

PS Admin program

User's Guide

Rev. 03 (April, 2003)

Copyright Statement

Copyright ©1997

No part of this publication may be reproduced in any form or by any means or used to make any derivative such as translation, transformation, or adaptation without permission from the authors, as stipulated by the United States Copyright Act of 1976.

Trademarks

All trademarks belong to their respective owners.

Limited Warranty

The software and reference material are provided “as are,” without warranty as to their performance, merchantability or fitness for any particular purpose. The authors reserve the right to revise this publication and to make changes to its contents at any time, without obligation to notify any person or entity of such revisions or changes.

Table of Contents

ABOUT THIS GUIDE.....	1
<i>What's Not Covered in This User's Guide.....</i>	<i>1</i>
<i>Contents of the User's Guide</i>	<i>2</i>
INTRODUCTION.....	3
<i>Background on Print Servers.....</i>	<i>3</i>
<i>Print Server Administration Features.....</i>	<i>6</i>
INSTALLING AND STARTING THE PS ADMIN PROGRAM.....	8
<i>System Requirements.....</i>	<i>8</i>
<i>Installing PS Admin.....</i>	<i>10</i>
<i>Starting PS Admin</i>	<i>10</i>
PRINT SERVER WIRELESS SETTING IN PS ADMIN PROGRAM 12	
<i>Ad-Hoc Mode:.....</i>	<i>13</i>
<i>Infrastructure Mode:.....</i>	<i>17</i>
<i>WEP Encryption Key.....</i>	<i>21</i>
GETTING STARTED SETTING UP YOUR PRINT SERVER.....	23
<i>Choosing a Name for Your Print Server.....</i>	<i>23</i>
<i>Setting a Password for Your Print Server</i>	<i>25</i>
<i>Changing Print Server Port Settings.....</i>	<i>26</i>
<i>Testing Your Print Server.....</i>	<i>30</i>

SETTING UP MICROSOFT NETWORK PRINTING..... 31

Setting up the Print Server for Microsoft Networking..... 31

Printing from Client Workstations..... 33

Windows 95 (and later) Client Workstations33

Windows NT 4.0 (and later) Client Workstations36

Windows NT 3.51 Client Workstations.....38

Windows for Workgroups Client Workstations.....39

Windows 2000 TCP/IP Printing.....43

Windows XP TCP/IP Printing.....54

Configure Printer to Print to Print Server.....54

Install PS ADMIN Print Server Setup Program and Configure Print Server58

Add Printer.....63

CONFIGURE PRINTER TO PRINT TO PRINT SERVER..... 70

MS-DOS/PC-DOS Workstations.....79

Keeping the Print Queue on a Windows NT Server..... 80

SETTING UP APPLE TALK PRINTING..... 83

Setting up the Print Server for AppleTalk Printing83

Printing from MacOS Client Workstations.....85

SETTING UP UNIX TCP/IP PRINTING..... 87

Configuring TCP/IP Network Settings..... 87

Printing Text Files from Unix..... 88

Printing from BSD Unix Versions..... 89

Printing from SCO Unix System V/386..... 91

Printing from Solaris..... 93

Printing from Windows NT..... 94

Printing using TFTP..... 96

Printing using FTP..... 97

PS ADMIN ADMINISTRATION 98

The PS Admin Main Window 98

Filtering the List of Print Servers 99

Working with Environment Files and Preferences..... 100

Monitoring Printer Status..... 103

Resetting the Print Server 104

Upgrading the Print Server's Internal Firmware..... 105

TROUBLESHOOTING PRINT SERVER PROBLEMS..... 107

Using the PS Admin Device Diagnostics Window 107

APPENDIX: TELNET INTERFACE ADMINISTRATION 110

Setting an IP Address without PS Admin 110

Accessing the Telnet Interface 111

Changing TCP/IP Settings..... 112

Changing Server Settings..... 114

Changing the Print Server Password 115

Changing Port Settings..... 116

Changing AppleTalk Settings..... 118

Displaying Configuration Information..... 119

Resetting the Print Server 120

Upgrading Print Server Firmware 122

Print Server Administration

User's Guide

About This Guide

This *User's Guide* describes the operation of the *PS Admin* program, which can be used to conveniently configure and manage your print server from any personal computer running the Windows 3.1x, Windows for Workgroups 3.11, Windows NT 3.51, Windows NT 4.0 or later, or Windows 95 or later operating systems. Once your print server is configured, you can use it for printing from any Novell NetWare, TCP/IP, AppleTalk, or Microsoft network.

This *Guide* also describes the `telnet` interface, which you can use to configure your print server without the use of a Windows-based PC.

What's Not Covered in This User's Guide

This User's Guide concentrates on the software setup and management of your print server. Information about how to connect the print server to the network, to power, and to your printer(s), is covered in the print server's hardware *User's Guide*.

Contents of the User's Guide

This User's Guide is divided into three parts:

- ◆ Part I gives an overview of your print server and of the Windows-based *PS Admin* program you can use to manage it.
- ◆ Part II covers the initial steps you will need to take to set up your print server, configure it for printing from various network systems, and allow client workstations to use it to print documents.
- ◆ Part III covers daily administration tasks, how to troubleshoot problems with your print server, and how to use the `telnet` interface.

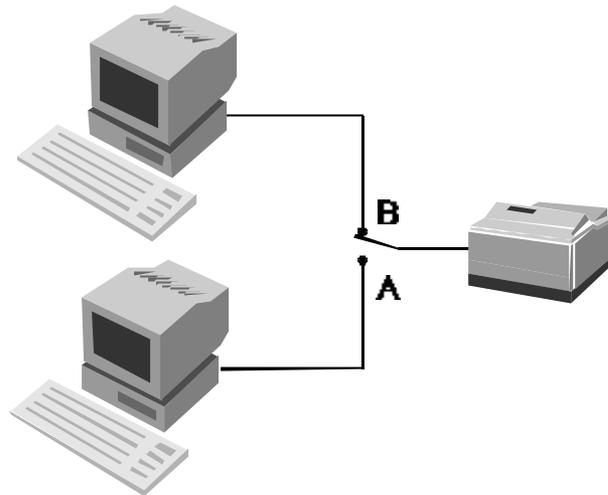
Introduction

This chapter introduces the printing and administration features of the print server products, and of the *PS Admin* program that you can use to set up and administer print server.

Background on Print Servers

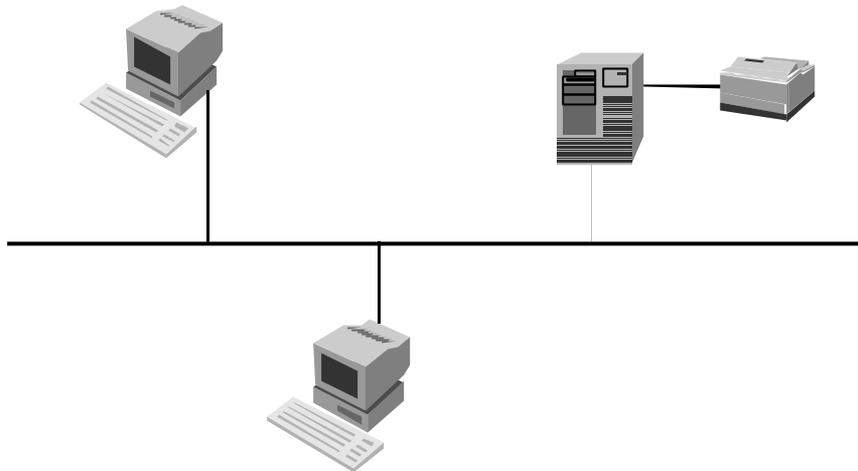
Before personal computer networking became common, users who wanted to print from their personal computers needed to have a directly-connected printer. As laser printers became common, it became too expensive for each user to have a dedicated printer, and some form of print sharing became even more necessary.

The simplest form of print sharing involves a switch box:



A switch box can make it more convenient for two or more users to share a single printer, but it requires long print cables unless the two users are close together. The users also have to coordinate their printing, which becomes difficult if more than two computers share a printer.

Server-based network operating systems (such as Novell NetWare) make it possible for a larger number of users to share printers. When a workstation user prints a document, network software on the workstation takes a file of instructions for the printer and stores them in a *print queue* on the server. The server takes each job in the print queue and sends it to the printer, which is either attached to the server itself or to one of the workstations on the network.



This arrangement allows a large number of people to share printers, and makes it possible to centrally manage the printers and their print queues.

This method has several disadvantages, however:

- ◆ It increases the load on the file server.
- ◆ The file server has a limited number of printer ports available.
- ◆ If printers are attached to the file server, then they have to be located near the server instead of near the users, which may be inconvenient.
- ◆ If printers are attached to user workstations, then print jobs will be delayed or printed more slowly as they are sent to the workstation. The remote printer software used on the workstation may also be incompatible with other software used on the workstation.

Print server devices such as the multi-protocol network print servers make network printing more practical, because:

- ◆ Network print servers can be located anywhere on the network, making it easy to place printers near the people who will be using them.
- ◆ It is easy to centrally manage network print servers.
- ◆ The load on network servers is reduced.
- ◆ Multi-protocol print servers make it possible for printers to be shared by people using different network operating systems.

Print Server Administration Features

The print servers can be centrally administered using the *PS Admin* program, making it convenient to manage all of your print servers from a single Windows-based interface. *PS Admin* features include:

- ◆ Allows setup and modification of parameters for the server's printer ports, the server itself and for the Microsoft Networking (NetBEUI), TCP/IP, and AppleTalk protocols.
- ◆ Allows administrators to view the status of each of the server's printer ports, including the printer status display if the printer supports PJI (Printer Job Language).
- ◆ Can display server statistics and status for troubleshooting purposes.
- ◆ Provides a convenient interface for setting up Novell NetWare 5.x servers (Native NDS).
- ◆ Allows the print server's internal software to be conveniently upgraded to a new version.

In addition to *PS Admin* server based administration, print servers also support a `telnet`-based interface for networks that do not use Windows-based personal computers. This interface supports viewing and modifying all server, port, TCP/IP, and AppleTalk-related settings.

Network administrators using the industry-standard SNMP network management protocol can also monitor the print server from any network management console.

Installing and Starting the PS Admin Program

This chapter lists the requirements that your computer system should meet before you can install *PS Admin*, tells how to install the program, and how to start it.

System Requirements

We recommend that your system meet the following requirements to be able to use the *PS Admin* program:

- ◆ A PC-compatible computer with a 486 or faster processor
- ◆ One of the following Windows operating systems:
 - ◇ Microsoft Windows version 3.1x
 - ◇ Microsoft Windows for Workgroups version 3.11
 - ◇ Microsoft Windows 95 or later
 - ◇ Microsoft Windows NT 3.51, 4.0 or later.
- ◆ 8 megabytes of main memory (RAM)
- ◆ At least 16 megabytes of free hard disk space
- ◆ A Windows-compatible mouse or other pointing device
- ◆ An Ethernet/Fast Ethernet network card with appropriate drivers (either NDIS or ODI)

You should also check your computer's settings:

- ◆ If you are using a screen resolution larger than 640 x 480 (standard VGA), the *PS Admin* display will look best if you use a “Small Fonts” setting.

You only need to have one workstation that meets the above requirements. It is not necessary to run the *PS Admin* program on every workstation. Ordinary network stations will still be able to print to your print server.

If you will only be using TCP/IP (UNIX) and/or AppleTalk protocols, you can use the `telnet` interface instead of the Windows-based *PS Admin*. For more information about using the `telnet` interface, see the *Appendix: Telnet Interface Administration* section.

Installing PS Admin

Follow the procedure outlined below to install *PS Admin*:

1. Insert the Print Server installation CD
2. Click **Install PS Admin Program**
3. The Setup program will begin by copying some files and ask for your confirmation. Click the **Next >** button to continue.
4. The Setup program will then ask you to select a directory on your hard disk where you want it to install the *PS Admin* program. If you want a destination directory path other than the one shown, click the **Browse...** button to select it.

Click the **Next >** button to continue the installation.

5. The setup program will copy *PS Admin* program files to the directory you selected, as well as create a PS Admin program group. Press the **Finish** button to complete the installation.

Once the installation is complete, you can begin using *PS Admin*.

Starting PS Admin

If you are using Windows 95/98/Me or Windows NT 4.0 (or a later version of Windows), to start the *PS Admin* program:

1. Press the **Start** button in the taskbar.

2. Within the Programs menu, select PS Admin.
3. Select the PS Admin program.

For Windows 3.1, Windows for Workgroups 3.1x, or Windows NT 3.51,

1. In the Program Manager, double-click on the PS Admin program group icon to open it.
2. Double-click the *PS Admin* program icon.

The *PS Admin* program will then be ready for use.

Instructions for using *PS Admin* to perform network print server “initial setup” tasks are found in the next chapter, *Getting Started Setting up Your Print Server*. For information about using *PS Admin* for other types of print server administration, see the *PS Admin Administration* chapter.



PRINT SERVER WIRELESS SETTING IN PS ADMIN PROGRAM

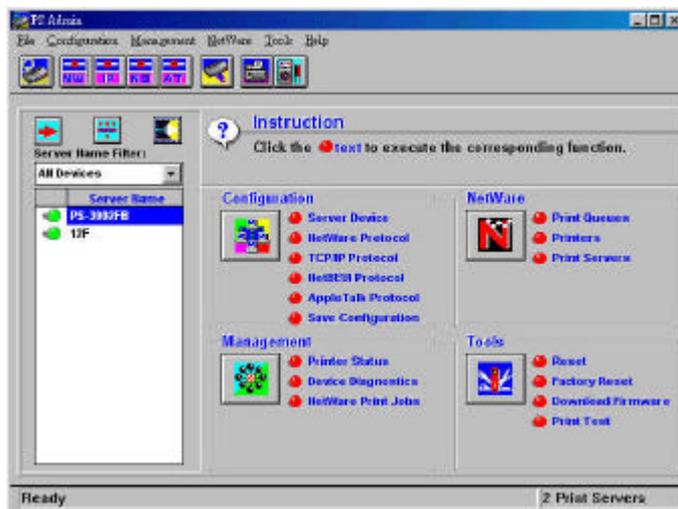
Installation procedure for wireless print server consists of two modes. Ad-hoc and infrastructure mode each with it's own setting. In the ad-hoc mode it provides direct communication between PC/Notebook and print server with setting to the same wireless channel and ESS-ID. In infrastructure mode communication between PC/Notebook and print server is through the Access Point acting as a bridge between wired and wireless network with ESS-ID setting matching the Access Point.

NOTE: *The following contains important information about what steps need to be taken to prepare for your wireless print server setting. If your print server is not a wireless print server please skip this chapter.*

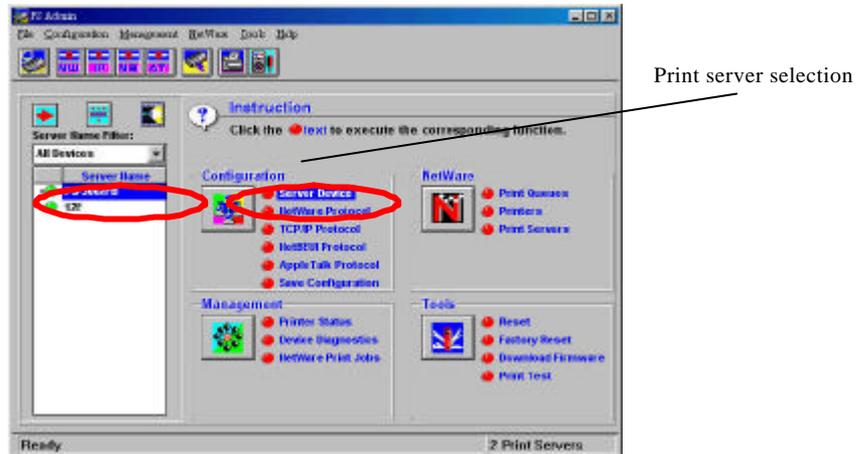
Ad-Hoc Mode:

- ◆ Before initiating set-up procedure for the print server make sure your print server has setup already in your LAN environment.
- ◆ Start-up PS Admin

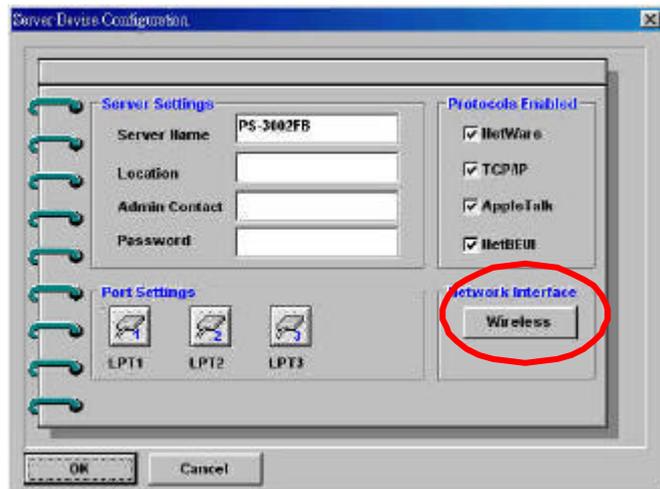
The PS Admin main window will appear like the one below.



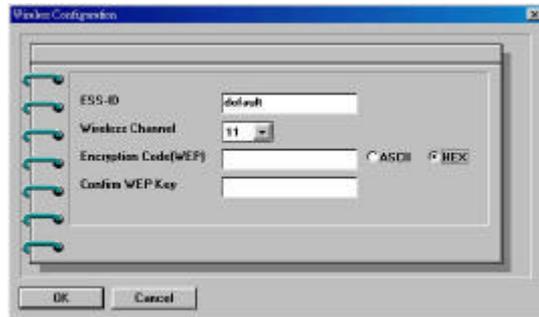
Select the print server and click on Server Device as illustrated.



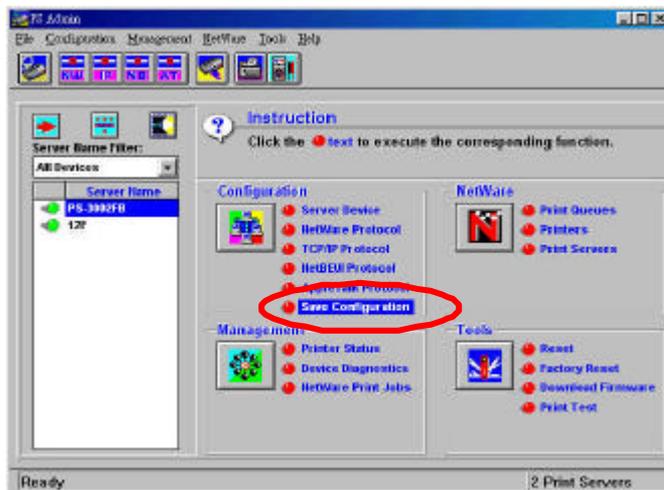
In the Server Device Configuration window click on Wireless button as indicated below.



The Wireless Configuration window will appear. The default wireless channel is set to 11 and ESS-ID is set as 'default'. You can alter the channel and ESS-ID setting to your requirement, however keep in mind the PC/Notebook must also be set to the same channel and ESS-ID. Press the OK button to return to the PS Admin main window.



Click on Save Configuration to store your setting.



