES
  Number of pages ..... *NONE
  Starting time .....
  Ending time .....
                                + for more values
Order of files on queue ..... SEQ *FIFO
Remote system..... RMTSYS > *INTERNETADR

Remote printer queue..... RMTPRTO > 'd1prn'
Writers to autostart..... AUTOSTRWTR 1
Queue for writer messages..... MSGQ QSYSOPR
  Library ..... *LIBL
Connection type ..... CNNTYPE > *IP
Destination type ..... DESTTYP XAUTOQ XAIX
Host print transform ..... TRANSFORM *YES
Manufacturer type and model ..... MFRTYPMDL > *IBM6400EP
Workstation Customizing Object..... WSCST *NONE
  Library .....
Internet address ..... INTERNETADR > '9.99.57.173'
Destination options ..... DESTOPT *NONE

Print separator page..... SEPPAGE *YES
User defined option..... USRDFNOPT *NONE

```

3. Enter values for the following parameters:

**Output queue (OUTQ)**

The name of the AS/400 output queue. The name can be anything you would like. This name is not the same as the printer internal queue name, 'd1prn'.

---

**Note**



When the IPDS feature is installed, queue name 'd4prn' is not available.

---

**Remote system (RMTSYS)**

Internet address of the NIC on the printer (\*INTNETADR prompts you for this) or the hostname of the NIC.

**Remote printer queue (RMTPRTQ)**

Default name of the network printer. Set for any of 'd1prn' through 'd4prn'. The remote printer queue name must be all lower case, entered in single quotes.

---

**Note**



When the IPDS feature is installed, queue name 'd4prn' is not available.

---

**Writer to Autostart (AUTOSRTWTR)**

Set the value to 1. This will start the Remote Writer when the queue is created, and it automatically starts the Remote Writer after each IPL of the AS/400 and whenever STRTCP is started.

**Connection type (CNNTYPE)**

Specify this value as \*IP.

### **Destination type (DESTTYP)**

Specify **XAUTOQ XAIX**. **XAUTOQ** is a performance enhancement, in which data is not required to be transformed again if the connection is interrupted. **XAIX** allows printing of multiple copies.

### **Transform (TRANSFORM)**

Specify this value as **\*YES**.

### **Manufacturer type (MFRTYPMDL)**

Select a manufacturer type and model. This is the name of the WSCO. Select **\*IBM6400EP** for Epson emulation or **\*IBM6400PR** or **\*IBM42023** for Proprinter Emulation.

### **Internet address (INTNETADR)**

Specify the IP address of the printer.

## Verify Printing on AS/400

---

This section verifies that the printer is capable of printing ASCII files and that the printer can be pinged on the network.

To test ASCII printing:

1. Start TCP/IP, if it is not already running, by entering the command **STRTCP**.
2. Verify that the AS/400 TCP/IP interface is active.
3. Ping the printer from an AS/400 workstation with the command:  
**ping ip\_address**.

Where *ip\_address* is the Internet address of the remote system printer (the NIC) or the hostname of the printer (if you put the hostname in the host entry table as directed in “Configuring a TCP/IP Host Table Entry” on page 139).

4. If the printer cannot be pinged, proceed to “AS/400 ASCII Troubleshooting” on page 147.
5. Use one of the following methods to send a spooled file to the printer:
  - Enter the LPR command on the AS/400 command line with the appropriate parameters. See “To use LPR manually:” on page 140.
  - Enter **STRMTWTR name** on the AS/400 command line, where **name** is the name of the AS/400 remote output queue (not the printer Internet queue, as described in “To create an Automatic Remote Output Queue:” on page 143).
  - Use the **WRKOUTQ** command to send jobs.

## AS/400 ASCII Troubleshooting

---

During Power Up, the printer performs an interface hardware test. The presence of the ETHERNET PARAMS menu selections at the printer control panel indicates that the LineJet Print Server hardware is functioning properly. See the *User's Guide* for configuration menu information.

If you have trouble pinging the printer:

1. Verify the configuration of AS/400, including the printer and any intervening devices such as routers and bridges.
2. Verify that the AS/400 line description is varied on and the printer is turned on and displays a status of ONLINE.
3. Verify that the AS/400 TCP/IP is active.

### TCP/IP Access Problem

---

If you can “ping” the printer from a workstation, but you cannot Web browse, Telnet, or print to the printer through the LineJet Print Server, there may be an incorrect entry in the TCP access list. In order for this workstation to use the LineJet Print Server in this case, one of two things must happen.

1. The TCP list must have an entry added to grant access to this workstation.
2. All entries must be deleted from the TCP list to grant all workstations/hosts access to the above TCP services.

To view the current access list:

Use the printer control panel to access the menu. See the *User's Guide* for configuration menu information. From the Operator Print Test menu choose the Ethernet Test Page. When the page prints, look under the “TCP ACCESS TABLE” section for the TCP access list entries.

To add/delete a TCP access list entry, refer to “TCP Access Lists” on page 181.

### Note



When the following procedure is used, the TCP access list will be cleared but all IP addresses will need to be entered again after the procedure is complete.

---

To reset all TCP/IP values to the factory defaults when access is impossible:

1. Obtain a printer configuration printout using the control panel. See the *User's Guide* for configuration menu information.
2. Power off the printer.
3. On the LineJet Print Server, place SWITCH 2 in the down position.
4. Power on the printer and wait for the ONLINE state.
5. On the LineJet Print Server, place SWITCH 2 in the up position.
6. From a workstation attached to this network segment, create an ARP entry. The LineJet Print Server IP address and hardware or MAC address are needed. At the workstation enter:  

```
arp -s <ipaddress> <MACaddress>  
ping <ipaddress>
```
7. Try to “ping” this IP address to see if the LineJet Print Server can be seen on your network. If the interface does not respond, verify you are on the same network segment as the printer and that the ARP entry was created.
8. Telnet into the printer LineJet Print Server using the same IP address as above. Log in as root with no password.
9. At system prompt, enter:  

```
store tcpip from default  
config http on  
reset
```

### Note



This will reset all TCP/IP settings to factory default and reset the LineJet Print Server.

---

10. Wait five minutes for the LineJet Print Server to reset.

11. Power the printer off and then back on.
12. Wait for the “ENET IS READY” message to display.
13. Set the IP address, subnet mask, and default gateway parameters to the desired values. (See “Configuration Tools” on page 21.)

## Web Browser/HTTP Problem

---

In some cases you may not be able to browse the printer web page simply because the LineJet Print Server HTTP may be turned off.

If you cannot “**ping**” the LineJet Print Server IP address, make sure the IP Address, subnet mask, and default gateway are set correctly by checking the ETHERNET PARAMS menu from the control panel. See the *User's Guide* for configuration menu information.

If you can “**ping**” the LineJet Print Server IP address but can not access the web pages, perform the following procedure to verify the LineJet Print Server HTTP is turned on.

1. Telnet into the LineJet Print Server and log in as root with no password.
2. At the system prompt enter the following commands:

```
config http on  
save  
reset
```

3. After approximately 5 minutes, point your browser to the LineJet Print Server IP address. The printer web pages should now be accessible.

If you are still experiencing difficulty accessing or browsing the printer, contact technical support for further assistance.



---

# 12

## *Monitoring Printers*

---

### Implementing Printer Management

---

Printer management includes the following tasks:

- Monitoring the status of network printers
- Responding to alarms
- Gathering statistics on printer operations

The three elements of network printer monitoring and management are:

- Agent/manager model
- MIB, the management information database
- SNMP, the protocol used to get management information

#### **Agent/Manager Model**

---

The elements of a monitoring system, MIB and SNMP, are implemented in an agent/manager model:

- The **manager** is a console, workstation, or server on working hubs or routers which has a global knowledge of NICs and printers.
- **Agents** are utilities that reside on devices, such as a NIC, that respond through SNMP to management requests for information. The information is stored in a MIB (Management Information Base).

### MIB

---

A MIB is a management information base that contains information a device makes available to SNMP. The MIB describes information about actual objects to be managed and controlled. There are many different MIBs defined.

#### Standards of Network Printer MIBs

The Printer MIB is based on the following standards:

- System and Interfaces Group MIB (RFC 1213 of March 1991)
- Host Resource MIB (RFC 1514 of September 1993)
- Printer MIB (RFC 1759 of March 1995)

#### Components of the Printer MIB

The printer MIB gives the network manager access to most of the information that is normally accessible through the NIC command set for configuring the server with SNMP. Some objects identified by this MIB are not applicable to the NIC.

The complete definition of the Printer MIB is provided in the Printer MIBs in DOS Format and Printer MIBs in TAR Format, which are shipped with the NIC. The MIB is provided in a subset of the ASN.1 syntax. The Printer MIB is composed of the following sections:

- General
- Cover
- Localization
- Input
- Output
- Marker
- Media Path
- Channel
- Interpreter
- Console
- Alert

## Information Provided by the MIB

The Printer MIB contains the following types of information about network printers:

**Descriptions.** Printer configuration, location, and contact.

**Status.** Current operating status of printers.

**Alerts.** Reportable events from printers.

## General Information about MIBs

For further information on SNMP and MIB, refer to the following:

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

## Getting the Latest MIB Information

To obtain the latest copy of these and other RFCs, FTP the files from one of the following two sources:

Internet:

`ftp.isi.edu\internet-drafts`

World Wide Web:

`http://www.ietf.cnri.reston.va.us/lid-abstracts.html`

## SNMP

---

SNMP is the protocol used to communicate between manager and agent. Managers request information, usually through automated polling at specified intervals, and agents respond. Though used primarily on TCP/IP networks, SNMP can be implemented on other protocols, for example, IPX.

SNMP is a standard by which a network manager can get statistics and configuration information from the NICs and other devices on the network. This is done through a Network Management Station (NMS), such as NetView<sup>®</sup>.

## Monitoring Tools

---

Many tools can be used to monitor printers with SNMP agents. One of these tools is NetView. There are also other MIB browsers, which are not described here.

### OS/2 TCP/IP

---

To get SNMP.EXE to work correctly to browse MIB items, you may need to delete the following file:

```
d:\mptn\etc\mib2.tbl
```

### Monitoring with AIX NetView/6000

---

The AIX NetView/6000 program can manage any IP-addressable device with an SNMP agent.

NetView/6000 can be used to set a network topology, monitor a network, diagnose problems, and measure network performance.

Through its MIB Browser, information about the resources affecting an event (such as an alarm) can be obtained.

### Setting the SNMP Community Name

---

The default SNMP read-only community name is “public”, and cannot be changed.

Change the SNMP R/W community name with the command:

```
set user passwd snmp com_name  
save
```

where *com\_name* is the new SNMP R/W community name.

The default is no R/W community name.

---

#### Note



Changing SNMP community names or access rights may hinder or disable applications that are monitoring your printers.

---



---

# 13

## *Commands*

---

### Command Shell Overview

---

The LineJet Print Server comes with an in-depth command shell, which allows you to manipulate objects like destinations, I/O ports, and models and provides monitoring and troubleshooting capabilities.

#### Access Methods

---

There are many ways this command shell can be accessed:

- built in HTML forms
- a Telnet session from a TCP/IP host to the LineJet Print Server
- a single remote shell command (i.e. rsh, rcmd, remsh) from a TCP/IP host

#### Main Command Shell Prefixes

---

All configurable commands either start with “**store**” or “**set**”, troubleshooting commands usually start with “**debug**”, and view commands start with “**list**”.

If the “**store**” prefix is used, the LineJet Print Server must be repowered to make the changes take effect. Since “**store**” affects flash memory settings only, the print server must reset and read the new settings now in flash memory.

If the “**set**” prefix is used, a “**save**” command must be executed as well so that the new settings are retained after power cycles. Since “**set**” only affects the settings in memory, they will be lost after a power cycle unless they are saved to flash memory.

## Getting Command Help

---

The LineJet Print Server command shell provides several online help tools. These include:

### “?” Command

Typing “?” when logged in to the command shell will produce a full listing of all commands available.

### Command Prefixes

Typing in the first portion of a command will produce an error message showing the correct syntax. For example, typing in “**store tcpip**” will produce a list of all commands that start with this prefix.

## Complete Command List

---

This section outlines the entire LineJet Print Server command set including the command syntax, a description, and in most cases, an example for each command listed.

---

**Note**

If you see the word “*ifnum*” in any shell commands, you should substitute a “1” unless told otherwise. This “1” represents the one network interface (i.e. Ethernet) supported.

---

### Store Commands

---

These commands change the settings stored in flash memory and do not affect the current or working settings in memory. A power cycle is needed before the stored settings become current.

```
store ifc ifnum utp [-]li [-]rx
store ifc 1 utp li
```

Modify the physical UTP interface properties where **li** enables link integrity and **rx** enables the increased receive threshold.

```
store ifc from default
```

Set all UTP settings back to factory defaults.

```
store ifc from current
```

Store all current UTP settings to flash memory so they are retained after a power cycle. This ensures all current settings match what is stored in flash memory.

```
store pserver opts [[-]jobsecurity] [jobtimeout
seconds]
```

```
store pserver opts jobsecurity jobtimeout 5
```

If **jobsecurity** is disabled, any user can cancel queued jobs on the LineJet Print Server including guest users. If **jobtimeout** is set to some value other than 0, the LineJet Print Server will only wait this amount of **seconds** when getting printer feedback. This is only used if you have a logpath port and type set on a particular destination.

