PocketPro Administrator's Guide

(For use with TROY PocketPro 100S Print Servers)

NOTE: For best results, view this document using Adobe Acrobat Reader 5.0 or higher. Click on the main headings in the table of contents to link directly to that section.

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To Begin Using This Manual

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The TROY print servers are warranted to be free of defects in materials and workmanship for a period of five years. This period begins upon the date of shipment if the hardware is installed by the Purchaser, or upon installation if the Hardware is installed by TROY. During the warranty period, TROY will repair or replace the unit at no charge provided it is returned to TROY with the freight pre-paid. The warranty on repaired products or replacement products is 30 days or the last day of the warranty of the original defective product, whichever is longer. This warranty does not apply if the product has been damaged by accident, misuse, natural catastrophe, modification, improper service, or conditions resulting from causes external to the product. The warranty shall be void if the TROY serial numbers have been removed.

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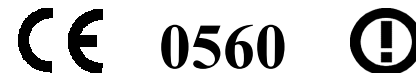
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Preface

This manual is designed and formatted for use as an online document (viewable on your computer screen). The document contains electronic links that group applicable information and provide quick access to each section of the manual. For best results, you <u>must</u> use Adobe Acrobat Reader 5.0 or higher to view or print this document. Earlier versions of Adobe Acrobat Reader will not produce a properly formatted document on your computer screen or printer. The latest version of Adobe Acrobat Reader is available as a free download from the Adobe website at http://www.adobe.com.

Conventions

This User's Guide uses these conventions:

Bold indicates emphasis or a minor heading.

Italic refers to a document title or is used for emphasis.

COURIER type indicates text visible on a computer screen or keys on your computer keyboard.

DISPLAY FONT indicates text visible on the printer control panel display.

The letter ℓ is used in examples to distinguish the small letter l from the numeral 1 (one).

The character Ø is used in examples to distinguish the letter O from the numeral 0 (zero).

<Esc>, <CR>, <LF>, <FF>, etc. are control characters. Use a text editor to enter the equivalent of the character. For example, to get <Esc> using a DOS text editor, hold down the **Ctrl** key; and press the **[** (left square bracket) key. Other text editors may vary.

NOTE: **Notes contain important information set off from the text.**

CAUTION: **Caution messages appear before procedures, which, if not observed, could result in loss of data or in damage to equipment.**

WARNING: *Warning messages alert you to a specific procedure or practice, which, if not followed correctly, could cause serious personal injury.*

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Introduction

TROY external print servers allow multiple host computers to share virtually any type of printer or plotter on a high-speed local area network (LAN). The PocketPro 100S is a compact low-cost Ethernet print server designed to connect a printer with a parallel port to an Ethernet (10baseT) or Fast Ethernet (100baseT) network.

You can print jobs on a printer or plotter connected to a TROY external print server as if the printer or plotter were attached directly to your computer. No special software is required on the host computers, and application programs run without any modification. Because the TROY PocketPro 100S provides multiprotocol capabilities, users on UNIX, Novell, AppleTalk, LAN Server, Windows NT/2000/XP, Windows 95/98/ME, and LAN Manager computers can simultaneously access the same printer. The following diagram illustrates how TROY external print servers are used in a typical network.
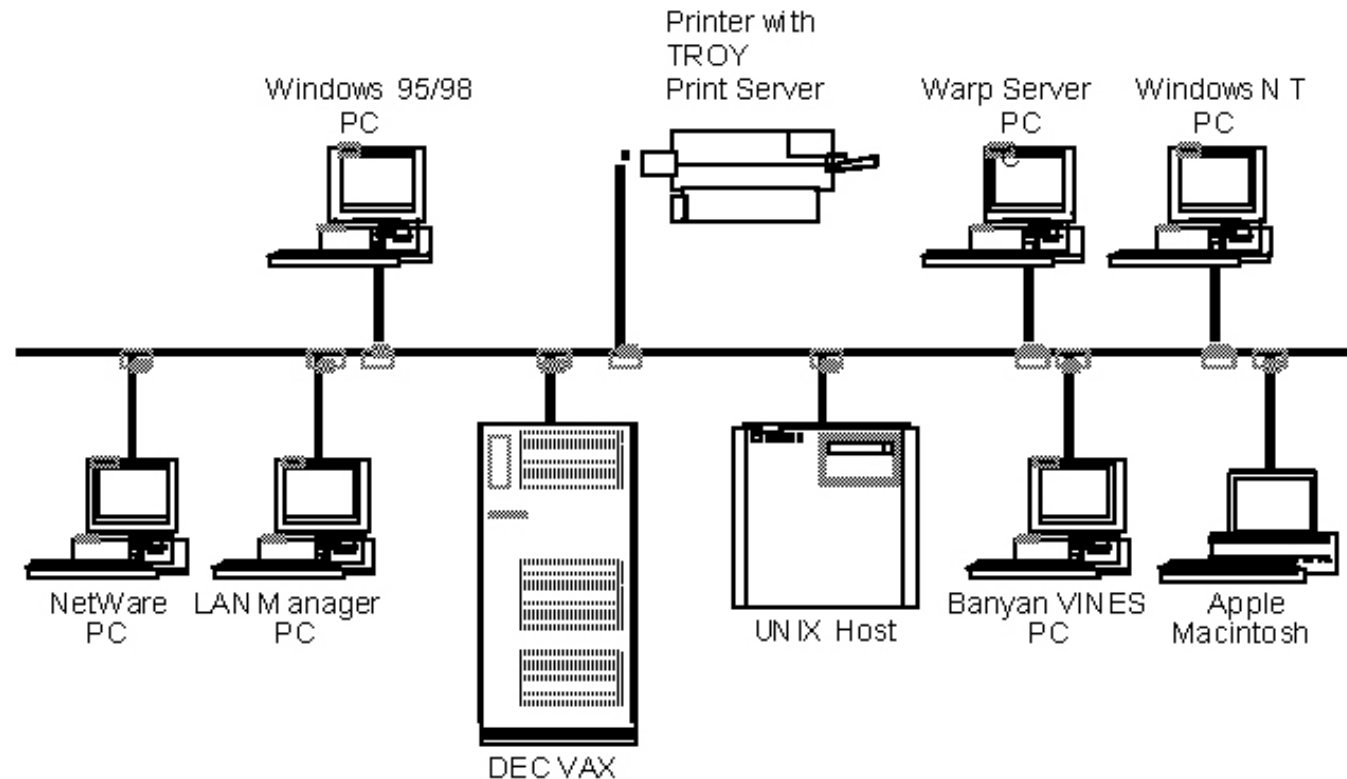
Product Features

The TROY PocketPro 100S print server offers the widest range of features in the industry:

- TCP/IP, NetWare, AppleTalk, DLC/LLC, NetBEUI

- Network Operating System compatibility:
  - UNIX systems that support the Berkeley lpr/lpd printing protocol, or printing to a raw TCP port
  - Novell NetWare V2.15 or above, V3.xx, or V4.xx, including support for bindery mode, Novell Directory Services (NDS), and NDPS (Novell Distributed Print Servers)
  - Windows NT and NTAS V3.5 or above, and Windows NT/2000/XP
  - IBM OS/2, LAN Server, Warp Server
  - Windows 95/98/ME (Peer-to-Peer or client mode)
  - Windows for Workgroups (Peer-to-Peer or client mode)

- High-speed Centronics parallel port compatible with IEEE P1284 bidirectional parallel interface standard

- Superior network and printer management:
  - Compatible with Hewlett-Packard JetAdmin and Web JetAdmin printer management software (NOTE: The HP JetAdmin utility is no longer available for download from the HP web site)
  - ExtendView, XAdmin32, WebXAdmin
  - Remote console management via TELNET, or Xconfig (over Netware)

- PrintraNet software for transparently sending documents to remote locations over the Internet

- Internet Printing Protocol (IPP)

- lpd-Plus feature for providing multiple services with a custom setup and reset strings, character substitution, and text-to-PostScript conversion

- Flash memory for easy updating of firmware via NetWare, BOOTP, tftp (master or slave mode)

- AppleTalk spoofing capabilities for support of non-bidirectional parallel printers

- AppleTalk binary support on printers that support the HP Tagged Binary Communications Protocol

- IP address configuration via DHCP, BOOTP, rarp, arp, Xadmin32, ExtendView, or remote console

- IP security to restrict printing based on IP address

- A printer or plotter that uses a Centronics-compatible 36-pin female parallel port, IEEE P1284 bidirectional parallel interface

Installation Requirements

- A Windows Operating System CD

- An additional Ethernet (category 5) network cable

- A Web browser such as Internet Explorer or Netscape (to use the WebXAdmin utility)

NOTE: If you are not sure that you have the required components, please ask your system administrator for assistance, or call TROY Technical Support at (800) 332-6427. Customers outside the U.S., call (949) 250-3280, Extension 200.

Parallel Port Hardware Setup

1. Before attempting to install the TROY PocketPro 100S print server, make sure you have installed your printer or plotter as described in the documentation for the device.

2. Plug the TROY PocketPro 100S print server directly into the parallel port (36-pin female connector) on your printer. No additional data cable is required.

NOTE: In the event that the print server cannot be connected directly to the printer's Centronics port, a 36-to-36-pin Centronics (male-to-female) cable can be ordered from TROY (p/n CABLE-CEN2). For printers that use the miniature Centronics IEEE 1284C connector, TROY offers the CABLE C/B adapter cable.

3. Plug the PocketPro power supply adapter into a 120-volt AC receptacle.

4. Plug the PocketPro power supply cable into the PocketPro 100S print server.

5. Switch your printer power ON.

LED Indicators

The back edge of the PocketPro 100S provides LED (Light Emitting Diodes) indicators for easy monitoring. The following table defines the function of each LED.

The back edge of the TROY print server provides LED indicators (Light Emitting Diodes) for easy monitoring. The following table defines the function of each LED.

Label	Color	State	Status
POWER	ORANGE	ON	The unit is receiving power.
		OFF	The unit is not receiving power.
DATA	GREEN	ON	The unit is transmitting at 100 megabits per second.
		OFF	The unit is transmitting at 10 megabits per second.
LINK	YELLOW	ON	There is an Ethernet link.
		OFF	There is no Ethernet link.
		Blinking	There is network activity.
DATA+LINK	YELLOW GREEN	Blinking Alternately	A fatal error or exception has occurred.
DATA+LINK	YELLOW GREEN	Blinking Simultaneously	The firmware is being updated.

Test Switch Options

- To print a self-test page, press and hold the *Test* switch for one-eighth of a second but less than five seconds.

- To reset the unit back to factory default settings, press and hold the *Test* switch for at least five seconds, and then power-cycle the unit.

EtherNet Connection

The TROY PocketPro 100S print server can connect to either a 100baseTX Fast Ethernet network or a 10baseT Ethernet network. It automatically senses the type of network, so no configuration is required.

Unshielded Twisted Pair Network Connection

To connect the TROY PocketPro 100S to a 10baseT unshielded twisted pair (UTP) Ethernet network, you will need an unshielded twisted pair Ethernet hub with at least one unused port installed on your network, plus an appropriate length of RJ45 modular cable.

To connect the TROY PocketPro 100S to a 100baseTX Fast Ethernet network, you will need a 100baseTX Fast Ethernet hub with at least one unused port, plus an appropriate length of Category 5 RJ45 modular cable.

Connect one end of the RJ45 cable to the print server connector labeled "100baseTX/10baseT", and then connect the other end to a port on the twisted pair Ethernet hub. The TROY PocketPro 100S will automatically determine whether it is connected to a 10baseT or 100baseTX network.

Changing the Print Server Reset

The printer reset is a sequence of characters that is sent to the printer after the job is completed. It ensures that the last page of the job is ejected from the printer and that the printer is reset to its default state so that the next job will print properly.

The default printer reset for a TROY PocketPro 100S print server is a null, except on the TCP/IP text service, which has <Formfeed> as the default. A null reset means that some print jobs may not be ejected upon completion. Some operating systems, such as NetWare, provide the ability to insert a reset sequence at the end of each job, in which case the TROY PocketPro 100S null reset is adequate. Also, Microsoft Windows printer drivers typically provide a printer reset at the end of each job. But for those operating systems that do not provide this reset capability, the TROY PocketPro 100S provides the ability to customize the printer reset to meet the requirements of virtually any type of printer. The following predefined reset strings are available:

No.	Definition	Printer
1	Null (use if no reset is desired)	---------
2	<ESC>E	PCL printer
3	CTRL-D	PostScript printer
4	<ESC>%-12345X	PJL (use with newer HP and Lexmark/IBM printers)
11	<Formfeed>	General

Changing the Print Server Reset (cont.)

Refer to your printer documentation if you do not know the proper reset string. Use the null string if you are planning to reset the printer from the host software (for example, from a Windows driver). If you want to define a new reset string, refer to Appendix B.

You can insert a printer reset command either before or after each job, although generally the reset goes at the end of the job. TROY print servers allow you to define multiple services for a given port. This is useful, for example, if you want to use different reset strings with the same printer. For example, you might want to define a service for UNIX jobs that contains an <ESC-E> reset, and a different service for NetWare that has no reset.

Print jobs are normally sent to service 1 (TWC_XXXXXX_P1, where "XXXXXX" is the last six digits of Ethernet address, for all protocols except TCP/IP and AppleTalk) or service 2 (BINARY_P1, for TCP/IP). Refer to Appendix B for additional information on using services.

To change the printer reset on a TROY PocketPro 100S print server using the XAdmin32 utility, double-click on the print server name, enter the password (ACCESS by default), and then click on the **Services** tab, double-click on the desired service, and then select the appropriate **Printer Control String**.

Alternatively, you may use the remote console by typing in the following command:

```
SET SERVICE servicename EOT stringno
```

The "*servicename*" is the name of the service (do a **SHOW SERVICE** command for a list of services) and *stringno* is the number of the string. For example to use string 3 (the PostScript CTRL-D reset) on the default parallel port service, you would enter the following:

```
SET SERVICE BINARY_P1 EOT 3
```

Changing the Print Server Configuration (Optional)

In addition to changing the printer reset string, you can modify the TROY print server configuration in a number of other ways. The procedure and commands for changing the configuration are described in Appendix A.

Introduction

TROY offers a wide variety of ways to configure and monitor the PocketPro 100S external print server. This section discusses the installation and the basic usage of several management utilities. These methods include the use of one or more of the following utilities:

- TROY ExtendView Utility (included on the *TROY PocketPro 100S Installation* CD)
- TROY XAdmin32 Utility (available for download from the TROY web site)
- TROY WebXAdmin Web-browser Utility
- TROY Print Server Command Console
- HP JetAdmin Windows-based Utility (no longer available for download from the HP web site)
- HP Web JetAdmin Web-browser Utility

TROY ExtendView Utility

ExtendView is a 32-bit Windows utility using the TCP/IP or IPX/SPX protocols. To take full advantage of the capabilities of ExtendView, you should use the Novell 32-bit client software on the PC workstation that is used for configuring the print queues.

To install ExtendView (designed for Microsoft Windows 95/98/ME/2000/NT/XP operating systems), perform the following steps:

1. Insert the *TROY PocketPro 100S* CD into the CD-ROM of your computer, and select **Install Software**.

2. Select *TCP/IP Management Utilities,* and then click on *Next*.

3. Select *ExtendView*, and then click on *Install*.

NOTE: For a detailed description of the ExtendView utility, please refer to the Help files provided with the utility.

XAdmin32 Utility

XAdmin32 is a 32-bit Windows utility using the TCP/IP or IPX/SPX protocols. To take full advantage of the capabilities of XAdmin32, you should use the Novell 32-bit client software on the PC workstation that is used for configuring the print queues.

To install XAdmin32, download a copy of the software from the TROY web site (http://www.troygroup.com).

NOTE: For a detailed description of the XAdmin32 utility, please refer to the Help files provided with the utility.

TROY WebXAdmin Utility

WebXAdmin allows you to configure the print server with a standard web browser like Netscape Navigator or Microsoft Internet Explorer. It can therefore be used on any operating system that supports web browser capabilities. To use WebXAdmin, you must first make sure that you have a web browser installed on your computer and that you have configured an IP address in both the computer and the print server. Also make sure that you have configured your TCP/IP stack to communicate over the local area network (rather than via a PPP dial-up connection).

Accessing the WebXAdmin Utility

To use the WebXAdmin utility, start your web browser and enter the IP address of the print server as the destination web site. Once you are connected, enter the password (ACCESS is the default password) and select the protocol or other item that you wish to configure. You will then be connected to the appropriate web page for configuration of that item. You may use the normal browser buttons to move forward and back through the web pages.

TROY Print Server Command Console

All TROY print servers support a sophisticated command-line-oriented console for configuration and management. This console contains features that are not available through WebXAdmin, including sophisticated diagnostic capabilities. The TROY print server command console can be accessed via TELNET and the TROY XCONFIG NetWare Utility. It is also available through one of the web pages using the WebXAdmin Utility. The general configuration procedure is the same regardless of which method is used.

Using TELNET Commands

To connect to the print server using TELNET on UNIX, Windows NT, or most other TCP/IP systems, type the following command at the UNIX system prompt:

> TELNET *ipaddress*

The *ipaddress* is the IP address of the print server. When you are connected, push RETURN or ENTER to get the "#" prompt, enter the password ACCESS (it will not echo), and type anything in response to the ***Enter Username>*** prompt. When you get the ***Local>*** prompt, you are ready to enter commands.

Using XCONFIG Commands

To connect to the print server using the TROY XCONFIG NetWare Utility, insert the TROY Print Server Software CD in your CD-ROM drive, browse the CD contents and look for XCONFIG.

If you have only one print server, you will be immediately connected. If you have more than one print server, you will be given a list of available print servers. Type the number of the print server you want to connect to. When you are connected, enter the password ACCESS (it will not echo) at the "#" prompt, and type anything in response to the ***Enter Username>*** prompt. When you get the ***Local>*** prompt, you are ready to enter commands.

HP JetAdmin Utility

NOTE: The TROY PocketPro 100S works transparently with the HP (Hewlett-Packard) JetAdmin utility; however, this utility has been discontinued and is no longer available for download from the HP web site.

The TROY PocketPro 100S will appear in the list of configured print servers unless IPX is not running on the computer and the print server is not configured with a valid IP address. If this is the case, select **Device** from the menu bar and click on **New**. Select the desired print server from the list of unconfigured devices, and then press **Configure**. Enter the requested information, including the IP address, subnet mask, and gateway, and then click on **Close** to return to the list of configured print servers.

You may now select the print server from the list, and click on the **Modify** button (or select **Device**, and then **Modify** from the menu bar) to change the print server configuration.

HP Web JetAdmin Utility

Once you are connected and are at the Web JetAdmin home page, click on the **Find Device** tab, and then click on **Find All Devices** to get a list of all Web JetAdmin-compatible print servers (or you may limit your search by using the Advanced Search method). Click on the desired TROY print server name, and the **Properties** page will be displayed for that print server. Click on the **Config** tab to configure the print server.

Introduction

The TROY PocketPro 100S print servers include the TCP/IP (Transmission Control Protocol/Internet Protocol) suite. Since virtually all UNIX host computers support TCP/IP, this capability allows a printer to be shared on a UNIX Ethernet network. TCP/IP communications can proceed concurrently with other protocols, which means that UNIX, NetWare, Apple, and other computers can share the same printer over an Ethernet network using a TROY print server.

TROY TCP/IP Concepts

The TROY PocketPro 100s using TCP/IP appears to the network as a UNIX host computer with a unique IP address running the lpd (line printer daemon) protocol. As a result, any host computer that supports the Berkeley remote-LPR command can spool jobs to the TROY print server without the need for any special software on the host computer. Application programs run transparently, and users do not need to learn new procedures to use the printer. TROY print servers also support gateways for communications with hosts on remote networks. In addition, raw TCP ports are available for special applications and compatibility with HP JetDirect print servers.

The TROY PocketPro 100S is preconfigured to run on a TCP/IP network with a minimum of setup. The only mandatory configuration in the print server is the entering of an IP address (the TROY PocketPro 100S comes with a default IP address of 192.0.0.192, but this should be changed to meet the addressing requirements of your network.

TCP/IP UNIX Host Configuration

The configuration process for most UNIX systems is described in the following steps. Unfortunately, this process is not entirely standardized, so it is recommended that you refer to your system documentation (or *man* pages) for additional information.

1. Configure the /etc/hosts file (or equivalent local host table) on each UNIX host that needs to communicate with the TROY print server, or provide similar information to a name server on the network. Use your favorite editor to add an entry to the /etc/hosts file containing the IP address and node name of the TROY print server.

   <u>EXAMPLE</u>:   `192.189.207.3    TWC_00C351`

The actual format of the entry may vary depending on your system, so check your system documentation, and also note the format of other entries in the etc/hosts file.

NOTE: The node name in this file does not necessarily need to be the same as the one that is actually configured in the TROY PocketPro 100S (the name that appears on the printer self-test), but it is good practice to make the names the same; however, some operating systems, such as HP/UX, do not accept the "_" character in the default name, so for these systems you must use a different name. In any case, the node name in the /etc/hosts file must match the node name in the /etc/printcap file. Some systems, such as HP/UX and AIX, allow you to enter the IP address as the host name when setting up the print queue. In this case, you do not need to configure the host file.

TCP/IP UNIX Host Configuration (cont.)

2. Choose which TROY print server service you want to use. There are two types of services available on the TROY PocketPro 100S. Binary services pass data through unmodified and are therefore required for PCL or PostScript rasterized graphics printouts. Text services add a carriage return at the end of each line for proper formatting of UNIX text files (which end in linefeed and do not have carriage returns). The text service can also be used for non-rasterized graphics, such as ASCII PostScript graphics or many types of PCL graphics.

If you are using the parallel port on the print server, choose one of the available services (this service name will be used in step 3):

　　　BINARY_P1 Binary (parallel port)
　　　TEXT_P1　　　Text (parallel port)

You may set up multiple print queues on your UNIX host computer for the same TROY print server, each with a different service name (for example, one queue for binary graphics jobs and one for text jobs). Refer to Appendix B for additional information on using services.

NOTE: The following step applies to the majority of UNIX systems, including Sun OS (but not Solaris 2.xx), Silicon Graphics (lpr/lpd option required), DEC ULTRIX, DEC OSF/1, and Digital UNIX. Users of RS/6000 AIX, HP/UX, Sun Solaris 2.xx, and other systems that do not use the printcap file should skip to Step #4. SCO users should also skip to section 3-A (SCO uses the printcap file, but this file is automatically configured via the rlpconf command.

3. Configure the `/etc/printcap` file on each host computer to specify the local print queue, the TROY print server name (also called remote machine or rm), and the TROY print server service name (also called remote printer, remote queue, or rp), and the spool directory. An example of a typical printcap file is as follows:

```
laser1|Printer on Floor 1:\
      :lp=:\
      :rm=TWC_003C51:\
      :rp=TEXT_P1:\
      :sd=/usr/spool/lpd/laser1:
```

TCP/IP UNIX Host Configuration (cont.)

This will create a queue named laser1 on the host computer that communicates to a TROY print server with a node name (rm) of TWC_003C51 and a service name (rp) of TEXT_P1 for printing text files to the printer through the spool directory /usr/spool/lpd/laser1. If you are printing binary graphics files, you would use the service BINARY_P1 instead of TEXT_P1.

NOTE: The rm and rp options are not available on all UNIX systems; so, if necessary, check your documentation (or man pages) to determine the equivalent options.

Users of Berkeley-compatible UNIX systems can use the lpc command to obtain the printer status:

```
%lpc status
laser1:
queuing is enabled
printing is enabled
no entries
no daemon present
```

Users of AT&T-compatible UNIX systems can generally use the lpstat or rlpstat commands to obtain similar status information. Because this procedure varies from system to system, refer to your system documentation for the exact usage.

NOTE: Skip Step #4 if you have completed Step #3.

4. If you have an HP/UX system, IBM RS/6000 AIX computer, or Sun Solaris 2.xx, there is no printcap file. This is also true for some other AT&T-based UNIX systems, as well as many VMS-based TCP/IP software packages (for example, UCX, TGV Multinet, etc.). On SCO systems, there is a printcap file, but it is automatically configured by rlpconf command. Most of these systems use a printer setup program to define the service name (remote printer), the TROY print server name (remote machine) or IP address, and the local queue name (spool directory).

HP/UX Configuration

In the case of HP/UX 10.xx, the *sam* program is used to set up the remote printer. The steps are as follows:

1. Execute the *sam* program. When you get a list of options, select **Printers and Plotters**.

2. Select **LP Spooler.**

3. Select **Printers and Plotters**.

4. Select **Actions,** and then select **Add Remote Printer/Plotter**.

   ▪ Enter any name as the **Printer Name** (this will be the name of the print queue).

   ▪ Enter the IP address of the print server as the **Remote System Name**.

   ▪ Enter the desired print server service name as the **Remote Printer Name**.

   ▪ Check the box next to **Remote Printer is on BSD System**. You may accept the default values for the remaining items.

5. Click **OK** to configure the printer. You should now be able to print using the lp -d command with the printer name.

If you are using the HP Distributed Print Service, the configuration procedure is slightly different because you are sending the print jobs to a file server, which in turn spools the jobs to the print server. Therefore, you must know the name of the file server (spooler host) in addition to the above information. You will add a physical printer and a remote printer, and then assign a logical printer name to the remote printer (a unique name that does not match any other name). To print, use the `lp -d` command with the logical printer name.

Earlier versions of HP/UX use similar procedures to 10.xx:

1. Enter *sam* and select "Peripheral Devices" and then "Add Remote Printer" (not "networked printer").

2. Enter the following remote printer settings (the other settings do not matter):

   ▪ Line printer name (user-selectable)

   ▪ Remote system name (the TROY print server name; must match what is in hosts file or use TROY print server IP address)

   ▪ Remote printer queue (TROY print server binary or text service name)

   ▪ Remote Printer is on a BSD System (Yes)

IBM RS/6000 AIX Configuration

The RS/6000 AIX operating system uses the *smit* program to set up the remote printer. The procedure is as follows for AIX 4.0 and later:

1. Enter SMIT and select "devices"

2. Select "Printer/Plotter"

3. Select "Print Spooling"

4. Select "Add a Print Queue"

5. Select "Remote"

6. Enter the following Remote Printer Settings:

   - Name of queue (user selectable)
   - Host Name of Remote Printer (TROY Print server name; must match name /etc/hosts file or use TROY print server IP address)
   - Name of queue on remote server (TROY print server binary or text service name)
   - Type of print spooler: BSD (press the list button and choose BSD).

The procedure for pre-V4.0 systems is as follows:

1. Enter *smit* and select "Devices"

2. Select "Printer/plotter"

3. Select "Manage remote printer subsystem"

4. Select "Client services"

5. Select "Remote printer queues"

6. Select "Add a remote queue"

7. Enter the following remote queue settings:

   - Name of queue to add (user selectable)
   - Activate the queue (Yes)
   - Destination host (TROY print server name; must match name in /etc/hosts file or use the print server IP address)
   - Name of queue on remote printer (TROY print server binary or text service name)
   - Name of device to add (user selectable; for example, lp0)

**Sun Solaris 2.x
Configuration**

The Sun Solaris 2.x uses the lpsystem and lpadmin programs for remote printer configuration:

```
lpsystem -t bsd troyname
lpadmin -p queue -s troyname!\troyservice
accept queue     [not required on newer Solaris systems]
enable queue     [not required on newer Solaris systems]
```

The *queue* is the name of the local print queue, *troyname* is the TROY print server name (must match the entry in the /etc/hosts file) or IP address and *troyservice* is the TROY print server binary or text service. If this is the first printer configured, you must also use the lpsched command immediately prior to the accept command.

As an alternative, you may use ***Printer Manager*** in the ***admintool*** utility under ***OpenWindows***. Select ***Edit***, ***Add***, and ***Add Access to Remote Printer***. Then enter the TROY print server name in the format *troyname!\troyservice* as described above. Make sure that the Printer Server OS is set to BSD (the default setting), and then click on ***Add***.

It is recommend that you use the /etc/hosts file for the printer name rather than NIS or other name services. Also note that due to a bug in the Sun lpd implementation on Solaris 2.4 and earlier releases, you may experience problems printing very long print jobs. If this is the case, a workaround is to use the raw TCP port with the HP JetDirect software as described later in this section.

SCO UNIX Configuration

SCO UNIX requires TCP/IP V1.2 or later to work with the TROY PocketPro 100S. You must first configure the `/etc/hosts` file as described in step 2.   If necessary, start lpr services with the `mkdev rlp` command (*this command must be executed only **one time** or serious problems may result!*). Then issue the `rlpconf` command at the SCO system prompt. Respond to the questions as follows:

- *Printer name*. Enter the name of the print server service (usually BINARY_P1 for binary graphics files or TEXT_P1 for ASCII text files). If you are configuring more than one TROY print server, you will need to change the print server service name on each print server to a unique name (using the WebXAdmin Configure Service facility or the SET SERVICE *oldname* NAME *newname* command; refer to Appendix A and Appendix B for details), because the service name is also used as the name of the print queue.

- *Remote printer or a local printer*: Enter "r" for remote

- *Name of the remote host that <Printer name> is attached to*: Enter the name of the TROY print server that you configured in the /etc/`hosts` file)

- *System default printer*: Enter either "y or "n" to make the printer the system default printer.

You should now be able to print to your queue. Note that this procedure assigns the queue name as the same as the name of the print server's service. If you want to name the queue something different than the service name, edit the /etc/`printcap` file.

Other Non-Standard Configuration Options

With DEC TCP/IP Services for VMS (UCX), you first need to put a name for the TROY PocketPro 100S in the HOSTS file using the command `SET HOST name /ADDRESS=ipaddress` at the `UCX>` prompt, where *name* is the desired name for the print server and *ipaddress* is the IP address for the print server. Then use the `sys$system:ucx$lprsetup` command to add a printer (print queue). Enter the desired printer name, and then use the TROY print server name as the remote system name. Specify one of the TROY print server services (see beginning of this section for options) as the remote system printer name (accept the defaults for other questions).

Process Software's TCPware simply uses the VMS `INIT/QUEU` command with their special symbiont in the following format:

```
INIT/QUEUE/PROC=TCPWARE_TSSSYM/ON="host,port" queue
```

The *host* is the IP address or name of the TROY print server, *port* is the TROY print server raw TCP port number (9100 for the parallel port), and *queue* is the VMS queue name.

TGV's Multinet requires you to run the MULTINET CONFIGURE /PRINTERS command, then use the ADD command to add a printer, specifying the TROY print server IP address, a protocol type of LPD, and one of the service options described at the beginning of this section as the remote print queue.

With Wollongong's PATHWAY, first make sure that you have the Access option with lpd enabled. Then enter the print server name and IP address in the `TWG$TCP:[NETDIST.ETC]HOSTS.` file, run the LPGEN program, and execute the command `add queue/rmachine=troyname/rprinter=service`, where *queue* is the name of the queue, *troyname* is the TROY print server name from the *hosts* file, and *service* is the TROY print server service name.

To use a TROY PocketPro 100S with an IBM AS/400 running IBM's TCP/IP Gateway Services for OS/400 (the OS/400 system must be v3.1 or later):

1. Assign a TCP/IP address to the AS/400 and the TROY PocketPro 100S.

2. Use the CFGTCP command at your OS/400 prompt to add the print server's TCP/IP address to the AS/400 host table.

3. Use the following one-line OS/400 command to create the LPD queue:

```
CRTOUTQ   OUTQ(<queuename>   RMSTSYS   (*INTNETADR)   RMTPRTO(<service>)
AUTOSTRWTR(1)   CNNTYPE(*IP)   DESTTYPE   (*OTHER)   MFRTYPMDL   (<driver>)
INTNETADR('<ipaddress>') TEXT ('<description>')
```

The <queuename> is the new AS/400 print queue name, <service> is the TROY print server service name, <driver> is the OS/400 printer driver name (*HP4 is recommended if in doubt), and <ipaddress> is the IP address of the print server. Note that the IP address and description must be enclosed in single quotes.

Other systems use similar procedures to set up the TROY print server. These programs will generally ask for the following information:

Requested information:	You should use:
remote printer or remote	TROY print server binary or text service name
remote host computer name	Any name (must match name in printcap file, if any), or in some cases, you may enter the TROY print server IP address here
remote host IP address	TROY print server IP address

Tech support specialists for these companies can usually answer configuration questions if you provide them with the equivalent UNIX configuration information (tell them that the TROY print server looks like a remote UNIX host computer running the lpd line printer daemon).

4. If you have not created a spool directory for the TROY print server on your UNIX host computer, you will need to do so now (the printer setup utilities in HP/UX, AIX, Solaris 2.xx, and other systems will automatically create the spool directory). The lpd spool directory is usually located in the /usr/spool directory (check with your system manager to see if the location is different for your system). To create a new spool directory, use the mkdir command. For example, to create a spool directory for the queue laser1, you would enter:

```
mkdir /usr/spool/lpd/laser1
```

On some systems it is also necessary to start the daemon. This is done on Berkeley-compatible UNIX systems with the lpc start command as shown in the following example:

```
lpc start laser1
```

5. The final step before printing is to add the IP address to the TROY print server. Consult with your system administrator before assigning an IP address to avoid conflicts with other devices. If your network does not have an officially assigned block of IP addresses, you may use any unique address between 192.168.254.1 and 192.168.254.254 (this is a reserved range of Class C addresses for private networks that are not connected to the Internet per RFC 1918; note that you must also assign your host computer an IP address in this range).

The IP address can be set in any of the following ways:

- ExtendView
- XAdmin32
- HP JetAdmin
- DHCP
- The UNIX arp and ping commands
- Reverse Arp (rarp)
- BOOTP
- TROY XCONFIG NetWare utility

The easiest way to configure the IP address is using either ExtendView, XAdmin32, or JetAdmin as described in Section 2. The remaining configuration methods are described in the following paragraphs.

NOTE: The IP address you assign to the print server must be on the same logical network as your host computers (e.g., If your host has an IP address of 192.189.207.3, the TROY print server should have an IP of 192.189.207.x, where x is an integer between 1 and 254), or you must properly configure your router to work with the TROY print server.

Using ExtendView to Assign an IP Address

To assign an IP address using ExtendView, perform the following steps:

1. Launch the ExtendView utility by clicking on **Start**, **Programs**, **TROY Group Printing**, and **ExtendView**. The utility will automatically search for TROY wireless devices on the network.

2. Locate your PocketPro 100S from the list of discovered devices; it will be listed as TWC_XXXXXX (where XXXXXX are the last six digits of the MAC address with an IP address of 192.0.0.192).

3. Double-click on your PocketPro 100S from the list of displayed devices. ExtendView will prompt you for an IP address. Enter an IP address, and then click on **OK**. You will then be directed to the Print Server Configuration page.

4. Click on the **TCP/IP** tab, enter the subnet mask and default gateway, and then click on **OK**.

5. When prompted, click on **Yes** to save these changes and reset the print server.

Using DHCP to Configure the Print Server IP Address

The TROY PocketPro 100S supports the DHCP protocol for automatically loading the IP address from a host computer that supports DHCP. By default, the print server will automatically try DHCP, BOOTP, and rarp before using the IP address configured in the server.

NOTE: This procedure may take about a minute, so the print server cannot be accessed via TCP/IP during that time. If a faster IP address load is required, select the desired IP configuration method (AUTO, DHCP, BOOTP, RARP, STATIC) via WebXAdmin, or the print server console SET IP METHOD command (STATIC is used when the IP address is manually entered).

Using arp and ping to Configure the Print Server IP Address

The arp and ping method is one of the simplest ways of configuring the print server IP address.   To use arp and ping, enter the following commands at the operating system prompt:

```
arp -s ipaddress ethernetaddress [temp]
ping ipaddress
```

The *ethernetaddress* is the Ethernet address of the print server and *ipaddress* is the IP address of the print server. The temp parameter should be used with UNIX systems, but is not supported by Microsoft operating systems. For example, a typical UNIX entry would be:

```
arp -s 192.189.207.2 00:40:17:00:c3:e4 temp
ping 192.189.207.2
```

while a typical Microsoft entry would be:

```
arp -s 192.189.207.2 00-40-17-00-c3-e4
ping 192.189.207.2
```

If everything is OK, you will get a message back on the screen indicating that the print server is alive. If you do not get such a message, first check the note bellow, and then try entering the commands again.

NOTE: This procedure will not work through a router (gateway) and only works if the print server IP address has never been configured before. If you have previously configured an IP address, then use TELNET as described in Appendix A to change the IP address, or set the unit to default before using ARP.

In order for the ARP command to work on Windows 95/98, the ARP table on the PC must have at least one IP address defined other than its own. Type ARP -A at the DOS command prompt to verify that there is at least one entry in the ARP table. If there is no other entry besides the local machine, ping another IP address on your network, such as another workstation (you cannot ping yourself), in order to build the ARP table. This cannot be the IP address of the computer you are working on.

Using rarp to Configure the Print Server IP Address

The TROY PocketPro 100S IP address can be configured using the Reverse ARP (rarp) facility on your host computer. This is done by editing the /etc/ethers file (if this file does not exist, you can create it) with an entry similar to the following:

```
00:40:17:00:01:07   TROY_000107
```

The first entry is the Ethernet address of the TROY print server and the second entry is the name of the TROY print server (the name must be the same as the one you put in the /etc/hosts file).

If the rarp daemon is not already running, start it (depending on the system the command can `be rarpd`, `rarpd -a`, `in.rarpd -a` or something else; type man rarpd or refer to your system documentation for additional information). To verify that the rarp daemon is running on a Berkeley UNIX-based system, type the following command:

```
ps -ax | grep -v grep | grep rarpd
```

For AT&T UNIX-based systems, type:

```
ps -ef | grep -v grep | grep rarpd
```

The TROY PocketPro 100S will obtain the IP address from the rarp daemon when it is powered ON.

Using BOOTP to Configure the Print Server IP Address

BOOTP is an alternative to rarp that has the advantage of allowing configuration of the subnet mask and gateway. In order to use BOOTP to configure the IP address into the TROY print server, first make sure that BOOTP is installed and running on your host computer (it should appear in the /etc/services file on your host as a real service; type man bootpd or refer to your system documentation for information). BOOTP is usually started up via the /etc/inetd.conf file, so you may need to enable it by removing the "#" in front of the bootp entry in that file. For example, a typical bootp entry in the /etc/inetd.conf file would be:

```
#bootp dgram udp wait /usr/etc/bootpd bootpd -i
```

Depending on the system, this entry might be called "bootps" instead of "bootp". In order to enable BOOTP, simply use an editor to delete the "#" (if there is no "#", then BOOTP is already enabled). Then edit the BOOTP configuration file (usually /etc/bootptab) to enter the name, network type (1 for Ethernet), Ethernet address (which can be found on the label on the TROY print server), and the IP address, subnet mask and gateway of the TROY print server. Unfortunately, the exact format for doing this is not standardized, so you will need to refer to your system documentation to determine how to enter this information (many UNIX systems also have template examples in the bootptab file that you can use for reference). Some examples of typical /etc/bootptab entries include:

```
TWC_000107 1  00:40:17:00:01:07 192.189.207.3
```

and:

```
TWC_000107:ht=ethernet:ha=004017000107:\
ip=192.189.207.3:
```

Certain BOOTP host software implementations will not respond to BOOTP requests if you have not included a download filename in the configuration file; if this is the case, simply create a null file on the host and specify the name of this file and its path in the configuration file.

As with rarp, the TROY print server will load its IP address from the BOOTP server when the printer is powered ON.

Configuring the Print Server IP Address with XCONFIG

Users of Novell computers have additional alternatives for configuring the TROY PocketPro 100S IP address by using the remote console facility.

On a NetWare system, you would use the XCONFIG utility included with every TROY print server. Simply type XCONFIG at the DOS prompt and select the desired TROY print server.

1. If you are using the remote console, you will get the message Connection established (XCONFIG) or Remote console reserved (ULTRIX). Press **RETURN** and enter the password ACCESS in response to the "#" prompt (it will not echo).

2. You will be prompted for a user name. Enter anything in response to this prompt.

3. You will then get the Local> prompt. Type SET IP ADDRESS *ipaddress*, where *ipaddress* is the desired IP address you wish to assign to the TROY print server (check with your network manager for the IP address to use). For example:

   ```
   Local> SET IP ADDRESS 192.189.207.3
   ```

4. You will now need to set the subnet mask by typing SET IP SUBNET *subnetmask*, where *subnetmask* is the desired subnet mask you wish to assign to the TROY print server (check with your network manager for the subnet mask to use). For example:

   ```
   Local> SET IP SUBNET 255.255.255.0
   ```

5. If you do not have any subnets, use one of the following default subnet masks:

255.255.255.0	for class C networks
255.255.0.0	for class B networks
255.0.0.0	for class A networks

6. Your network type can be identified by the left-most group of digits in your IP address. The value of this group ranges from 192 through 255 for Class C networks (e.g., 192.189.207.3), 128 through 191 for Class B networks (e.g., 128.10.1.30), and 1 through 127 for Class A networks (e.g., 13.27.7.1).

Configuring the Print Server IP Address with XCONFIG (cont.)

7. If you have a gateway (router), enter its address with the command SET IP ROUTER *routeraddress*, where *routeraddress* is the desired IP address of the gateway you wish to assign to the TROY print server. For example:

```
Local> SET IP ROUTER 192.189.207.1
```

8. To verify that you have entered the IP information correctly, type SHOW IP.

9. Type EXIT to end the remote console session.

10. Before attempting to print, it is **very** important to verify the connection between the host and the TROY print server by using the UNIX ping command with the IP address of the TROY print server. For example:

```
ping 192.189.207.3
```

You should get a message that the TROY PocketPro 100S is alive. If you get an error message or no response, then there is no connection. *You will not be able to print if you cannot ping the TROY print server.* If this is the case, verify that you have set up the host and TROY print server correctly and that the physical connections (e.g., the transceivers and cabling) are good. Refer to the *Troubleshooting* chapter for additional information.

11. To print to the TROY print server from UNIX, use the standard lpr command with the -P option to specify the queue name. For example, to print the file TEST on the queue laser1, you would type:

```
lpr -Plaser1 TEST
```

Some AT&T-based UNIX systems, such as SCO and HP/UX, use the standard lp command instead of lpr. In these cases, use the -d option instead of -P to specify the queue name as shown in the following example:

```
lp -dlaser1 TEST
```

TROY print servers implement only a subset of the lpr options. If you want to utilize printing options such as landscape mode, language switching, etc., refer to Appendix B for information on using services.