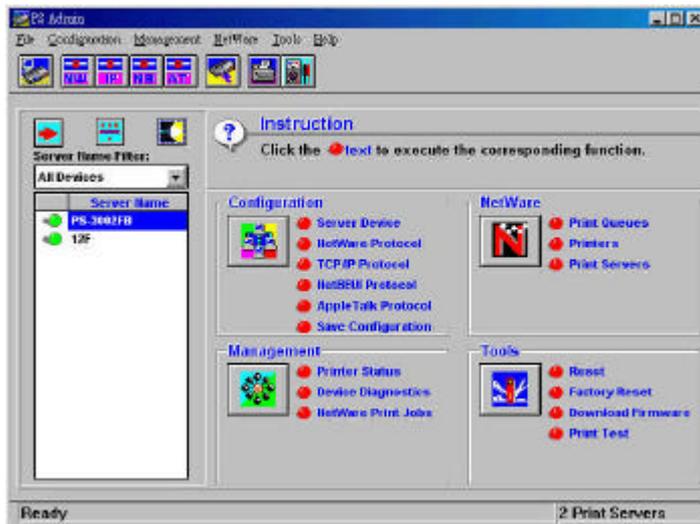
Note 1:

When changes are made on the print server's wireless channel and ESS-ID it must correspond to the PC/Notebook channel and ESS-ID for direct wireless communication.

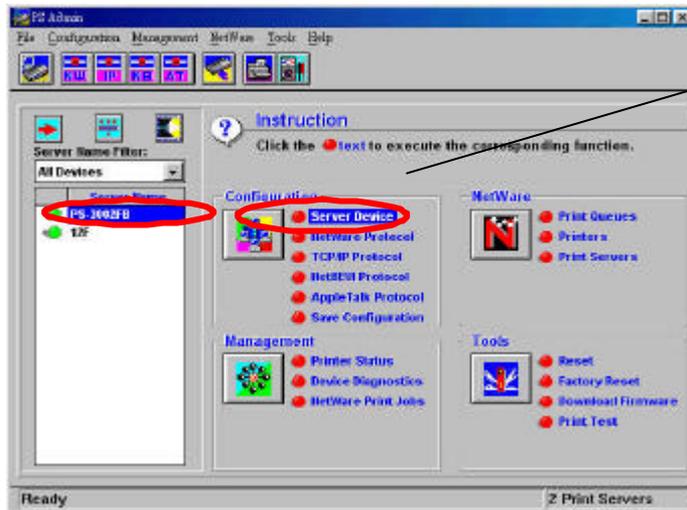
Infrastructure Mode:

- ◆ Before initiating set-up procedure for the print server make sure your print server has setup already in your LAN environment.
- ◆ Start-up PS Admin

The PS Admin main window will appear like the one below.

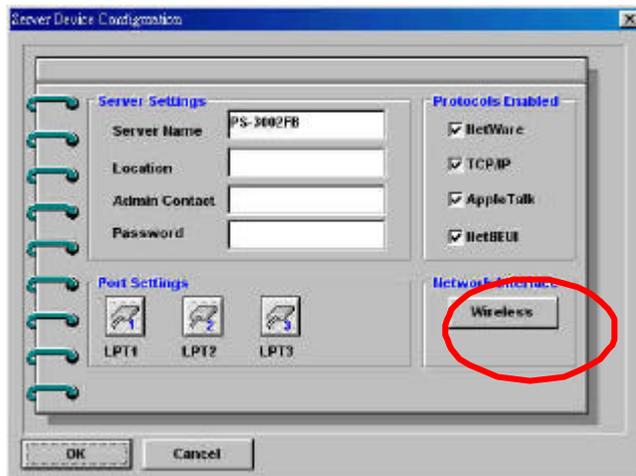


Select the print server and click on Server Device as illustrated.

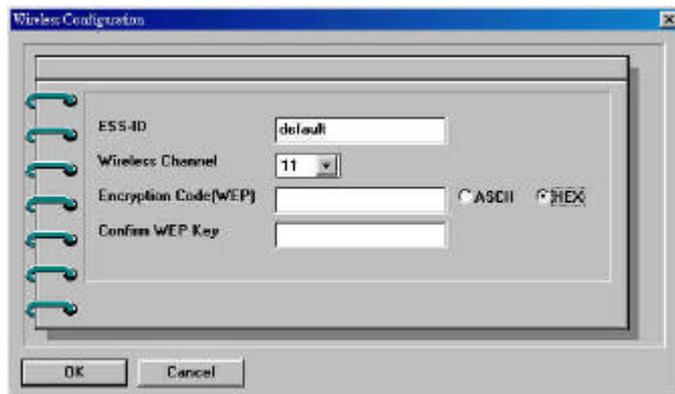


Print server selection

In the Server Device Configuration window click on Wireless button as indicated below.



The Wireless Configuration window will appear. Make sure to set the ESS-ID to match with Access Point's ESS-ID. The default ESS-ID of the print server is set as 'default'. Press on the OK button to return to the PS Admin main window.



Click on Save Configuration to store your setting.

After setting up ESS-ID from the PS Admin, alter the DIP switch on the print server to infrastructure mode and the print server will re-start.

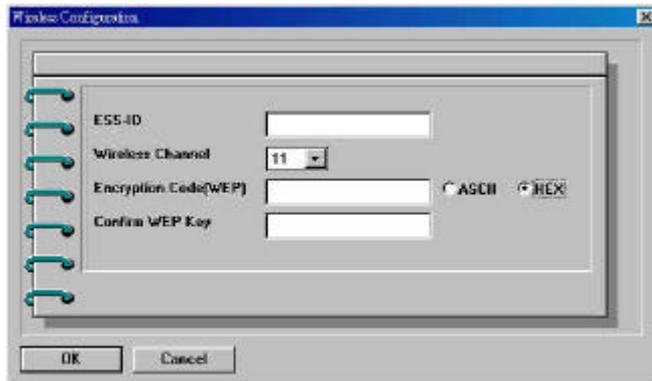
Note 1:

Please make sure to change your PC/Notebook to infrastructure mode. The ESS-ID on PC/Notebook and print server must match with the Access Point's ESS-ID.

WEP Encryption Key

WEP (Wired Equivalent Privacy) Encryption Key is used to secure communication data on the wireless communication. The print server support IEEE 802.11 64 bit WEP key and 128 bit WEP key.

To enable WEP encryption operation, follow setup procedure either Ad-hoc mode or Infrastructure mode, under Wireless Configuration windows, setup ESS-ID and wireless channel, also type in Encryption Code.



The factory default WEP encryption is disabled (Encryption Code field is blank).

To input Encryption Code, first Click on ASCII or HEX check box to select input format as ASCII format or HEX format.

ASCII input format:

To setup 64 bit WEP key, input 5 ASCII characters, for example, '12345'.

To setup 128 bit WEP key, input 13 ASCII characters, for example, '1234567890123'.

HEX input format:

To setup 64 bit WEP key, input 10 HEX code, for example, '3132333435', this is the same with ASCII input '12345'.

To setup 128 bit WEP key, input 26 HEX code, for example, '31323334353637383930313233', this is the same with ASCII input '1234567890123'.

On Confirm WEP Key field, input the same string input on the Encryption Code field.

Make sure the Encryption Code is the same with the access point's encryption code that the print server is to be connected under Infrastructure mode. Your PC/Notebook's encryption code also needs to be setup the same with the print server's encryption code under either Infrastructure mode or Ad-hoc mode.

Note:

Carefully input Encryption Code, any error setting will cause communication link to fail. If failure occurs, please reset to factory-reset for the print server and follow the setup procedure (Ad-hoc or Infrastructure mode) again.

Getting Started Setting up Your Print Server

Before you can print over the network using your print server, you may need to perform some basic setup tasks. These include:

- ◆ Choosing a name for your print server.
- ◆ Setting a password to protect your print server's settings from unauthorized modifications.
- ◆ Choosing names for the print server's individual printer ports, and changing the port settings.
- ◆ Testing the operation of the print server and checking that the print server is connected properly.

Once you have finished with these tasks, you can proceed to set up network printing for Novell NetWare, Microsoft Networks, AppleTalk networks, and UNIX TCP/IP systems. Information about setting up printing on these network types is covered in the following chapters.

Choosing a Name for Your Print Server

Each network print server has a server name. When the print server is shipped from the factory, it has a default name of the form PS-xxxxxx, where xxxxxx represents the last six digits of the Ethernet address found on the print server's underside sticker.

You can choose any name you like for your print servers, provided that:

- ◆ The server name is less than 15 characters long.
- ◆ The server does not have the same name as any Novell NetWare fileserver on your network.
- ◆ The server does not have the same name as any of the print servers configured for your Novell network.
- ◆ The server does not have the same name as any Microsoft Networking client or server.

Uppercase and lowercase letters are not distinguished in print server names.

It is recommended that you limit your print server name to 15 characters, chosen from the letters A to Z, the digits 0 to 9, and the hyphen (“-”) character. Names that violate this recommendation may not be usable with some networks.

To change your print server's name,

1. Select the print server in the *PS Admin* main window's server name display (or extended server display).
2. Choose **Server Device...** from the **Configuration** menu, or press the **Configure Server** button in the toolbar. (If you have already assigned a password to the server, you will have to enter it at this point.) *PS Admin* will display the Server Device Configuration window.
3. In the **Server Name** field, enter the name you have chosen for the server, and press **OK**.

4. Choose **Save Configuration** from the **Configuration** menu, or press the **Save Configuration** button on the toolbar. This will store the new settings into the print server and restart it.

Your print server will now be accessible under the new name.

Setting a Password for Your Print Server

Unless you set a password, anyone on your network will be able to change your print server's settings. If your local network is connected to the Internet, then it may be possible to change your print server's configuration from anywhere in the world using the `telnet` interface. To protect your print server's integrity, you should set a password for your print server, and record it in a safe place.

To set the print server's password,

1. Select the print server in the *PS Admin* main window's server name display (or extended server display).
2. Choose **Server Device...** from the **Configuration** menu, or press the **Configure Server** button in the toolbar. (If you have already assigned a password to the server, you will have to enter it at this point.) *PS Admin* will display the Server Device Configuration window.
3. In the **Password** field, enter the password you have chosen for the server, and press **OK**.
4. *PS Admin* will ask you to confirm your new password. Enter the password a second time and press **OK**.



5. Choose **Save Configuration** from the **Configuration** menu, or press the **Save Configuration** button on the toolbar. This will store the new settings into the print server and restart it.

WARNING: *Do not forget or lose your print server password. If you forget it, you will have to contact your service representative to change the password.*

Changing Print Server Port Settings

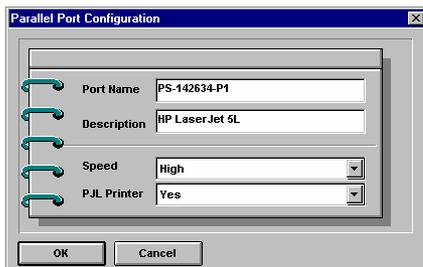
Your network print server provides a number of parallel and/or serial printer ports. For each port, you can determine:

- ◆ The name of the port
- ◆ A comment describing the port
- ◆ For parallel ports,
 - ◇ Whether or not data can be sent to the port at high speed
 - ◇ Whether or not the attached printer supports HP's PDL (Printer Job Language) protocol.
- ◆ For serial ports,
 - ◇ The serial port speed (baud rate), in bits per second.

- ◇ How many data bits are sent per byte
- ◇ How many stop bits are sent with each byte
- ◇ Whether or not a parity bit is sent, and if so what kind (even or odd parity)
- ◇ Whether or not software flow control is used (XON/XOFF)
- ◇ Whether or not hardware flow control should be used, and if so what kind (DTR, RTS, or DTR/RTS).

To set the parameters for a printer port,

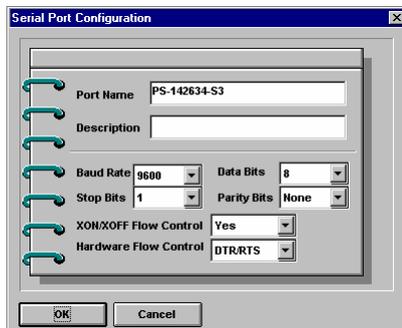
1. Select the print server in the *PS Admin* main window's server name display (or extended server display).
2. Choose **Server Device...** from the **Configuration** menu, or press the **Configure Server** button in the toolbar. (If you have assigned a password to the server, you will have to enter it at this point.) *PS Admin* will display the Server Device Configuration window.
3. Press the button corresponding to the port you wish to change. For parallel ports, the following dialog will be displayed:



The fields that can be changed are:

- ◇ **Port Name** The name by which the port is known on various network systems. The port name should be at most 32 characters long and may consist of letters, numbers, and hyphens. Spaces are not allowed. (If the port will be used for LAN Manager clients, the port name can not exceed 8 characters.)
- ◇ **Description** A comment describing the port.
- ◇ **Speed** Determines whether or not the print server can send data to the printer at high speed. Most newer printers can accept high-speed data transmission; if your printer loses characters then you may need to choose the low-speed mode.
- ◇ **PJL Printer** Determines whether or not the printer accepts Hewlett Packard's PJP printer job control language commands. PJP allows users to get feedback on the printer's status. If the printer connected to the port supports PJP, set this field to Yes.

For serial ports, the following dialog will be displayed:



The fields that can be changed are:

- ◇ **Port Name** See above.

- ◇ **Description** See above.
 - ◇ **Baud Rate** Sets the serial communications bit rate, in bits per second. Most printers default to 9600bps; rates from 300bps to 115200bps are available.
 - ◇ **Data Bits** Sets the number of bits transmitted per byte on the serial port. Most modern printers use 8-bit data.
 - ◇ **Stop Bits** Sets the number of stop bits transmitted per byte on the serial port. Most modern printers use serial protocol with 1 stop bit.
 - ◇ **Parity Bits** Sets the type of parity check bit sent with each byte on the serial port. Most modern printers use a non-parity serial protocol.
 - ◇ **XON/XOFF Flow Control** Determines whether or not the print server should respond to software flow control requests from the printer. When software flow control is used, the printer will send an XOFF character (Control-S) to the print server when its buffer is getting full, and an XON character (XON) when the buffer is no longer full.
 - ◇ **Hardware Flow Control** Determines whether or not the print server should respond to hardware flow control requests from the printer. When hardware flow control is used, the printer will use the DTR, RTS, or both RS-232 control lines to control the print server's transmission of data in order to prevent the printer's buffers from getting full.
4. Click **OK** to exit the Port Configuration dialog.
 5. Click **OK** to exit the Server Device Configuration dialog window.

6. Choose **Save Configuration** from the **Configuration** menu, or press the **Save Configuration** button on the toolbar. This will store the new settings into the print server and restart it.

Testing Your Print Server

Once you have set all of the necessary parameters, and have finished connecting your printer(s) to the print server, you should test each of the printer ports using the Print Test function.

For each port you wish to test,

1. Select the print server in the *PS Admin* main window's server name display (or extended server display).
2. Choose **Print Test...** in the **Tools** menu. *PS Admin* will prompt you for which port you wish to test.
3. Choose a port and click OK. The print server should print out a "Print Server Test Page."
4. Repeat this procedure for each printer port with an attached printer.

NOTE: *The Print Test function may not work with PostScript printers that do not accept plain text files.*

Setting up Microsoft Network Printing

Microsoft Networking services, based on the NetBEUI protocol, provide network users with peer-to-peer network services. In addition to accessing files and printers on a central server, any workstation can share its file directories and printer ports, making them accessible to other workstations.

Your print servers are also capable of making attached printers accessible to Microsoft Networking workstations running network operating systems such as:

- ◆ Microsoft Windows for Workgroups 3.x
- ◆ Microsoft Windows 95 (or later)
- ◆ Microsoft Windows NT 3.51, 4.0 or later
- ◆ Microsoft LAN Manager
- ◆ IBM LAN Server

To improve printing efficiency, Microsoft Networking services clients can choose to print to a print queue stored on a Windows NT server, which can then forward the print jobs to the print server.

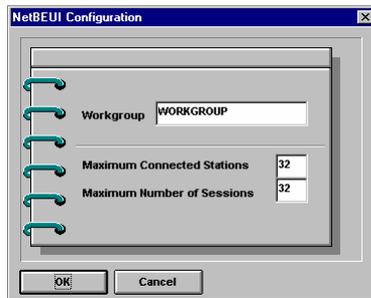
Setting up the Print Server for Microsoft Networking

Little additional setup is necessary for the print server to be usable from Microsoft Networking clients. First, the NetBEUI check box in the Server Device Configuration window needs to be checked. Select the

print server and choose **Server Device...** from the **Configuration** menu to display this window.

You should also set the *workgroup name* and maximum allowed connections. These settings are accessible from the NetBEUI Configuration dialog window, which you can display by choosing **NetBEUI Protocol...** from the **Configuration** menu.

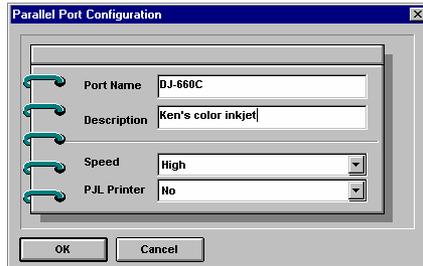
Each Microsoft Networking workstation or server has a workgroup name. The workgroup name determines what servers and resources will show up by default in lists of accessible resources. You should assign to the print server the same workgroup name as the users who will be accessing it most often.



Network path names for printers on Microsoft Networking systems are of the form:

`\\computer name\printer name`

When the print server is used with Microsoft Networking, the Server Name (set from the Server Device Configuration window) is used for the *computer name* in the path, and the Port Name (set from the Parallel Port Configuration or Serial Port Configuration window) is used for the *printer name*.



For example, the printer connected to the port named DJ-660C on server PS-142634 would be referred to by the path:

```
\\PS-142634\DJ-660C
```

Printing from Client Workstations

This section tells how to make it possible for your Microsoft Networking client workstations to access printers connected to your network print server.

Windows 95 (and later) Client Workstations

To allow your Windows 95 (or later) workstation to print over the network directly through your network print server,

1. From the **Start** menu, choose the **Settings** submenu, then the **Printers** item within it. Windows will display the Printers folder.
2. Double-click on the **Add Printer** icon in the Printers folder. Windows will start the Add Printer Wizard.



3. Press the **Next >** button to continue to the next screen.



4. Choose the **Network printer** selection and click the **Next >** button to continue.



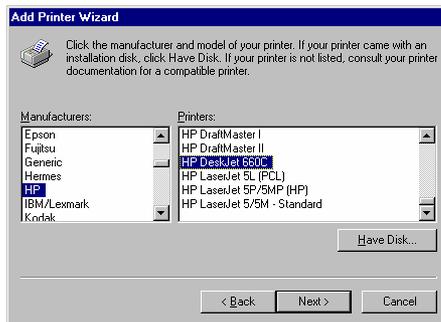
5. Enter the network path for your network print server, specifying which port you want to connect to. For instance, to use the printer connected to the port named PS-142634-P2 on the print server named PS-142634, enter:

\\PS-142634\PS-142634-P2

As an alternative to entering the network path, you can also use the **Browse...** button to locate the print server and printer. Press the **Next >** button to continue.



6. At this point Windows will ask you to choose the correct printer driver for the printer. Choose your printer's make and model from the list, or use the driver disk included with the printer. When you have chosen the correct printer, click **Next >** to continue.



7. Windows will ask for a name for the printer. Enter a name, or accept the default. Press **Finish** to complete the installation.