```
store pserver tcpsocket TCPportnumber port
newTCPportnumber
```

```
store pserver tcpsocket 4000 port 5000
```

Change a pre-defined *TCPportnumber* on the LineJet Print Server to a *newTCPportnumber*. The default number is 9100 for prn.

```
store pserver tcpsocket TCPportnumber dest destination
store pserver tcpsocket 5000 dest dlprn
```

Assign a pre-defined *TCPportnumber* to a particular *destination* on the LineJet Print Server. Therefore, if you are using a print method that sends jobs directly to a TCP port number, you still have the option to process the job data through this destination setting.

```
store pserver novell passwd password
store pserver novell passwd mplex
```

Store the *password* for the LineJet Print Server to use when logging in to a Novell file server. This *password* would have to match one set on the file server.

```
store pserver novell user name username
store pserver novell user name microl
```

Define a *username* on the LineJet Print Server to be used when it logs into a Novell file server to find information. This *username* must match a user pre-defined on the Novell file server.

```
store pserver novell user passwd password
store pserver novell user passwd mplex2
```

Define a *password* on the LineJet Print Server for the Novell user already defined. This *password* must match the one stored on the Novell file server. Passwords are optional as long as there is not one defined on the file server for the user.

```
store pserver novell fserver add|del fileservername
store pserver novell fserver add fs1
```

Add or remove a server entry on the LineJet Print Server for the Novell file server it will be servicing.

**store pserver smb workgrp *newworkgroupname***

**store pserver smb workgrp eng**

Define a different Windows workgroup as defined by ***newworkgroupname*** for the LineJet Print Server to be visible within. By default, the print server only comes up within the group called "WORKGROUP."

**store pserver from default**

Set all general print server settings back to factory defaults.

**store pserver from current**

Store all current general print server settings to flash memory so they are retained after a power cycle. This ensures all current settings match what is stored in flash memory.

**store rprinter add|del *printservername printernumber destination***

**store rprinter add pserver1 0 dlprn**

Add or delete the RPRINTER settings on the LineJet Print Server for a Novell environment. The ***printservername*** must be the name of an existing PSERVER.NLM on your Novell file server. The ***printernumber*** is the printer number within this PSERVER.NLM. The ***destination*** is the queue on the LineJet Print Server where the print jobs will be sent to.

**store tcpip *ifnum* addr *IPaddress***

**store tcpip 1 addr 192.75.11.9**

Store the IP address for the LineJet Print Server.

**store tcpip *ifnum* mask *netmask***

**store tcpip 1 mask 255.255.255.0**

Store the subnet mask for the LineJet Print Server.

**store tcpip *ifnum* opts [[-]rarp] [[-]bootp] [[-]dhcp]**

**store tcpip 1 opts -rarp -bootp -dhcp**

Enable or disable the automatic RARP, BOOTP or DHCP requests for IP addresses upon bootup. If you are storing the LineJet Print Server TCP/IP network settings within the device, you will not need to rely on RARP, BOOTP or DHCP for new settings.

```
store tcpip ifnum frametype [[-]ethernet2]
[[-]802.2snap]
```

```
store tcpip 1 frametype ethernet2 802.2snap
```

Control which frame type(s) is supported with the TCP/IP protocol. By default, both **Ethernet 2** and **802.2snap** are enabled but normal TCP/IP communications rely on Ethernet 2. This setting has no affect on other supported network protocols (e.g. Novell).

```
store tcpip route add|del host|net IPaddress ifnum
store tcpip route add net 192.75.12.0 1
store tcpip route del net 192.75.12.9 1
```

Add or delete a static route to a particular TCP/IP host or subnet specified by **IPaddress** so the LineJet Print Server knows how to communicate with it. Normally one entry for a default router/gateway is all that is needed for communications between different subnets. Please see the next command for details.

```
store tcpip route add|del default routerIPaddress
ifnum
store tcpip route add default 192.75.11.1 1
```

Store a default router/gateway defined by **routerIPaddress** so the LineJet Print Server knows where to direct packets destined for another subnet. It is easier to store one default entry rather than an entry per remote host or network as in the previous command.

```
store tcpip tcp rxwin packets
store tcpip tcp rxwin 2
```

Determine the receive window size for the LineJet Print Server. Usually the **packets** value ranges from 2 to 8 with the lower number allowing for more simultaneous TCP connections with the print server.

```
store tcpip tcp opts [-]keepalive [-]disbufmgmt
```

```
store tcpip tcp opts keepalive -disbufmgmt
```

Control whether the LineJet Print Server maintains a connection with a host when data can not be accepted into its buffer. Normally the **keepalive** feature is enabled so when the printer can not accept data, the print job connection is maintained and continued once the situation clears. If **disbufmgmt** is disabled (i.e. "-"), the LineJet Print Server will not buffer any data when there is a blocked situation with the printer. Normally it is best to have both **keepalive** and **disbufmgmt** enabled.

```
store tcpip tcp access [root] add|del IPaddress
```

```
store tcpip tcp access add 192.75.11.25
```

Add or remove an entry from the LineJet Print Server TCP access list defined by *IPaddress*. If the list has an entry, only this host can print to and remotely interact with the print server.

```
store tcpip proxy add|del targetIPaddress
```

```
store tcpip from default
```

Set all TCP/IP network settings back to factory defaults.

```
store tcpip from current
```

Store all current TCP/IP network settings to flash memory so they are retained after a power cycle. This ensures all current settings match what is stored in flash memory.

## Set Commands

---

These settings alter the current or working settings in memory only. Therefore, they will be lost if the LineJet Print Server is power cycled. To ensure this does not happen, be sure to issue a **"save"** command so the current settings get written to flash memory.

```
set date year month day
```

```
set date 1997 02 10
```

Set the current date noting the four-digit **year**, the two-digit **month** from 1 through 12, and the **day** being the number in the month. If the LineJet Print Server is reset, this value will be lost so you will need to set the date again.

```
set dest destination name newname
```

```
set dest dlprn name laser
```

Change the current name of the ***destination*** to a new name as indicated by ***newname***. This ***newname*** must be nine characters or less or it will be truncated. These names are case sensitive.

```
set dest destination backchannel prn [prn]
```

```
set dest dlprn backchannel prn
```

Establish a return path for printer feedback for a given ***destination***. Since the LineJet Print Server I/O port is bi-directional, however, you will most likely use the same I/O port that the ***destination*** is currently sending jobs to.

```
set dest destination model modelname
```

```
set dest dlprn model m4
```

Associate a model with a destination. Jobs sent to the named ***destination*** are processed according to the options defined in the named model.