IP Security

The TROY PocketPro 100S provides a means of allowing only host computers with authorized IP addresses to access the print server. This is very useful for applications like check printing, where general access to the printer is not allowed. The console command `SET IP ACCESS ENABLED` *ipaddress* enters a host computer IP address into the access table of the print server (where *ipaddress* is the IP address of the host computer; refer to Appendix A for information on using the print server console). To remove an IP address, use the command `SET IP ACCESS DISABLED` *ipaddress*. To reenable general access, use the command `SET IP ACCESS ALL.`

Raw TCP Ports

The TROY PocketPro 100S provides a raw TCP port capability that can be used by any application that can open and send data to a TCP port. The port number is 9100 (238C hex) for the parallel port. The ports pass data through unmodified, so there is no TELNET interpretation provided. When using the raw TCP ports, make sure that TELNET interpretation is disabled in your software or else you may get distorted printouts.

The raw TCP port is compatible with many popular software packages, including HP's JetDirect software for UNIX, TGV Multinet (streams mode), IBM AIX for the RS/6000 (V3.25 or later), and any TCP/IP-based software that supports HP's JetDirect Ethernet network interface card.

The HP JetDirect software for UNIX is available for Sun Solaris, SunOS, and HP/UX. HP printer users can download these utilities from the HP web site (http://www.hp.com).

To use a TROY PocketPro 100S print server with the HP host printing utilities on an HP/UX or Sun system, perform the following steps:

1. Download the software from the HP web site (http://hp.com).

2. If the download file is in tar format, use the tar xvf filename command to extract the software, where filename is the name of the software that you downloaded (you must be logged in as root). If the file is in pkgadd format, use the `pkgadd -d filename all` command to extract the software. Accept the default directory to store the files. Follow the instructions in the README files to install the software.

3. Run JetAdmin by typing `jetadmin` at the UNIX prompt (on SunOS 4.xx systems, you use the hpnpcfg program instead of JetAdmin, but the configuration steps are similar).

4. Select item 1 (Configuration) and then select item 3 (Add printer to local spooler).

Raw TCP Ports (cont.)

5. Enter the desired name for the TROY print server or IP address at the Enter the network printer name/IP Name prompt.

<u>NOTE</u>: You will get a message "Unknown printer". Do you wish to continue?". Enter "Y" to continue.

6. Select the printer type (for example, "HP LaserJet IIISi Printers").

7. If desired, change any of the configurable parameters (note that the default queue name is the name of the printer plus an "_" and a number (e.g., laser_1)). Then enter 0 to configure the queue.

8. Answer "Y" at the "OK to Continue?" prompt. Exit the JetAdmin utility by pressing RETURN and then "q" twice.

Print a job using the lp command. For example,

```
lp -dlaser_1 /etc/hosts
```

If you need a different TCP port number or if you want additional TCP ports, you may define a TCP port number on any TROY print server service by using the following command:

```
SET SERVICE servicename TCP nn
```

The *servicename* is the name of the service, and *nn* is the desired port number (must be greater than 1023). Refer to Appendix A for information on using services.

Changing the Configuration (Optional)

You may use TELNET, the XCONFIG NetWare utility to connect to the TROY PocketPro 100S remote console and change the configuration or view the status. The procedure and configuration commands are described in Appendix A.

Introduction

The TROY PocketPro 100S allows NetWare client PCs to print jobs on the same printer as UNIX, AppleTalk, and LAN Manager users. All NetWare jobs are spooled through the Novell server, so NetWare utilities and application programs can use the printer transparently.

NetWare Concepts

Novell NetWare is a sophisticated network operating system that allows PC clients (and other nodes) to access network resources such as disk drives and printers as if they were directly connected. NetWare networks require at least one file server, and users must log into this server to take advantage of the NetWare capabilities.

To handle printing over the network, the file server provides print spooling for the clients. It holds print jobs locally until contacted by a print server on the network, which in turn sends the job to appropriate printer. In the past, a NetWare print server was typically either a PC dedicated to handling printers or a Network Loadable Module (NLM) or Value Added Process (VAP) running on the file server. Today, NetWare print servers are often special-purpose networking hardware like a TROY print server.

There are two environments in which to configure the TROY PocketPro 100S print server:

- Bindery (Netware 3.x)
- Netware Directory Services (NDS) for Netware version 4.1 and higher.

TROY print servers can operate in three different modes to service NetWare print queues:

- Remote Printer mode (also known as NPRINTER mode on NetWare 4.xx or RPRINTER mode on NetWare 2.xx or 3.xx networks)
- Queue Server mode (also called print server or PSERVER mode)
- NDPS – Novell Distributed Print Servers (Netware 5.xx and later)

In remote printer mode, the client PC sends the print job to the file server, which in turn spools it to a print server (the print server may be a physical device like a PC or a software NLM or VAP on the file server), which in turn sends it to the printer. This approach provides good performance, and has the advantage of not consuming a user slot on the file server.

The TROY PocketPro 100S can also act as a NetWare print server (queue server) with an attached printer, which therefore eliminates the need for a dedicated PC print server or for an NLM or VAP on the file server. This means that jobs from the client PC are spooled to the file server, which in turn spools the job directly to the TROY print server. The advantage of this approach is higher performance, but it has the drawback of requiring a user slot on the file server.

NetWare Concepts

Generally speaking, TROY recommends that you use queue server mode instead of remote printer mode because the performance will be much higher. The exception to this recommendation is if you have a limited number of available user slots (for example, if you have a 5-user NetWare license and you have five active users). TROY print servers will work with NetWare Directory Services (NDS) or bindery emulation mode on NetWare 4.xx and later networks.

General Information

In order to use the TROY PocketPro 100S on a NetWare network, one or more file servers must be configured with a print queue that the TROY print server can service. Users send their print requests to the file server's print queue, and the jobs are then spooled (either directly, or in the case of remote printer mode, via an intermediate print server) to the TROY print server.

The TROY PocketPro 100S external print server can be configured under Windows using TROY's ExtendView utility, XAdmin32, WebXAdmin, or Hewlett-Packard's JetAdmin utilities. Alternatively, they can be configured using the NetWare PCONSOLE utility in conjunction with TROY's DOS XCONFIG utility.

NOTE: You must enable bindery emulation in order to use queue server mode with these products.

Before You Begin

Before you can configure a NetWare print queue, you must have sufficient privileges. With NetWare 3.xx and earlier, you MUST be logged in as SUPERVISOR (not someone with Supervisor privileges). With NetWare 4.xx and later, make sure that you have sufficient administrator privileges to create a print queue in the desired context.

Default Names
(Service Names)

The TROY PocketPro 100S automatically makes itself known on a NetWare network. The default NetWare Print Server name is TWC_*xxxxxx*_P1, where "*xxxxxx*" are the last six digits of the Ethernet address (the Ethernet address is on a label that is affixed to the TROY print server). Note that the NetWare Print Server name is used for either NDS or bindery mode configuration.

If you are configuring the first port with WebXAdmin, the NDS Printer Name for this port is automatically assigned as TWC_*xxxxxx*_P1 Printer. If you are using an alternate configuration method like NWAdmin, you may assign any arbitrary unique name for the printer. If you are configuring any other port, the NDS Printer Name is TWC_*xxxxxx*_pp, where "pp" is the port name (for example, S2).

The Print Server and Printer names are used extensively during the configuration process, so be sure to remember them. Note that these names are actually the names of the print server's NetWare services (refer to Appendix B for more information on using services). If desired, you may change the default names to something more meaningful by using ExtendView, XAdmin32, WebXAdmin, or the print server console.

TWC_*xxxxxx*_P1   (parallel port; default NetWare **Print Server** name)

Configuring the Print Server in Queue Server Mode

The TROY PocketPro 100S can be configured in Queue Server mode for either bindery or NDS mode operation. The simplest way to do this is with TROY's ExtendView, XAdmin32, WebXAdmin, or HP's JetAdmin utilities. ExtendView and WebXAdmin are Windows-based utilities that allow you to configure the print server and create NetWare print queues without using NetWare utilities like PCONSOLE or NWAdmin (if you have Windows 3.xx, you must use XAdmin as described in this chapter). JetAdmin is a Hewlett-Packard utility that provides similar capabilities. Any of these utilities can be used in conjunction with Novell's NWAdmin or PCONSOLE.

NOTE: The Hp JetAdmin 1.xx and 2.xx utilities do not allow direct configuration of NetWare print queues. If you are using these versions, you may configure the print server with JetAdmin and then use NWAdmin or PCONSOLE to add the print queue. If possible, TROY recommends that you upgrade to JetAdmin 3.xx.

Configuring the Print Server in Bindery Queue Server Mode Using ExtendView

1. Make sure that ExtendView is installed and running on your system.

2. Launch ExtendView; it will automatically list all available print servers on the network. If your device is not shown, press F5 or click on the ⟳ icon to refresh the list.
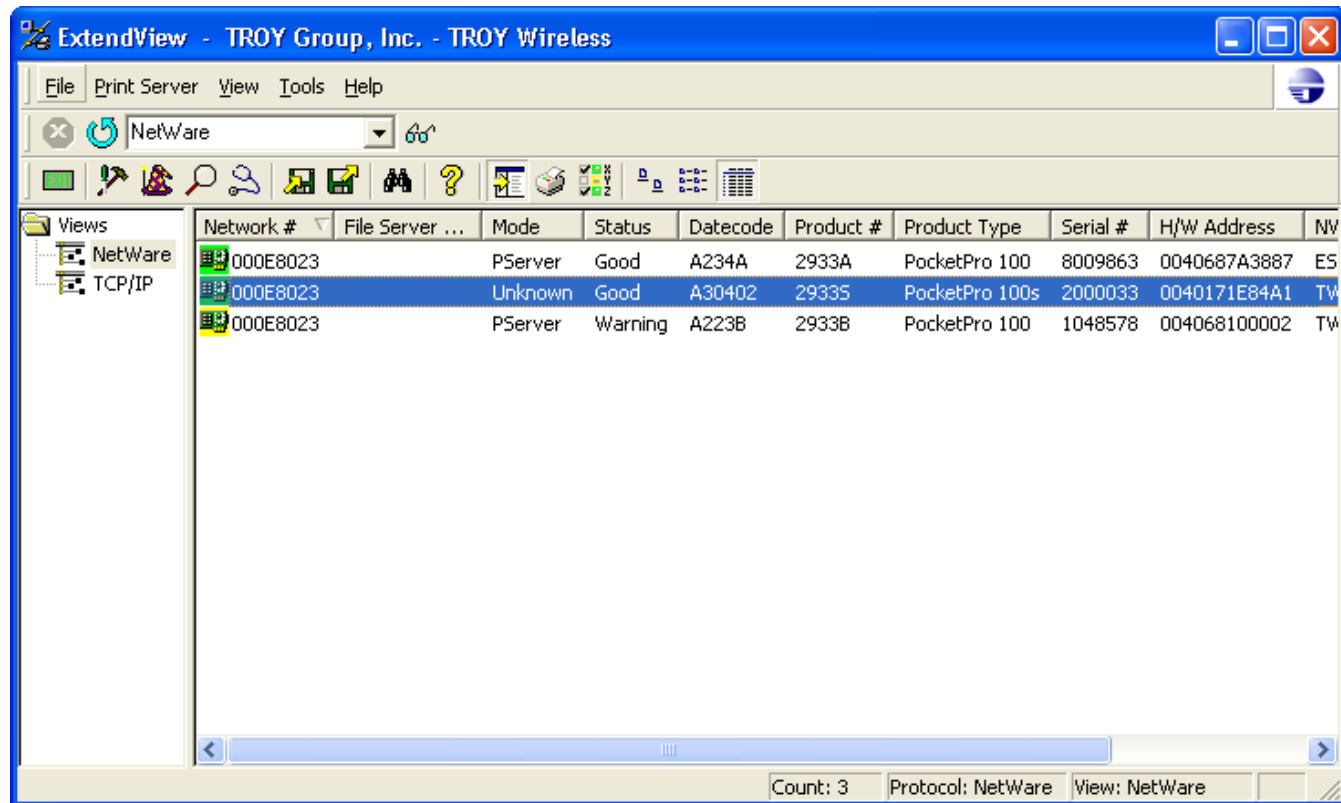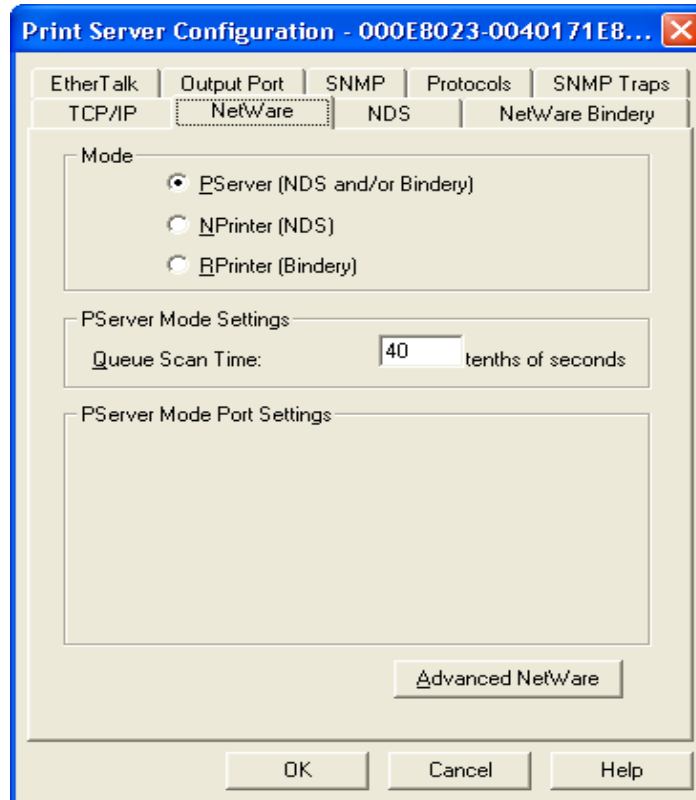
Configuring the Print Server in Bindery Queue Server Mode Using ExtendView (cont.)

3. Select your print server from the list (you should be able to identify using its MAC address and serial number), and the press ALT-C to configure. Alternatively, you can highlight the device, right-click on it, and then click on **Configuration**.
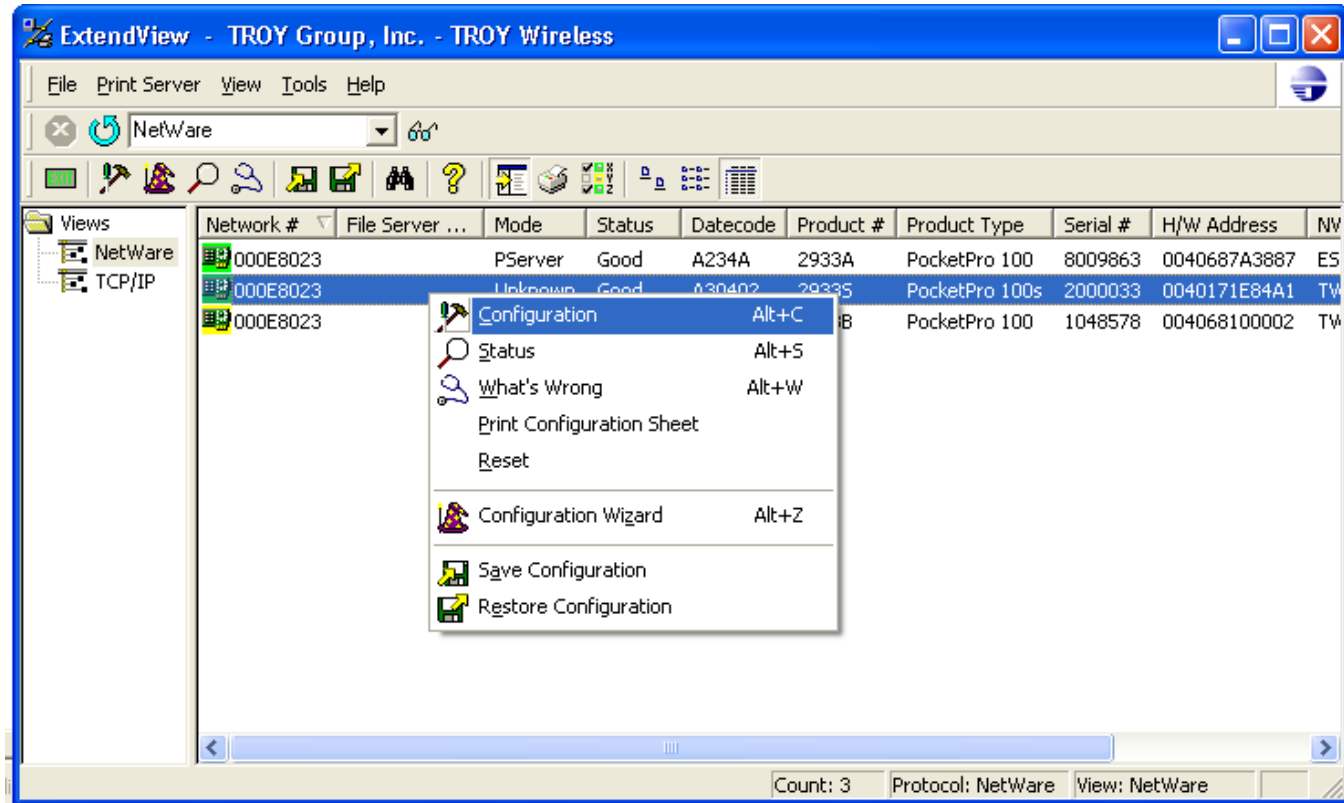
Configuring the Print Server in Bindery Queue Server Mode Using ExtendView (cont.)

4. Click on the **NetWare** tab and select **PServer** (NDS and/or Bindery) mode.

5. Click on the **Netware Bindery** tab. Select your NetWare default file server. The print server name is TWC_xxxxxx_P1, where xxxxxx are the last 6 digits of the MAC address. You may leave it as is or change it to something else. It is recommended that you do not change the print server name.

6. For available queues, you will see your NetWare file server. If there is a queue already created, you will see "+ " next to your file server name indicating that you can expand it to list all available queues. You can select an existing queue or create a new one.
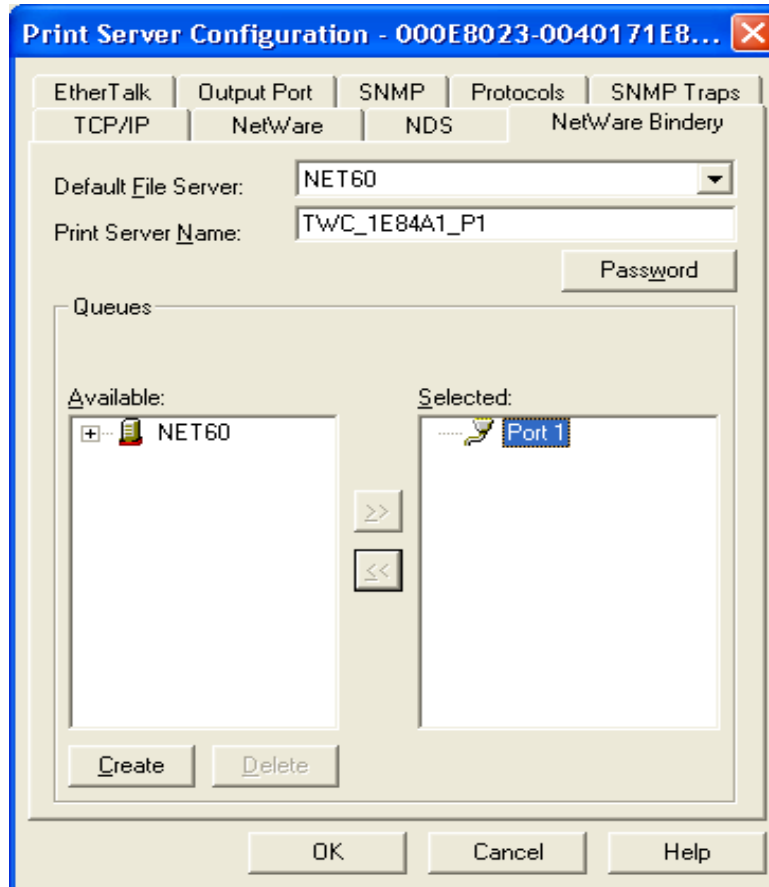
Configuring the Print Server in Bindery Queue Server Mode Using ExtendView (cont.)

7. To create a new queue, click on **Create**, select your file server where you want your queue to reside, enter a queue name for it, and then click on **OK**. The new queue will be listed under available queues.
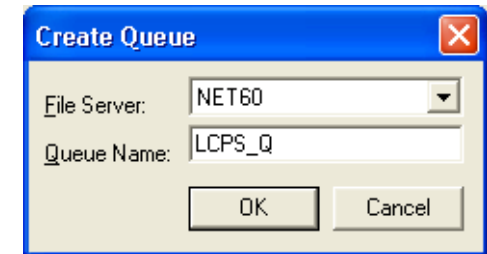
8. Select the queue that you would like to use, and then click on the ≫ button to attach it to the print server. Click on **OK** twice to save the changes and reset the print server.

9. Exit ExtendView. You are now ready to use the print queue from a NetWare workstation.

1. Make sure that ExtendView is installed and running on your system.

2. Launch ExtendView; it will automatically list all available print servers on the network. If your device is not shown, press F5 or click on the ⟳ icon to refresh the list.

3. Select your print server from the list (you should be able to identify using its MAC address and serial number), and then press ALT-C to configure. Alternatively, you can highlight the device, right-click on it, and then click on **Configuration**.
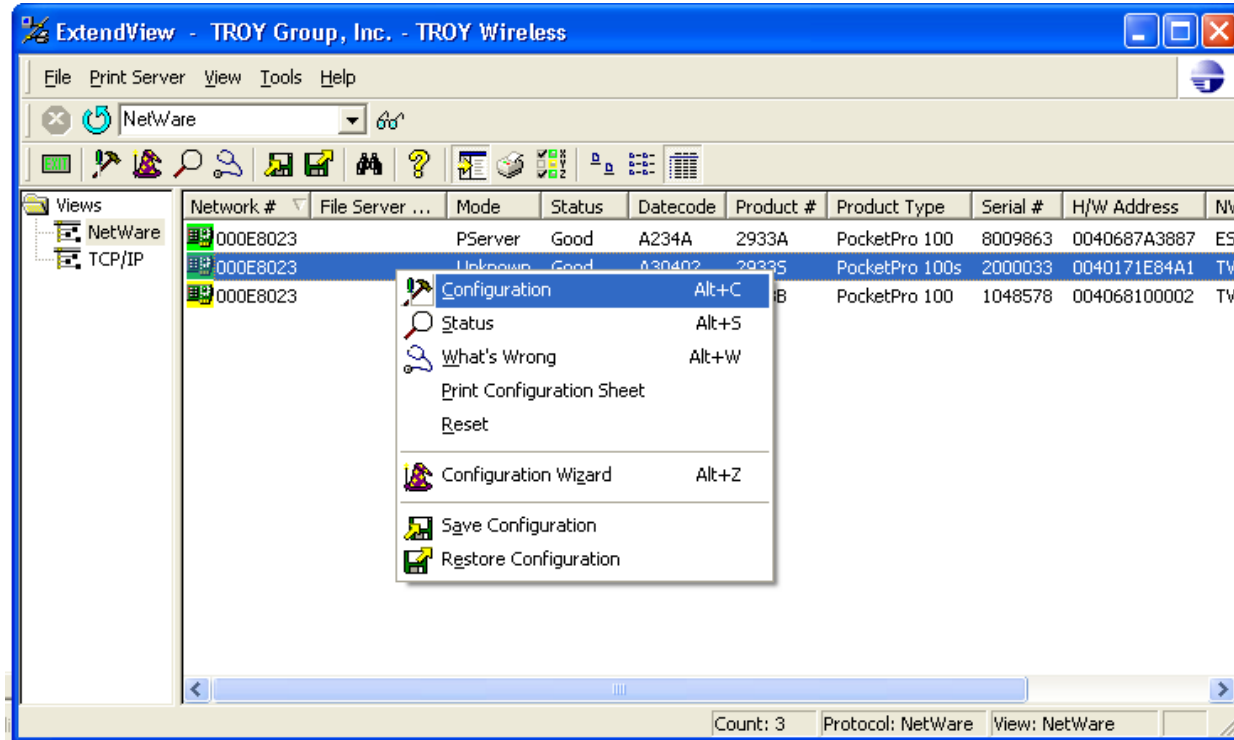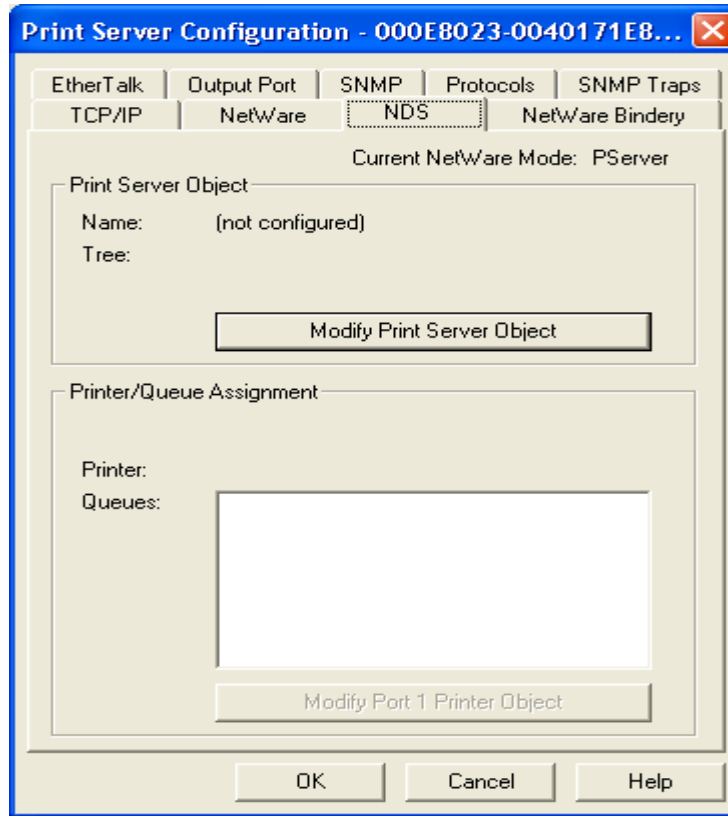
Configuring the Print Server in NDS Queue Server Mode Using ExtendView (cont.)

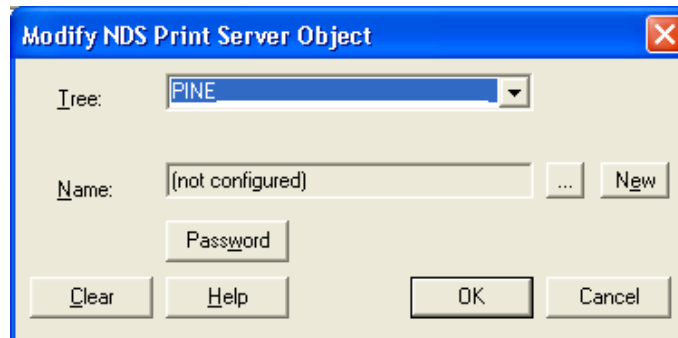4. Click on the **Netware** tab, and then select **PServer** (NDS and/or Bindery) mode.
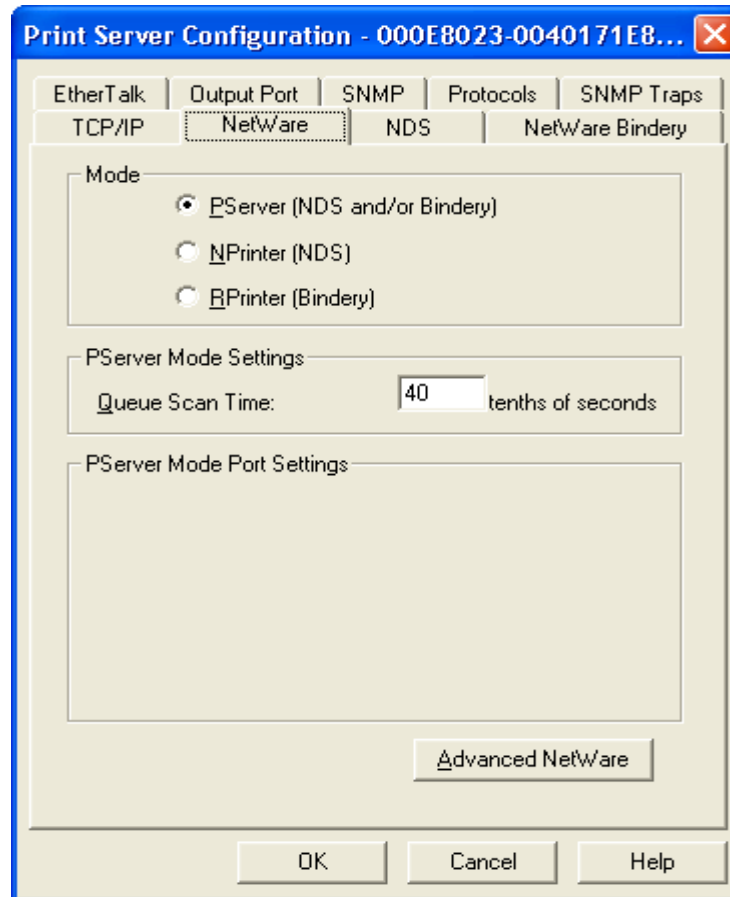
Configuring the Print Server in NDS Queue Server Mode Using ExtendView (cont.)

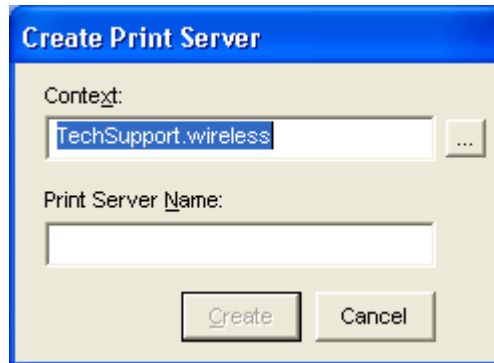5. Click on the **NDS** tab, and then click on **Modify Print Server Object**.

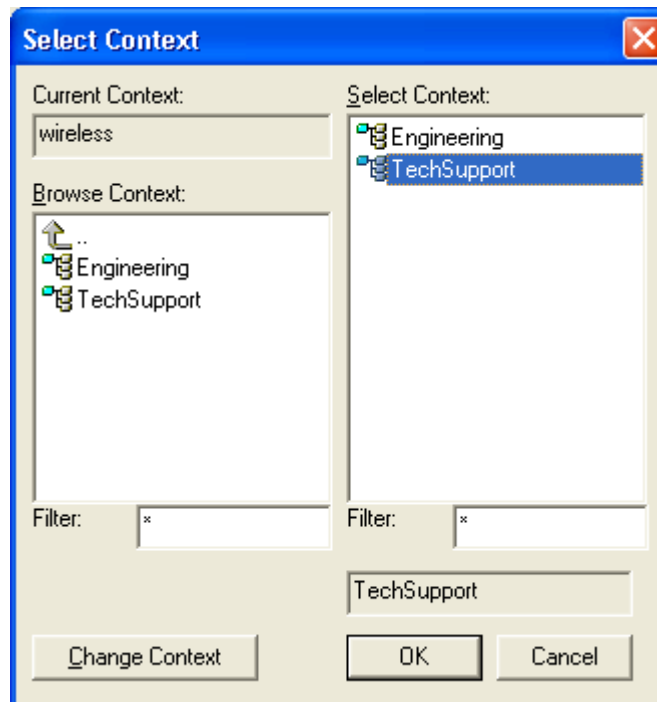6. Click on ⏷ to select the Tree that you want to use. Click on New to create a new Print Server Object.

Configuring the Print Server in NDS Queue Server Mode Using ExtendView (cont.)

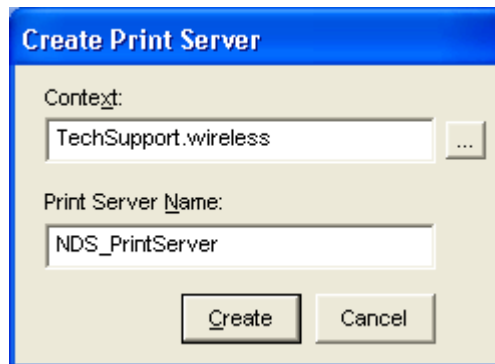7. Click on [...] to select **Context**.

8. Choose the desired context, and then click on **OK.**
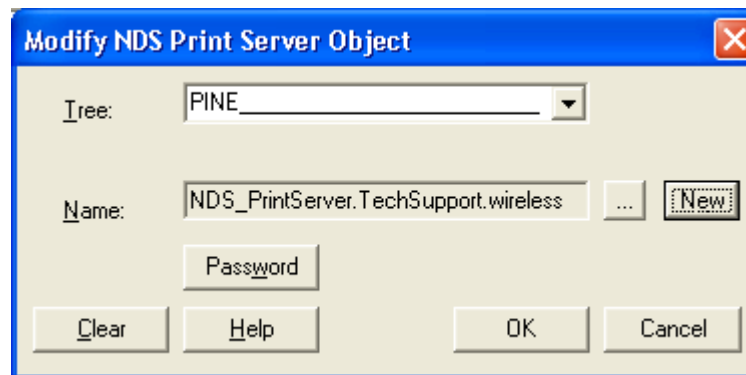
Configuring the Print Server in NDS Queue Server Mode Using ExtendView (cont.)

9. The desired context will be shown; enter the desired name for the print server object, and then click on **Create.**

10. Click on **OK** to save the changes.

Configuring the Print Server in NDS Queue Server Mode Using ExtendView (cont.)

11. Click on **Modify Port 1 Printer Object**.
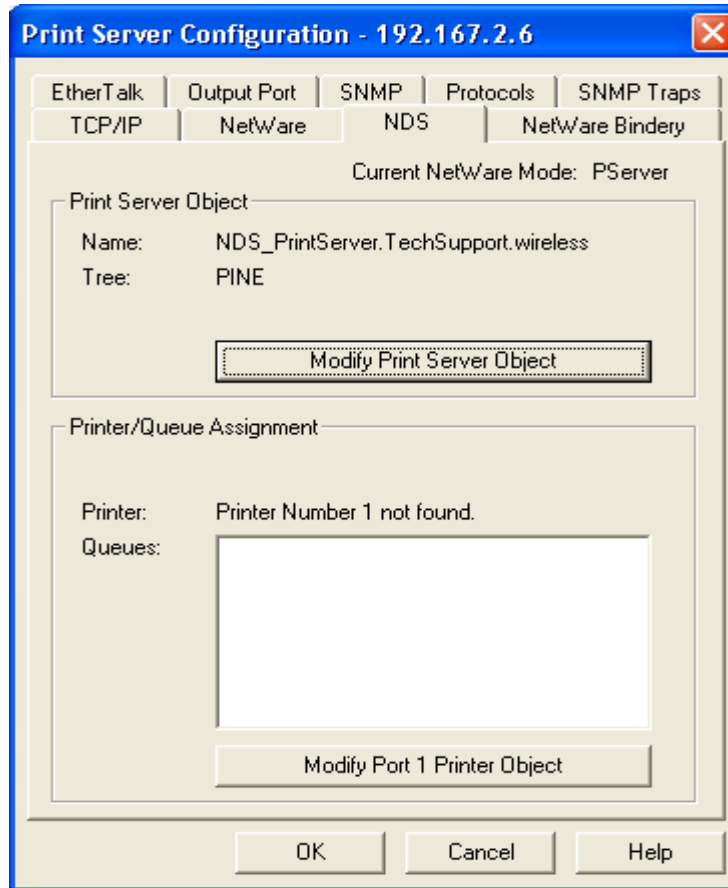
**Configuring the
Print Server in
NDS Queue
Server Mode
Using
ExtendView
(cont.)**

12. Click on the New button alongside the **Printer** field to create a new printer object.
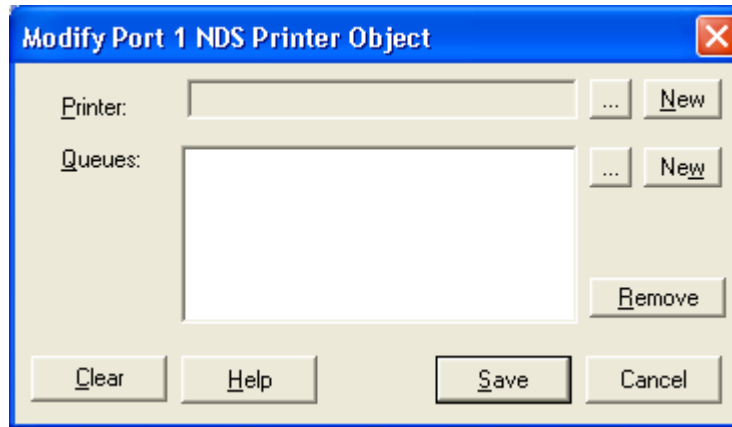
13. If desired, change the context by clicking on the ... button. Enter the desired name for the printer object, and then click on **Create**.
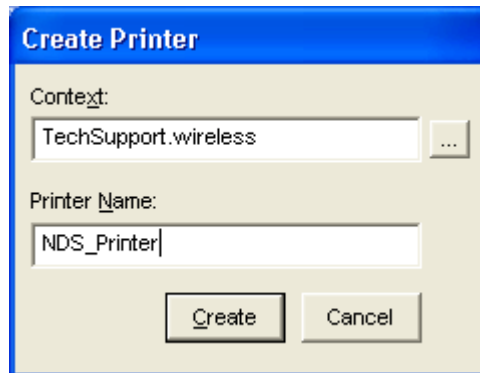
Configuring the Print Server in NDS Queue Server Mode Using ExtendView (cont.)

14. Click on [New] alongside the **Queues** field to create a new NetWare queue.
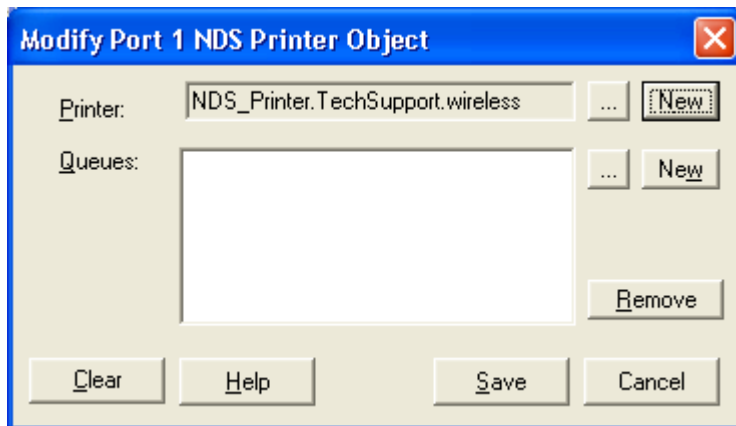
15. If desired, change context by clicking on [...] alongside **Context**. Enter the desired Print Queue name, and then click on [...] alongside **Print Queue Volume** field to select where the queue will reside.
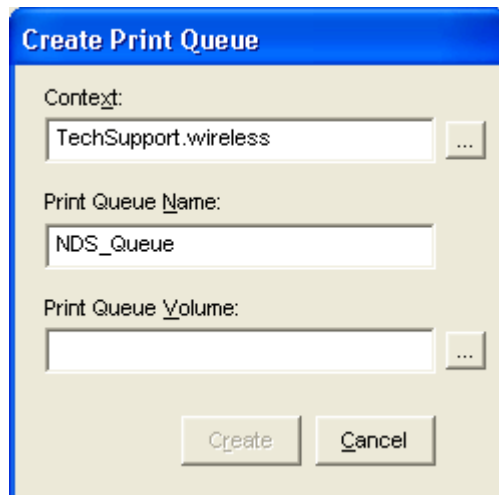
Configuring the Print Server in NDS Queue Server Mode Using ExtendView (cont.)