Windows NT 4.0 (and later) Client Workstations

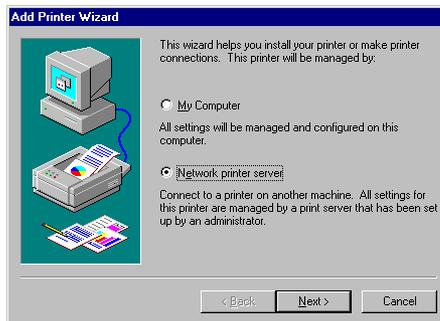
To allow your Windows NT 4.0 (or later) workstation to print over the network directly through your network print server,

1. From the **Start** menu, choose the **Settings** submenu, then the **Printers** item within it. Windows will display the Printers folder.
2. Double-click on the **Add Printer** icon in the Printers folder.



Windows will start the Add Printer Wizard.

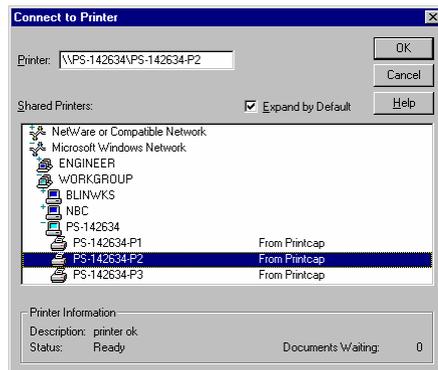
3. Choose the **Network printer server** selection and click the **Next >** button to continue.



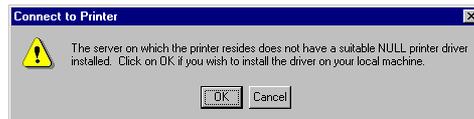
4. Enter the network path for your network print server, specifying which port you want to connect to. For instance, to use the printer connected to the port named PS-142634-P2 on the print server named PS-142634, enter:

\\PS-142634\PS-142634-P2

As an alternative to entering the network path, you can also browse the network to locate the print server and port. Press the **OK** button to continue.



5. Windows will display the following message. Press **OK** to continue.



6. At this point Windows will ask you to choose the correct printer driver for the printer. Choose your printer's make and model from the list, or use the driver disk included with the printer. When you have chosen the correct printer, click **OK** to continue.
7. If you already have a default printer, Windows will ask if you wish to use the newly installed printer as the new default.

8. When installation is complete, Windows will display the following dialog. Press the **Finish** button to complete installation.



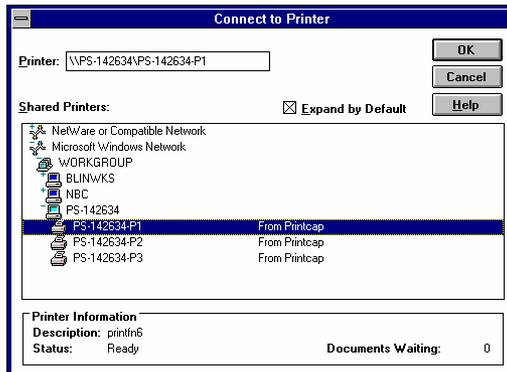
Windows NT 3.51 Client Workstations

To allow your Windows NT 3.51 workstation to print over the network directly through your network print server,

1. Double-click on the Print Manager icon found in the Main program group.
2. In the Print Manager, choose **Connect to Printer...** from the **Printer** menu.
3. Enter the network path for the print server, specifying which printer port you want to connect to. For instance, to use the printer connected to the port named PS-142634-P2 on the print server named PS-142634, enter:

```
\\PS-142634\PS-142634-P2
```

As an alternative to entering the network path, you can also browse the network to locate the print server and port. Press the **OK** button to continue.



4. Windows will display the following message. Press **OK** to continue.

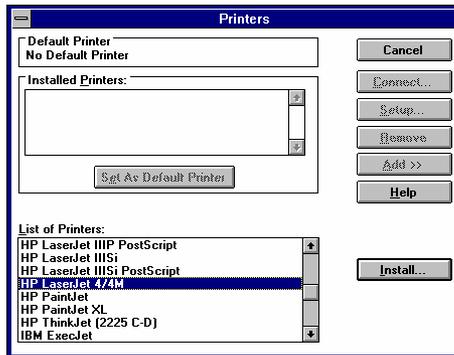


5. Windows will ask you to choose the correct printer driver for the printer. Select a driver and press **OK**.
6. The printer should now be available for use.

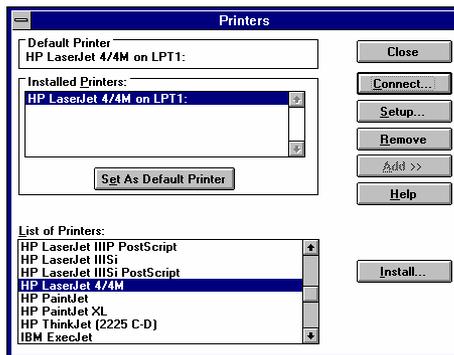
Windows for Workgroups Client Workstations

To enable network printing to your network print server from your Windows for Workgroups 3.11 workstation,

1. Start the Print Manager by double-clicking its icon in the Main program group.
2. From the Print Manager's **Options** menu, choose **Printer Setup...**. The Print Manager will display the Printers dialog window.



3. From the List of Printers, choose the appropriate printer type and click **Install**. If your printer type is not listed, you may have to choose “Install Unlisted or Updated Printer” and use a driver diskette provided by the printer manufacturer. The Print Manager program will install the printer’s driver program, prompting you to insert diskettes as necessary. When driver installation is complete, the printer will show up in the Installed Printers list.

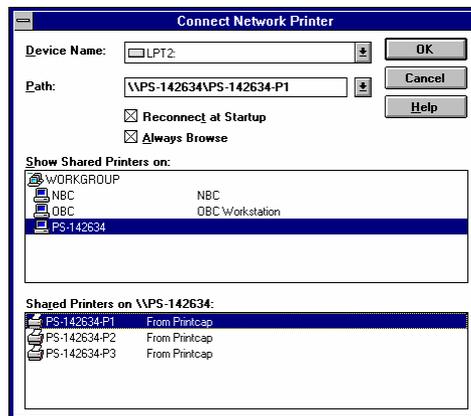


4. Select the printer in the Installed Printers list and click the **Connect...** button.

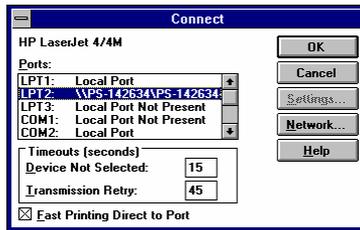
5. From the Connect dialog window, click **Network...** The Connect Network Printer window will be displayed.
6. In the Device Name field, choose a free printer port to be assigned to the network printer. (Any free port name will do.) Once the connection is made, all requests to print to that printer port will be redirected to the network printer.
7. Enter the network path for your network print server in the Path field, specifying which port you want to connect to. For instance, to use the printer connected to the port named PS-142634-P1 on the print server named PS-142634, enter:

\\PS-142634\PS-142634-P1

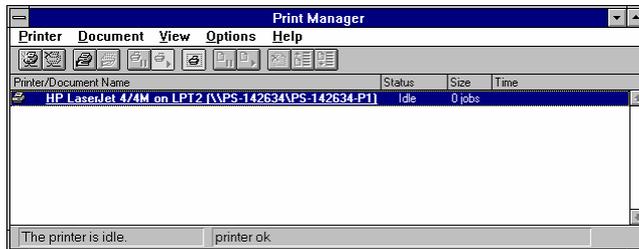
As an alternative to entering the network path, you can also browse the network to locate the print server and printer. Press **OK** to continue.



8. Select the newly connected printer port in the Connect dialog window, and click **OK**.

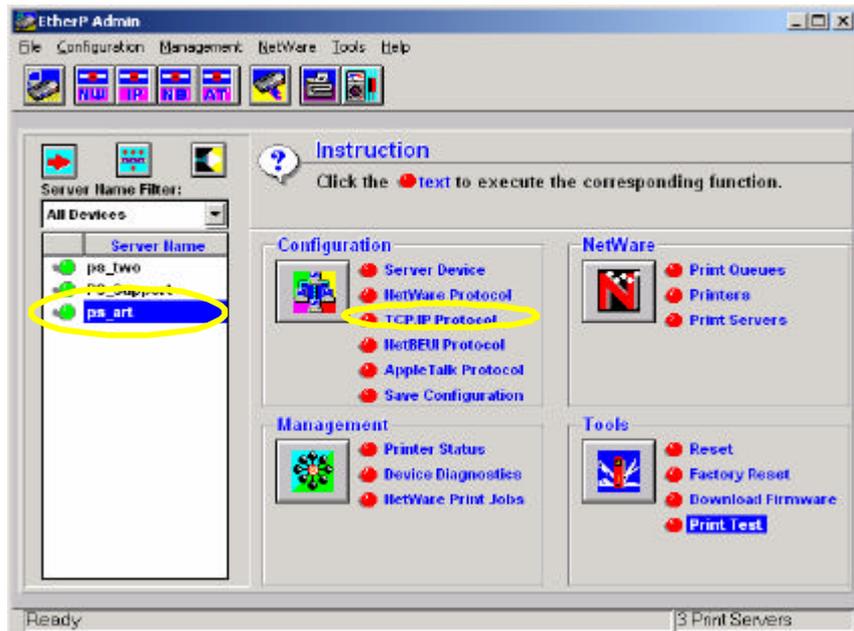


9. Click **Close** to close the Printers dialog window.
10. The printer will now appear in the Print Manager window, and will be accessible from all Windows applications, as well as for DOS applications executed from Windows.

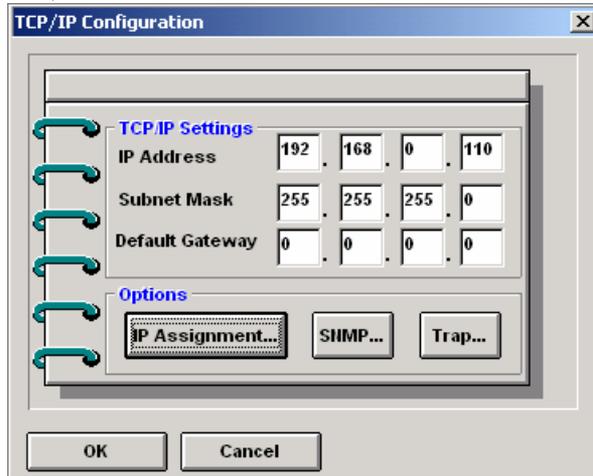


Windows 2000 TCP/IP Printing

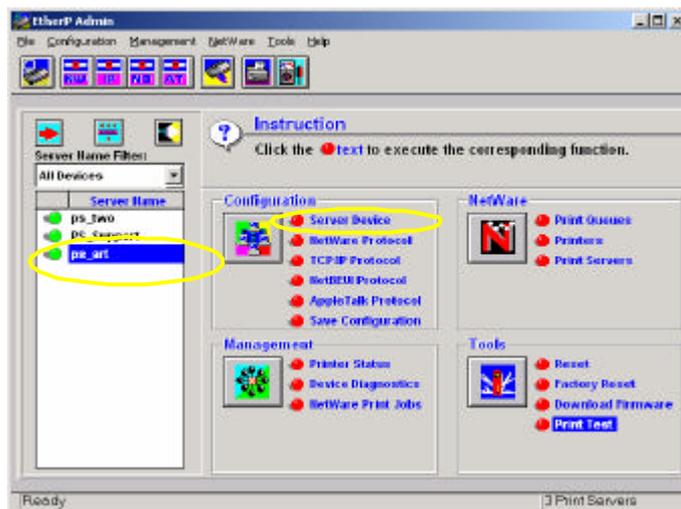
1. Connect the Printer to Print Server's LPT port, connect the Print Server to the network and then power on both devices.
2. Run the Admin software to configure the TE100-PS1/TE100-PS3.
3. Select the "Server Name" that you wish to configure on the left and then select "TCP/IP Protocol".



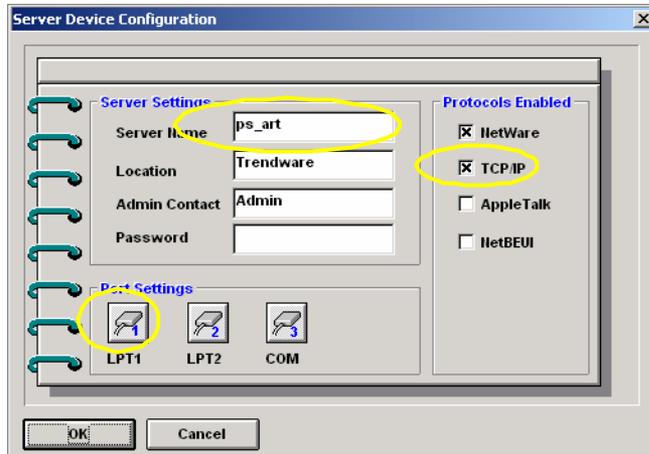
4. Input the IP address, Subnet Mask, Default Gateway (if you have one), and then click “OK”.



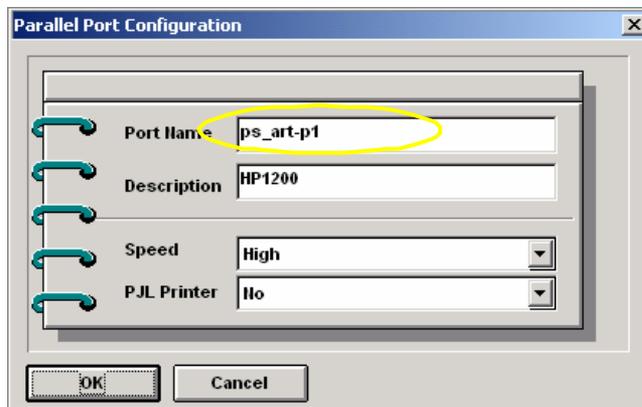
5. Back to the main screen, select the Server name again and then select “Server Device”.



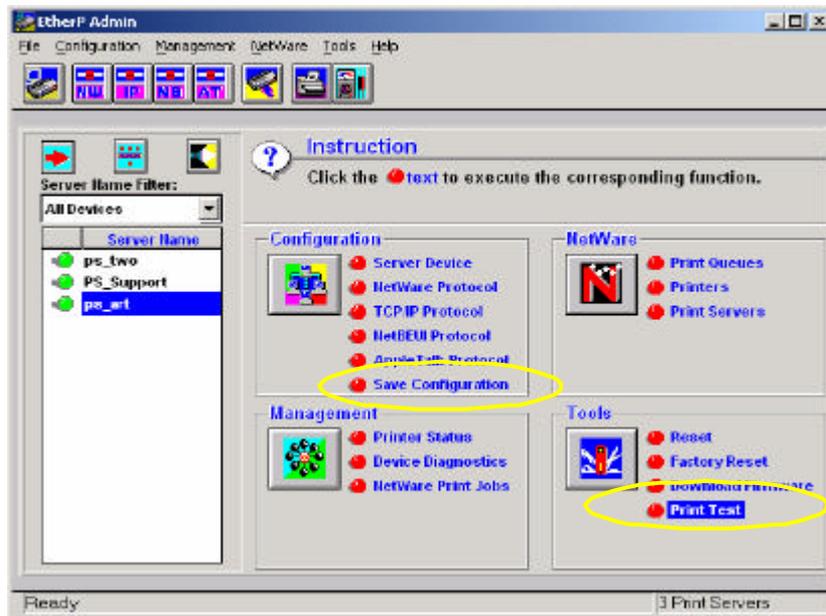
6. Input the desired Server Name, select to enable the TCP/IP protocol and then at "Port Settings" select which port you are going to configure.



7. Enter the Port Name and then select "OK". If the Print Server name is **ps_art** and you are setting up Print Server's **LPT1**, the port name must be **ps_art-p1**.

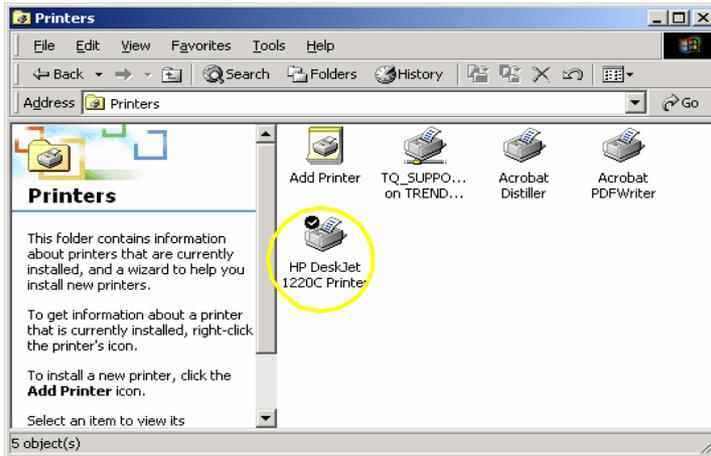


8. Select “OK” again to go back to the main menu, select “Save Configuration”, and then click “Yes” and “OK” to save the settings. The Print Server will now save the settings and then reset the device (This may take one minute). After the reset, click on “Print Test”, select the port with printer connected to it, and then select “OK”. A test page should be printed.

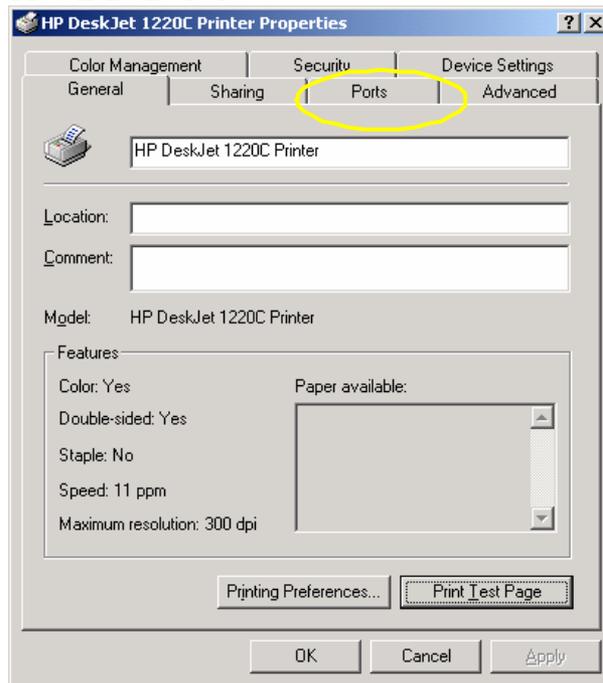


9. If your printer has software that you can run to install the printer driver, run the software to add a local printer at your computer's Parallel port (LPT port).

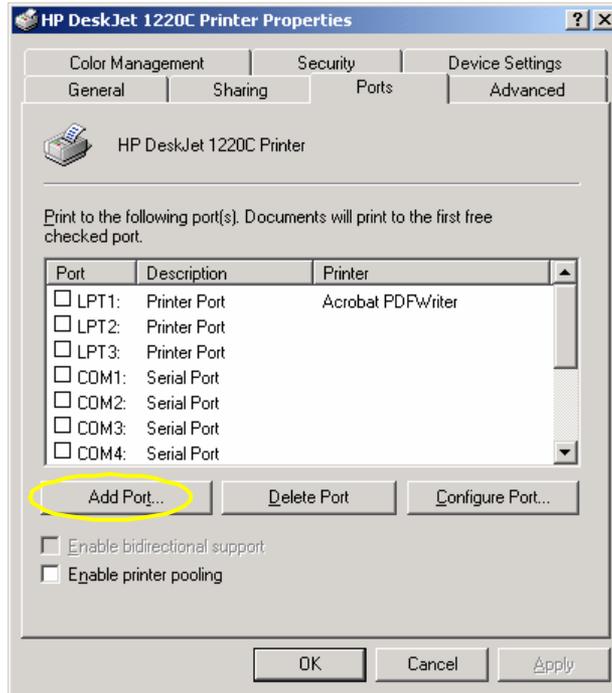
10. After the printer is installed, **right-click** on the printer, and then select “Properties”.