```
set dest destination logpath logpathname
```

```
set dest dlprn logpath l4
```

Associate a logpath with a destination. Jobs sent to the named ***destination*** are logged according to the settings defined in the named logpath.

```
set dest destination service [[-]socket][[-]lpd]
[[[-]lpsched] [[-]rprinter] [[-]pserver] [[-]netbios]
[[[-]ftpd]
```

```
set dest dlprn service -netbios
```

Set the ***destination*** to handle only certain print services. To add a service, specify the service name. To disable a service, use “-” before the name. The available services are:

<b>socket</b>	Direct socket printing via TCP/IP.
<b>lpd</b>	LPR printing with TCP/IP including LPR clients on any platform.
<b>lpsched</b>	LP or System V printing with TCP/IP.
<b>rprinter</b>	Novell RPRINTER support.
<b>pserver</b>	Novell PSERVER support.

**netbios** Windows 95 and Windows for Workgroups printing.

**ftpd** Printing using the File Transfer Protocol (FTP) via TCP/IP.

**set dest from default**

Set all destination settings back to factory defaults.

**set dest from stored**

Set all current destination settings to the values stored in flash memory.

**set logpath *logpath* name *newname***

**set logpath l1 name pagecount**

Change the current name of the **logpath** to a new name as indicated by **newname**. This **newname** must be nine characters or less or it will be truncated. These names are case sensitive.

**set logpath *logpath* type [[-]job] [[-]user] [[-]pgcnt] [[-]cksum] [[-]printer] [[-]ioport]**

**set logpath l2 type job user printer pgcnt**

Establish the type of printer and print job logging to be done within this **logpath**. The options are:

**job** Job ID, username, etc.

**user** User ID along with three messages per job about start and finish.

**pgcnt** For total pages printed in a job.

**cksum** 16-bit checksum value to confirm integrity of data printed.

**printer** For special printer feedback.

**ioport** Printer error messages determined through the parallel port pins.

**set logpath *logpath* port *TCPportnumber* | email | syslog**

**set logpath l3 port 2000**

Determine where the log information should be sent for a print job or attached printer. The choices are:

***TCPportnumber***TCP port number ranging from 1024 to 65000.

**email** Particular user's email address. This address is set using the "**set sysinfo email *emailname@IPaddress***" command.

**syslog** A central TCP/IP host running the SYSLOG daemon. This host is set using the "**set sysinfo syslog *IPaddress***" command.

**set logpath from default**

Set all logpath settings back to factory defaults.

**set logpath from stored**

Set all current logpath settings to the values stored in flash memory.

**set model *model* name *newname***

**set model m1 name landscape**

Change the current name of the **model** to a new name as indicated by **newname**. This **newname** must be nine characters or less or it will be truncated. These names are case sensitive.

**set model *model* type raw**

**set model m2 type raw**

Set the model **type** to **raw** so that it does not process the data passing through it in any way.

**set model *model* banner [ps|text|auto [after]]**

**set model m2 banner text**

Determine whether a banner page should be added for print jobs passing through the **model** mapped destination/queue. **auto** will determine which type is needed depending on the type of print job data passing through. By default, banner pages are added to the front of the job. If **after** is set, the banner page will come at the end.

**set model *model* stty [[-]onlcr] [[-]descramble] [xtab tablength|none]**

**set model m3 stty onlcr**

Control extra job processing done by the **model**. The processing options are:

**onlcr** Carriage return insertion for Unix text jobs. Adds carriage returns to text jobs with solitary linefeeds. This will prevent stair-stepped output or output running off the right side of the page.

**descramble** Automatic descrambling of print jobs passing through which have been scrambled using the proprietary scramble Unix utility, **npscramble**.

**xtab** Tab expansion from 1 to 16 spaces.

**set model *model* trailer *trailerstring***

**set model m7 trailer \$FF**

Set a trailer string to be sent to the printer at the end of any print jobs passing through this **model**. **trailerstring** can consist of up to nine elements. An example element is a hexadecimal code (e.g. 0x04) or a pre-defined variable on the print server (e.g. \$FF for a formfeed). Use "**list var**" to see all available variables.

**set model from default**

Set all model settings back to factory defaults.

**set model from stored**

Set all current model settings to the values stored in flash memory.

**set prn [-]autofd**

**set prn -autofd**

Assert or do not assert the AUTOFD line for carriage return insertion. This only affects printers that support this function such as impact printers.

**set prn flush**

**set prn flush**

Flush the data in the parallel port input and output buffers.

**set prn unlock**

**set prn unlock**

Release the access lock on the parallel port.

**set prn timeout *minutes* |none**

**set prn timeout none**

Terminate the print job sent to the parallel port if it is not printed after the timeout period in **minutes** expires. The **minutes** value ranges from 0 though 255 with 0 indicating no timing out to take place. This is the default setting and should be fine for most print setups.

**set prn [-]opost**

**set prn -opost**

Allow or disallow output processing on the parallel port such as carriage return insertion (i.e. onlcr).

**set prn [-]onlcr**

**set prn -onlcr**

Enable or disable carriage return insertion on the parallel port. This may be needed for Unix text jobs coming through with solitary linefeeds. This feature is almost always set at the model level rather than the I/O port level though.

**set prn xtab *tablength* | none**

**set prn xtab none**

Set the tabstop width as indicated by *tablength*. The range is 1 through 16 spaces.

**set prn from default**

Set all parallel port settings back to factory defaults.

**set prn from stored**

Set all current parallel port settings to the values stored in flash memory.

**set snmp**

To add a user named **snmp** with root privileges, please follow the steps below:

1. Login to the LineJet Print Server as a root user.
2. Add a user named snmp.  
**set user add snmp**
3. Set the user type to root.  
**set user type snmp root**
4. Set the password for the snmp user.  
**set user passwd snmp *snmppassword***
5. Save the changes.  
**save**

The user **snmp** is now created and *snmppassword* is the only community string which will allow write access.

**set snmp manager *index ipaddress trap-community***

The Print Server continuously generates traps but unless the trap table is filled in, no SNMP manager will receive this information. To set the Print Server to send traps to a particular SNMP manager, use this command to add a SNMP manager to the trap table.

*index* is the index number of the trap table. *ipaddress* is the IP address of the SNMP manager receiving traps. *trap-community* is the community string sent along with the trap information.

**set sysinfo name *newname***

**set sysinfo name salesprinter**

Set a descriptive name defined by *newname* for LineJet Print Server identification purposes. This is not used in the operation of the print server in any way.

**set sysinfo location *description***

**set sysinfo location salesdept**

Set the physical location of the LineJet Print Server. This is for identification purposes and is not used in the operation of the print server in any way.

**set sysinfo contact *contactname***

**set sysinfo contact Paul\_Harris**

Set a person or department to contact in case of print server trouble.

**set sysinfo loginfo [-]sys | [-]tcp | [-]ipx | [-]spx**

**set sysinfo loginfo -sys ipx**

Set the LineJet Print Server debugging information type. Usually this information includes unexpected errors or exceptions from the print server divided into these groups:

<b>sys</b>	General system messages.
<b>tcp</b>	TCP stack messages.
<b>ipx</b>	IPX stack messages.
<b>spx</b>	SPX stack messages.

---

**Note**



This is not printer or job logging information.