16. Select the appropriate **Volume** where you want to spool the files, and then click on **OK.**
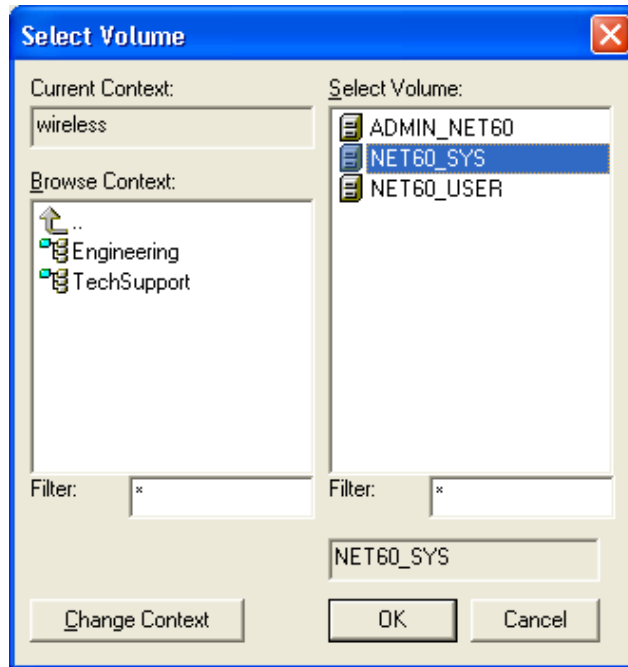
17. Verify Print Queue settings, and then click on **Create**.
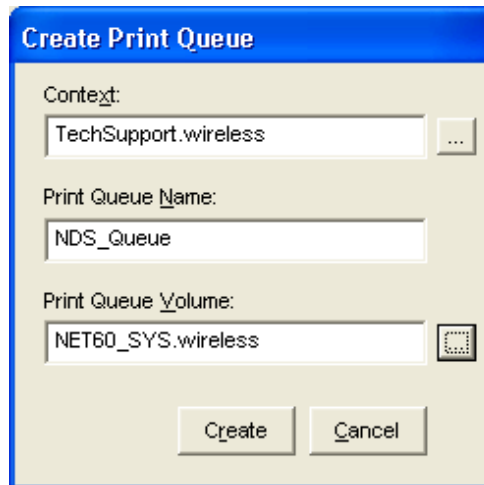
Configuring the Print Server in NDS Queue Server Mode Using ExtendView (cont.)
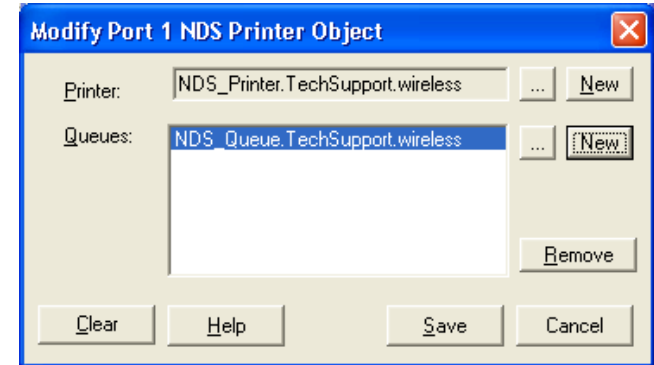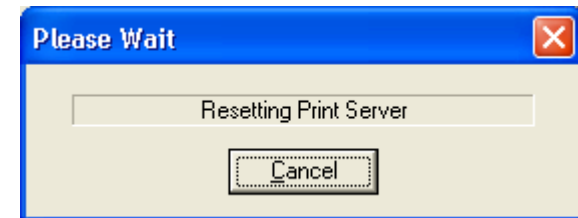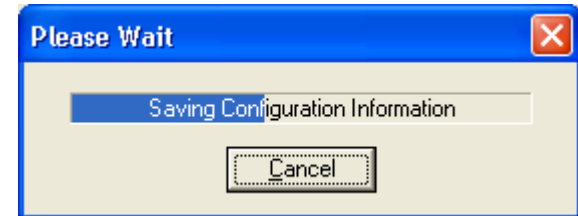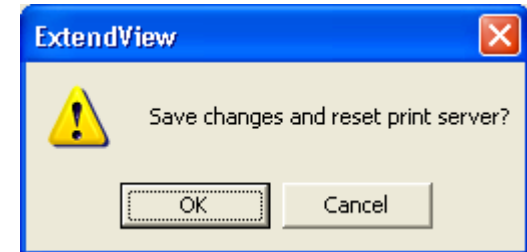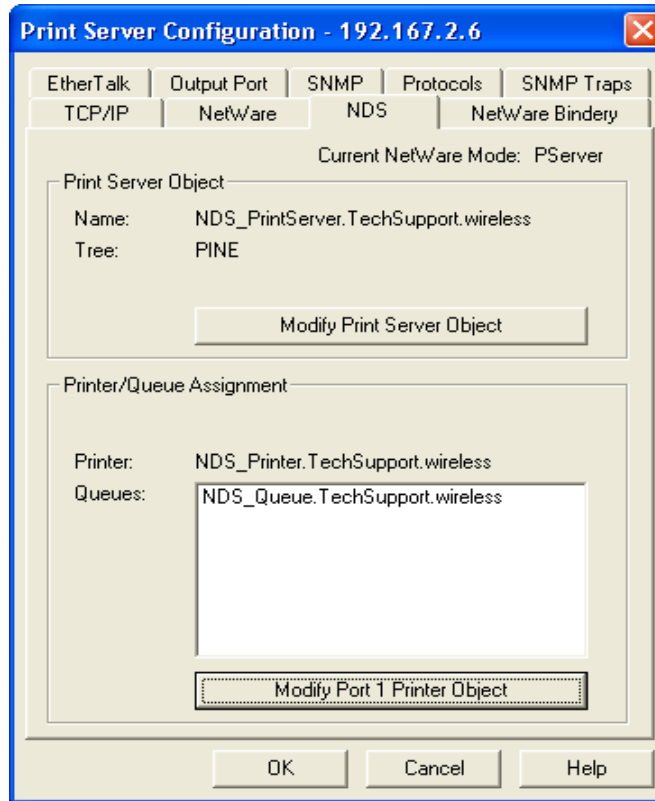
18. Click on **SAVE** to save the created printer object.

19. Click on **OK** twice to save changes and reset the print server.

20. Exit ExtendView. You are now ready to use the print queue from a NetWare workstation.

**Configuring the Print Server Using HP JetAdmin 3.XX**

1. Make sure that JetAdmin 3.xx is running on your system and that you have sufficient privileges to use it to create print queues. If you are using the Microsoft NetWare client on your workstation, make sure that you have installed **Services for NetWare Directory Services** in the **Network** control panel.

2. Click on **Start**, select **Programs**, select the **HP JetAdmin Utilities 3.0** folder, and then select **HP JetAdmin.** One or more TROY print server NetWare services will show up in the list of printers (the default service names are listed in the *Default Print Server Names* section at the beginning of this chapter).

3. Click on the NetWare service you wish to configure, and then go the menu bar and select **File**, **Modify**.

4. If desired, change the print server name and description. Click on **Next**. Do this with caution because this will change the print server service name, and will, therefore, affect any other protocols that use this service.

5. Make sure that **NetWare Directory Services** is selected in the window on the left side of the display.

   ▪ Click on the inverted triangle button and select the NDS tree.
   ▪ Click **Change...** button to select the NDS context.

6. Click on the **Operating Mode** button and select **Queue Server Mode**.

7. Click on the **Queues** button, and click on the **Change...** button. Select the **Available Print Queues** window:

   ▪ If you are configuring an NDS queue, click on the context where the print queue will reside.
   ▪ If you are configuring a bindery queue, click on the volume where the queue will reside.

8. Click on **Create** and enter any unique name for the Queue name.

   ▪ If you are configuring an NDS queue, the default file server on which the print queue will reside will be listed. You may optionally change this by clicking on the inverted triangle button and selecting a different server. You may also optionally change the context that you selected in the previous step by clicking on the **Browse...** button. Click on **OK**, and proceed to Step 9.
   ▪ If you are configuring a bindery queue, you may optionally click on the inverted triangle button to change the file server volume selected in the previous step. Click on **OK** to continue and go to Step 9.

9. Click on **Yes** when asked if you want to add the queue to the list of serviced queues. The queue name will now appear in the **Available Print Queues** in the selected context (for NDS mode) or under the selected volume (for bindery mode).

10. Click on **OK**, and then click on **Next.** If applicable, enter the IP address, and then click on **Next.**

11. If desired, you can enable users that will be notified in the event of printer problems. Click on **Finish.** You can now use the print queue from your NetWare workstation.

Configuring the Print Server Using WebXAdmin

1. Enter the IP address of the print server as the destination address in your browser, and then press **ENTER** or **RETURN**.

2. Enter the configuration password (ACCESS is the default), and then press **Submit**.

3. Click on **Configure NetWare.** You will see one enabled service (the default service names are listed in the *Default Print Server Names* section at the beginning of this chapter). Click on the service.

   ▪ If you are using NDS, type in the tree and context (the context may be entered in either the form printers.mytree or OU=printers.O=mytree. Click **Submit** and exit the browser. Proceed to the next section, *Adding NetWare Print Queues using NWAdmin.*

   ▪ If you are using bindery mode with WebXAdmin, click on **Configure Bindery File Servers** from the main menu, type in the name of the file server where the print queue will reside, and then click on **Add**. Proceed to the next section, *Configuring NetWare Print Queues using NWAdmin.*

Configuring the Print Server in NDS Queue Server Mode Using WebXAdmin

1. Enter the IP address of the print server as the destination address in your browser, and then press **Enter** or **Return**.
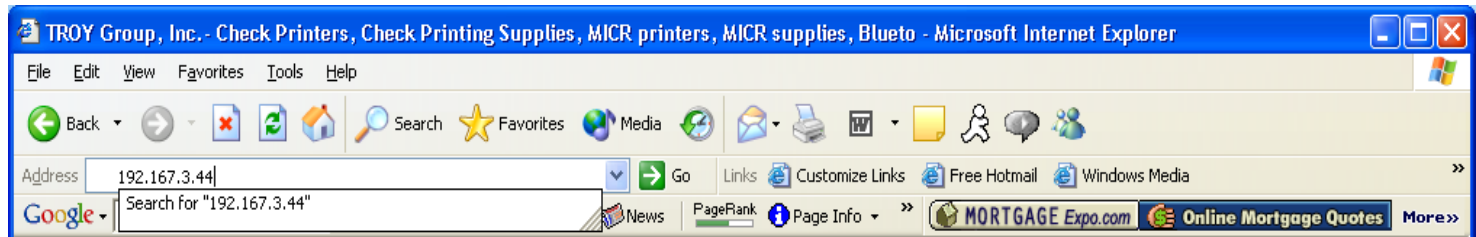
2. Enter the configuration password (ACCESS is the default password), and then click on **Submit**.

Configuring the Print Server in NDS Queue Server Mode Using WebXAdmin (cont.)

3. Click on **Configure Netware** to see the enabled service (the default service names are listed in the *Default Print Server Names* section at the beginning of this chapter).

TROY PocketPro 100s
Network Configuration

Node Name:	TWC_1E84A1
Serial Number:	2000033
Firmware Version:	PROS-3.99 (2003.04.02)
Ethernet Address:	00-40-17-1E-84-A1
Boot Version:	7.5

Configure Service	Configure Port	Configure Netware	Configure TCP/IP
Configure Appletalk	Configure NetBIOS	Configure DLC	Configure Internet
Configure IPP	Set Default	Console	Configure Password
Print Test Page	Ethernet Statistics	Reset PrintServer	Reload Firmware

English   Nederlands   Français   Deutsch   Español

TROY Group Home Page

TROY PocketPro 100s
Configure Netware

4. Click on the service. Select **Queue Server**, type in the tree and context (the context may be entered in either the form "printers.mytree" or "OU=printers.O=mytree". Click on **Submit** to go back to the main page.

Netware	⦿ Enable ◯ Disable
Enabled Services	TWC_1E84A1_P1
Active Servers and Queues	None Configure Bindery File Servers
Frame Type	0) AUTO
Netware Password	Enter new password Confirm new password

Reset | Submit

[Main][Help]

5. Click on **Reset PrintServer**, and
then exit the browser. Proceed to the
next section, *Adding NetWare Print
Queues using NWAdmin*.

Adding NetWare Print Queues in Queue Server Mode Using NWAdmin

If you are using WebXAdmin or JetAdmin 1.xx or 2.xx, you need to use NWAdmin to configure the actual NetWare print queue. This is because these utilities only allow you to define the print server context and tree (or file server, if you are using bindery mode). The following steps are required:

1. Make sure that you have defined the context and tree for each NetWare Print Server and Printer that you wish to configure by using WebXAdmin, or the print server console as described in previous sections. Then start the Novell NWAdmin program by double clicking on the icon.

2. Create a printer object:

   - Click on the container where the object will reside.

   - Select **Object** from the menu bar, and then select **Create**.

   - When you get the **New Object** menu, select **Printer** (non-NDPS), and then click on **OK**.

   - Enter a printer name, and then click on **Create**. The new printer will then be listed.

   - If you are configuring the port, you may enter any arbitrary name for the Printer.

   NOTE: If you are configuring the default service, the name of the printer object can be any unique name (it cannot be the same as the default service name). If you are configuring any other service, the name of the printer object is the same as the name of the service.

3. Create a print queue object:

   - Click on the container where the object will reside. Select **Object** from the menu bar and then **Create**.

   - When you get the **New Object** menu, select **Print Queue,** and then click on **OK**.

   - Select **Directory Service Queue**. Enter any desired name for the print queue.

   - Click on the **Print Queue** **Volume** button, and select the volume on which the print queue will reside.

   - Click on **OK,** and then click on **Create**.

Adding NetWare Print Queues in Queue Server Mode Using NWAdmin (cont.)

4. Create a print server object:

   ▪ Click on the container where the object will reside.

   ▪ Select **Object** from the menu bar, and then click on **Create**.

   ▪ When you get the **New Object** menu, select **Print Server,** and then click on **OK**.

   ▪ Enter the name of the TROY print server (default is TWC_*xxxxxx*_P1), and select **Create**. Use the default print server name (the default names are listed under *Default Print Server Names* at the beginning of this chapter) unless you specifically changed it with ExtendView, XAdmin 32, or print server console.

5. Associate the printer with the print queue:

   ▪ Change context if required, and then double-click on the name of the printer you created in Step 3.

   ▪ Click on **Assignments**, and then click on **Add...**

   ▪ Change context if necessary, and then select the print queue you created in Step 4. Click **OK**, and then click on **OK** again.

6. Associate the print server with the printer:

   ▪ Change the context if required, and then double-click on the name of the print server you created in Step 5.

   ▪ Click on **Assignments**, and then click on **Add...**

   ▪ Change the context if necessary, and then select the printer created in Step 3. Click **OK**, and then click on **OK** again.

7. Exit NWAdmin. You are now ready to use the print queue from a NetWare workstation.

Configuring the Print Server and Print Queue in Queue Server Mode Using PCONSOLE and XCONFIG

As an alternative to HP JetAdmin, you can use the standard Novell PCONSOLE utility in conjunction with TROY's XCONFIG program to set up your print queues (if desired, you may use TELNET instead of the XCONFIG utility). The procedure is basically as follows:

1. Use XCONFIG to connect to the print server. Enter the password (`ACCESS` is the default) and type anything in response to the Enter Username> prompt.

Configuring the Print Server and Print Queue in Queue Server Mode Using PCONSOLE and XCONFIG (cont.)

2. If you are configuring an NDS queue, enter the commands:

```
SET SERVICE servicename TREE treename

SET SERVICE servicename CONTEXT contextname
```

The *servicename* is the service that you want to configure (the default service names are listed in the *Default Print Server* Names section at the beginning of this chapter), *treename* is the name of your NDS tree, and *contextname* is the NDS context where the print server will reside. Skip to Step 3.

If you are configuring a bindery queue, enter the command:

```
SET NETW QSERVER fileserver ON servicename
```

The *fileserver* is the name of the file server where the queue will reside (note that this is not necessarily the same as the volume name), and *servicename* is the name of the print server service (the default service names are listed in the *Default Print Server* Names section at the beginning of this chapter).

NOTE: The `SET NETWARE SERVER` command, which enables file servers on a global basis, is available for compatibility with older firmware releases, but is not recommended for new applications.

3. Start PCONSOLE

- If necessary, change to the desired context if you are using NDS.

- Go to **Print Queues**, press **Insert** to create a new print queue, and enter the name of the print queue. If you are configuring an NDS queue, you will also need to enter a volume name (press Insert to browse for available volumes).

- Select **Print Servers** (NetWare 4.xx and later) or **Queue Servers** (NetWare 2.xx and 3.xx), press **Insert** and enter the name of the TROY print server (the default print server names are discussed in the *Default Print Server Names* section at the beginning of this manual).

- **Go to Print Queues**, select the desired print queue, and then select Print Servers and press Insert to select the name of the TROY print server.

- Exit PCONSOLE.

4. Go back to XCONFIG and enter the command:

```
SET NETWARE RESCAN
```

After a few seconds, do a `SHOW NETWARE` command; you should see the queue you created being serviced by the file server. You are now ready to use the queue.

Adding Netware Print Queues in Queue Server Mode Using NWAdmin

1. Make sure that you have defined the context and tree for each NetWare Print Server and Printer that you wish to configure by using WebXAdmin or the print server console. Then start the Novell NWAdmin program by double-clicking on the [NWAdmin32] icon.

2. Create a printer object by clicking on the container where the object will reside. Select **Object** from the menu bar, and then click on **Create**.
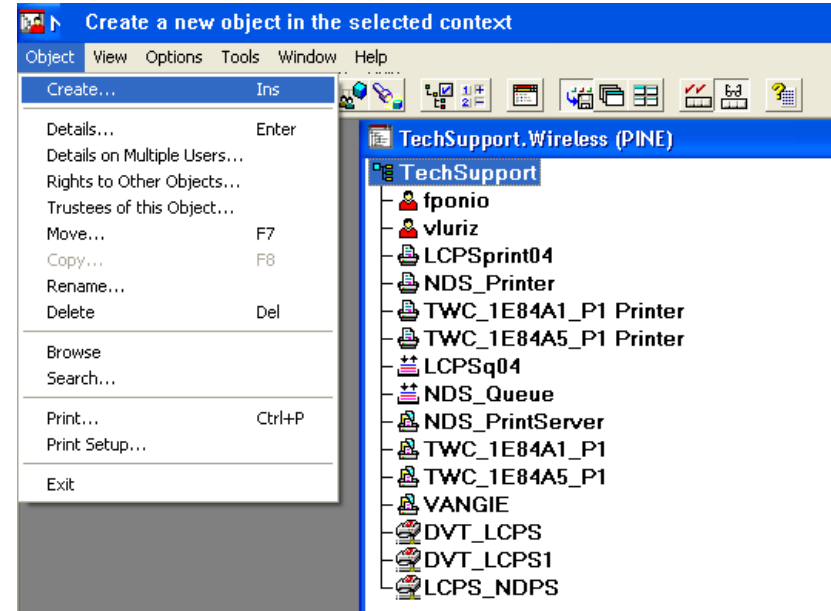
3. When you get the **New Object** menu, select **Printer (Non NDPS),** and then click on **OK**.
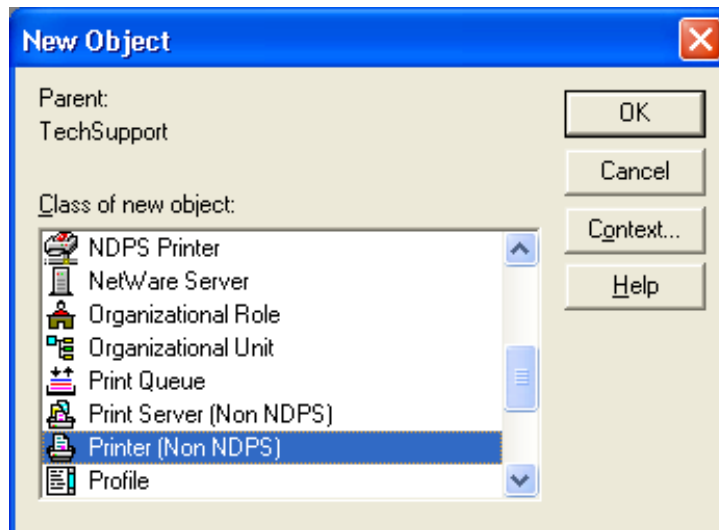
Adding Netware Print Queues in Queue Server Mode Using NWAdmin (cont.)

4. Enter a printer name, and then click on **Create**. The new printer will then be listed.
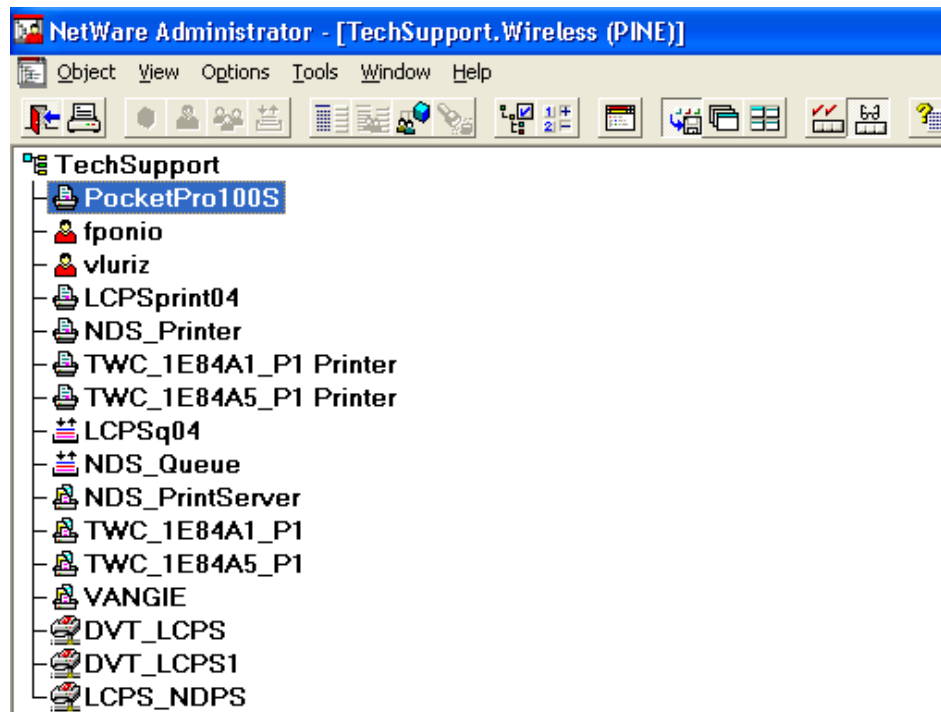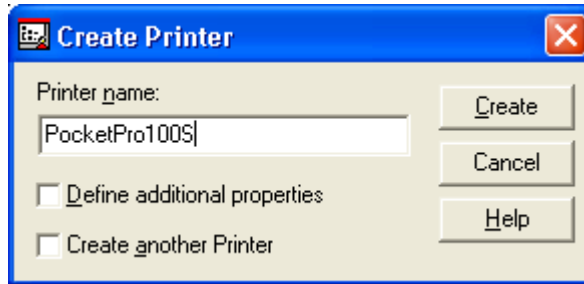
Adding Netware Print Queues in Queue Server Mode Using NWAdmin (cont.)

5. Create a print queue object by clicking on the container where the object will reside. Select **Object** from the menu bar, and then click on **Create**. When you get the **New Object** menu, select **Print Queue**, and then **OK**.
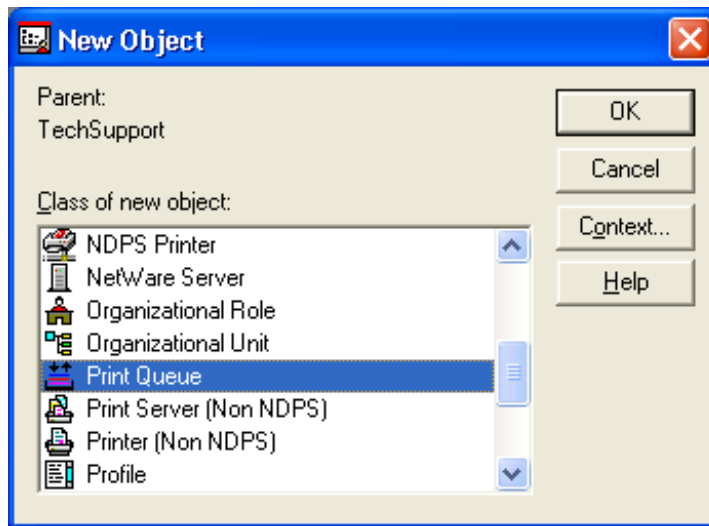
6. Select **Directory Service Queue**. Enter any desired name for the print queue. Click on the **Print Queue Volume** button, and then select the volume on which the print queue will reside.
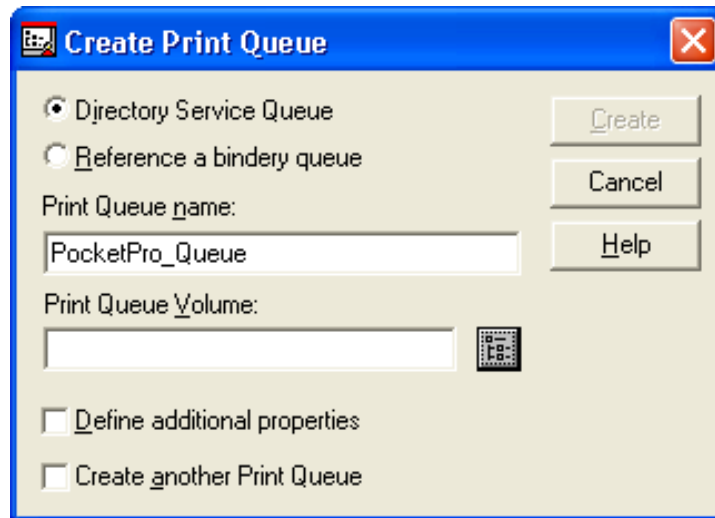
**Adding Netware
Print Queues in
Queue Server
Mode Using
NWAdmin (cont.)**

7. Click on **OK**, and then click on **Create**. The new print queue will then be listed.
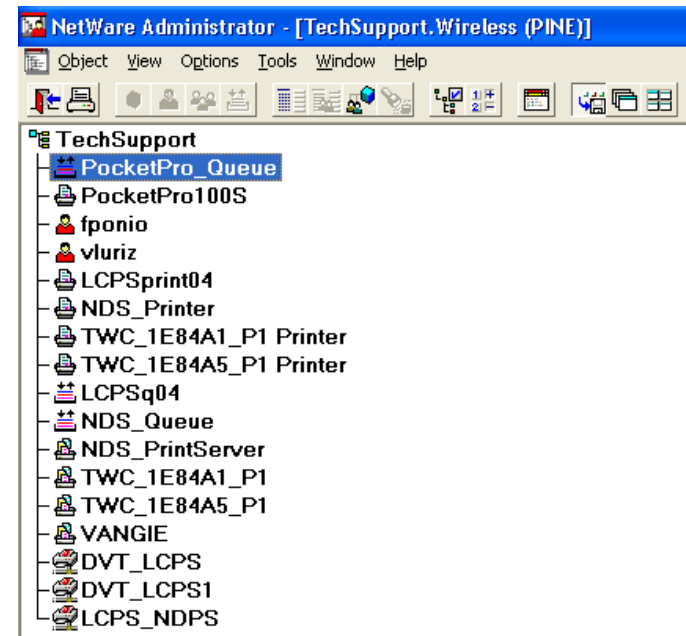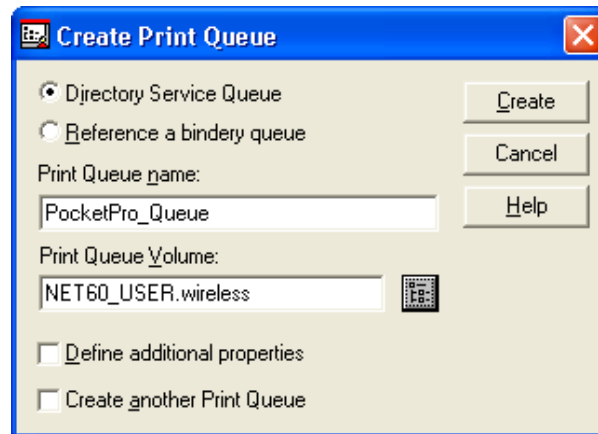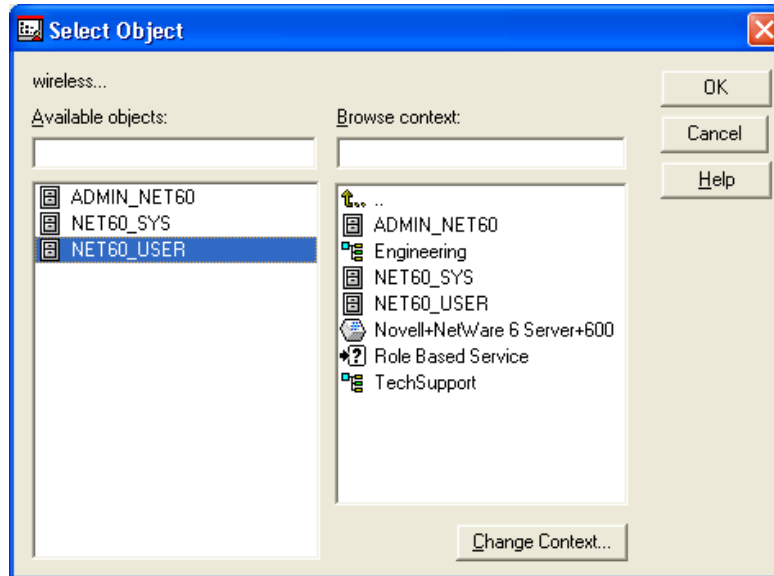
Adding Netware Print Queues in Queue Server Mode Using NWAdmin (cont.)

8. Create a print server object by clicking on the container where the object will reside. Select **Object** from the menu bar, and then click on **Create**. When you get the **New Object** menu, select **Print Server (Non NDPS),** and then click on **OK**.

9. Enter the name of the TROY print server (the default is TWC_xxxxxx_P1) and select **Create**. Use the default print server name (the default names are listed under *Default Print Server Names* at the beginning of this chapter) unless you specifically changed it with ExtendView, XAdmin32 or print server console. The new print server should now be listed as shown.
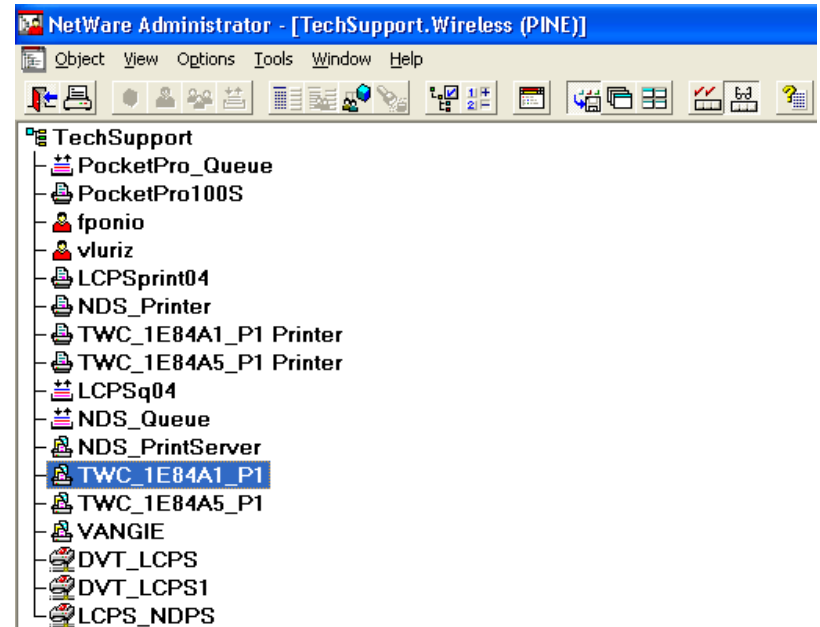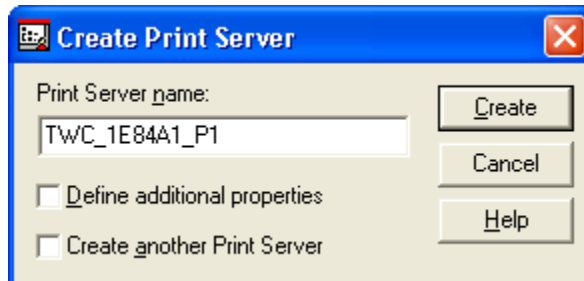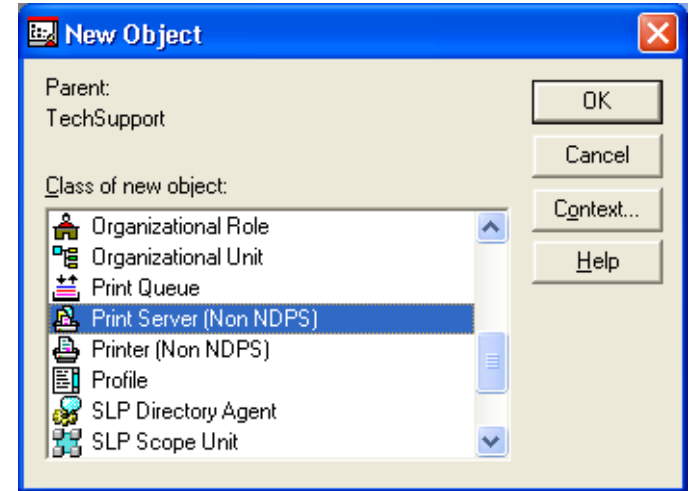
10. Associate the printer with the print queue by changing the context if required, and then double-clicking on the name of the *printer* you created in Step 3. Click on **Assignments**, and then click on **Add**…
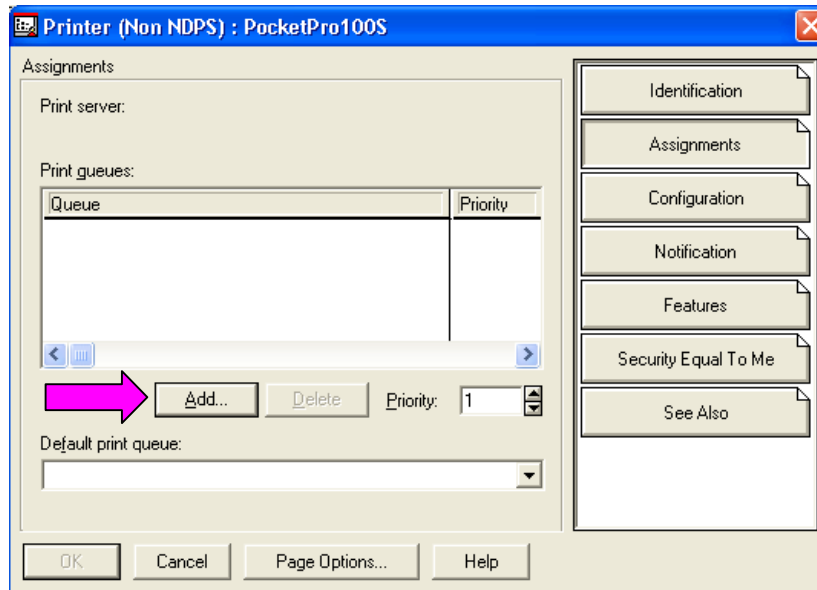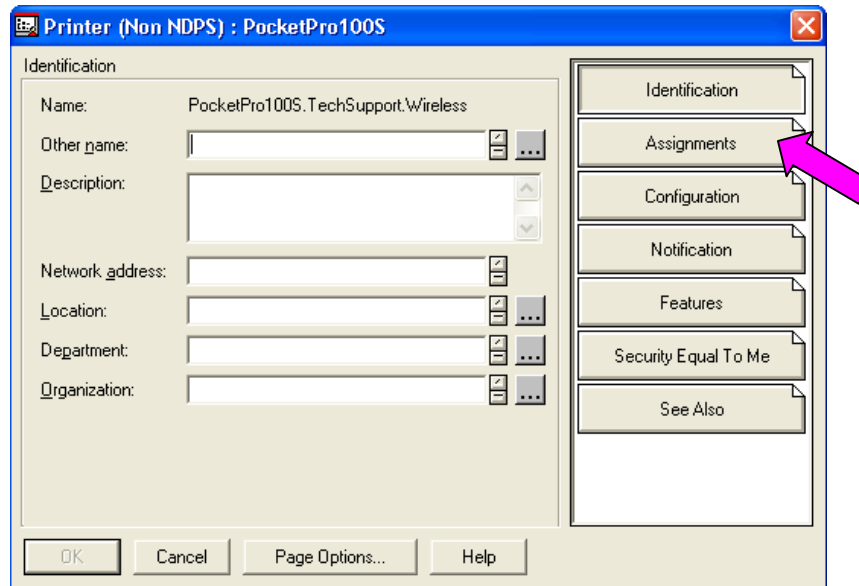
Adding Netware Print Queues in Queue Server Mode Using NWAdmin (cont.)

11. Change the context if necessary, and then select the print queue you created in Step 4. Click on **OK**, and then click on **OK** again.
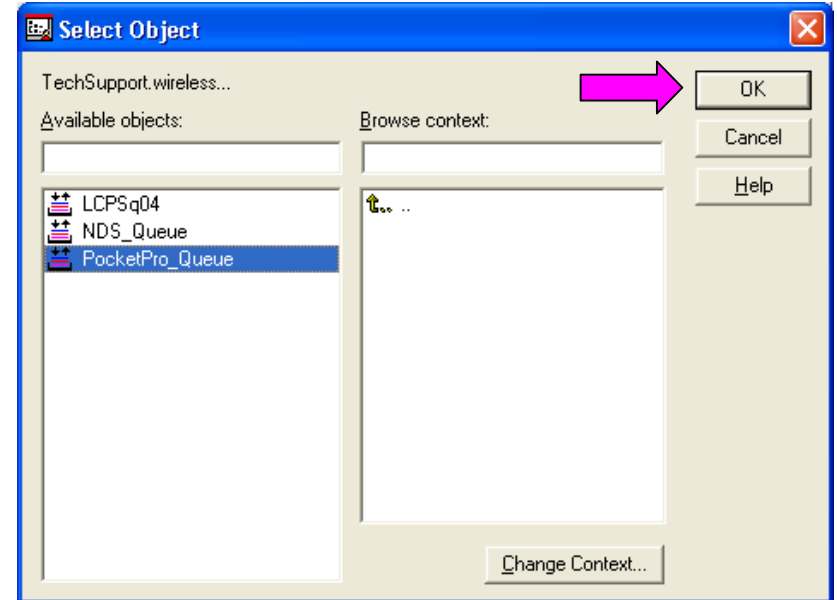
12. Associate the print server with the printer by changing the context if required, and then double-clicking on the name of the *print server* you created in Step 5. Click on **Assignments**, and then click on **Add**…
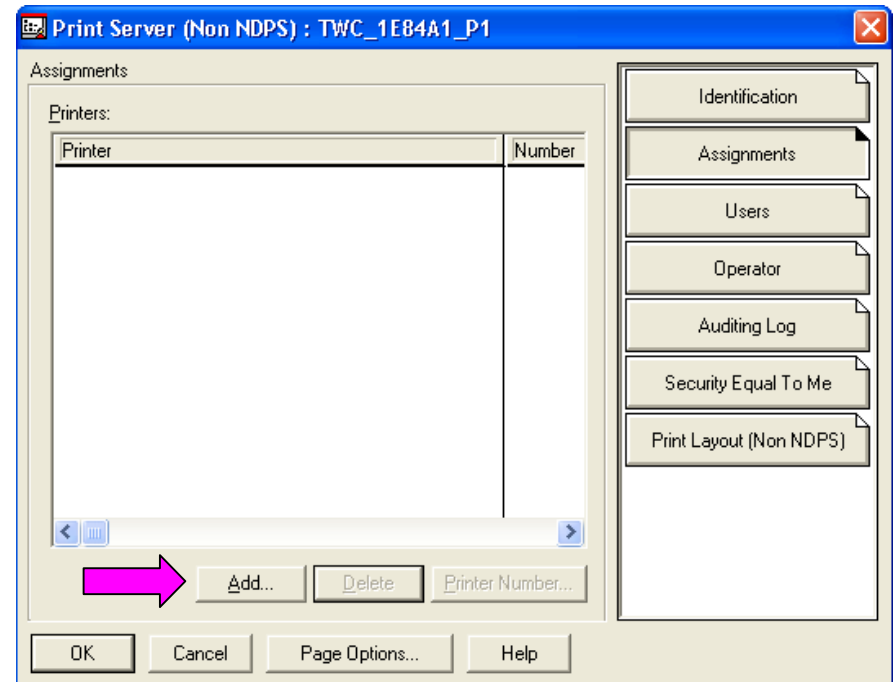
Adding Netware Print Queues in Queue Server Mode Using NWAdmin (cont.)

13. Change the context if necessary, and then select the printer created in Step 3. Click on **OK**, and then click on **OK** again.

14. Exit NWAdmin. You are now ready to use the print queue from a NetWare workstation.
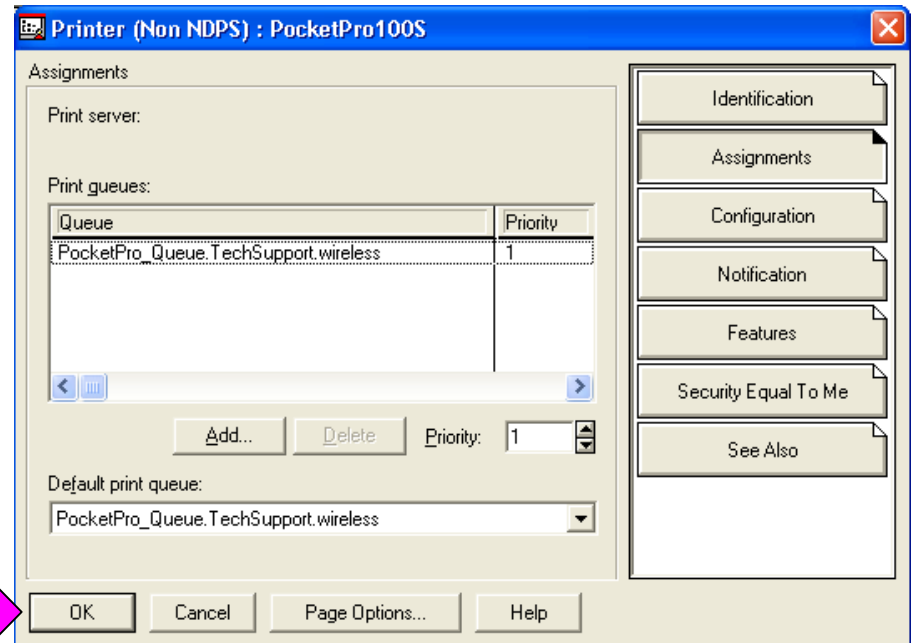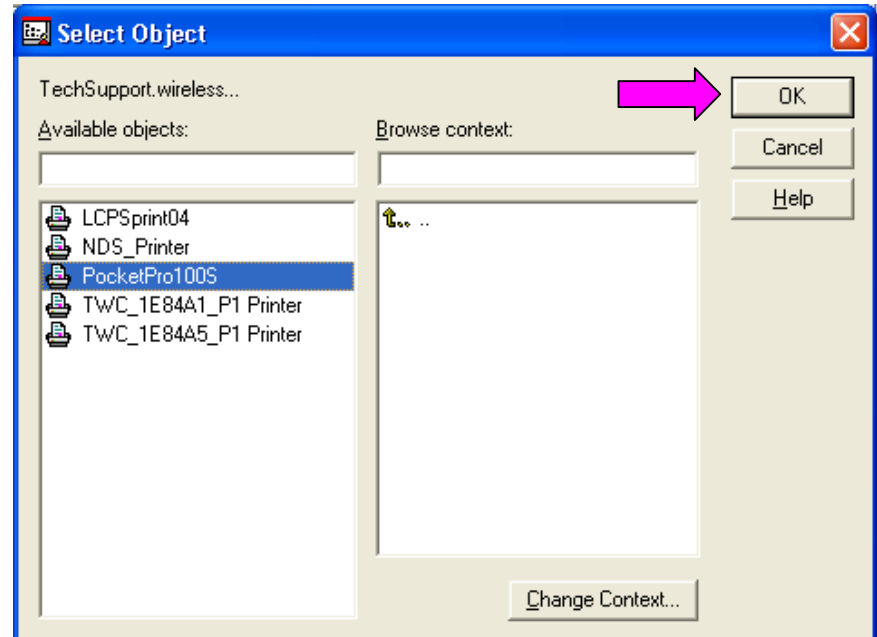
Configuring the Print Server and Print Queue Using NDPS

Novell Distributed Print Services (NDPS) is Novell's new method of handling printers. The biggest advantage of NDPS compared to the old queue server and remote printer methods is simpler configuration for the user. NDPS is currently implemented on NetWare 5 through the use of NetWare Loadable Modules (NLMs) known as gateways. The TROY PocketPro 100S is compatible with the Novell Gateway, which is included with the Novell NetWare 5 software and is also available as an option for NetWare 4.