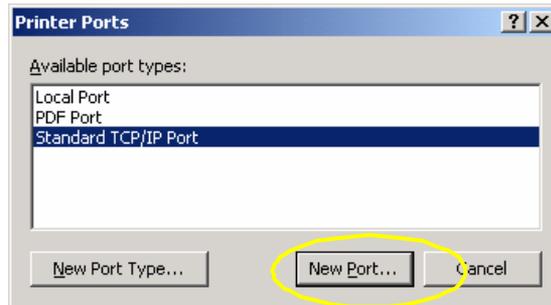
11. Click on "Ports".



12. Click on “Add Port..”.



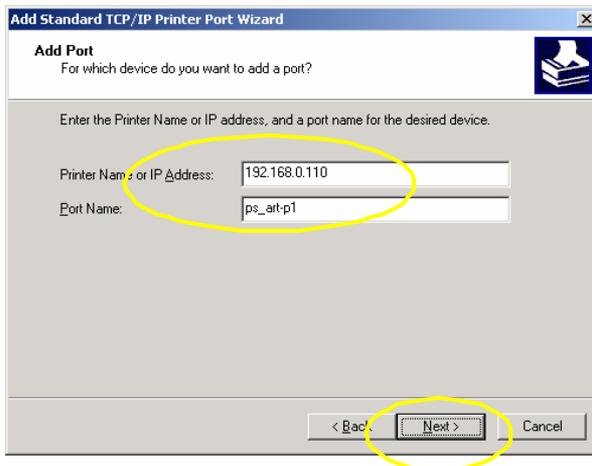
13. Select “Standard TCP/IP Port” and click on “New Port..”.



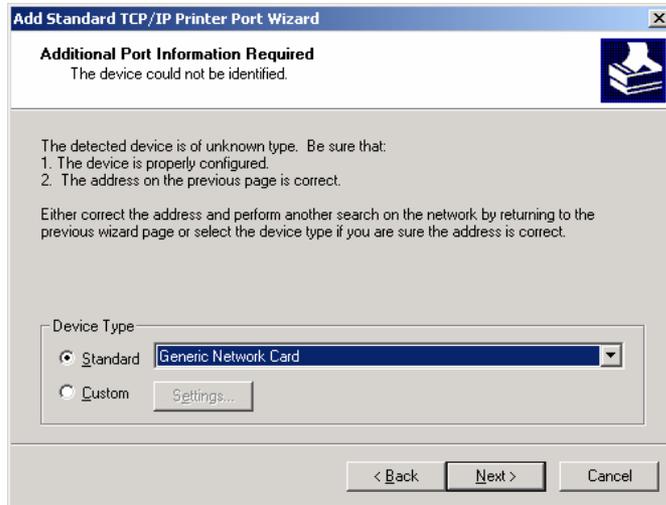
14. Click “Next”.



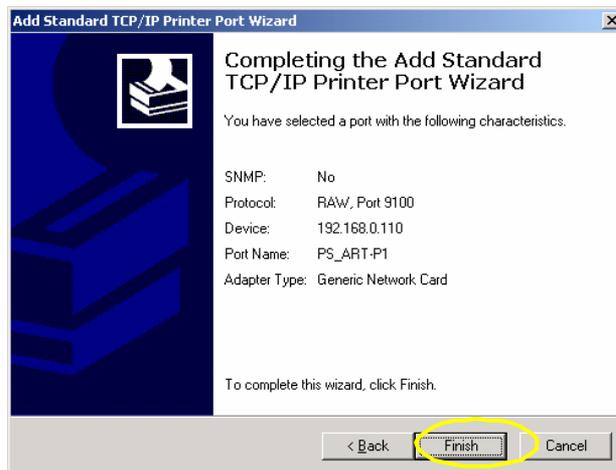
15. Enter the print server's IP address (i.e. 192.168.0.110) from Step. 4, input the port name from Step. 7 (**ps_art-p1**), and then click “Next”.



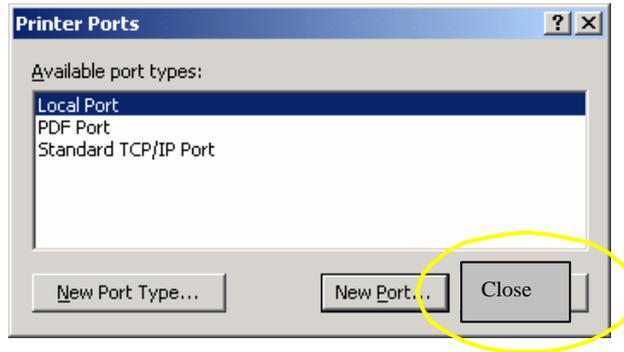
16. At Device Type check “Standard” and select “Generic Network Card” and click “Next”.



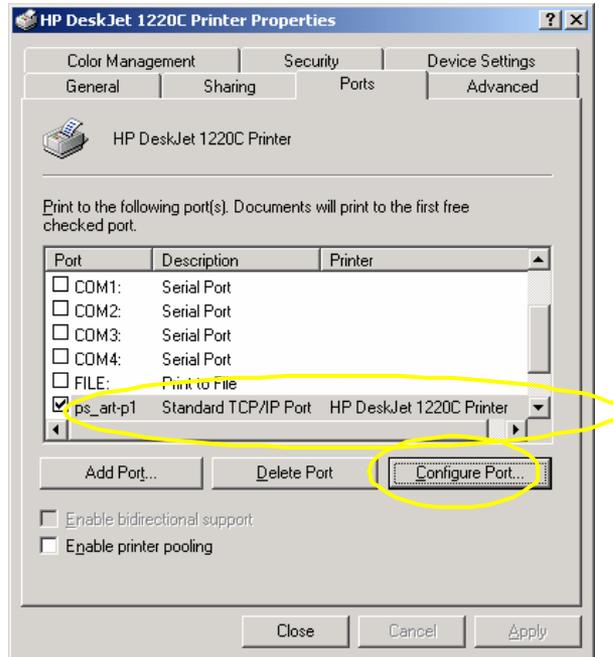
17. Click “Finish”.



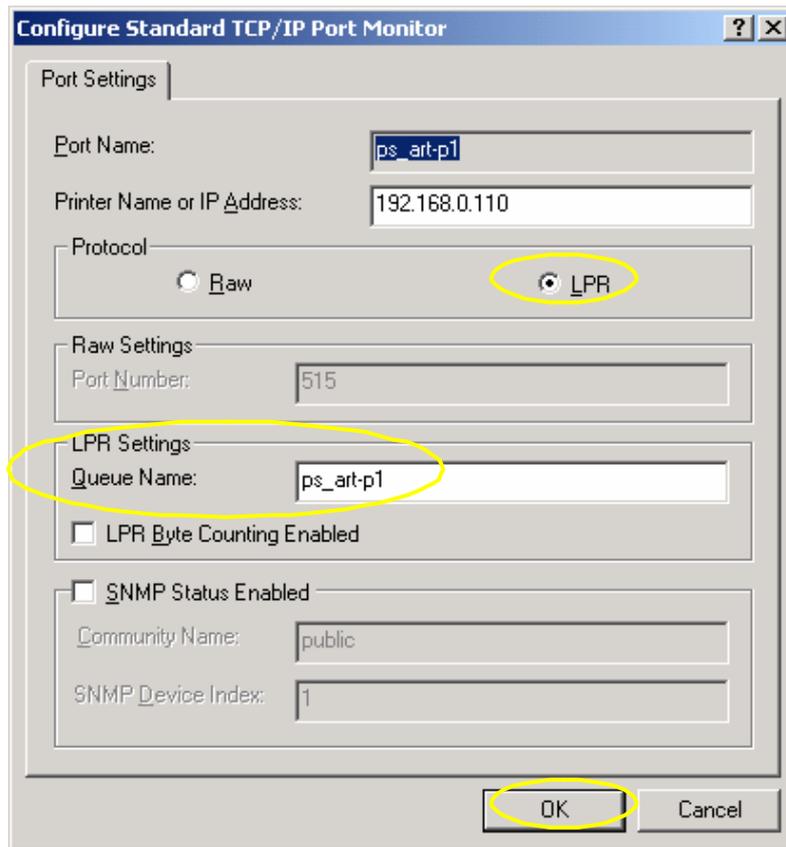
18. Click “Close”.



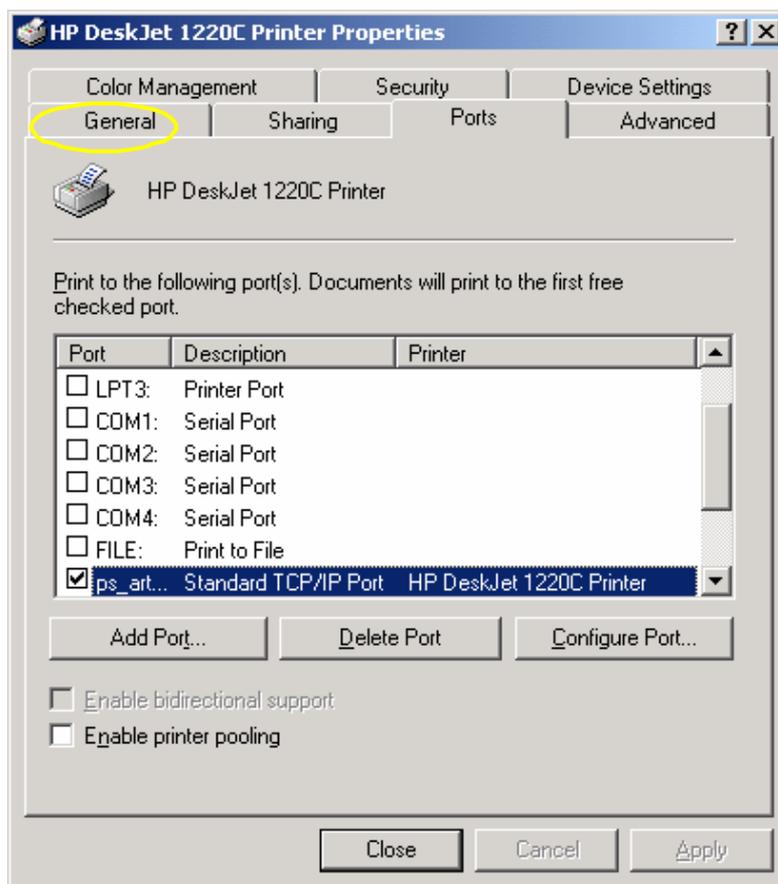
19. At “Ports”, select the **ps_art-p1** port and select “Configure Port..”.



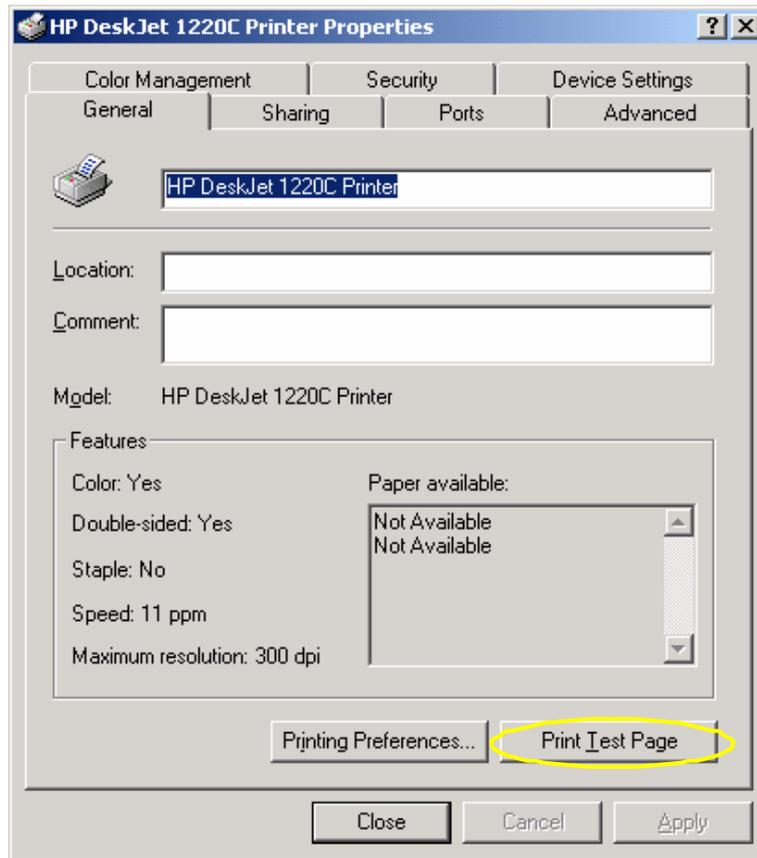
20. At “Protocol”, select “LPR” and at “LPR Settings”, input the Port Name (ps_art-p1) as the Queue Name and click on “OK”.



21. Back at “Ports”, make sure the ps_art-p1 is still selected and select “General”.



22. Select “Print Test Page” and the test print page will be at the printer.

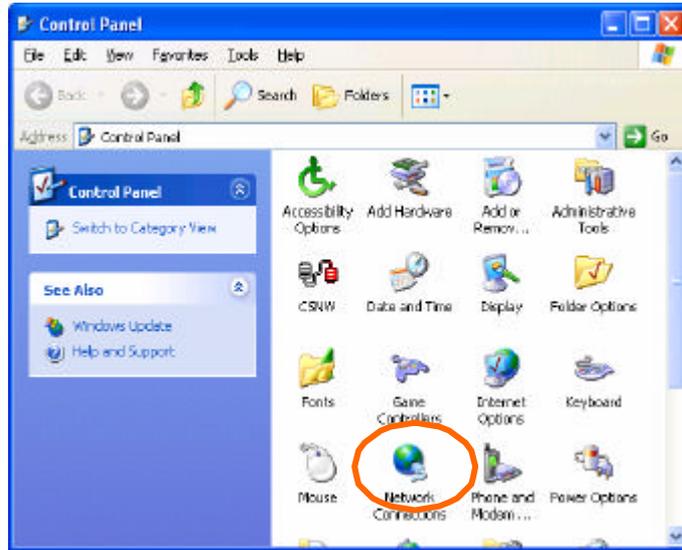


23. This completes the setup.

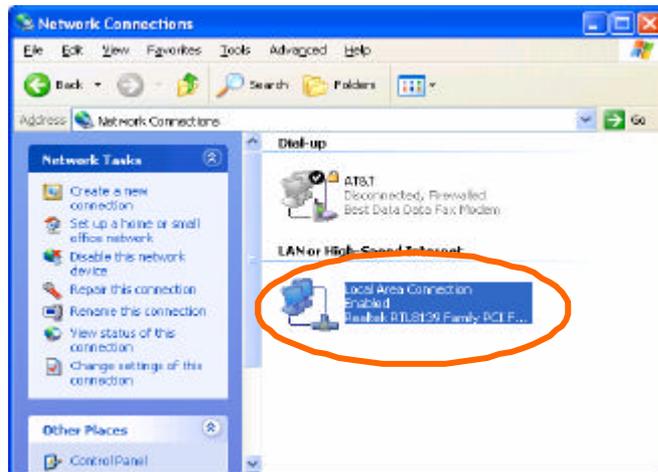
Windows XP TCP/IP Printing

Configure Printer to Print to Print Server

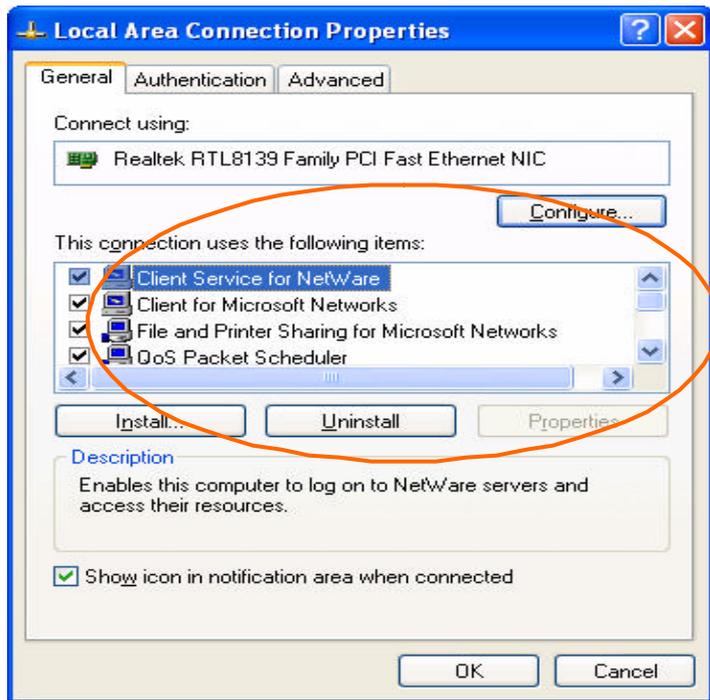
1. Check the XP's network properties. Go to "Start" → "Settings" → "Control Panel", and double click "Network Connections".



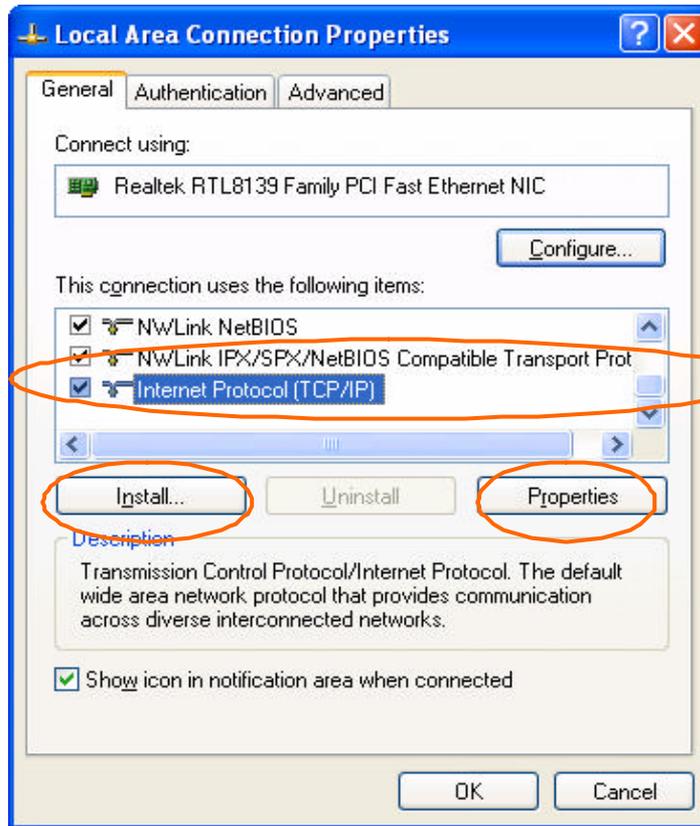
2. Right click on the Local Area Connection and select “Properties”. If you do not see the Local Area Connection, either the network card is not installed or the driver was not loaded properly.