```
set sysinfo logport null|syslog
set sysinfo logport null
```

Define where the debugging information should be sent to. This can be sent to an output device off of the LineJet Print Server I/O port or to a central TCP/IP host running a SYSLOG daemon. To set this host, use the command "**set sysinfo syslog *hostIPAddress***".

```
set sysinfo email emailname@IPaddress
set sysinfo email joe@192.75.11.5
```

Define the user email address to receive printer and job logging information from a particular logpath on the LineJet Print Server.

***emailname*** is the host or IP name of the user and ***IPaddress*** is the IP address where the mail is stored on your network.

```
set sysinfo syslog hostIPAddress
set sysinfo syslog 192.75.11.30
```

Set the IP address of the host running the SYSLOG daemon. LineJet Print Server debugging or print job and printer logging information can be sent to that IP address.

```
set sysinfo dns DNSserverIPAddress
set sysinfo dns 192.75.11.2
```

Set your DNS server IP address so the LineJet Print Server can resolve host names when used with its built-in Telnet and Ping clients.

```
set sysinfo descramblekey hexvalue
set sysinfo descramblekey 1234
```

Set the key value used for descrambling print jobs that have passed through the **npscrumble** utility on a TCP/IP host. This key is a four-digit hexadecimal value obtained from the host software, npscrumble. Within the npscrumble source code, there is a variable called SR\_KEY which contains the default key value. This can be changed to any four-digit value you would like.

```
set sysinfo module [[-]novell] [[-]netbios]
set sysinfo module -novell
```

Enable and disable certain network protocol stacks within the LineJet Print Server. Sometimes it helps to disable any protocols you are not using on your network.

```
set time hours [minutes [seconds ]]
```

```
set time 10 30
```

Set the current time noting the **hours** based on the 24-hour system and the **minutes** and **seconds** ranging from 0 through 59. If the LineJet Print Server is reset, this value will be lost so you will need to set the time again.

```
set user add|del username
```

```
set user add eng
```

Add or remove a user on the LineJet Print Server defined by **username**.

### IMPORTANT

**Be careful not to delete the root user, or you will be unable to configure any further settings on the print server. You will have to go back to factory defaults to correct this problem.**

```
set user passwd username password
```

```
set user passwd eng mplex1
```

Assign a **password** to a defined user on the LineJet Print Server. This **password** must be less than eleven characters.

```
set user type username root|guest
```

```
set user type eng root
```

Assign root or guest privileges to a particular user defined by **username**. Guest permissions allow viewing of settings only. Root permissions allow complete control of the LineJet Print Server.

```
set user from default
```

Set all user settings back to factory defaults.

```
set user from stored
```

Set all current user settings to the values stored in flash memory.