Configuring the Print Server and Print Queue with the TROY Wireless Gateway

To configure a TROY print server with the TROY wireless gateway, you must first install the NDPS on the client workstation (use any NetWare client 2.2 or later CD-ROM and specify "Custom installation"). Then install the NDPS Broker and create an NDPS Manager (use the NetWare Administrator "Create" command and select the appropriate NDPS object).

1. Launch the NWAdmin utility (NetWare Administrator) and select the container where you want the printer object to reside. Click on **Object → Create…**
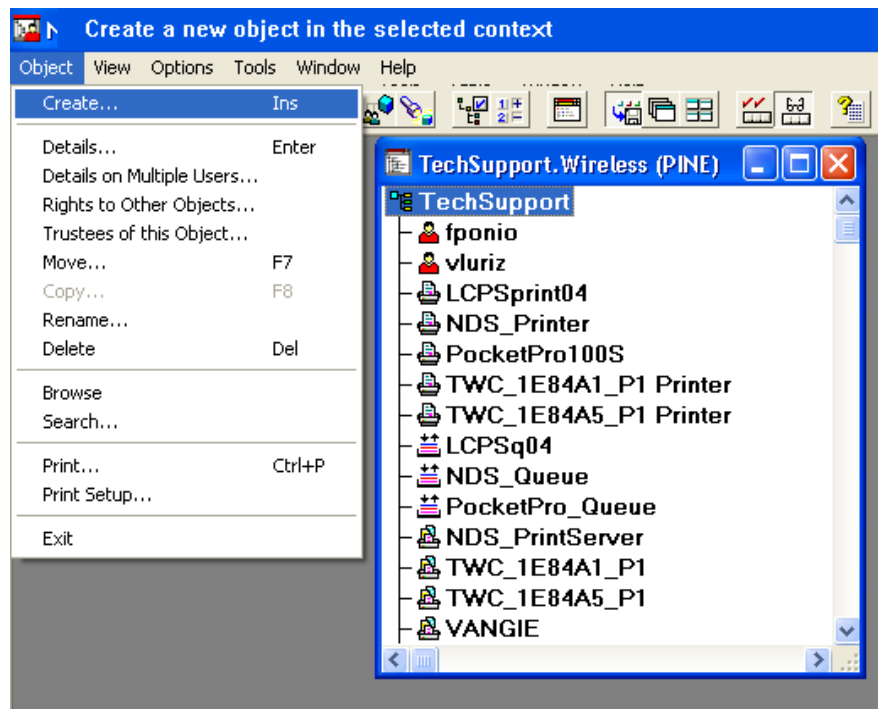
Configuring the Print Server and Print Queue with the TROY Wireless Gateway (cont.)

2. Select **NDPS Printer**, and then click on **OK**.
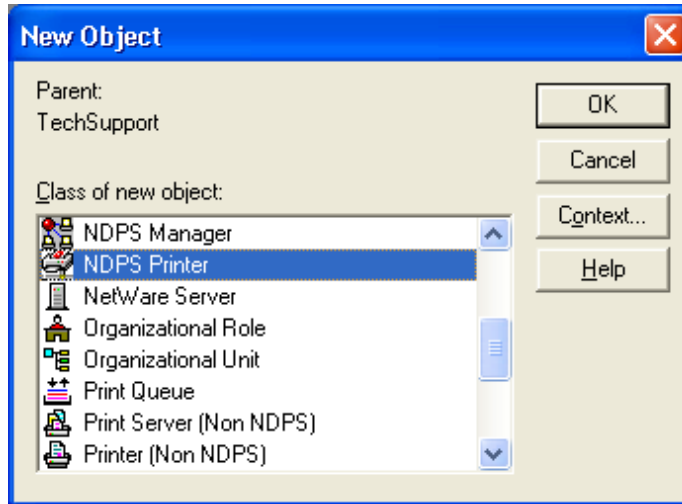
3. Enter the desired NDPS Printer Name, and select **Create a New Printer Agent** to create a new printer that will be using the TROY Wireless gateway. Click on **CREATE**.
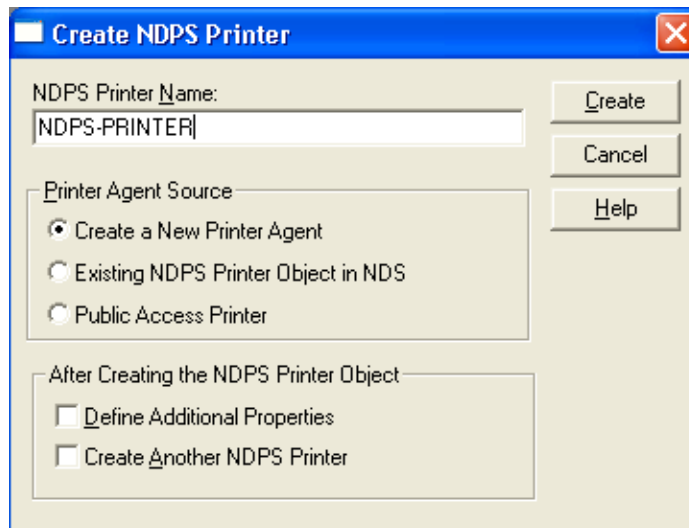
Configuring the Print Server and Print Queue with the TROY Wireless Gateway (cont.)

4. Verify the Printer Agent name, and then click on ⋯ to browse for the *NDPS manager*.   Select the NDPS Manager to use, and then click on **OK**.
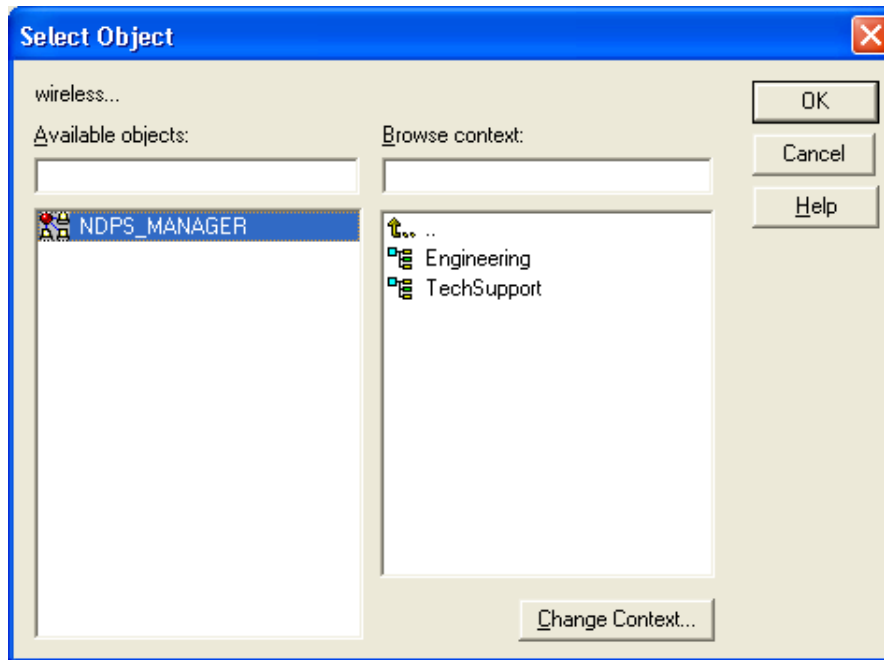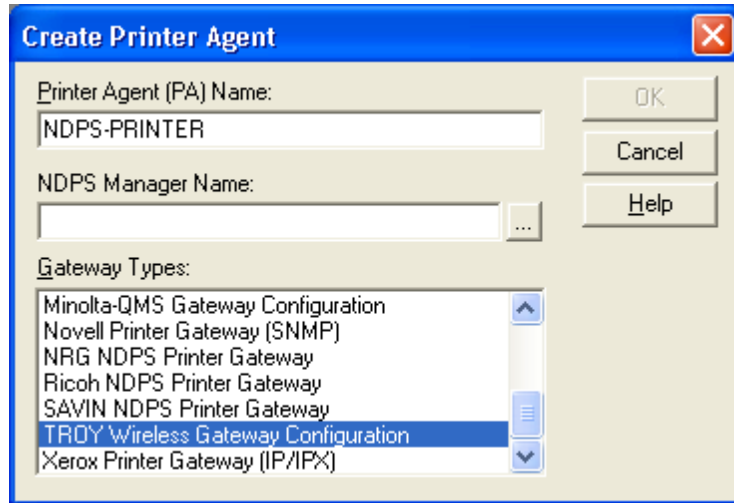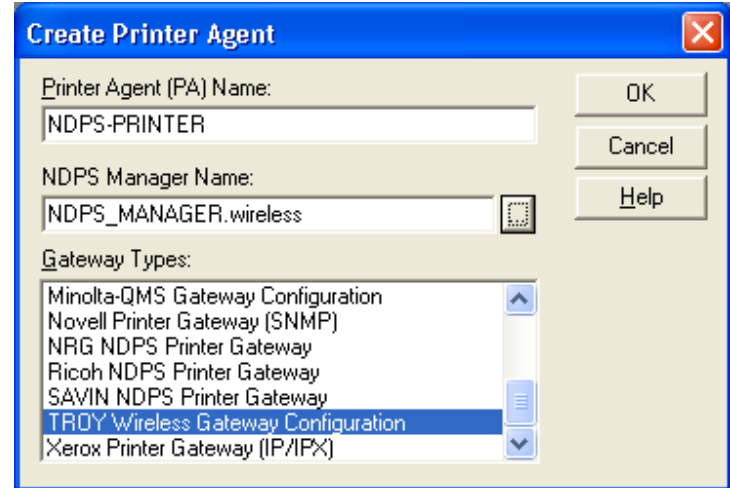
Configuring the Print Server and Print Queue with the TROY Wireless Gateway (cont.)

5. Select **TROY Wireless Gateway Configuration** as the gateway type, and then click on **OK**.
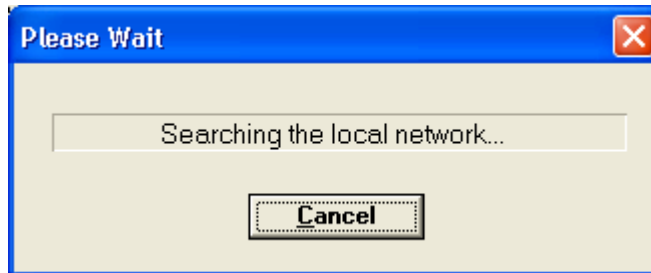
6. From the Search Setup, select **IP** and specify **Local Search**, and then click on **Find Now**.

   NOTE: **TROY recommends that you use IP if your NetWare server is configured to use IP. Alternatively, you can also use IPX.**

Configuring the Print Server and Print Queue with the TROY Wireless Gateway (cont.)

7. Locate your device (Pocket Pro 100S) from the print server list, select it, and then click on **Next.**
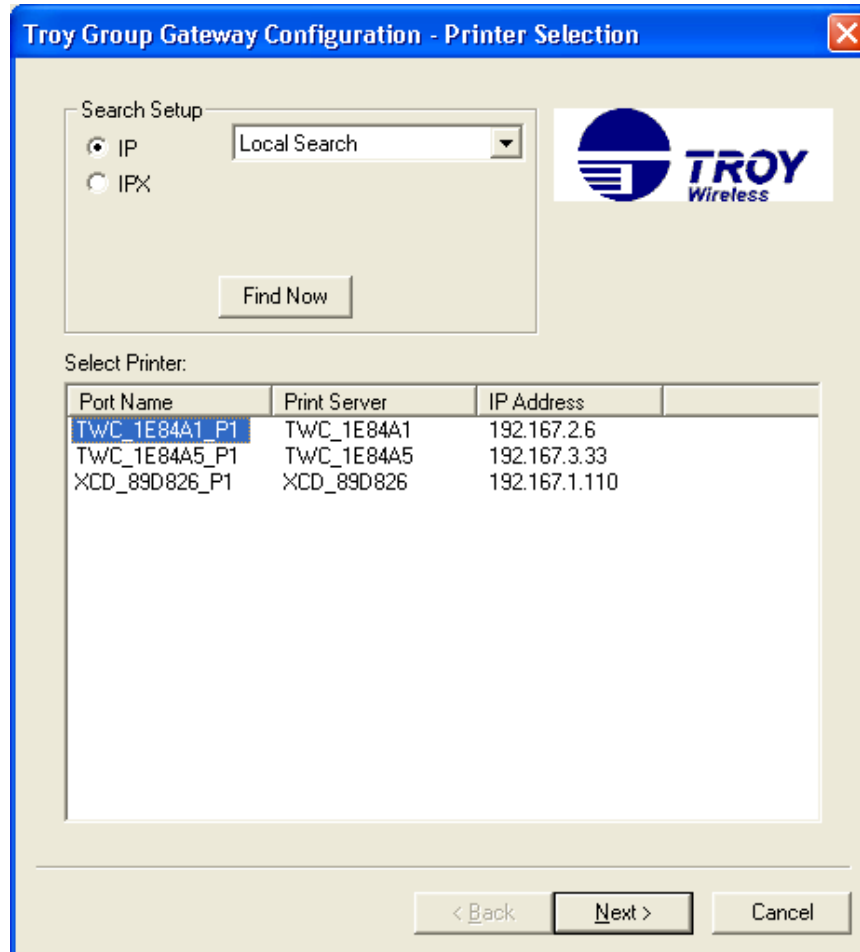
Configuring the Print Server and Print Queue with the TROY Wireless Gateway (cont.)

8. For the Printing Protocol, select **LPR**, then "**Print to IP Address**". Select the suitable *Printer Type*, and then click on **Finish**. Wait for the Printer Agent to finish loading.
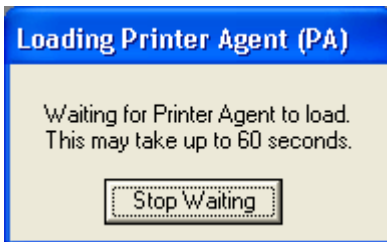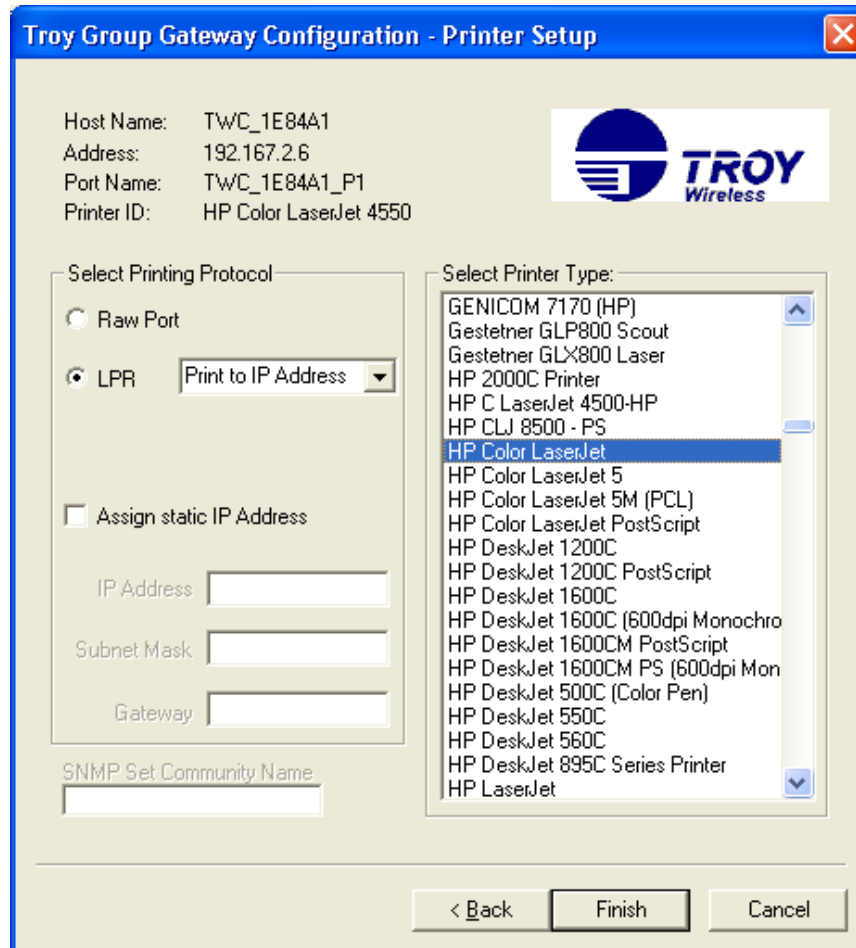
Configuring the Print Server and Print Queue with the TROY Wireless Gateway (cont.)

9. Click on the tab of the operating system that you are running and select the appropriate *Printer Driver*. Click on **Continue**.

   <u>NOTE</u>: **If you are running Windows XP, select the Windows 2000 Driver.**
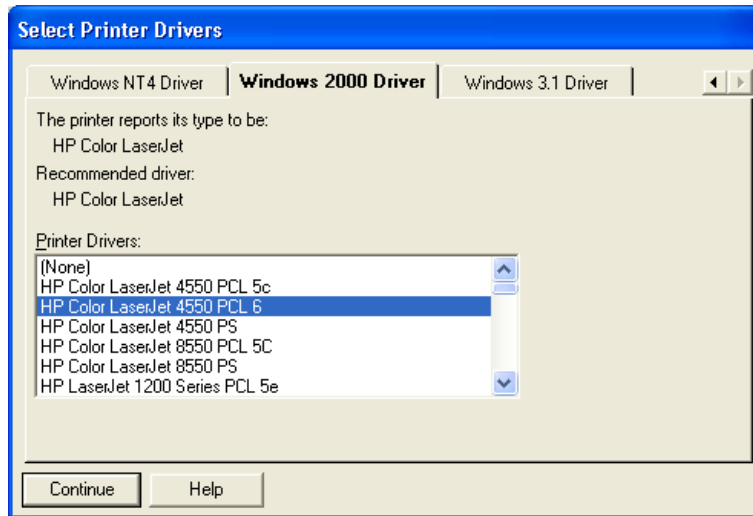
10. Verify the drivers were installed, and then click on **OK**. Wait for the Printer Object to be completely created.
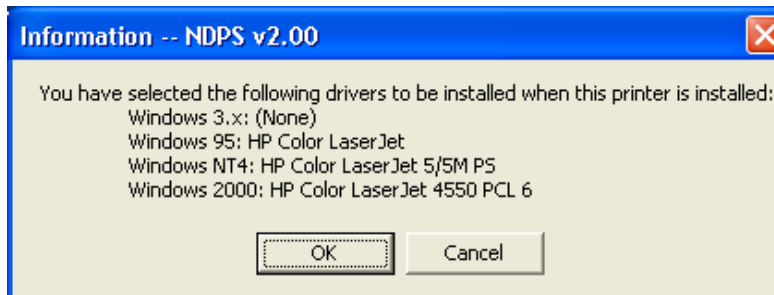
Configuring the Print Server and Print Queue with the TROY Wireless Gateway (cont.)

11. The newly created NDPS printer will be listed. You are now ready to use the print queue from a NetWare workstation.
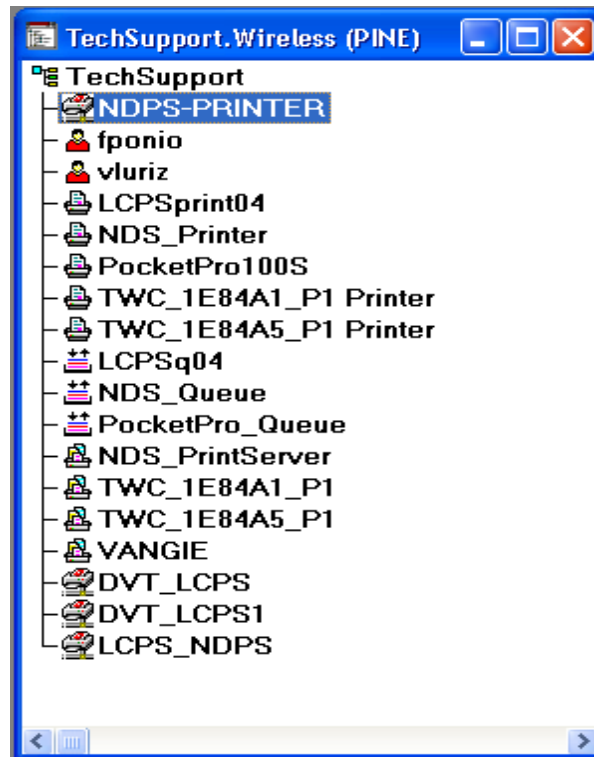
Configuring the Print Server and Print Queue with the Novell Gateway

To configure the TROY PocketPro 100S with the Novell gateway, you must first install the NDPS on the client workstation (use any NetWare client 2.2 or later CD-ROM and specify "Custom installation"). Then install the NDPS Broker and create an NDPS Manager (use the NetWare Administrator "Create" command and select the appropriate NDPS object).

Next you must create an NDPS Printer object (which emulates a Print Server NLM), and you must also configure the print server as a remote printer (NPRINTER) that is connected to this Printer Object. The print server can be configured using WebXAdmin or print server console (specify the Printer Object as the name of the Print Server NLM, and select any desired printer number for the TROY print server). Create the NDPS Printer as follows:

1. In the NetWare Administrator (NWAdmin), select the container where you want to put the printer object.
2. You will get the **Object** menu. Select **Create** to get the **New Object** dialog.
3. Select **NDPS Printer**.
4. Type in any name for the NDPS Printer.
5. Select **Create a New Printer Agent** to create a new printer that uses the Novell gateway and click **Create**.
6. Make sure that he **Printer Agent** name is correct, and then click on Browse to select the **NDPS manager**.
7. Select the **Novell Printer Gateway** as the **Gateway Type**.
8. Configure the **Connection type** as "Remote" and specify the Port type as Other.
9. In the PServer Emulation box, use the default SAP name (which should be the same as the name of the Printer Agent) and specify the printer number (this number must match the one that you configured in the TROY print server). Click "Next".
10. Click **Finish** to get the Select Printer Drivers dialog.
11. Select the printer driver for each operating system (Win3.1, Win9X, Windows 2000/XP, or Windows NT4.0).
12. Click **Continue** to finish this process.

You can then use the standard Windows 9X Add Printer utility to add the printer on any client workstation. Specify a Network Printer and then use then browse to find the Printer Agent that you just created. The driver will be automatically downloaded and you will be ready to print.

Adding a Printer in a Windows Workstation Using the NDPS Print Queue

Use the following steps to add a printer in a Windows 2000/XP workstation using the NDPS print queue.

1. Go to **START** → **PRINTERS and FAXES** (**START** → **SETTINGS** → **PRINTERS** on Windows 2000), and then click on **Add Printer**.
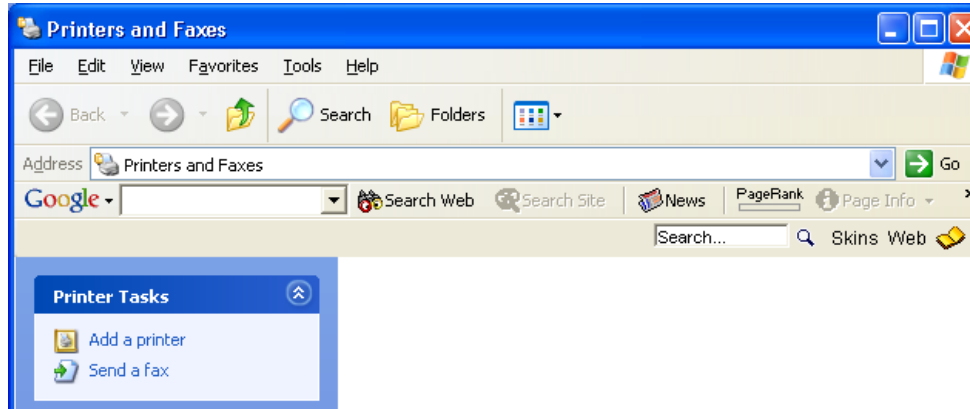
2. Click **Next** on the Welcome Window.
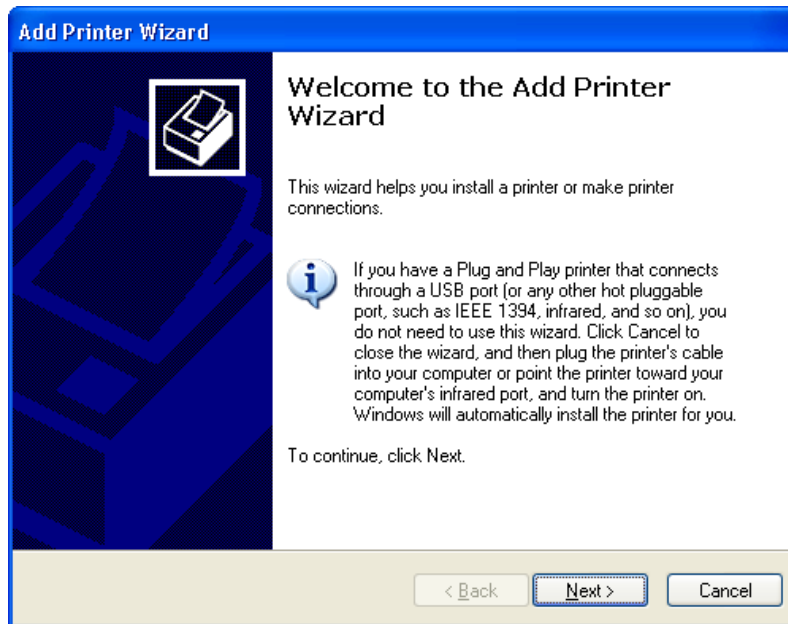
Adding a Printer in a Windows Workstation Using the NDPS Print Queue (cont.)

3. Select **A network printer, or a printer attached to another computer**, and then click on **Next**.

4. Select **Connect to this printer (or to browse for a printer, select this option and click Next):**, and then click on **Next**.

5. The search for printers will be initiated. When the process has finished, a list of network printers will be displayed. Go to **NDPS Printers → NDPS Controlled Access Printers,** and then locate the *NDPS printer* that you created earlier. Click on **Next**. Windows will automatically copy the driver files.
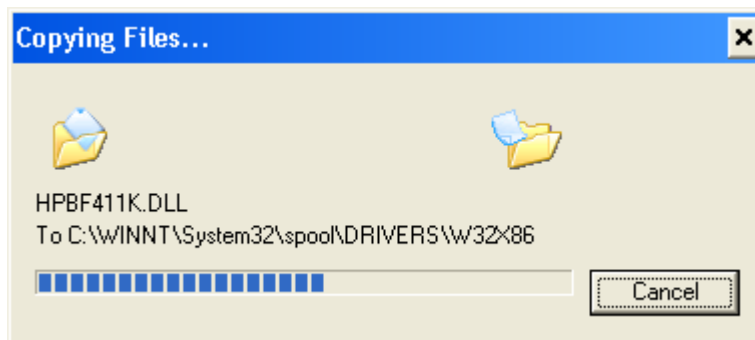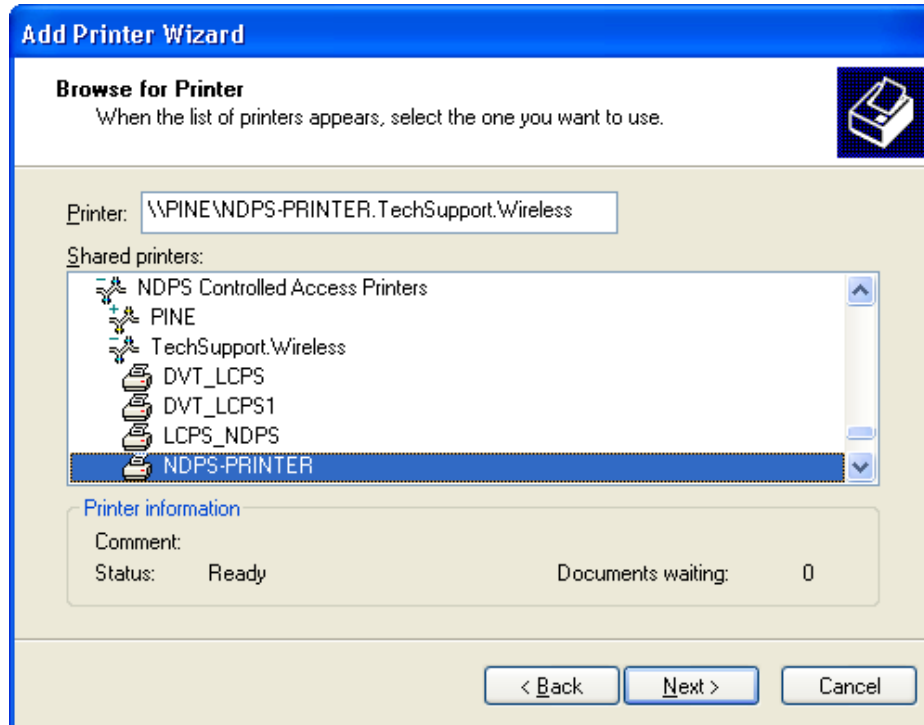
**Adding a Printer
in a Windows
Workstation
Using the NDPS
Print Queue**

6. Select **YES** if you would like this printer to be the default printer. Otherwise, just click on **Next**.
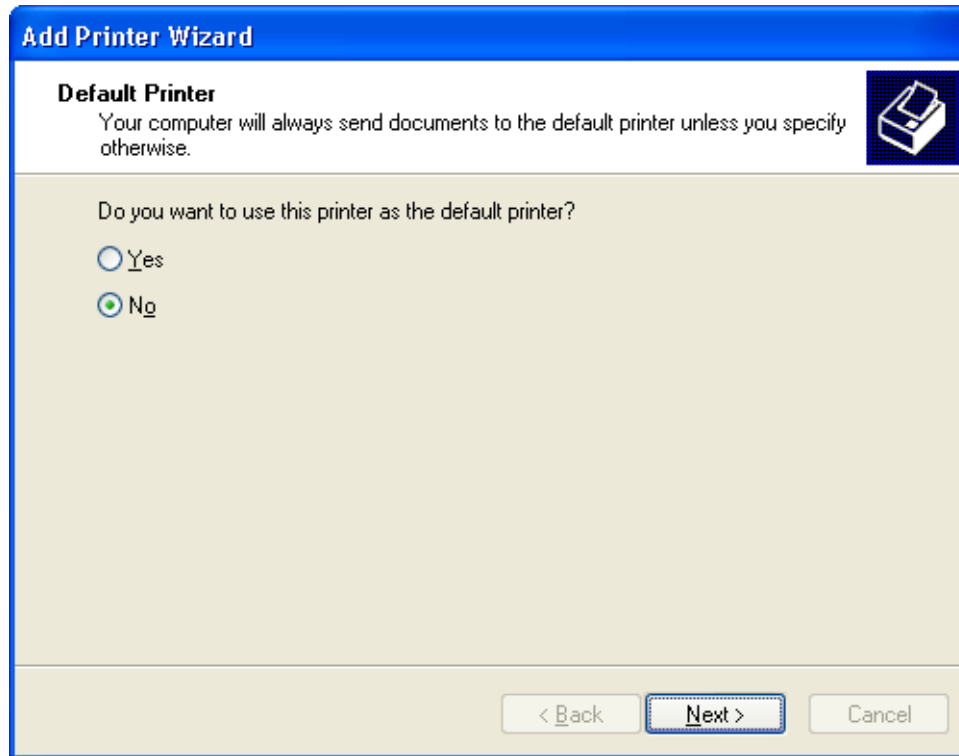
7. Complete the wizard by clicking on **Finish**. You will then see the printer you just created in your *Printers* folder.
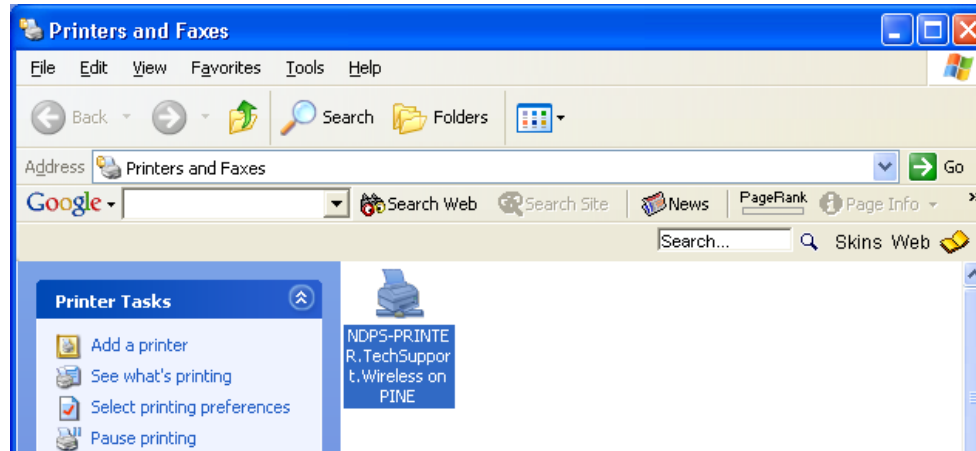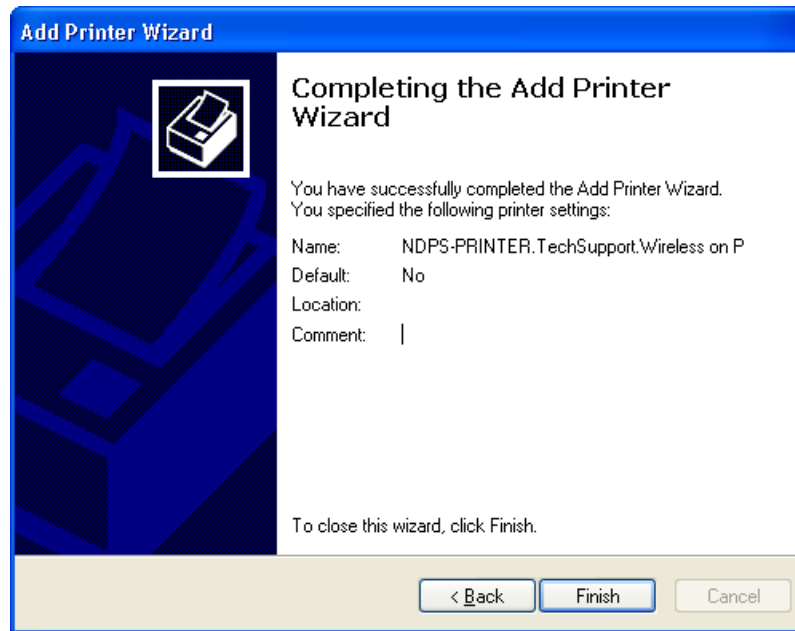
Configuring the Print Server and Print Queue in Remote Printer Mode

To configure the TROY PocketPro 100S for remote printer mode, two basic steps are required. First, you must use Novell's NWAdmin or PCONSOLE to add the print queue to the NetWare server. Then you must configure the print server for remote printer operation using ExtendView, XAdmin32, WebXAdmin, JetAdmin, or the print server console.

NOTE: You cannot configure both Queue Server and Remote Printer mode on the same print server port.

To configure the TROY Pocket Pro100S print server for remote printer mode using NWAdmin in Windows 2000/XP, perform the following steps:

Configuring the Print Server for Remote Printer Mode Using NWAdmin

1. Start NWAdmin and select the desired Container Object that will contain the new print server. Select **Object** → **Create** to create a print server.
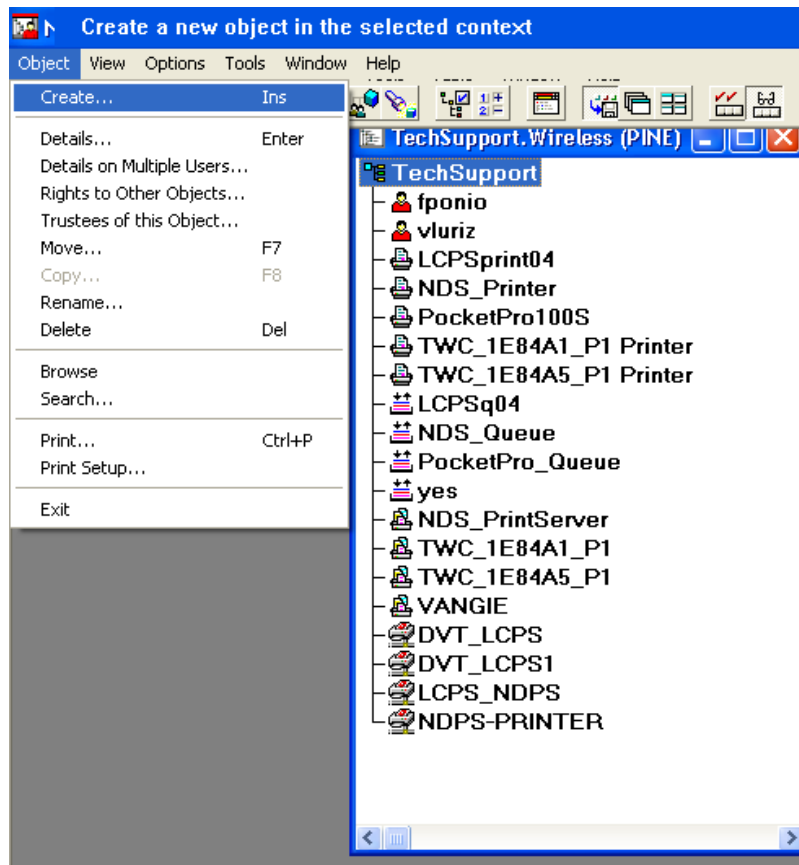
Configuring the Print Server for Remote Printer Mode Using NWAdmin (cont.)

2. When you get the New Object menu, select **Print Server (Non-NDPS)** and then **OK**.
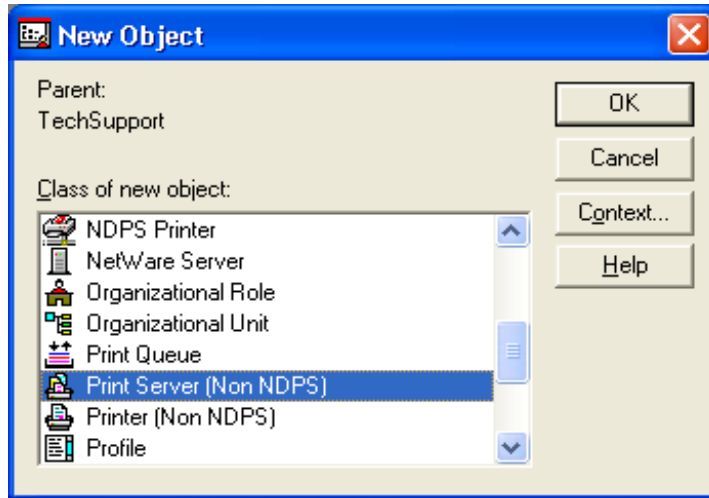
3. Enter the name of the Print Server, and then click on **Create**. The new Print Server will be listed.
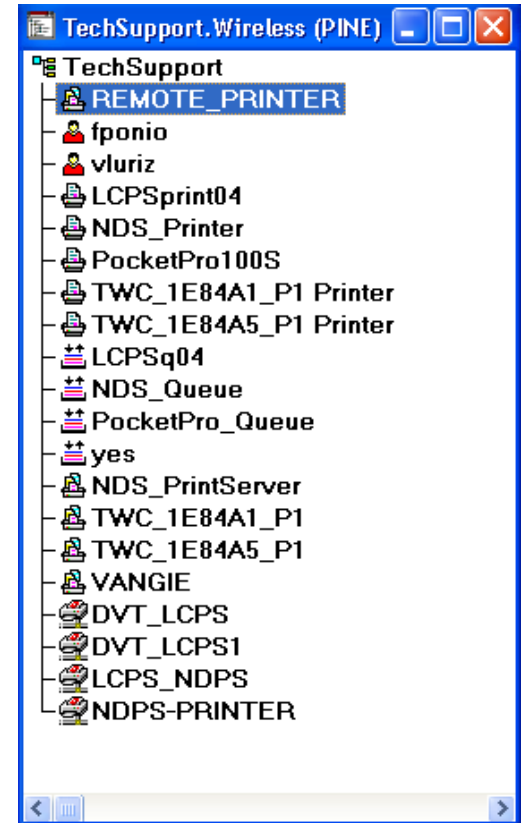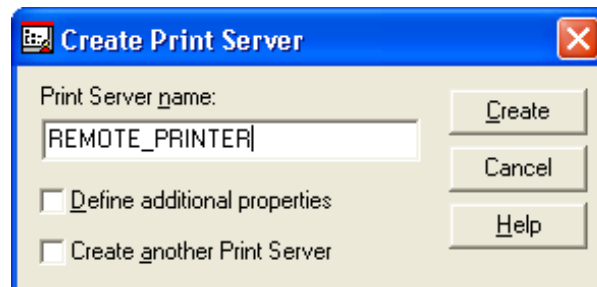
Configuring the Print Server for Remote Printer Mode Using NWAdmin (cont.)

4. Load the PSERVER NLM (NetWare Loadable Module) on your NetWare file server, and make sure that you select the Print Server that you created earlier. Verify that your PServer NLM is "running".

5. In NWAdmin, select the desired Container Object (Organizational Unit) that will contain the new printer, and then click on **Object → Create**.