3. Check the items and make sure IPX/SPX and TCP/IP protocols are installed.

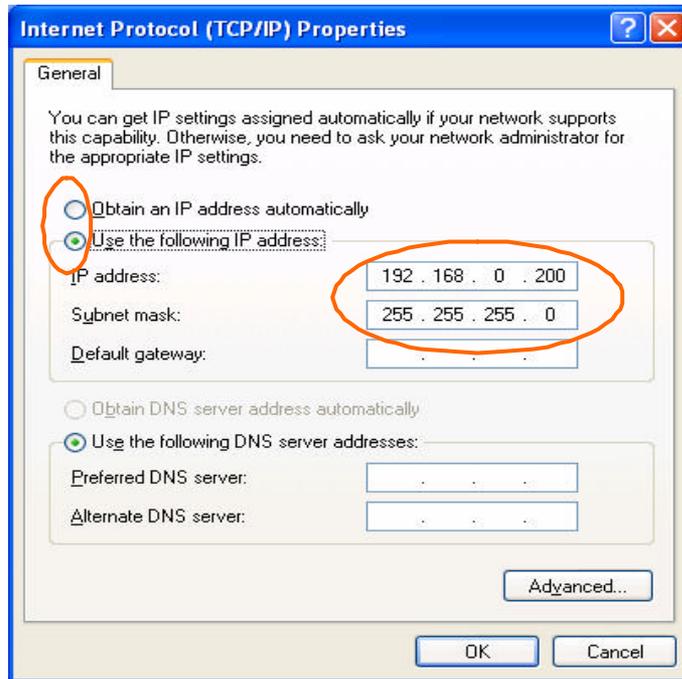


4. If any of them is not installed, click on "Install" to add the protocol. After adding the TCP/IP protocol, click to highlight the TCP/IP and then click on "Properties".



Note: *IPX/SPX is required to run the PS Admin print server setup program.*

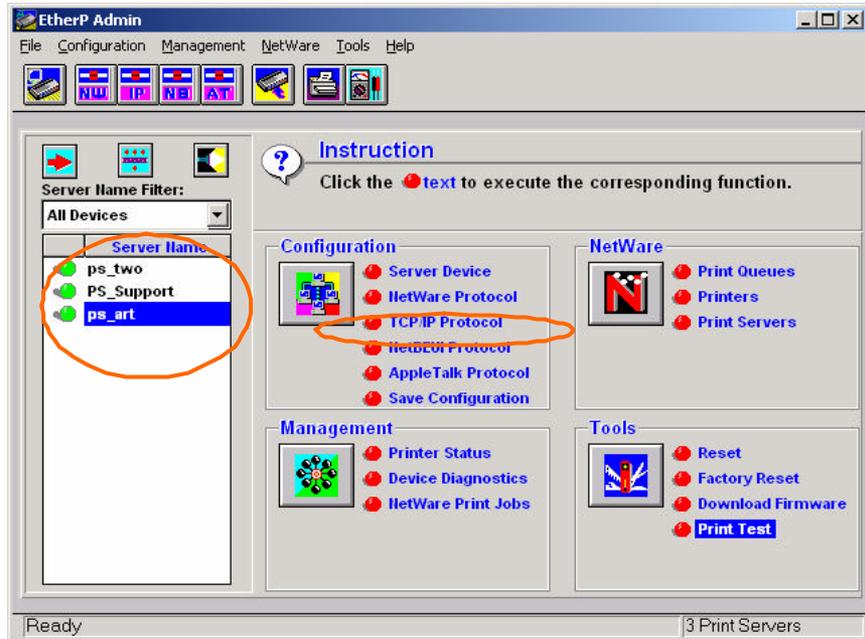
5. Click on Obtain an IP address automatically if you have a DHCP server on the network that distributes IP, or select “Use the following IP address:” and then input desired static IP addresses. Click Ok when finished.



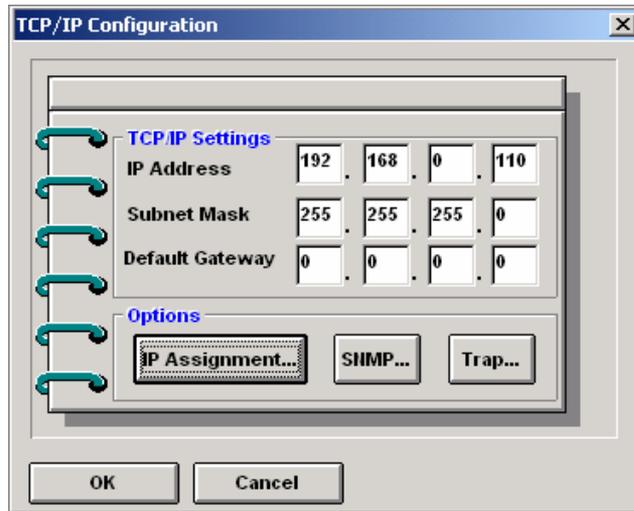
6. Connect the Print Server, Printer, and power on the units.

Install PS ADMIN Print Server Setup Program and Configure Print Server

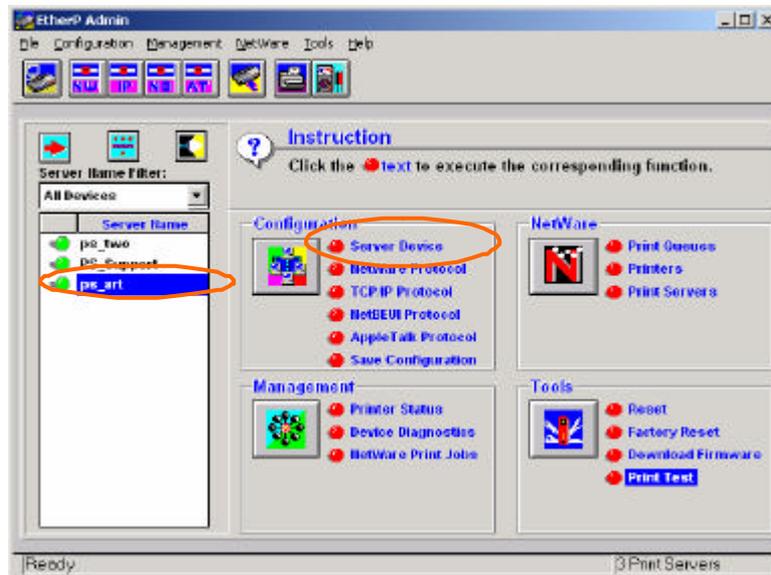
7. Insert the PS Admin CD-ROM to the computer and the setup program will auto-run. Select to install the ADMIN program, follow the instructions on the screen to complete the installation, and open the PS Admin. You should see the Print Server Name on the left hand side. The default print server name is PS-####. Click to highlight the Print Server and then click on TCP/IP Protocol under "Configuration".



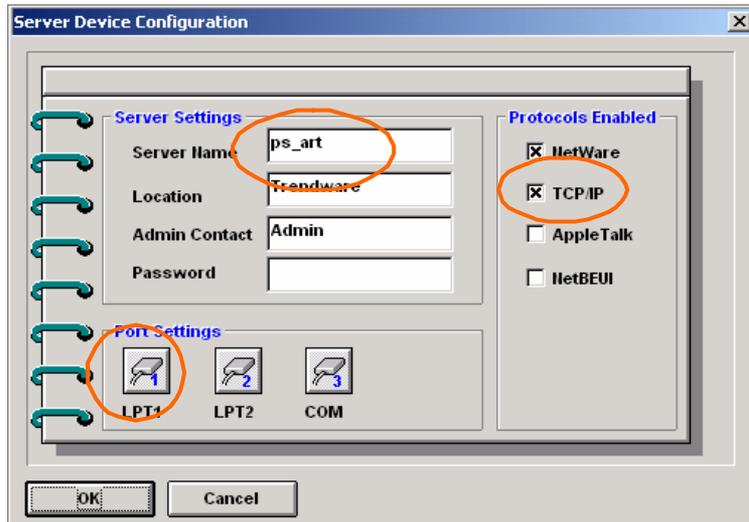
8. Input the proper IP addresses and click “Ok”. Record the IP address.



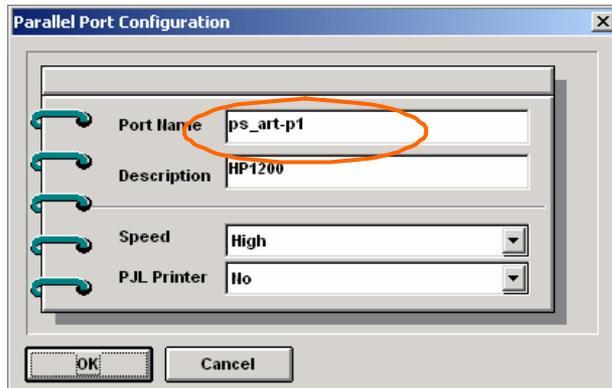
9. Back to the Main menu, select the Server name again and then select “Server Device”.



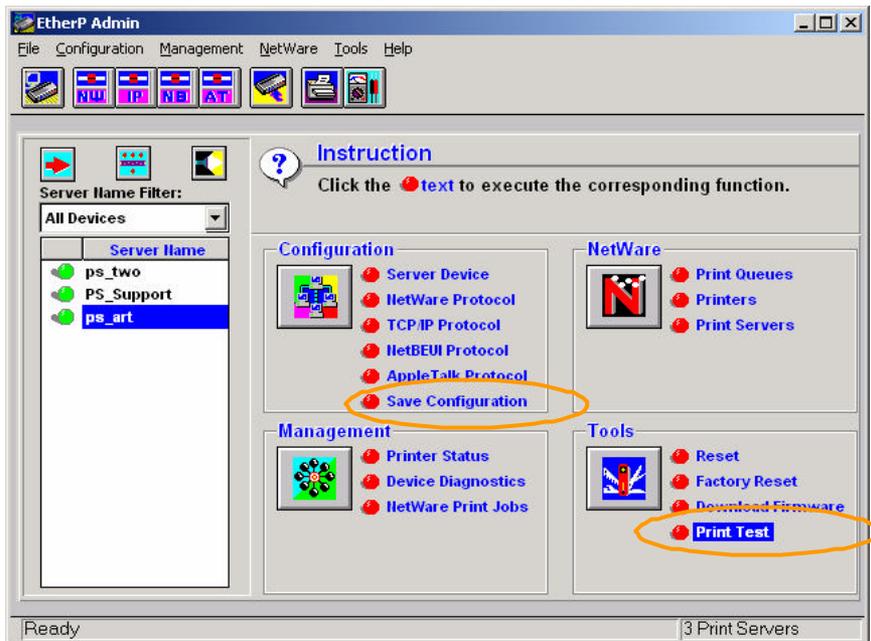
10. Input the desired Server Name (or you can leave it at default), select to enable the TCP/IP protocol and then at "Port Settings" select which port you are going to configure.



11. Enter the Port Name and then select "OK". If the Print Server name is **ps_art** and you are setting up Print Server's **LPT1**, the port name must be **ps_art-pl**. You can also leave everything as default and just record the Port Name.

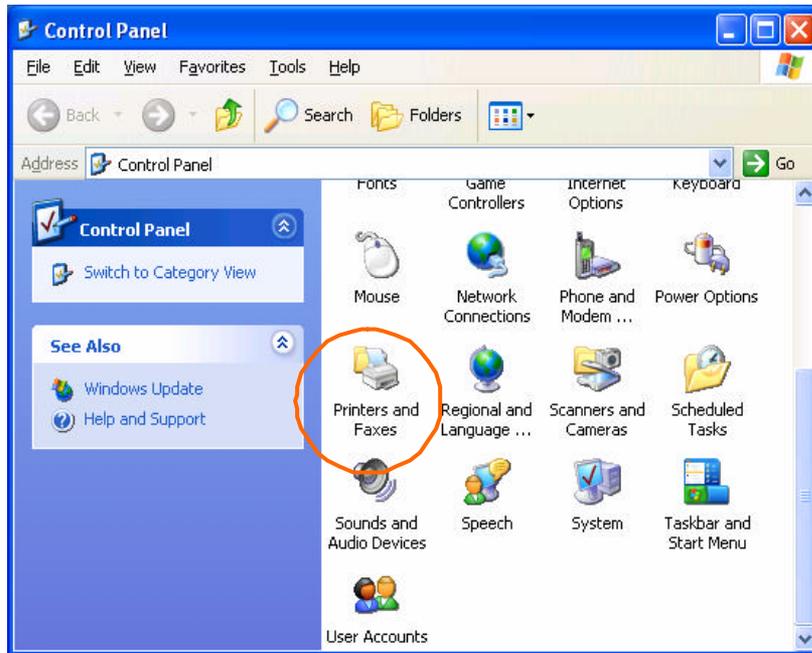


12. Select “OK” again to go back to the main menu, select “Save Configuration”, and then click “Yes” and “OK” to save the settings. The Print Server will now save the settings and then reset the device (This may take a minute). After the reset, click on “Print Test”, select the port with printer connected to it, and then select “OK”. A test page should be printed.

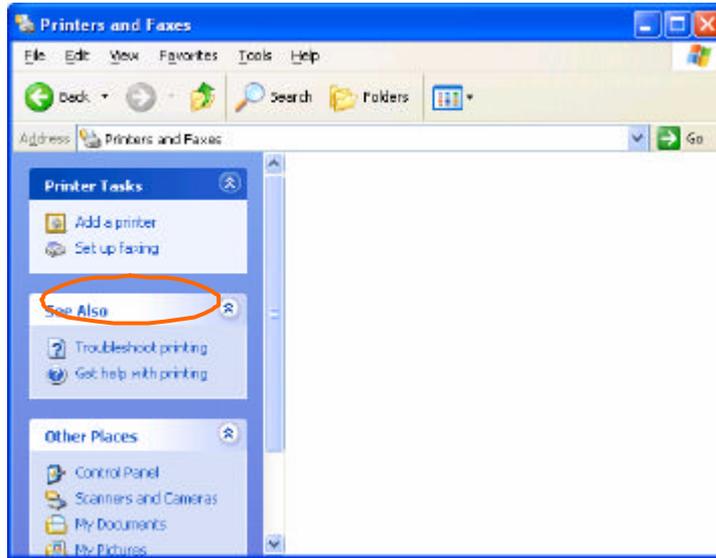


Add Printer

13. Click on “Start” → ”Settings” → ”Control Panel” and then double click on “Printers and Faxes”



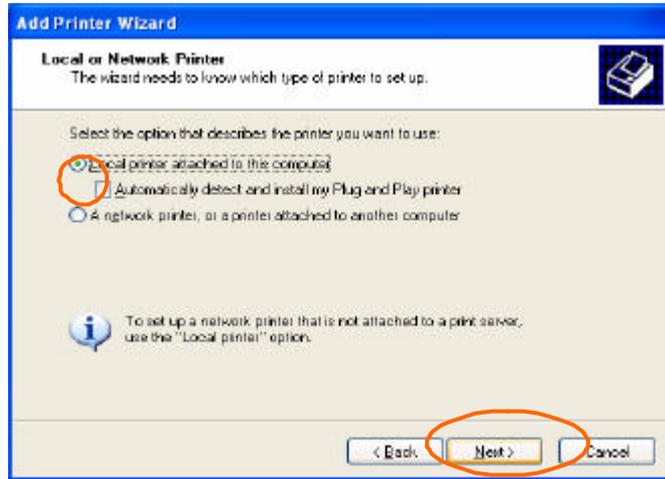
14. Click on “Add a Printer”.



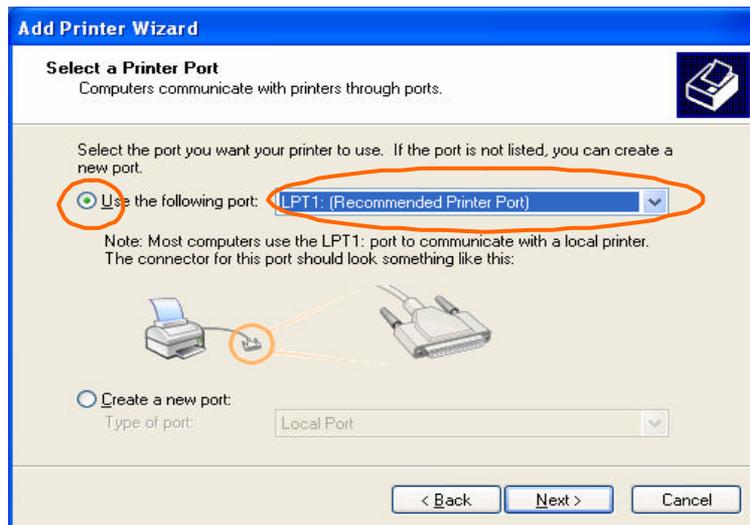
15. The add printer wizard will pop up. Click “Next”.



16. Select “Local printer attached to this computer” and click “next”.



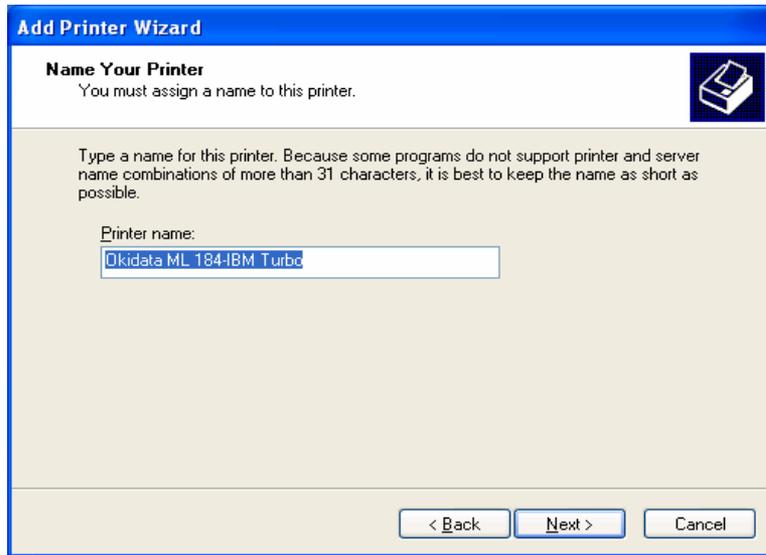
17. Click “Use the following port”, select LPT1, and then click “next”.



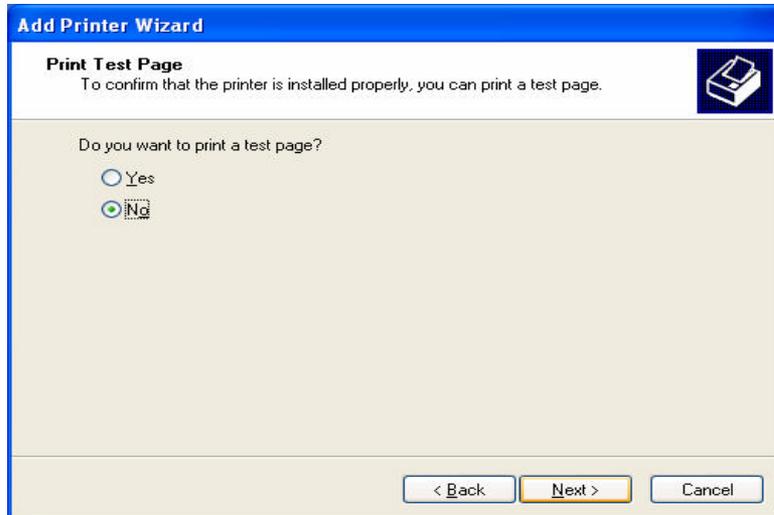
18. Select the manufacturer and the printer and click “Next”. If you have the printer driver disk, insert the disk, click “have disk”, and load the driver.