```
set user passwd snmp com_name
```

Sets the new SNMP R/W community name as the **com\_name** value.

**set var *variablename* *variablestring***

**set var LANDSCAPE 0x1b 0x26 0x6c 0x31 0x4f**

**set var FINISH \$FF \$PCL-RST**

Define a new variable to be used in header, trailer, or switch strings on the LineJet Print Server and call it ***variablename***. ***variablestring*** can be a space-separated list of words, hexadecimal numbers (e.g. 0x04), or references to other pre-defined variables. It is easiest to make up the ***variablestring*** with hexadecimal values as shown in the example.

One variable counts as one element within header and trailer strings.

Defined variables are referenced in strings by placing a “\$” before the variable name (e.g. “**set model m1 trailer \$FF**”).

**set var from default**

Set all variable settings back to factory defaults.

**set var from stored**

Set all current variable settings to the values stored in flash memory.

## List Commands

---

These commands list the current or working settings for a particular section within the command shell. To view stored settings in flash memory, you will need to add in “**stored**” within the beginning of any of the following commands. For example, “**list prn**” shows you the current prn settings but “**list stored prn**” shows you the settings sitting in flash memory. Normally these should match.

**list arp**

List the current ARP table that the LineJet Print Server adheres to in a TCP/IP network.

**list date**

List the current date on the LineJet Print Server.

**list dest**

List the current destination settings (e.g. names and mapped I/O ports, models, and logpaths).

**list diff**

List the differences between the current settings and the stored settings in flash memory. Normally, you want these values to match so issue a **“save”** command followed by a **“reset”**.

**list ifc**

List the current UTP interface settings (e.g. link integrity).

**list key**

List the license details and license key number.

**list logins**

List any active user logins on the LineJet Print Server.

**list logpath**

List the current logpath settings (e.g. names and mapped destinations).

**list model**

List the current model settings (e.g. names and mapped destinations).

**list pserver**

List the current general print server settings (e.g. print server name and Novell mode).

**list prn**

List the current parallel port setting (e.g. mode).

**list rprinter**

List any current RPRINTER definitions.

**list snmp**

List Trap Table containing SNMP Managers.

**list sysinfo**

List the current LineJet Print Server system information (e.g. contact name and protocol stacks enabled).

**list tcpip**

List all current TCP/IP network settings (e.g. IP address and subnet mask).

**list test**

List the status of output tests on the I/O ports.

**list time**

List the current time on the LineJet Print Server.

**list user**

List the current user definitions (e.g. user names and types).

**list var**

List all pre-defined variables including any newly created ones. Any of these defined variables can be referenced in a string by placing a “\$” before the variable name (e.g. “**set model m1 trailer \$FF**”).

## Debug Commands

---

The “**debug**” set of commands help troubleshoot problems that may occur on the LineJet Print Server. Some of the output may be cryptic but it helps when troubleshooting.

**debug eeprom**

List ROM contents.

**debug io**

List statistics from the I/O port module.

**debug ip**

List IP stack statistics.

**debug lpd**

List statistics from the lpd daemon.

**debug lpq**

List statistics from the queue module.

**debug mem**

List statistics from the LineJet Print Server memory module.

**debug nest fserver**

View the Novell file server(s) the LineJet Print Server has acknowledged and connected to.

**debug nest ipx**

Determine whether a board has been bound to the LineJet Print Server under Novell and that the network number is correct for your network.

**debug nest logs**

View miscellaneous Novell log messages.

**debug nest odi**

Determine what frame type is bonded to which board number under Novell.

**debug nest pserver**

View the Novell PSERVER log messages including queues attached to.

**debug nest rprinter**

View the Novell PSERVER and RPRINTER log messages and destinations used on the LineJet Print Server.

**debug nest sap**

Determine whether the LineJet Print Server is seeing any Novell network activity.

**debug netbios**

List NetBIOS (i.e. Windows 95 and WfW) statistics.

**debug nif**

List network interface statistics.

**debug novell**

List file and print servers.

**debug tcp**

List TCP stack statistics.

## Miscellaneous Commands

---

These commands do not fall under any specific section of the command shell but they are used quite frequently.

### **save [default]**

Save the current settings to flash memory so they are available after power cycles. Sysinfo, destination, model, logpath, variable, user, and I/O port settings will be saved. If **default** is specified as well, factory settings will be saved, overwriting any new settings you have configured.

### **reset**

Perform a warm boot or hardware reset simulating a power-on reset. Restores current settings to those stored in flash memory since the flash memory settings will be read and loaded into memory upon bootup.

### **load [default]**

Load the settings stored in flash memory and use them as the current or working settings. If **default** is specified as well, factory settings will be loaded.

### **lpstat [ioport] [jobID]**

#### **lpstat prn**

Display active and queued jobs and I/O port status for a given *ioport* or *jobID*. Specifying one of these parameters will shorten the output focusing on the particular I/O port or print job specified.

### **cancel jobID**

#### **cancel dlprn-10**

Remove a job from an I/O port queue. Use “**lpstat**” to find a particular job ID first.

**start fox|tts|loopb prn**

**start fox prn**

Begin a debugging test on one of the I/O ports on the LineJet Print Server. The tests available are:

- |              |  |
|--------------|--|
| <b>fox</b>   | A continuous stream of text sent to the attached printer. This is a good test for troubleshooting hardware as long as the attached printer supports text output. |
| <b>tts</b>   | A continuous stream of Gandalf 400C TTS-compatible text sent to the attached printer.  |
| <b>loopb</b> | Loopback test. Any input characters from the device attached to the I/O port is echoed back.   |

**stop prn**

**stop prn**

Stop an output test on an I/O port.

**disable ioport|destination**

**disable prn**

Disable an **I/O port** so that queued jobs are not printed, or disable a **destination** so jobs can not be queued to it.

**enable ioport|destination**

**enable prn**

Enable an **I/O port** so that queued jobs are printed, or enable a **destination** so jobs can be queued to it.

**close tcp TCPindexnumber**

**close tcp 3**

Force a TCP/IP connection between a TCP/IP host and the LineJet Print Server to close. The **TCPindexnumber** can be retrieved from “debug tcp” output.

**ping [-s] hostIPAddress [datasize [packetnumber]]**

**ping 192.75.11.30**

“**ping**” another TCP/IP host specified by **hostIPAddress** on the LineJet Print Server network. **datasize** is the datagram packet size which defaults to 64 bytes if no size is included in the syntax and **packetnumber** is the number of requests to be sent.

### Note



To use a host or IP name instead of the address, you must have set the DNS server on the LineJet Print Server. Use the command “**set sysinfo dns...**” to do this.

---

**telnet *hostIPAddress* [*escapecharacter*]**

**telnet 192.75.11.35**

Start a Telnet session with another TCP/IP host specified by ***hostIPAddress*** on the LineJet Print Server network. If ***escapecharacter*** is used, it resets the key sequence used to exit the Telnet session. It will return you to the telnet> prompt where you can execute “***quit***”. Use the “***keycode***” command to find out exact escape characters if needed. The default character is CTRL-].

---

### Note



To use a host or IP name instead of the address, you must have set the DNS server on the LineJet Print Server. Use the command “**set sysinfo dns...**” to do this.

---

**chr *string***

Echo ***string*** or redirect ***string*** to an I/O port using “**chr *string* > *ioport***”.

**keycode**

Determine the hexadecimal value for a key to be used as the escape character with the LineJet Print Server built-in “**telnet**” command.

---

# 14

## *Extra Features*

---

### LineJet Print Server Security

---

There are TCP access lists available to restrict host connections with the device.

#### Users and Passwords

---

The LineJet Print Server supports two user types:

<b>root</b>	Access to everything within the print server including all configurable settings.
<b>guest</b>	Ability to list settings only.

Passwords can be set for each user type. However, most often you would just set a password for the root user to protect the LineJet Print Server configuration. Guest users can not alter the print server configuration in any way.

To configure a root password on your LineJet Print Server:

1. Load a Web browser on a network station that can communicate with the print server over TCP/IP. The commands to set a root password are:

Syntax:

```
set user passwd username password  
save
```

Example:

```
set user passwd root your_password_for_root
save
```

2. Direct your Web browser to URL

```
"http://LineJetIPAddress/adminConf.html"
(e.g. "http://192.75.11.9/adminConf.html").
```

---

### Note



If prompted for a "User ID" and password first, type in "**root**" for the user ID and press ENTER at the password prompt since there is no password by default.

---

3. At the "Administration Configuration" HTML form that displays, scroll down to the "Passwords" section.
4. Click within the "Old" field beside the "Root Password" heading and enter the existing root password. By default, there is no root password so you can go to the next step without typing anything in this field.
5. Within the "Root Password" section, click within the "New" field and enter the new root password.
6. Within the "Root Password" section, click within the "Confirm" field and enter the new root password again. Remember this is case sensitive.
7. Click on the SUBMIT button when done and physically repower the print server to make the new setting takes effect.

From this point on, anytime you log in to the LineJet Print Server as "**root**", you will need to specify this password or your login attempt will fail.

To clear this password or change it, use the same "Administration Configuration" HTML form. Just enter the appropriate "Old" password and put in the new one (or nothing if you do not want a root password any longer). The commands directly on the LineJet Print Server are:

```
set user from default
save
```

## TCP Access Lists

---

Within TCP/IP environments, the LineJet Print Server can restrict host access to destinations/queues and remote command (i.e. rsh, rcmd, remsh and telnet) execution services. This is done using an access list similar in function to the Unix .rhosts file.

To view the current access list on the print server:

---

**Note**

Access list settings are not configurable through the HTML forms provided with the LineJet Print Server.

---

1. Start a Telnet session with the LineJet Print Server.

Syntax:

```
telnet LineJetIPaddress
```

2. Log in as “**root**” and press ENTER at the password prompt since there is no password by default (or your password for your home set).
3. List the current access list.

Syntax:

```
List tcpip
```

If the list is empty, all hosts have access to the LineJet Print Server services. If there are entries in the list, only those hosts specified have access to printing and remote command execution.

To add and delete access list entries, the commands are:

Syntax:

```
store tcpip tcp access add|del hostIPaddress |  
networkaddress  
reset
```

where *hostIPaddress* is the IP address of a TCP/IP host on your network and *networkaddress* is the address of a subnet on your network.

Example:

```
store tcpip tcp access add 192.75.11.25
store tcpip tcp access add 192.75.12.0
store tcpip tcp access del 192.75.11.25
reset
```

---

### Note



Although the maximum number of entries in the access list is 10, each entry can refer to a network rather than a specific host. This allows all hosts on that specified network to have access plus any individual hosts specified in the list.

---

## Printer Monitoring and Logging

---

One of the key aspects of maintaining a computing environment is monitoring printer status and logging this information to useful places. The LineJet Print Server allows this through its built-in HTML forms, command set, and logpaths.

### Printer and Print Job Monitoring

---

To view the current status of an I/O port on the LineJet Print Server, two methods are available:

1. Selecting the desired I/O port on the “Status” HTML form (i.e. “`http://LineJetIPaddress/indexStatus.html`”; e.g. “`http://192.75.11.9/indexStatus.html`”) that comes with the LineJet Print Server.
2. “`lpstat`” command directly on the print server once logged in as “`guest`” or “`root`”.

In each case, you are given a description of each I/O port status and a list of queued jobs. Table 5 describes some of the common terms you may encounter.

**Table 5. Key Printer Logging Terms**

<b>Term</b>	<b>Description</b>
"idle"	There is no job queued for the LineJet Print Server I/O port.
"blocked"	The printer is not allowing the LineJet Print Server to send data to it. Check that there is not a printer error and it is online and ready to go.
"waiting"	The LineJet Print Server knows about a print job but is waiting for the host to send more data or to send an expected packet.

## Printer Logging Through Logpaths

---

In the LineJet Print Server product manual, destinations are described as logical queues with associated models and logpaths. Models determine if any extra processing is needed with the print jobs passing through and logpaths determine whether any logging is needed for each job.

Each logpath on the LineJet Print Server consists of two parts:

- Type** The type of log information to be captured. The choices are "**job**" for job ID and username, "**user**" for user ID (and three messages per job), "**pgcnt**" for total pages printed in a job, "**cksum**" for file checksums, "**printer**" for special printer feedback, and "**ioport**" for parallel printer status messages.
- Port** Where this log information will be sent to. The choices are a **TCP port number** (e.g. 2000), an **email address** (including an alias), or a central host running a **SYSLOG daemon**.

To view the current logpath settings on the print server:

1. Load a Web browser on a network station that can communicate with the print server over TCP/IP or using Telnet (e.g. Telnet “ipaddress”). The command to view the logpath settings is:

---

**Note**



If prompted for a “User ID” and password first, type in “**root**” for the ID and press ENTER at the password prompt since there is no password by default.

---

Syntax:

**list logpath**

2. Direct your Web browser to URL  
“**http://LineJetIPAddress/destConf.html**”  
(e.g. “**http://192.75.11.9/destConf.html**”).

---

**Note**



If prompted for a “User ID” and password first, type in “**root**” for the ID and press ENTER at the password prompt since there is no password by default.

---

3. At the “Print Path Configuration” HTML form that displays, select a destination link (e.g. d1prn) from the top of the page to bring up the appropriate destination form.
4. Once the desired destination HTML form displays, scroll down to the “Logpath Type” and “Logpath Port” sections to view the current logpath settings for this particular destination.

At this point, you can alter any of these settings and then click on the SUBMIT button to store them into the LineJet Print Server. Remember to repower the LineJet Print Server to make the settings take effect.

---

## Downloading Software

---

Emulation and operating system software must be loaded into flash memory on the controller board. This software is stored as a compressed file on a 3.5 inch, double-density floppy diskette. The software can be downloaded from the host computer to the printer's flash memory using LineJet Print Server.

### Procedure

---

1. Make a printout of *all* saved configurations. (Refer to the *User's Guide*.) (Installing new software erases all saved configurations. You will use the printouts to restore printer configuration.)
2. Set the printer power switch to O (off).
3. On the printer control panel, press and hold down the **ON LINE + FF** keys. Without releasing the keys, power the printer on. Continue holding the **ON LINE + FF** keys down.
4. When you see "WAITING FOR PROGRAM DOWNLOAD" on the LCD, release the **ON LINE + FF** keys.
5. On the host computer, create a temporary directory called "download" on the **c:** drive. From an MS-DOS<sup>®</sup> prompt, type:

```
md c:\download <Return>
```

6. Insert the emulation or upgrade diskette into diskette drive A (or B) of the host computer.
7. Make the diskette drive the active drive by typing the following at the DOS prompt:

```
A: <Return>
```

(If the diskette is in drive B, type **B:** <Return>)

8. Get the name of the compressed file on the diskette by listing the contents of the diskette; at the DOS prompt type:

```
DIR <Return>
```

The compressed file on the diskette takes the form *FILENAME.EXE*

9. Copy the compressed file to the “download” directory you created in step 5; at the DOS prompt type:

```
copy FILENAME.EXE c:\download <Return>
```

where *FILENAME.EXE* is the name of the file contained on the diskette.

10. Make the “download” directory the active directory; at the DOS prompt, type:

```
c:\download <Return>
```

11. Decompress the executable file on the hard drive; at the DOS prompt, type:

```
FILENAME.EXE <Return>
```

This will create a file called *FILENAME.PRG* inside the “download” directory.

12. Start the FTP protocol; at the DOS prompt, type:

```
ftp xxx.xxx.xxx.xxx <Return>
```

(where *xxx.xxx.xxx.xxx* represents the IP Address of the printer.)

13. Log in to the printer; at the prompt, type:

```
root <Return>
```

You are given a password prompt. The default is no password; at the password prompt, enter <Return>. If the FTP program requires a password, contact your system administrator.

14. Once logged in, type the following sequence at the DOS prompt to download the *FILENAME.PRG* file to the printer:

```
cd dest <Return>
cd dlprn <Return>
bin <Return>
put FILENAME.PRG <Return>
```

(where *FILENAME.PRG* is the name of the file decompressed in step 11.)

15. As the file downloads, the FTP program shows the progress as a percentage. Once the download is complete, exit out of the FTP program by typing:

```
quit <Return>
```

16. When the new program has successfully loaded into flash memory and the printer has reset itself, set the printer power switch to O (off).
17. Unplug the AC power cord from the printer.
18. Remove the diskette from the host computer and store it with the printer.
19. Using the configuration printout(s), reconfigure the printer. (Refer to the *User's Guide*.)

# LineJet Print Server Naming Schemes

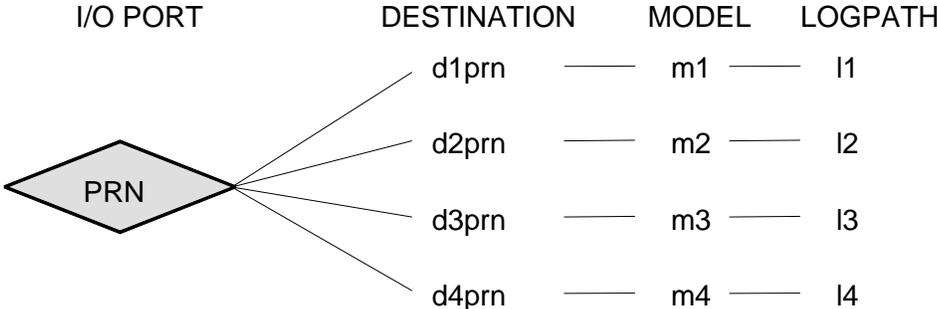


Figure 14. LineJet Print Server Default Names

<b>ARP</b>	Address Resolution Protocol. Associates a selected IP address with a network device Ethernet address.
<b>bps</b>	Bits per second.
<b>Centronics</b>	Parallel port interface standard found on most printers.
<b>daemon</b>	A continuously running process that handles system-wide functions like print spooling.
<b>default router</b>	Local device that forwards any IP packets destined for another subnet.
<b>destination</b>	Logical print queue on the LineJet Print Server which hosts send their print jobs to. There are eight destinations (two per I/O port) by default.
<b>DHCP</b>	Dynamic Host Configuration Protocol. Allows a network device to discover its IP address dynamically upon bootup. The IP address does not need to be stored within the device itself permanently.
<b>Download Mode</b>	Refers to the condition of the LineJet Print Server when in a startup condition, downloading configuration information.
<b>DNS</b>	Domain Name Server. Host providing responses to queries for a given host name IP address.
<b>EEPROM</b>	Electrically Erasable/Programmable Read-Only Memory.
<b>factory defaults</b>	Settings shipped with the LineJet Print Server.

<b>Factory Settings</b>	S2 jumper position stating all factory default settings are to be used while the LineJet Print Server is up and running.
<b>Firmware Panic</b>	Unrecoverable errors detected by the LineJet Print Server firmware force the Print Server into Firmware Panic mode. Manually reset the LineJet Print Server to resume operation.
<b>Flash</b>	Stores firmware code and configurable settings. Allows for upgrades without replacing hardware inside the LineJet Print Server.
<b>FTP</b>	File Transfer Protocol. Used for transferring files from one TCP/IP host to another and used in the upgrade process.
<b>Hardware Exception</b>	Buss errors, address errors, and illegal instructions force the LineJet Print Server into this non-operational mode.
<b>HTML</b>	HyperText Markup Language. Format used for documents viewable on the World Wide Web.
<b>ifnum</b>	Interface Number. Represents the network interface. With a LineJet Print Server, this will always be "1" for Ethernet.
<b>interface script</b>	Unix host filter file that processes the print job before it is sent over the network to the LineJet Print Server.
<b>I/O port</b>	Port for attaching peripherals to. The LineJet Print Server provides four: PRN1, PRN2, COM1, COM2.
<b>IP Address</b>	The Internet Protocol Address. A numeric address such as 123.45.61.23 which identifies a printer or server in a LAN or WAN.
<b>LAN</b>	Local Area Network.
<b>LED</b>	Light Emitting Diode. The printer has an LED display which shows the status of the printer to the operator.

---

<b>logpath</b>	Determines type of print job and printer logging needed per job. One logpath is associated with every destination.
<b>LPD/LPR</b>	Line Printer Daemon. The most common TCP/IP remote printing protocol that crosses all hardware utilizing IP.
<b>MIB</b>	Management Information Base. A set of variables (database) managed by an SNMP manager application.
<b>model</b>	Defines how a print job should be processed (e.g. banner pages added, ASCII to PostScript conversion) as it passes through the LineJet Print Server. One model is associated with every destination.
<b>NetBIOS</b>	Network Basic Input Output System. Common interface among PC networks.
<b>Monitor Mode</b>	Refers to the condition of the LineJet Print Server with no configuration or IP address loaded.
<b>npsh</b>	Extensive built-in command shell within the LineJet Print Server.
<b>PDF</b>	Portable Document Format. Encodes different types of documents enabling them to be read across multiple platforms.
<b>ping</b>	Standard command to test a TCP/IP connection. (e.g. "ping 192.75.11.9")
<b>print path</b>	Three-stage path a print job takes when it is sent from a host to a printer through the LineJet Print Server.

<b>protocol</b>	A set of rules or conventions governing the exchange of information between computer systems, or between a printer and a host computer. For computer printers, a protocol is the coding convention used to convey and print data. A printer protocol includes codes for printing text and graphics, as well as codes instructing the printer to perform special operations, and machine-to-machine communication codes.
<b>PSERVER</b>	Print Server. A Novell print method where the LineJet Print Server continuously polls the Novell file server print queue looking for print jobs.
<b>RAM</b>	Random Access Memory. Volatile memory within the LineJet Print Server that contains current/working settings. Settings are lost once the power is removed.
<b>RARP</b>	Reverse Address Resolution Protocol. Allows a network device to discover its IP address dynamically upon bootup. The IP address does not need to be stored within the device itself permanently.
<b>ROM</b>	Read-Only Memory.
<b>router</b>	A device that forwards IP packets to their destination. Also called a gateway.
<b>RPRINTER</b>	Remote Printer. A Novell print method where the LineJet Print Server waits for jobs to be sent to it from a defined PSERVER.
<b>SNMP</b>	Simple Network Management Protocol. A standard protocol used to monitor network devices called "SNMP agents."
<b>socket</b>	TCP connection between two hosts consisting of a source and destination TCP port number at each end.

---

<b>subnet mask</b>	A binary value used to divide IP networks into smaller sub-networks or subnets. This mask is used to help determine whether IP packets need to be forwarded on to other subnets.
<b>TCP/IP</b>	Transmission Control Protocol/Internet Protocol. Suite of protocols that act as the base protocol for the Internet.
<b>TCP port</b>	A logical connection point in the software of a TCP host or device. When two IP devices talk, they establish a socket which consists of a source and destination TCP port number on both ends.
<b>telnet</b>	Command and protocol to establish a terminal connection between two hosts on an IP network.
<b>UTP</b>	Unshielded Twisted Pair. A cable used for telephone and computer-to-computer connections.
<b>WAN</b>	Wide Area Network.



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