6. When you get the New Object menu, select **Printer (Non-NDPS)**, and then click on **OK**.
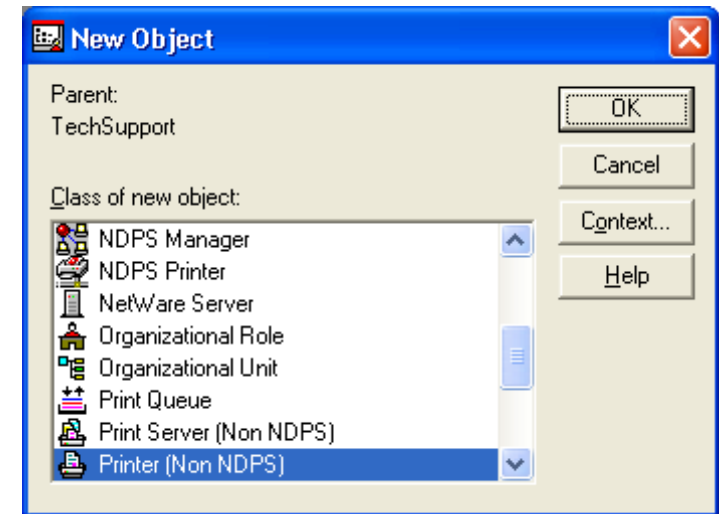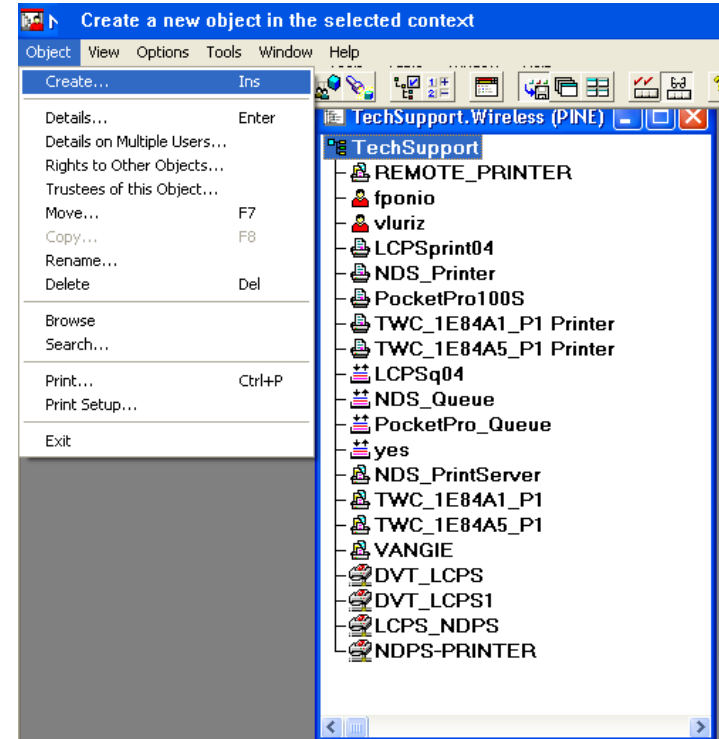
7. Enter the name of the printer, and the click on **Create**.
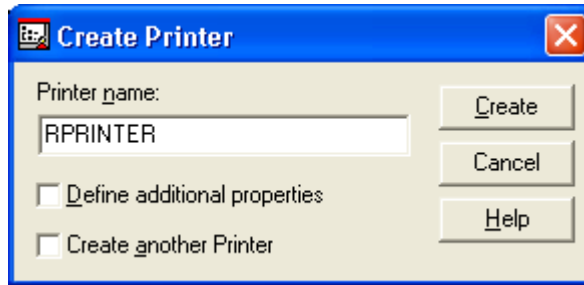
8. Double-click on the name of your PSERVER NLM (Print Server). Click on **Assignments**, and then click on **ADD…**
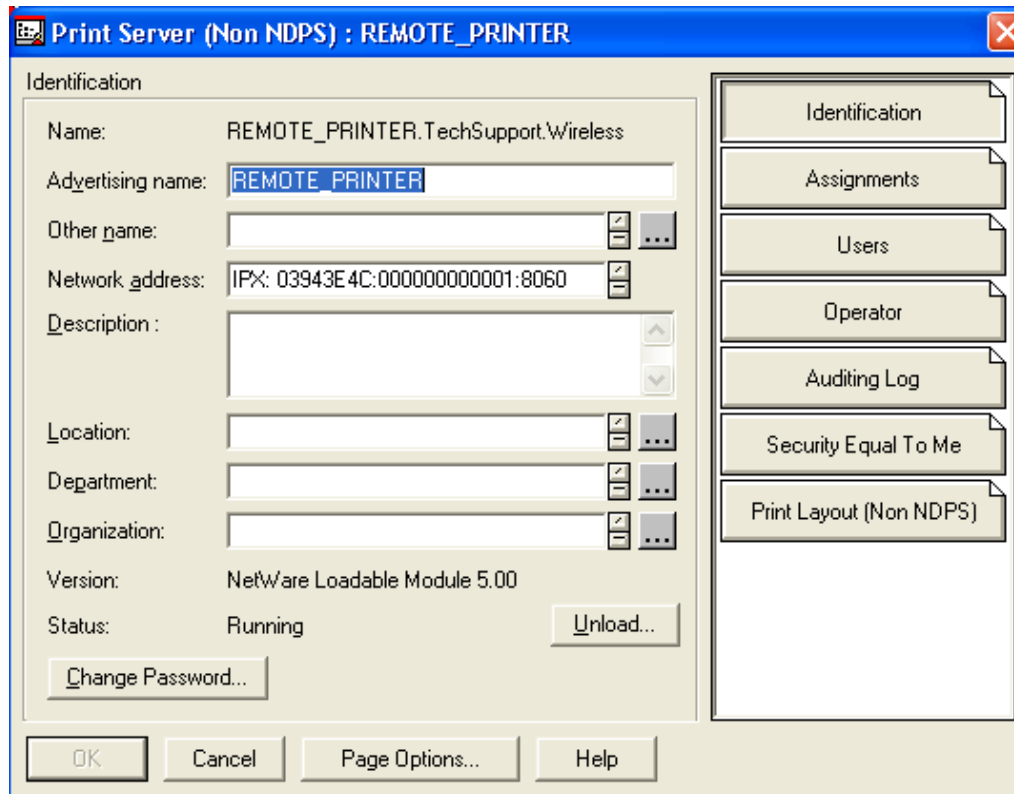
Configuring the Print Server for Remote Printer Mode Using NWAdmin (cont.)
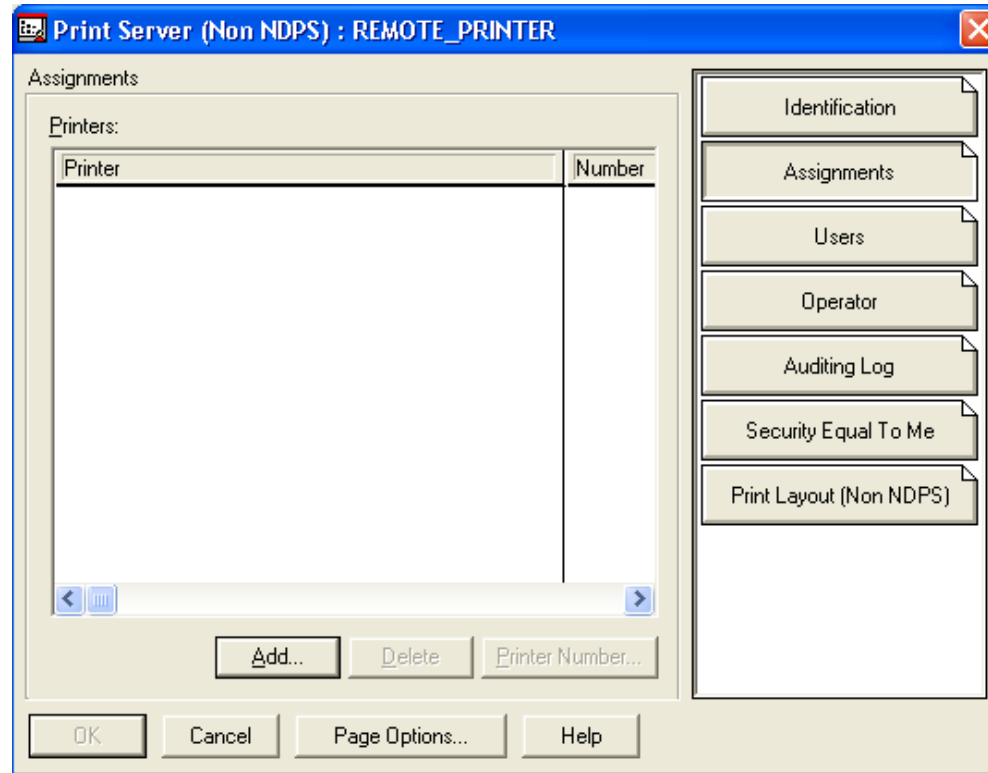
Configuring the Print Server for Remote Printer Mode Using NWAdmin (cont.)

9. If necessary, change the directory context. Select the printer you created, and then click on **OK**.
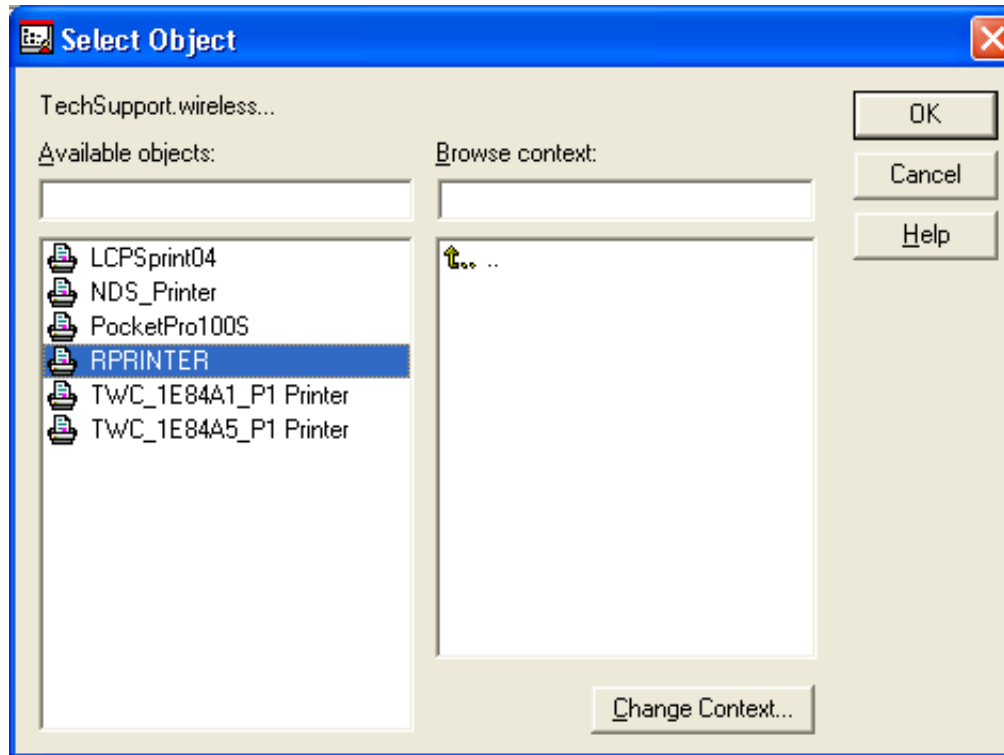
10. Note the number of the printer, as you will use this later, and then click on **OK**.

NOTE: You may also assign another printer number. Select the printer, and then click on Printer Number. Enter the desired printer number and click on OK.
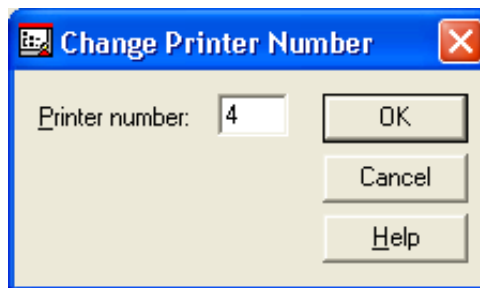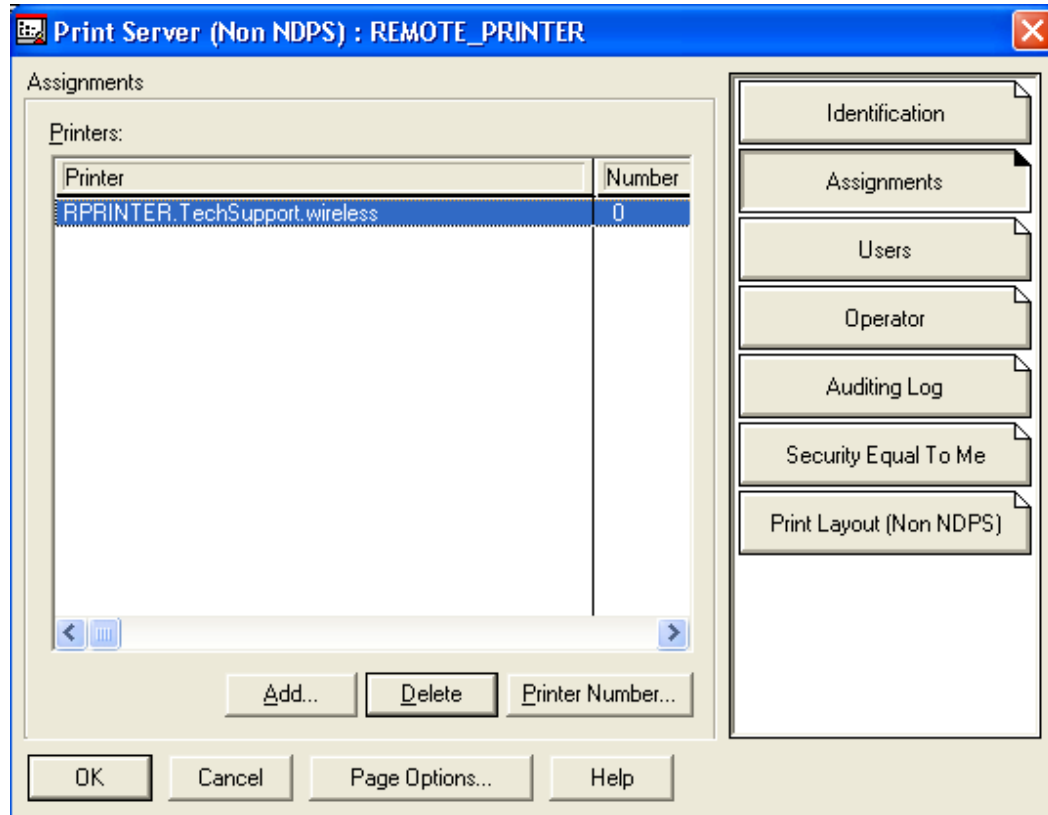
Configuring the Print Server for Remote Printer Mode Using NWAdmin (cont.)

11. Verify the new printer number, and then click on **OK**.
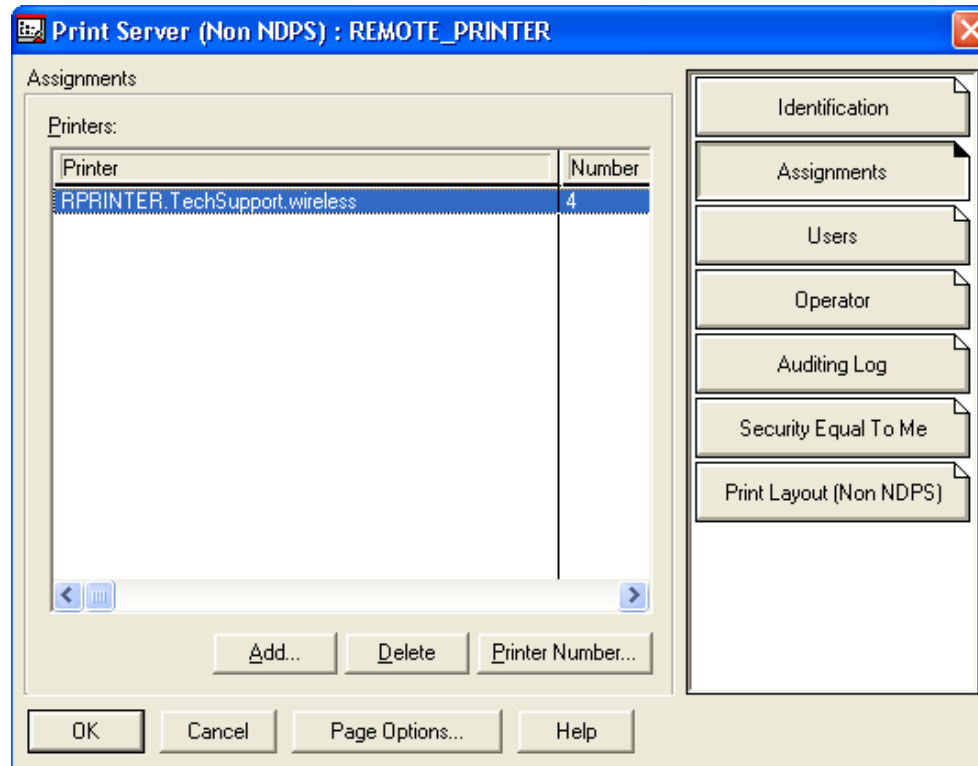
Configuring the Print Server for Remote Printer Mode Using NWAdmin (cont.)

12. Select the desired Container Object (Organizational Unit) that will contain the default print queue, and then click on **Object** → **Create** to get the **New Object** menu.
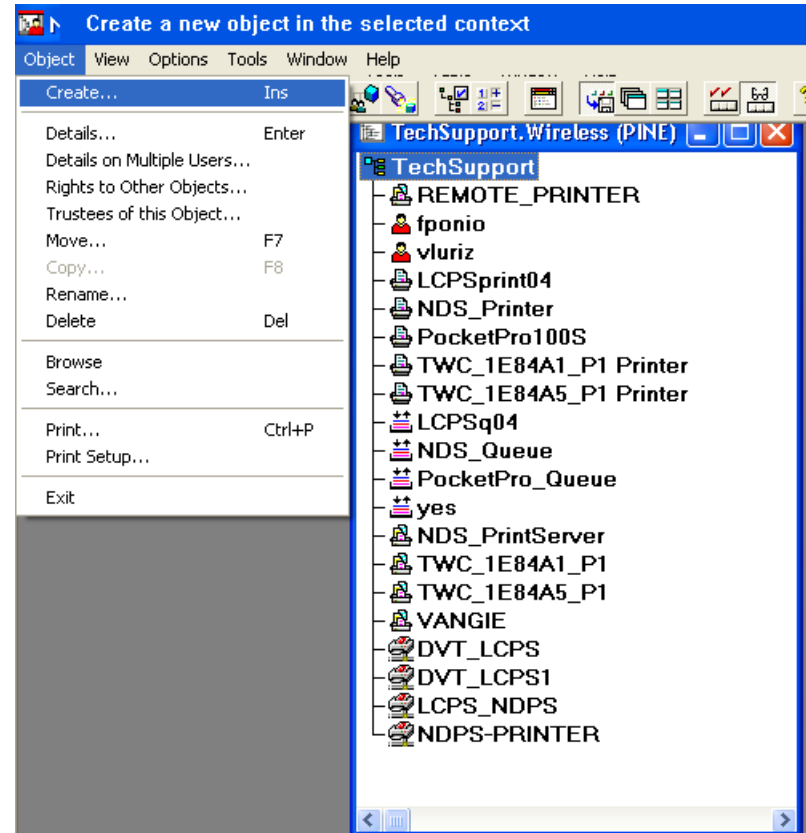
13. Select **Print Queue**, and then click on **OK**.
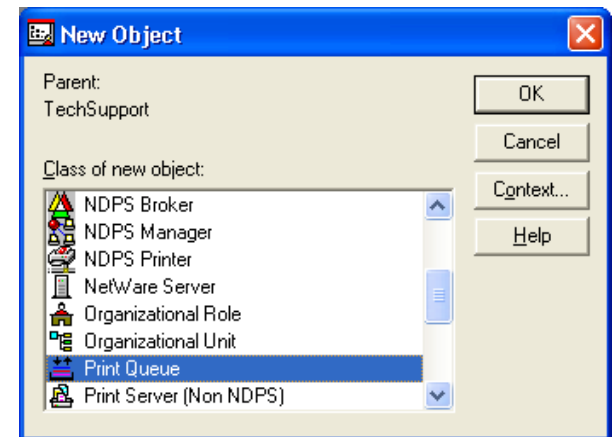
14. Make sure that **Directory Service Queue** is selected, and then type in a name for the default print queue.
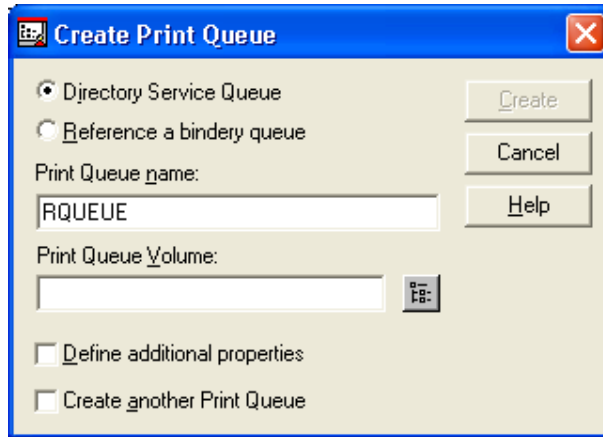
15. Click on the [icon] button to select the print queue volume. Change the directory context if necessary, select the desired volume (**Objects**), and then click on **OK**.
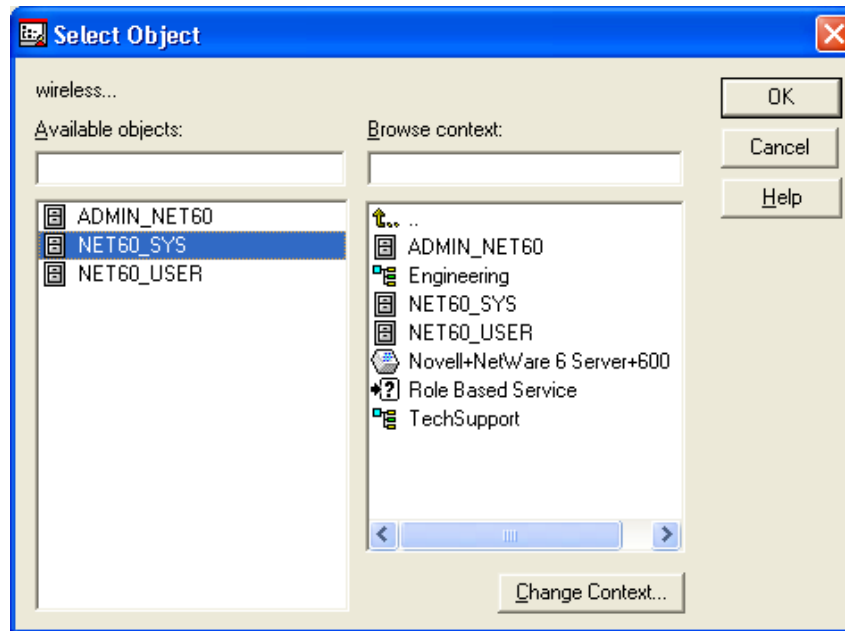
16. Verify the print queue settings, and then click on **Create** to create the print queue.
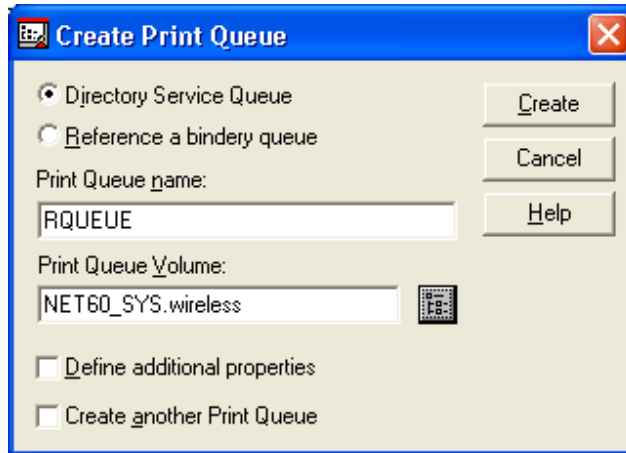
17. Double-click on the name of the printer you created previously, click on **Assignments**, and click on **ADD**.
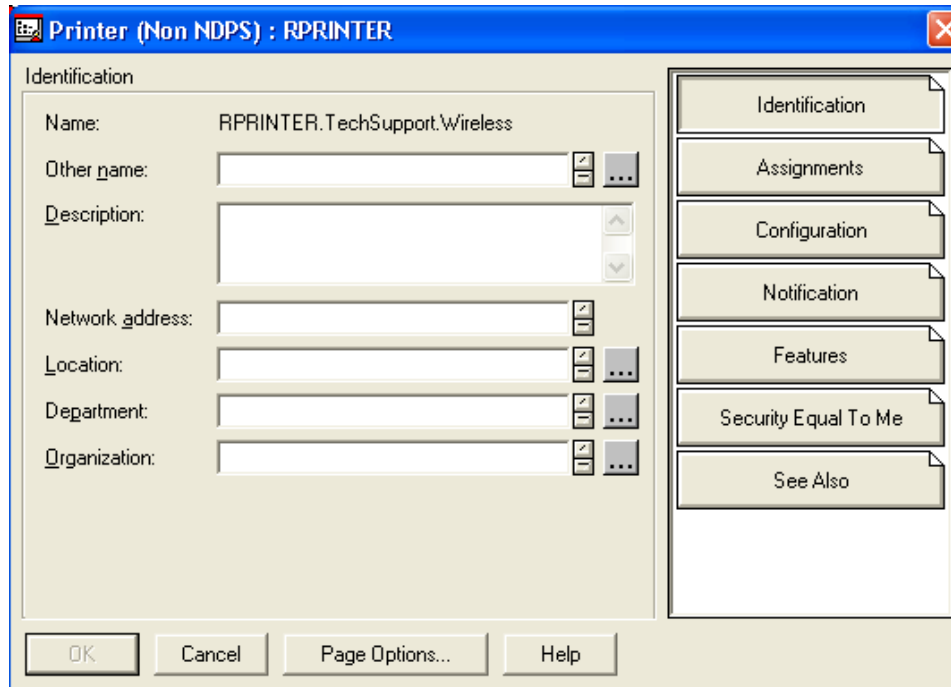
Configuring the Print Server for Remote Printer Mode Using NWAdmin (cont.)
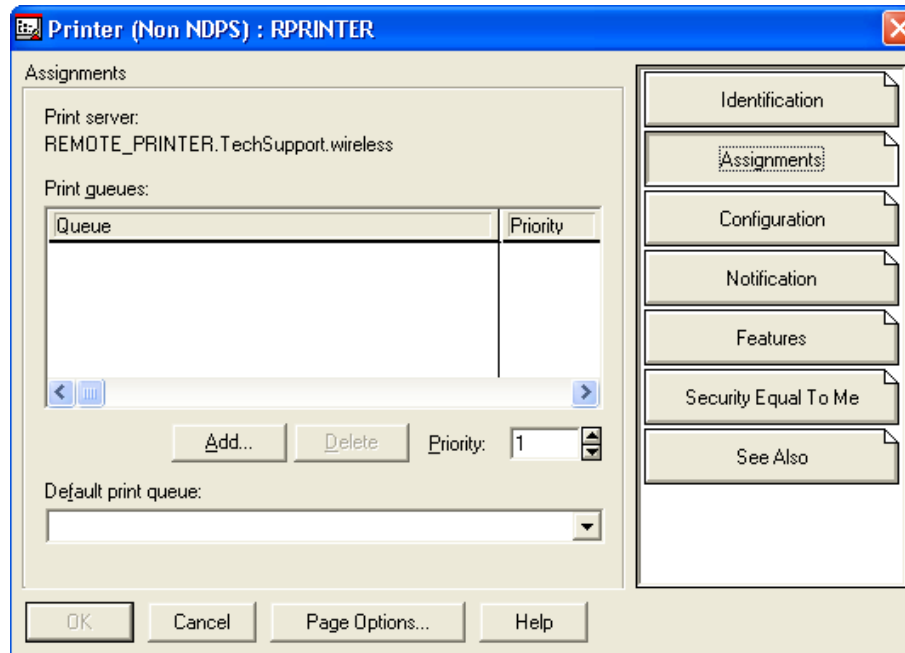
18. Change context if necessary, select the print queue you created earlier, and then click on **OK**.
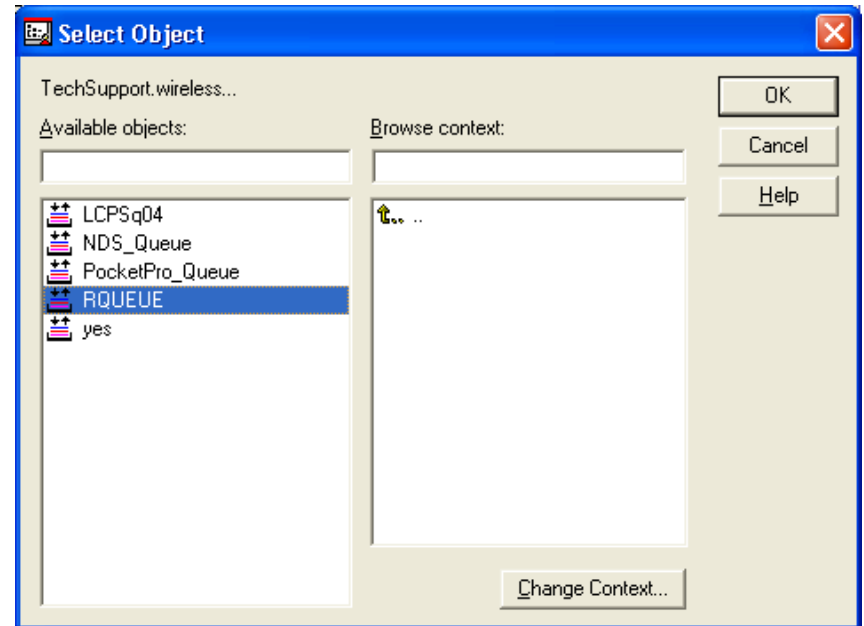
19. Verify the print queue name, and then click on **OK**.
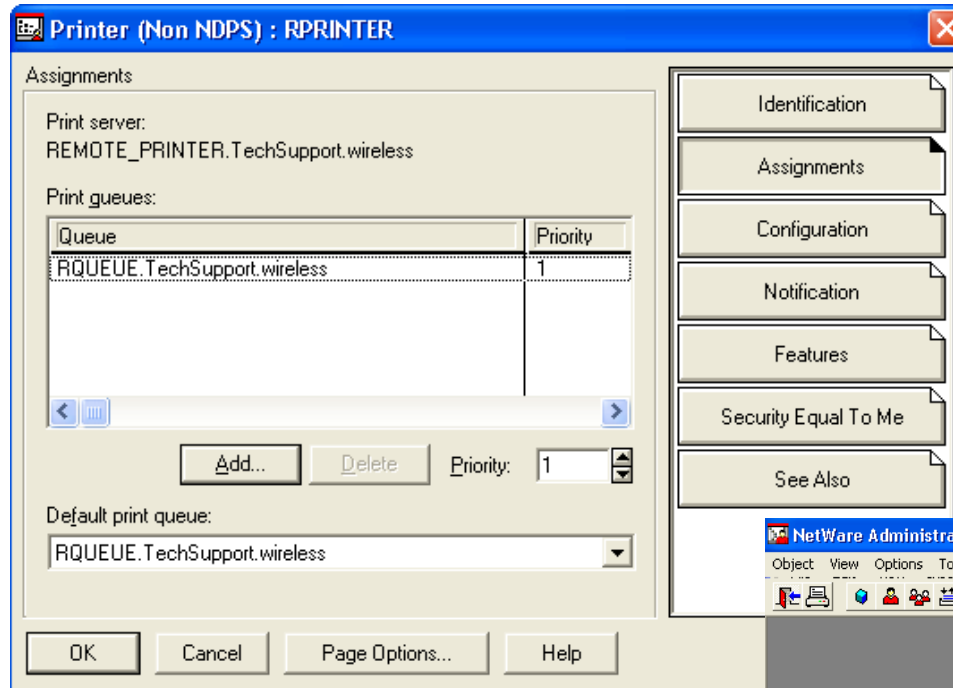
20. Exit NwAdmin by clicking on **Object → Exit**.
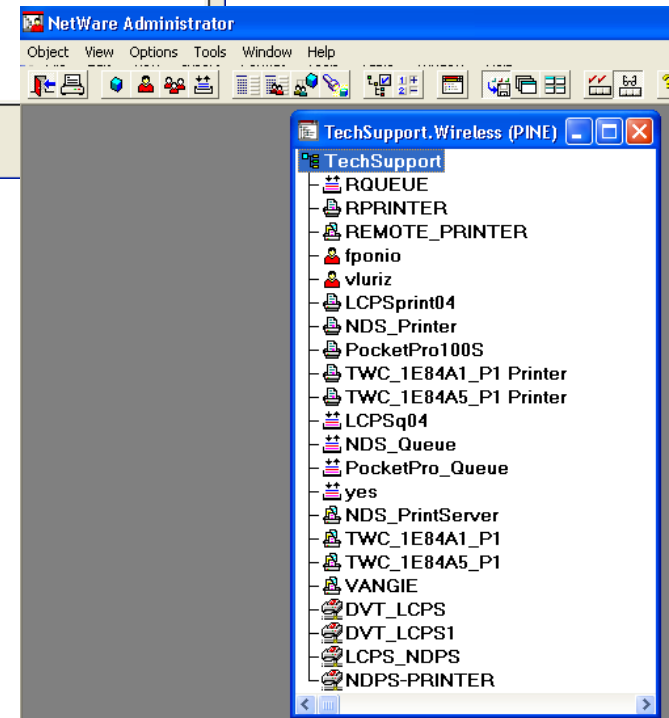
Configuring the Print Server for Remote Printer Mode Using ExtendView

To configure the TROY Pocket Pro100S print server for remote printer mode using ExtendView in Windows 2000/XP, perform the following steps:

1. Launch the ExtendView utility and locate your Pocket Pro 100S using either its serial number or Ethernet address. If it is not listed, click on the button to refresh the list.
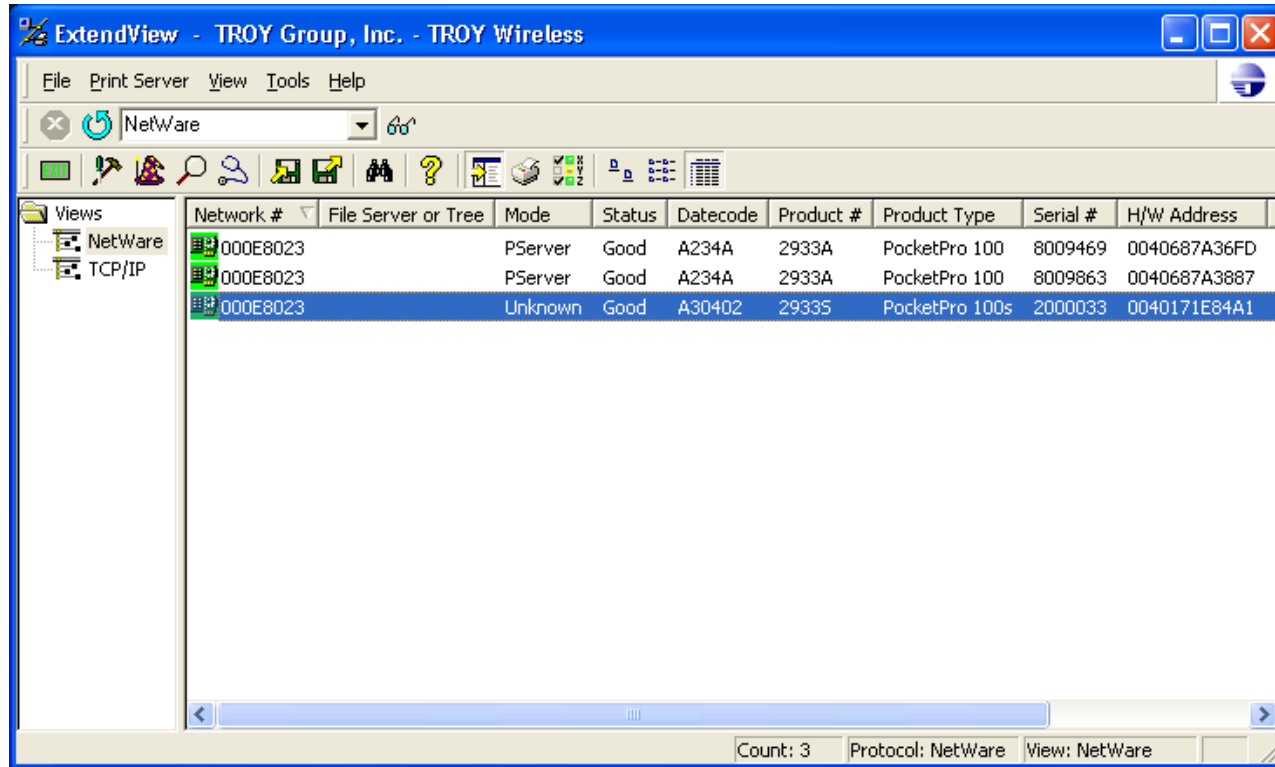
2. Right-click on your TROY print server, and then click on **Configuration**.
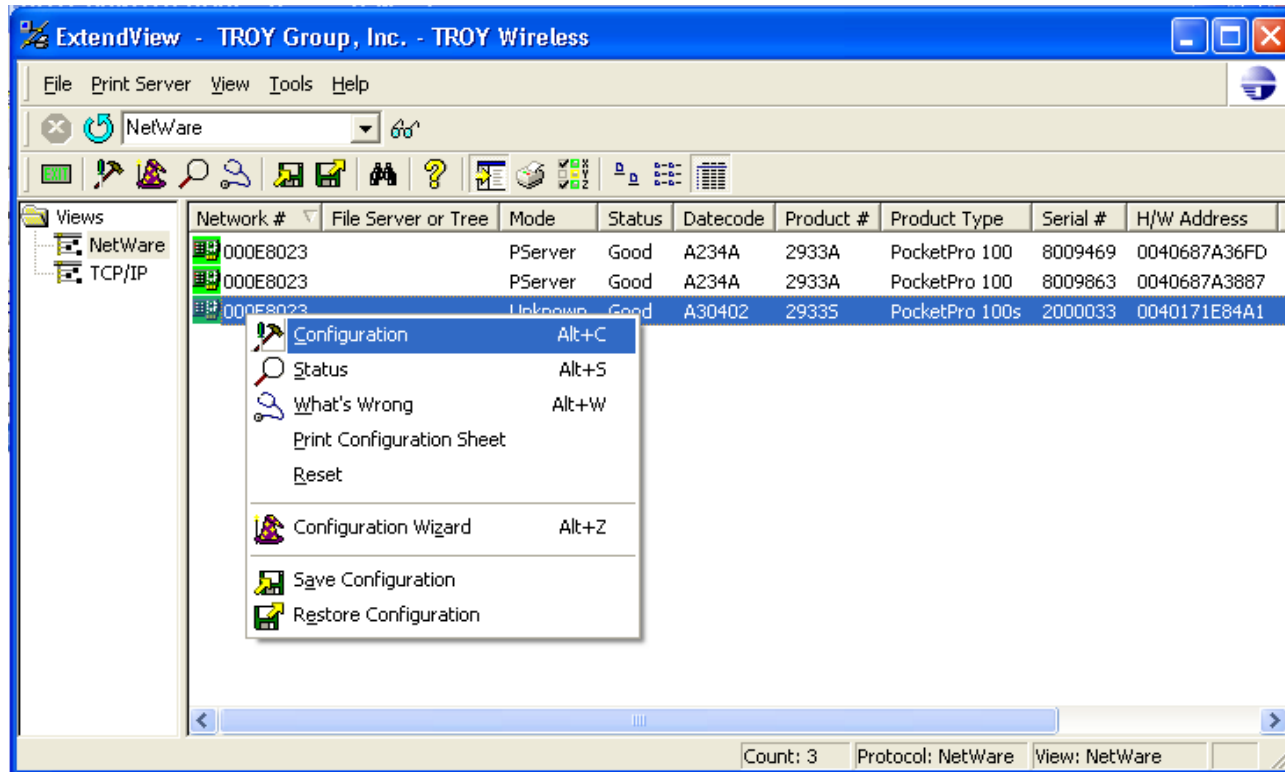
Configuring the Print Server for Remote Printer Mode Using ExtendView (cont.)

3. Click on the **NetWare** tab, select **RPrinter (Bindery)**, and then enter the printer number created in Step 7 of NWAdmin configuration in the previous section.
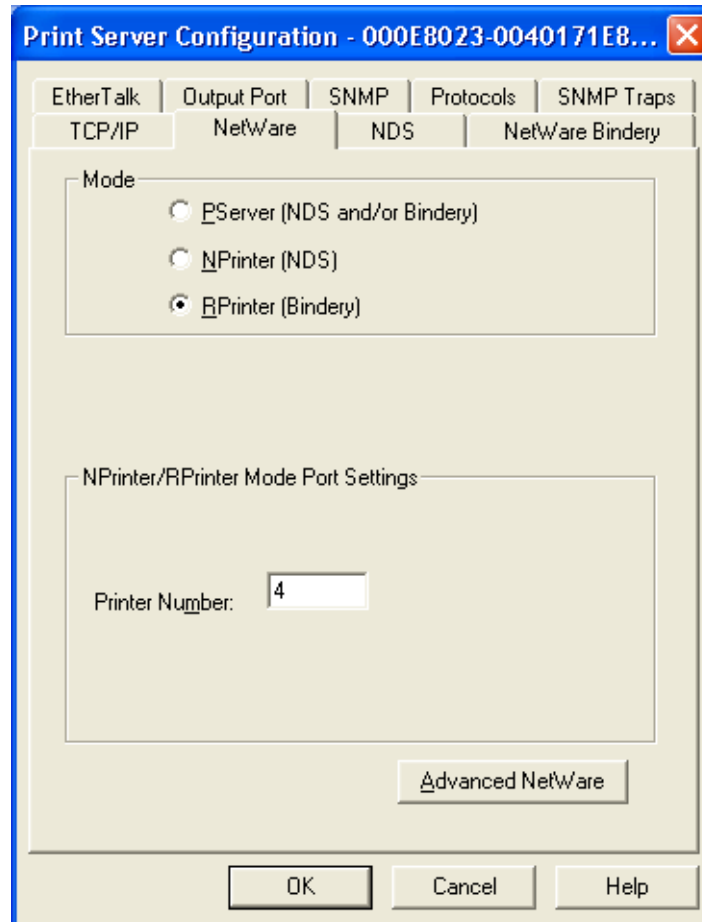
Configuring the Print Server for Remote Printer Mode Using ExtendView (cont.)