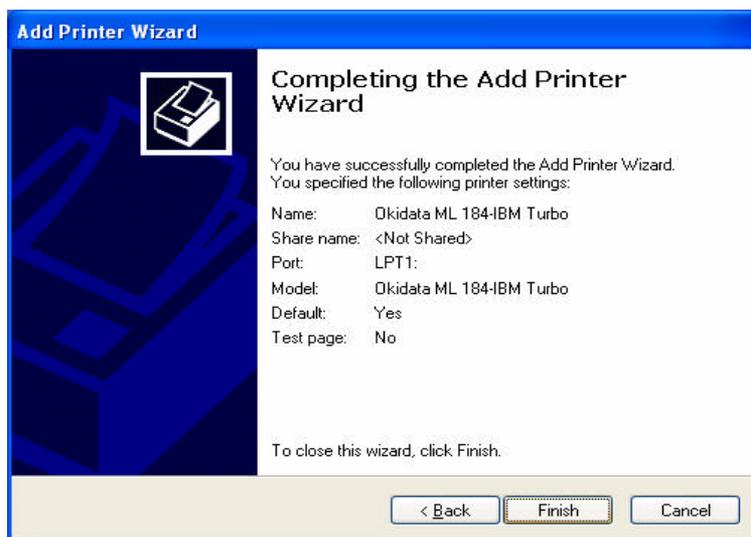
19. Input the printer name and click “next”.



20. Click “No” and click “Next”.

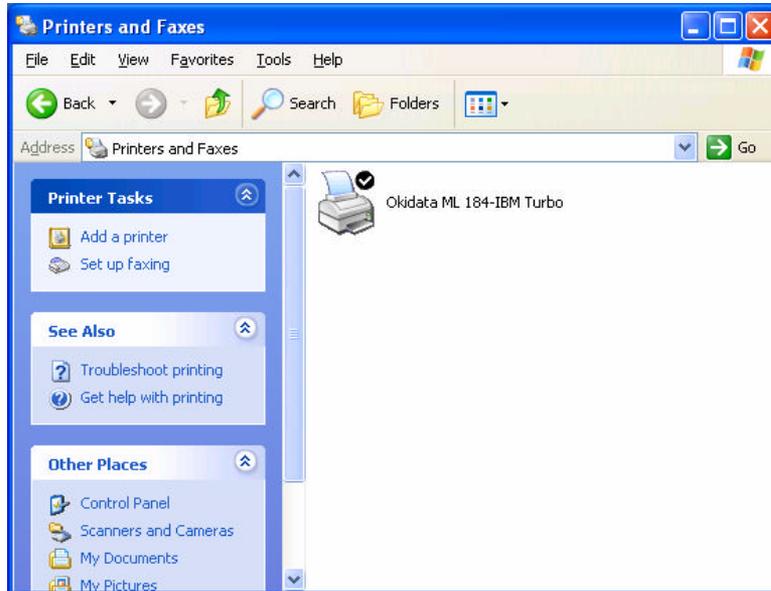


21. Click “Finish”.

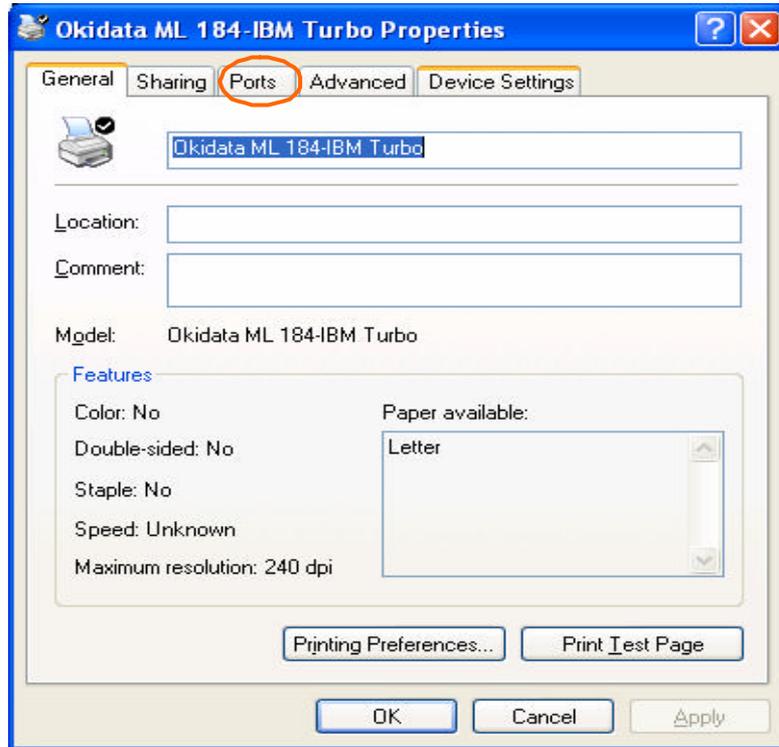


Configure Printer to Print to Print Server

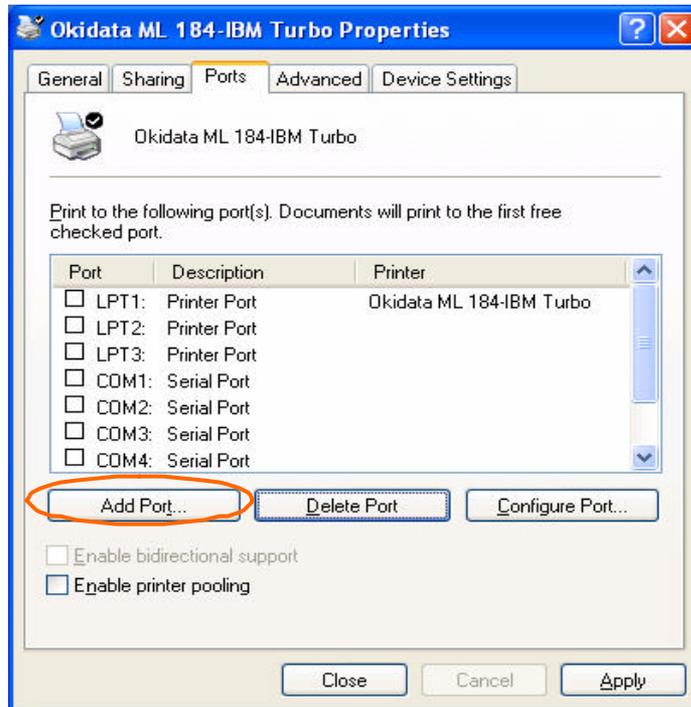
21. Back at the “Printer and Faxes” screen, you should see the newly added printer. Right click on the Printer and then select “Properties”.



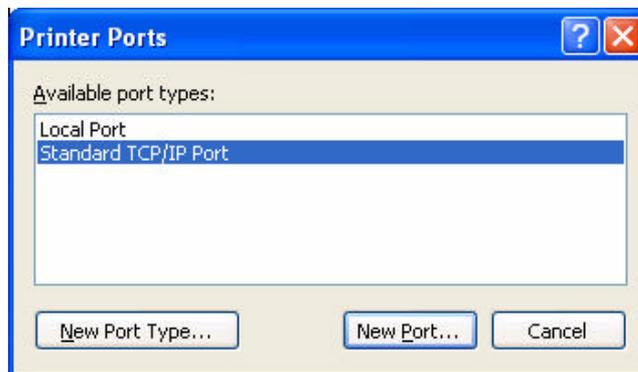
22. Click on “Ports” tab.



23. Click on Add Port



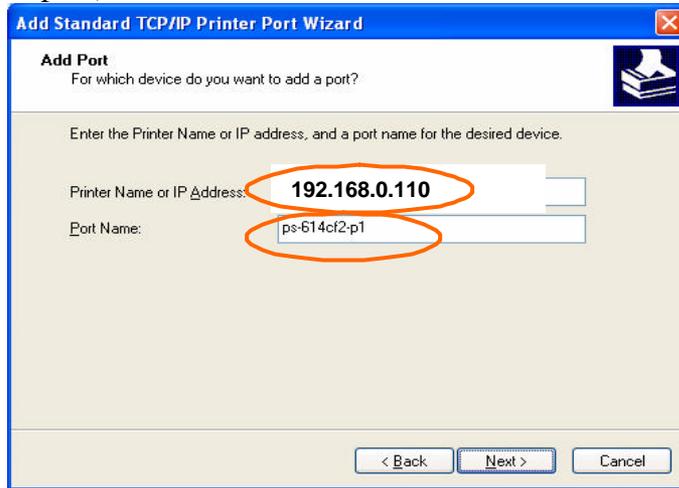
24. Select “Standard TCP/IP Port” and click on “New Port..”.



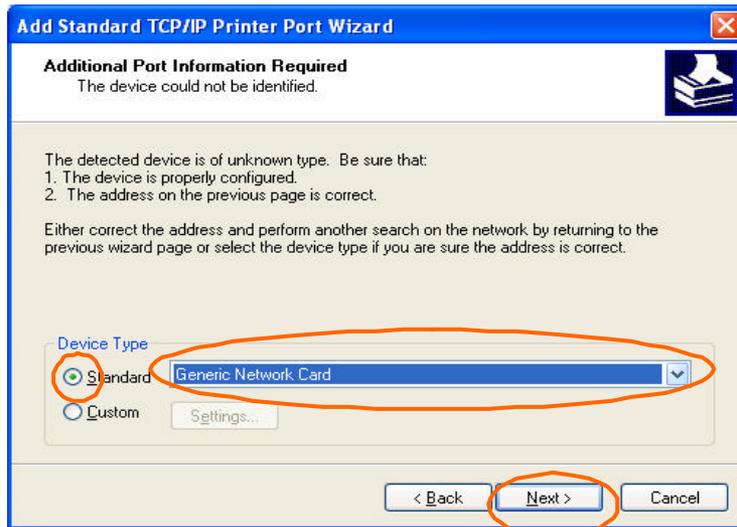
25. Click "Next".



26. Input Print Server IP address (from step 8) and Port Name (from step 11), and click “Next”.



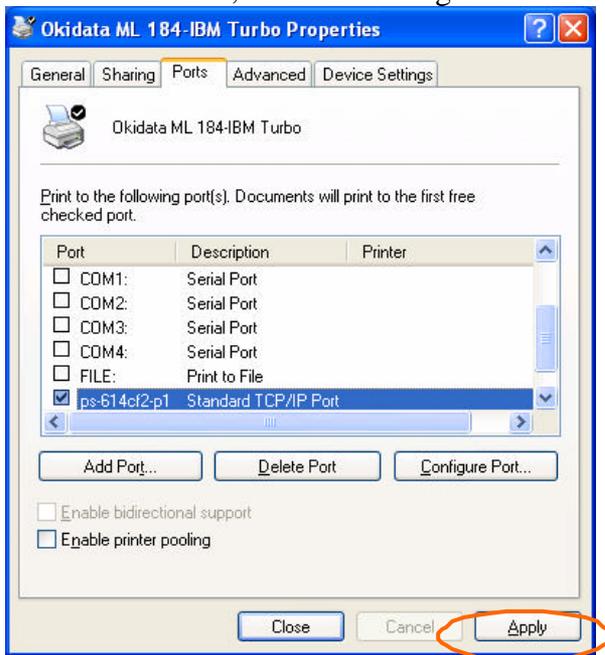
27. Click “Standard” and “Generic Network Card”, and click “Next”.



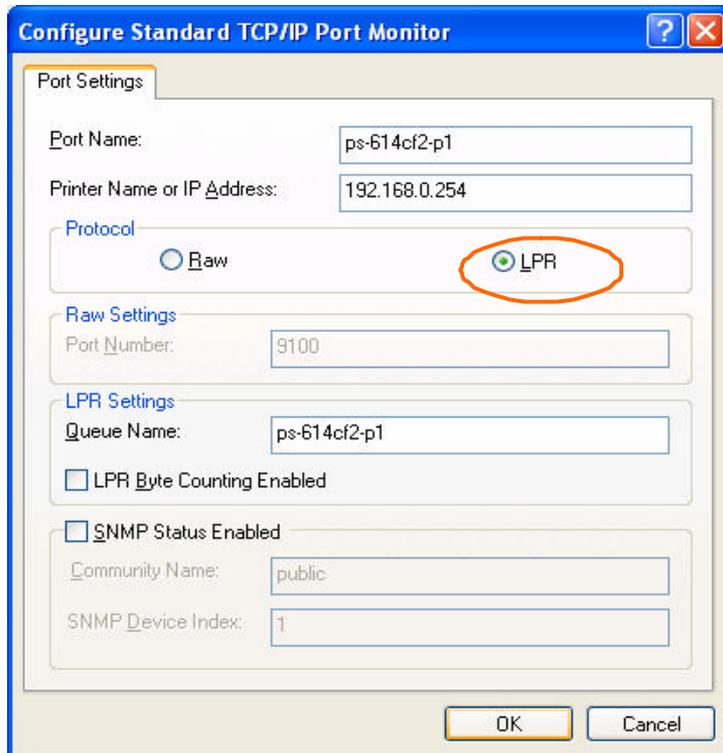
28. Click “Finish”.



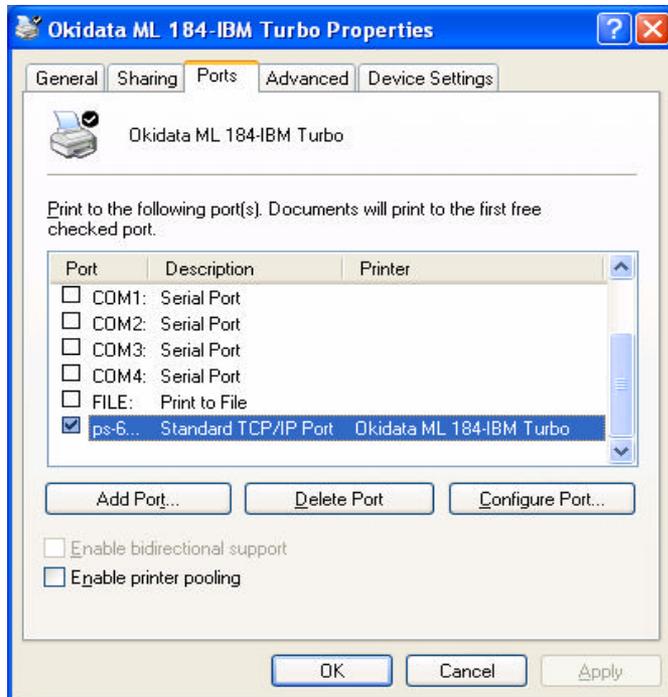
29. Back to the Printer Properties, the newly added “Port Name” should be checked, click on “Configure Port”.



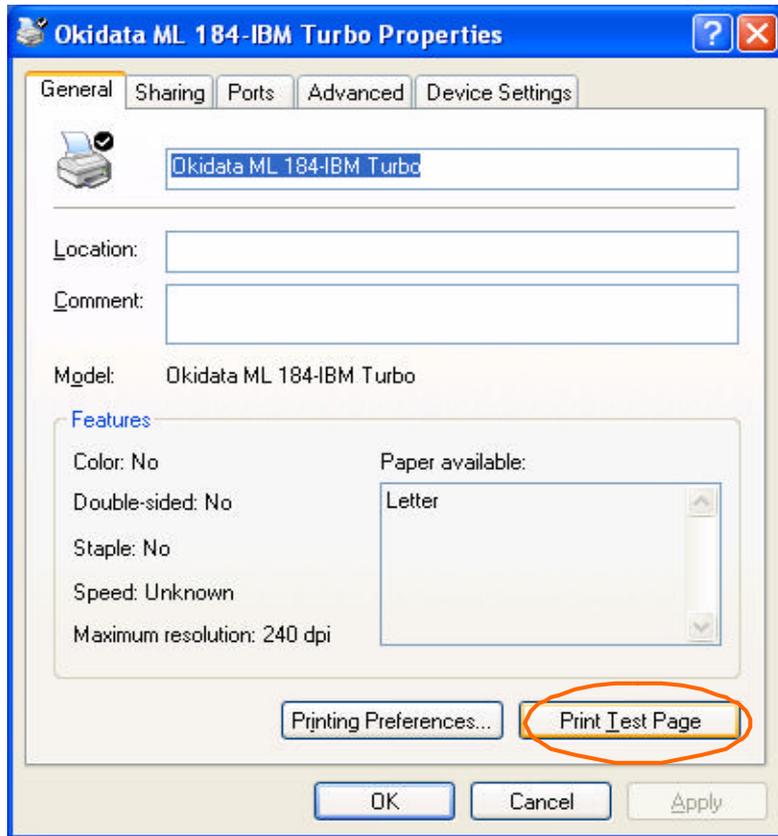
30. Select “LPR” under Protocol and click “OK”.



31. Back to the Printer Properties, click on “General” tab.



32. Click on “Print Test Page”, Windows XP test page should be printed by the printer.



33. This XP Computer can now print to the printer that is connected to the Print Server.

MS-DOS/PC-DOS Workstations

To connect your MS-DOS/PC-DOS workstation using client software such as

- ◆ Microsoft LAN Manager client
- ◆ Microsoft NT Server client
- ◆ Microsoft Windows for Workgroups (DOS client)

you will normally use the `NET USE` command. To connect a DOS-based NetBEUI client to a printer attached to your print server,

1. Choose a free printer port (LPT1, LPT2, or LPT3) not being used on the workstation. If you never connect a printer directly to the workstation's physical printer port, you should probably choose LPT1.
2. Type the command

```
NET USE port \\computer name\printer name
```

where *port* is the name of the free printer port, *computer name* is the name of the print server, and *printer name* is the name of the print server's port. For example, to connect LPT1 to the printer on port PS-142634-P1 on the print server PS-142634, use the command:

```
NET USE LPT1 \\PS-142634\PS-142634-P1
```

3. You can add the above line to your `AUTOEXEC.BAT` file if you always wish to be connected to the printer.

Keeping the Print Queue on a Windows NT Server

Because Microsoft Windows Networking is a peer-to-peer network, it is possible for clients workstations to connect directly to the network print server. However, because the print server's memory is limited, a client may have to wait for large print jobs to complete instead of letting the print server queue the entire job.

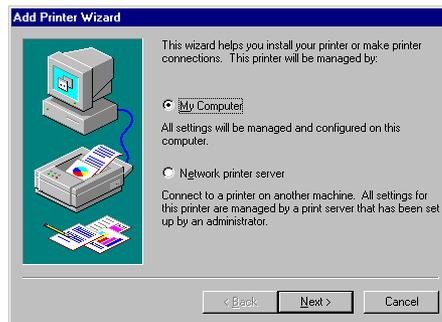
To reduce wait times for clients, you may wish to store the print queue on a Windows NT Server. For a Windows NT 4.0 server,

1. From the **Start** menu, choose the **Settings** submenu, then the **Printers** item within it. Windows will display the Printers folder.
2. Double-click on the **Add Printer** icon in the Printers folder.

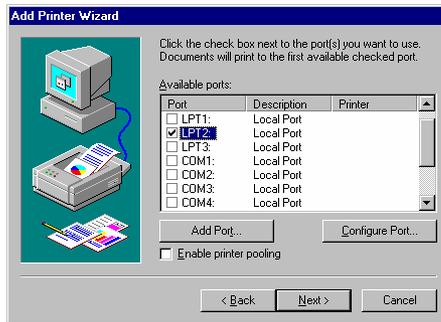


Windows will start the Add Printer Wizard.

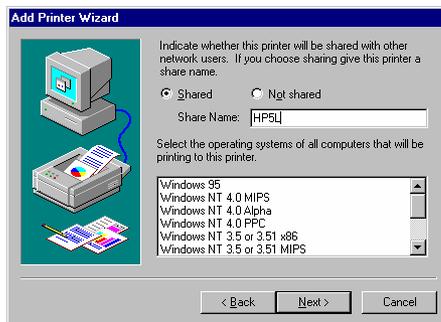
3. Choose the **My Computer** selection and click the **Next >** button to continue.