4. Click on the **NetWare Bindery** tab, type in the PSERVER NLM's name as the **Print Server Name**, and then click on **OK**.
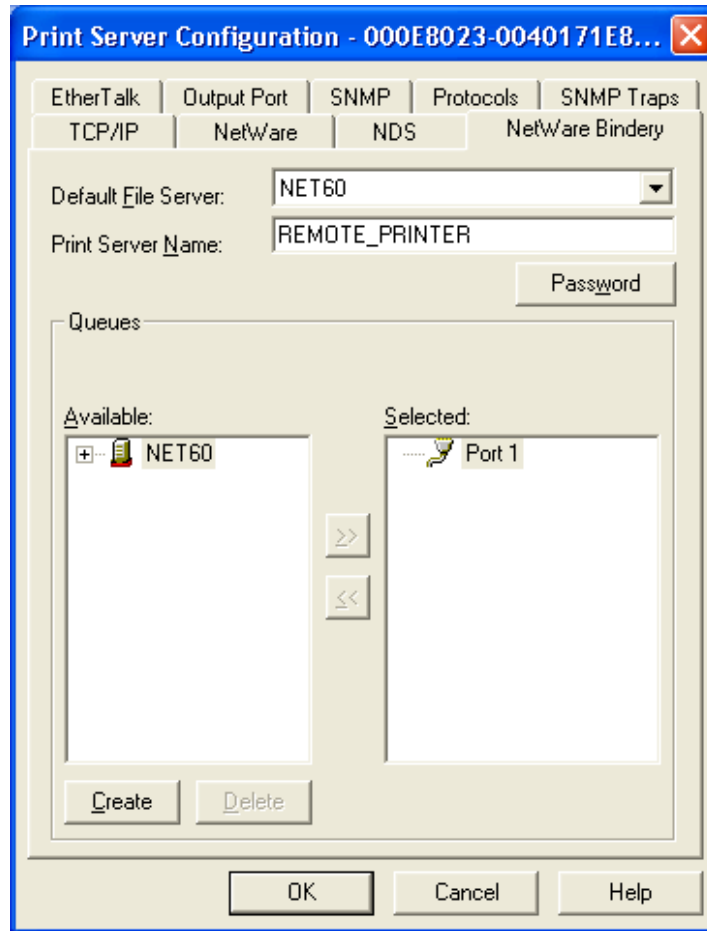
5. Click on **OK** to save changes and reset the TROY print server. Exit the ExtendView utility.

6. You must now unload the PSERVER NLM from your NetWare file server console, and then reload it in order for the changes to take effect.
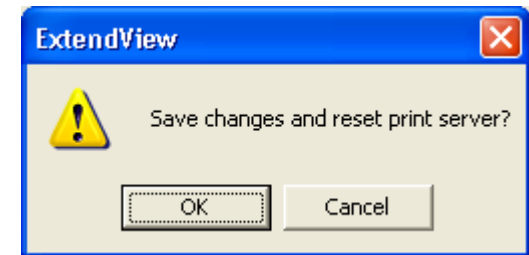
Configuring the Print Server and Print Queue Using NWAdmin, WebXAdmin, or JetAdmin (NDS Remote Printer Mode)

To configure the TROY PocketPro 100S for remote printer mode with NWADMIN (NetWare Administrator utility) and WebXAdmin, or JetAdmin, perform the following steps:

1. Make sure that the PSERVER NLM (NetWare Loadable Module) is loaded on your file server and that you are logged in as ADMIN in NDS mode on the NetWare 4.xx or later file server.

2. Start NWADMIN by double clicking on the icon. Select the desired Container Object (Organizational Unit) that will contain the new printer.

3. Select **Object** from the menu bar and then **Create**. When you get the **New Object** menu, select **Printer**, and then click on **OK**.

4. Enter the name of the printer, and then select **Create**.

5. Double-click on the name of your PSERVER NLM. Click on **Assignments**, and then click on **Add...**

6. If necessary, change the directory context. Select the printer you created, and then click on **OK**. Note the number of the printer, as you will use this later, and then click on **OK**.

7. Select the desired Container Object (Organizational Unit) that will contain the default print queue, and then click on **Object** and **Create** to get **New Object** menu.

8. Select **Print Queue**, and then **OK**. Make sure that **Directory Service Queue** is selected, and then type in a name for the default print queue.

9. Click on the button to select the print queue volume. Change the directory context if necessary, select the desired volume **(Objects)**, and then click on **OK**. Click on **Create** to create the print queue.

10. Change context if required, and then double-click the name of the printer you created previously.

11. Click on **Assignments**, and then click on **Add..**

12. Change context if necessary, and select the print queue you created. Click **OK** twice, and exit NWADMIN.

Configuring the Print Server and Print Queue Using NWAdmin, WebXAdmin, or JetAdmin (cont.)

13. Select the print server and service that you wish to configure:

   - If you are using WebXAdmin, start your web browser, enter the IP address of the print server as the destination address, and then push **ENTER** or **RETURN**. Click on **Configure NetWare**, and then click on the Enabled Service to configure the print server (the default service names are listed in the *Default Print Server Names* section at the beginning of this chapter).

   - If you are using JetAdmin, one TROY print server NetWare service will show up in the list of printers (the default service name is listed in the *Default Print Server Names* section at the beginning of this chapter; note that JetAdmin supports a maximum of three ports per print server). Click on the service to configure, go to the menu bar and select **Device**, and then select **Modify**. Click on **Next**, and then select **Operating Mode**.

14. Select the Remote Printer as the **Operating Mode**, enter the name of your PSERVER NLM as the **Print Server Name**, and select the number of the printer from step 6 as the **Printer Numbe**r (XAdmin32 and JetAdmin allow you to choose from a list of available print server NLMs rather than typing in the name).

15. If you have JetAdmin, click **Next** two times, and click on **Finish**. If you have WebXAdmin, click **Submit**.

16. Exit the configuration utility. You must now unload the PSERVER NLM from your NetWare file server console and then reload it in order for the changes to take effect.

Configuring the Print Server and Print Queue Using PCONSOLE and XCONFIG (Remote Printer Mode)

To configure the TROY PocketPro 100S for remote printer mode operation using PCONSOLE and XCONFIG, perform the following steps:

1. Make sure that the PSERVER NLM (NetWare Loadable Module) is loaded on your file server.

2. Log into the file server from your PC workstation as ADMIN if you are using NetWare 4.xx (if you want NDS support, do not login under bindery mode). If using NetWare 2.XX or 3.xx, login as SUPERVISOR.

3. Run the PCONSOLE utility from your PC workstation.

4. If you are creating a new print queue, select **Print Queue Information** (NetWare 3.xx) or **Print Queues** (NetWare 4.xx) from the **Available Options** menu. Press **INSERT**, type in the desired print queue name (with NetWare 4.xx, you will also be asked for a volume name; press **INSERT** and select the appropriate volume), and press **ESCAPE** to return to the main menu.

Configuring the Print Server and Print Queue Using PCONSOLE and XCONFIG (cont.)

The following steps apply to configuring a remote printer with NDS support on NetWare 6.xx systems:

a. Select **Print Servers** from the PCONSOLE menu, and then select the name of the PSERVER NLM on your host computer.

b. Select **Printers.**

c. Press **INSERT** to get **Object, Class** menu.

d. Press **INSERT** and enter the **Printer Name** (any unique name is OK).

e. Highlight the printer name and press **ENTER** twice to get **Printer Configuration Menu.**

f. PCONSOLE will assign a **Printer Number**. Remember this number, since it will be used later.

g. Highlight **Print Queues Assigned** and press **ENTER** and then **INSERT** to get a list of available queues.

h. Highlight the name of the print queue you wish to assign to the remote printer and press **ENTER**.

i. The other settings in the menu are not required. Push **ESCAPE** several times to exit PCONSOLE.

j. Skip to Step 5 below.

The following steps apply to configuring a remote printer on NetWare 3.xx systems:

a. Select **Print Server Information** from the PCONSOLE main menu and choose the name of the PSERVER NLM.

b. Select **Print Server Configuration** and then **Printer Configuration**. Select any "Not Installed" printer and press **Enter.** Remember the number of this printer; it will be used later in the configuration process.

c. If desired, type in a new name for the printer.

d. Go to **Type**, press **ENTER**, highlight **Remote Other/Unknown** and press **ENTER** again. The other settings in this menu are not required.

e. Push **ESCAPE** and save the changes.

f. Push **ESCAPE** and select **Queues Serviced by Printer.**

g. Highlight the printer name that you just configured and press **ENTER**.

h. Press **INSERT**, choose the desired print queue, and press **ENTER** (you can accept the default priority).

i. Press **ESCAPE** several times to exit PCONSOLE.

j. Proceed to Step 5 below (next page).

Configuring the Print Server and Print Queue Using PCONSOLE and XCONFIG (cont.)

5. Run the XConfig utility (if you do not have it installed, it can be downloaded from the TROY web site at http://www.troygroup.com/wireless).

6. Select the TROY PocketPro 100S from the list of print servers. When you get the message that the print server is connected, press the ENTER key and type the password `ACCESS` in response to the "#" prompt (the password will not echo), and then press the ENTER key again in response to the `Enter Username>` prompt. When you get `the Local>` prompt, type:

       `SET NET NPRINTER nlm number ON service`

       `SET NET RESCAN`

       `EXIT`

The *nlm* is the name of the PSERVER NLM on your file server, *number* is the printer number (must match the printer number you selected during the PCONSOLE configuration in the previous steps) and *service* is the name of the service (the default service name is listed in the *Default Print Server Names* section of this chapter). For example, to set up remote printer 3 for an HP printer with the TROY print server TWC_00C3E4 using the PSERVER NLM called TROY1PS, you would type:

       `SET NET NPRINTER XCD1PS 3 ON TWC_00C3E4_P1`

       `SET NET RESCAN`

       `EXIT`

NOTE: The same service cannot be used for both queue server mode and remote printer mode. Refer to Appendix B in this manual for information on using services.

7. You must now unload the PSERVER NLM from your NetWare file server console, and then reload it in order for the changes to take effect.

Configuring the Workstation

The final step is to configure the workstation(s) to print to the TROY PocketPro 100S. The TROY print server can be used with any workstation that supports either the Novell or Microsoft client software.

Configuring the Workstation (Windows 95/98/ME)

To use a NetWare print queue from a Windows 9X/ME workstation, first make sure that the appropriate NetWare drivers are installed. Then go to the **Start** button, choose **Settings**, and then select **Printers**. Double-click on the **Add Printer** icon, and then execute the following steps when you get to the **Add Printer** Wizard.

1. Click on **Next**, select **Network Printer**, and then click on **Next** again.

2. Select **Browse**, double-click on the appropriate file server name, select the print queue, and then click on **OK**. If you used JetAdmin to configure the queue, you should double click on the **HP_Network_Printers** icon instead of the file server icon, and then select the TROY print server name. Click on **Next**.

3. Select the desired printer manufacturer and model (click on **Have Disk** if your printer is not listed), and then click on **Next.**

4. If the driver already exists, select **Keep Existing Driver** (if it does not, this step will be skipped), and then click on **Next.**

5. If desired, change the name of the printer and/or make it the default, and then click on **Next.**

6. Select **Yes** when you are asked "Would you like to print a test page?" Click on **Finish**.

Configuring the Workstation (Windows 2000/XP)

Use the following steps to add a printer in a Windows 2000/XP NetWare client workstation.

1. Go to **Start→ Printers and Faxes** (**Start → Settings → Printers** in Windows 2000), and then click on **Add Printer**.
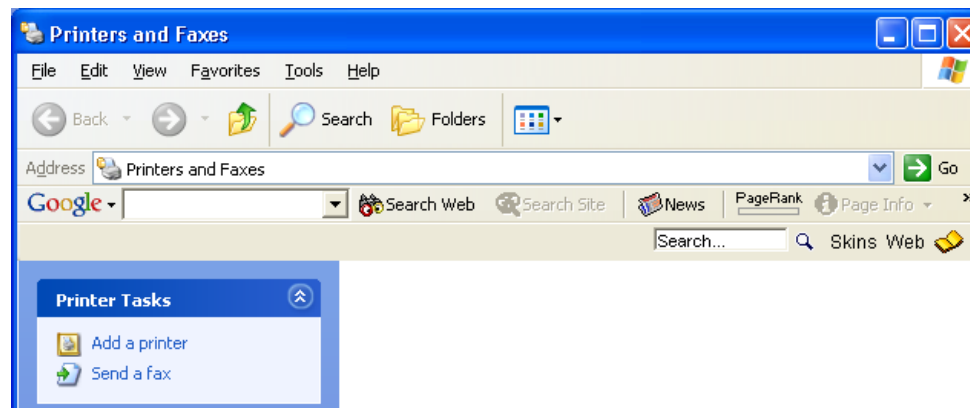
Configuring the Workstation (Windows 2000/XP) (cont.)

2. Click on **Next** on the Welcome Window.

3. Select **A network printer, or a printer attached to another computer** (**Network printer** in Windows 2000), and then click on **Next**.
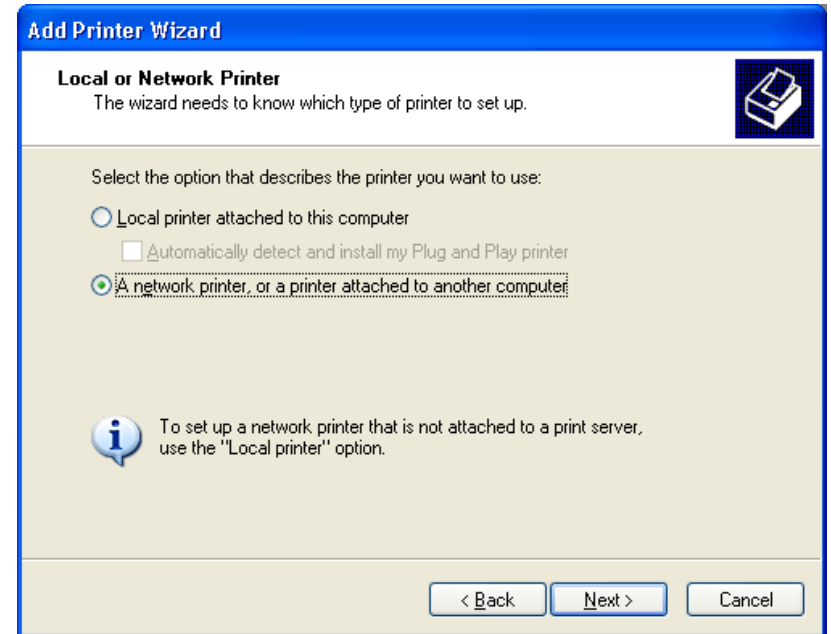
Configuring the Workstation (Windows 2000/XP) (cont.)

4. Select **Connect to this printer (or to browse for a printer, select this option and click Next): (Type the printer name, or click Next to browse for a printer** in Windows 2000), and then click on **Next**.

5. The search for printers will be initiated. When the search has been completed, a list of network printers will be displayed. Go to **NetWare Network → NetWare Servers**, and then click on your file server. Then select the *Remote print queue* that you created earlier. Click on **Next**.
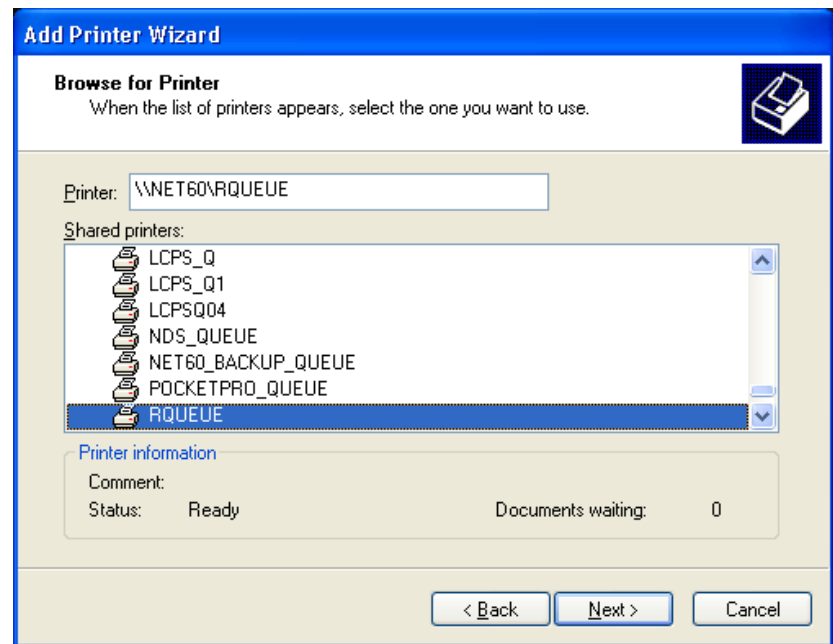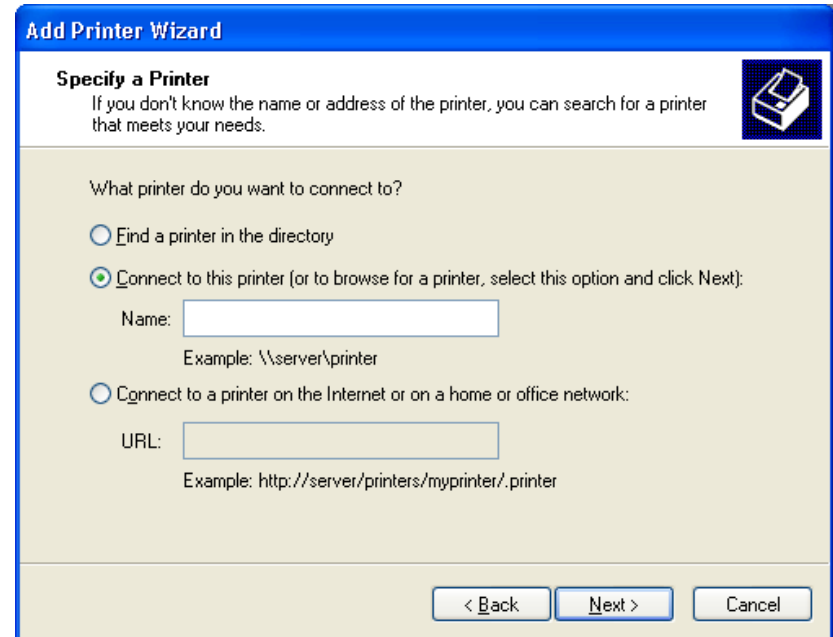
6. When prompted to select the correct printer driver, click on **OK.**
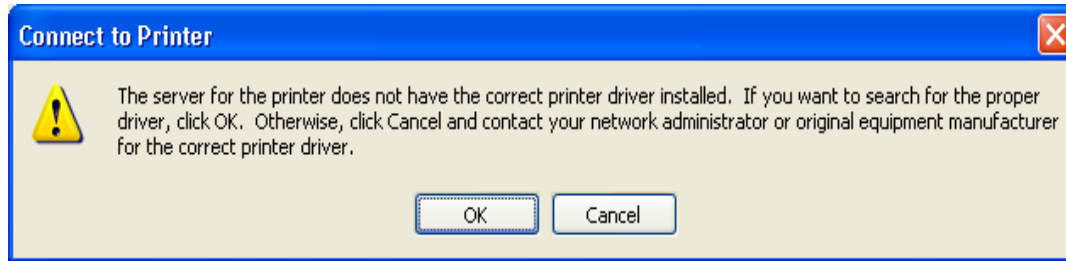
7. Select your printer manufacturer and model, and then click on **OK** again.
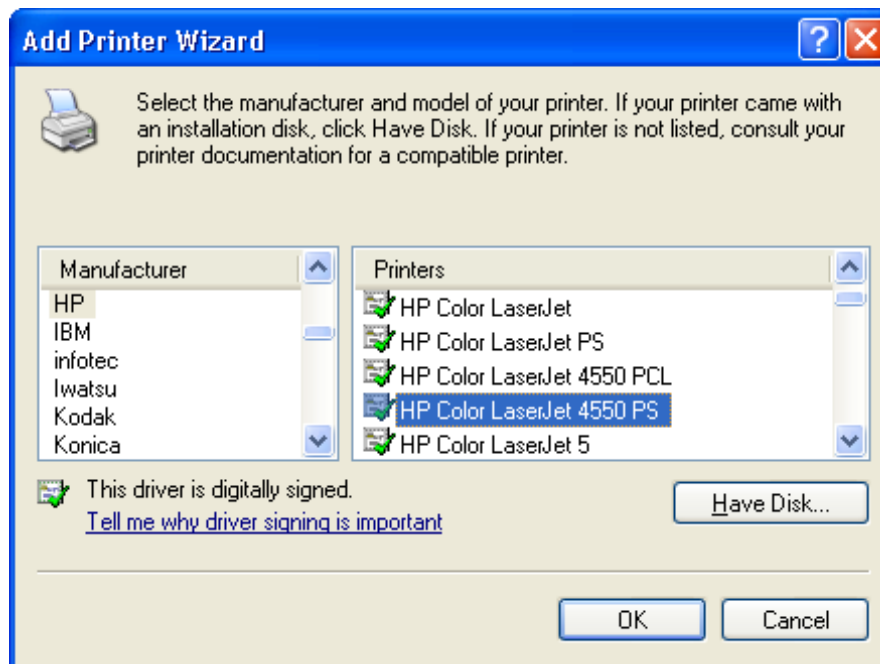
Configuring the Workstation (Windows 2000/XP) (cont.)

8. Select **YES** if you would like this printer to be the default printer. Otherwise, click on **Next**.

9. Complete the wizard by clicking on **Finish**. You will then see the printer you just created in your "printers" folder.
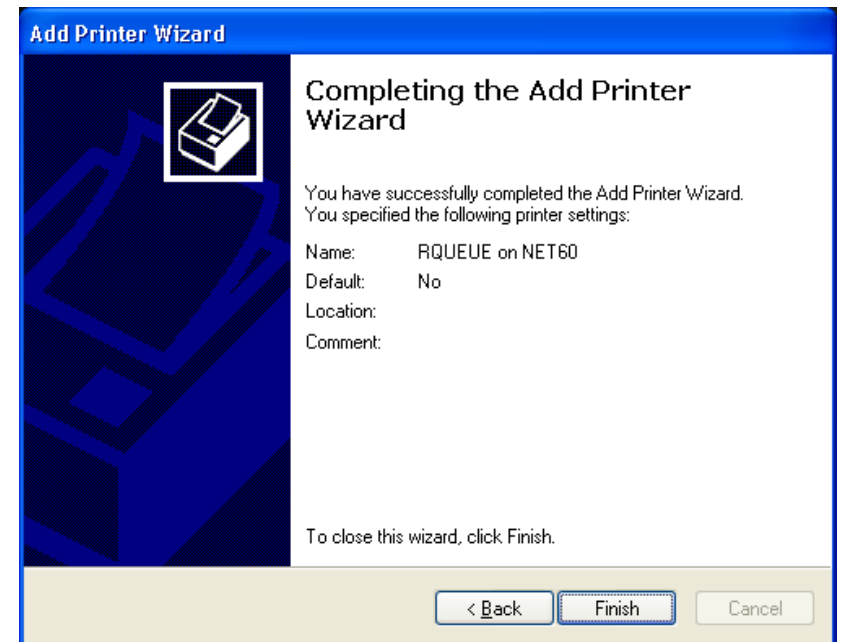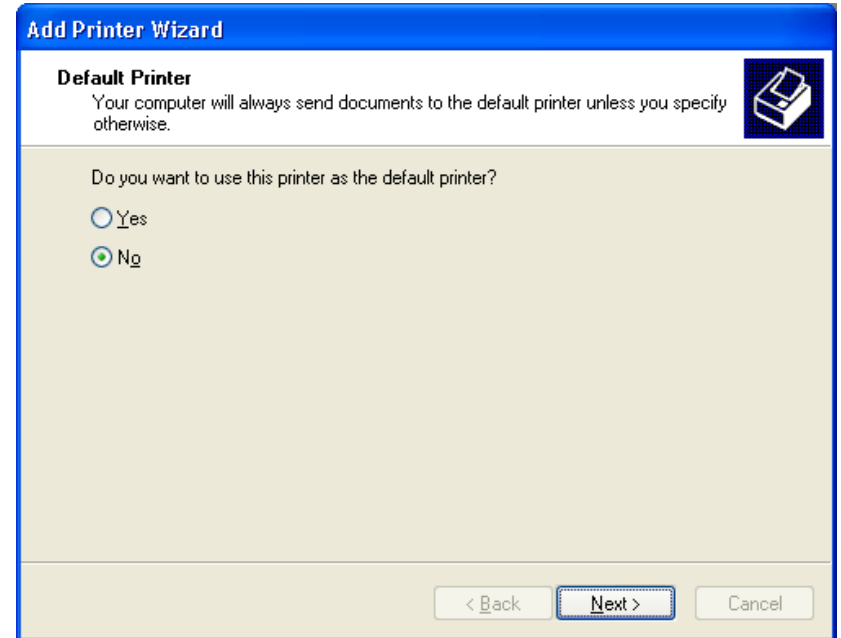
Configuring the Workstation (Windows NT 4.XX)

To add a queue from a Windows NT 4.XX workstation (with NetWare Windows VLM drivers and utilities installed), execute the following steps:

1. Go to the **Start** button, choose **Settings**, and then select **Printers**.

2. Double-click on the **Add Printer** icon, and then execute the following steps when you get to the **Add Printer Wizard**:

   - Select **Network Printer,** and then click on **Next.**

   - Select the desired print queue, and then click on **OK**. Answer **OK** when asked if you want to install the printer driver.

   - Select the desired printer manufacturer and model, and then click on **Next.**

   - If desired, make the printer the default, and then click on **Next.**

   - Click on **Finish**.

Configuring the Workstation (Windows 3.xx)

To use a NetWare print queue from a Windows 3.xx workstation, first make sure that you have the appropriate NetWare Windows VLM drivers and utilities installed, and then execute the following steps:

1. Open the **Main** window of the Windows Program Manager, and start the Print Manager.

2. Select **Options** (or **Printer**) from the menu bar, and then select **Network Connections.**

3. Select the desired port (for example, LPT1:) under **Ports:** and the desired print queue under **Resources.** If you have configured the TROY print server for NDS mode, you may alternatively select the printer name instead of the print queue name.

4. Click on **Capture** and **Permanent.**

5. Close the window, select **Options,** and then select **Printer Setup.**

6. Choose the desired printer under **Installed Printers**. If the desired printer does not exist, select **Add>>**, select the printer from the **List of Printers**, and then click on **Install** (normally you will need either the original Windows diskette distribution or the printer manufacturer's driver diskette).

7. If the desired printer is not on the correct port, click on **Connect**, select the port, and then click on **OK**.

8. If desired, click **Set as Default Printer** to make the printer your default printer.

9. Exit the Print Manager.

Configuring the Workstation (DOS-based NetWare Drivers)

To configure the PC workstation so that DOS applications can print transparently to the TROY PocketPro 100S (you may also use this procedure if you do not have Windows-specific NetWare drivers), use the DOS editor to add a command with the following format to the AUTOEXEC.BAT file on your PC:

```
capture l=n q=queuename ti=timeout
```

The n is the number of the parallel port you wish to redirect, *queuename* is the name of the queue you created (if you using NetWare 4.xx in NDS mode, you may specify p=*printername* instead of the queue, where *printername* is the name of the NDS printer; be sure to enter the entire directory context of the printer), and *timeout* is a the number of seconds the file server will send data to the printer after the application last writes to a file (use at least 5 seconds for DOS applications and at least 50 seconds for Windows applications, and you may need to increase the values if you are unable to print). For example, if your queue is called *myqueue* and you wish to use LPT1 with a timeout of 5 seconds, you would enter:

```
capture l=1 q=myqueue ti=5
```

After the workstation is restarted, you will be able to print from applications programs as if the printer were directly connected to the LPT1 parallel port.

Testing the Print Queue

Test the queue by printing a small job from an application program like the Windows 98 Paint Accessory program (make sure that the program is set up to print to the correct print queue if the TROY PocketPro 100S is not assigned to service the default queue). The file will be spooled to the TROY PocketPro 100S for printing and should print on the printer within a short period of time. If it does not, double-check your configuration; and if necessary, refer to the *Troubleshooting* chapter of this manual for additional information.

Changing the Print Server Configuration (Optional)

The default parameters for the TROY PocketPro 100S can be changed via the WebXAdmin or XCONFIG utility to meet a wide variety of user needs. The procedure and configuration commands are described in Appendix A in this manual.

Introduction

The TROY PocketPro 100S supports the AppleTalk protocol running over Ethernet (also known as EtherTalk). This capability allows Macintosh computers to print jobs to a printer simultaneously with jobs from Windows, UNIX, NetWare, and other computers.

AppleTalk Concepts

TROY print server AppleTalk capabilities allow a printer to appear as a shareable printer node on an AppleTalk Phase 2 network. The TROY print server broadcasts information to Macintoshes on the network, and automatically appears in the Print Center or Chooser of each Macintosh. Application programs (such as Microsoft Word, Excel, PageMaker, etc.) can print without modification or special software on the Macintosh.

Macintosh Configuration

Identify the printer to which the print server is connected, and install the printer driver.

OS 8.x and 9.x

1. Verify that Ethernet is enabled from the Network Control Panel or AppleTalk Control Panel.

2. At a Macintosh workstation, from the Apple menu, open the *Chooser*.

3. If the Chooser window displays an AppleTalk zone list, select the necessary zone.

4. Click on the icon for the printer driver you are going to use. If you have a Postscript printer, you can use the LaserWriter driver.

5. Select the print server name (the default is TWC_xxxxxx_P1_AT, where "xxxxxx" are the last six digits of the Ethernet address.).

6. Close the Chooser. You can now print to the printer using any standard Macintosh application program.

OS 10.x

1. If you have not done so already, set the name of your computer by going to the Applications folder*, selecting **System Preferences**, and then **Sharing**. Type in the computer name in the Network Identity section (you can also set the IP address here if you want).

2. Turn on Ethernet and AppleTalk by clicking on the Applications folder, and then clicking on **Network**. Next to Configure: select **Built-in Ethernet** (you can leave the Location: setting as Automatic).

3. Click on the AppleTalk tab, make sure that the box next to **Make AppleTalk** Active is checked. If necessary, select the appropriate AppleTalk Zone. You can leave the Configure: setting as Automatically.

4. Now go to the Applications folder, open the **Utilities** folder, and select **Print Center**. The Printer List will appear (it will be empty if you have no printers configured). Click on **Add Printer...** and then select **AppleTalk** instead of Directory Services.

5. All of the available AppleTalk printers on the network should appear. Click on the one you wish to add, and then click Add. The printer will now appear in the Printer List.

6. To print from an application program, go to **File** and then **Print**, select the desired printer, and then click on **Print**.

* <u>NOTE</u>: The Applications folder can be reached by double-clicking on the Macintosh HD icon on the desktop.

Introduction

Users of Windows NT V3.5 or later (including Windows NT Advanced Server), Windows 2000, and Windows XP can print directly using the TCP/IP protocol to printers equipped with a TROY PocketPro 100S. No special software is required on the Windows NT system, and the printing operates transparently with any application.

The TROY PocketPro 100S also supports transparent printing from IBM LAN Server and Warp Server file server, as well as from OS/2 Warp Connect workstations, using the TCP/IP protocol. TCP/IP is included standard with Warp Server and with LAN Server V4.0, and is optional on LAN Server V3.x systems. It is also included standard with OS/2 Warp Connect, and is optional on earlier versions of OS/2.

In addition, client PCs connected to a Windows NT Advanced Server or to an IBM LAN Server file server can print transparently to the TROY PocketPro 100S. In this case, the client PCs typically use the NetBEUI protocol to print jobs to the file server, which in turn spools the job to the TROY PocketPro 100S via TCP/IP. The advantage of TCP/IP compared to other approaches is that it is a high-performance routable industry-standard protocol.

NOTE: TROY recommends TCP/IP for Windows NT and OS/2 printing because it is routable and provides higher performance. The TROY PocketPro 100S also supports printing using the NetBEUI or DLC/LLC protocols. Windows NT and OS/2 configuration using these protocols is also described in this manual.

Windows NT/2000 IP Configuration

To configure a print queue from a Windows NT/2000/XP computer, you must first configure an IP address in both the computer and in the print server as follows:

1. If you have not already done so, install TCP/IP on your Windows NT/2000/XP system. This is done via the **Network** icon in the **Control Panel** window of the Windows NT system (the Control Panel is in the Main window on NT V3.5x systems, or use the **Start** button on NT V4.xx or 2000 to access the **Settings** menu, or use the Start button on XP to access the control panel).

    a. On NT V3.5x systems, select **Add Software** and add **TCP/IP Protocol and related components**. Click on **Continue**, choose the options **TCP/IP Network Printing Support** and **Connectivity Options**, and then click on **Continue** again. Insert the requested disk(s) to copy the required files.

    b. On NT V4.xx/2000 systems, click on the **Protocols** tab, select **Add**, and double click on **TCP/IP protocol**. Insert the requested disk(s) to copy the required files. Then click on the **Services** tab, and double-click on **Microsoft TCP/IP Printing** (only required if printing from Windows NT 4.xx and using LPR). Again insert the requested disk(s). Click on the **Protocols** tab when then copying is finished.

    c. On 2000/XP systems, go to **Network Connections** (**Network and Dial-up Connections** on Windows 2000) and right-click on your local area connection. Go to **Properties**, click on **Install**, **Protocol**, **TCP/IP**, and then click on **OK**.

**Windows
NT/2000 IP
Configuration
(cont.)**

If you have a DHCP server on your network, an IP address will automatically be assigned. Otherwise, you will have to manually assign an IP address. Double-click on the TCP/IP Protocol option and add the host IP address, subnet mask, and gateway address. Consult your system administrator for these addresses. If you are not directly connected to the Internet, you may assign any arbitrary Class C address of the form *aaa.bbb.ccc.ddd*, where *aaa* is any number from 192 to 222, *bbb* and *ccc* are any number from 0 to 255, and *ddd* is any number from 0 to 254; for example, 192.189.207.3. You may also use a subnet mask of 255.255.255.0 with no gateway address. If you have more than one LAN adapter card, select the one you want to use for TCP/IP.

If you have more than one LAN adapter card, select the one you want to use with TCP/IP. Click on **OK** twice to exit (you may need to restart the system).

2. If you have not already configured the print server IP address, you will need to do so now. If you have a DHCP server on your network, an IP address will automatically be assigned. If you do not have DHCP, the simplest way to assign an IP address with Windows NT 4.x or Windows 2000/XP is to use ExtendView as described in Section 3.

    As an alternative, or if you have Windows NT 3.5x, you may go to the MS-DOS Command Prompt and use the `arp -s` command to enter the IP address into the TROY print server as shown in the following example:

    ```
    arp -s 192.189.207.77 00-40-17-00-ed-d6
    ping 192.189.207.77
    ```

    Again, substitute your actual IP address for *192.189.207.77*, and replace the *00-40-17-00-ed-d6* with the actual Ethernet hardware address of the TROY print server (which can be found on the label affixed to the bottom of the box or via the printer self-test). If you get the message "The arp entry addition failed: 3", try pinging a known device on the network using the command `ping ipaddress`, where *ipaddress* is the IP address of that device.

    <u>NOTE</u>: You must be on the same Ethernet segment (that is, there cannot be a router between the TROY print server and the Windows NT system) to use the arp -s command. If there is a router, you may use BOOTP or other methods to enter the IP address. Also, this method only works the first time the TROY print server is configured. If the TROY print server already has an IP address, you may use TELNET to access it and change the IP address using the SET IP ADDRESS command described in Appendix A, or set the unit to default settings first.

    The TROY PocketPro 100S has a default IP address of 192.0.0.192. You must change this address to a unique value to avoid having duplicate IP addresses.

Windows 2000/XP Standard TCP/IP Printer Configuration

NOTE: Skip this section if you have Windows NT V4.xx or V3.51.

Windows 2000/XP allows you to configure a "Standard TCP/IP printer" that uses a raw TCP port (port 9100 by default) for printing. To use this capability, execute the following steps:

1. Go to the **Start** button, click on **Control Panel** and then **Printers** (**Start** and then **Printers and Faxes** if you are on Windows XP).

2. Double-click on **Add Printer**.

3. Click on **Next**.

4. Select Local Printer, and then click on **Next**

5. Click on **Create New Port**, and select **Standard TCP/IP** Port as the type.

6. Click on **Next**.

7. Enter the IP address or (if you have a name server on the network) the name of the TROY print server. You can accept the default name for the port or type in any desired name.

8. Select **Generic Network Card** unless you want to use a different TCP port than 9100, in which case, select **Custom**. By default, TROY print servers use port 9100 for the first parallel port (P1).

9. Click on **Finish**.

10. Select the desired printer type, and then click on **Next**.

11. If desired, make the printer the default printer. Click on **Next**.

12. If desired, make the printer shared. Click on **Next.**

13. If desired, print a test page. Click on **Next**.

14. Click on **Finish**.

NOTE: You can also use an "LPR Port" instead of a "Standard TCP/IP Port" to install this option. Go to the Windows Control Panel and select "Add/Remove Programs". Click on "Add/Remove Windows Components", and then click on "Other Networking and Print Services". Click on Details, select "Print Services for UNIX", and then click on OK.

**Windows NT
V4.xx
Configuration
(LPR/LPD)**

<u>NOTE</u>: **If you have Windows NT V3.5 or V3.51, skip to the next section.**

Windows NT 4.x systems can print using lpr/lpd. The configuration procedure is as follows:

1. Go to the **Start** button, choose **Settings**, and then select **Printer**. Double-click on the **Add Printer** icon to get the Add Printer Wizard. Click on **My Computer** (Not **Network Printer**), and then click on **Next**.

2. Select **Add Port**, select **LPR Port** from the list of available ports, and then click on **New Port**.

3. Type in the IP address that you wish to assign to the print server in the **Name or address of server providing lpd:** box. If you do not have a router on the network, this IP address must match the first three bytes of the IP address of your computer. For example, if your computer has an IP address of 192.189.207.53, your print server must have an address like 192.189.207.27.

4. Type in the print server service name in the **Name of printer of print queue on that server:** box. If you do not know which service name to use, enter BINARY_P1, and then click on **OK**:

5. Click on **Close**. The new print server IP address should be listed and highlighted as an available port. Click on **Next**.

6. Select the desired printer manufacturer and model (click **Have Disk** if your printer is not listed), and then click on **Next.**

7. If the driver already exists, select **Keep Existing Driver** (if it does not, this step will be skipped), and then click on **Next.**

8. If desired, change the name of the printer and/or make it the default, and then click on **Next.**

9. If desired, make the printer shared (so other users can access it), and select the operating system(s) that these other computers will be running, and then click on **Next**.

10. Select **Yes** when you are asked "*Would you like to print a test page?*" Click on **Finish** to complete the installation. You may now print to the printer as if it were a local printer.

Windows NT 3.5x Configuration

If you have Windows NT or NT AS 3.5 or 3.51, use the following procedure to configure the TROY print server:

1. Go to the **Main** window, and select the **Print Manager** icon.

2. Select **Printer** menu.

3. Select **Create Printer**

4. Enter any name for the printer for the **Printer Name**.

5. Select **Driver**. Choose appropriate driver.

6. Select **Description**. Enter anything.

7. Select **Print to**.

8. Select **Other**.

9. Select **LPR Port**.

10. Enter the TROY print server IP address or name (from HOSTS file) as the **Name or Address of Host Providing LPD**.

11. Enter the TROY print server service name as the **Name of Printer on That Machine.** Generally speaking, you should use the service BINARY_P1 to pass the data through unmodified.

LAN Server/Warp Server Configuration

The TROY PocketPro 100S will work with IBM LAN Server/Warp Server networks that have IBM TCP/IP V2.0 or later software installed on the file server (TCP/IP is standard with LAN Server V4.0 and later, and on the Warp Server). Use the following procedure to configure the TROY PocketPro 100S on an OS/2 LAN Server or Warp Server file server, or on a OS/2 Warp Connect workstation:

NOTE: TROY recommends TCP/IP for OS/2 printing because it is routable and provides higher performance.

1. Make sure that TCP/IP software is installed on your OS/2 file server. If you have not already done so, open the **TCP/IP** folder on the desktop, and double click on the **TCP/IP Configuration** icon to add the IP address to the OS/2 file server (consult your system manager for this address).

2. Add the TROY print server name to the HOSTS file (usually located in the \tcpip\etc directory; this step is not required if you use the TROY print server IP address as the name). To do this, go to the OS/2 System icon, open the **Command Prompts** folder, and double click on the OS/2 Window icon. Use the OS/2 editor and add the an entry similar to the following:

```
192.189.207.77 xps
```

Substitute the name of the TROY print server (any unique name will do) and the desired IP address in place of *xps* and *192.189.207.77* in the above example.

3. While still at the OS/2 prompt, use the following command to enter the IP address into the TROY print server:

```
arp -s xps 00:40:17:00:ed:d6 temp
```

Again, substitute your actual name and IP address for *xps* and *192.189.207.77*, and replace the *00:40:17:00:ed:d6* with the actual Ethernet hardware address of the TROY print server (which can be found on the label affixed to the TROY print server box or via the printer self-test; note that you should use colons rather than hyphens to separate the bytes of the hardware address). The IP address will be set when you ping the print server in the next step.

NOTE: You must be on the same Ethernet segment (that is, there cannot be a router between the TROY print server and the OS/2 system). If there is a router, you may use BOOTP or other methods to enter the IP address. Also, this method only works the first time the TROY print server is configured. If the TROY print server already has an IP address, you may use TELNET to access it and change the IP address using the SET IP ADDRESS command described in Appendix A, or set the unit to default settings first.

4. Set the IP address and verify the connection by using the ping command with the address or name of the TROY print server. For example:

```
ping 192.189.207.77        or

ping xps
```

Again, substitute your actual name and IP address in place of *xps* and *192.189.207.77* in the above examples. You should get a response back from the TROY print server if the IP address has been set and the print server is alive on the network. If you do not, run the printer self-test as described in Chapter 2 and verify that you have entered the correct IP address.

LAN Server/Warp Server Configuration (cont.)

5. From the OS/2 desktop open the **Templates** folder. Use the right mouse button to drag the Printer icon (not the **Network Printer** icon) onto the desktop.

6. The **Create a Printer** window should be open (if it is not, double click on the printer icon).
   - Type in any name for the printer.