4. Check the box for an unused local port on your server, usually LPT2 or LPT3. Click the **Next >** button to continue.



5. At this point Windows will ask you to choose the correct printer driver for the printer. Choose your printer's make and model from the list, or use the driver disk included with the printer. When you have chosen the correct printer, click **Next >** to continue.
6. Windows will give you opportunity to share the printer. Click the **Shared** selection, and give the printer a share name, then click **Next >** to continue.



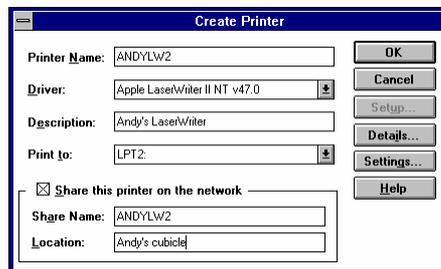
7. After you are finished adding the printer to the server, you need to redirect the local port to the print server using a `NET USE` command typed in from the Command Prompt:

```
NET USE LPT2 \\PS-142634\PS-142634-P1
```

You will need to execute this command every time the server is rebooted. You may wish to place it in a batch file, executed from the Startup program group.

For a Windows NT 3.51 server,

1. Double-click on the Print Manager icon found in the Main program group.
2. Choose **Create Printer...** from the **Printer** menu.
3. In the Create Printer dialog window, choose a name for the printer, select the proper driver, and choose an unused local printer port. Click the check box to allow the printer to be shared, and choose a share name (the name by which the printer will be known to network clients). Click **OK** to continue.



4. After you are finished adding the printer to the server, you need to redirect the local port to the print server using a NET USE command typed in from the Command Prompt:

```
NET USE LPT2 \\PS-142634\PS-142634-P1
```

You will need to execute this command every time the server is rebooted. You may wish to place it in a batch file, executed from the Startup program group.

Setting up AppleTalk Printing

The AppleTalk network protocol is used with computers using the MacOS operating system. It can be used for network communications over standard Ethernet or Fast Ethernet using the EtherTalk transport, or over a proprietary low-speed LocalTalk transport.

Your print server can be used for network printing to PostScript printers. You can print from any MacOS computer connected to your Ethernet network, either directly using an EtherTalk connection, or indirectly through a LocalTalk-to-EtherTalk router.

NOTE: *The Chooser name of a printer connected to one of the print server's ports is the same as its port name. If you are using AppleTalk printing, you will need to make sure that every port name is unique among all of the network printers in your AppleTalk zone.*

Setting up the Print Server for AppleTalk Printing

To set up your print server so that it can be used for AppleTalk printing:

1. Make sure the AppleTalk protocol is enabled. The AppleTalk check box in the Server Device Configuration window needs to be checked. Select the print server and choose **Server Device...** from the **Configuration** menu to display this window.
2. Choose **AppleTalk Protocol...** from the **Configuration** menu.

3. If your AppleTalk network is divided into *AppleTalk zones*, you will have to specify which zone the print server should be in. You should locate the print server in the same zone as most of the users who will be using it.

If your network is not divided into zones, the AppleTalk Zone field should contain a single asterisk “*”.

4. For each printer port that will be used for AppleTalk printing, you may need to change the AppleTalk port settings. Press the appropriate Port Setting button to open the AppleTalk Port Configuration dialog window.



PS Admin will display the port's Chooser Name (which is the same as the port name) and allow you to change the port's settings:

- ◇ **Printer Type** Describes the type of printer. Most PostScript printers should use the LaserWriter type.
- ◇ **PostScript Level** Describes whether the printer supports Level 1 PostScript or Level 2 PostScript. This information can usually be found in the printer's documentation or on the printer test page.
- ◇ **Font Group** Describes the print font options supported by the printer such as No Font, All Font, Standard 35, and Standard 13.

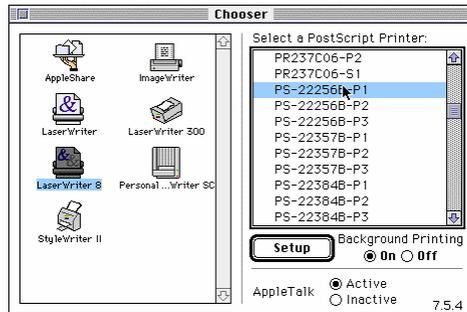
5. Press **OK** to return to the AppleTalk Configuration dialog. Repeat these steps for as many ports as necessary.
6. Press **OK**, then choose **Save Configuration** from the **Configuration** menu (or press the Save Configuration toolbar button) to change the settings in the print server. The print server will restart itself and begin serving print jobs.

Printing from MacOS Client Workstations

The exact procedure for selecting a PostScript printer connected to your print server may vary slightly, depending on what printer driver version you are using. The procedure described below assumes you are using the LaserWriter 8 print driver, included with recent versions of the MacOS operating system.

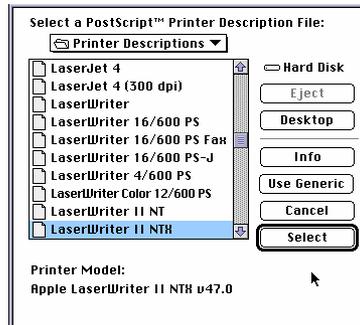
To choose a printer connected to your print server as your MacOS workstation's default printer,

1. Open the Chooser by selecting **Chooser** from the Apple menu.
2. Select the LaserWriter 8 icon on the left. Make sure that AppleTalk is set to Active.
3. A list of all networked PostScript printers will be displayed:



Click on the name of the printer (port) you wish to use.

4. If you previously have not set this printer as the default, your computer will prompt you for a PostScript Printer Description file. Choose the appropriate printer description file for your printer and click **Select**. If your printer is not listed, click **Use Generic** to use a generic printer description.



If you wish to access this setting in the future, you can use the **Setup** button in the Chooser window.

5. At this point the selected printer will become your computer's default printer. You may need to choose **Page Setup...** in any applications you might have open.

Setting up UNIX TCP/IP Printing

Your print servers can provide print services to systems using the `lpr/lpd` network printing protocol. Most UNIX systems are capable of supporting `lpd`.

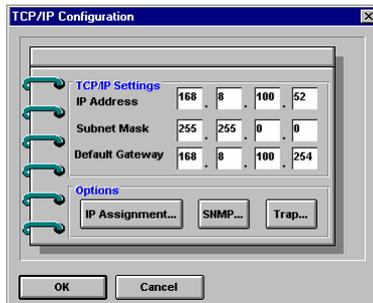
This chapter explains how to use *PS Admin* to configure the print server for TCP/IP printing, and how to configure your Unix workstations to print to the print server.

For TCP/IP networks without a Windows-based workstation available, you can use the `telnet` interface to configure the print server. See *Appendix: Telnet Interface Administration* for more information about using the `telnet` interface.

Configuring TCP/IP Network Settings

To configure your print server to allow TCP/IP-based printing, as well as SNMP and `telnet`-based management,

1. Make sure the TCP/IP protocol is enabled. The TCP/IP check box in the Server Device Configuration window needs to be checked. Select the print server and choose **Server Device...** from the **Configuration** menu to display this window.
2. Choose **TCP/IP Protocol...** from the **Configuration** menu.
3. Configure the print server's IP address, local network subnet mask, and default gateway.



4. Press **OK**, then choose **Save Configuration** from the **Configuration** menu (or press the Save Configuration toolbar button) to change the settings in the print server.

The print server will restart itself and will be available for `lpd`-protocol printing, as well as management using the `telnet` protocol and SNMP-based centralized network management.

Printing Text Files from Unix

Text files on Unix systems contain lines that end with “newline” characters, as opposed to MS-DOS and the Windows-related operating systems that end with a carriage return followed by a linefeed. Most printers require a carriage return/linefeed pair at the end of each line, making it necessary for some translation to be done before Unix text files can be printed on most printers.

For this purpose, you can define two “printers” for the same printer port, one that prints to the port itself, and one that prints to the port name with `_TEXT` added to the name. Files printed to the second port will be translated so that the printer has the carriage return/linefeed pairs that it needs.

For example, you could define a printer `hp51` that prints to port `PS-142634-P1`, and a printer `hp51t` that prints to port `PS-142634-P1_TEXT`. Your graphics files could then be printed to the `hp51` printer, and “raw” text files could be printed to the `hp51t` printer.

Printing from BSD Unix Versions

For “flavors” of the Unix operating system derived from or related to the BSD releases, such as SunOS 4.x, Linux, BSD/OS, FreeBSD, or NetBSD, you can use the following procedure to enable users to print to a printer connected to your print server:

1. Log in as the superuser (root).
2. Add an entry for the print server in the host's `/etc/hosts` file, giving a hostname for the print server's IP address. A line in `/etc/hosts` contains an IP address and one or more aliases for the host. For example:

```
202.39.74.40 ps-142634 ps-142634.company.com
```

If you use DNS (the Domain Naming Services protocol), you can add an address record entry to your DNS database for the print server.

3. Create a spool directory for the printer:
 - ◇ On SunOS systems, create the directory as a subdirectory of `/var/spool`, with the same name as the printer (e.g., `/var/spool/hp51`).
 - ◇ On Linux systems, create the directory as a subdirectory of `/usr/spool/lp`.

- ◇ On BSD/OS, FreeBSD, or NetBSD systems, create the directory as a subdirectory of `/var/spool`.
- 4. Change the owner and permissions of the directory so that it is owned and writable by group `daemon`, using the following commands:

```
chown bin.daemon /var/spool/hp51
chmod 775 /var/spool/hp51
```

- 5. Add an entry for the printer to `/etc/printcap`, similar to the following:

```
hp51:\
    :lp=:sd=/var/spool/hp51:mx#0:\
    :rm=ps-142634:rp=PS-142634-P1:
```

The meaning of each of the entries is described below. The directory path in the `sd` spool directory entry should match the directory name you created above. If your entry requires more than one line you can escape the newline with a backslash.

- 6. Issue the command

```
lpc start hp51
```

to start a spool daemon for the printer. The printer will now be available for use.

- 7. Optionally, add another `printcap` entry (and issue another `lpc start` command) for a second printer, using the `port_TEXT` port. This second printer name can be used for printing text files.

Entries in `/etc/printcap` begin with a name for the printer or a list of names, separated by `|` (a vertical bar). The entries used above are:

- ◆ **lp=** The `lp` entry is used to specify a local printer device. Since the printer is a remote printer, this entry should be blank.
- ◆ **sd=dir** The location of the printer's local spool directory.
- ◆ **mx#blocks** The limit for print job files in the local spool directory; 0 means no limit.
- ◆ **rm=address** The host where the remote printer is located, in this case your print server.
- ◆ **rp=printer** The name of the printer on the remote host. For the print server, the port name should be used. **Note:** this entry is case-sensitive.

Printing from SCO Unix System V/386

To allow printing to a printer attached to your print server from a SCO Unix System V/386 host,

1. Login as the superuser (root).
2. Add an entry for the print server in the host's `/etc/hosts` file, giving a hostname for the print server's IP address. A line in `/etc/hosts` contains an IP address and one or more aliases for the host. For example:

```
202.39.74.40 ps-142634 ps-142634.company.com
```

If you use DNS (the Domain Naming Services protocol), you can add an address record entry to your DNS database for the print server.

3. Change to the `/dev` directory, and issue the command
`mkdev rlp`

4. The script will ask:

```
Do you want to install or delete remote
printing (i/d/q)?
```

Answer *i* and press Enter to continue.

5. The script will ask:

```
Do you want to change the remote printer
description file /etc/printcap(y/n)?
```

Answer *y* and press Enter to continue.

6. The script will ask:

```
Please enter the printer name (q to quit):
```

Enter an alias for the printer on the local machine and press Enter.
This name should be the same as the destination port name.

7. Answer *r* (remote printer) to the question

```
Is printer a remote printer or a local
printer (r/l)?
```

8. When prompted with the question:

```
Please enter the name of the remote host that
printer is attached to:
```

then enter the address of the print server. You can use the name
you added to */etc/hosts* in the step above.

9. Confirm that your entries are correct.

```
Is this correct? (y/n)
```

10. Answer the question:

```
Would you like this to be the system default
printer? (y/n)
```

11. When you are done adding remote printers, enter `q` for the printer name.

12. Answer `y` to the question

Do you want to start remote daemon now (y/n)?

Once remote printing is set up, you can use the `lp` command to print jobs to the new printer. For more information, consult your SCO Unix documentation.

Printing from Solaris

To allow printing from a Sun Solaris workstation,

1. Login as the superuser (`root`).
2. Add an entry for the print server in the host's `/etc/hosts` file, giving a hostname for the print server's IP address. A line in `/etc/hosts` contains an IP address and one or more aliases for the host. For example:

```
202.39.74.40 ps-142634 ps-142634.company.com
```

If you use DNS (the Domain Naming Services protocol), you can add an address record entry to your DNS database for the print server.

3. In OpenWindows, start the `admintool` program.
4. Click on the **Printer Manger** icon.
5. From the **Edit** menu, select **Add Printer**, then **Add Access to Remote Printer...**
6. Enter values for the fields as follows:

- ◇ **Printer Name** This field should contain the name of the printer port you wish to use. The field is case-sensitive.
 - ◇ **Printer Server** This field should contain the IP address of the print server, or the alias name you added in step 2.
 - ◇ **Printer Server OS** This field should be set to BSD.
7. Confirm the addition.
 8. Optionally repeat the addition to add another printer for printing text files, with `_TEXT` appended to the port name.

Once you have added the new printer, you can use the `lp` command to print files to the printer. Consult your Solaris documentation for details.

Printing from Windows NT

Windows NT versions 3.51 and later support printing using the `lpd` protocol. To print to your print server from a Windows NT 4.0 workstation or server,

1. Make sure that you have installed the TCP/IP protocol and the Microsoft TCP/IP Printing service. You can install these from the Network control panel if necessary.
2. From the **Start** menu, choose the **Settings** submenu, then the **Printers** item within it. Windows will display the Printers folder.
3. Double-click on the **Add Printer** icon in the Printers folder.



Windows will start the Add Printer Wizard.

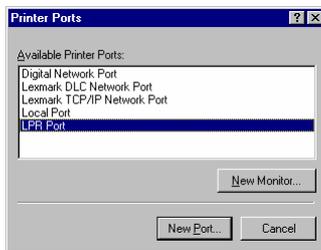
4. Choose the **My Computer** selection and click the **Next >** button to continue.



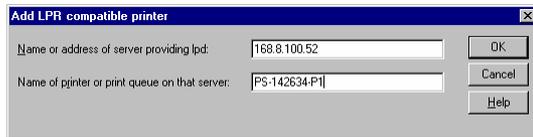
5. Click the **Add Port...** button to add the `lpd` print server to the list of ports.



6. Choose the **LPR Port** type and press **New Port...**



7. Enter the IP address of your print server, and the port name of the printer you wish to use.



8. Click **OK** to return to the Printer Ports window, and then click **Close** to return to the Add Printer Wizard.
9. Click **Next >** to continue installing the printer, following the on-screen instructions. The Add Printer Wizard will ask you to select the proper driver for the printer, and will ask you to give a name to the printer.

When you are done installing the printer, you will be able to use any of the usual printing commands to print to your printer.

Printing using TFTP

For testing purposes, you can also use the Trivial File Transfer Protocol (TFTP) to print to the print server. This is not a recommended method for ordinary printing, since it will not work if the print server is already printing.

On most systems, you can enter the command

```
tftp ip-address
```

to start the `tftp` client program. At the `tftp` prompt, you can type

```
put file dest-port
```

to print the local file named *file* to the print server port named *dest-port*. (Case is sensitive in the *dest-port* name.)

Printing using FTP

You can also use the Internet's standard File Transfer Protocol (FTP) to print to the print server. As with the TFTP method, this is recommended only for testing.

You can use any FTP client, including client programs with graphical interfaces. To use a command line version of FTP, on most systems you can enter the command

```
ftp ip-address
```

to start the `ftp` client program. At the `ftp` prompt, you can type

```
put file dest-port
```

to print the local file named *file* to the print server port named *dest-port*. (Case is sensitive in the *dest-port* name.)

PS Admin Administration

This chapter explains the *PS Admin* main window display, and tells how you can use *PS Admin* to perform common print server administration tasks, including:

- ◆ Monitoring the status of printers connected to the print server's ports.
- ◆ Checking the status of NetWare print jobs.
- ◆ Configuring NetWare print services, including print servers, print queues, and printers.
- ◆ Resetting the print server.
- ◆ Upgrading the print server's internal flash memory using an updated flash memory file.

The PS Admin Main Window

The main window of the *PS Admin* contains the following elements:

- ◆ **Toolbar buttons** The toolbar buttons are shortcuts for their corresponding menu choices. The buttons on the toolbar are, from left to right: Configure Server, Configure NetWare, Configure TCP/IP, Configure NetBEUI, Configure AppleTalk, Save Configuration, Printer Status, and Device Diagnostics.

- ◆ **Menu Shortcuts** There are four groups of menu shortcuts on the main window, corresponding to the **Configuration**, **Management**, **NetWare**, and **Tools** menus in the menu bar.
- ◆ **Expand Server List button** The expand server list button expands the **Server Name List** into an extended format.

The extended server list format contains additional information about each server. To shrink the list back to the abbreviated format, press the button again.

- ◆ **Server Name Filter** The server name filter pulldown list allows you to choose an already-defined filter for limiting the Server Name List to a smaller set. You can use the **Define Filter Strings** button to define new filters, as described below in the *Filtering the List of Print Servers* section.
- ◆ **Discover Print Servers button** When a new print server is added to the network, you need to press the Discover Print Servers button to update the *PS Admin* display. Pressing this button is the equivalent of choosing **Discover** from the **File** menu.

Filtering the List of Print Servers

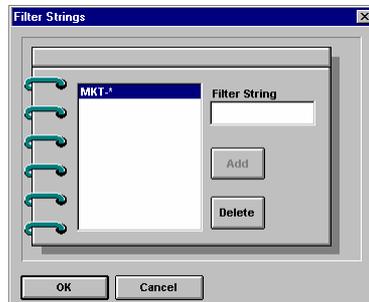
In an environment with a large number of print servers, you may wish to set up filters to make it easier to find individual print servers or groups of print servers.

Filters are similar to wildcards in DOS or other operating systems. A filter wildcard uses the wildcard characters * and ? to select a set of print servers. The ? wildcard character matches any character in a print server name, and the * character represents zero or more characters.

For example, to limit the print server display to servers MKT-01, MKT-02, MKT-03, ..., you could use the filter MKT-??. To display all servers with names beginning with S, you can use the filter S*.

To establish and use a new filter:

1. Press the **Define Filter Strings** button.



2. Enter a filter string and press the **Add** button.
3. Select the new filter string from the Server Name Filter pulldown list. The server list will be restricted to the list of servers that match the filter string.
4. To display all servers, choose All Devices from the Server Name Filter pulldown.

Working with Environment Files and Preferences

When *PS Admin* starts up, it first checks the network, looking for all network print servers. Since this may take awhile if you have a large network, you may want to use environment files to reduce the wait. An environment file stores the list of servers it has discovered, along with information about them.

To save an environment file,

1. Make sure that *PS Admin*'s list of servers is up-to-date. Press the **Discover Print Servers** button to update the list if necessary.
2. Choose **Save As...** from the **File** menu. Choose a file name for the file. By default the file will have a .ENV extension.