   - Select the default printer driver. If the desired printer driver is not listed, click on the **Install new Printer Driver** button, and then add the driver.

   - Choose the output port. IBM TCP/IP automatically creates 8 named pipes called `\PIPE\LPD0` through `\PIPE\LPD7`. Pick an unused port, and then double-click on that port.

NOTE: Early versions of Warp Server have a bug in which the named pipes do not appear (the problem does not affect Warp Connect or LAN Server). This problem is fixed via a patch available from IBM.

You will get the **Settings** window. Enter the following:

LPD server The TROY print server name (from HOSTS file) or IP address.

LPD printer For most applications, use the TROY PocketPro 100S binary service BINARY_P1 to pass data through unmodified. However, if you are printing text files from the DOS or OS/2 command prompt, you should use the text service TEXT_P1, which will add carriage returns for proper formatting of the data (but will potentially distort graphics printouts).

Host name The IP name of the OS/2 file server

User The IP address of the OS/2 file server

You may leave the other entries blank. Click on the **OK** button. The pipe should be highlighted; if not, click on it.

   - Click on the **Create** button to create the printer.

**LAN
Server/Warp
Server
Configuration
(cont.)**

7. Open the **LAN Services** folder, and execute the **LAN Requester** program:

> - Select **Definitions**
>
> - Select **Aliases**
>
> - Select **Printers**
>
> - Select **Create**.   Enter the following:
>
>> **Alias** (should be same as the printer name previously defined
>>
>> **Description** (anything you want)
>>
>> **Server name** (name of OS/2 server)
>>
>> **Spooler queue** (name of printer as defined previously)
>>
>> **Maximum number** (leave blank unless you want **of users** to limit the number of users)
>
> - Exit the **LAN Requester** program.

8. You should now be able to print. To test the queue, type the following from either the OS/2 command prompt or from a DOS workstation:

> COPY C:\CONFIG.SYS *servername**alias*

The *servername* is the name of the file server and *alias* is the alias name that you specified during this configuration process. This should print the CONFIG.SYS file on the printer. If you selected a binary service as the LPD printer name, the lines will be staggered (normal DOS, Windows, and OS/2 applications will print OK.

9. The TROY print server will appear as a standard OS/2 printer to application programs. To make the TROY print server operate transparently with DOS programs, execute the following command on each workstation:

> NET USE LPT1: *servername**alias*

This will make the printer and the TROY print server appear to the software as a printer that is directly connected to the parallel port of the workstation.

Setup Procedure

1. Insert the CD supplied with the PocketPro 100S print server, and then click on **Install Software**.

2. Select **TCP/IP Management Utilities**, and then click on **Next**.

3. Select **ExtendView**, and then click on **Install**.

4. Start the utility by clicking on **Start**, **Programs**, **TROY Group**, **Printing**, and then **ExtendView**.

5. When you get the Welcome screen, click on **Next**, choose any name for your **View Name**, select **Automatically create a view with default settings**, and then click on **Finish**.

6. Double-click on the print server that you want to print to in the list.

7. If you are using TCP/IP (recommended for Windows printing) and you do not have a DHCP server (see note below), you will need to manually assign a valid IP Address (If you are not sure what IP address is valid, ask your network administrator), and then click on **OK**.

NOTE: If you are using DHCP on your network, the print server may have acquired valid IP settings at this point and no further configuration is necessary. This might work well if your DHCP server allows the print server to keep this address permanently, but in most cases, you will want to use a static address outside the range reserved for DHCP (see your DHCP server documentation for details). When you configure your printer port, the print server will go to a static IP address. To assign a static IP address, right-click on the print server in the menu, and then select Configuration. On the TCP/IP tab, under IP Address Resolution, select Set Permanent, and assign a valid static IP address for your network. Click on OK to save the new settings.

8. Install the ExtendNet Connect IP Port Monitor by inserting the CD supplied with your print server and clicking on **Install Software**.

9. Select **ExtendNet Connect Windows Printing**, click on **Next**, click on **ExtendNet Connect for TCP/IP**, and then click on **Install**. Follow the on-screen instructions to complete this installation.

10. Install the printer driver software according to the documentation for the printer.

11. Click on the Windows **Start** button, select **Settings**, and then **Printers** (**Start**, then **Printers and Faxes** if you are using Windows XP).

12. Right-click on the printer you wish to associate with the network port, and then select **Properties**.

Setup Procedure (cont.)

13. If you are using Windows NT/2000/XP, go to the **Ports** tab. If you are using Windows 95/98/ME, go to the **Details** tab, and then click on **Add Port**.

14. If you are using Windows NT/2000/XP, highlight **TROY Wireless ExtendNet Connect IP Monitor**, and then click on **New Port**.

15. If you are running Windows 95/98/ME, select **Other**, highlight **TROY Wireless ExtendNet Connect IP Monitor**, and then click on **OK**. The search will begin for available print servers.

16. Highlight the print server you would like to create the port for, and then click on **Add**.

17. Make sure the port you created is chosen, and then click on **Apply**. You are now ready to print.

Introduction

This chapter describes procedures for IPP Configuration. The Internet Printing Protocol (IPP) allows you to print over local area networks (LANs). IPP is currently included with newer Windows operating systems.

Windows 2000 IPP Configuration

The following steps are required to use IPP with Windows and the TROY PocketPro 100S. Make sure that the print server is powered on and configured with a valid IP address (refer to Section 3 for information on how to configure the IP address). *Note that the printer cannot be configured unless the Windows 2000 server can communicate with the print server.*

1. Go to the **Start** button, and then click on **Printers**.

2. Double-click on **Add Printer**.

3. Click on **Next**.

4. Select **Network Printer,** and then click on **Next**.

5. Select **Connect to a Printer on the Internet or on your Intranet**. Enter the URL of the print server along with the service name (BINARY_P1 is the default service). For example:

    ```
    http://192.189.207.99/BINARY_P1
    ```

6. It may take a couple of minutes to find the print server. You may also get a message that the correct driver is not installed; if so, click on **OK** to install the driver, and then select the appropriate printer.

7. Select the printer type, and then click on **Next**.

8. If desired, make the printer the default printer, and then click on **Next**.

9. Click on **Finish**. You are now ready to use the IPP printer.

Configuring IPP on Other Operating Systems

IPP is beginning to be implemented on other operating systems. The procedures for configuring the IPP print queue varies from system to system; but in all cases, you must specify the URL of the print server. This address has the following format:

```
http://ipaddress/service
```

The *ipaddress* is the IP address of the print server and *service* is a service on the print server that is enabled for IPP. By default, the BINARY_P1 service is enabled for IPP. An example of a valid URL would be:

```
http://192.189.207.253/BINARY_P1
```

Introduction

This chapter describes procedures for troubleshooting problems you may encounter with the TROY PocketPro 100S print server, and is divided into the following sections:

- Installation Problems

- Intermittent Problems

- Protocol-Specific Troubleshooting

If you have followed the steps in this chapter and you believe that you have a bad board, then please refer to Section 10 for information on returning defective products.

Installation Problems

PRINTER DOES NOT COME UP READY:

If you cannot print to the TROY PocketPro 100S print server after you install it, check the following:

- Make sure that the printer is powered on and is on-line, and that all cables are securely plugged in.

PRINTER COMES UP READY, BUT YOU CANNOT PRINT:

If the printer starts up OK but you cannot print, the problem could be one of the following:

- There is a problem with the interface between the print server and the printer

- There is a problem with the network connection or cabling.

- There is a queue setup problem, a print server setup problem, or other protocol-related problem.

Installation Problems (cont.)

<u>CHECKING THE INTERFACE BETWEEN THE PRINT SERVER AND THE PRINTER:</u>

1. First make sure that the cable between the print server and the printer is securely plugged in at both sides.

2. Wait about two minutes after the printer is powered on and then run a printer self-test (see Section 2 for information on how to run the self-test).

   a. If the self-test does not print, then there is possibly a hardware problem. Double-check the connections. If you still cannot print, then make sure that your printer is capable of printing text, PCL or PostScript (the self-test will not work unless one of these is possible). Some examples of printers that do not support direct printing of text files:

      ▪ So-called Windows printers, usually low-end inkjet printers, perform all the image rasterization in the printer driver, so the printer only understands a raw image file.

      ▪ Many plotters only support HP-GL/2, RTL, or proprietary languages.

   The only way to test such printers is to use an application program with the correct printer drivers.

3. It may be necessary to adjust the parallel port default settings in order to accommodate certain printers, especially older ones, by using console commands (refer to Appendix A for information on commands, and refer to Appendix B for information on using services). Do a `SHOW PORT` command to see the current port settings.

   ▪ Some printers require the pACKH hardware handshake. For these printers, use the command `SET PORT P1 ACKH ENABLED`.

   ▪ Some printers and applications do not work well if bidirectional communications are enabled. Use the command `SET PORT P1 BID DISABLED` to disable bidirectional.

   ▪ If you are using ECP mode with Okidata printers and a TROY PocketPro 100S print server, you will need to enable software handshaking with the command `SET PORT P1 SWIO ENABLED`.

   ▪ Not all printers support Fast Strobe mode, so make sure that FSTB is not enabled on the port if you are having problems printing (Fast Strobe is disabled by default; use the command `SET PORT P1 FSTB DISABLED` to disable it).

   ▪ In some rare instances, disabling NBUF with the `command SET PORT P1 NBUF DISABLED` will solve port compatibility issues.

Installation Problems (cont.)

4. If the self-test prints OK but you cannot print or you get distorted printouts, make sure that the printer is set for the correct Page Description Language. Most new printers support AUTO mode, which means that they will automatically switch between PCL and PostScript. However, older printers like the LaserJet II, LaserJet III, and LaserJet IIISi require that the printer be set to the desired language through the printer front panel. Also, verify that you have set up the drivers correctly on the workstation. Some printers, like the Epson Stylus, require special drivers and will not print if standard PCL or PostScript drivers are used.

CHECKING THE NETWORK CONNECTION AND CABLING:

If the self-test page prints but you cannot print documents, first check the network connection and cabling.

- If the appropriate LEDs are not on, there is probably a bad 10baseT or 100baseTX cable, or the hub port is bad. If possible, try a different cable and hub port, or try connecting a different device to the cable.

- If you are using a repeater or hub, make sure that SQE (heartbeat) is turned off at the hub (this is the default setting for most hubs). Also, if you have a hub or multiport repeater, verify that the hub or repeater port is good by trying the print server on a different port.

- If you have a bridge or router located between the TROY PocketPro 100S and the host computer, make sure that the device is set up to allow the print server to send and receive data from the host. For example, a bridge can be set up to only allow certain types of Ethernet addresses to pass through (a process known as filtering); therefore, such a bridge must be configured to allow TROY print server addresses. Likewise, a router can be set up to pass only certain protocols, so be sure that the desired protocol can be passed through to the TROY PocketPro 100S. In the case of routers, also make sure that the protocol is routable (LAT, NetBEUI, and DLC/LLC are not routable).

- If the job exits the queue but does not print, make sure that you are not trying to print a text job to a PostScript printer. If you have a printer that is capable of automatic language switching, make sure that the printer is not forced into PostScript mode.

- Make sure that you are not trying to perform an illegal operation, such as attempting to print a legal-size form when the printer only supports 8.5" x 11" paper.

- Check the other troubleshooting sections in this chapter for additional causes of intermittent problems.

Intermittent Problems

If the print server and the printer start up OK, but you intermittently have problems printing, check the following:

- Excessive NetWare polling can be a big cause of intermittent problems. Make sure that you have only enabled the NetWare file servers that you need for printing (do a SHOW NETWARE command from the print server console to see the enabled file servers).

- If you can print small jobs OK but large graphics jobs are distorted or incomplete, make sure that you have adequate memory in your printer.

- Check the individual protocol troubleshooting sections in this chapter for additional causes of intermittent printer problems.

TCP/IP Trouble-shooting

If you are using TCP/IP and cannot print to the print server and you have checked the hardware and network as described in the previous steps, then check the following (*note that it is always a good idea to try creating a another print queue to eliminate the possibility of setup errors*):

- The problem may be the result of mismatched or duplicate IP addresses. Verify that the IP address is correctly loaded into the TROY print server (via the self-test page or through the remote console) and make sure that no other nodes on the network have this address (DUPLICATE IP ADDRESSES ARE THE BIGGEST CAUSE OF TCP/IP PRINTING PROBLEMS). If the address is not correct, then check whether the loading procedure was properly executed.

- If you used XCONFIG or ccr to enter the IP address, make sure that you exited the remote console properly with an EXIT command.

- If you used rarp, make sure that you started the rarp daemon using the rarpd, rarpd -a, in.rarpd -a, or equivalent command. Verify that the /etc/ethers file contains the correct Ethernet address and that the TROY print server name matches the name in the /etc/hosts file.

- If you used bootp, make sure that bootp is enabled (i.e., the "#" is removed from the bootp entry) in the /etc/inetd.conf file. Verify that /etc/bootptab file is correctly configured.

TCP/IP Trouble-shooting (cont.)

- Also verify that the host computer and the print server are either on the same subnet (for example, if the print server has a subnet mask of 255.255.255.0, the host must have the same subnet mask) or that the router is properly configured to pass data between the two devices.

- Make sure that the /etc/printcap file (if applicable) is typed in correctly. In particular, look for missing ":" and "\" characters, because a small error *anywhere* in the file can have *major* consequences. Also check the /usr/spool directory to make sure that you have created a valid spool directory.

- If you are using a Berkeley-based UNIX, make sure that the daemon is started on Berkeley based systems with the command lpc start *printer*, where *printer* is the name of the local print queue.

- If you are using an AT&T-based UNIX, make sure the printer is enabled (enable *printer*, where *printer* is the name of the local print queue).

- Make sure that the lpr/lpd remote line printer service are running on the host computer (refer to your host computer documentation for information on how to do this).

- If jobs are run together or do not eject from the printer, try setting the service (remote printer) with EOT set to the appropriate printer reset string. This string is number 4 (<ESC>%-12345X) for all newer HP printers. For example:

  ```
  SET SERVICE BINARY_P1 EOT 4
  ```

NOTE: Do not use the above command if you have a LaserJet II, IID, III, or IIID printer. Instead, use an EOT 2 for PCL jobs or 3 for PostScript jobs.

- If the lines of a text file are staggered, make sure that you have specified a remote printer (rp) name of TEXT in your /etc/printcap file.If you are having trouble printing long jobs (over 1MB), add the line mx#0 to your /etc/printcap file entry.

NOTE: Sun Solaris has a bug with lpr/lpd printing and long jobs. This bug affects any diskless print server, not just TROY. The solution is to use the HP JetDirect UNIX host printing utilities as described in the Raw TCP Port section at the end of Section 3.

- If you are using the raw TCP port and are experiencing intermittent queue stalling problems, make sure that queueing is enabled on the service (do a SHOW SERVICE command from the remote console, and note if "Q" is listed in the OPT column for the desired service). If it is not, enable queueing with the command SET SERVICE *servicename* QUE ENA command.

TCP/IP Trouble-shooting (cont.)

- If the wrong IP address is loaded, check your network for file servers that have DHCP, BOOTP, or rarp enabled, and make sure that these file servers are not set up to load IP addresses into the print server. Also, make sure that you do not use the `command SET IP BOOT 0` to disable TCP/IP broadcasts; instead, you should use the command `SET IP METHOD STATIC` (otherwise, unpredictable results will occur).

- If you have problems with queues locking up when the active print job is deleted, try setting the IP timeout to one minute with the console command `SET IP TIMEOUT 1`.

- If you are using certain IP switch models with the TROY PocketPro 100S, you may not be able to communicate unless you set the Keepalive Timer using the WebXAdmin Configure TCP/IP facility or the console command SET IP KEEPALIVE 5. This sends out an ARP broadcast every five minutes to notify the switch that the print server is still on the network.

NetWare Trouble-shooting

If you cannot print from NetWare and you have checked the hardware and network as described in the previous steps, first verify that the print server is attached to the server queue by going to PCONSOLE, selecting `PRINT QUEUE INFORMATION,` and then `CURRENTLY ATTACHED SERVERS`. If the TROY print server does not appear in the list of attached servers, then check the following (*note that it is always a good idea to try deleting and recreating the print server and creating a new print queue in order to eliminate the possibility of setup errors*):

- If you cannot create a print queue, make sure that you have sufficient NetWare privileges. With NetWare 3.12 and earlier, you MUST be logged in as SUPERVISOR (not someone with Supervisor privileges). If you are having problems creating queues with NetWare 4.xx and later, try logging in as ADMIN. Also, make sure that you are not trying to run ExtendView or XAdmin32 with the Microsoft NetWare client (you must use the Novell 32-bit client).

- If you changed the login password, you must change the password in *both* the TROY print server (using the `SET NETWARE PASSWORD` command) and in the file server (using the PCONSOLE Print Server Information `Change Password` command).

- Make sure that you have enabled at least one NetWare file server using the `SET NETWARE SERVER` *servername* `ENABLED` command.

- Ensure that you have not exceeded your NetWare user limit.

NetWare Trouble-shooting (cont.)

- Make sure that the print server name you used in PCONSOLE *exactly* matches the name that is config-ured in the print server, and make sure it is defined as a Queue Server for the print queue.

- If you are running both 802.3 and Ethernet II frames on different file servers on your network, there is a possibility that the print server may not make a connection to the desired file server. Try forcing the frame type to the desired one using the `SET NETWARE FRAME` command from the TROY print server remote console.

- If you are losing portions of your print job and you are using the DOS NetWare drivers, try setting the TIMEOUT parameter in your CAPTURE statement to a higher value (at least 50 seconds for Windows).

AppleTalk Trouble-shooting

If you cannot print from an AppleTalk for Macintosh computer, you have checked the hardware and network as described in the previous steps, then check the following:

- Make sure that you are running Phase 2 AppleTalk and that you have selected the correct network interface from the Network Control Panel on the Macintosh.

- If you have a large network, ensure you have the Laser Writer V8.2 or later drivers (or equivalent driver such as the HP LaserJet 8.2), because earlier versions may cause PostScript errors. Also, verify that you get the correct printer information when you select **Printer Info** from the **Setup** button in the Chooser.

- If you are using the LaserWriter 8.4 (or above) drivers and the print server is at the latest firmware.

- Make sure that you have selected the correct Printer Description File (PPD) from the Chooser (otherwise PostScript errors may result).

- Verify that you have selected the correct AppleTalk zone. Because the TROY print server gets its zone information from router broadcasts, it may not be in the zone you expect, and will therefore not show up in the Chooser. If this is the case, you may need to force the zone name with the `SET APPLETALK ZONE` command described in Appendix A.

- Verify that you have a PostScript printer, because AppleTalk require PostScript. If you have a printer with automatic language switching, the printer may need to be manually forced into PostScript mode via the printer front panel.

- If you are using PATHWORKS for Macintosh, make sure that you specified the LAT port (not the normal name@zone) as the destination.

AppleTalk Trouble-shooting (cont.)

- If you are using older versions of the LaserWriter drivers, verify that the Laser Prep versions on all Macintosh computers that need to print to the TROY print server are the same (not required with LaserWriter 8.xx drivers).

- Make sure that printer supports bidirectional communications. If it does not, use the console command SET SERVICE *servicename* RECEIVE ENABLED to enable AppleTalk spoofing. If the preceding does not work, verify that the printer supports bidirectional communications over the parallel port.

- If you are having problems printing scanned images, bitmapped graphics, or other binary graphics, you will need to enable binary graphics support on the AppleTalk service using the command `SET SERVICE` *servicename* `FILTER 4`. The printer must support the HP Tagged Binary Communications Protocol.

Windows Server Trouble-shooting

If you are having trouble printing with a Windows Server, check the following (also refer to the TCP/IP Troubleshooting section):

- Make sure that you can ping the TROY PocketPro 100S using the DOS command `PING ipaddress`, where *ipaddress* is the IP address of the TROY print server. If you cannot ping the print server, you will not be able to print.

- Make sure that TCP/IP and lpr printing are installed and running if you are running a Windows NT system or a LAN Server file server.

- If you are having problems printing to the TROY print server from a client PC that is connected to a Windows or LAN Server file server, verify that you can print a job directly from the DOS or OS/2 prompt on the file server. If you can print from the file server but not from the client, then the problem is probably with the client to server communications rather than with the TCP/IP link to the TROY print server. Check your file server network setup (for example, make sure that you can print from the client to other printers on the network).

Introduction

TROY Group, Inc. offers several customer support options to assist you in the event you experience difficulties with your TROY PocketPro 100S, including telephone support, repair services, and warranty.

Worldwide Web Support

The TROY worldwide web site provides a quick and easy way to answer many common technical questions. It includes a wide variety of technical support tips, as well as copies of product manuals, product literature, and firmware load images. The web site is located at http://www.troygroup.com.

Obtaining Technical Support

Your first point of contact for technical support is the Distributor or Dealer from whom you bought your TROY PocketPro 100S. They are familiar with your needs, and will generally be able to provide you with the fastest and most comprehensive support.

If your Distributor or Dealer is unable to answer your questions or is for some reason not available, then contact TROY directly at (800) 332-6427, 8 AM to 8 PM, Monday through Friday, Eastern Standard Time. Or you can send a fax at (304) 232-0996 or send an e-mail to: technicalsupport@troygroup.com.

Before contacting Technical Support, please refer to Section 9 in this manual for troubleshooting suggestions or the TROY web site to isolate any problems, and be sure to write down any error messages. Also, make sure that you have the serial number of the product (located on the product label on the card).

North and South America

If you need to talk to one of our Technical Support Specialists, our support line is open Monday through Friday, 8 AM to 8 PM, Eastern Standard Time.

U.S. 48 contiguous States: (800) 332-6427
Canada, Alaska, Hawaii, and South America: +1-304-232-0899
E-Mail: <technicalsupport@troygroup.com>

Europe

Technical support is available in either German or English from Monday through Thursday, 9 AM to 12 PM and 1 PM to 5 PM, and on Friday from 9 AM to 12 PM and 1 PM to 4 PM.

Phone: +49-7032-9454-21
E-Mail: <support@troygroup.de>
Web: <http://www.troygroup.de>

Returning Products

If you need to return a TROY product for any reason (failures, incorrect shipments, etc.), follow the steps below:

1. Contact the TROY Technical Support group at (800) 332-6427 to request a Return Goods Authorization (RGA) number. For North and South American customers (customers outside the continental United States), please call (304) 232-0899 to request an RGA number. For European customers, call +49-7032-9454-21 and request a Return Material Authorization (RMA) number.

2. Be prepared with the serial number of the unit you are returning. You will be asked for the serial number to verify warranty coverage.

Please record these serial numbers in the space provided below for future reference.

     Print Server Model #: _____

     Print Server S/N: _____

Make sure that you write the RMA or RGA number on the outside of the shipping container you use to return the product. Please ship the defective product(s) to the appropriate address below:

North and South America:	Europe:
TROY Group, Inc.	TROY GmbH
RGA# _____	RMA# _____
3 Bryan Drive	Schwarzwaldstr. 99
Wheeling, WV 26003	D-71083 Herrenberg, Germany

If the unit is not under warranty, you will be billed for the standard repair charges. If you do not have a valid TROY account number, you may be asked for payment in advance (Mastercard, Visa, American Express, check, or money order).

Warranty

TROY print servers are warranted to be free of defects in materials and workmanship for a period of five years. This period begins upon the date of shipment if the Hardware is installed by the Purchaser, or upon installation if the Hardware is installed by TROY. During the warranty period, TROY will repair or replace the unit at no charge provided it is returned to TROY with the freight prepaid as described in the "Returning Products" section of this chapter. To ensure prompt service, please fill out the enclosed warranty card.

The warranty on repaired products or replacement products is 30 days or the last day of the warranty of the original defective product, whichever is longer. This warranty does not apply if the Product has been damaged by accident, misuse, natural catastrophe, modification, improper service, or conditions resulting from causes external to the Product. The warranty shall be void if the TROY serial numbers have been removed.

Disclaimer

The above warranty is the exclusive, and no other warranty, expressed or implied, shall apply. TROY specifically disclaims the implied warranties of merchantability and fitness for a particular purpose. Purchaser's sole and exclusive remedy for any breach of this warranty, regardless of the form of action, whether contract, tort, or otherwise, shall be TROY's obligation to repair or replace as set forth above.

Contacts

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Introduction

Although it is not normally necessary to change the TROY PocketPro 100S default parameters, you can change the configuration using any one of the following methods:

- TELNET
- TROY XCONFIG NetWare Utility
- WebXAdmin (console)

The general configuration procedure is the same, regardless of which method is used.

Certain print server NetWare parameters (such as the NetWare service name) can also be changed by using the TROY ExtendView, XAdmin32, or WebXAdmin utility.

TELNET

To connect to the print server using TELNET on UNIX, Windows NT, or most other TCP/IP systems, type the following command at the UNIX system prompt:

        TELNET *ipaddress*

The *ipaddress* is the IP address of the print server. When you are connected, press **RETURN** or **ENTER** to get the "#" prompt, enter the password ACCESS (it will not echo), and type anything in response to the Enter Username> prompt. When you get the Local> prompt, you are ready to enter commands.

XCONFIG

The XCONFIG utility can be downloaded from the TROY web site (http://www.troygroup.com/wireless). To connect to the print server using the TROY XCONFIG NetWare utility, execute the following command at the DOS prompt:

        XCONFIG

If you have only one print server, you will be immediately connected. If you have more than one print server, you will be given a list of available print servers. Type the number of the print server that you want to connect to. When you are connected, enter the password ACCESS (it will not print) at the "#" prompt, and type anything in response to the Enter Username> prompt. When you get the Local> prompt, you are ready to enter commands.

**General
Server
Commands**

CLear FAtal
Deletes fatal error log

CLear PAssword
Remove console password

CLear POrt *portname* JOB
Clears current entry in the print server's internal queue for the specified portname (P1 for the first parallel port, S1 for the first serial port, P2 for the second parallel port, and S2 for the second serial port)

CLear SERVEr STRing n
Remove BOT/EOT string (see Appendix B)

EXIT/^D
Exits print server console

HElp
Provides information on available commands

SET DEFAULT
Sets print server parameters to factory defaults

SET LOAD DIsable
Disables firmware reload after exit

SET LOAD ENable
Enables firmware reload after exit

SET LOAD HOst <name>
Sets node name of boot host for (NetWare firmware load)

SET LOAD IP aa.bb.cc.dd
Sets IP address of load host (TCP/IP firmware load)

**General
Server
Commands
(cont.)**

```
SET LOAD SOftware <filename>
```
Sets host filename of firmware to load.

```
SET LOAD XModem
```
Begins XModem serial download of new firmware

```
SET PAssword <password>
```
Sets console password (default password is ACCESS)

```
SET PORT <parallelportname> BIDir  [EN|DIS]
```
Enables/disables bidirectional communications on parallel port, where <portname> is P1 for first parallel port or P2 for second parallel port

```
SET PORT <parallelportname> DMA   [EN|DIS]
```
Enables/disables DMA support on parallel port

```
SET PORT <parallelportname> FSTB [EN|DIS]
```
Enables/disables fast strobe mode support on parallel port

```
SET PORT <parallelportname> NBUF [EN|DIS]
```
Enables/disables no buffer support on parallel port

```
SET PROtect <password>
```
Set console protection password to prevent access to SET commands (use UNPROTECT command to access SET commands)

```
SET SERVEr DEscription
```
Sets node description string displayed with SHOW SERVER command

```
SET SERVEr STRing n "..."
```
Defines server BOT/EOT string (see Appendix B)

```
SET SERVIce <servicename> <protocol>  [EN|DIS]
```
Enable or disables specified protocol on the specified service.

**General
Server
Commands
(cont.)**

SET SERVIce <servicename> BOT nn
Set service BOT string to nn (see Appendix B)

SET SERVIce <servicename> EOT nn
Set service EOT string to nn (see Appendix B)

SET SERVIce <servicename> FIlter nn
Set service filter to nn (see Appendix B)

SET SERVIce <servicename> FMS nn
Sets filter 1 match string to nn

SET SERVIce <servicename> FRS nn
Sets filter 1 replace string to nn

SET SERVIce <servicename> NAme <newname>
Changes service name

SET SERVIce <servicename> POrt <portname>
Change service port (<portname> is P1 for the parallel port

SET SERVIce <servicename> RECeive [EN|DIS]
Set receive only mode on specified service

SET SERVIce <servicename> TCP nn
Sets TCP port number of service

SHow FAtal
Show fatal error log

SHow FRee
Shows memory available

SHow LOAd
Shows firmware update parameters

**General
Server
Commands
(cont.)**

SHow POP3
Shows POP3 parameters

SHow POrt
Shows port parameters

SHow POrt <name> STA
Shows current port status.

SHow SERVEr
Shows server parameters.

SHow SERVEr COunters
Shows server statistics.

SHow SERVEr QUeue
Shows print server internal queue.

SHow SERVIce
Shows service Parameters.

SHow SMTP
Shows SMTP parameters.

SHow SNMP
Shows SNMP variables.

SHow TEstpage
Prints test page.

SHow VErsion
Shows server firmware version.

**General
Server
Commands
(cont.)**

`UNPROtect`
Allows system manager to temporarily access SET commands when remote console is in protected mode (See SET PROTECTION command). The SET DEFAULT command can be used to permanently disable the protected mode.

`ZEro`
Zeroes statistical counts.

**AppleTalk
Commands**

`SET APpletalk [EN|DIS]`
Enables or Disables Appletalk Processing

`SET APpletalk ZOne "<name>"`
Set Appletalk zone name

`SET LOCaltalk [EN|DIS]`
Enables/disables LocalTalk port

`SET APpletalk [EN|DIS]`
Enables/disables Appletalk processing

`SET SERVIce <servicename> APP [EN|DIS]`
Enables or disables AppleTalk jobs on specified service

`SET SERVIce <servicename> ATYPE <string>`
Sets AppleTalk type

`SET SERVIce <servicename> RECEIVE [EN|DIS]`
Enables or Disables bidirectional communications on service.

`SHow APpletalk`
Shows AppleTalk parameters

`SHow LOCaltalk`
Shows LocalTalk parameters

**NetBIOS/
NetBEUI
Commands**

`CLear NETBios DOMain <domainname>`
Clears domain name

`SET NETBios DOMain <domainname>`
Sets NetBIOS domain name

`SET NETBeui [EN|DIS]`
Enables or disables NetBEUI

`SET NETBios MEthod <type>`
Sets method of getting WINS server address

`SET NETBios PRimary aa.bb.cc.dd`
Sets IP address of primary WINS server

`SET NETBios SEcondary aa.bb.cc.dd`
Sets IP address of secondary WINS server

`SET SERVIce <servicename> NETBeui [EN|DIS]`
Enables or disables NetBEUI on service

`SHow NETBios`
Shows NetBEUI/NetBIOS parameters

**NetWare
Commands**

CLear NETWare SErver <server>
Removes specified NetWare file server from print server access list.

CLear NETWare QServer <fileserver> ON <servicename>
Removes queue server mode on service

CLear SERVIce <servicename> CONtext
Remove NDS context

CLear SERVIce <servicename> TREE
Remove NDS tree

SET NETWare ADvertise n
Sets advertising frequency of print server

SET NETWare [EN|DIS]
Enables/Disables Netware protocol on print server

SET NETWare FRame [802.2|802.3|ETH|AL|AU|SNA]
Sets Netware frame type to 802.2, 802.3, Ethernet II, ALL, AUTO, or SNAP

SET NETWare NEtwork n
Sets Netware internal network number

SET NETWare NPrinter <pserver> n ON <service>
Set NPrinter mode on service

SET NETWare PAssword <psw>
Sets print server login password for file server

SET NETWare POlling n
Sets queue polling time in seconds

SET NETWare QServer <fileserver> ON <service>
Sets Queue Server mode on service

**NetWare
Commands
(cont.)**

`SET NETWare Rescan`
Rescans file servers for new queues

`SET NETWare SErver <name> [EN|DIS]`
Enables file server

`SET SERVIce <servicename> CONtext <string>`
Sets NDS context

`SET SERVIce <servicename> NETW [EN|DIS]`
Enables or disables NetWare jobs on specified service

`SET SERVIce <servicename> TREE <string>`
Sets NDS tree

`SHow NETWare`
Shows NetWare parameters

SNMP Commands

`CLear SNMP CONtact <string>`
Removes SNMP SysContact

`CLear SNMP LOCation <string>`
Removes SNMP SysLocation

`SET SNMP GETCOMM  <string>`
Gets SNMP community

`SET SNMP SETCOMM1 <string>`
Set SNMP community 1 name

`SET SNMP SETCOMM2 <string>`
Set SNMP community 2 name

`SET SNMP CONtact  <string>`
Set SNMP SysContact

`SET SNMP LOCation <string>`
Sets SNMP SysLocation

`SET SNMP JETADmin [EN|DIS]`
Enables or disables JetAdmin

TCP/IP Commands

SET IP ACcess [EN|DI|ALL] aa.bb.cc.dd {MAsk ee.ff.gg.hh}
Allows or prevents specified IP address from accessing print server.

SET IP ADdress aa.bb.cc.dd
Sets IP address of print server

SET IP BAnner [EN|DIS]
Enables or Disables trailing banner page for lpr/lpd jobs

SET IP BOot n
Number of DHCP/BOOTP/RARP tries

SET IP CHKSUM [EN|DIS]
Enables or disables IP receive checksum

SET IP [EN|DIS]
Enables or Disables IP Processing

SET IP FTime [EN|DIS]
Enables or disables fast timeout

SET IP KEepalive n
Sets IP keepalive timer in minutes

SET IP MEthod [AUTO|BOOTP|RARP|STATIC]
Sets method of getting IP address

SET IP PIng aa.bb.cc.dd
Test connection to IP host

SET IP RArp nn
Sets procedure used by print server when obtaining its IP address. By default, the IP address is set along with a default subnet mask and a router address that is the same as the address of the load host. By setting nn to 1, the subnet mask is not set. If nn is set to 2, the router address is not set. If nn is set to 3, neither the subnet mask nor the router address is set.

TCP/IP Commands (cont.)

```
SET IP REtry [EN|DIS]
```
Sets lpd retry continuation

```
SET IP ROuter aa.bb.cc.dd
```
Sets default router address

```
SET IP SUbnet aa.bb.cc.dd
```
Sets subnet mask

```
SET IP TImeout n
```
Sets inactivity timeout (minutes)

```
SET IP WIndow nn
```
Sets LPD/TCP maximum window size

```
SET SERVIce <servicename> IP [EN|DIS]
```
Enables or disables TCP/IP jobs on specified service

```
SET SERVICE <servicename> TCP nn
```
Sets TCP port number (>1023) on service

```
SHow IP
```
Shows LPD/TCP/TELNET Parameters

```
SHow IP ACcess
```
Shows IP addresses that are allowed to access print server

Introduction

A service is a resource that can be accessed by computers that wish to print to the print server. The TROY PocketPro 100S print server provides the following predefined services (do a `SHOW SERVICE` command in the print server remote console to get a list of available services).

Available Services

Service	Definition
TWC_*xxxxxx*_P1	Parallel port binary service
BINARY_P1	Parallel port binary service
TEXT_P1_TX	Parallel port TCP/IP text service (adds carriage return after each line feed)
POSTSCRIPT_P1	Parallel port PostScript service (switches PJL-compatible printer to PostScript mode)
PCL_P1	Parallel port PCL service (switches PJL-compatible printer to PCL mode)
TWC_*xxxxxx*_P1_AT	Parallel port AppleTalk service

The "*xxxxxx*" is the last six digits of the Ethernet address (for example, TWC_009C53_P1). Any of the services, not just the user-defined ones, can be modified to meet a user's particular requirements.

Predefined Command Strings

The TROY PocketPro 100S print server provides the powerful capability to customize any of the services to meet specific user requirements through the use of setup and reset strings. Such strings are printer command sequences that are sent to the printer before or after the print job. For example, you could define one of the services to provide landscape mode printing by defining a setup string that contains the appropriate command to put the printer into landscape mode.

The TROY PocketPro 100S print server provides several predefined strings for popular PCL, PostScript, and PJL (the Page Job Language used by new Hewlett-Packard and other printers) commands. These include (do a `SHOW SERVER STRING` command in the remote console to see the available strings):

Predefined Command Strings (cont.)

No.	String	Definition
0	(special)	Using this number causes printer to not automatically reset at end of job.
1	NULL	Null string
2	\1BE	PCL reset (<ESC>E)
3	\04	PostScript reset (CTRL-D)
4	\1B%-12345X	PJL UEL
5	@PJL	Enter PJL mode
6	Enter Language=	PJL language switch
7	PCL\0A	PJL PCL command
8	Postscript\0A	PJL PostScript command
9	\FF\04\FF\05\FF\06\FF\07	Enter Language=PCL
10	\FF\04\FF\05\FF\06\FF\08	Enter Language=PostScript
11	\0C	Formfeed

To define a new string, use the command:

```
SET SERVER STRING number "string"
```

The *number* is the number of the string (12 through 31) and *string* is the desired string (must be enclosed in quotation marks).

A given string can include hexadecimal characters by preceding the value with a "\" character. The next two characters after the "\" will then be interpreted as the hexadecimal value of a character. For example, to specify <ESC>E as string number 12, you would enter:

```
SET SERVER STRING 12 "\1BE"
```

When you associate a string number with a service, the new string number completely replaces any previous string numbers. Also, if you are using one of the predefined PostScript or PCL services, the new string will nullify the language switching function of these services.

However, you can combine several string numbers together by preceding the string number with "\FF". For example, if you defined string number 21 as "\1B" (<ESC>), and string number 22 as "&l1O", you can create a new string number 23 that contains <ESC>&l1O (the PCL landscape mode command) by entering:

```
SET SERVER STRING 23 "\FF\15\FF\16"
```

**Predefined
Command
Strings
(cont.)**

The string numbers within the quotation marks are expressed in hexadecimal when used with this command.

To associate a string with the service, use the following commands:

```
SET SERVICE servicename BOT stringnumber
SET SERVICE servicename EOT stringnumber
```

The *servicename* is the name or number of the service and *stringnumber* is the number of the string as defined above. The first command (BOT) adds the specified string to the beginning of the job, while the second command (EOT) adds the specified string to the end of the job. A given service can have both a setup and reset string associated with it.

To clear a string number, type:

```
CLEAR SERVER STRING stringnumber
```

To clear a setup or reset string, set the string number to 1 (the null string):

```
SET SERVICE servicename BOT 1
SET SERVICE servicename EOT 1
```

**Enabling
Protocols on a
Service**

You may enable or disable protocols that can access a given service with the following commands:

```
SET SERVICE name IP ENABLED
SET SERVICE name NETWARE ENABLED
SET SERVICE name APPLE ENABLED
SET SERVICE name NETBEUI ENABLED
SET SERVICE name DLC ENABLED
```

The *name* is the name or number of the service. Do a SHOW SERVICE command to see the enabled protocols. Note that a given service must have at least one protocol enabled.

Adding Filters to a Service

A filter is a program built into the print server that performs a specific function. The following filters are available:

filter no.	Description
ONE	This filter substitutes one user-specified character string for another character string. By default, it substitutes a carriage return character plus a linefeed character every time a linefeed character is encountered in the data stream. It is useful for printing UNIX text files, because such files do not have carriage returns at the end at the end of lines.

filter no.	Description
TWO	This filter species that AppleTalk can be used on the service.

filter no.	Description
THREE	This filter converts a text file to PostScript for use with PostScript-only printers

filter no.	Description
FOUR	This filter enables the HP Tagged Binary Communications Protocol to allow AppleTalk binary jobs to be printed via the parallel port.

The service TEXT_*pp* is predefined with the text filter, while the service TWC_xxxxxx_*pp*_AT has the AppleTalk filter enabled. To use a filter with other services, use the following command:

```
SET SERVICE name FILTER fltrno ENABLED
```

The *name* is the name of the service and *fltrno* is the number of the filter (e.g., 1 for the text filter).

Changing the Service Name

The default service names are rather long and difficult to remember. If you want to change a service name to something more meaningful, execute the following command from the print server remote console:

```
SET SERVICE oldname NAME newname
```

Using Service Names with TCP/IP or NetWare

To use services from TCP/IP, specify the service name as the remote printer or "rp" parameter in the printcap file or the printer setup program (e.g., SAM or SMIT). Remember that if you want to print text files to a UNIX service, you should enable the TEXT filter (filter number 1).

To use a service with NetWare, use PCONSOLE to specify the default NetWare service name as one of the print servers for the queue (this service is TWC_*xxxxxx*_P1 by default, where "*xxxxxx*" is the last six digits of the Ethernet address). If you want to use a different service, you must also specify this service as one of the print servers for the print queue.

Using the Character Substitution Filter

The character substitution filter (filter 1) allows you to substitute any text string for any other text string (strings may be up to 64 characters, and the two strings may have different lengths). To use this filter:

1 Define the desired strings using the `SET SERVER STRING` *stringnumber* *string* command (the same command used to define EOT and BOT strings). For example:

```
SET SERVER STRING 15 "\01"
SET SERVER STRING 16 "This is a test\0D"
```

This sets string 15 as <CONTROL-A> and string 16 as "This is a test"<RETURN>. The command `SHOW SERVER STRINGS` shows the string settings.

2 Enable filter 1 on the desired service with the `SET SERVICE` *servicename* `FILTER 1` command. The command `SHOW SERVICE` displays which filters are enabled on the services, and the `SHOW SERVICE FILTER` displays the filter settings.

3 Define the service with the desired match string and replacement string with the following commands:

```
SET SERVICE servicename FMS matchnumber
SET SERVICE servicename FRS replacenumber
```

The *matchnumber* and *replacenumber* are the numbers of the strings defined in step 1. If the match string is set to 00, the default match string <LINEFEED> and replacement string <CARRIAGE RETURN><LINEFEED> will be used. If the replacement string is set to 00 (and the match string is not zero), then the replacement is NULL, and any matches are just deleted from the input stream.

4   As an example of the use of filter 1, in certain types of IBM CICS print jobs, pages end with a <CONTROL-A>. By using filter 1, you can substitute each occurrence of <CONTROL-A> with <FORMFEED>. This would be implemented as follows on a service called "CICS":

```
SET SERVER STRING 12 "\01"
SET SERVICE CICS FILTER 1
SET SERVICE CICS FMS 12
SET SERVICE CICS FRS 11
```

When jobs are printed to the CICS service, all occurrences of <CONTROL-A> will be replaced with <FORMFEED>. Note that filter 11 is predefined as <FORMFEED>.