To tell *PS Admin* to open the environment file when it starts up instead of trying to discover all of the devices on the network,

1. Choose **Preferences...** from the **File** menu.
2. Click on the Load Environment File on Startup selection. Type in a filename, or use the **Browse...** button to locate the file on your hard disk.

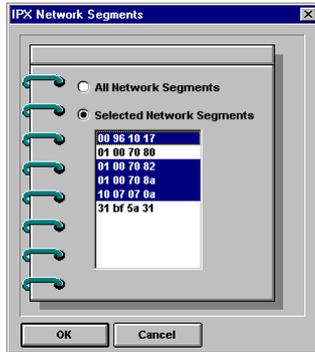


3. Click **OK**.

The settings accessible from the *PS Admin* Preferences dialog window are:

- ◆ **Load Environment File on Startup/Discover Environment on Startup** Determines whether *PS Admin* should load a file listing all of the print servers on the network and their addresses, or if it should search the network each time it starts.
- ◆ **Communication Timeout** Determines how long *PS Admin* will wait for a request sent to the print server to receive a response. You may have to increase this number if you have a large network.
- ◆ **Communication Retries** Determines how many times *PS Admin* will try again if it doesn't receive a response from a print sever.
- ◆ **Communication Protocol** Determines the communication protocol between *PS Admin* and the print server for configuration by either TCP/IP or IPX.
- ◆ **Discover Local Network/Discover Selected Networks** Determines whether *PS Admin* should discover print servers on your local IPX network only, or if it should also search other networks reachable from your workstation.

Pressing the **More...** button will display the IPX Network Segments window, which allows you to choose which networks will be searched. You can choose All Network Segments to discover servers on all reachable networks, or Selected Network Segments to select which networks you want to search in the displayed list.

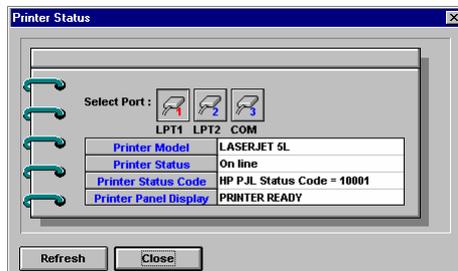


- ◆ **Sort Server Name List** Determines whether or not the list of servers should be sorted.
- ◆ **Save Settings on Exit** Determines whether or not *PS Admin* settings, for example filter definitions, should be saved when you exit *PS Admin*.

Monitoring Printer Status

By choosing **Printer Status** from the **Management** menu, you can monitor the status of each of the printers attached to the print server.

Pressing the Select Port buttons determines which port's status will be displayed.



The Printer Status field shows whether the printer is on line, off line, is out of paper, or has an error. If the printer is compatible with HP's PJL (Printer Job Language) protocol, and you have enabled the use of PJL on the port (see the *Changing Print Server Port Settings* section for instructions on how to do this), then the Printer Model, Printer Status Code, and Printer Panel Display fields will display information about the printer and its status.

Resetting the Print Server

Sometimes it may be desirable to restart your network print server, in order to reset its internal statistics counters or to clear other status information.

There are two different ways to reset the print server:

- ◆ An ordinary reset has the same effect as powering off the print server and powering it back on again. Statistics counters will be cleared, but all of the print server's configuration settings will be retained.
- ◆ A factory reset not only restarts the print server, but changes all of its configuration settings back to their original values, as the print server was shipped from the factory.

WARNING: *Do not perform a factory reset unless you are absolutely sure this is what you want. All settings will be erased and replaced with their original values.*

To perform the reset:

1. Select **Reset** or **Factory Reset** from the **Tools** menu.
2. *PS Admin* will ask for confirmation for the reset.
3. Click **Yes** to confirm. The print server will reset itself. If you selected **Factory Reset**, all of the print server's default configuration values will be restored.

Upgrading the Print Server's Internal Firmware

The print server's internal software is stored in Flash memory, which allows you to upgrade it to an updated version without shipping the print server back to your distributor. Consult your dealer for information about when updated print server firmware versions are available.

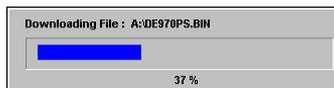
You will also need to have copies of the updated firmware. Firmware updates are contained in two related files, a larger one with a `.bin` extension, and a smaller one having a `.dwl` extension. Both of these files are necessary for the download to be completed successfully.

To perform the download:

1. Make sure you have backup copies of the previous version of the firmware image files before overwriting them with the new ones.
2. Choose **Download Firmware...** from the *PS Admin Tools* menu. The print server will ask for the filename of the updated `.bin` image file.



3. Type in the pathname of the `.bin` file, or click the **Browse...** button to locate the file using a standard dialog box.
4. Click **OK**. *PS Admin* will display an informational warning message.
5. Click **OK**. The download will begin. *PS Admin* will display the progress of the download.



6. When downloading is complete, *PS Admin* will display an informational message.

WARNING: *When downloading the image file, be very careful not to interrupt the transfer by powering down the print server or disconnecting it from the network. The print server should be able to recover from an interrupted transfer in most cases, However, in some situations it may be necessary to return your print server for servicing in order to recover from an interrupted download.*

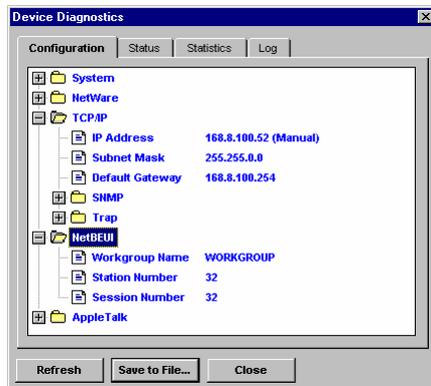
Troubleshooting Print Server Problems

This chapter gives advice for identifying problems with your print server.

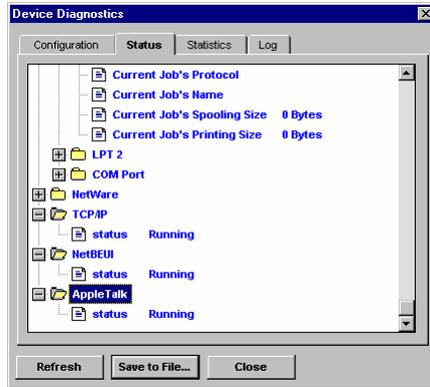
Using the PS Admin Device Diagnostics Window

Choosing **Device Diagnostics...** from the *PS Admin Management* menu displays the Device Diagnostics window. From the Device Diagnostics window you can display many of the print server's settings and status items, allowing you to identify many types of print server problems.

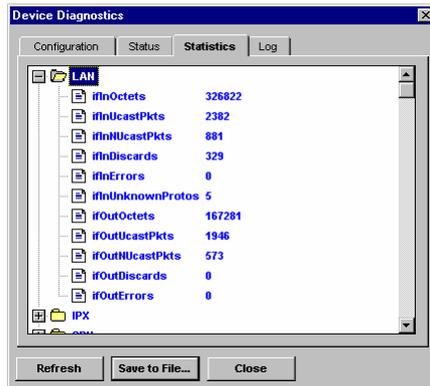
The **Configuration** tab displays the print server's configuration settings, divided into different categories in a tree structure. You can expand branches of the tree to display entries beneath the branch.



The **Status** tab shows the status of the print server's various subsystems.



The **Statistics** tab shows collected statistics, also divided into various categories. (Many of these categories correspond to standard SNMP management information base categories.)



The **Log** tab contains a tree branch for each error that occurs. Error log entry branches contain detailed information about the problem,

which should be able to assist your or technical support representative to locate the problem.

The **Save to File...** button at the bottom of the dialog window allows you to save a text file listing all of the entries in the Device Diagnostic window. You can use this function to keep a record of your print server's settings for future reference. The contents of this file may also be useful to your technical support representative if you encounter problems you are unable to resolve.

Appendix: Telnet Interface Administration

This appendix describes the use the `telnet` interface for controlling and configuring print servers.

Setting an IP Address without PS Admin

The *PS Admin* program allows you to set your print server's IP address (and other TCP/IP parameters). If you don't have a Windows-based workstation and you need to set your print server's address, you can use a BOOTP (Boot Protocol) server, or the manual method described below.

If you want to use BOOTP, your local Ethernet network needs to have a BOOTP server. The BOOTP server table needs to have an entry listing the print server's Ethernet (MAC) address, the IP address you want to assign to the print server, the network's mask, and the default gateway (router) address. Consult your BOOTP server documentation for information about how to add an entry to the server table.

If you aren't using BOOTP, you can manually set the IP address using the following method:

1. Note your print server's Ethernet (MAC) address. The Ethernet address is a 12-digit hex number printed on a sticker on the bottom of your print server.
2. Use a host on the same local Ethernet network as the print server. Change your host's ARP (address resolution protocol) table to

add a mapping from the IP address you want to assign to the print server's Ethernet address. For many TCP/IP systems, this is done with a command of the form:

```
arp -s ip-address ethernet-address
```

For example, to assign the address 202.39.74.40 to the print server with MAC address 00 80 C8 14 26 34, use the command:

```
arp -s 202.39.74.40 0080C8142634
```

Note: on a UNIX-based system, you will need to have superuser (root) permission to execute the `arp` command.

3. From the host with the modified ARP table, send an ICMP echo request to the print server using the `ping` command:

```
ping 202.39.74.40
```

When the print server receives an ICMP request at its own Ethernet address, but with a different IP address than the one it was expecting, it changes its IP address setting.

4. The print server will now respond to the new IP address. At this point you can use the `telnet` interface (as described below) to change the host's other settings.

Accessing the Telnet Interface

You can access your print server's `telnet` interface using an ordinary `telnet` client program. On many systems, the command to invoke a `telnet` client is:

```
telnet ip-address
```

Where *ip-address* is the IP address you have assigned to the print server.

When you first `telnet` to the print server, it displays its log-in message. At this point you can enter the password you have assigned to your print server. If you have not yet assigned a password, just press Enter.

The print server will then display the `telnet` interface main menu.

Changing TCP/IP Settings

Once you have set the print server's IP address for the first time (using the method described above), you may wish to change the address or other TCP/IP configuration information such as the local network mask, or the default gateway. To change these TCP/IP settings,

1. From the main menu, choose TCP/IP Configuration. The print server will display the TCP/IP Configuration menu.

```
[TCP/IP Configuration]
1 - IP Address          <168.8.100.52>
2 - Subnet Mask        <255.255.0.0>
3 - Default Gateway    <168.8.100.254>
4 - SNMP Community
5 - SNMP Traps
6 - IP Assignment Method <Manual>
0 - Return to Main Menu

Enter Selection:
```

2. To change the IP address, local subnet mask, or default gateway, choose the appropriate menu item. The print server will prompt you for a new value for the setting. Enter the new value and press Enter.
3. When you are done changing TCP/IP settings, choose 0 to return to the Main Menu.
4. Choose the Save Configuration menu item. The print server will ask for confirmation:

```
Do you really want to save the configuration?
(y/n)
```

Answer *y* to confirm the save. The telnet connection will drop, and the print server will reset itself, letting the new TCP/IP settings take effect.

Changing Server Settings

From the Server Configuration menu, you can change the server name, as well as the Location and Contact fields (used for identifying the location of the print server and the person responsible for maintaining it).

To change one of these settings,

1. From the main menu, choose Server Configuration. The print server will display the Server Configuration menu.

```
[Server Configuration]
1 - Server Name          <PS-142634>
2 - Location             <Central office>
3 - Admin Contact       <Benjamin Lin>
4 - Change Password
0 - Return to Main Menu

Enter Selection:
```

2. To change the server name, location, or admin contact, choose the appropriate menu item. The print server will prompt for the new value.

If you are setting the server name, be sure to follow the recommendations described in the *Choosing a Name for Your Print Server* section of this manual.

3. When you are done changing the server settings, choose 0 to return to the Main Menu.
4. Choose the Save Configuration menu item. The print server will ask for confirmation:

```
Do you really want to save the configuration?
(y/n)
```

Answer Y to confirm the save. The telnet connection will drop, and the print server will reset itself, letting the new server configuration take effect.

Changing the Print Server Password

The print server password is used to protect the print server's configuration from changes, either through the *PS Admin* program, or through the telnet interface.

To change the print server's password,

1. From the main menu, choose Server Configuration. The print server will display the Server Configuration menu.

```
[Server Configuration]
1 - Server Name          <PS-142634>
2 - Location             <Central office>
3 - Admin Contact       <Benjamin Lin>
4 - Change Password
0 - Return to Main Menu

Enter Selection:
```

2. Choose the Change Password menu item. The print server will prompt for the old password:

```
Input Old Password :
```

If there is no password, just press Enter.

3. The print server will prompt you to enter the new password. All password characters will be displayed as asterisks (*). You will then be prompted a second time. Enter the same password as before to confirm that you have typed it correctly.

```
Input New Password  : *****  
Confirm New Password: *****
```

4. Choose 0 to return to the Main Menu.
5. Choose the Save Configuration menu item. The print server will ask for confirmation:

```
Do you really want to save the configuration?  
(y/n)
```

Answer Y to confirm the save. The telnet connection will drop, and the print server will reset itself, letting the new password setting take effect.

Changing Port Settings

Each port on the print server has several settings that you may need to change to suit your configuration and the printer you have attached to the port. Complete descriptions of each of these settings may be found in the *Changing Print Server Port Settings* section. To change one or more port settings,

1. Choose Port Configuration from the main menu. The print server will display the Port Configuration menu.

2. Select the port you wish to configure. The print server will display a menu appropriate to the port's type. For a parallel port, a menu similar to the following will be displayed:

```
[Port 1]
1 - Port Name           <PS-142634-P1>
2 - Description         <HP LaserJet 5L>
3 - Speed               <High>
4 - PJI Printer        <Yes>
0 - Return to Port Menu

Enter Selection:
```

For a serial port, the menu will be similar to the following:

```
[Port 3]
1 - Port Name           <PS-142634-S3>
2 - Description         <>
3 - Baud Rate           <9600>
4 - Data Bits           <8>
5 - Stop Bits           <1>
6 - Parity Bits         <None>
7 - S/W Flow Control    <XON/XOFF>
8 - H/W Flow Control    <DTR/RTS>
0 - Return to Port Menu

Enter Selection:
```

3. To change any of the displayed settings, choose the appropriate menu item. The print server will prompt for the new value.
4. When you are done changing settings for the port, choose 0 to return to the Port Configuration menu.

5. When you are done changing port settings, choose 0 to return to the main menu.
6. Choose the Save Configuration menu item. The print server will ask for confirmation:

```
Do you really want to save the configuration?  
(y/n)
```

Answer Y to confirm the save. The `telnet` connection will drop, and the print server will reset itself, letting the new port settings take effect.

Changing AppleTalk Settings

You can also change AppleTalk network settings from the `telnet` interface. On Macintosh-only networks, you can use a `telnet` client such as NCSA Telnet to configure your print server without requiring a Windows-compatible machine.

Selecting `AppleTalk Configuration` displays the `AppleTalk Configuration` menu:

```
[AppleTalk Configuration]
1 - Zone Name                <*>
2 - Port 1 Printer Type     <LaserWriter>
3 - Port 1 PostScript Level <Level 2>
4 - Port 2 Printer Type     <LaserWriter>
5 - Port 2 PostScript Level <Level 2>
6 - Port 3 Printer Type     <LaserWriter>
7 - Port 3 PostScript Level <Level 2>
0 - Return to Main Menu

Enter Selection:
```

To modify a selection, select its menu item and enter a new value. The meanings of each of the AppleTalk settings is described in the *Setting up the Print Server for AppleTalk Printing* section.

Displaying Configuration Information

The print server telnet interface provides two menu selections for displaying information about the print server and about the printers connected to it. From the main menu, you can select the Display Information selection to display the Display Information menu:

```
[Display Information]
1 - Display Configuration
2 - Display Port Status
0 - Return to Main Menu

Enter Selection:
```

The Display Configuration selection displays several pages of information about the print server's hardware and internal software, as well as its configuration settings. Information about the port settings is also included.

The Display Port Status selection displays statistics and information about the jobs printed on each of the print server's ports.

Port Number	1	2	3
=====			
[Total Status]			
Jobs	45	1	0
Sizes (KBytes)	23179	0	0
Timeouts	0	0	0

[Current Job]			
Printer Status	On Line	Off Line	On Line
Index	0	1	0
Protocol		NETWARE	
Name		00C60001	
Spooling Bytes	0	172032	0
Printing Bytes	0	153600	0
=====			
1 - Refresh Port Status			
0 - Return to Display Information Menu			
Enter Selection:			

Resetting the Print Server

Sometimes it may be desirable to restart the print server, in order to reset its internal statistics counters or to clear other status information.

The telnet interface provides two different types of reset:

- ◆ An ordinary reset has the same effect as powering off the print server and powering it back on again. Statistics counters will be cleared, but all of the print server's configuration settings will be retained.
- ◆ A factory reset not only restarts the print server, but changes all of its configuration settings back to their original values, as the print server was shipped from the factory.

WARNING: *Do not perform a factory reset unless you are absolutely sure this is what you want. All settings, including the print server's TCP/IP network address, will be erased and replaced with their original values.*

To reset the print server,

1. Choose Tools from the Main Menu.

```
[Tools]
1 - Reset
2 - Factory Reset
3 - Download Firmware
0 - Return to Main Menu

Enter Selection:
```

2. Choose the Reset or Factory Reset menu item, depending on the type of reset you wish to perform. The print server will ask for confirmation.
3. Confirm the reset by entering `y` and pressing Enter. The telnet connection will drop, and the print server will reset itself. If you

selected Factory Reset, all of the print server's default configuration values will be restored.

Upgrading Print Server Firmware

The print server's internal software is stored in Flash memory, which allows you to upgrade it to an updated version without shipping the print server back to your distributor. Consult your dealer for information about when updated print server firmware versions are available.

To upgrade your print server's firmware, you will need to have a TFTP server on your network. A TFTP (Trivial File Transfer Protocol) server is provided with most versions of the UNIX operating system, as well as with many other operating systems that support TCP/IP networking. Consult your system documentation for detailed information about establishing a TFTP server.

You will also need to have copies of the updated firmware. Firmware updates are contained in two related files, a larger one with a `.BIN` extension, and a smaller one having a `.DWL` extension. **Both** of these files are necessary for the download to be completed successfully. The files should be stored on your TFTP server with uppercase filenames.

To perform the download:

1. Make sure you have backup copies of the previous version of the firmware image files before overwriting them with the new ones.
2. Place the two firmware image files in the root of your TFTP server directory. (On some versions of the UNIX operating system, the TFTP server directory is found in `/tftpboot`.)

3. Connect to the print server using `telnet`, and select Tools from the Main Menu.
4. Choose Download Firmware. The print server will display the Download Firmware menu.

```
[Download Firmware]
1 - TFTP Server IP Address <0.0.0.0>
2 - Download
0 - Return to Tools Menu

Enter Selection:
```

5. Choose the TFTP Server IP Address selection. Enter the IP address of the system you have designated as the TFTP server.

```
Input TFTP Server IP Address: 203.69.140.234
```

6. Choose the Download selection. Provided all files are set up correctly, the print server will download the `.DWL` file, reset itself (closing the `telnet` connection), and begin downloading the `.BIN` file. When this is complete, the print server will restart, using the updated version of the firmware.

WARNING: *When downloading the image file, be very careful not to interrupt the transfer by powering down the print server or disconnecting it from the network. The print server should be able to recover from an interrupted transfer in most cases, provided the TFTP server remains available. However, in some situations it may be necessary to return your print server for servicing in order to recover from an interrupted download.*

—