Introduction

The firmware code used in the TROY PocketPro 100S print server is stored in flash memory. The firmware files stored in the flash memory of the PocketPro 100S can be upgraded by downloading the appropriate update file.

NOTE: The firmware can also be upgraded using the XAdmin32 Utility by downloading the software and procedures from the TROY web site at http://www.troygroup.com.

Downloading New Firmware Using the TCP/IP Update Utility in Windows

1. Run the TROY Wireless Update utility for TCP/IP. The **About Update for TCP/IP** window will be displayed. Click on **OK** to continue. The **Select Update File** window will be displayed.
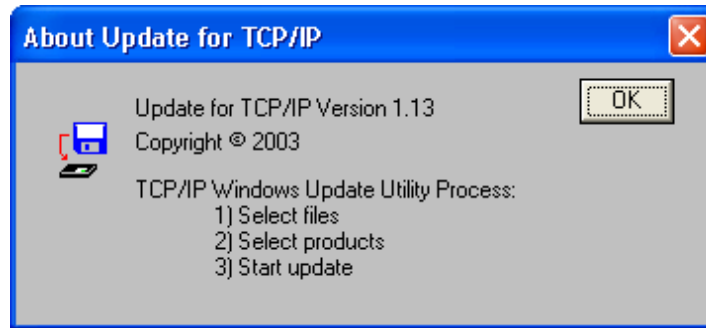
2. Select **UpdateFiles (*.bin)** file type, locate the PocketPro 100S bin file, and then click on **Open**. A window will be displayed (see next page) showing the file(s) you have selected including the revision level and date code for each file.
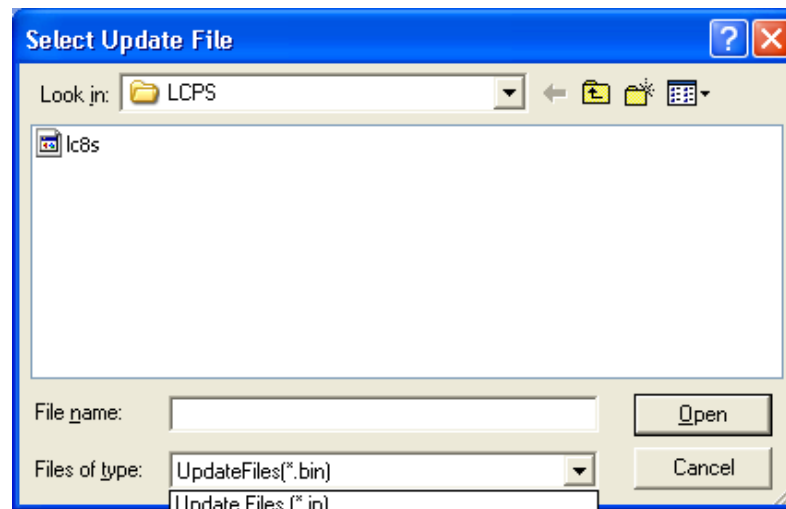
3. Verify that the file(s) are correct, and then click on **OK**. The utility will start searching for qualified print servers present on the network.
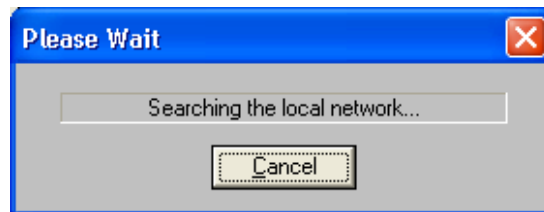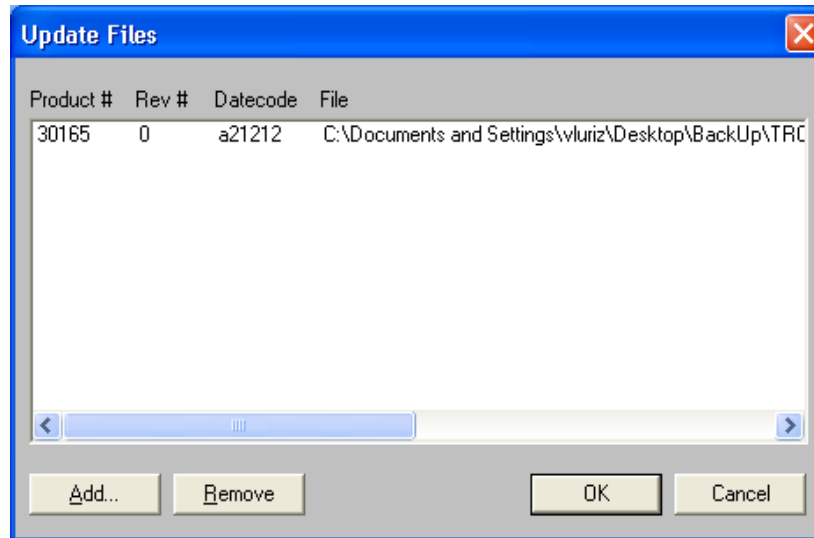
4. When the search process is complete, click on **OK** to continue. A list of found devices will be displayed.
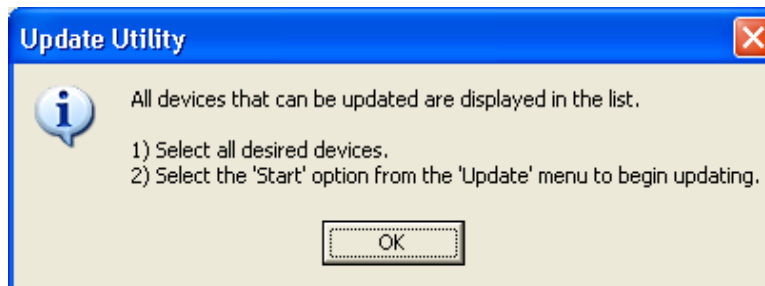
Downloading New Firmware Using the TCP/IP Update Utility in Windows (cont.)

5. Select the desired PocketPro 100S to be upgraded, click on the green icon, or click on *UPDATE* ➔ *START*. The firmware update process will begin automatically as soon as the PocketPro 100S is ready.
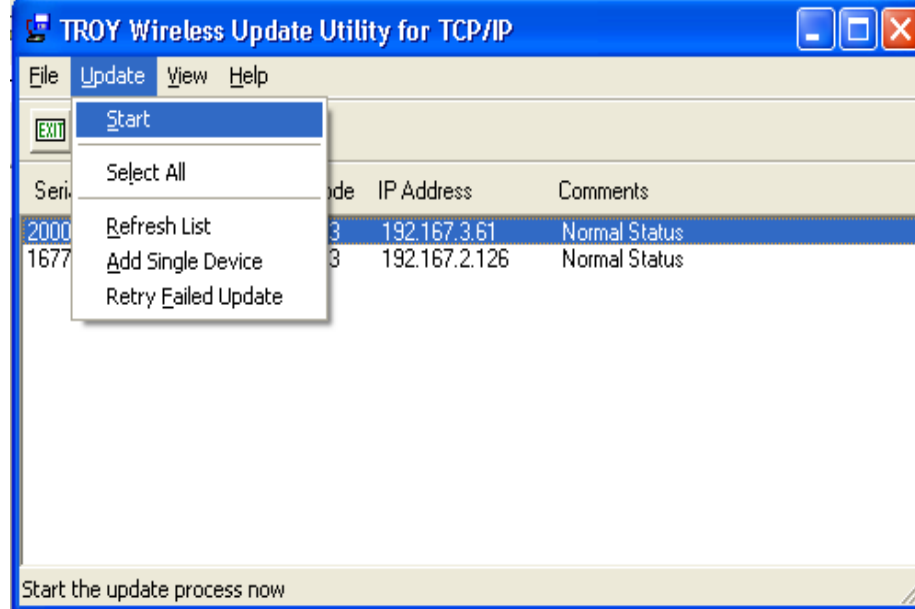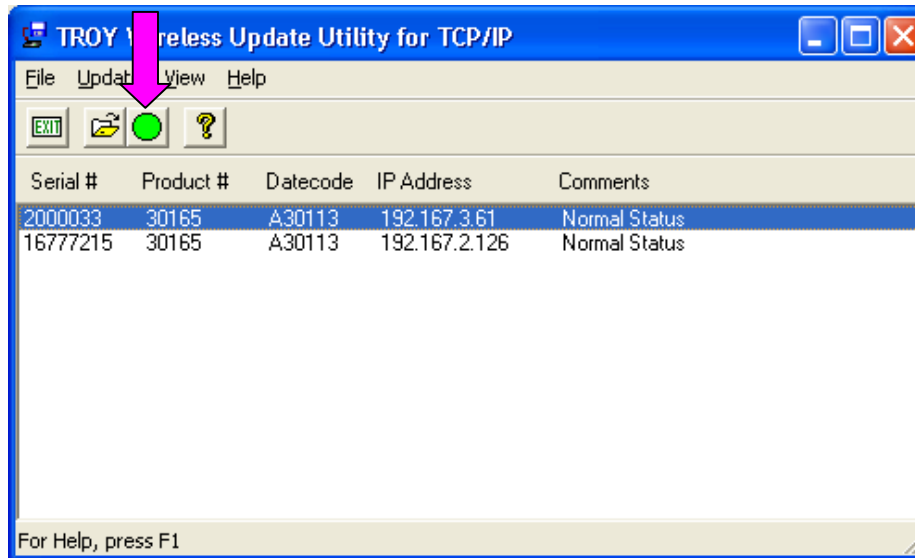
**Downloading
New
Firmware
Using the
TCP/IP
Update Utility
in Windows
(cont.)**

6. When the PocketPro 100S is ready, the firmware upgrade will begin. The IP address of the PocketPro 100S as well as the file you are loading will be displayed.
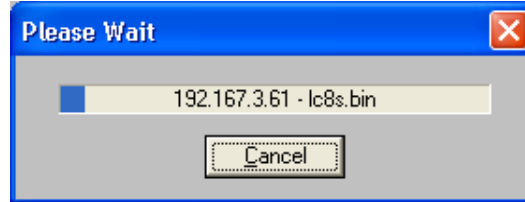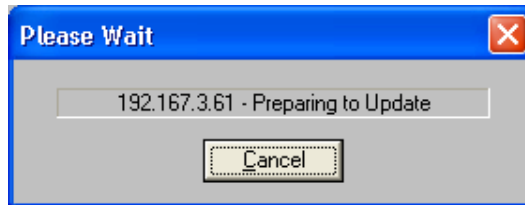
7. The update log will be displayed when the update process is finished. Click on *Close* to continue.
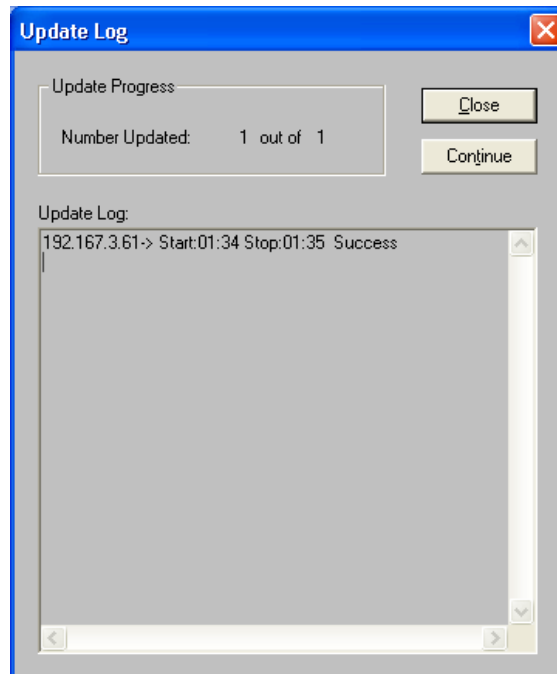
Downloading New Firmware Using the XAdmin32 Utility in Windows

The PocketPro 100S firmware can also be upgraded using the XAdmin32 utility, which is available for download from the TROY web site (www.troygroup.com/wireless).   Perform the following steps to upgrade the PocketPro 100S firmware using the XAdmin32 utility.

1. Right-click on the print server to be upgraded in the list, and then select *Load Firmware*.

2. If you are using TCP/IP to upgrade, select *TFTP PUT* from this host. If you are upgrading using IPX/SPX on a NetWare network to upgrade, select *Netware GET* from a server (If you are using Netware to upgrade, you need to put the .bin firmware file in the LOGIN directory of the Netware server). Click on *OK*.

3. If you selected TFTP PUT from this host in Step 2, enter the configuration password (the default password is ACCESS), and then click on *Browse* to find the .bin firmware file you downloaded. Click on *Load*. The firmware on your PocketPro 100S will be upgraded to the new version.

4. If you selected Netware GET from a server in Step 2, enter the configuration password (the default password is ACCESS). Enter the name of the Netware server where you saved the .bin file as the Host Name. Enter the name of the firmware file for File. Click on *OK*. The firmware on your PocketPro 100S will be upgraded to the new version.

Downloading from a Windows NT or UNIX Host Computer Using Master Mode tftp

To download the print server firmware from a Windows NT or UNIX system using master mode tftp, first copy the firmware update file to that host. Make sure that tftp is started by checking the appropriate files on your system (on Windows NT, TCP/IP and Simple TCP/IP Services must be enabled in the Network Control Panel); with UNIX, tftp must be enabled in your /etc/services file and possibly in another configuration file, such as `/etc/inetd.conf`. Refer to your system documentation or the UNIX man pages for additional information.

To download the firmware from Windows NT/2000/XP, enter the following command:

```
tftp - i ipaddr put file password
```

The *ipaddr* is the IP address of the TROY print server, *file* is the name of the firmware update file, and *password* is the print server password (ACCESS is the default password).

To download the file from most UNIX systems, enter the following commands from the UNIX system prompt:

```
tftp ipaddress
tftp> binary
tftp> put file password
```

The *ipaddress* is the IP address of the TROY print server, *file* is the name of the firmware update file, and *password* is the print server password (ACCESS is the default password).

Downloading from a UNIX Host Computer using Slave Mode tftp

To download the print server firmware from a UNIX host using slave mode tftp, first copy the appropriate firmware update file (for example, TROY.BIN) to that host. Make sure that tftp is started by checking the appropriate files on your system (generally speaking, tftp must be enabled in your /etc/services file and possibly in another configuration file, such as /etc/inetd.conf). Refer to your UNIX system documentation or man pages for additional information.

Now log into the print server remote console using TELNET (refer to Appendix A for more information on using commands), and execute the following commands:

```
SET LOAD IP unixhost-ipaddress
SET LOAD SOFTWARE "pathname"
SET LOAD ENABLE
```

The *unixhost-ip address* is the IP address of the UNIX load host and *pathname* is the full path name for the firmware update file (e.g., `/tftpboot/TROY.BIN`). Some tftp implementations require that the update file be located in the `/tftpboot` directory. Be sure to put the path name in quotes and remember that UNIX names are case-sensitive. Also, make sure that your file protection allows general access to the boot directory.

When you type a CTRL-D to exit the remote console, the firmware update file will then be loaded into the print server. The orange TEST LED will blink during the load process and will go out when the process is complete.

If the orange LED does not go out after about two minutes, check to make sure that you correctly entered all parameters and that your network connections are good. Then power the print server off and then on again, enter the SET LOAD ENABLE command, and exit the remote console to retry the download.

Downloading from a UNIX Host Computer using BOOTP

To download the print server firmware from a UNIX host using BOOTP, first copy the firmware update file to that host. Make sure that BOOTP and tftp are started by checking the appropriate files on your system (generally speaking, BOOTP must be enabled in the `/etc/inetd.conf` file, while tftp must be enabled in your `/etc/services` file and possibly in another configuration file, such as the `/etc/inetd.conf` file). Refer to your UNIX system documentation or man pages for additional information.

Configure your `/etc/bootptab` file to specify the Ethernet address of the print server and the name of the update file (for example, TROY.BIN). Make sure that your file protection allows general access to the directory that contains the update file. The exact format of the file `/etc/bootptab` varies widely, so you will need to refer to your UNIX system documentation for details. A typical `/etc/bootptab` file entry might be:

```
xc2:ht=ethernet:ha=00401700c953:\
ip=192.189.207.3:bf=/usr/TROY.BIN:
```

Now log into the print server remote console using TELNET (see Appendix A for more information on using commands), and execute the following commands:

```
SET LOAD SOFTWARE "pathname"
SET LOAD ENABLE
```

The *unixhost-ip address* is the IP address of the UNIX load host and *pathname* is the full path name for the firmware update file (e.g., `/tftpboot/TROY.BIN`). Be sure to put the path name in quotes and remember that UNIX names are case-sensitive. Also, make sure that your file protection allows general access to the boot directory.

When you type a CTRL-D to exit the remote console, the firmware update file will then be loaded into the print server. The red TEST LED will blink during the load process and will go out when the process is complete.

If the red LED does not go out after about two minutes, check to make sure that you correctly entered all parameters and that your network connections are good. Power the printer off and then on again, enter the SET LOAD ENABLE command, and then type EXIT to exit the remote console and retry the download.

Downloading from a NetWare Server

To download from a NetWare server, first copy the firmware update file into the \login directory on your SYS partition (`SYS:\LOGIN`). Using the \login directory will eliminate any potential file protection problems.

Connect to the print server remote console using XCONFIG (refer to Appendix A for more information on using commands) and enter the following commands in response to `Local>` prompt.

```
SET LOAD HOST fileservername
SET LOAD SOFTWARE SYS:\LOGIN\TROY.BIN
SET LOAD ENABLE
```

The *fileservername* is the name of the file server. Substitute the actual name of your firmware update file for "TROY.BIN". When you type a CTRL-D to exit the remote console, the file TROY.BIN will then be loaded into the print server. The red diagnostic LED will blink during the load process and will go out when the process is complete.

If the red LED does not go out after about two minutes, check to make sure that you correctly entered all parameters and that your network connections are good. Then power the print server off and then on again, enter the `SET LOAD ENABLE` command, and exit the remote console to retry the download.

Obtaining Firmware Updates

To get the latest firmware updates for your TROY PocketPro 100S print server, go to the Tech Support pages on the TROY web site at http://www.troygroup.com/wireless.

If you do not have Internet access, you may contact TROY Tech Support at (800) 332-6427, fax (304) 232-0996, or send an e-mail using the following address: technicalsupport@troygroup.com. The firmware can be mailed to you on a diskette or electronically sent to you.

10base2

A type of Ethernet that uses RG58 coaxial cable. Also called Thin Ethernet, ThinNet, and CheaperNet.

10base5

The original Ethernet standard that uses a thick coaxial cable. Also called thick Ethernet or standard Ethernet.

10baseT

A type of Ethernet that uses unshielded twisted pair cable.

100baseT4

A 100 megabit/second networking standard based on Ethernet technology that uses four pairs on a Category 3 twisted pair cable (not widely used).

100baseTX

The most popular 100 megabit/second networking standard based on Ethernet technology. It uses two pairs on a Category 5 twisted pair cable.

802.2

(1) The IEEE standard for the Logical Link Control layer of the Ethernet protocol. The LLC layer is implemented as special fields containing control information within an IEEE compatible Ethernet frame.
(2) The NetWare Ethernet frame type that includes both the IEEE 802.3 and 802.2 fields.

802.3

(1) The IEEE standard for Ethernet. (2) The default Ethernet frame type for NetWare 3.xx and 2.xx (also called 802.3 raw; NetWare 802.3 is technically not IEEE compatible because it does not have the 802.2 fields).

A4

The International standard paper size (210 x 297mm).

Address

An identifier. Every device on a network has a unique address.

AIX

The variation of UNIX that runs on IBM computers.

Anonymous FTP

A method by which any user on a network can access certain files on a given host computer by logging in under the name *anonymous* after connecting to that computer with the FTP protocol.

AppleTalk

A protocol developed by Apple Computer for file sharing and print sharing. AppleTalk runs over Ethernet, LocalTalk, and Token Ring.

arp

The standard TCP/IP method for determining a device's actual network address based on its IP address. Also used by TROY print servers to set the IP address.

ASCII

A standard for the binary representation of characters.

AT&T UNIX

One of two major variants of UNIX on which operating systems like HP/UX, Solaris, and SCO UNIX are based. Originally developed by AT&T.

AUI

Attachment Unit Interface is the 15-pin Ethernet connector that is used to connect to a transceiver. Also called a DIX connector or a thick Ethernet port. *See also 10base5.*

Batch File

A file containing a number of system-level commands. When this file is run, each of the commands in the file are executed, thereby eliminating the need to type in each command individually.

Berkeley UNIX

One of two major variants of UNIX on which operating systems like Digital UNIX and SunOS are based. Originally developed by the University of California-Berkeley.

Bidirectional

Capable of communications in two directions. With printers, this usually means that the printer is capable of receiving data and sending back status information to the host computer.

Binary File

(1) A file that contains data that is not in a standard format like ASCII. In printing, binary files typically contain graphical information such as scanned photographs. (2) A special type of PostScript file that contains compressed binary information.

Bindery

In NetWare 2.xx and 3.xx, a database containing definitions for network entities, including users, file servers, print servers, etc., along with the properties associated with such entities. In NetWare 4.xx, bindery emulation is available for compatibility with older versions.

Bitronics

Refers to a bidirectional P1284-compatible parallel port.

BOOTP

A standard TCP/IP method for downloading information such as the IP address into a network device.

Bridge

A device that connects two local area network segments together. A bridge operates at level 2 of the OSI Reference model, which means that it operates transparently with higher-level protocols like NetWare and LAT.

Broadcast

In a network, a situation in which all destinations on the network receive a copy of a given packet.

Centronics

The standard for parallel printer ports that is used on the majority of printers.

Chooser

A Macintosh program that allows a user to select a printer on a network.

Circuit

A logical connection between two or more devices on a network.

Client

A computer on a local area network that obtains services from a server on the network.

Command File
The VMS equivalent of a batch file. See *batch file.*

Console
A program running on a device (such as print server) that allows a user to configure and monitor that device.

DCPS
Abbreviation for DECprint Supervisor.

Data Link Layer
Layer 2 of the OSI Reference Model that assembles and disassembles frames, handles synchronization, and detects errors.

Dataproducts
A standard for parallel printer ports that was originally developed by Dataproducts Corporation for its line printers and is common on older Digital Equipment corporation printers. Rarely used today. Can be handled with TROY external print servers via a third-party adapter.

DECNET
A network operating system and the corresponding protocol developed by Digital Equipment Corporation. Not to be confused with LAT, which is a different DEC protocol.

DECprint Supervisor
Sophisticated PostScript-based printing software for VMS that handles job queueing, error and status reporting, and translation of PCL, Tektronix 4014, and LN03 page description languages.

Digital UNIX
The latest Digital Equipment Corporation version of UNIX. It replaces OSF/1 and ULTRIX, and uses standard Berkeley UNIX TCP/IP and lpr/lpd for printing.

Direct Mode IPX
The protocol used by Windows 95 for peer-to-peer communications.

DLC/LLC

A protocol used for printing on Windows for Workgroups, LAN Manager, and other network operating systems; being phased out in favor of newer protocols like Windows 95 Peer-to-Peer direct mode IPX and TCP/IP.

DMA

<u>D</u>irect <u>M</u>emory <u>A</u>ccess is high performance computer architecture in which data is transferred in large blocks between the processor's memory and an external device without any processor intervention.

DOS

<u>D</u>isk <u>O</u>perating <u>S</u>ystem now commonly refers to the PC operating system developed by Microsoft that is officially called MS-DOS.

Download

The process of copying firmware or software from one computer to another computer or other device on the network (such as a print server).

Driver

Low-level software that interfaces a hardware device such as a printer to the computer's operating system. The driver allows programs running on the computer to access the hardware device in a relatively simple manner.

Duplex Printing

Printing on both sides of a sheet of paper.

EIO

The internal bus used by the latest HP printers like the HP LaserJet 4000, 5000, and 8000 series printers.

Escape Sequence

A series of characters, usually starting with the ESCAPE character (ASCII 27) that is used to control a printer or print job.

Ethernet

The most popular Local Area Network standard, which was developed originally by Xerox, Intel, and Digital Equipment Corporation. It operates at a speed of 10 million bits per second.

Ethernet II

(1) The second generation of Ethernet, which was developed before the IEEE 802.3 standard. (2) A frame that is compatible with the Ethernet II standard.

Ethernet_SNAP

Ethernet Sub-Network Access Protocol, an Ethernet frame type that is derived from the 802.2 standard.

FTP

File Transfer Protocol, a TCP/IP-related protocol for transferring files between devices on a network.

File Server

A device on a local area network that provides services to client computers on the network, such as file sharing, print services, etc.

Firmware

The program that operates a microprocessor-based device like a print server. Essentially the same as software, but the term "software" usually applies to general-purpose computers.

Flash Memory

A type of memory that allows read and write operations, but permanently stores data when the power is turned off. It is useful for storing firmware, because it can be easily updated by downloading new code.

Font

A set of characters (usually the alphabet plus numbers punctuation, and special characters) that have a particular style.

Form

A template describing the way a page will appear when printed.

Frame

A group of data and control information that is sent over a network. Often used interchangeably with *packet*, although *frame* is normally used with lower-layer protocols like Ethernet, while *packet* is associated with higher layer protocols like IP and IPX.

Gateway

(1) In TCP/IP jargon, a gateway is the same as a router (see *Router*). (2) A device that converts one higher-level network protocol to a different higher-level protocol (for example, a LAT-to-TCP/IP gateway).

Hops

The number of routers that are located between two devices, such as the print server and the file server.

Host Computer

A computer that provides services to one or more users.

Hosts File

The file on a UNIX host computer (usually in the /etc directory) that contains a list of host computers on the network).

HP/UX

The variation of UNIX that runs on Hewlett-Packard computers.

Hub

(1) A multiport repeater for connecting several network segments together; this term is usually associated with 10baseT networks. (2) A sophisticated network device consisting of a chassis plus several plug-in boards, including bridges, routers, 10baseT hubs, and other devices.

IEEE

International Electronics and Electrical Engineers is a standards body that controls the specifications for Ethernet and other networking-related standards.

IETF

Internet Engineering Task Force is the group that defines the de facto standards for TCP/IP.

I/O Slot

Input/Output slot; in printers, a place where network interface cards are mounted.

IOP

Internal Option Port is the bus used on Lexmark 4039 and Optra Series printers to connect network interface cards.

IP
Internet Protocol, one of the core protocols of the TCP/IP protocol suite.

IP Address
A network address used by the TCP/IP protocol.

IPP
Internet Printing Protocol, an emerging standard for printing across LANs and the Internet.

IPX
Internetwork Packet Exchange, one of the NetWare core protocols. Used in conjunction with SPX for printing and other applications.

JetAdmin
A Hewlett-Packard printer management program available for NetWare and TCP/IP.

JetSend
A protocol originally designed by Hewlett-Packard for simple device-to-device communications.

JetStatus
A feature of TROY print servers that allows a user to view the status of the printer. The SHOW SERVER QUEUE command invokes JetStatus; on XJet IV print servers, more detailed information is available via the SHOW PORT P1 STATUS command.

Job
In printing, a document that is sent to the printer from a computer.

LAN
Local Area Network is a high-speed method of interconnecting devices in a local or campus environment.

LAN Manager
A network operating system developed by Microsoft Corporation.

LAN Server
A network operating system developed by IBM Corporation, based on Microsoft's LAN Manager.

Landscape mode
Printing a document with the long edge of the paper at the top.

LAT
Local Area Transport, a protocol originally developed by Digital Equipment Corporation.

LAT port
A logical port through which LAT devices can send data to other LAT devices. A LAT application port is the default type of LAT port that is used for printing applications (the other type of LAT port is a dedicated port that always accesses a single service on the host computer).

LATCP
A VMS utility program used to configure LAT ports.

LAT Symbiont (LATSYM)
A VMS program that controls the printing of jobs via LAT ports.

Legal Size
The U.S. long paper size (8.5 x 14 inches).

Letter Size
The U.S. standard paper size (8.5 x 11 inches).

LLC
Logical Link Control, one of two Ethernet protocol layers that combined, correspond to the OSI data link layer. The LLC layer provides a hardware-independent interface to higher-level protocols.

LN03
An older Digital Equipment Corporation laser printer. The LN03 used the ANSI PPL page description language, while its successor the LN03-Plus added Sixel graphics capabilities.

LocalTalk
A low-speed (230.4Kbps) local area network standard developed by Apple Computer. Normally used with the AppleTalk protocol.

Logical

Refers to conceptual rather than physical. For example, a computer may have a single physical connection to the network (an Ethernet adapter card), but may have logical connections to many different devices on the network.

lpd

Line Printer Daemon is a program that runs on a host computer or a dedicated print server that allows other host computers to print jobs on that computer or print server. TROY print servers use lpd to allow printing from computers on the network.

lpd-Plus

A feature of TROY print servers that allows the user to define multiple services, each with a different setup and reset string. For example, a user could have one service for landscape printing and another for duplex printing. Also called *logical printers*.

lpr

Line Printer Remote, the program that runs on a client computer to request print services from an lpd host computer or print server.

lpq

A Berkeley UNIX command for obtaining the status of printers.

lpstat

An AT&T UNIX command for obtaining the status of printers.

LPT1

The primary parallel port on a PC. Many networking programs allow transparent printing to network printers by accepting output intended for LPT1 and redirecting it over the network.

MAC

Medium Access Control, one of two Ethernet protocol layers that, together, correspond to the Data Link layer of the OSI model. The MAC layer interfaces to the Ethernet hardware. A MAC address is the same as an Ethernet address.

man page

In UNIX systems, the man pages are an on-line help facility that provide information on various topics.

MAPI

<u>M</u>essaging <u>A</u>pplications <u>P</u>rogram <u>I</u>nterface, a popular method for applications programs to send E-mail messages through Windows operating systems.

MIO

<u>M</u>odular <u>I/O</u>, the internal bus on newer HP printers that connects to network interface cards.

MOP

<u>M</u>aintenance-<u>O</u>riented <u>P</u>rotocol, the protocol used by the VMS NCP and NCL utilities and for downloading files.

multiprotocol

Refers to the ability to handle multiple protocols simultaneously. In a print server, this means that multiple computers can concurrently send print jobs to the same printer.

Name Server

A node on a TCP/IP network that provides a list of all nodes on the network. The name server is accessible from any node, and eliminates the need to have separate hosts files on each node.

NCL

Network Control Language, the method in OpenVMS V6.1 and later for accessing and maintaining remote devices. Replaces NCP.

NCP

Network Control Program, a VMS utility for accessing and maintaining remote devices.

NDS

<u>N</u>etWare <u>D</u>irectory <u>S</u>ervices, a database of network entities in NetWare 4.xx, such as users, file servers, print servers, etc. NDS is a global directory service, which means that users anywhere on a network can access a service such as a printer by name without being logged into the file server that offers that service.

NDPS

<u>N</u>ovell <u>D</u>istributed <u>P</u>rint <u>S</u>ervices is a method for configuring printers in NetWare 5.0 and later systems.

NetBEUI

A networking protocol that is used on Microsoft network operating systems. Although NetBEUI can be used for printing, it is being replaced by newer printing protocols like the Windows 95 Peer-to-Peer direct mode IPX and TCP/IP.

NetWare

A network operating system developed by Novell.

Network Layer

Layer 3 of the OSI Reference Model; establishes paths to allow packets to be routed throughout the network. IP and IPX are examples of this layer.

Network Operating System

A program that controls the operation of a network.

NLM (NetWare Loadable Module)

In NetWare 3.xx or 4.xx, a program that runs on the file server that performs a specific function such as communications.

Node

A device connected to a network, such as a computer or print server.

NPRINTER

The method for connecting a remote printer to a print server in NetWare V4.xx. See also *Remote Printer*.

NWADMIN

The Windows-based NetWare Administrator utility that is used to manage NetWare file servers from a client workstation.

OpenVMS

DEC's latest name for the VMS operating system, which was originally called VAX/VMS.

OS/2

IBM's PC operating system. Primarily significant because it is used as the file server operating system on LAN Manager and LAN Server networks.

OS/400
The operating system used on IBM AS/400 minicomputers.

OSF/1
DEC's version of UNIX that was originally called ULTRIX and is now called Digital UNIX. OSF/1 uses the standard Berkeley lpr/lpd procedures for printing to remote host computers and print servers.

OSI Reference Model
A seven-layer model developed by the International Standards Organization that is used as a reference for developing protocols. Since each layer performs a different function, development and debugging are simplified, and there is greater flexibility (for example, this approach allows TCP/IP to run over both Ethernet and Token Ring).

P1284
An IEEE standard that defines a high-speed bidirectional parallel printer port. P1284 ports are also compatible with the Centronics standard.   There are three types of physical connectors associated with the 1284 standard: 1284A (25-pin DB25), 1284B (36-pin standard Centronics), and 1284C (miniature Centronics). *pp. 1-2, 2-15.*

Packet
A group of data and control information that is sent over a network. Often used interchangeably with *frame*, although *frame* is normally used with lower-layer protocols like Ethernet, while *packet* is associated with higher layer protocols like IP and IPX.

Page Description Language
A control language usually consisting of commands embedded within a document that control the way the document will look when printed. Such commands would set the type of fonts, page margins, colors, graphics, etc. within the document.

Parallel Port
On a printer, a port that transfers data 8 bits at a time for maximum performance. The parallel port usually has a 36-pin Centronics connector.

PATHWORKS
The Digital Equipment Corporation network operating system for PCs and Macintosh computers.

PCL
A page description language originally developed by Hewlett-Packard for its LaserJet printers.

PCONSOLE
A NetWare utility program for configuring and managing printers.

PDL
An abbreviation for Page Description Language.

Peer-to-Peer
(1) A LAN in which nodes communicate with each other without the need for a file server. (2) A new protocol for peer-to-peer communications that is included with Windows 95 (also known as Direct Mode IPX).

Physical Layer
Layer 1 of the OSI Reference Model; defines the physical and electrical connection to the network.

PJL
Page Job Language, a Hewlett-Packard printer control language that is independent of the page description language.

Ping
A TCP/IP command that determines whether a device is alive on the network.

POP3
Post Office Protocol, the protocol used to retrieve E-mail from the server.

Port
(1) A physical connector, such as the parallel port. (2) A logical connection to a device.

Portrait mode
Printing a document with the short edge of the paper at the top (the normal method of printing).

PostScript
A page description language originally developed by Adobe that is widely used in graphics arts applications.

PPD

See Printer Description File.

PPL

An ANSI-standard page description language originally used in the DEC LN03 laser printer.

Printcap File

The file on a UNIX host computer (usually in the /etc directory) that contains a list of printers.

PRINTCON

A NetWare utility program for defining the characteristics of the print job.

PRINTDEF

A NetWare utility program for defining the characteristics of a printer or form. These characteristics are associated with the print job via the PRINTCON utility.

Printer Description File

A file used in PostScript printing that describes the features available on the printer. Commonly used with Apple Macintosh computers (also called a PPD).

Print Server

(1) A device that allows multiple host computers to share a printer over a local area network. (2) In Novell NetWare, a logical device that services print queues on a file server.

Protocol

A method of sending and receiving data between two or more nodes on a network, and insuring that the data is received without errors.

Queue

A region on the computer or file server's disk where files are temporarily stored before printing. Since the queue can store multiple files, it effectively allows users to send their jobs to the printer even if the printer is busy (a procedure called *spooling*).

Queue Server

In Novell NetWare, a queue server is basically the same as a NetWare print server. Queue Server mode is a NetWare printing method in which the printer is directly connected to the print server with no PSERVER NLM installed on the file server.

rarp

Reverse Arp, a standard TCP/IP method of determining a device's IP address based on its Ethernet address.

Raw TCP port

A type of TCP port (see *TCP port*) in which data is passed unmodified to the receiving node.

RCONSOLE

A NetWare utility program that allows a workstation user to access the file server console.

Remote Console

A method of accessing the print server console remotely via protocols like TELNET or NCP for configuration and management purposes.

Remote Printer

In Novell NetWare, a remote printer is a device that connects a printer to a NetWare print server via a network connection rather than through the parallel or serial port of the print server.

Repeater

A network device that connects two or more network segments together and provides the additional function of strengthening and reshaping the electrical signals, thereby allowing the network to be extended over greater distances.

Reset

In printing, a reset is a one or more characters sent after a print job. Usually, the purpose of a reset is to restore the printer back to its normal state.

RJ45

A type of modular jack connector similar to a telephone connector but with eight wires. Used for 10baseT Ethernet connections and for serial port connections.

Router

A device that connects networks together. A router operates at level 3 of the OSI Reference model. A router is called a *gateway* in TCP/IP terminology.

RPRINTER

The method for connecting a remote printer to a print server in NetWare V3.xx and V2.xx (replaced by NPRINTER in NetWare V4.xx). See also *Remote Printer*.

RS-232

The most common serial interface electrical standard.

RS/6000

IBM's RISC-based family of computers.

SCO UNIX

A PC-based UNIX developed by the Santa Cruz Operation.

Segment

A physically or logically separate part of a network, usually a different cable, which is joined with other segments of the network via a repeater, bridge, or router to form the complete network.

Serial Port

On a printer or print server, a port that transfers data one bit at a time. Serial ports usually have either 25-pin, 9-pin "D", or RJ45 connectors.

Server

A device on a local area network that provides services to client computers on the network. See *File Server, Print Server*.

Service

A capability offered by a node on a network. A single node can have multiple services available.

Setup string

A series of characters that is sent before a print job. Usually the purpose of a setup string is to put the printer in a special state (for example, landscape mode).

Shell Script
The UNIX equivalent of a batch file. See *batch file.*

SMTP
Simple Mail Transfer Protocol, a protocol used to send E-mail messages over the Internet.

SNAP
See *Ethernet_SNAP.*

SNMP
Simple Network Management Protocol, a protocol for monitoring and controlling devices on a network.

Solaris
A UNIX operating system developed by Sun Microsystems that runs on Sun computers and Intel-based PCs.

Spoofing
A method normally associated with AppleTalk in which the print server simulates a bidirectional communications link by sending back control information to the printer rather than relying on the printer to send back this information.

Spool Directory
On UNIX systems, a directory that contains the names of files being spooled to a printer.

Spooling
In printing applications, spooling is the transfer of data to a temporary storage area on disk (the print queue) prior to printing. Spooling allows many jobs to be queued to a single printer. Since printers are relatively slow devices compared to disk drives, spooling allows a user to submit a job to the printer and then perform other tasks while the job is being printed.

SPX
Sequenced Packet Exchange is one of the NetWare core protocols and is used in conjunction with IPX for printing and other applications.

StreetTalk Name
The Banyan VINES naming convention used to identify all items on the network.

Subnetwork
One of several small networks that are joined together into a single large network.

Subnet Mask
A TCP/IP method of dividing a network into several smaller subnetworks.

Symbiont
Software that handles job queuing and printing on an operating system.

SYSCON
A NetWare utility for managing file servers from a client workstation.

TCP/IP
Transmission Control Protocol/Internet Protocol is the de facto standard for Internet communications that is widely used on local area networks. Technically, this means the TCP and IP protocols, but the term has come to encompass all of the related protocols, such as TELNET, FTP, lpd, etc.

TCP Port
A method of accessing a TCP/IP service, where a device with a single IP address can have multiple TCP ports. For example, TELNET is port 23, lpd is port 515, etc.; to access a service, you would specify the IP address of the device plus the TCP port number of the service.

TCPware
A popular VMS TCP/IP software package sold by Process Software.

TELNET
A TCP/IP protocol that allows two devices to communicate over a LAN. One of the devices appears as if it were a dumb serial terminal that is hardwired to the other device. TELNET is used by TROY print servers to allow devices like PCs to access the print server remote console.

TELNET interpretation
In the TELNET protocol, certain characters are intercepted and handled in a special manner, rather than being sent directly to the device.

Text file
A file that contains ASCII formatted information, with each line of text usually separated by a line feed and/or carriage return.

tftp
<u>T</u>rivial <u>F</u>ile <u>T</u>ransfer <u>P</u>rotocol is a simple method of transferring information between two TCP/IP devices.

TGV Multinet
A TCP/IP software package that runs on VMS.

Thin Ethernet
See 10base2.

Transport layer
Layer 4 of the OSI Reference Model; provides end-to-end data integrity. TCP is an example of this layer.

Transceiver
In Ethernet networks, a small box that plugs into the AUI port of a device to allow that device to connect to the Ethernet cable. Many Ethernet devices have one or more built-in transceivers, which eliminate need for the AUI port.

UCX
The old name for DEC's TCP/IP services for VMS.

ULTRIX
The original DEC UNIX. ULTRIX supports both TCP/IP and LAT printing.

UNIX
A general-purpose computer operating system used on many different kinds of computers.

VAP
<u>V</u>alue <u>A</u>dded <u>P</u>rocess is a program that runs on a NetWare 2.xx file server and performs a specific function such as communications.

VAX

Digital Equipment Corporation's family of 32-bit computers that runs either VMS or some variation of UNIX (ULTRIX, OSF/1, or Digital UNIX).

VINES

A network operating system developed by Banyan Systems Incorporated.

VINES IP

The protocol used with Banyan VINES.

VMS

An operating system used on Digital Equipment Corporation computers.

WAN

Wide Area Network is a network that interconnects computers and other devices over large distances, most often via telephone company facilities but also via private networks, public data networks, and satellites.

Warp

IBM's latest version of the OS/2 operating system.

Web JetAdmin

A Hewlett-Packard software program for Windows NT that allows HP, TROY, and other print servers to be configured and managed over the network using a web browser.

WebXAdmin

A feature of TROY print servers that allows configuration and management via a web browser.

Windows 95 and Windows 98

Microsoft's PC operating systems that feature built-in peer-to-peer networking.

Windows NT

Microsoft's multitasking operating system that can be used either as a client or as a server (Windows NT Advanced Server).

Windows 2000
Microsoft's latest multitasking operating system that replaces Windows NT. Windows 2000 can be used either as a client or as a server.

WINSOCK
A popular applications program interface for TCP/IP networking using Windows operating systems.

Wollongong PATHWAY
A TCP/IP software package for VMS.

Xadmin
TROY's Windows-based utility for managing and configuring print servers.

Admin32
The 32-bit version of TROY's Windows configuration utility.

XIO
Expanded I/O is the internal bus on HP LaserJet II and III printers that connects to network interface cards.

Zone
In AppleTalk, a zone is a subnetwork; that is, a given network can be subdivided into multiple zones.